CICS Transaction Server for z/OS

Resource Definition Guide

Version 3 Release 1

SC34-6430-09

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SC34-6430-09

Note!

Before using this information and the product it supports, be sure to read the general information under “Notices” on page 717.

This edition applies to Version 3 Release 1 of CICS Transaction Server for z/OS, program number 5655-M15, and to all subsequent versions, releases, and modifications until otherwise indicated in new editions. Make sure you are using the correct edition for the level of the product.

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Preface

What this book is about

This book tells you how to define the characteristics of your data processing resources to your CICS® system. It describes four methods of resource definition:
- Online definition (CEDA)
- Batch definition (DFHCSDUP)
- Automatic installation (autoinstall)
- Macro definition

You can also use EXEC CICS CREATE commands, which are described in the *CICS System Programming Reference*; and CICSPlex® SM Business Application Services (BAS) commands, which are described in *CICSPlex System Manager Managing Business Applications*

Who should read this book

This book is for those responsible for defining resources to CICS.

What you need to know to understand this book

This book assumes that you have a basic understanding of CICS concepts and facilities. You must also be familiar with your own system and the resources to be defined and maintained.

How to use this book

This book is divided into a number of parts:
- About resource definition contains guidance information on defining and managing CICS resources, and descriptions of each resource type.
- Resource definition online (RDO) transaction CEDA contains guidance on using the CICS supplied transaction CEDA, guidance information on using the CEDA commands, and descriptions of the CEDA commands.
- The resource definition batch utility DFHCSDUP contains guidance information on using the DFHCSDUP commands, and descriptions of the DFHCSDUP commands.
- Macro resource definition contains guidance information on using the resource definition macros and descriptions of the macros.
- Appendices.

Notes on terminology

When the term “CICS” is used without any qualification in this book, it refers to the CICS element of CICS Transaction Server for z/OS®.

“CICS/ESA” is used for IBM® Customer Information Control System/Enterprise System Architecture.

Other abbreviations that may be used for CICS releases are as follows:
- CICS/MVS Version 2 Release 1 and subsequent modification levels—CICS/MVS 2.1
- CICS/ESA Version 3 Release 3—CICS/ESA 3.3

- CICS/ESA Version 4 Release 1—CICS/ESA 4.1.

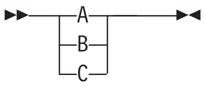
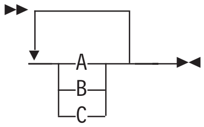
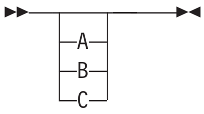
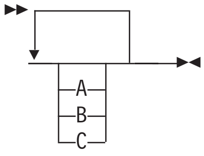
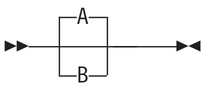
MVS™ refers to the operating system, which is a base element of z/OS.

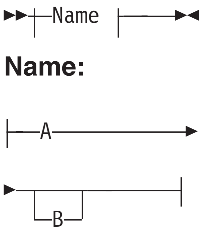
Use of the dollar symbol ($)

In the character sets given in this book, the dollar symbol ($) is used as a national currency symbol and is assumed to be assigned the EBCDIC code point X'5B'. In some countries a different currency symbol, for example the pound symbol (£), or the yen symbol (¥), is assigned the same EBCDIC code point. In these countries, the appropriate currency symbol should be used instead of the dollar symbol.

Syntax notation

The conventions used in the syntax notation are:

Symbol	Action
	A set of alternatives—one of which you ***must*** code.
	A set of alternatives—one of which you ***must*** code. You ***may*** code more than one of them, in any sequence.
	A set of alternatives—one of which you ***may*** code.
	A set of alternatives — any number (including none) of which you may code once, in any sequence.
	Alternatives where **A** is the default.

Symbol	Action
	Use with the named section in place of its name.
Punctuation and uppercase characters	Code exactly as shown.
Lowercase characters	Code your own text, as appropriate (for example, `name`).

Summary of changes

Changes for CICS Transaction Server for z/OS, Version 3 Release 1

Technical cahnges

- There are new resources:

  PIPELINE
  See Chapter 20, "PIPELINE resource definitions," on page 157

  URIMAP
  See Chapter 33, "URIMAP resource definitions," on page 347

  WEBSERVICE
  See Chapter 34, "WEBSERVICE resource definitions," on page 363
- For several CICS releases, BTAM terminals have been supported only indirectly—that is, by transaction routing from a back-level terminal-owning region to which the terminals were attached. In CICS Transaction Server for z/OS, Version 3 Release 1, this indirect support is removed. BTAM is no longer supported and references to it have been removed.
- Because CICS no longer supports the ACB interface of the Telecommunications Access Method (TCAM), and supports the DCB interface only indirectly:
  - Many incidental references to TCAM have been removed.
  - The "TCAM DCB interface" topic has been removed.
  - Parts of the "TCT—terminal control table" topic have been rewritten.
- Because of the removal of support for Java program objects and hot-pooling (hpj), the following changes are made:
  - The HOTPOOL attribute is removed from the PROGRAM resource definition.
  - The sample application program group DFH$JAVA is removed.
  - DFHTASK field 278, CICS MAXHPTCBS delay time, is removed from the DFHMCT TYPE=RECORD macro.

Changes for CICS Transaction Server for z/OS, Version 2 Release 3

The more significant changes for this edition are:

Technical changes
There are changes to the following resources:

CORBASERVER
- There are a new attributes: ASSERTED and OUTPRIVACY

TCPIPSERVICE
- There is a new attribute: PRIVACY
- You can specify additional values for the AUTHENTICATE attribute.

Structural changes
- Syntax diagrams have added, showing the relationship between attributes for each resource.

Changes for CICS Transaction Server for z/OS, Version 2 Release 2

The more significant changes for this edition are:

Technical changes

There are changes to the following resources:

CORBASERVER

- There are new attributes: AUTOPUBLISH, CLIENTCERT, DJARDIR, SSLUNAUTH, and UNAUTH.
- These attributes are now obsolete: PORT, SSL, and SSLPORT.

DB2CONN

- There are new attributes: DB2GROUPID and RESYNCMEMBER.
- The descriptions of these attributes have changed: DB2ID, PRIORITY and TCBLIMIT.

DB2ENTRY

- The description of the PRIORITY attribute has changed.

TCPIPSERVICE

- There is a new attribute: ATTACHSEC.

TERMINAL

- Attribute XRFSIGNOFF is superseded by RSTSIGNOFF.

TYPETERM

- Attribute XRFSIGNOFF is superseded by RSTSIGNOFF.

Stuctural changes

- There are minor changes to the way information in Table 36 on page 625 and Table 37 on page 632 is presented.

Changes for CICS Transaction Server for z/OS, Version 2 Release 1

Technical changes

- New resource types introduced to support enterprise beans:
  - CORBASERVER, for defining Corba Servers
  - DJAR, for defining deployed jar files
- Enhancements to the PROFILE, REQUESTMODEL, TCPIPSERVICE and TRANSACTION resource definitions to support enterprise beans.
- The MIGRATE function has been removed from the DFHFCT macro resource definition.
- Support for DFHDCT macro resource definition is removed.

Structural changes

- The opening two chapters have been combined.
- The resource type descriptions have been moved to the first part of the book.
- Each resource definition chapter is in three parts:
  - A description of the resource definition type
  - How to create the resource definition, with cross-references to related topics.
  - Attribute descriptions.

Changes for CICS Transaction Server for OS/390, Version 1 Release 3

- The following new resource type are introduced:
  - DOCTEMPLATE
  - ENQMODEL
  - PROCESSTYPE
  - REQUESTMODEL
  - TCPIPSERVICE
  - TSMODEL

  CEDA and DFHCSDUP commands are modified to support them.
- A remove option is added to the DELETE and MOVE commands.
- The MIGRATE command is enhanced so that you can migrate existing TST macro definitions to TSMODEL resource definitions.
- Two new fields, JVM and JVMClass, have been added to the CEDA DEFINE PROGRAM panel, to support running Java applications under the control of a JVM.
- The USERDEFINE command is made available from DFHCSDUP

Part 1. About resource definition

This part contains an introduction to resource definition.

Chapter 1. What is resource definition?

To run your system, you need to supply CICS with information about your system resources, including software resources such as programs and data, and hardware resources such as terminals, printers, and telecommunications links. Many of the properties of these resources are variable, so you can choose the particular functions and combinations of resources that your business needs. Resource definition is the process by which you tell your CICS system which resources to use, what their properties are, and how it can use them.

Every resource is defined with a set of **attributes**. The attributes are the properties of the resource, telling CICS, for example, whether a file can be updated, what security level should be given to a transaction, or the remote systems with which CICS can communicate.

How resources are defined

For most resources, you can define resources to CICS by several different methods.

Resource definition online (RDO)
This method uses the CICS-supplied online transactions CEDA, CEDB, and CEDC. Definitions are stored in the CICS system definition (CSD) file, and are installed into an active CICS system from the CSD file.

DFHCSDUP offline utility
This method allows you to make changes to definitions in the CSD file by means of a batch job submitted offline. The definitions are stored in the CSD file

Automatic installation (autoinstall)
Autoinstall minimizes the need for a large number of definitions, by dynamically creating new definitions based on a “model” definition provided by you.

System programming, using the EXEC CICS CREATE commands
You can use the EXEC CICS CREATE commands to create resources independently of the CSD file. For further information, see *CICS System Programming Reference*.

Macro definition
You can use assembler macro source to define resources that cannot be stored on the CSD. Definitions are stored in assembled tables in a program library, from which they are installed during CICS initialization.

CICSPlex SM Business Application Services
You can use CICSPlex SM Business Application Services (BAS) to define and manage resources. Definitions are stored in the CICSPlex SM data repository and can be installed either automatically, during CICS initialization, or dynamically, into a running CICS system. For information on CICSPlex SM BAS, see *CICSPlex System Manager Managing Business Applications*.

Which methods you use depends on the resources you want to define. Table 1 on page 4 shows you the methods you can use for each resource. Table 2 on page 5 suggests some of the things you should consider when deciding which definition method to use.

Table 1. Resources and how you can define them to the running CICS system

Resource	RDO/EXEC CICS CREATE commands	DFHCSDUP	Autoinstall	Macro	CICSPlex SM BAS
Connections	Yes (CONNECTION)	Yes	Yes	No	Yes (CONNDEF)
CorbaServers	Yes (CORBASERVER)	Yes	No	No	Yes (EJCODEF)
DB2® Connections	Yes (BD2CONN)	Yes	No	No	Yes (DB2CDEF)
DB2 entries	Yes (BD2ENTRY)	Yes	No	No	Yes (DB2EDEF)
DB2 transactions	Yes (DB2TRAN)	Yes	No	No	Yes (DB2TDEF)
Deployed jar files	Yes (DJAR)	Yes	No	No	Yes (EJDJDEF)
Document template	Yes (DOCTEMPLATE)	Yes	No	No	Yes (DOCDEF)
Enqueue models	Yes (ENQMODEL)	Yes	No	No	Yes (ENQMDEF)
FEPI node lists	No	No	No	No	Yes (FENODDEF)
FEPI pool definitions	No	No	No	No	Yes (FEPOODEF
FEPI property sets	No	No	No	No	Yes (FEPRODEF
FEPI target lists	No	No	No	No	Yes (FETRGDEF)
Files (BDAM)	No	No	No	Yes (DFHFCT)	No
Files (VSAM)	Yes (FILE)	Yes	No	No	Yes (FILEDEF)
File segments (CICS for OS/2 only)	No	No	No	No	Yes (FSEGDEF)
Journals	No	No	Yes	No	Yes (JRNLDEF)
Journal models	Yes (JOURNALMODEL)	Yes	No	No	Yes (JRNMDEF)
Local shared resource (LSR) pools	Yes (LSRPOOL)	Yes	No	No	Yes (LSRDEF)
Map sets	Yes (MAPSET)	Yes	Yes	No	Yes (MAPDEF)
Partition sets	Yes (PARTITIONSET)	Yes	Yes	No	Yes (PRTNDEF)
Partners	Yes (PARTNER)	Yes	No	No	Yes (PARTDEF)
Process types	Yes (PROCESSTYPE)	Yes	No	No	Yes (PROCDEF)
Profiles	Yes (PROFILE)	Yes	No	No	Yes (PROFDEF)
Programs	Yes (PROGRAM)	Yes	Yes	No	Yes (PROGDEF)
Recoverable service elements	No	No	No	Yes (DFHRST)	No
Request models	Yes (REQUESTMODEL)	Yes	No	No	Yes (RQMDEF)
Sessions	Yes (SESSIONS)	Yes	No.	No	Yes (SESSDEF)
TCP/IP services	Yes (TCPIPSERVICE)	Yes	No	No	Yes (TCPDEF)

Table 1. Resources and how you can define them to the running CICS system (continued)

Resource	RDO/EXEC CICS CREATE commands	DFHCSDUP	Autoinstall	Macro	CICSPlex SM BAS
Temporary storage (defined by macro)	No	No	No	Yes (DFHTST)	No
Temporary storage models (resource definition)	Yes (TSMODEL)	Yes	No	No	Yes (TSMDEF)
Terminals (non-VTAM®)	No	No	No	Yes (DFHTCT)	No
Terminals (VTAM)	Yes (TERMINAL)	Yes	Yes	No	Yes (TERMDEF)
Transactions	Yes (TRANSACTION)	Yes	No	No	Yes (TRANDEF)
Transaction classes	Yes (TRANCLASS)	Yes	No	No	Yes (TRNCLDEF)
Transient data queues (destinations)	Yes (TDQUEUE)	Yes	No	No	Yes (TDQDEF)
Typeterms	Yes (TYPETERM)	Yes	No	No	Yes (TYPTMDEF)

Table 2. Methods of resource definition

Method	Description	Advantages	Disadvantages
RDO	This method uses the CEDA transaction, which allows you to define, alter, and install resources in a running CICS system.	RDO is used while CICS is running, so allows fast access to resource definitions.	Because CEDA operates on an active CICS system, care should be taken if it is used in a production system. Use some form of auditing as a control mechanism.
EXEC CICS CREATE system commands	This method allows you to add CICS resources to a CICS region without reference to the CSD file.	It enables configuration and installation of CICS resources for large numbers of CICS regions from a single management focal point. It also allows you to write applications for administering the running CICS system.	CREATE commands neither refer to nor record in the CSD file. The resulting definitions are lost on a cold start, and you cannot refer to them in a CEDA transaction.
DFHCSDUP	DFHCSDUP is an offline utility that allows you to define, list, and modify resources using a batch job. DFHCSDUP can be invoked as a batch program or from a user-written program running either in batch mode or under TSO. Using the second method, you can specify up to five user exit routines within DFHCSDUP.	• You can modify or define a large number of resources in one job. • You can run DFHCSDUP against a non-recoverable CSD file while it is being shared between CICS regions using RLS access mode.	• You cannot install resources into an active CICS system. • You cannot make updates via DFHCSDUP against a recoverable CSD file that is being accessed in RLS mode.

Table 2. Methods of resource definition (continued)

Method	Description	Advantages	Disadvantages
Autoinstall	This applies to VTAM terminals, LU6.2 sessions, journals, programs, mapsets, and partitionsets. You set up “model” definitions using either RDO or DFHCSDUP. CICS can then create and install new definitions for these resources dynamically, based on the models.	If you have large numbers of resources, much time is needed to define them, and if they are not all subsequently used, storage is also wasted for their definitions. Using autoinstall reduces this wasted time and storage.	You must spend some time initially setting up autoinstall in order to benefit from it.
Macro	Using this method, you code and assemble macro instructions to define resources in the form of tables.	Where possible, use the other methods.	• You can change the definitions contained in the tables while CICS is running, but you must stop and restart CICS if you want it to use the changed tables. • You must do time-consuming assemblies to generate macro tables.
CICSPlex SM BAS	Using BAS, you can create, maintain, and install CICS resources in a running CICS system. For full information, see *CICSPlex System Manager Managing Business Applications*.	• Centralized resource definition • Logical scoping • Distributed resource installation	

Where are resource definitions held?

Every resource defined to CICS by means of CEDA or DFHCSDUP is held on the CICS system definition (CSD) file, which is a VSAM data set.

The CSD file can be defined as recoverable, so that changes made by CEDA or CEDB that were incomplete when an abend occurred are backed out. CICS allows a CSD file and its resource definitions to be shared between different CICS systems. This is called *compatibility mode* and is intended for use when you want to create or change resource definitions on a CDS file that is shared between different releases. For more information on defining the CSD, see *CICS System Definition Guide*.

CICS control tables contain resource definition records for resources that cannot be defined in the CSD. The tables and their resource definitions are created by using the CICS table assembly macro instructions. You have to code assembler-language macro statements for each resource to appear in the table, assemble the complete set of macro statements, link-edit the output to produce a load module, and specify the module suffix in DFHSIT. See Chapter 47, “Defining resources in CICS control tables,” on page 499.

How are resource definitions organized?

Resource definitions held on the CSD are organized into *groups* and *lists*.

Group A collection of related resources on the CSD. Each resource that you define must belong to a group; you cannot define a resource without naming the group.

List The names of groups that CICS installs at an initial or cold start. You can add groups to lists if you want them installed at an initial or cold start, or if it helps you to manage your groups better. Groups do not have to belong to lists, and can be defined independently.

For more information on groups and lists, see Chapter 3, "Groups and lists," on page 17.

How are resources managed?

CICS includes a number of facilities that help you manage your resources once you have created them on the CSD.

The resource management transaction CEDA
An online transaction that allows you to operate on resource definitions held in the CSD. See Chapter 35, "The CEDA transaction tutorial," on page 369 and Chapter 36, "Resource management transaction CEDA commands," on page 391.

The resource management utility program DFHCSDUP
A batch program that allows you to operate on and list the CSD offline. See *CICS Operations and Utilities Guide*.

The RDO command logs
Separate transient data queues that record information about resource definition. See *CICS System Definition Guide*

The CICS global catalog
A data set that is not used exclusively for RDO, but is used to record installed resource attributes for warm and emergency restarts. See *CICS System Definition Guide*.

CEMT CEMT is a CICS-supplied transaction that you use to invoke all the master terminal functions. The master terminal program provides dynamic user control of the CICS system. By using this function, an operator can inquire about and change the values of parameters used by CICS, alter the status of the system resources, terminate tasks, and shut down the CICS system. See *CICS Supplied Transactions*.

SPI commands
The CICS system programming interface (SPI) commands are used to manage the CICS system and its resources. These commands, which provide you with a command-level equivalent to the function of the master terminal transaction (CEMT), fall into three categories:

- Commands that retrieve information about a CICS resource or system element
- Commands that modify the status or definition of the system or a resource, or invoke a system process
- Commands that modify or expand system execution by means of exits.

See *CICS System Programming Reference*.

Commands for managing resources

You manage your resource definitions using commands supplied as part of CEDA or DFHCSDUP. These commands allow you to work with your resources, for example, by defining, deleting, copying, and renaming.

The commands are listed in Table 3. For the syntax of these commands and information on how to use them, see *CICS Operations and Utilities Guide* and *CICS Operations and Utilities Guide*. To help you use CEDA, see Chapter 35, "The CEDA transaction tutorial," on page 369.

Table 3. CEDA and DFHCSDUP commands

Command	**Function**	**CEDA—see**	**DFHCSDUP—see**
ADD	Adds a group name to a list.	"The CEDA ADD command" on page 391	
ALTER	Modifies the attributes of an existing resource definition.	"The CEDA ALTER command" on page 392	"The DFHCSDUP ALTER command" on page 431
APPEND	Copies a list to the end of another list.	"The CEDA APPEND command" on page 394	"The DFHCSDUP APPEND command" on page 433
CHECK	Cross checks the resource definitions within a group, or within the groups in a list or lists, up to a maximum of four lists. The CHECK command is CEDA only.	"The CEDA CHECK command" on page 395	—
COPY	Copies one or more resource definitions from one group to another, or one resource definition within a group.	"The CEDA COPY command" on page 396	"The DFHCSDUP COPY command" on page 434
DEFINE	Creates a new resource definition.	"The CEDA DEFINE command" on page 399	"The DFHCSDUP DEFINE command" on page 436
DELETE	Deletes one or more resource definitions.	"The CEDA DELETE command" on page 400	"The DFHCSDUP DELETE command" on page 438
DISPLAY	Shows the names of one or more groups, lists, or resource definitions within a group. The DISPLAY command is CEDA only.	"The CEDA DISPLAY command" on page 402	—
EXPAND	Shows the names of the resource definitions in one or more groups or lists. The EXPAND command is CEDA only.	"The CEDA EXPAND command" on page 404	—

Table 3. CEDA and DFHCSDUP commands (continued)

Command	**Function**	**CEDA—see**	**DFHCSDUP—see**
EXTRACT	Extracts and processes resource definition data from groups or lists on the CSD file. The EXTRACT command is DFHCSDUP only.	—	"The DFHCSDUP EXTRACT command" on page 440
INITIALIZE	Prepare a newly-defined data set for use as a CSD file. The INITIALIZE command is DFHCSDUP only.	—	"The DFHCSDUP INITIALIZE command" on page 442
INSTALL	Dynamically adds a resource definition or a group of resource definitions to the active CICS system. The INSTALL command is CEDA only.	"The CEDA INSTALL command" on page 406	—
LIST	Produce listings of the current status of the CSD file. The LIST command is DFHCSDUP only.	—	"The DFHCSDUP LIST command" on page 443
LOCK	Prevents other operators updating or deleting a group or the groups in a list. The LOCK command is CEDA only.	"The CEDA LOCK command" on page 408	—
MIGRATE	Transfers the contents of a terminal control table (TCT), temporary storage table (TST), file control table (FCT), or destination control table (DCT) to the CSD. The MIGRATE command is DFHCSDUP only.	—	"The DFHCSDUP MIGRATE command" on page 444
MOVE	Moves one or more resource definitions from one group to another. The MOVE command is CEDA only.	"The CEDA MOVE command" on page 409	—
PROCESS	Applies maintenance to the CSD file for a specific APAR. The PROCESS command is DFHCSDUP only.	—	"The DFHCSDUP PROCESS command" on page 448
REMOVE	Removes a group name from a list.	"The CEDA REMOVE command" on page 412	"The DFHCSDUP REMOVE command" on page 448
RENAME	Renames a resource definition, either within a group, or while simultaneously moving it to another group. The RENAME command is CEDA only.	"The CEDA RENAME command" on page 413	—
SCAN	Scans all of the IBM-supplied groups and user-defined groups for a resource. The definition of the matched resource in an IBM-supplied group is compared to the definition(s) of the corresponding matched resource in the user groups. The SCAN command is DFHCSDUP conly.	—	"The DFHCSDUP SCAN command" on page 449

Table 3. CEDA and DFHCSDUP commands (continued)

Command	Function	CEDA—see	DFHCSDUP—see
SERVICE	Applies corrective maintenance to the CSD file. The SERVICE command is DFHCSDUP only.	—	"The DFHCSDUP SERVICE command" on page 451
UNLOCK	Releases a lock on a group or list. The UNLOCK command is CEDA only.	"The CEDA UNLOCK command" on page 414	—
UPGRADE	Upgrades the CICS-supplied resource definitions on the CSD file (for example, when you migrate to a higher release of CICS). The UPGRADE command is DFHCSDUP only.	—	"The DFHCSDUP UPGRADE command" on page 452
USERDEFINE	Creates a new resource definition with your own defaults.	"The CEDA USERDEFINE command" on page 415	"The DFHCSDUP USERDEFINE command" on page 453
VERIFY	Removes internal locks on groups and lists. The VERIFY command is DFHCSDUP only.	—	"The DFHCSDUP VERIFY command" on page 455
VIEW	Shows the attributes of an existing resource definition. The VIEW command is CEDA only.	"The CEDA VIEW command" on page 419	—

Shared resources for intercommunication

Resources that reside on a remote system, but are accessed by a local CICS system, have to be defined on both the remote and local systems. To avoid duplicating definitions in the CSD files for the local and remote systems, you can create resource definitions on a CSD file that is shared by the local and remote systems. This reduces disk storage and maintenance, because you require only one CSD file record for each shared resource.

If you decide to use dual-purpose resource definition, you may want to consider reorganizing your resources within your resource definition groups. For example, you might currently have two groups: one containing all the resources for a CICS transaction-owning region (TOR), and one containing all the resources for a CICS application-owning region (AOR).

When you use shared resource definitions, you can have three groups, with the first group containing resources specific to the TOR, the second group containing resources specific to the AOR, and the third group containing resources to be installed in both the TOR and the AOR.

These resources should be defined as both local and remote. When the definition is installed on the TOR, CICS compares the SYSIDNT name with the

REMOTESYSTEM name. If they are different, a remote transaction definition is created. When the definition is installed on the AOR, CICS compares the REMOTESYSTEM name with the SYSIDNT name. If they are the same, a local transaction definition is installed.

Dual-purpose resource definition can be used with the following resources:
- Files
- Programs
- Temporary storage models (TSMODELs)
- Terminals
- Transient data queues (TDQUEUEs)
- Transactions

Security of resource definitions

CICS provides a number of facilities that help you keep your resource definitions secure from unauthorized use.

When you are considering the security of your resource definitions:

Resource security checking

Resource security checking ensures that terminal operators can access only those resources for which they have been authorized. You can use resource security checking (RESSEC) for the TRANSACTION definition.

Multiple CSD files

You can have different CSD files for different CICS systems. The users of one CICS do not have access to the CSD file for another CICS.

You could have a test CSD file in a system where the RDO transactions can be used, and a production CSD file in a system where the RDO transactions are not available. There would then be no chance of unauthorized users altering resource definitions needed for production work.

Read-only and update definitions for the same CSD file

Having two CSD files means duplicating resource definitions for resources that are shared by more than one system. An advantage of RDO is that you need only one definition for each resource. You can define one CSD file to be shared among several CICS systems with only one having write access. To do this, you define one CSD file differently to different systems by using the CSDACC system initialization parameter. For the system where the CSD file can be used but not updated, you specify:

```
CSDACC=READONLY
```

and, for the system where you are planning to update the CSD, you specify:

```
CSDACC=READWRITE
```

You need READONLY access to install definitions. This also allows you to use the DISPLAY and VIEW commands. You need READWRITE access to use the ADD, APPEND, ALTER, COPY, MOVE, and RENAME commands. For information on defining the CSD file, see the *CICS Operations and Utilities Guide*:.

Controlling access to a group or list—LOCK and UNLOCK

RDO also provides a means of controlling access to any group or list, so that users in the same system can have different types of access. This is done with the LOCK command (see “The CEDA LOCK command” on page 408).

The LOCK and UNLOCK commands enable you to control update access to a group or list so that only operators with the same operator identifier can make changes.

The lock is held on the CSD file and remains in effect across restarts of CICS. The lock is owned by the user, who is identified by a combination of the CICS generic applid (specified by the APPLID system initialization parameter), and the user's operator identifier (OPIDENT).

The OPIDENT is the one associated with the user when he or she signs on to the terminal used for RDO. For further information on OPIDENT, see the *CICS RACF® Security Guide*.

Any user who is not signed on or who has a different OPIDENT is not allowed to perform any operation that would change the locked group. However, any user is allowed to do the following things to a locked group:
- COPY
- CHECK
- DISPLAY
- INSTALL
- VIEW

The lock can be removed, using the UNLOCK command, only by a user on the same system and with the same operator identifier.

It would be wise to put a lock on your group of TYPETERMs and on your group of AUTINSTMODEL TERMINALs.

Controlling access to the RDO transactions

Recommended access for the CEDA, CEDB, and CEDC transactions is as follows:

- CEDC can be given fairly wide access, because it allows only read-only commands.
- CEDB should be restricted, because it allows modification of the CSD file as well as read-only commands.
- CEDA should be further restricted to the few people allowed to modify both the active CICS system and the CSD file.

Installing resources

A user who is authorized to use CEDA can install any resources in the CICS system: beyond checking the user's authority to use the transaction itself, CICS does not do any command or resource security checking in the CEDA transaction.

This is not the case for transactions that use the CREATE command to install resources; here, CICS uses

- command security to check that the user is authorized to use the CREATE command. For more information, see *CICS RACF Security Guide*.
- resource security to check that the user is authorized to modify the resource in question. For more information, see *CICS RACF Security Guide*.

Getting started with resource definition

There are several steps that you must perform to begin defining resources.

1. Create and initialize a CSD. See the *CICS System Definition Guide* for information on how to do this.
2. Migrate macro level resource definitions. If you are moving to CICS Transaction Server for z/OS from an earlier release and you have macro level resource definitions for any of the following tables, you must migrate them to the CSD:
   - The program control table (PCT)
   - The processing program table (PPT)
   - The file control table (FCT), apart from entries that define BDAM files
   - The terminal control table (TCT) entries for VTAM terminals, intersystem communication links, and multiregion operation links.
   - The DB2 resource control table (RCT)
   - The destination control table (DCT)

   In addition, you are advised to migrate the temporary storage table (TST) to the CSD: many attributes that you can specify on the CSD have no macro equivalent.

   For more information about migrating macro level resource definitions, see *CICS Operations and Utilities Guide*.
3. Run a DFHCSDUP UPGRADE job. Do this to bring the CICS supplied definitions in your CSD file up to the level of CICS Transaction Server for z/OS, Version 3 Release 1. See *CICS Operations and Utilities Guide* for information on how to do this.
4. Work with your resource definitions. Use Table 1 on page 4 and Table 2 on page 5 to help you decide which methods to use to define and manage your resources.
   - If you want to use CEDA, read Chapter 35, “The CEDA transaction tutorial,” on page 369 for help in using CEDA and Chapter 36, “Resource management transaction CEDA commands,” on page 391 for reference information.
   - If you want to use DFHCSDUP, read *CICS Operations and Utilities Guide* for guidance information and *CICS Operations and Utilities Guide* for reference information.
   - If you want to use autoinstall, read Chapter 39, “Introduction to autoinstall,” on page 459.
   - If you want to use macro definitions, read Chapter 46, “Introduction to CICS control tables and macros,” on page 493.

Chapter 2. CSD file management

The CICS system definition (CSD) file is a VSAM data set containing a resource definition record for every resource defined to CICS by means of CEDA or DFHCSDUP. It can be defined as recoverable, so that changes made by CEDA or CEDB that were incomplete when an abend occurred, are backed out.

Compatibility mode (CSD file sharing)

CICS allows a CSD file and its resource definitions to be shared between different CICS systems. The systems might be running the same or different releases of CICS. **Compatibility mode** is intended for use when you want to create or change resource definitions on a CSD file that is shared between different releases.

All maintenance should be done under the latest release of CICS. This avoids the risk of earlier releases modifying entries created under more recent releases with new attributes that the older version does not recognize. Ensure this by restricting write access to the CSD file to the latest release. See the *CICS System Definition Guide* for further details on defining CSD files.

Compatibility mode is entered by using PF2 on the CEDA panels where it is available. It gives you access to those attributes that were current at your earlier release, but are obsolete at your later release. However, you can use compatibility mode only with commands affecting individual resources: you cannot perform generic commands (ALTER, DEFINE, and VIEW) in compatibility mode.

There is more information about issues relating to compatibility mode in the following places:

- For the usage and meaning of attributes and their compatibility with previous releases of CICS, see Appendix A, “Obsolete attributes,” on page 615.
- For information about what compatibility groups you need in your startup group list for CSD file sharing to work, see Table 38 on page 633, and *CICS Transaction Server for z/OS, Version 3 Release 1 Migration from CICS TS Version 2.2*, which has a table showing the DFHCOMPx groups you need to include for the earlier releases.

Creating a CSD file

If you do not already have a CSD file, you must create one. For detailed information about creating a CSD file, see the *CICS System Definition Guide*.

You can create more than one CSD file, depending on your requirements. For example, you can have different CSD files for different systems, so that your test systems and production systems are separate from each other.

You can also share one CSD file between CICS releases; see “Compatibility mode (CSD file sharing).”

When the CSD file has been initialized, it contains a number of groups (all beginning with the letters 'DFH') containing related resource definitions, and one list, called DFHLIST. These definitions are supplied by CICS and are necessary for some system functions and for running CICS-supplied transactions.

Chapter 3. Groups and lists

Information on the CSD file is organized into **groups** and **lists**. The main purpose of the **group** is to provide a convenient method of collecting related resources together on the CSD file. Every resource that you define must belong to a group; you cannot define a resource without also naming its group.

A **list** contains the names of groups that CICS installs at an initial or cold start. You can add groups to lists if you want them to be installed at an initial or cold start, or if it helps you to manage your groups better. Groups do not have to belong to lists, and can be defined independently.

What should be in a group?

Usually, the definitions within a group have something in common. For example:

For application resources:

- It is more convenient to keep all the resource definitions belonging to one application in one group.
- If you use PARTITIONSET or PROFILE definitions for many applications, keeping them separate in their own groups avoids the possibility of unnecessary duplication.

For communication resources:

- SESSIONS definitions **must** be in the same group as the CONNECTION definition to which they refer. You may have more than one group of definitions for each system and its sessions with other systems, in a single CSD file that is shared by all the systems. Be careful that you install each group of definitions in the correct system.
- Restrict a group to contain only one CONNECTION definition with its associated SESSIONS definitions.
- Keep all your TYPETERM definitions in one group. This avoids the possibility of unnecessary duplication. You **must** put the group of TYPETERMs before the groups of TERMINAL definitions in your lists.
- It is convenient to group TERMINAL definitions according to departmental function or geographical location.
- You **must** keep all the TERMINAL definitions for one pool of pipeline terminals in the same group.
- Keep AUTINSTMODEL TERMINAL definitions separately in a group of their own.

For CORBA resources:

- A CORBASERVER definition must be in the same group as the DJAR definitions that refer to it, or in a group that is installed before the group containing those DJAR definitions, otherwise CICS may attempt to install the DJAR before the CORBASERVER it requires.

For transient data resources, sample definitions for the CICS-supplied transient data queues (those beginning with the letter “C”) are provided in group DFHDCTG. For these definitions to become available for use at the earliest possible point during CICS initialization, include group DFHDCTG as the first group installed during an initial or cold start.

How many resource definitions should a group contain?

Try to keep your groups to a manageable size; ideally, there should be no more than about 100 resource definitions in a group. Allocate your resource definitions between groups to obtain optimum performance, in both system and administration terms. The following considerations may help:

- A large group can involve a lot of unnecessary processing time to install. This is particularly true of those containing TERMINAL and SESSIONS definitions, because they take a large amount of dynamic storage.
- A large number of very small groups can also use unnecessary processing time, because of the extra I/O involved in reading many group names from the CSD file. In theory, you could have one resource definition per group, but this is not recommended; the processing of a large number of single-resource groups can affect DASD space, initial or cold start performance, and the performance of both CEDA and DFHCSDUP.
- Administration is easier if you have smaller groups. For example, the DISPLAY GROUP ALL command involves a lot of scrolling if the resource definitions in the group extend over many screens. You cannot see at a glance the contents of a large group.
- You may find that you have storage problems when you EXPAND, COPY, or INSTALL a large group. In particular, if a very large number of CSD file records are defined in a region with a small dynamic storage area, issuing a CEDA EXPAND GROUP(*) command can result in the system going short on storage (SOS).

Setting up lists for initialization

You can specify up to four lists, using specific or generic naming, on the GRPLIST system initialization parameter. The default list is the CICS-supplied list DFHLIST.

The lists that you name in the GRPLIST system initialization parameter must include all the resource definitions required by CICS. These are supplied by CICS and are added to the CSD file when you initialize it before starting to use RDO. (For further information about this, see the *CICS Operations and Utilities Guide*:.)

To create a list containing both CICS-supplied and your own resource definitions:

1. Start to create the list that you use to initialize CICS, by appending DFHLIST to a new list. For example:

   ```
   CEDA APPEND LIST(DFHLIST) TO(INITLIST)
   ```

   This ensures that all CICS-supplied definitions are installed, whether or not you need to change them.
2. Remove the groups containing definitions for function that you do not require. For example:

   ```
   CEDA REMOVE GROUP(DFHMISC) LIST(INITLIST)
   ```
3. Copy all the resource definitions that you need to change into your own groups. For example:

   ```
   CEDA COPY TRANSACTION(CEDF) GROUP(DFHOPER)  TO(SECTRANS)
   CEDA COPY PROFILE(DFHCICST) GROUP(DFHSTAND) TO(REQMOD)
   ```

   Do **not** rename the copies. You can now use ALTER to change the attributes as necessary. For example:

   ```
   CEDA ALTER TRANSACTION(CEDF) GROUP(SECTRANS)
   ```

4. Add these groups to your list for initialization. For example:

   ```
   CEDA ADD GROUP(SECTRANS) LIST(INITLIST)
   CEDA ADD GROUP(REQMOD)   LIST(INITLIST)
   ```

   Make sure that you add this group **after** the DFH groups. Although you now have two definitions for the resources that you have altered, the second definition in the list is the one that will be installed, if you name this list as a GRPLIST parameter when you initialize CICS.
5. Add any other groups containing resource definitions of your own that you want to use, or append other lists. Your list might look like this:

   ```
   DFHBMS
   DFHCONS
   :
   DFHVTAMP
   SECTRANS
   REQMOD
   ZEMAPPL
   ZEMCOMM
   ZEMTYPES
   ZEMTERMS
   ```

   Note that the group containing the TYPETERMs should come before the groups containing the TERMINAL definitions.
6. Cold start your CICS system, naming the list or lists that you have created in the GRPLIST system initialization parameter. For example:

   ```
   START=COLD,GRPLIST=INITLIST
   ```

Using several lists

You can create lists that contain different sets of groups so that you can initialize different “flavors” of CICS using the GRPLIST system initialization parameter.

Using different lists at different times

It is recommended that you initialize your CICS system with the START=AUTO system initialization parameter, so that the CICS catalog is used to define the system whenever possible, instead of the list or lists named in the GRPLIST operand. However, if you use CICS differently each time you initialize it, specify the START=COLD system initialization parameter, and specify a different list to define your system every time you initialize CICS. For example, you might have:

- A different list for each day of the week, if the pattern of work is different on each day.
- A list for the CICS used for the day shift, and a list for the CICS used for the night shift.
- A test only list used only when CICS is started up by the system programmers on a day of rest (for example).
- For security reasons, a special list containing groups of restricted resource definitions. You could append this list to your usual one, when these resources are needed.

Consider how you might use the list and group mechanisms with transactions related to a company's salary operations.

Assume that some transactions used by the salary administrators are used every day. For example, a transaction for handling an employee's tax details may have to be performed at any time. Other transactions, such as minor weekly or monthly payroll adjustments, are run at predefined intervals, or on specific days or dates.

You would therefore not want to include the same mixture of transactions and programs every time the system was started up.

By creating a resource definition group for taxation transactions, and another for payroll transactions, you could add them to different lists to produce the required system tables for different days. In the above example, one list would identify only the taxation group; the other would identify both taxation and payroll groups. You would specify the appropriate list in a system initialization parameter.

Clearly, a real system would have many more groups and lists than this.

Using different lists for different CICS systems

If you are running more than one CICS system in the same MVS image, you may use the same CSD file to define your resources to both systems. This helps you to ensure that each system has the same definition of resources where necessary. You probably do not want to use all the same resources in each system, so you could create a list for each system. You name the appropriate list in the system initialization parameter for each system.

For example, you might have two production CICS systems sharing a CSD file. Assume that one production system runs three applications: customer inquiry, billing, and adjustments. Each application has its own resources (programs, map sets, and transactions), so you put the resource definitions in three groups: CUSTINQ, CUSTBILL, and CUSTADJ. Then you add these groups to a list called CICS1A.

Another production system runs two more applications in addition to customer inquiry: customer update and customer credit authorization. For these, you create two more groups (CUSTCRED and CUSTUPDT) and another list called CICS1B.

CICS1B contains the same CUSTINQ group as CICS1A, and it also contains CUSTCRED and CUSTUPDT. If you decide, for performance reasons, to move one of your applications to a different CICS system, all you need to do is add the appropriate group name to the appropriate list. The next time you initialize CICS with this list specified in the GRPLIST system initialization parameter, you install the new group.

Using different lists when you introduce changes

The list with which you initialize CICS is a definition of your system (for RDO resources). When you introduce changes to your resources, it is useful to create a new list, keeping the old list to return to if something goes wrong. Then you can reinitialize CICS with the old list, knowing that everything is as it was previously.

Creating groups and lists

A group is created when you specify it as the GROUP name in a DEFINE command or as the TO group in a COPY command (see “The CEDA COPY command” on page 396 and “The CEDA DEFINE command” on page 399). For example, the command:

```
CEDA DEFINE PROGRAM(PROG1) GROUP(MYGROUP)
```

defines a program called PROG1, and creates a group called MYGROUP if it does not already exist.

These are the only ways to create a group; a nonexistent group can be named in a list, but naming it in a list does not create it.

A group must not have the same name as an existing group or list.

You can create a list in either of the following ways:
- Use the ADD command to add a group to a list (see “The CEDA ADD command” on page 391). If the specified list does not exist, it is created.
- Use the APPEND command to append the contents of one list to another list (see “The CEDA APPEND command” on page 394). If the appended-to list does not exist, it is created, containing the contents of the first list.

A list must not have the same name as an already existing group or list.

Checking groups and lists of resource definitions for consistency

The CHECK command (see “The CEDA CHECK command” on page 395) checks the consistency of definitions within a group or within all of the groups within a list or lists. It does not, however, cross-check every attribute of a resource. You may still get error messages when installing a group, although there were no problems when you used the CHECK command.

If you use the CHECK GROUP command, CEDA cross-checks all of the resources in a specified group to ensure that the group is ready to be used. For example, CHECK might warn you that a transaction definition within the group does not name a program within the same group. (Note, however, that this might not be an error. The group might intentionally be paired with a group that does contain the program, or you may want the program to be autoinstalled, in which case it would not have a definition.)

If you use the CHECK LIST command, CEDA cross-checks every group named in the list. It does not simply check each group in turn, but merges the definitions in all of the listed groups, and checks them all. In this way it warns you if there are duplicate resource definitions, or references to definitions that do not exist.

Chapter 4. Resource definition installation

When a resource definition is installed, information about the resources is used to construct the data structures that represent the resource in the CICS address space.

What happens when CICS is initialized

When you initialize CICS, what happens to your resource definitions depends on the type of start. This is defined in the START system initialization parameter; START=INITIAL or an initial start, START=COLD for a cold start, and START=AUTO for a warm or emergency restart.

Initial or cold start

During an initial or cold start, CICS creates system tables by installing groups named in the list or lists named by the GRPLIST system initialization parameter. If you installed a group with the INSTALL command during the previous CICS execution, you must add its name to a list if you want it to be installed during a cold start.

If you usually use START=COLD at CICS initialization, installing by means of a list will probably be your standard way of making resource definitions available to CICS. Use of the INSTALL command is a supplementary method, which you could find very useful when testing a system, or if an unexpected need for a resource arises when CICS is running.

You may not want to use the RDO transactions in a production system, for security or performance reasons. In this case, the CSD file is shared by both systems, but is read-only in the production system. You define all your production resources using your development system, and install them in the production CICS system when you cold start it.

Warm or emergency start

During a warm or emergency start, CICS recreates the tables from the resource definitions stored in the system log and global catalog.

No reference is made to the CSD file, nor is the GRPLIST name used. So all groups that had been installed by the end of the previous CICS execution are reinstalled automatically at a warm or emergency restart. Thus any CICS system modifications you have introduced using RDO will persist. For autoinstalled resources, see the following:
- "What happens at CICS restart" on page 469
- "Recovery and restart for connection autoinstall" on page 482
- "Program autoinstall and recovery and restart" on page 486

If you have named a different list in the GRPLIST operand, or if you have added new groups to it after the last system initialization, CICS does not install the groups in the new list during a warm or emergency restart, because CICS does not refer to the list.

If you usually use START=AUTO at CICS initialization, using the INSTALL command is your standard way of making resource definitions available to CICS.

You use a list to define your system only when you need to do an initial or cold start. You can ensure that your list is up to date by adding to it each group installed using the INSTALL command.

What happens when you use the INSTALL command

Most resource definitions can be installed in groups or individually, and are committed at the individual resource level. However, some VTAM terminal control resource definitions must be installed in groups and are committed in *installable sets*.

Some VTAM terminal control resource definitions within a CSD group are committed at the installable set level. An installable set comprises those resources, such as a CONNECTION and its associated SESSIONS, which are dependent in some way. The backout of an installable set does not cause the whole group to be backed out. The following types of resource definition are installed in installable sets:

- CONNECTION and associated SESSIONS definitions
- Pipeline terminals—all the terminal definitions sharing the same POOL name

If a member of an installable group fails to install, CICS issues message DFHZC6216 identifying the member that caused the installation of the set to fail.

All other resource types are committed individually, and not in installable sets. For these resources, the effect of a partially successful group INSTALL is to leave the resources that were added in a committed state.

For the installation of installable sets and for individual definition, an INSTALL may not be successful for one of two reasons:

1. A resource definition could not be installed because it is currently in use.
2. A system failure occurred during installation.

You can use the CEDA INSTALL command to reinstall the same group used at a cold or initial start, and the new definitions are installed successfully, even if some original definitions are in use and fail to install.

How to install a limited number of data definitions

If you wish to install only a few new or changed definitions, install single resources as described in “The CEDA INSTALL command” on page 406. (Note that the single-resource INSTALL of some CONNECTIONs and SESSIONS is not possible.) Use of the single-resource INSTALL eliminates the problems of a partial INSTALL caused by a failure.

However, if you wish to change or add a larger number of definitions, you might prefer to install a new group. In that case, the following considerations apply:

- When you install a group containing an updated definition of an existing resource, the installation fails if the resource is being used at the time. Make sure that none of the resources in a group is in use before trying to install the group.
- Installation is a two-stage process: any existing definition for the resource must be “deleted” from the system tables before a definition can be installed. This can result in more than one message if the “deletion” fails and causes the installation to fail.
- If you have several CICS systems that share the same CSD file, you must be careful not to install a group of resources in the wrong system.

Duplicate resource definition names

An RDO-defined definition overrides a macro-defined definition of the same name. For example, if you try to install a definition for a VTAM terminal that has the same name as a non-VTAM terminal, the VTAM terminal entry overwrites the non-VTAM terminal entry.

If you INSTALL a group while CICS is active, the resource definitions in the group override any of the same type and name already installed.

When an existing resource definition is replaced in this way, the statistics associated with the old resource definition are transferred to the new definition. If a PROGRAM definition is replaced, the program is relocated on the library and loaded when the new definition is referenced for the first time. In effect, the new definition implies a NEWCOPY operation. The same rules apply to map sets and partition sets.

It is probably unwise to have more than one resource definition of the same name on the CSD file, even for different resource types. You must keep PROGRAM, MAPSET, and PARTITIONSET names unique. If you have, for example a PROGRAM and a MAPSET with the same name, only one of them is available to CICS. As far as names are concerned, after installation these definitions are treated as if they were the same resource type.

For all resource types except TDQUEUEs and FILEs, if two groups in a list contain resource definitions of the same name, and of the same resource type, CICS uses the definition in the group that is later in the list.

- For TDQUEUE definitions, the first definition in the list is used.
- For FILE definitions, if the file is defined as ENABLED, the later installation of a duplicate fails. However, if the file is defined as DISABLED, the later installation of a duplicate succeeds.

The only reason why you might have more than one resource definition of the same name is if you have alternative definitions of the same real resource, with different attributes. These resource definitions must be in different groups.

Part 2. RDO resource types and their attributes

This part describes the resource types that you can define, manage, and install using RDO commands. The resource types are in alphabetical order.

Chapter 5. RDO resource types and their attributes

This topic describes the resource types that you can define, manage, and install using RDO commands. The resource types are in alphabetical order.

Table 4 lists the resource definition types, with a brief description and a cross-reference to where you can find more information.

Table 4. CICS RDO resources

Resource	Description	Reference
CONNECTION	Defines a remote system with which your CICS system communicates, using intersystem communication (ISC) or multiregion operation (MRO).	Chapter 6, "CONNECTION resource definitions," on page 33
CORBASERVER	Defines an execution environment for enterprise beans and stateless CORBA objects	Chapter 7, "CORBASERVER resource definitions," on page 49
DB2CONN	Defines the attributes of the connection between CICS and DB2, and of the pool threads and command threads used with the connection.	Chapter 8, "DB2CONN resource definitions," on page 61
DB2ENTRY	Defines the attributes of entry threads used by the CICS DB2 attachment facility.	Chapter 9, "DB2ENTRY resource definitions," on page 75
DB2TRAN	Defines a transaction, or a group of transactions, associated with a DB2ENTRY, that are additional to the transactions specified in the DB2ENTRY itself.	Chapter 10, "DB2TRAN resource definitions," on page 83
DJAR	Defines an instance of a deployed JAR file, containing enterprise beans.	Chapter 11, "DJAR resource definitions," on page 87
DOCTEMPLATE	Defines the attributes of a document template.	Chapter 12, "DOCTEMPLATE resource definitions," on page 93
ENQMODEL	Defines a named resource for which the ENQ and DEQ commands have a sysplex-wide scope.	Chapter 13, "ENQMODEL resource definitions," on page 99
FILE	Defines the physical and operational characteristics of a file.	Chapter 14, "FILE resource definitions," on page 103
JOURNALMODEL	This resource definition provides the connection between a CICS journal name (or identifier) and the associated log streams managed by the MVS system logger, or between the journal name and the SMF log.	Chapter 15, "JOURNALMODEL resource definitions," on page 127

Table 4. CICS RDO resources (continued)

Resource	Description	Reference
LSRPOOL	The local shared resources (LSR) pool is a reserve of data buffers, strings, and Hiperspace™ buffers (see the *CICS Performance Guide* for more information on Hiperspace) that VSAM uses when processing access requests for certain files.	Chapter 16, “LSRPOOL resource definitions,” on page 135
MAPSET	Each interactive application using a display device can use specific screen layouts, or maps. Each map can be used by multiple invocations of the same program, or by different programs. You use either basic mapping support (BMS) or Screen Definition Facility (SDF) to create maps. Every map must belong to a mapset.	Chapter 17, “MAPSET resource definitions,” on page 143
PARTITIONSET	The screen areas of some display devices (for example, the 8775 Display Terminal, and the IBM 3290 Information Panel) can be divided into **partitions**, each of which can be treated as a separate display. Different programs or transactions can write to or receive input from different partitions.	Chapter 18, “PARTITIONSET resource definitions,” on page 147
PARTNER	You use the PARTNER definition to enable CICS application programs to communicate via APPC protocols to a partner application program running on a remote logical unit. This interaction is called a **conversation**. The PARTNER definition also facilitates the use of the call to the interface with the communications element of the System Application Architecture.	Chapter 19, “PARTNER resource definitions,” on page 151
PIPELINE	A PIPELINE resource definition is used when a CICS application is in the role of a Web service provider or requester. It provides information about the message handler programs that act on a service request and on the response.	Chapter 20, “PIPELINE resource definitions,” on page 157
PROCESSTYPE	Using the CICS business transaction services (BTS) API, you can define and execute complex business applications called *processes*. A PROCESSTYPE resource definition defines a BTS process-type. It names the CICS file which relates to the physical VSAM data set (repository) on which details of all processes of this type (and their activity instances) are to be stored. A PROCESSTYPE resource definition	Chapter 21, “PROCESSTYPE resource definitions,” on page 161

Table 4. CICS RDO resources (continued)

Resource	Description	Reference
PROFILE	The PROFILE definition is used to specify options that control the interactions between transactions and terminals or logical units. It is a means of standardizing the use of, for example, screen size and printer compatibility. Each TRANSACTION definition names the PROFILE to be used.	Chapter 22, "PROFILE resource definitions," on page 165
PROGRAM	You use the PROGRAM definition to describe the control information for a program that is stored in the program library and used to process a transaction.	Chapter 23, "PROGRAM resource definitions," on page 175
REQUESTMODEL	A REQUESTMODEL resource definition provides the connection between an Internet Inter-ORB Protocol (IIOP) inbound request and the identifier of the CICS transaction that is to be initiated.	Chapter 24, "REQUESTMODEL resource definitions," on page 189
SESSIONS	Before two systems can communicate using ISC or MRO, they must be logically linked through one or more sessions. The nature of the link determines how they can communicate. You specify the link in the SESSIONS definition.	Chapter 25, "SESSION resource definitions," on page 201
TCPIPSERVICE	Use this resource to define which TCP/IP services are to use CICS internal sockets support. The internal CICS services that can be defined are IIOP, CICS Web support, and ECI.	Chapter 26, "TCPIPSERVICE resource definitions," on page 215
TDQUEUE	Defines the attributes of a transient data queue.	Chapter 27, "TDQUEUE resource definitions," on page 227
TERMINAL	CICS needs a definition for each terminal with which it communicates. A terminal's unique properties are in its TERMINAL definition. Properties that it has in common with other terminals (usually static) are in the TYPETERM definition.	For VTAM terminals, Chapter 28, "TERMINAL resource definitions," on page 247; for non-VTAM terminal, TCT—terminal control table
TRANCLASS	By putting your transactions into transaction classes (TRANCLASSes), you can control how CICS dispatches tasks. For example, you can separate transactions into those that are heavy resource users and those that are of lesser importance, such as the "Good morning" broadcast messages. You can then use the attributes on the TRANCLASS definition to control the number of active and new tasks allowed from each transaction class.	Chapter 29, "TRANCLASS resource definitions," on page 275

Table 4. CICS RDO resources (continued)

Resource	Description	Reference
TRANSACTION	A CICS application consists of one or more programs written to perform a specific function. A particular invocation of such an application is a **transaction**. In the TRANSACTION definition you specify options related to functions provided by CICS itself, such as transaction priority, security key, and the length of the transaction work area (TWA).	Chapter 30, “TRANSACTION resource definitions,” on page 279
TSMODEL	A TSMODEL resource definition allows you to specify a Temporary Storage queue name prefix, and associate attributes with that name. You can also map names directly to a shared TS pool (without the need for a shared sysid).	Chapter 31, “TSMODEL resource definitions,” on page 299
TYPETERM	A TYPETERM is a partial terminal definition that identifies a set of common terminal properties or attributes. Every TERMINAL definition must specify a TYPETERM. TYPETERMS make it easier to define your terminals if you have many terminals of the same kind.	Chapter 32, “TYPETERM resource definitions,” on page 305
URIMAP	A URIMAP is a resource definition that matches the URIs of HTTP or Web service requests, and provides information on how to process the requests.	Chapter 33, “URIMAP resource definitions,” on page 347
WEBSERVICE	A WEBSERVICE resource defines aspects of the run time environment for a CICS application program deployed in a Web services setting, where the mapping between application data structure and SOAP messages has been generated using the CICS Web services assistant.	Chapter 34, “WEBSERVICE resource definitions,” on page 363

Chapter 6. CONNECTION resource definitions

A CONNECTION defines a remote system with which your CICS system communicates, using *intersystem communication* (ISC) or *multiregion operation* (MRO).

When you define a CONNECTION, you give enough information to identify the system and specify its basic attributes. You put details in the SESSIONS definition about the sessions you use to communicate with the system. CICS uses the CONNECTION name to identify the other system when the definition has been installed. For other CICS systems connected via MRO, this name is typically the same as that specified in the other CICS system as the SYSIDNT system initialization parameter. For other systems connected via ISC, this name is typically based on an acronym that describes the location of or the organization that owns the system (for example, USA1 or IBMC).

The REMOTESYSTEM name on a TRANSACTION definition, or on a TERMINAL definition, refers to a CONNECTION definition through its CONNECTION name. These attributes are used for transaction routing.

The REMOTESYSTEM name on a PROGRAM definition refers to a CONNECTION definition through its CONNECTION name. This attribute is used for distributed program link.

The CONNECTION definition does **not** name associated SESSIONS.

Before you start creating definitions for intercommunication resources, see *CICS Intercommunication Guide* for further guidance. There you can find many useful examples of the attributes you must specify for different types of links and sessions.

Special considerations for different connection types are:

MRO links and sessions

You define an MRO link using one CONNECTION definition, and its associated parallel sessions using one SESSIONS definition.

ACCESSMETHOD

On the CONNECTION definition, specify this as IRC (for interregion communication), or XM (for cross-memory services). IRC is used to open and close the links.

PROTOCOL

On the SESSIONS definition, specify LU61 as the PROTOCOL. On the CONNECTION definition, leave the PROTOCOL value blank.

SENDPFX, SENDCOUNT, RECEIVEPFX, RECEIVECOUNT

In one SESSIONS definition, you specify a number of send sessions and a number of receive sessions. The values that you specify in these attributes are used to determine the names of the TCT entries created when the definition is installed. (See "Installing connection definitions" on page 37.)

APPC links and parallel sessions

For APPC, the sessions are grouped into modesets. You define each modeset with a SESSIONS definition, so you have as many SESSIONS definitions as you require modesets. You define the link as a CONNECTION definition. The following attributes are significant:

`ACCESSMETHOD`
On the CONNECTION definition, specify this as VTAM.

`MAXIMUM`
Use this to control the number of sessions in the modeset.

`MODENAME`
On the SESSIONS definition for each modeset, name the modeset with the MODENAME. This is the name by which the modeset is known to CICS when the definition is installed in the active system.

`PROTOCOL`
On both the CONNECTION and SESSIONS definitions, specify APPC as the protocol.

APPC (LUTYPE6.2) single session terminal

You can define an APPC terminal as a CONNECTION-SESSIONS pair or as a TERMINAL-TYPETERM pair. The TERMINAL-TYPETERM method is described in “APPC (LUTYPE6.2) single session terminal” on page 251. If you want to use the CONNECTION-SESSIONS method, the following attributes are significant:

`ACCESSMETHOD`
On the CONNECTION definition, specify this as VTAM.

`MAXIMUM`
For a single session terminal, specifying 1,0 or 1,1 has the same effect. (For further information, see “CONNECTION definition attributes” on page 38.)

`MODENAME`
On the SESSIONS definition, specify the MODENAME. This is the name that CICS uses to identify the session when the definition is installed in the active system.

`PROTOCOL`
On both the CONNECTION and SESSIONS definitions, specify APPC as the protocol.

`SINGLESESS`
YES indicates that the CONNECTION definition is for a single session terminal.

LUTYPE6.1 links and sessions

LUTYPE6.1 links and sessions can be defined in one of two ways:

- In one CONNECTION and one SESSIONS definition
- In one CONNECTION and a number of SESSIONS definitions: one for each session needed

If your sessions are all to have **identical** attributes, define each link in one CONNECTION definition and all its associated sessions in one SESSIONS definition.

`ACCESSMETHOD`
On the CONNECTION definition, specify this as VTAM.

`PROTOCOL`
On the SESSIONS definition and on the CONNECTION definition, specify this as LU61.

`RECEIVECOUNT, RECEIVEPFX, SENDCOUNT, SENDPFX`
These attributes are used as for MRO links and sessions.

If your sessions are to have **different** attributes from each other, you must create a separate SESSIONS definition for each one. With the exception of NETNAMEQ, this method is the same as that for CICS-IMS™ sessions, described below.

Note: For CICS-CICS ISC links and sessions, you are recommended to use APPC rather than LUTYPE6.1.

LUTYPE6.1 CICS-IMS links and sessions

IMS needs each session to be defined in a separate SESSIONS definition, because each session must have a different NETNAMEQ.

You define the link as a CONNECTION definition, and create a number of SESSIONS definitions: one for each SEND session and one for each RECEIVE session.

ACCESSMETHOD
On the CONNECTION definition, specify this as VTAM.

NETNAMEQ
This is the name that the remote IMS system uses to identify the session.

PROTOCOL
On both the CONNECTION and SESSIONS definitions, specify LU61 as the protocol.

SESSNAME
This is the name that CICS uses to identify the session when the definition is installed in the active system.

RECEIVECOUNT
SENDCOUNT
Use these attributes to specify whether a session is a SEND session or a RECEIVE session.

A RECEIVE session is one in which the local CICS is the primary and is the contention loser. It is specified by defining RECEIVECOUNT(1) and leaving SENDCOUNT to default to blank. (You do not need to specify a SENDPFX or a RECEIVEPFX.)

A SEND session is one in which the local CICS is the secondary and is the contention winner. Specify it by defining SENDCOUNT(1) and leaving RECEIVECOUNT to default to blank.

INDIRECT connections

An INDIRECT connection is a remote system for which you have not defined a direct link with the local system. Instead, the two systems communicate with each other by way of one or more intermediate systems. You can use this method for transaction routing. The remote system, indirectly connected, is always the terminal-owning region; the local system is always the application-owning region or an intermediate region on the transaction routing path.

Indirect connections are required only if you use non-VTAM terminals for transaction routing across intermediate systems. Optionally, you can use them with VTAM terminals, where several transaction routing paths are possible, to identify the preferred path to the terminal-owning region. For information about why you might want to define indirect connections, and about the resource definitions required for transaction routing, see the *CICS Intercommunication Guide*.

In the local system, you must have ordinary CONNECTION and SESSIONS definitions for the intermediate systems to which you are directly connected. The ACCESSMETHOD should be IRC or XM with PROTOCOL(LU61), or VTAM with PROTOCOL(APPC).

For the INDIRECT connection (also known as an indirect link or an indirect system) you need, in the local system, a CONNECTION definition only. You do not need a SESSIONS definition: the sessions that are used are those of the intermediate system. The following attributes of the CONNECTION definition are significant:

ACCESSMETHOD
Specify this as INDIRECT.

INDSYS
Specify the CONNECTION definition for the MRO or APPC link that is the start of a path to the terminal-owning system.

NETNAME
Specify the APPLID of the terminal-owning system.

Defining connections

You can define connections in the following ways:

- Using the CEDA transaction; see “Defining connections using CEDA.”
- Using the DFHCSDUP utility; see *CICS Operations and Utilities Guide*.
- Using the CREATE CONNECTION command; see the *CICS System Programming Reference*.
- For APPC connections only, using autoinstall; see Chapter 42, “Autoinstalling APPC connections,” on page 479.
- Using CICSPlex SM Business Application Services; see *CICSPlex System Manager Managing Business Applications*.

Defining connections using CEDA

From a CICS terminal, issue the following command:

```
CEDA DEFINE CONNECTION(name) GROUP(name)
```

Figure 1 on page 37 illustrates the CEDA DEFINE CONNECTION panel:

```
 Connection   ==>
 Group        ==>
 DEscription  ==>
CONNECTION IDENTIFIERS
 Netname      ==>
 INDsys       ==>
REMOTE ATTRIBUTES
 REMOTESYSTem ==>
 REMOTEName   ==>
 REMOTESYSNet ==>
CONNECTION PROPERTIES
 ACcessmethod ==> Vtam              Vtam | INdirect | IRc | Xm
 PRotocol     ==>                   Appc | Lu61 | Exci
 Conntype     ==>                   Generic | Specific
 SInglesess   ==> No                No | Yes
 DAtastream   ==> User              User | 3270 | SCs | STrfield | Lms
 RECordformat ==> U                 U | Vb
 Queuelimit   ==> No                No | 0-9999
 Maxqtime     ==> No                No | 0-9999
OPERATIONAL PROPERTIES
 AUtoconnect  ==> No                No | Yes | All
 INService    ==> Yes               Yes | No
SECURITY
 SEcurityname ==>
 ATtachsec    ==> Local             Local | Identify | Verify | Persistent
                                    | Mixidpe
 BINDPassword   :                   PASSWORD NOT SPECIFIED
 BINDSecurity ==> No                No | Yes
 Usedfltuser  ==> No                No | Yes
RECOVERY
 PSrecovery   ==>                   Sysdefault | None
 Xlnaction    ==> Keep              Keep | Force
```

Figure 1. The DEFINE panel for CONNECTION

Installing connection definitions

To install new CONNECTION definitions, put them in a group of their own which does not contain CONNECTION definitions that have already been installed, then use CEDA INSTALL to install the whole group. You cannot install single CONNECTION definitions.

To modify and reinstall existing MRO CONNECTION definitions, or if you want new and existing MRO CONNECTION definitions to be in the same group, you must close down all interregion communication (IRC) and open it again, before you can use the definition. If you do not close IRC and open it again, you get message DFHIR3788 when you try to bring up the region with the new connection.

Use the following procedure:

1. Close IRC down:

   `CEMT SET IRC CLOSED`

2. Install the resource definitions:

   `CEDA INSTALL GROUP(`*`groupname`*`)`

3. When you have successfully installed the group containing the definitions, open IRC again:

   `CEMT SET IRC OPEN`

CONNECTION definition attributes

```
►►──CONNECTION(name)──GROUP(groupname)──┬───────────────────┬────────────────────►
                                        └─DESCRIPTION(text)─┘

   ┌─┤ Attributes for APPC connections ├──────────┐  ┌─AUTOCONNECT(NO)──┐
►──┼──────────────────────────────────────────────┼──┼──────────────────┼────────►
   ├─┤ Attributes for MRO connections ├───────────┤  ├─AUTOCONNECT(ALL)─┤
   ├─┤ Attributes for LU type 6.1 connections ├───┤  └─AUTOCONNECT(YES)─┘
   └─┤ Attributes for indirect connections ├──────┘

   ┌─DATASTREAM(USER)─────┐  ┌─INSERVICE(YES)─┐  ┌─MAXQTIME(NO)──────┐
►──┼──────────────────────┼──┼────────────────┼──┼───────────────────┼───────────►
   ├─DATASTREAM(LMS)──────┤  └─INSERVICE(NO)──┘  └─MAXQTIME(seconds)─┘
   ├─DATASTREAM(SCS)──────┤
   ├─DATASTREAM(STRFIELD)─┤
   └─DATASTREAM(3270)─────┘

                           ┌─QUEUELIMIT(NO)──────┐  ┌─RECORDFORMAT(U)──┐
►──┬───────────────────┬───┼─────────────────────┼──┼──────────────────┼─────────►
   └─NETNAME(netname)──┘   └─QUEUELIMIT(number)──┘  └─RECORDFORMAT(VB)─┘

   ┌─XLNACTION(KEEP)──┐
►──┼──────────────────┼──────────────────────────────────────────────────────────►◄
   └─XLNACTION(FORCE)─┘
```

Attributes for APPC connections:

```
   ┌─ACCESSMETHOD(VTAM)─┐  ┌─PROTOCOL(APPC)─┐  ┌─ATTACHSEC(LOCAL)──────┐
├──┴────────────────────┴──┴────────────────┴──┼───────────────────────┼─────────►
                                               ├─ATTACHSEC(IDENTIFY)───┤
                                               ├─ATTACHSEC(MIXIDPE)────┤
                                               ├─ATTACHSEC(PERSISTENT)─┤
                                               └─ATTACHSEC(VERIFY)─────┘

   ┌─BINDSECURITY(NO)──┐  ┌─PSRECOVERY(SYSDEFAULT)─┐
►──┼───────────────────┼──┼────────────────────────┼─────────────────────────────►
   └─BINDSECURITY(YES)─┘  └─PSRECOVERY(NONE)───────┘

►──┬────────────────────────────────────────────────────────────────────────┬────►
   └─REMOTESYSTEM(connection)──┬────────────────────────┬──┬──────────────────────┬─┘
                               └─REMOTENAME(connection)─┘  └─REMOTESYSNET(netname)─┘

                              ┌─SINGLESESS(NO)──┐  ┌─USEDFLTUSER(NO)──┐
►──┬────────────────────────┬─┼─────────────────┼──┼──────────────────┼──────────┤
   └─SECURITYNAME(userid)───┘ └─SINGLESESS(YES)─┘  └─USEDFLTUSER(YES)─┘
```

Attributes for MRO connections:

```
├──┬─ACCESSMETHOD(IRC)──┬──────────────────────────────────────────┬──┬──────────►
   │                    │                  ┌─CONNTYPE(SPECIFIC)─┐  │  │
   │                    └─PROTOCOL(EXCI)───┴─CONNTYPE(GENERIC)──┴──┘  │
   └─ACCESSMETHOD(XM)─────────────────────────────────────────────────┘
```

```
  ┌─ATTACHSEC(LOCAL)────┐ ┌─USEDFLTUSER(NO)──┐
►─┼─────────────────────┼─┼──────────────────┼─────────────────────────────────────┤
  └─ATTACHSEC(IDENTIFY)─┘ └─USEDFLTUSER(YES)─┘
```

Attributes for LU type 6.1 connections:

```
   ┌─ACCESSMETHOD(VTAM)─┐
├──┴────────────────────┴──PROTOCOL(LU61)──┬─────────────────────────┬──────────┤
                                           └─SECURITYNAME(userid)─┘
```

Attributes for indirect connections:

```
├──ACCESSMETHOD(INDIRECT)──INDSYS(connection)──────────────────────────────────┤
```

ACCESSMETHOD({VTAM|**INDIRECT**|**IRC**|**XM**})
specifies the access method to be used for this connection.

VTAM Communication between the local CICS region and the system defined by this connection definition is through VTAM. You can use VTAM intersystem communication (ISC) for systems that are in different MVS images or in different address spaces in the same MVS image.

INDIRECT
Communication between the local CICS system and the system defined by this connection definition is through the system named in the INDSYS operand.

IRC Communication between the local CICS region and the region defined by this connection definition is through the interregion communication (IRC) program DFHIRP, using the SVC (as opposed to cross-memory (XM)) mode of DFHIRP.

Note: This use of the term IRC is more specific than its general use. You can use IRC for multiregion operation (MRO) for regions that are in the same MVS image or in different MVS images within a sysplex.

XM MRO communication between the local CICS region and the region defined by its CONNECTION definition uses MVS cross-memory services. Initial connection is through the interregion communication (IRC) program DFHIRP, using the cross-memory (XM) (as opposed to the SVC) mode of DFHIRP. You can use XM for multiregion operation for regions that are in the same MVS image, or in different MVS images within a sysplex.

Note: The CICS type 3 SVC is still required with XM because DFHIRP is used when the link is opened. For further information about SVCs, see the *CICS Transaction Server for z/OS Installation Guide*.

MVS cross-memory services are used only if the ACCESSMETHOD of the other end of the link is also defined as XM.

If the MRO partners reside in different MVS images within a sysplex, and the CONNECTION specifies IRC or XM, CICS automatically uses XCF as the access method, and ignores the IRC or XM specification.

Note: You cannot define XCF explicitly; if you want to use XCF, you must specify IRC or XM. See the *CICS Intercommunication Guide* for more information about XCF.

ATTACHSEC({LOCAL|IDENTIFY|VERIFY|PERSISTENT| MIXIDPE})
specifies the level of attach-time user security required for the connection.

IDENTIFY
Incoming attach requests must specify a user identifier. Enter IDENTIFY when the connecting system has a security manager; for example, if it is another CICS system.

LOCAL
The authority of the user is taken to be that of the link itself, and you rely on link security alone to protect your resource. If the PROTOCOL attribute on the CONNECTION definition is LU6.1, you must specify LOCAL.

MIXIDPE
Incoming attach requests may be using either or both IDENTIFY or PERSISTENT security types. The security type actually used depends on the incoming attach request.

PERSISTENT
Incoming attach requests must specify a user identifier and a user password on the first attach request. Subsequent attach requests require only the user identifier. This should be used only between a programmable workstation, (for example, an IBM Personal Computer) and CICS.

VERIFY
Incoming attach requests must specify a user identifier and a user password. Enter VERIFY when the connecting system has no security manager and hence cannot be trusted. Do not specify VERIFY for CICS-to-CICS communication, because CICS does not send passwords.

AUTOCONNECT({NO|YES|ALL})
For systems using ACCESSMETHOD(VTAM), you specify with AUTOCONNECT(YES) or (ALL) that sessions are to be established (that is, BIND is to be performed). Such sessions are set up during CICS initialization, or when you use the CEMT or EXEC CICS SET VTAM OPEN command to start communication with VTAM. If the connection cannot be made at these times because the remote system is unavailable, you must subsequently acquire the link by using the CEMT or EXEC CICS SET CONNECTION(sysid) INSERVICE ACQUIRED command, unless the remote system becomes available in the meantime and itself initiates communications.

For APPC connections with SINGLESESS(NO) specified, CICS tries to bind, on system start-up, the LU services manager sessions in mode group SNASVCMG.

For connection definitions with SINGLESESS(YES) specified, the AUTOCONNECT operand is ignored. Use the AUTOCONNECT operand of the session definition instead.

ALL On this definition, ALL is equivalent to YES, but you can specify ALL to be consistent with the session definition.

AUTOCONNECT(ALL) should not be specified for connections to other CICS systems, because this can cause a bind-race.

NO CICS does not attempt to bind sessions when the connection is established.

YES CICS attempts to bind only contention-winning sessions when the connection is established.

The AUTOCONNECT option is not applicable on an LU6.1 connection definition. For LU6.1 connections, specify AUTOCONNECT(YES) on the SESSIONS definition if you want the connection to be established at initialization or CEDA install. Specify AUTOCONNECT(NO) on the SESSIONS definition if you do not want the connection to be established at initialization or CEDA install.

BINDPASSWORD

This attribute is obsolete, but is supported to provide compatibility with earlier releases of CICS. For more information, see Appendix A, "Obsolete attributes," on page 615.

BINDSECURITY({NO|YES}) (APPC only)

specifies whether an ESM is being used for bind-time security.

NO No external bind-time security is required.

YES If security is active and the XAPPC system initialization parameter is set to YES, CICS attempts to extract the session key from RACF in order to perform bind-time security. If no RACF profile is available, the bind fails.

CONNECTION(*name*)

specifies the name of this connection definition. The name can be up to four characters in length.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters you enter are converted to uppercase.

This is the name specified as REMOTESYSTEM on file, terminal, transaction, and program definitions. You should not have a terminal definition and a connection definition with the same name.

CONNTYPE({SPECIFIC|GENERIC})

For external CICS interface (EXCI) connections, this specifies the nature of the connection.

GENERIC

The connection is for communication from a non-CICS client program to the CICS system, and is generic. A generic connection is an MRO link with a number of sessions to be shared by multiple EXCI users. For a generic connection you cannot specify the NETNAME attribute.

SPECIFIC
The connection is for communication from a non-CICS client program to the CICS region, and is specific. A specific connection is an MRO link with one or more sessions dedicated to a single user in a client program. For a specific connection, NETNAME is mandatory.

DATASTREAM({**USER**|**3270**|**SCS**|**STRFIELD**|**LMS**})
specifies the type of data stream.

LMS The data stream is a Logical Message Services (LMS) data stream consisting of FMH4s and FMH8s as defined in the LUTYPE6.1 architecture.

SCS The data stream is an SCS data stream as defined in the LUTYPE6.1 architecture.

STRFIELD
The data stream is a structured field data stream as defined in the LUTYPE6.1 architecture.

USER Let DATASTREAM default to USER if the data stream is user-defined. If you are communicating between multiple CICS systems, always let DATASTREAM default to USER.

3270 The data stream is a 3270 data stream as defined in the type 6.1 logical unit (LUTYPE6.1) architecture.

DESCRIPTION(*text*)
You can provide a description of the resource you are defining in this field. The description text can be up to 58 characters in length. There are no restrictions on the characters that you can use. However, if you use parentheses, ensure that for each left parenthesis there is a matching right one. If you use the CREATE command, for each single apostrophe in the text, code two apostrophes.

GROUP(*groupname*)
Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed.

Acceptable characters:

`A-Z 0-9 $ @ #`

Any lower case characters you enter are converted to upper case.

The GROUP name can be up to eight characters in length. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

INDSYS(*connection*)
specifies the name of another CONNECTION that defines an intermediate system used to relay communications between this system and the remote system. The name can be up to four characters in length.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters you enter are converted to uppercase.

You may specify an intermediate system only if you specify ACCESSMETHOD(INDIRECT).

INSERVICE({YES|NO})
specifies the status of the connection that is being defined.

NO The connection can neither receive messages nor transmit input.

YES Transactions may be initiated and messages may automatically be sent across the connection.

MAXQTIME({NO|*seconds*})
specifies a time control on the wait time for queued allocate requests waiting for free sessions on a connection that appears to be unresponsive. The maximum queue time is used only if a queue limit is specified for QUEUELIMIT, and then the time limit is applied only when the queue length has reached the queue limit value.

NO CICS maintains the queue of allocate requests that are waiting for a free session. No time limit is set for the length of time that requests can remain queued (though the DTIMOUT mechanisms can apply to individual requests). In this case, a value of X'FFFF' is passed on the XZIQUE parameter list (in field UEPEMXQT).

seconds
The approximate upper limit on the time that allocate requests can be queued for a connection that appears to be unresponsive. The number represents seconds in the range 0 through 9999.

CICS uses the maximum queue time attribute to control a queue of allocate requests waiting. When the number of queued allocate requests reaches the queue limit (QUEUELIMIT), and a new allocate request is received for the connection, if the rate of processing for the queue indicates that, on average, the new allocate takes more than the maximum queue time, the queue is purged, and message DFHZC2300 is issued. When the queue is purged, queued allocate requests return SYSIDERR.

No further queuing takes place until the connection has successfully freed a session. At this point, CICS issues DFHZC2301 and resumes normal queuing.

You can also control the queuing of allocate requests through an XZIQUE global user exit program. This allows you to use statistics provided by CICS, which report the state of the link. You can use these statistics, in combination with the queue limit and maximum queue time values you specify, to make more specialized decisions about queues.

The MAXQTIME value is passed to an XZIQUE global user exit program on the XZIQUE parameter list, if the exit is enabled. See the *CICS Customization Guide* for programming information about writing an XZIQUE global user exit program.

You can also specify the NOQUEUE|NOSUSPEND option on the ALLOCATE command to prevent an explicit request being queued. See the *CICS Application Programming Reference* for programming information about these API options.

NETNAME(*netname*)
specifies the network name that identifies the remote system. The name can be up to eight characters in length. The name follows assembler language rules. It must start with an alphabetic character.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters you enter are converted to uppercase.

The NETNAME is the APPLID of the remote system or region, unless you are defining an LUTYPE6.1 or APPC link to a VTAM generic resource group.

- If you are defining an LUTYPE6.1 link to a generic resource, NETNAME must specify the generic resource name, not the APPLID of one of the group members.
- If you are defining an APPC link to a generic resource, NETNAME can specify either the group's generic resource name or the APPLID (member name) of one of the group members. However, if you specify a member name, and this CICS is not itself a member of a CICS generic resource, the connection must always be acquired by this CICS (“this CICS ” being the CICS region in which the connection definition is installed).

For VTAM, the APPLID is the label of the remote VTAM VBUILD TYPE=APPL statement.

If you do not supply a NETNAME, the CONNECTION name is used by default.

There are some rules about duplicate NETNAMEs. You **cannot** have:

- Two or more APPC links with the same NETNAME
- An APPC link and an LUTYPE6.1 link with the same NETNAME
- Two or more IRC connections with the same NETNAME
- Two or more remote APPC connections with the same NETNAME.
- A remote APPC connection with the same NETNAME as any other connection or local terminal.

You **can** have:

- An IRC connection and an LUTYPE6.1 connection with the same NETNAME
- An IRC connection and an APPC connection with the same NETNAME
- Two or more LUTYPE6.1 connections with the same NETNAME
- Any connection with the same NETNAME as a remote terminal.

For connections that use the VTAM LU alias facility:

- **APPC synclevel 1**: If the CICS region supports VTAM dynamic LU alias (that is, LUAPFX=*xx* is specified on the CICS region's APPL statement) this NETNAME is assumed to be in the same network as the CICS region. If it is not the resource must have a local VTAM CDRSC definition with LUALIAS=*netname* defined, where *netname* must match the NETNAME defined on this CONNECTION definition. Synclevel 1 APPC connections are generally work stations.

  Be aware that some synclevel 1 resources may become synclevel 2, depending on how they connect to CICS. For example, if TXSeries does *not* use a PPC gateway, the connection is synclevel 1. If it does use a PPC gateway, it is synclevel 2.
- **APPC synclevel 2 and LUTYPE6.1**: This NETNAME is assumed to be unique. CICS matches it against the network name defined in the VTAM APPL statement. These connections are generally CICS-to-CICS but could, for example, be TXSeries-connected through a PPC gateway.

PROTOCOL({APPC|LU61|EXCI|blank})
specifies the type of protocol that is to be used for the link.

APPC (LUTYPE6.2 protocol)
Advanced program-to-program communication, or APPC protocol. This is the default value for ACCESSMETHOD(VTAM). Specify this for CICS-CICS ISC.

blank MRO between CICS regions. You must leave the PROTOCOL blank for MRO, and on the SESSIONS definition you must specify LU6.1 as the PROTOCOL.

EXCI The external CICS interface. Specify this to indicate that this connection is for use by a non-CICS client program using the external CICS interface.

LU61 LUTYPE6.1 protocol. Specify this for CICS-CICS ISC or CICS-IMS ISC, but not for MRO.

PSRECOVERY({SYSDEFAULT|NONE})
In a CICS region running with persistent sessions support, this specifies whether, and how, LU6.2 sessions are recovered on system restart within the persistent session delay interval.

NONE All sessions are unbound as out-of-service with no CNOS recovery.

SYSDEFAULT
If a failed CICS system is restarted within the persistent session delay interval, the following actions occur:

- User modegroups are recovered to the SESSIONS RECOVOPTION value.
- The SNASVCMG modegroup is recovered.
- The connection is returned in ACQUIRED state and the last negotiated CNOS state is returned

QUEUELIMIT({NO|*number*})
specifies the maximum number of allocate requests that CICS is to queue while waiting for free sessions:

NO There is no limit set to the number of allocate requests that CICS can queue while waiting for a free session. In this case, a value of X'FFFF' is passed on the XZIQUE parameter list (in field UEPQUELM).

number
The maximum number of allocate requests, in the range 0 through 9999, that CICS can queue on the connection while waiting for a free session. When the number of queued allocate requests reaches this limit, subsequent allocate requests return SYSIDERR until the queue drops below the limit.

This queue limit is passed to an XZIQUE global user exit program on the XZIQUE parameter list if the exit is enabled.

You can also control the queuing of allocate requests through the MAXQTIME attribute, and through an XZIQUE global user exit program. See the MAXQTIME attribute for more information about controlling queues.

Note: BIND re-negotiation is not triggered, even if there are unused secondary sessions. Unless the CEMT SET MODE command is used to force re-negotiation, the queuelimit will come into play as soon as all the primary sessions are in use.

RECORDFORMAT({U|VB})
specifies the type of SNA chain.

U	Let RECORDFORMAT default to U if the SNA chain is a single, unblocked stream of data. You can have private block algorithms within the SNA chain. Let RECORDFORMAT default to U if you are communicating between multiple CICS systems.
VB	The SNA chain is formatted according to the VLVB standard as defined in the LUTYPE6.1 architecture.

REMOTENAME(*connection*)
specifies the name by which the APPC connection for transaction routing is known in the system or region that owns the connection. The name can be up to four characters in length.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters you enter are converted to uppercase.

The remote system or region can be an APPC device (see "APPC devices for transaction routing" on page 259).

REMOTESYSNET(*netname*)
specifies the network name (APPLID) of the system that owns the connection. The name can be up to eight characters in length. It follows assembler language rules, and must start with an alphabetic character.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters you enter are converted to uppercase.

Use REMOTESYSNET when transaction routing to remote APPC systems or devices, and there is no direct link between the region in which this definition is installed and the system that owns the connection to the remote device. You do not need to specify REMOTESYSNET if:

- You are defining a local connection (that is, REMOTESYSTEM is not specified, or specifies the sysid of the local system).
- REMOTESYSTEM names a direct link to the system that owns the connection. However, there is one special case: if the connection-owning region is a member of a VTAM generic resources group and the direct link to it is an APPC connection, you may need to specify REMOTESYSNET. REMOTESYSNET is needed in this case if the NETNAME specified on the CONNECTION definition for the direct link is the generic resource name of the connection-owning region (not the applid).

REMOTESYSTEM(*connection*)
specifies the name that identifies the intercommunication link to the system that owns the connection. The name can be up to four characters in length.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters you enter are converted to uppercase.

This is the CONNECTION name on the connection definition for the intercommunication link.

REMOTESYSTEM is used for transaction routing to remote APPC systems or devices. If it is not specified, or if it is specified as the sysid of the local system, this connection is local to this system. If the name is that of another system, the connection is remote. You can therefore use the same definition for the connection in both the local system and a remote system.

If there are intermediate systems between this CICS and the region that owns the (connection to the) device, REMOTESYSTEM should specify the first link in the path to the device-owning region. If there is more than one possible path, it should specify the first link in the preferred path.

SECURITYNAME(*userid*)
For APPC and LU6.1 links only, this is the security name of the remote system.

In a CICS system with security initialized (SEC=YES), the security name is used to establish the authority of the remote system.

Note: If USERID is specified in the SESSIONS definition associated with the connection definition, it overrides the userid specified in the SECURITYNAME attribute, and is used for link security.

The security name (or USERID on the sessions definition) must be a valid RACF userid on your system. Access to protected resources on your system is based on the RACF user profile and its group membership.

SINGLESESS({**NO**|**YES**})
specifies whether the definition is for an APPC terminal on a single session APPC link to CICS.

NO The definition is not for a single session APPC link to CICS.

YES The definition is for an APPC terminal on a single session APPC link to CICS.

The MODENAME attribute of the SESSIONS definition can be used to supply a modename for the single session mode set.

An APPC single session terminal can also be defined as a TERMINAL-TYPETERM definition. Both the TERMINAL-TYPETERM definition and the CONNECTION definition can be autoinstalled. If you are considering using autoinstall, see Chapter 40, “Autoinstalling VTAM terminals,” on page 461.

USEDFLTUSER ({**NO**|**YES**}) **(APPC and MRO only)**
specifies the action that is taken when an inbound FMH5 does not contain the security information implied by the ATTACHSEC attribute.

NO The attach request is rejected, and a protocol violation message is issued.

YES The attach is accepted, and the default user ID is associated with the transaction.

For more information, see the *CICS RACF Security Guide* and *CICS RACF Security Guide*.

XLNACTION({KEEP|FORCE}) (APPC and MRO only)
specifies the action to be taken when a new logname is received from the partner system. Receipt of a new logname indicates that the partner has deleted its recovery information.

Note: MRO here covers connections with ACCESSMETHOD set to either IRC or XM.

FORCE
The predefined decisions for in-doubt UOWs (as defined by the indoubt attributes of the transaction definition) are implemented, before any new work with the new logname is started. CICS also deletes any information retained for possible resolution of UOWs that were in-doubt at the partner system.

Attention: Data integrity may be compromised if you use this option.

KEEP Recovery information is kept, and no action is taken for in-doubt units of work.

For IRC, the connection continues with new work. Resolve in-doubt UOWs using the CEMT or SPI interface.

For APPC, the connection is unable to perform new work that requires synclevel 2 protocols until all outstanding recoverable work with the partner (that is, in-doubt UOWs, or information relevant to UOWs that were in-doubt on the partner system under the old logname) is completed using the CEMT or SPI interface.

Note: On IRC connections to pre-CICS Transaction Server for z/OS systems, and on LU6.1 connections to all levels of CICS, lognames are not used and the XLNACTION attribute is ignored. For detailed information about IRC connections to back-level systems, see the *CICS Intercommunication Guide*.

Chapter 7. CORBASERVER resource definitions

A CORBASERVER defines an execution environment for enterprise beans and stateless CORBA objects.

The attributes include:

- Information that is used to construct Generic Factory Interoperable Object References used by clients that invoke stateless CORBA objects. For more information, see *Java Applications in CICS*.
- Information that is used when making outbound method requests on objects in remote EJB or CORBA servers.

If you are using load balancing, you will need to install the same CORBASERVER definition in multiple cloned AORs. See *Java Applications in CICS*.

If you are not using load balancing, you should not define and install CORBASERVER definitions with the same name (but different attributes) in different CICS regions, because (unless the CorbaServers have different JNDI prefixes) only the last PERFORM CORBASERVER PUBLISH command will register an entry with the name server for the CORBASERVER name.

Defining CorbaServers

You can define CorbaServers in the following ways:

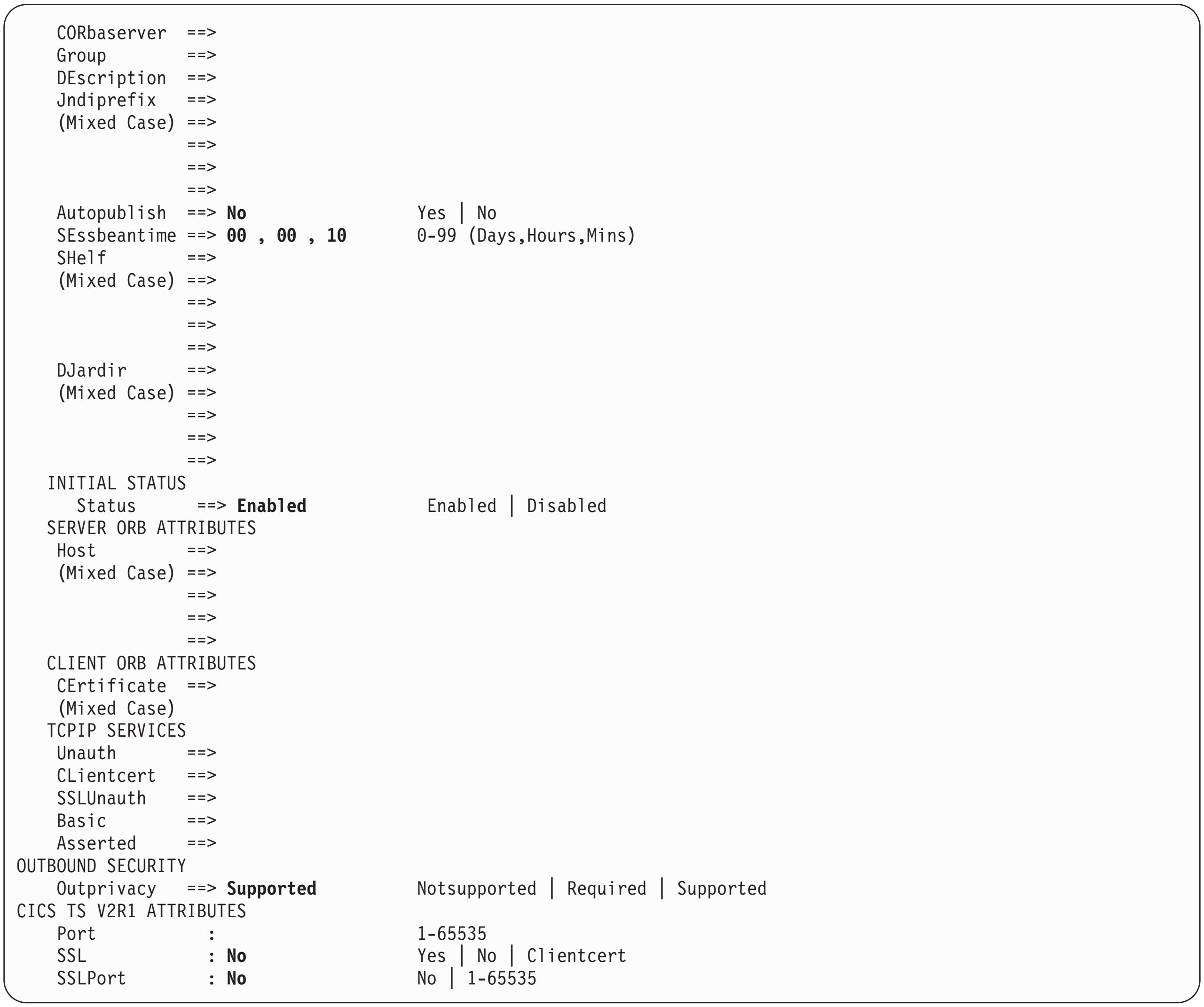
- Using the CEDA transaction; see “Defining CorbaServers using CEDA.”
- Using the DFHCSDUP utility; see the *CICS Operations and Utilities Guide*.
- Using the CREATE CORBASERVER command; see the *CICS System Programming Reference*.
- Using CICSPlex SM Business Application Services; see *CICSPlex System Manager Managing Business Applications*.

Defining CorbaServers using CEDA

From a CICS terminal, issue the following command:

```
CEDA DEFINE CORBASERVER(corbaserver) GROUP(name)
```

Figure 2 on page 50 illustrates the CEDA DEFINE CORBASERVER panel:



```
    CORbaserver  ==>
    Group        ==>
    DEscription  ==>
    Jndiprefix   ==>
    (Mixed Case) ==>
                 ==>
                 ==>
                 ==>
    Autopublish  ==> No                Yes | No
    SEssbeantime ==> 00 , 00 , 10      0-99 (Days,Hours,Mins)
    SHelf        ==>
    (Mixed Case) ==>
                 ==>
                 ==>
                 ==>
    DJardir      ==>
    (Mixed Case) ==>
                 ==>
                 ==>
                 ==>
   INITIAL STATUS
      Status      ==> Enabled           Enabled | Disabled
   SERVER ORB ATTRIBUTES
    Host         ==>
    (Mixed Case) ==>
                 ==>
                 ==>
                 ==>
   CLIENT ORB ATTRIBUTES
    CErtificate  ==>
    (Mixed Case)
   TCPIP SERVICES
    Unauth       ==>
    CLientcert   ==>
    SSLUnauth    ==>
    Basic        ==>
    Asserted     ==>
OUTBOUND SECURITY
    Outprivacy   ==> Supported         Notsupported | Required | Supported
CICS TS V2R1 ATTRIBUTES
    Port           :                   1-65535
    SSL            : No                Yes | No | Clientcert
    SSLPort        : No                No | 1-65535
```

Figure 2. The DEFINE panel for CORBASERVER

For information about input to mixed case fields, see "Entering mixed case attributes" on page 388.

Installing CorbaServer definitions

The EJB request streams directory file, DFHEJDIR, must be defined, installed, and available before you can install a CORBASERVER definition.

When you install a CORBASERVER, CICS checks related resources for consistency:

- At the end of GROUPLIST installation during CICS initialization.
- After a group containing a CORBASERVER is installed. In this case, related TCPIPSERVICEs must either be installed before the group containing the CORBASERVER, or as part of the same group.
- After a CORBASERVER is installed as an individual resource. In this case, related TCPIPSERVICEs must be installed before the CORBASERVER.

You can install a CorbaServer in either enabled or disabled state.

When you install a CORBASERVER, it is not available for use immediately, even if you have chosen to install it in enabled state; instead CICS starts a task which completes the steps necessary to make it usable:

1. Related resources (such as TCPIPSERVICE and DJAR) are checked for consistency with the CORBASERVER.
2. The shelf directory is created if necessary, or emptied if it already exists.
3. If a deployed JAR file directory has been specified, it is scanned for deployed JAR files. (This automatic scan occurs regardless of whether the CorbaServer is installed in enabled or disabled state.) CICS assumes that a file is a deployed JAR if:
   a. It has a suffix of `.jar` (in lowercase).
   b. Its base filename is between 1 and 32 characters long. By "base filename" we mean the part of the filename before the suffix, and excluding any file path. For example, the base filename of the file `djardir\myDeployedJar.jar` is `myDeployedJar`.
4. If there are any deployed JAR files in the DJARDIR directory, they are copied to the shelf directory, and DJAR resource definitions are dynamically created for them.

If step 1 or step 2 fails, CICS puts the CORBASERVER in DISABLED state, and issues a message indicating the cause of the problem. If this happens, and the problem lies with the associated resources, you must:

- Make the necessary corrections to the associated resources, re-installing the resource definitions as necessary.
- If required, enable the CorbaServer by issuing an EXEC CICS or CEMT SET CORBASERVER ENABLED command.

If the problem lies with the CORBASERVER definition, you must:

- Discard the installed CORBASERVER definition.
- Make the necessary corrections to the CORBASERVER definition.
- Reinstall the CORBASERVER definition.

Any work which is directed to a newly-installed CORBASERVER is suspended until the CORBASERVER is ready for use—that is, in ENABLED state.

To determine the state of a CORBASERVER, use the INQUIRE CORBASERVER command, or CEMT INQUIRE CORBASERVER.

You can install more than one CORBASERVER definition in the same CICS region. It is recommended that you divide your enterprise beans and CORBA stateless objects between CorbaServers based on their:

- Functionality
- Maintenance requirements
- Availability requirements

That is, sets of beans or CORBA stateless objects that have distinct functionality, maintenance requirements, or availability requirements, should be installed in distinct CorbaServers.

If you replace an existing CORBASERVER definition by installing another of the same name, you must first discard the existing definition.

CORBASERVER: related resources

The attributes and values you specify for a CORBASERVER resource must be consistent with those specified on other resources. However, CICS does not check consistency of all related resources when the CORBASERVER is installed, and therefore does not report inconsistencies at install time. See "Installing CorbaServer definitions" on page 50 for more information.

- The following attributes specify the name of a TCPIPSERVICE resource:
  - BASIC
  - CLIENTCERT
  - ASSERTED
  - SSLUNAUTH
  - UNAUTH

  You must install each TCPIPSERVICE referred to in the CORBASERVER definition before the CorbaServer can be used. If you are using a separate listener region, you must install each TCPIPSERVICE in the application-owning region and a matching TCPIPSERVICE in the listener region.

  Some attributes in each TCPIPSERVICE referred to in the CORBASERVER definition depend upon which CORBASERVER attribute refers to it:

CORBASERVER attribute that refers to the TCPIPSERVICE	TCPIPSERVICE SSL attribute	TCPIPSERVICE AUTHENTICATE attribute
CLIENTCERT	CLIENTAUTH	CERTIFICATE
SSLUNAUTH	YES or CLIENTAUTH	NO
UNAUTH	NO	NO

- The value of the HOST option of the CORBASERVER definition must match the value of the IPADDRESS option of one or more IIOP TCPIPSERVICE definitions. (These TCPIPSERVICE definitions must be installed in *all* the regions—both listener regions and AORs—of the logical EJB/CORBA server.) However, if the TCPIPSERVICE specifies a value for DNSGROUP, the HOST option of the CORBASERVER definition must specify a matching generic host name.

  Note: There may be more than one IIOP TCP/IP service at the same IP address, each listening on a different port and supporting a different type of authentication.

CORBASERVER: interrelated attributes

- A CorbaServer knows about two distinct HFS directories: a deployed JAR file directory (DJARDIR) from where it installs deployed JAR files, and a "shelf" directory in which it keeps copies of installed deployed JAR files. The DJARDIR attribute (if specified) and the SHELF attribute must identify distinct valid directories.
- You cannot specify both the CLIENTCERT and SSLUNAUTH attributes.

CORBASERVER definition attributes

```
►►──CORBASERVER(name)──GROUP(groupname)──┬───────────────────┬─────────────────────►
                                          └─DESCRIPTION(text)─┘

   ┌─AUTOPUBLISH(NO)──┐
►──┼──────────────────┼──┬────────────────────┬──┬─────────────────────┬───────────►
   └─AUTOPUBLISH(YES)─┘  └─CERTIFICATE(label)─┘  └─CIPHERS(cipherlist)─┘

►──┬──────────────────────┬──HOST(hostname)──┬──────────────────────┬──────────────►
   └─DJARDIR(directory)───┘                  └─JNDIPREFIX(prefix)───┘

   ┌─SESSBEANTIME(00,00,10)─┐   ┌─SHELF(/var/cicsts)─┐   ┌─STATUS(ENABLED)──┐
►──┼────────────────────────┼───┼────────────────────┼───┼──────────────────┼──────►
   ├─SESSBEANTIME(00,00,00)─┤   └─SHELF(directory)───┘   └─STATUS(DISABLED)─┘
   └─SESSBEANTIME(dd,hh,mm)─┘

►──UNAUTH(tcpipservice)──┬──────────────────┬──┬─────────────────────────┬─────────►◄
                         └─ASSERTED(char8)──┘  ├─CLIENTCERT(tcpipservice)─┤
                                               └─SSLUNAUTH(tcpipservice)──┘
```

ASSERTED(*tcpipservice*)
specifies the 8–character name of a TCPIPSERVICE that defines the characteristics of the port which is used for inbound IIOP with asserted identity authentication.

AUTOPUBLISH({**NO**|**YES**})
specifies whether the contents of a deployed JAR file should be automatically published to the namespace when the DJAR definition is successfully installed into this CorbaServer. “Successfully installed” means that the DJAR is INSERVICE. The default is NO.

Specifying YES causes beans to be automatically published to the namespace when a DJAR is successfully installed. It does not cause beans to be automatically retracted when a DJAR is discarded.

CERTIFICATE(*label*)
specifies the label of an X.509 certificate that is used as a client certificate during the SSL handshake for outbound IIOP connections. If this attribute is omitted, the default certificate defined in the key ring for the CICS region user ID is used.

Certificate labels can be up to 32 bytes long.

The distinguished name within the specified certificate provides inputs to the distinguished name user-replaceable program, DFHEJDNX.

CIPHERS(*cipherlist*)

Specifies a string of up to 56 hexadecimal digits that is interpreted as a list of up to 28 2-digit cipher suite codes. When you use the CEDA transaction to define the resource, CICS automatically initializes the attribute with a default list of acceptable codes. For CICS to initialize the attribute, the KEYRING system initialization parameter must be specified in the CICS region where you are running CEDA. If KEYRING is not set, CICS does not initialize the attribute. The default list of codes depends on the level of encryption that is specified by the ENCRYPTION system initialization parameter.

- For ENCRYPTION=WEAK, the default value is `03060102`
- For ENCRYPTION=MEDIUM, the initial value is `0903060102`
- For ENCRYPTION=STRONG, the initial value is `0504352F0A0903060102`

You can reorder the cipher codes or remove them from the initial list. However, you cannot add cipher codes that are not in the default list for the specified encryption level. To reset the value to the default list of codes, delete all of the cipher suite codes and the field will automatically repopulate with the default list. See Cipher suites for more information.

CLIENTCERT(*tcpipservice*)

specifies the 8–character name of a TCPIPSERVICE that defines the characteristics of the port which is used for inbound IIOP with SSL client certificate authentication. This attribute is optional. You cannot specify both the CLIENTCERT and SSLUNAUTH attributes.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters you enter are converted to uppercase.

CORBASERVER(*name*)

specifies the 1-4 character name of the CorbaServer.

Acceptable characters:

`A-Z a-z 0-9`

For information about entering mixed case information, see “Entering mixed case attributes” on page 388.

Do not use names beginning with DFH, because these characters are reserved for use by CICS.

DESCRIPTION(*text*)

You can provide a description of the resource you are defining in this field. The description text can be up to 58 characters in length. There are no restrictions on the characters that you can use. However, if you use parentheses, ensure that for each left parenthesis there is a matching right one. If you use the CREATE command, for each single apostrophe in the text, code two apostrophes.

DJARDIR(*directory*)

specifies the 1–255 character fully-qualified name of the deployed JAR file directory (also known as the *pickup directory*) on HFS.

Acceptable characters:

`A-Z a-z 0-9 . / _ # @`

For information about entering mixed case information, see “Entering mixed case attributes” on page 388.

If specified, DJARDIR must refer to a valid HFS directory to which the CICS region has at least read access.

The pickup directory is where you place deployed JAR files that you want to be installed into the CorbaServer by the CICS scanning mechanism. When the CORBASERVER definition is installed, CICS scans the pickup directory and automatically installs any deployed JAR files it finds there. (This automatic scan occurs regardless of whether the CorbaServer is installed in enabled or disabled state.)

CICS assumes that any files in the pickup directory that end in `.jar` and have a base filename of 1–32 characters are EJB deployed JAR files. It copies them to its shelf directory and dynamically creates and installs DJAR definitions for them. The name of the DJAR definition is the name of the deployed JAR file on HFS. For example, a deployed JAR file named `/var/cicsts/pickup/TheThreeBears.jar` results in a DJAR definition named `TheThreeBears`.

After the CorbaServer has been installed, you can add more deployed JAR files to the pickup directory. CICS installs them in either of the folowing situations:

- When instructed to by means of an explicit EXEC CICS or CEMT PERFORM CORBASERVER SCAN command. (This command works only when the CorbaServer is in a steady state—that is, when it is in ENABLED or DISABLED state, but *not* when it is in ENABLING, DISABLING, or DISCARDING state.)
- When instructed to by the resource manager for enterprise beans (otherwise known as the RM for enterprise beans), which issues a PERFORM CORBASERVER SCAN command on your behalf. (The resource manager for enterprise beans is described in the *CICS Operations and Utilities Guide*).

After the CorbaServer has been installed, you can also put updated versions of deployed JAR files into the pickup directory. When you issue a PERFORM CORBASERVER SCAN command (either explicitly or by means of the RM for enterprise beans), CICS detects that an update has occurred and updates both the LASTMODTIME, DATESTAMP, and TIMESTAMP attributes of the installed DJAR definition and the shelf copy of the deployed JAR file, to reflect the pickup directory change.

Note:

1. If you use the scanning mechanism in a production region, be aware of the security implications: specifically, the possibility of CICS command security on DJAR definitions being circumvented. To guard against this, we recommend that user IDs given write access to the HFS deployed JAR file directory should be restricted to those given RACF authority to create and update DJAR and CORBASERVER definitions.
2. If you do not specify a value for DJARDIR, no automatic scan takes place on installation of the CorbaServer. PERFORM CORBASERVER SCAN commands (whether explicit or issued by the RM for enterprise beans) will fail.
3. The installation of the CorbaServer fails if the value of DJARDIR is not blank but does not refer to a valid HFS directory to which the CICS region has read access.
4. The fact that resource names must be unique in the CSD has several implications for the scanning mechanism:
   a. Different CorbaServers in the same CICS region must use different DJARDIR directories. (Otherwise, performing a scan against different CorbaServers would result in multiple sets of

identically-named DJAR definitions, each set pointing at a different CorbaServer. CICS rejects all such sets of definitions except the first.)

   b. For the same reason, you must not place an identically-named deployed JAR file into multiple DJARDIR directories in the same CICS region.

      If you want to install the same set of beans into more than one CorbaServer in the same CICS region, you should do either of the following:

      1) Name the deployed JAR file differently in each DJARDIR directory.
      2) Use static definitions. That is, create multiple (differently-named) static DJAR definitions, pointing at the same deployed JAR file on HFS but at different CorbaServers.

5. Different CICS regions may share the same set of DJARDIR directories. Typically, all the AORs in a multi-region EJB server would share the same set of DJARDIR directories.
6. CICS ignores any deployed JAR files in the pickup directory that have the same name *and* the same date and time stamps as currently-installed DJAR resources. A deployed JAR file with the same name but a later date-and-time stamp than an installed DJAR is treated as an update.
7. Deleting a previously-installed deployed JAR file from the pickup directory does not remove the DJAR resource from CICS; its beans are still available. To make the beans unavailable, you must discard the DJAR resource.
8. You cannot update a statically-installed DJAR definition by means of the scanning mechanism—you must first discard the static definition. For example, if you have a statically-installed DJAR definition named `myDjar1`, you cannot update it by scanning a deployed JAR file named `myDjar1.jar`.
9. An invalid deployed JAR file is not detected early (when the pickup directory is scanned), but when the EJB environment attempts to open it. The DJAR resource for an invalid JAR file becomes UNRESOLVED. CICS outputs a message to indicate what is wrong with the JAR file. The message is sent to the CICS log and to the “EJB event” user-replaceable program.
10. After every scan of the pickup directory, CICS outputs a message indicating the number of new and the number of updated deployed JAR files found during the scan.

GROUP(*groupname*)

Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed.

Acceptable characters:

`A-Z 0-9 $ @ #`

Any lower case characters you enter are converted to upper case.

The GROUP name can be up to eight characters in length. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

HOST(*hostname*)

specifies the TCP/IP host name, or a string containing the dotted-decimal TCP/IP address, of this logical EJB/CORBA server.

Acceptable characters:

`A-Z a-z 0-9 . -`

For information about entering mixed case information, see “Entering mixed case attributes” on page 388.

The host name is included in Interoperable Object References (IORs) exported for objects in this logical server. Clients must use this host name to access the CICS listener regions.

If you are using connection optimization by means of Domain Name System (DNS) registration, to balance client connections across the listener regions of your logical IIOP or EJB server, specify the generic host name to be quoted by client connection requests. (The generic host name is the DNSGROUP value defined in the TCPIPSERVICE resource definition, suffixed by the name of the domain or subdomain managed by the MVS system name server. This is established by your MVS TCP/IP system administrator.) See *Java™ Applications in CICS* for more information about using DNS with IIOP and enterprise beans.

JNDIPREFIX(*prefix*)

specifies a JNDI prefix of up to 255 characters which is used when enterprise beans are published to the Java Naming and Directory Interface (JNDI).

Acceptable characters:

`A-Z a-z 0-9 . / _ # @`

For information about entering mixed case information, see “Entering mixed case attributes” on page 388.

Publishing a bean means binding a reference to the home of the bean in a name space. The naming context in which the bean is bound is named, relative to the initial context defined for the CICS region, using a concatenation of the JNDIPREFIX attribute of the CorbaServer and the name of the bean. The JNDIPREFIX attribute must match the prefix specified by the client when it uses JNDI to obtain a reference to the home interface for a bean. For more information, see *Java Applications in CICS*.

Note: Any JNDI sub-context below the CICS region's initial JNDI context may be transient. This is the case if CICS has write access to the initial context node (if you're using an LDAP name server) or initial context directory (if you're using a COS name server).

CICS creates the sub-context specified on the JNDIPREFIX option (if it has the necessary write permission and the sub-context does not already exist in the name space structure) when an enterprise bean is published from the CorbaServer. However, if all the enterprise beans in the CorbaServer are retracted, CICS may delete the sub-context from the name space structure. Where multiple CorbaServers share part of a prefix hierarchy, CICS never removes contexts that are still in use by any of them. But if the contexts in the prefix are empty they are removed, as far back as the initial context.

If you want to protect the sub-context hierarchy from deletion, do not give CICS write access to the initial context node or directory. (This means that you must create the top-level node or directory of the sub-context manually. For information on how to do this with an LDAP name server, see *Java Applications in CICS*.)

CICS limits the use of the / character in the JNDI prefix field to prevent the use of empty atomic components, which are denoted by an empty string. The / character may not be the first or last character of the prefix. Also, two or more consecutive instances of the / character are not allowed anywhere in the prefix.

If this option is not specified, no prefix is added when publishing enterprise beans to JNDI.

OUTPRIVACY

This attribute is obsolete, but is supported to provide compatibility with earlier releases of CICS. For more information, see Appendix A, “Obsolete attributes,” on page 615.

PORT

This attribute is obsolete, but is supported to provide compatibility with earlier releases of CICS. For more information, see Appendix A, “Obsolete attributes,” on page 615.

If this attribute is present in the CORBASERVER definition, the following attributes must be blank:
- ASSERTED
- BASIC
- CLIENTCERT
- SSLUNAUTH
- UNAUTH
- OUTPRIVACY

SESSBEANTIME({**00,00,00**|**00,00,10**|*dd,hh,mm*})

specifies, in days, hours, and minutes, the period of inactivity after which a session bean may be discarded by CICS.

00,00,00

Session beans will not be timed out.

00,00,10

Session beans may be discarded after ten minutes of inactivity. This is the default value.

dd,hh,mm

Session beans may be discarded after the specified period of inactivity. The maximum value you can specify is 99 days, 23 hours, and 59 minutes.

SHELF({**/var/cicsts/**|*directory*})

specifies the 1–255 character fully-qualified name of a directory (a *shelf*, primarily for *deployed JAR files*) on HFS.

Acceptable characters:

`A-Z a-z 0-9 . / _ # @`

For information about entering mixed case information, see “Entering mixed case attributes” on page 388.

CICS regions into which the CORBASERVER definition is installed must have full permissions to the shelf directory—read, write, and the ability to create subdirectories.

A single shelf directory may be shared by multiple CICS regions and by multiple CORBASERVER definitions. Each CICS region uses a separate subdirectory to keep its files separate from those of other CICS regions. The subdirectories for CORBASERVER definitions are contained within the subdirectories of the CICS regions into which they are installed. After a CICS region performs a cold or initial start, it deletes its subdirectories from the shelf before trying to use the shelf.

You should not modify the contents of a shelf that is referred to by an installed CORBASERVER definition. If you do, the effects are unpredictable.

SSL

This attribute is obsolete, but is supported to provide compatibility with earlier releases of CICS. For more information, see Appendix A, “Obsolete attributes,” on page 615.

If this attribute is present in the CORBASERVER definition, the following attributes must be blank:
- ASSERTED
- BASIC
- CLIENTCERT
- SSLUNAUTH
- UNAUTH
- OUTPRIVACY

SSLPORT

This attribute is obsolete, but is supported to provide compatibility with earlier releases of CICS. For more information, see Appendix A, “Obsolete attributes,” on page 615.

If this attribute is present in the CORBASERVER definition, the following attributes must be blank:
- ASSERTED
- BASIC
- CLIENTCERT
- SSLUNAUTH
- UNAUTH
- OUTPRIVACY

SSLUNAUTH(*tcpipservice*)

specifies the 8–character name of a TCPIPSERVICE that defines the characteristics of the port which is used for inbound IIOP with SSL but no client authentication. This attribute is optional. You cannot specify both the CLIENTCERT and SSLUNAUTH attributes.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters you enter are converted to uppercase.

STATUS({**ENABLED**|**DISABLED**})
specifies whether the CorbaServer is to be installed in enabled or disabled state. The default is enabled.

UNAUTH(*tcpipservice*)
specifies the 8–character name of a TCPIPSERVICE that defines the characteristics of the port which is used for inbound IIOP with no authentication.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters you enter are converted to uppercase.

Note that you must specify a value for the UNAUTH attribute when you define a CORBASERVER, even if you intend that all inbound requests to this CORBASERVER should be authenticated. This is because the PORTNUMBER attribute of the TCPIPSERVICE is required in order to construct IORs that are exported from this logical server.

Chapter 8. DB2CONN resource definitions

A DB2CONN definition defines the attributes of the connection between CICS and DB2, and of the *pool threads* and *command threads* used with the connection.

Defining DB2 connections

You can define DB2 connections in the following ways:

- Using the CEDA transaction; see "Defining DB2 connections using CEDA."
- Using the DFHCSDUP utility; see *CICS Operations and Utilities Guide*.
- Using the CREATE DB2CONN command; see the *CICS System Programming Reference*.
- Using CICSPlex SM Business Applications Services; see *CICSPlex System Manager Managing Business Applications*.

Defining DB2 connections using CEDA

From a CICS terminal, issue the following command:

`CEDA DEFINE DB2CONN(name) GROUP(name)`

Figure 3 illustrates the CEDA DEFINE DB2CONN panel:

```
 DB2Conn      ==>
 Group        ==>
 DEscription  ==>
CONNECTION ATTRIBUTES
 CONnecterror ==> Sqlcode           Sqlcode | Abend
 DB2Groupid   ==>
 DB2Id        ==>
 MSGQUEUE1    ==> CDB2
 MSGQUEUE2    ==>
 MSGQUEUE3    ==>
 Nontermrel   ==> Yes               Yes | No
 PUrgecycle   ==> 00 , 00           0-59
 Resyncmember ==> Yes               Yes | No
 SIgnid       ==>
 STANdbymode  ==> Reconnect         Reconnect | Connect | Noconnect
 STATsqueue   ==> CDB2
 TCblimit     ==>                   4-2000
 THREADError  ==> N906D             N906D | N906 | Abend
POOL THREAD ATTRIBUTES
 ACcountrec   ==> None              None | TXid | TAsk | Uow
 AUTHId       ==>
 AUTHType     ==>                   Userid | Opid | Group | Sign | TErm
                                    | TX
 DRollback    ==> Yes               Yes | No
 PLAN         ==>
 PLANExitname ==>
 PRiority     ==> High              High | Equal | Low
 THREADLimit  ==>                   3-2000
 THREADWait   ==> Yes               Yes | No
COMMAND THREAD ATTRIBUTES
 COMAUTHId    ==>
 COMAUTHType  ==>                   Userid | Opid | Group | Sign | TErm
                                    | TX
 COMThreadlim ==> 0001              0-2000
```

Figure 3. The DEFINE panel for DB2CONN

Installing DB2 connection definitions

This section describes the guidelines for installing and discarding DB2CONN definitions and the implications of interruptions in partial activity.

- Only one DB2CONN can be installed in a CICS system at any one time. An install of a second DB2CONN can implicitly DISCARD the existing DB2CONN and its associated DB2ENTRYs and DB2TRANs (unless reinstalling a DB2CONN of the same name) before proceeding with the installation.
- A DB2CONN must be installed before any DB2ENTRY or DB2TRAN definitions. DB2ENTRY and DB2TRAN definitions cannot exist on their own, and can only be associated with a DB2CONN that is already installed. Also, if you discard a DB2CONN, the associated DB2ENTRY and DB2TRAN resource definitions are also discarded. Note that there is no attribute on a DB2ENTRY or DB2TRAN that explicitly specifies the DB2CONN to which they belong. This allows DB2ENTRY and DB2TRAN definitions to be shared by DB2CONN definitions without alteration.

  Note: When DB2CONN, DB2ENTRYs, and DB2TRANs are defined in the same group, CICS automatically installs the DB2CONN first. If you install DB2 definitions from multiple groups (by means of a list or multiple INSTALL GROUP commands), the first group you install must contain the DB2CONN definition. Successive groups should not have any DB2CONN definitions. CICS issues an error message when installing a DB2ENTRY or DB2TRAN when no DB2CONN is installed. If multiple DB2CONN definitions are installed, all DB2 definitions installed before the final DB2CONN definition are discarded. CICS issues messages for all discards.
- A DB2CONN must be installed before the CICS DB2 connection can be started. Because it contains information regarding pool threads and command threads, as well as global type information, a DB2CONN represents the minimum required to start the CICS DB2 connection. There are no entry threads, and all transactions use the pool. You can add DB2ENTRYs and DB2TRANs after the CICS DB2 connection is active.
- A DB2CONN can be re-installed only if the CICS DB2 attachment facility is not connected to DB2, and therefore inactive.
- A DB2CONN can be discarded only when the CICS DB2 attachment facility is not connected to DB2.
- The discard of a DB2CONN implicitly discards all installed DB2ENTRYs and DB2TRANs.

  Note: There is no group commit or group discard of DB2CONNs, DB2ENTRYs, and DB2TRANs. However when a DB2CONN is discarded, the underlying control block is marked stating that a discard is in progress. The DB2ENTRYs and DB2TRANs are discarded before the DB2CONN. If the discard fails when half completed, a DB2CONN control block results, and a message is issued that a discard is in progress. A start of the CICS DB2 attachment facility fails with a message:

  ```
  DFHDB2074 CICS DB2 ATTACHMENT FACILITY STARTUP
            CANNOT PROCEED AS THE CURRENTLY
            INSTALLED DB2CONN IS NOT USABLE
  ```

  when using a partially discarded DB2 resource definition. You must re-issue the discard. When a CICS system restarts after a failure when discarding, it knows that a discard took place. CICS does not recover the blocks from the catalog, and this effectively completes the discard. (Note that the definitions are removed from the catalog as well.)

When you are installing, parts of any group or list install can fail, but messages are displayed that identify which resources have failed. You can proceed with a start of the CICS DB2 attachment facility when this happens.

Checks on definitions of DB2 connection resources

For a DB2CONN object, the following checks are made:

- To ensure that there is only one DB2CONN defined in the group or list. If more than one is found (even one with a different name), a warning message is issued. Only one DB2CONN can be installed at a time.
- That PLANEXITNAME exists as a program definition in the group or list if a PLANEXITNAME is specified, and program autoinstall is not active.

DB2CONN definition attributes

```
►►──DB2CONN(name)──GROUP(groupname)──┬───────────────────┬─────────────────────────►
                                     └─DESCRIPTION(text)─┘

   ┌─CONNECTERROR(SQLCODE)─┐
►──┼───────────────────────┼──┬──────────────────┬─────────────────────────────────►
   └─CONNECTERROR(ABEND)───┘  ├─DB2GROUPID(name)─┤
                              └─DB2ID(name)──────┘

   ┌─MSGQUEUE1(CDB2)────┐
►──┴─MSGQUEUE1(tdqueue)─┴──┬─────────────────────┬──┬─────────────────────┬───────►
                           └─MSGQUEUE2(tdqueue)─┘  └─MSGQUEUE3(tdqueue)─┘

   ┌─NONTERMREL(YES)─┐  ┌─PURGECYCLE(0,30)──┐  ┌─RESYNCMEMBER(YES)─┐
►──┼─────────────────┼──┼───────────────────┼──┼───────────────────┼──────────────►
   └─NONTERMREL(NO)──┘  └─PURGECYCLE(mm,ss)─┘  └─RESYNCMEMBER(NO)──┘

                           ┌─STANDBYMODE(RECONNECT)─┐  ┌─STATSQUEUE(CDB2)─────┐
►──┬──────────────┬────────┼────────────────────────┼──┼──────────────────────┼───►
   └─SIGNID(name)─┘        ├─STANDBYMODE(NOCONNECT)─┤  └─STATSQUEUE(tdqueue)─┘
                           └─STANDBYMODE(CONNECT)───┘

   ┌─TCBLIMIT(12)────┐  ┌─THREADERROR(N906D)─┐  ┌─ACCOUNTREC(NONE)─┐
►──┼─────────────────┼──┼────────────────────┼──┼──────────────────┼──────────────►
   └─TCBLIMIT(value)─┘  ├─THREADERROR(ABEND)─┤  ├─ACCOUNTREC(UOW)──┤
                        └─THREADERROR(N906)──┘  ├─ACCOUNTREC(TASK)─┤
                                                └─ACCOUNTREC(TXID)─┘

   ┌─AUTHTYPE(USERID)─┐  ┌─DROLLBACK(YES)─┐  ┌─PLANEXITNAME(DSNCUEXT)─┐
►──┼──────────────────┼──┼────────────────┼──┼────────────────────────┼───────────►
   ├─AUTHTYPE(GROUP)──┤  └─DROLLBACK(NO)──┘  ├─PLANEXITNAME(exit)─────┤
   ├─AUTHTYPE(SIGNID)─┤                      └─PLAN(plan)─────────────┘
   ├─AUTHTYPE(TERM)───┤
   ├─AUTHTYPE(TX)─────┤
   ├─AUTHTYPE(OPID)───┤
   └─AUTHID(userid)───┘

   ┌─PRIORITY(HIGH)──┐  ┌─THREADLIMIT(3)─────┐  ┌─THREADWAIT(YES)─┐
►──┼─────────────────┼──┼────────────────────┼──┼─────────────────┼───────────────►
   ├─PRIORITY(EQUAL)─┤  └─THREADLIMIT(value)─┘  └─THREADWAIT(NO)──┘
   └─PRIORITY(LOW)───┘

   ┌─COMAUTHTYPE(USERID)─┐  ┌─COMTHREADLIM(1)─────┐
►──┼─────────────────────┼──┼─────────────────────┼───────────────────────────────►◄
   ├─COMAUTHTYPE(GROUP)──┤  └─COMTHREADLIM(value)─┘
   ├─COMAUTHTYPE(SIGNID)─┤
   ├─COMAUTHTYPE(TERM)───┤
   ├─COMAUTHTYPE(TX)─────┤
   ├─COMAUTHTYPE(USER)───┤
   └─COMAUTHID(userid)───┘
```

The attributes are described in the categories:

- "General attributes" on page 65
- "Connection attributes" on page 65
- "Pool thread attributes" on page 69
- "Command thread attributes" on page 72

General attributes

The general attributes of a DB2CONN are:

DB2CONN(*name*)
The name to identify a DB2 connection definition. The name can be up to eight characters in length.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters you enter are converted to uppercase.

DESCRIPTION(*text*)
You can provide a description of the resource you are defining in this field. The description text can be up to 58 characters in length. There are no restrictions on the characters that you can use. However, if you use parentheses, ensure that for each left parenthesis there is a matching right one. If you use the CREATE command, for each single apostrophe in the text, code two apostrophes.

GROUP(*groupname*)
Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed.

Acceptable characters:

`A-Z 0-9 $ @ #`

Any lower case characters you enter are converted to upper case.

The GROUP name can be up to eight characters in length. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

Connection attributes

The connection attributes of a DB2CONN are:

CONNECTERROR({**SQLCODE**|**ABEND**})
Specifies the way that the information, that CICS is not connected to DB2 because the attachment facility is in 'standby mode', is reported back to an application that has issued an SQL request.

ABEND
The application abends with abend code AEY9.

SQLCODE
The application receives a -923 sqlcode. SQLCODE cannot be specified if STANDBYMODE is set to NOCONNECT.

DB2GROUPID(*name*)
Specifies the group ID (up to four characters) of a data sharing group of DB2 subsystems. The group attach facility connects CICS to any active member of this data sharing group. The group ID should match the group attachment name defined in DB2. If the DB2GROUPID attribute is left blank, group attach is not used. You cannot specify both DB2GROUPID and DB2ID— the priorities are as follows:

1. Specifying a DB2GROUPID blanks out any DB2ID that is already set in the DB2CONN definition.
2. If you attempt to specify both a DB2GROUPID and a DB2ID on the same CEDA panel, the DB2ID is used.
3. If an individual subsystem's DB2ID is specified in a CEMT or EXEC CICS SET DB2CONN command, or in a DSNC STRT command, this overrides any DB2GROUPID attribute that is set in the installed DB2CONN definition. The DB2GROUPID in the installed DB2CONN definition is blanked out, and needs to be set again (using CEDA or a SET DB2CONN command) to use group attach.

DB2ID(*name*)

Specifies the name of the DB2 subsystem to which the CICS DB2 attachment facility is to connect. By default this field is blank. If you want to use group attach, specify a DB2GROUPID in the DB2CONN definition, instead of a DB2ID. The DB2ID set in the installed DB2CONN definition can be overridden by a DB2 subsystem ID specified on a DSNC STRT command, or by a DB2ID specified in a SET DB2CONN command. If the DB2ID in the installed DB2CONN definition is left blank, and the DB2GROUPID is also left blank,you can specify a DB2 subsystem ID on the INITPARM system initialization parameter. If no DB2 subsystem ID is specified by any of these means, and no DB2GROUPID is specified, the default DB2ID of blanks is replaced by DSN when the connection is attempted. Hence, the hierarchy for determining the DB2 subsystem is as follows:

1. Use the subsystem ID if specified in a DSNC STRT command.
2. Use the DB2ID in the installed DB2CONN if not blank.
3. Use the DB2GROUPID in the installed DB2CONN for group attach, if not blank.
4. Use the subsystem ID if specified on the INITPARM when the DB2ID and DB2GROUPID in the last installed DB2CONN are blank (or have subsequently been set to blanks). On any startup, INITPARM is always used if the last installed DB2CONN contained a blank DB2ID and a blank DB2GROUPID, even if the DB2ID or DB2GROUPID was subsequently changed using a SET command.
5. Use a default subsystem ID of DSN.

You cannot specify both DB2GROUPID and DB2ID — if you attempt to specify both on the same CEDA panel, the DB2ID is used. If a DB2GROUPID is specified in a CEMT or EXEC CICS SET DB2CONN command, this overrides any DB2ID that is set in the installed DB2CONN definition, and the DB2ID is blanked out.

MSGQUEUE1({**CDB2**|*tdqueue*}

Specifies the first transient data destination to which unsolicited messages from the CICS DB2 attachment facility are sent. This first destination cannot be blank.

MSGQUEUE2(*tdqueue*)

Specifies a second transient data destination to which unsolicited messages from the CICS DB2 attachment facility are sent.

MSGQUEUE3(*tdqueue*)

Specifies a third transient data destination to which unsolicited messages from the CICS DB2 attachment facility are sent.

NONTERMREL({YES|NO})

Specifies whether or not a non-terminal transaction releases threads for reuse at intermediate syncpoints.

NO Non-terminal transactions do not release threads for reuse at intermediate syncpoints.

YES Non-terminal transactions release threads for reuse at intermediate syncpoints.

PURGECYCLE({0|*mm*},{30|*ss*})

Specifies the duration, in minutes and seconds, of the purge cycle for protected threads. The default is 0, 30; that is, 30 seconds.

A protected thread is not terminated immediately when it is released. It is terminated only after two completed purge cycles, if it has not been reused in the meantime. Therefore, if the purge cycle is set to 30 seconds, a protected thread is purged 30 - 60 seconds after it is released. The first purge cycle after the attachment facility starts is always 5 minutes. After that the purgecycle values are applied. An unprotected thread is terminated when it is released (at syncpoint or end of task) if there are no other transactions waiting for a thread on that DB2ENTRY. Only threads belonging to a DB2ENTRY can be protected. Pool threads and command threads cannot be protected.

RESYNCMEMBER({YES|NO})

If you are using group attach, use the RESYNCMEMBER attribute to select the strategy that CICS adopts if outstanding units of work are being held for the last DB2 data sharing group member to which CICS was connected.

YES indicates that if outstanding units of work are held, you require resynchronization with the last DB2 data sharing group member to which CICS was connected. CICS ignores the group attach facility, and the CICS-DB2 attachment facility waits until it can reconnect to that last connected DB2 data sharing group member, to resolve the indoubt units of work. Units of work which are shunted indoubt are not included in this process, because CICS itself is unable to resolve those units of work at this time. Resynchronization for those UOWs will occur when CICS has resynchronized with its remote coordinator.

NO indicates that you do not require resynchronization. CICS makes one attempt to reconnect to the last connected DB2 data sharing group member. If this attempt is successful, the indoubt units of work (with the exception of UOWs that are shunted indoubt) can be resolved. If it is unsuccessful, then CICS uses group attach to connect to any active member of the DB2 data sharing group, and a warning message (DFHDB2064) is issued stating that there may be unresolved indoubt units of work with the last member of the group to which CICS was connected.

SIGNID(*name*)

Specifies the authorization ID to be used by the CICS DB2 attachment facility when signing on to DB2 for pool and DB2ENTRY threads that specify AUTHTYPE(SIGN). The default is blanks which are replaced by the applid of the CICS system when the DB2CONN is installed. The ID that you specify can be up to eight characters in length.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters you enter are converted to uppercase.

Note: If you specify a user ID on the SIGNID attribute, CICS performs a surrogate user check against the user ID performing the installation. Similarly, the CICS region user ID is subject to a surrogate user check during group list installation on a CICS cold or initial start.

STANDBYMODE({RECONNECT|CONNECT|NOCONNECT})
Specifies the action to be taken by the CICS DB2 attachment facility if DB2 is not active when an attempt is made to connect CICS to DB2.

CONNECT
Specifies that the CICS DB2 attachment facility is to wait in 'standbymode' for DB2 to become active. If the connection is made, and DB2 subsequently fails, the CICS DB2 attachment facility terminates.

NOCONNECT
Specifies that the CICS DB2 attachment facility is to terminate.

RECONNECT
Specifies that the CICS DB2 attachment facility is to go into 'standby mode' and wait for DB2. If DB2 subsequently fails after the connection is made, the CICS DB2 attachment facility reverts to 'standby mode', and CICS subsequently reconnects to DB2 when DB2 recovers.

STATSQUEUE({CDB2|*tdqueue*})
Specifies the transient data destination for CICS DB2 attachment facility statistics produced when the CICS DB2 attachment facility is shut down.

TCBLIMIT({12|*value*})

Specifies the maximum number of TCBs that can be used to process DB2 requests. The default is 12. The minimum number is 4 and the maximum is 2000. When connected to DB2 Version 5 or earlier, the CICS DB2 attachment facility creates the TCBs in the form of subtasks up to the limit specified by TCBLIMIT. Each of these subtasks identifies to DB2 and creates a connection into DB2. When connected to DB2 Version 6 or later, CICS creates open TCBs (up to the limit specified by the system initialization parameter MAXOPENTCBS). The TCBLIMIT attribute of the DB2CONN definition governs how many of the open TCBs can be used to access DB2 — that is, how many of them can identify to DB2 and create a connection into DB2.

The TCBLIMIT value controls the total number of threads for the CICS region. For this reason, the recommended value for TCBLIMIT is the sum of all the thread limit values (that is, the sum of all THREADLIMIT attributes on the DB2 connection and DB2 entry resource definitions, plus the COMTHREADLIMIT value on the DB2 connection definition) up to the limit of 2000.

When CICS is connected to DB2 Version 5 or earlier, note that if you specify THREADLIMIT values which, in total, exceed the number of TCBs (TCBLIMIT) that can be created, a task could acquire a thread and then find that there is no available TCB. In this case, the task is suspended, with the INQUIRE TASK command showing HTYPE(CDB2TCB) with no corresponding HVALUE. This contrasts with the case where a task is suspended waiting for a thread, which shows HTYPE(CDB2RDYQ) and HVALUE(*POOL), HVALUE(*COMD), or HVALUE(*entry_name*), as appropriate.

When CICS is connected to DB2 Version 6 or later, note that if MAXOPENTCBs is exceeded (so no more open TCBs can be created), the task is suspended with HTYPE(DISPATCH) and HVALUE(OPEN_TCB). If MAXOPENTCBs is not exceeded but TCBLIMIT is exceeded , then the task is suspended with HTYPE(CDB2CONN). In this situation, although CICS has an open TCB available, the maximum allowed number of open TCBs are being used to access DB2 (as defined in TCBLIMIT).

When determining the number for TCBLIMIT, you must consider the amount you specified for the MAX USERS parameter on DB2 installation panel DSNTIPE.

THREADERROR({N906D|N906|ABEND})
Specifies the processing that is to occur following a create thread error.

ABEND
When the first SQL error is detected, CICS takes a transaction dump for abend code AD2S, AD2T, or AD2U, depending on the type of error. For the first error, the transaction does not abend. For a second or subsequent SQL error, the transaction abends with abend code AD2S, AD2T, or AD2U. The transaction must be terminated and reinitialized before it is allowed to issue another SQL request.

N906D
A transaction dump is to be taken and the DSNCSQL RMI associated with the transaction is *not* to be disabled. The transaction receives a -906 SQLCODE if another SQL is issued, unless the transaction issues SYNCPOINT ROLLBACK. SYNCPOINT without the ROLLBACK option results in an ASP3 or ASP7 abend. The transaction dump records an abend of AD2S, AD2T or AD2U.

N906 The DSNCSQL RMI associated with the transaction is *not* to be disabled. The transaction receives a -906 SQLCODE if another SQL request is issued, unless the transaction issues a SYNCPOINT ROLLBACK. SYNCPOINT without the ROLLBACK option results in an ASP3 or ASP7 abend.

Pool thread attributes

The pool thread attributes of a DB2CONN are:

ACCOUNTREC({NONE|TASK|TXID|UOW})
Specifies the minimum amount of DB2 accounting required for transactions using pool threads. The specified minimum may be exceeded as described in the following options.

NONE No accounting records are required for transactions using pool threads.

DB2 produces at least one accounting record for each thread when the thread is terminated. Authorization changes additionally cause accounting records to be produced.

TASK The CICS DB2 attachment facility causes a minimum of one accounting record for each CICS task to be produced.

A transaction containing multiple UOWs (assuming the thread is released at syncpoint) may use a different thread for each of its UOWs. The result may be an accounting record produced for each UOW.

TXID The CICS DB2 attachment facility causes an accounting record to be produced when the transid using the thread changes.

Because pool threads are typically used by a number of different transaction IDs, there is an increased chance that a transaction containing multiple units of work (UOWs) will use a different thread for each UOW (assuming the thread is released at syncpoint). In this case an accounting record may be produced per UOW.

UOW The CICS DB2 attachment facility causes an accounting record to be produced for each UOW, assuming that the thread is released at the end of the UOW.

AUTHID(*userid*)
Specifies the user ID that should be used for security checking when using pool threads. If AUTHID is specified, AUTHTYPE may not be specified.

AUTHID is not suitable if you are using RACF for some or all of the security checking in your DB2 address space; use AUTHTYPE instead, with the USERID or GROUP options. This is because threads using an AUTHID do not pass the required RACF access control environment element (ACEE) to DB2. The ACEE is not required if you are only using DB2 internal security, so in this case, you can use AUTHID. The ID that you specify can be up to eight characters in length.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters you enter are converted to uppercase.

AUTHTYPE({USERID|OPID|GROUP|SIGN|TERM|TX})
Specifies the type of ID that can be used for threads on this DB2ENTRY. If AUTHTYPE is specified, AUTHID may not be specified.

If you are using RACF for some or all of the security checking in your DB2 address space, you need to use the USERID or GROUP options. This is because only threads defined with these options pass the required RACF access control environment element (ACEE) to DB2. The ACEE is not required if you are only using DB2 internal security, so in this case, you can use any of the options.

USERID
The user ID associated with the CICS transaction is used as the authorization ID. If the user ID is less than eight characters in length, it is padded on the right with blanks.

| **Important:** Do not specify COMMAUTHTYPE(USERID) when you use the DB2 sample sign-on exit DSN@SGN, as this may result in an SQL -922 failure. Specify COMMAUTHTYPE(GROUP) instead.

OPID The operator identification that is associated with the userid that is associated with the CICS transaction is used as the authorization ID. The 3–character operator identification is padded on the right with blanks to form the 8–character authorization ID.

GROUP
Specifies the user ID and the connected group name as the authorization ID. The following table shows how these two values are interpreted by DB2.

IDs passed to DB2	How DB2 interprets values
CICS sign-on user ID (USERID)	Represents the primary DB2 authorization ID.
RACF connected group name	If the RACF list of group options is not active, DB2 uses the connected group name supplied by the CICS attachment facility as the secondary DB2 authorization ID. If the RACF list of group options is active, DB2 ignores the connected group name supplied by the CICS attachment facility, but the value appears in the DB2 list of secondary DB2 authorization IDs.

To use the GROUP option, the CICS system must have SEC=YES specified in the CICS system initialization table (SIT).

If no RACF group ID is available for this USERID, an 8-character field of blanks is passed to DB2 as the group ID.

SIGN Specifies that the SIGNID attribute of the DB2 connection definition is to be used as the resource authorization ID.

TERM Specifies the terminal identification as an authorization ID. The 4–character terminal identification is padded on the right with blanks to form the 8–character authorization ID.

If the transaction is not associated with a terminal (for example, if it is initiated with a START command), do not specify AUTHTYPE(TERM).

TX Specifies the transaction identification as the authorization ID. The 4–character transaction identification is padded on the right with blanks to form the 8–character authorization ID.

DROLLBACK({YES|NO})
Specifies whether or not the CICS DB2 attachment facility should initiate a SYNCPOINT ROLLBACK if a transaction is selected as the victim of a deadlock resolution.

YES The attachment facility issues a syncpoint rollback before returning control to the application. An SQL return code of -911 is returned to the program.

Do not specify YES if the pool is used by transactions running enterprise beans as part of an OTS transaction; CICS syncpoint rollback is not allowed in an OTS transaction. Consider defining a DB2ENTRY which specifies DROLLBACK(NO) for use by transactions which run enterprise beans as part of an OTS transaction.

NO The attachment facility does not initiate a rollback for a transaction. An SQL return code of -913 is returned to the application.

PLAN(*plan*)
Specifies the name of the plan to be used for all pool threads. If PLAN is specified, PLANEXITNAME may not be specified.

PLANEXITNAME({DSNCUEXT|*exit*})
Specifies the name of the dynamic plan exit to be used for pool threads. If you change the PLAN and PLANEXITNAME while there are active transactions for the pool, the next time the transaction releases the thread the plan/exit will be determined using the new rules. If PLANEXITNAME is specified, PLAN may not be specified.

PRIORITY({HIGH|EQUAL|LOW})
Specifies the priority of the pool thread TCBs relative to the CICS main TCB (QR TCB). If CICS is connected to DB2 Version 6 or later, the thread TCBs are CICS open L8 TCBs. If CICS is connected to DB2 Version 5 or earlier, the thread TCBs are private TCBs created by the CICS-DB2 Attachment Facility.

HIGH Thread TCBs have a higher priority than the CICS QR TCB.

EQUAL
Thread TCBs have equal priority with the CICS QR TCB.

LOW Thread TCBs have a lower priority than the CICS QR TCB.

THREADLIMIT({3|*value*})
Specifies the current maximum number of pool threads that the CICS DB2 attachment facility allows to be active before requests are made to wait or are rejected (subject to the THREADWAIT attribute). The default threadlimit (3) is also the minimum you can specify. The maximum value must not be greater than the value specified for TCBLIMIT.

THREADWAIT({YES|NO})
Specifies whether or not transactions should wait for a pool thread, or be abended if the number of active pool threads reaches the thread limit.

The CICS DB2 attachment issues a unique abend code AD3T, message DFHDB2011, when THREADWAIT=NO is coded and the number of pool threads is exceeded.

YES If all threads are busy, a transaction must wait until one becomes available. A transaction can wait as long as CICS allows it to wait, generally until a thread becomes available.

NO If all threads are busy, the transaction is terminated with abend code AD2T or AD3T.

Command thread attributes

The DB2 connection definition command thread attribute descriptions are:

COMAUTHID(*userid*)
Specifies what id the CICS DB2 attachment facility should use for security checking when using command threads. If COMAUTHID is specified, COMAUTHTYPE may not be specified.

COMAUTHID is not suitable if you are using RACF for some or all of the security checking in your DB2 address space; use COMAUTHTYPE instead, with the USERID or GROUP options. This is because threads using a COMAUTHID do not pass the required RACF access control environment element (ACEE) to DB2. The ACEE is not required if you are only using DB2 internal security, so in this case, you can use COMAUTHID.The ID that you specify can be up to eight characters in length.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters you enter are converted to uppercase.

COMAUTHTYPE({USERID|OPID|GROUP|SIGN|TERM|TX})

Specifies the type of id that can be used for security checking when using command threads. If COMAUTHTYPE is specified, COMAUTHID may not be specified.

If you are using RACF for some or all of the security checking in your DB2 address space, you need to use the USERID or GROUP options. This is because only threads defined with these options pass the required RACF access control environment element (ACEE) to DB2. The ACEE is not required if you are only using DB2 internal security, so in this case, you can use any of the options.

USERID

The 1 to 8-character userid associated with the CICS transaction is used as the authorization ID. The name can be up to eight characters in length.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters you enter are converted to uppercase.

Important: Do not specify COMMAUTHTYPE(USERID) when you use the DB2 sample sign-on exit DSN@SGN, as this may result in an SQL -922 failure. Specify COMMAUTHTYPE(GROUP) instead.

OPID The operator identification associated with the userid that is associated with the CICS transaction sign-on facility is used as the authorization ID (three characters padded to eight).

GROUP

Specifies the 1 to 8-character USERID and the connected group name as the authorization ID. The following table shows how these two values are interpreted by DB2.

IDs passed to DB2	How DB2 interprets values
CICS sign-on user ID (USERID)	Represents the primary DB2 authorization ID.
RACF connected group name	If the RACF list of group options is not active, DB2 uses the connected group name supplied by the CICS attachment facility as the secondary DB2 authorization ID. If the RACF list of group options is active, DB2 ignores the connected group name supplied by the CICS attachment facility, but the value appears in the DB2 list of secondary DB2 authorization IDs.

To use the CGROUP option the CICS system must have SEC=YES specified in the CICS system initialization table (SIT).

If no RACF group ID is available for this USERID, an 8-character field of blanks is passed to DB2 as the group ID.

SIGN Specifies that the SIGNID attribute of the DB2CONN is used as the resource authorization ID.

TERM Specifies the terminal identification (four characters padded to eight) as an authorization ID. An authorization ID cannot be obtained in this manner if a terminal is not connected with the transaction.

If a transaction is started (using a CICS command) and has no terminal associated with it, the COMAUTHTYPE(TERM) should not be used.

TX Specifies the transaction identification (four characters padded to eight) as the authorization ID.

`COMTHREADLIMIT({1|value})`

The number specifies the current maximum number of command threads the CICS DB2 attachment facility allows active before requests overflow to the pool.

Chapter 9. DB2ENTRY resource definitions

A DB2ENTRY defines the attributes of *entry threads* used by the CICS DB2 attachment facility.

A transaction, or a group of transactions, can be associated with the DB2ENTRY; a group of transactions may be represented by the use of one or more wildcard characters (see “Wildcard characters for transaction IDs” on page 83). Also, further transactions can be associated with a DB2 entry by defining a DB2 transaction.

Defining DB2 entries

You can define DB2ENTRYs in the following ways:

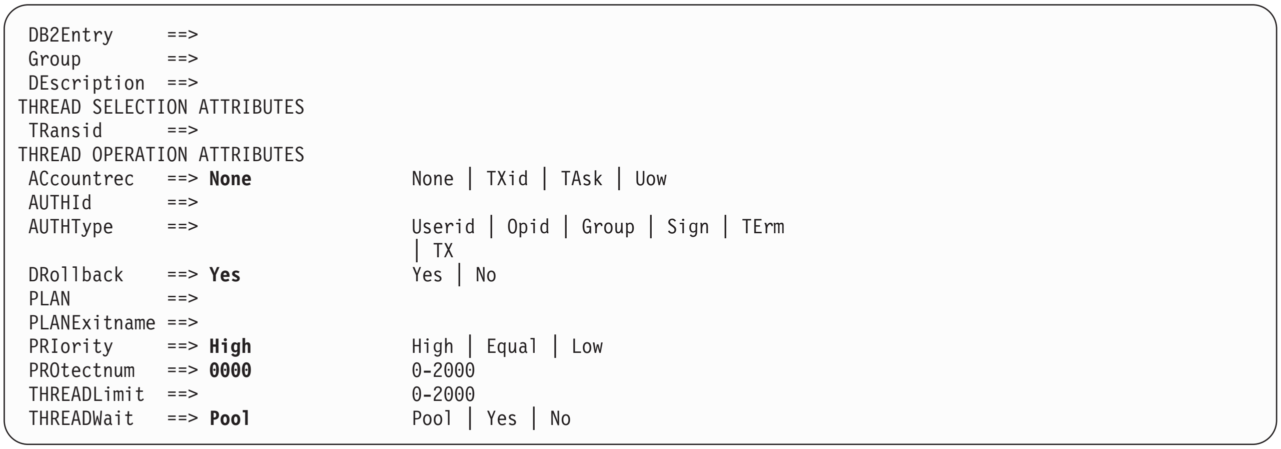
- Using the CEDA transaction; see “Defining DB2 entries using CEDA.”
- Using the DFHCSDUP utility; see *CICS Operations and Utilities Guide*.
- Using the CREATE DB2ENTRY command; see the *CICS System Programming Reference*.
- Using CICSPlex SM Business Application Services; see *CICSPlex System Manager Managing Business Applications*.

Defining DB2 entries using CEDA

From a CICS terminal, enter the following command:

```
CEDA DEFINE DB2ENTRY(name) GROUP(name)
```

The panel that is displayed when you enter a valid CEDA DEFINE DB2ENTRY command is:



```
 DB2Entry     ==>
 Group        ==>
 DEscription  ==>
THREAD SELECTION ATTRIBUTES
 TRansid      ==>
THREAD OPERATION ATTRIBUTES
 ACcountrec   ==> None              None | TXid | TAsk | Uow
 AUTHId       ==>
 AUTHType     ==>                   Userid | Opid | Group | Sign | TErm
                                    | TX
 DRollback    ==> Yes               Yes | No
 PLAN         ==>
 PLANExitname ==>
 PRIority     ==> High              High | Equal | Low
 PROtectnum   ==> 0000              0-2000
 THREADLimit  ==>                   0-2000
 THREADWait   ==> Pool              Pool | Yes | No
```

Figure 4. The DEFINE panel for DB2ENTRY

Installing DB2 entry definitions

This section describes the guidelines for installing and discarding DB2ENTRY definitions and the implications of interruptions in partial activity.

- You can install a DB2ENTRY only if you have previously installed a DB2CONN.
- You can install a new DB2ENTRY at any time, even when the CICS DB2 adapter is connected to DB2.
- You can reinstall (by replacing an existing DB2ENTRY) only when the DB2ENTRY is disabled and no transaction is using it. Use the SET DB2ENTRY

DISABLED command to quiesce activity and disable the entry. New transactions trying to use the DB2ENTRY are routed to the pool, abended, or returned an SQLCODE, dependent on the setting of the DISABLEDACT keyword when the DB2ENTRY is disabled.

- You can discard a DB2ENTRY only if it is disabled. Use the SET DB2ENTRY DISABLED command to quiesce activity and disable the entry. New transactions trying to use the DB2ENTRY are routed to the pool, abended, or returned an SQLCODE, dependent on the setting of the DISABLEDACT keyword when the DB2ENTRY is disabled.

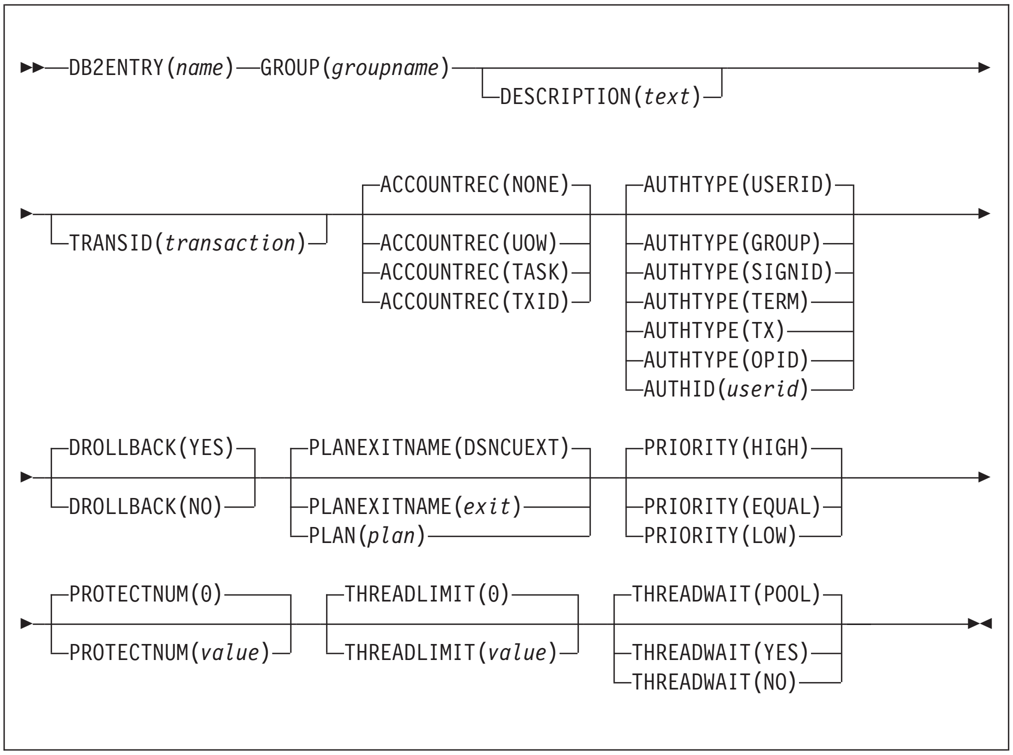
  If you discard a DB2ENTRY, you could make the corresponding DB2TRAN an 'orphan'. If you then run a transaction, a message is sent to the CDB2 transient data destination, and the request is rerouted to the pool.

Checks on definitions of DB2 entry resources

For a DB2ENTRY object, the following checks are made:

- That two DB2ENTRYs of the same name do not appear in the same list. If they do, a warning message is issued.
- That a DB2CONN exists in the group or list. If one does not, a warning message is issued. This may not be an error because the DB2CONN may exist in another group elsewhere, but a DB2CONN must be installed before a DB2ENTRY can be installed.
- Whether a transaction resource definition exists for TRANSID in the group or list if TRANSID has been specified on the DB2ENTRY. If it does not, a warning message is issued.
- Whether PLANEXITNAME exists as a program definition in the group or list if PLANEXITNAME has been specified, and program autoinstall is not active.

DB2ENTRY definition attributes



The attributes are described in the following categories:
- “General attributes”
- “Thread selection attributes” on page 78
- “Thread operation attributes” on page 78.

General attributes

The general attributes of a DB2ENTRY are:

DB2ENTRY(*name*)
One to eight character name to identify a DB2 entry definition.

Acceptable characters:

`A-Z a-z 0-9 $ @ # . / - _ % & ¢ ? ! : | " = ¬ , ; < >`

For information about entering mixed case information, see “Entering mixed case attributes” on page 388.

DESCRIPTION(*text*)
You can provide a description of the resource you are defining in this field. The description text can be up to 58 characters in length. There are no restrictions on the characters that you can use. However, if you use parentheses, ensure that for each left parenthesis there is a matching right one. If you use the CREATE command, for each single apostrophe in the text, code two apostrophes.

GROUP(*groupname*)

Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed.

> **Acceptable characters:**
>
> `A-Z 0-9 $ @ #`
>
> Any lower case characters you enter are converted to upper case.

The GROUP name can be up to eight characters in length. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

Thread selection attributes

The thread selection attributes of a DB2ENTRY are:

TRANSID(*transaction*)

Specifies the transaction id associated with the entry. Only one transaction can be specified here. However, the use of one or more wildcard characters in the TRANSID (see “Wildcard characters for transaction IDs” on page 83) allows a group of transactions to be represented. Additional transactions can be defined for this entry by defining a DB2 transaction that refers to this DB2 entry. Transid is optional on a DB2 entry. All transactions can be associated with a DB2 entry means of DB2 transactions instead. However, if only one transaction is associated with a DB2 entry it is easier to specify it on the DB2 entry.

Note: Specifying a transaction id here causes a 'ghost' DB2 transaction object to be created when the DB2 entry definition is installed, and such DB2 transaction objects may appear on SYSRES and RDSCPROC views.

Thread operation attributes

The thread operation attributes of a DB2ENTRY are:

ACCOUNTREC({NONE|TASK|TXID|UOW})

Specifies the minimum amount of DB2 accounting required for transactions using this DB2 entry. The specified minimum may be exceeded, as described in the following options.

NONE No accounting records are required for transactions using threads from this DB2ENTRY

However, DB2 produces at least one accounting record for each thread after the thread is terminated. Authorization changes additionally cause records to be produced.

TASK The CICS DB2 attachment facility causes a minimum of one accounting record for each CICS task to be produced.

A transaction containing multiple UOWs (assuming the thread is released at syncpoint) may use a different thread for each UOW. The result may be that an accounting record is produced for each UOW.

TXID The CICS DB2 attachment facility causes an accounting record to be produced when the transid using the thread changes.

This option applies to DB2 entry definitions that are used by more than one transaction ID. As threads are typically released at syncpoint, a transaction containing multiple UOWs may use a different thread for each UOW. The result may be that an accounting record is produced per UOW.

UOW The CICS DB2 attachment facility causes an accounting to be produced for each UOW, assuming that the thread is released at the end of the UOW.

AUTHID(*userid*)
Specifies the user ID to be used for security checking when using this DB2ENTRY. If AUTHID is specified, AUTHTYPE may not be specified.

AUTHID is not suitable if you are using RACF for some or all of the security checking in your DB2 address space; use AUTHTYPE instead, with the USERID or GROUP options. This is because threads using an AUTHID do not pass the required RACF access control environment element (ACEE) to DB2. The ACEE is not required if you are only using DB2 internal security, so in this case, you can use AUTHID. The ID that you specify can be up to eight characters in length.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters you enter are converted to uppercase.

AUTHTYPE({USERID|OPID|GROUP|SIGN|TERM|TX})
Specifies the type of id that can be used for security checking when using this DB2ENTRY. If AUTHTYPE is specified, AUTHID may not be specified.

If you are using RACF for some or all of the security checking in your DB2 address space, you need to use the USERID or GROUP options. This is because only threads defined with these options pass the required RACF access control environment element (ACEE) to DB2. The ACEE is not required if you are only using DB2 internal security, so in this case, you can use any of the options.

USERID
The USERID associated with the CICS transaction is used as the authorization ID.

When the DB2 sample sign-on exit DSN3@SGN is used with AUTHTYPE(USERID), the exit sends the user ID to DB2 as the primary authorization ID and the connected group name to DB2 as the secondary ID. When the sample sign-on exit is used, there is no difference between AUTHTYPE(USERID) and AUTHTYPE(GROUP).

OPID The operator identification that is associated with the userid that is associated with the CICS transaction sign-on facility, is used as the authorization ID (three characters padded to eight).

GROUP
Specifies the 1 to 8-character USERID and the connected group name as the authorization ID. The following table shows how these two values are interpreted by DB2.

IDs passed to DB2	How DB2 interprets values
CICS sign-on user ID (USERID)	Represents the primary DB2 authorization ID.

IDs passed to DB2	How DB2 interprets values
RACF connected group name	If the RACF list of group options is not active, DB2 uses the connected group name supplied by the CICS attachment facility as the secondary DB2 authorization ID. If the RACF list of group options is active, DB2 ignores the connected group name supplied by the CICS attachment facility, but the value appears in the DB2 list of secondary DB2 authorization IDs.

To use the GROUP option the CICS system must have RACF external security SEC=YES specified in the CICS system initialization table (SIT).

If no RACF group ID is available for this USERID, an 8-character field of blanks is passed to DB2 as the group ID.

SIGN Specifies that the SIGNID attribute of the DB2CONN is used as the resource authorization ID.

TERM Specifies the terminal identification (four characters padded to eight) as an authorization ID. An authorization ID cannot be obtained in this manner if a terminal is not connected with the transaction.

If a transaction is started (using a CICS command) and has no terminal associated with it, AUTHTYPE(TERM) should not be used.

TX Specifies the transaction identification (four characters padded to eight) as the authorization ID.

DROLLBACK({YES|NO})
Specifies whether or not the CICS DB2 attachment should initiate a SYNCPOINT rollback in the event of a transaction being selected as victim of a deadlock resolution.

YES The attachment facility issues a syncpoint rollback before returning control to the application. An SQL return code of -911 is returned to the program.

Do not specify YES if the DB2ENTRY is used by transactions running enterprise beans as part of an OTS transaction; CICS syncpoint rollback is not allowed in an OTS transaction.

NO The attachment facility does not to initiate a rollback for this transaction. An SQL return code of -913 is returned to the application.

PLAN(*plan*)
Specifies the name of the plan to be used for this entry. If PLAN is specified, PLANEXITNAME cannot be specified.

PLANEXITNAME(DSNCUEXT|*exit*)
Specifies the name of the dynamic plan exit to be used for this DB2 entry definition. If you change the PLAN and PLANEXITNAME while there are active transactions for the DB2 entry definition, the next time the transaction releases the thread, the plan/exit will be determined using the new rules. If PLANEXITNAME is specified, PLAN cannot be specified.

PRIORITY({HIGH|EQUAL|LOW})
Specifies the priority of the thread TCBs for this DB2ENTRY relative to the

CICS main TCB (QR TCB).If CICS is connected to DB2 Version 6 or later, the thread TCBs are CICS open L8 TCBs. If CICS is connected to DB2 Version 5 or earlier, the thread TCBs are private TCBs created by the CICS-DB2 Attachment Facility.

HIGH Thread TCBs have a higher priority than the CICS QR TCB.

EQUAL Thread TCBs have equal priority with the CICS QR TCB.

LOW Thread TCBs have a lower priority than the CICS QR TCB.

PROTECTNUM({0|*value*})
Specifies the maximum number of protected threads allowed for this DB2 entry definition. A thread, when it is released by a transaction and there is no other work queued, can be protected, meaning that it is not terminated immediately. A protected thread is terminated after only two complete purge cycles if it has not been reused in the meantime. Hence, if the purge cycle is set to 30 seconds, a protected thread is terminated 30 - 60 seconds after it is released, assuming it is not reused in the meantime. The first purge cycle after the CICS DB2 attachment facility has been started is 5 minutes, after which the PURGECYCLE value is applied. Threads are only protected while they are inactive. If a transaction reuses a protected thread, the thread becomes active, and the current number of protected threads is decremented.

THREADLIMIT({0|*value*})
Specifies the maximum number of threads for this DB2 entry definition that the CICS DB2 attachment allows active before requests are made to wait, are abended, or diverted to the pool.

THREADWAIT({POOL|YES|NO})
Specifies whether or not transactions should wait for a DB2ENTRY thread, be abended, or overflow to the pool should the number of active DB2ENTRY threads reach the THREADLimit number.

POOL If all threads are busy, the transaction is diverted to use the pool of threads. If the pool is also busy, and NO has been specified for the THREADWAIT attribute on the DB2 connection definition, the transaction is terminated with abend code AD3T.

NO If all threads are busy, a transaction is terminated with an abend code AD2P.

YES If all threads are busy, a transaction waits until one becomes available.

Chapter 10. DB2TRAN resource definitions

A DB2TRAN defines a transaction, or a group of transactions, associated with a DB2ENTRY, that are additional to the transactions specified in the DB2ENTRY itself.

Only one DB2TRAN definition can be installed for a specific transaction. An attempt to install a second DB2TRAN definition explicitly referring to the same transaction ID will fail.

The DB2TRAN definition allows a DB2ENTRY to have an unrestricted number of transactions associated with it, including names using wildcard characters. You can define any number of DB2TRANs to be associated with a single DB2ENTRY.

Wildcard characters for transaction IDs

Transaction IDs may be coded in generic form using asterisk and plus signs in the following ways:

- An asterisk (*) can be added to a transaction name, or used alone, to produce the effect on any value of making it 'wild'. The transaction name specified with an asterisk at the end of the name represents 0-3 unspecified characters in the transaction ID. For example, a TRansid of “T*” would represent transaction “T”, “TA”, “TAB”, “TABE”.
- A plus sign (+) is allowed in any position to represent any single character.
- An asterisk alone represents any transaction and can act as an alternative pool definition. It differs from a pool by having the additional attribute of the DB2ENTRY of overflowing to the pool when the thread allocation is exhausted.

The rules of matching are that the most specific match is taken. For example, transaction FRED will use DB2ENTRY(1) specifying a generic transaction ID of “FRE*”, rather than DB2ENTRY(2) specifying a generic transaction ID of “F*”. Also a '+' is more specific than a '*', eg “FRE+” is more specific than “FRE*”.

If AUTHTYPE(TX) is specified, the actual TXID is passed to DB2 as the primary authorization ID, and not the name that used wildcard characters.

Note that if a DB2TRAN is defined using a generic transaction ID that includes a wildcard, the INQUIRE DB2TRAN command is unable to identify the individual transactions that match the generic transaction ID. For example, you can issue the command

```
CEMT INQUIRE DB2TRAN(*) TRANSID(ABCD)
```

to see details of the DB2TRAN with which transaction ABCD is associated. However, if the DB2TRAN is defined using a transaction ID 'ABC*', the INQUIRE DB2TRAN command is unable to match the DB2TRAN to the transaction ID 'ABCD', and returns a 'not found' response.

Defining DB2 transactions

You can define DB2TRANs in the following ways:

- Using the CEDA transaction; see “Defining DB2 transactions using CEDA” on page 84.
- Using the DFHCSDUP utility; see *CICS Operations and Utilities Guide*.

- Using the SPI; see the *CICS System Programming Reference*.
- Using the CREATE DB2TRAN command; see the *CICS System Programming Reference*.
- Using CICSPlex SM Business Application Services; see *CICSPlex System Manager Managing Business Applications*.

Defining DB2 transactions using CEDA

From a CICS terminal, enter the following command:

`CEDA DEFINE DB2TRAN(`*`name`*`) GROUP(`*`name`*`)`

The CEDA panel that is displayed when you enter a valid DEFINE DB2TRAN command is:

```
DB2Tran      ==>
Group        ==>
Description  ==>
Entry        ==>
Transid      ==>
```

Figure 5. The DEFINE panel for DB2TRAN

Installing DB2 transaction definitions

This section describes the guidelines for installing and discarding DB2TRAN definitions and the implications of interruptions in partial activity.

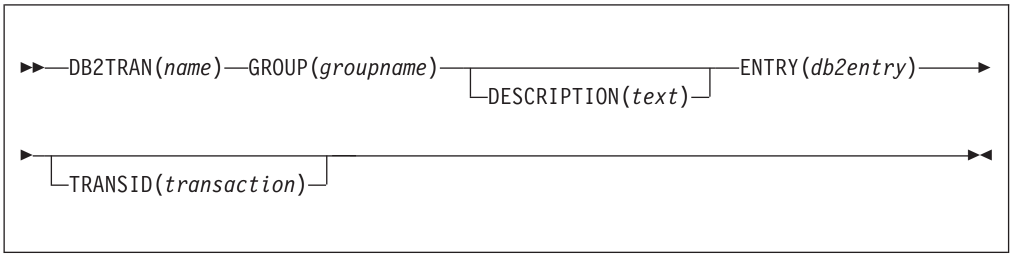
- You cannot install more than one DB2TRAN for the same transaction, if you have given the full transaction ID in the DB2TRAN definition. If you have used a generic transaction ID with a wildcard character, you can install more than one DB2TRAN that potentially matches the transaction, but CICS only uses the closest match (see “Wildcard characters for transaction IDs” on page 83).
- A DB2TRAN that refers to a non-existent DB2ENTRY cannot be installed. The DB2ENTRY must be installed first.
- Note that when DB2ENTRY and DB2TRAN definitions are defined in the same group, CICS installs the DB2ENTRY first at install time.
- You can install a new DB2TRAN at any time, even when the CICS DB2 adapter is connected to DB2.
- A DB2TRAN can be re-installed at any time, and can be discarded at any time.

Checks on definitions of DB2 transaction resources

For a DB2TRAN object, the following checks are made:

- That a DB2TRAN of the same name does not appear in the same list. If one does, a warning message is issued.
- Whether a DB2CONN exists in the group or list. If one does not, a warning message is issued. This may not be an error because the DB2CONN may exist in another group, but a DB2CONN must be installed before a DB2TRAN can be installed.
- Whether the DB2ENTRY specified on the DB2TRAN exists in the group or list. If not, a warning message is issued.
- That the TRANSID specified on the DB2TRAN exists in the group or list. If not, a warning message is issued.

DB2TRAN definition attributes



DB2TRAN(*name*)
The one to eight character name to identify this DB2 transaction definition.

Acceptable characters:

`A-Z a-z 0-9 $ @ # . / - _ % & ¢ ? ! : | " = ¬ , ; < >`

For information about entering mixed case information, see “Entering mixed case attributes” on page 388.

DESCRIPTION(*text*)
You can provide a description of the resource you are defining in this field. The description text can be up to 58 characters in length. There are no restrictions on the characters that you can use. However, if you use parentheses, ensure that for each left parenthesis there is a matching right one. If you use the CREATE command, for each single apostrophe in the text, code two apostrophes.

ENTRY(*db2entry*)
Specifies the name of the DB2 entry definition to which this DB2 transaction definition refers. It is the DB2 entry definition with which this additional transaction should be associated.

GROUP(*groupname*)
Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed.

Acceptable characters:

`A-Z 0-9 $ @ #`

Any lower case characters you enter are converted to upper case.

The GROUP name can be up to eight characters in length. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

TRANSID(*transaction*)
Specifies the transaction id to be associated with the entry. If the TRANSID is not specified it defaults to the first four characters of the DB2 transaction definition name. The transaction id can include wildcard characters (see “Wildcard characters for transaction IDs” on page 83).

Chapter 11. DJAR resource definitions

A DJAR defines an instance of a deployed JAR file, which contains enterprise beans.

The definition identifies a particular instance of a deployed JAR file (in the sense that it is valid to have multiple versions of the same deployed JAR file deployed in different CorbaServers in the same region). The DJAR definition also associates the JAR file instance with its execution environment, the CorbaServer.

A deployed JAR file is an ejb-jar file, containing enterprise beans, on which code generation has been performed and which has been stored on the hierarchical file system (HFS) used by z/OS. When the DJAR definition is installed, CICS copies the deployed JAR file (specified by HFSFILE) into a subdirectory of the HFS shelf directory of the specified CORBASERVER.

Usually, you do not have to code DJAR definitions by hand. Typically, they are created dynamically, by the CICS scanning mechanism.

Defining deployed JAR files

You can define deployed JAR files in the following ways:

- Dynamically, using the CICS scanning mechanism; see “Defining deployed JAR files using the CICS scanning mechanism.”
- Using the CEDA transaction; see “Defining deployed JAR files using CEDA” on page 89.
- Using the DFHCSDUP utility; see *CICS Operations and Utilities Guide*.
- Using the CREATE DJAR command; see the *CICS System Programming Reference*.
- Using CICSPlex SM Business Application Services; see *CICSPlex System Manager Managing Business Applications*

Defining deployed JAR files using the CICS scanning mechanism

To cause deployed JAR files to be defined and installed into a CorbaServer by the CICS scanning mechanism, place them in the CorbaServer's deployed JAR directory. (The deployed JAR directory is specified by the DJARDIR option of the CORBASERVER definition. It is also known as the “pickup” directory.) When the CorbaServer is installed, CICS scans the pickup directory and automatically installs any deployed JAR files it finds there. (This automatic scan occurs regardless of whether the CorbaServer is installed in enabled or disabled state.)

CICS assumes that a file is a deployed JAR if:

1. It has a suffix of `.jar` (in lowercase).
2. Its base filename is between 1 and 32 characters long. By “base filename” we mean the part of the filename before the suffix, and excluding any file path. For example, the base filename of the file `djardir\myDeployedJar.jar` is `myDeployedJar`.

CICS copies any deployed JAR files it finds in the pickup directory to its shelf directory and dynamically creates and installs DJAR definitions for them. The name of the DJAR definition is the name of the deployed JAR file on HFS. For example, a deployed JAR file named `/var/cicsts/pickup/TheThreeBears.jar` results in a DJAR definition named `TheThreeBears`.

After the CorbaServer has been installed, you can:

- Add more deployed JAR files to the pickup directory. CICS installs them:
  - When instructed to by means of an explicit EXEC CICS or CEMT PERFORM CORBASERVER SCAN command. (This command works only when the CorbaServer is in a steady state—that is, when it is in ENABLED or DISABLED state, but *not* when it is in ENABLING, DISABLING, or DISCARDING state .)
  - *Or* when instructed to by the resource manager for enterprise beans (otherwise known as the RM for enterprise beans), which issues a PERFORM CORBASERVER SCAN command on your behalf.
- Put updated versions of deployed JAR files into the pickup directory. When you issue a PERFORM CORBASERVER SCAN command (either explicitly or by means of the RM for enterprise beans), CICS detects that an update has occurred and updates both the LASTMODTIME, DATESTAMP, and TIMESTAMP attributes of the installed DJAR definition and the shelf copy of the deployed JAR file, to reflect the pickup directory change.

  Note:

  1. If you use the scanning mechanism in a production region, be aware of the security implications: specifically, the possibility of CICS command security on DJAR definitions being circumvented. To guard against this, we recommend that user IDs given write access to the HFS deployed JAR file directory should be restricted to those given RACF authority to create and update DJAR and CORBASERVER definitions.
  2. The fact that resource names must be unique in the CSD has implications for the scanning mechanism:
     a. Different CorbaServers in the same CICS region must use different DJARDIR directories. (Otherwise, performing a scan against different CorbaServers would result in multiple sets of identically-named DJAR definitions, each set pointing at a different CorbaServer. CICS rejects all such sets of definitions except the first.)
     b. For the same reason, you must not place an identically-named deployed JAR file into multiple DJARDIR directories in the same CICS region.

        If you want to install the same set of beans into more than one CorbaServer in the same CICS region, you should do one of the following:
        - Name the deployed JAR file differently in each DJARDIR directory.
        - Use static definitions. That is, create multiple (differently-named) static DJAR definitions, pointing at the same deployed JAR file on HFS but at different CorbaServers.
  3. CICS ignores any deployed JAR files in the pickup directory that have the same name *and* the same date and time stamps as currently-installed DJAR resources. A deployed JAR file with the same name but a later date-and-time stamp than an installed DJAR is treated as an update.
  4. You cannot update a statically-installed DJAR definition by means of the scanning mechanism—you must first discard the static definition.

For example, if you have a statically-installed DJAR definition named `myDjar1`, you cannot update it by scanning a deployed JAR file named `myDjar1.jar`.

5. An invalid deployed JAR file is not detected early (when the pickup directory is scanned), but when the EJB environment attempts to open it. The DJAR resource for an invalid JAR file becomes UNRESOLVED. CICS outputs a message to indicate what is wrong with the JAR file. The message is sent to the CICS log and to the "EJB event" user-replaceable program.
6. After every scan of the pickup directory, CICS outputs a message indicating the number of new and the number of updated deployed JAR files found during the scan.

To determine which DJAR resources have been dynamically installed by the scanning mechanism and which statically installed from a CSD or by means of CREATE DJAR, look at the value of the HFSFILE field returned on an INQUIRE DJAR command. If the DJAR has been dynamically installed, the value will begin with the CorbaServer's pickup directory. (You should not put statically-installed deployed JAR files in the pickup directory.) A DJAR name longer than 8 characters will also indicate a dynamically-installed resource.

Defining deployed JAR files using CEDA

From a CICS terminal, enter the following command:

`CEDA DEFINE DJAR(`*name*`) GROUP(`*name*`)`

Figure 6 illustrates the CEDA DEFINE DJAR panel.

```
DJar         ==>
Group        ==>
Description  ==>
Corbaserver  ==>
Hfsfile      ==>
(Mixed Case) ==>
             ==>
             ==>
```

Figure 6. The DEFINE panel for DJAR

For information about input to mixed case fields, see Entering mixed case attributes.

Installing deployed JAR files

How to install deployed JAR files using the CICS scanning mechanism is described in "Defining deployed JAR files using the CICS scanning mechanism" on page 87.

Note:

1. For performance reasons, CICS installs DJAR definitions in two stages. On receipt of an install request, CICS puts the resource into a pending state. Subsequently, possibly after CICS initialization has ended, CICS completes the installation of any pending resources. If this secondary installation stage (which involves copying the deployed JAR file to the HFS shelf directory and parsing the information it contains) fails, the state of the DJAR becomes UNRESOLVED or UNUSABLE. CICS

outputs a message to indicate what is wrong with the JAR file. The message is sent to the CICS log and to the “EJB event” user-replaceable program.

2. For *statically-installed* DJARs (those installed from a CSD or by means of CREATE DJAR), installation of the DJAR fails if the deployed JAR file contains a bean with the same name as a bean which is already installed in the specified CorbaServer.

   For *dynamically-installed* DJARs (those installed by the scanning mechanism), installation of the DJAR fails if:

   a. The deployed JAR file contains a bean with the same name as a bean which is already installed in the specified CorbaServer, and the HFS file names of the two deployed JAR files—the one containing the original bean and the newly-installed one—are *different*. (If they are the same (but with a different date-and-time stamp), CICS treats the newly-deployed JAR file as an update to the previously-installed version.)

   CICS outputs a message to indicate what is wrong with the JAR file. The message is sent to the CICS log and to the “EJB event” user-replaceable program.

3. CSD-installed DJAR definitions must be either in the same group as the CORBASERVER definition to which they refer, or in a group that is installed after the group containing the referenced CORBASERVER definition.

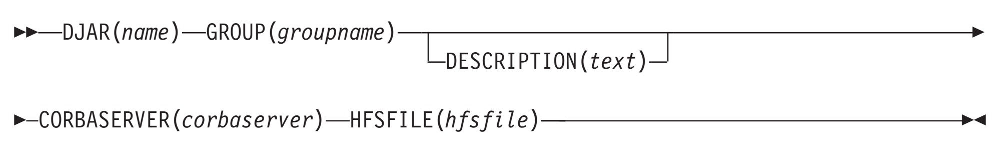
4. When you install a DJAR, CICS checks related resources for consistency:

   - At the end of GROUPLIST installation during CICS initialization.
   - After a group containing a DJAR is installed. In this case, related CORBASERVERs must either be installed before the group containing the DJAR, or as part of the same group.
   - After a DJAR is installed as an individual resource. In this case, related CORBASERVERs must be installed before the DJAR.

5. To update a *static* DJAR definition—that is, to replace an existing CSD-installed definition by installing another of the same name—you must first discard the existing definition.

6. LASTMODTIME, DATESTAMP, and TIMESTAMP are readonly attributes that CICS updates when the DJAR resource is installed or updated; they do not appear on the DEFINE DJAR panel. They can be used to determine whether CICS has refreshed itself after an update is made to a JAR in the pickup directory. The last-modified-time (LASTMODTIME) is a packed-decimal value accessible through the EXEC CICS or CECI INQUIRE DJAR command. The date and time stamps show the same date-and-time information in human-readable form; they are accessible through the CEMT INQUIRE DJAR transaction.

DJAR definition attributes



CORBASERVER(*corbaserver*)

specifies the 1-4 character name of the CorbaServer in which this DJAR is to be installed.

Acceptable characters:

`A-Z a-z 0-9`

For information about entering mixed case information, see “Entering mixed case attributes” on page 388.

DESCRIPTION(*text*)

You can provide a description of the resource you are defining in this field. The description text can be up to 58 characters in length. There are no restrictions on the characters that you can use. However, if you use parentheses, ensure that for each left parenthesis there is a matching right one. If you use the CREATE command, for each single apostrophe in the text, code two apostrophes.

DJAR(*name*)

specifies the 1-8 character name of this DJAR.

Acceptable characters:

`A-Z a-z 0-9 @ # . - _ % & ¢ ? ! : | " = , ; < >`

For information about entering mixed case information, see “Entering mixed case attributes” on page 388.

The names of statically-installed DJARs (those installed from a CSD or by means of CREATE DJAR) have a maximum length of 8 characters.

Note: If you hand-code DJAR definitions, do not use names beginning with DFH, because these characters are reserved for use by CICS.

The names of dynamically-installed DJARs (those installed by the CICS scanning mechanism) have a maximum length of 32 characters. The name of a dynamically-installed DJAR is the name of the deployed JAR file on HFS. For example, a deployed JAR file whose HFS name is `/var/cicsts/pickup/TheThreeBears.jar` results in a DJAR definition named `TheThreeBears`.

GROUP(*groupname*)

Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed.

Acceptable characters:

```
A-Z 0-9 $ @ #
```

Any lower case characters you enter are converted to upper case.

The GROUP name can be up to eight characters in length. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

HFSFILE(*hfsfile*)
specifies the 1-255 character fully-qualified file name of the deployed JAR file on HFS.

Acceptable characters:

```
A-Z a-z 0-9 . / _ # @
```

For information about entering mixed case information, see “Entering mixed case attributes” on page 388.

The name is case-sensitive, and may not contain spaces. The name must not end with a /, and must not contain consecutive instances of the / character.

Chapter 12. DOCTEMPLATE resource definitions

A DOCTEMPLATE resource definition defines the attributes of a *document template*.

A document template is a unit of information that is used to construct a document. A document template can contain fixed text, and symbols that represent text whose value is supplied by an application program. Document templates can be created by a CICS application, or retrieved from an external source. For more information, see *CICS Application Programming Guide*.

The template can reside in one of the following places:

- An MVS partitioned data set (specified by the DDNAME and MEMBERNAME attributes)
- A temporary storage queue (specified by the TSQUEUE attribute)
- A transient data queue (specified by the TDQUEUE attribute)
- A CICS program (specified by the PROGRAM attribute)
- A CICS file (specified by the FILE attribute)
- A z/OS UNIX System Services HFS file (specified by the HFSFILE attribute)

The template can also be returned by an exit program (specified by the EXITPGM attribute).

Defining document templates

You can define document templates in the following ways:

- Using the CEDA transaction; see "Defining document templates using CEDA."
- Using the DFHCSDUP utility; see *CICS Operations and Utilities Guide*.
- Using the CREATE DOCTEMPLATE command; see the *CICS System Programming Reference*.
- Using CICSPlex SM Business Application Services; see *CICSPlex System Manager Managing Business Applications*.

Defining document templates using CEDA

From a CICS terminal, enter the command:

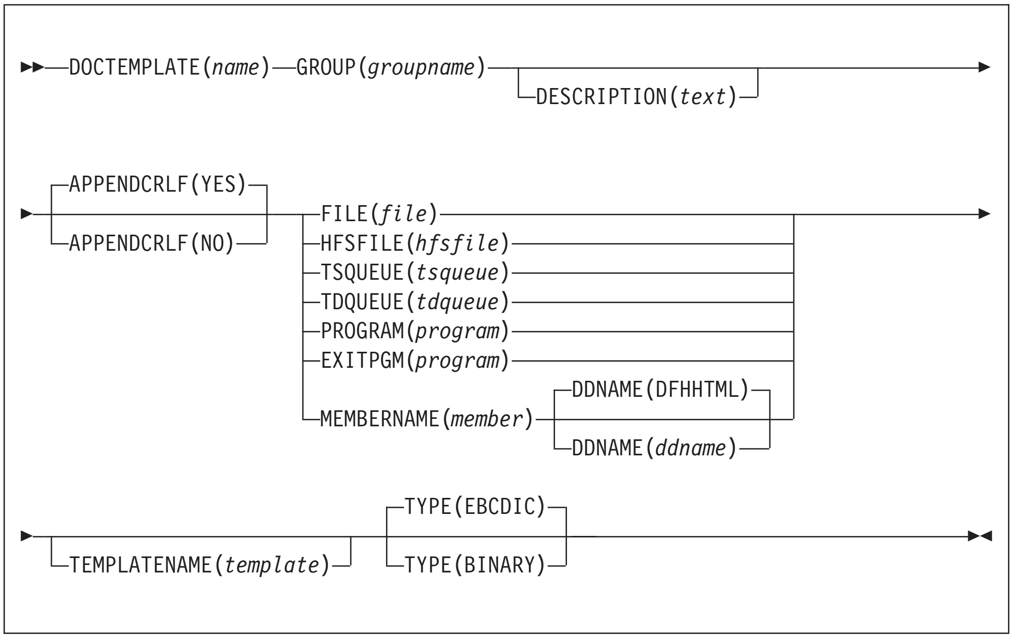
```
CEDA DEFINE DOCTEMPLATE(name) GROUP(name)
```

Figure 7 on page 94 illustrates the CEDA DEFINE DOCTEMPLATE panel:

```
 DOctemplate  ==>
 Group        ==>
 DEscription  ==>
FULL TEMPLATE NAME
 TEmplatename ==>
ASSOCIATED CICS RESOURCE
 File         ==>
 TSqueue      ==>
 TDqueue      ==>
 Program      ==>
 Exitpgm      ==>
PARTITIONED DATA SET
 DDname       ==>
 Membername   ==>
HIERARCHICAL FILE SYSTEM
 Hfsfile      ==>
 (Mixed Case) ==>
              ==>
              ==>
              ==>
TEMPLATE PROPERTIES
 Appendcrlf   ==> Yes              Yes | No
 TYpe         ==> Ebcdic           Binary | Ebcdic
```

Figure 7. The DEFINE panel for DOCTEMPLATE

DOCTEMPLATE definition attributes



APPENDCRLF(YES|NO)
: specifies whether CICS is to delete trailing blanks from and append carriage-return line-feed to each logical record of the template .

DDNAME(DFHHTML|*ddname*)
: when the template resides in an MVS partitioned data set (PDS), specifies the DDname of the PDS. The name can be up to eight characters in length.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters you enter are converted to uppercase.

If you specify a value for the MEMBERNAME attribute, but do not specify a value for DDNAME, the default value of DFHHTML is taken.

If you specify this attribute, you cannot specify EXITPGM, FILE, PROGRAM, TDQUEUE or TSQUEUE.

DESCRIPTION(*text*)
You can provide a description of the resource you are defining in this field. The description text can be up to 58 characters in length. There are no restrictions on the characters that you can use. However, if you use parentheses, ensure that for each left parenthesis there is a matching right one. If you use the CREATE command, for each single apostrophe in the text, code two apostrophes.

DOCTEMPLATE(*name*)
specifies the name of this document template definition. The name can be up to eight characters in length.

Acceptable characters:

`A-Z a-z 0-9 $ @ # . / - _ % & ¢ ? ! : | " = ¬ , ; < >`

For information about entering mixed case information, see "Entering mixed case attributes" on page 388.

EXITPGM(*program*)
specifies the name of an exit program that generates a template. The name can be up to eight characters in length.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters you enter are converted to uppercase.

If you specify this attribute, you cannot specify DDNAME, FILE, MEMBERNAME, PROGRAM, TDQUEUE or TSQUEUE.

FILE(*file*)
when the template resides in a CICS file, specifies the name of the file. The name can be eight characters in length.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters you enter are converted to uppercase.

If you specify this attribute, you cannot specify DDNAME, EXITPGM, MEMBERNAME, PROGRAM, TDQUEUE or TSQUEUE.

GROUP(*groupname*)

Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed.

> **Acceptable characters:**
>
> `A-Z 0-9 $ @ #`
>
> Any lower case characters you enter are converted to upper case.

The GROUP name can be up to eight characters in length. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

HFSFILE(*hfsfile*)

When the template resides in a z/OS UNIX System Services HFS file, this specifies the fully qualified (absolute) or relative name of the HFS file. The name can be specified as an absolute name including all directories and beginning with a slash, for example, `/u/facts/images/bluefish.jpg`. Alternatively, it can be specified as a name relative to the HOME directory of the CICS region userid, for example, `facts/images/bluefish.jpg`. Up to 255 characters can be used.

> **Acceptable characters:**
>
> `A-Z a-z 0-9 $ @ # . / - _ % & ¢ ? ! : | " = ¬ , ; < >`
>
> For information about entering mixed case information, see “Entering mixed case attributes” on page 388.

If you specify this attribute, you cannot specify DDNAME, EXITPGM, MEMBERNAME, PROGRAM, TDQUEUE or TSQUEUE.

Note: The CICS region must have permissions to access z/OS UNIX, and it must have permission to access the HFS directory containing the file, and the file itself. Giving CICS regions access to z/OS UNIX System Services and HFS directories and files explains how to grant these permissions.

MEMBERNAME(*member*)

when the template resides in an MVS partitioned data set (PDS), specifies the name of the member containing the template. The name can be up to eight characters in length.

> **Acceptable characters:**
>
> `A-Z 0-9 $ @ #`
>
> Unless you are using the CREATE command, any lowercase characters you enter are converted to uppercase.

If you specify this attribute, you cannot specify EXITPGM, FILE, PROGRAM, TDQUEUE or TSQUEUE.

PROGRAM(*program*)

when the template resides in a CICS program, specifies the name of the program. The name can be up to eight characters in length.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters you enter are converted to uppercase.

If you specify this attribute, you cannot specify DDNAME, EXITPGM, FILE, MEMBERNAME, TDQUEUE or TSQUEUE.

TDQUEUE(*tdqueue*)

when the template resides in a transient data queue, specifies the name of the queue. The name can be up to four characters in length.

Acceptable characters:

`A-Z a-z 0-9 $ @ # . / - _ % & ¢ ? ! : | " = ¬ , ; < >`

For information about entering mixed case information, see “Entering mixed case attributes” on page 388.

If you specify this attribute, you cannot specify DDNAME, EXITPGM, FILE, MEMBERNAME, PROGRAM, or TSQUEUE.

TEMPLATENAME(*template*)

specifies the name by which the template is known to application programs that use it. The name can be up to 48 characters in length.

Acceptable characters:

`A-Z a-z 0-9 $ @ # . / - _ % & ¢ ? ! : | " = ¬ , ; < >`

For information about entering mixed case information, see “Entering mixed case attributes” on page 388.

If you do not specify a value for this attribute, the value of the DOCTEMPLATE attribute is used, extended on the right with blanks.

TSQUEUE(*tsqueue*)

when the template resides in a temporary storage queue, specifies the name of the queue. The name can be up to 16 characters in length.

Acceptable characters:

`A-Z a-z 0-9 $ @ # . / - _ % & ¢ ? ! : | " = ¬ , ; < >`

For information about entering mixed case information, see “Entering mixed case attributes” on page 388.

If you specify this attribute, you cannot specify DDNAME, EXITPGM, FILE, MEMBERNAME, PROGRAM, or TDQUEUE.

TYPE({**EBCDIC**|**BINARY**})

specifies the format of the contents of the template.

BINARY

When the template is loaded from the template library, no parsing of the template's contents is done.

EBCDIC

When the template is loaded from the template library, the contents are parsed as EBCDIC text.

Chapter 13. ENQMODEL resource definitions

An ENQMODEL defines a named resource for which the **`EXEC CICS ENQ`** and **`EXEC CICS DEQ`** commands have a sysplex-wide scope.

Combined with an ENQMODEL resource definition, CICS uses MVS global resource serialization to provide sysplex-wide protection of application resources.

Local enqueues within a single CICS region are managed within the CICS address space. Sysplex-wide enqueues that affect more than one CICS region are managed by GRS.

The ENQSCOPE attribute of an ENQMODEL resource definition, defines the set of regions that share the same enqueue scope. If the ENQSCOPE attribute is left blank (the default value), CICS treats any matching ENQ or DEQ as local to the issuing CICS region. If the ENQSCOPE is non-blank, CICS treats the ENQ or DEQ as sysplex-wide and passes a queue name and the resource name to GRS to manage the enqueue.

The CICS regions that need to use sysplex-wide enqueue or dequeue function must all have the required ENQMODELs defined and installed. The recommended way to ensure this is for the CICS regions to share a CSD, and for the initialization group lists to include the same ENQMODEL groups.

Existing applications can use sysplex enqueues simply by defining appropriate ENQMODELs, without any change to the application programs. Those existing applications where the resource name is determined dynamically and not known in advance can only be so converted by use of the global user exit XNQEREQ and the parameter UEPSCOPE (see the *CICS Customization Guide* for details).

In a multi-tasking, multi-processing environment, resource serialization is the technique used to coordinate access to resources that are used by more than one program. MVS global resource serialization (GRS) provides a way to control access to such resources.

GRS combines systems into a global resource serialization complex, consisting of one or more systems that are:

- Connected to each other in a ring configuration
- Connected to a coupling facility lock structure in a star configuration
-

Recommendation: For reasons of performance, a ring configuration is not recommended for production regions in a multisystem environment. You should use a star configuration only in a multisystem sysplex. Note that a coupling facility is required for a star configuration.

You can display sysplex ENQUEUEs using GRS facilities with the Display GRS command. This command has many optional keywords, but for this purpose you can use:

```
D  GRS,RES=(DFHEqname|*,[  rname|,*])
```

where:

qname
specifies a 4-character ENQSCOPE defined by an ENQMODEL

rname
specifies an ENQNAME defined by an ENQMODEL

Defining enqueue models

You can define ENQMODELs in the following ways:

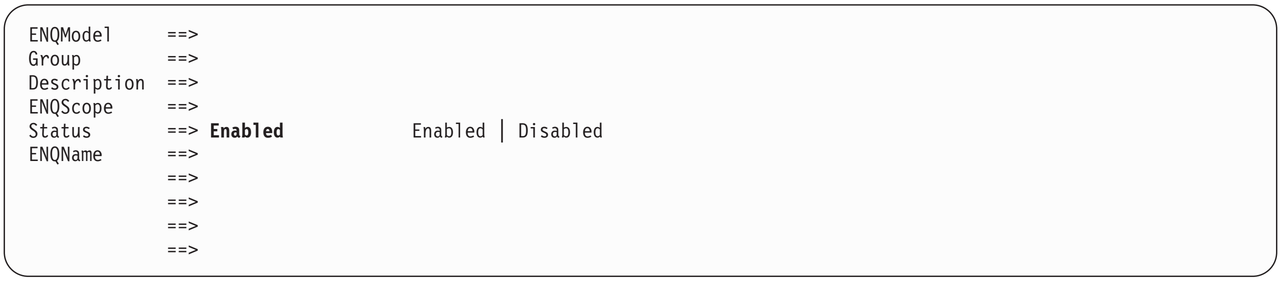
- Using the CEDA transaction; see "Defining enqueue models using CEDA."
- Using the DFHCSDUP utility; see *CICS Operations and Utilities Guide*.
- Using the CREATE ENQMODEL command; see the *CICS System Programming Reference*.
- Using CICSPlex SM Business Application Services; see *CICSPlex System Manager Managing Business Applications*.

Defining enqueue models using CEDA

From a CICS terminal, enter the following command:

`CEDA DEFINE ENQMODEL(name) GROUP(name)`

The CEDA panel that is displayed when you enter a valid DEFINE ENQMODEL command is:



```
ENQModel     ==>
Group        ==>
Description  ==>
ENQScope     ==>
Status       ==> Enabled           Enabled | Disabled
ENQName      ==>
             ==>
             ==>
             ==>
             ==>
```

Figure 8. The DEFINE panel for ENQMODEL

Installing enqueue model definitions

As ENQMODELs usually have the default status of *ENABLED*, the order of installing ENQMODELs must follow the rules for ENABLING ENQMODELs; that is, ENQMODELs forming nested generic ENQnames must be enabled in order from the most to the least specific. For example, ABCD* then ABC* then AB*.

ENQMODEL definition attributes

```
►►──ENQMODEL(name)──GROUP(groupname)──┬──────────────────┬──────────────►
                                      └─DESCRIPTION(text)─┘

                                       ┌─STATUS(ENABLED)──┐
►─ENQNAME(resource)──┬────────────────┬─┼──────────────────┼──────────►◄
                     └─ENQSCOPE(scope)─┘ └─STATUS(DISABLED)─┘
```

DESCRIPTION(*text*)
You can provide a description of the resource you are defining in this field. The description text can be up to 58 characters in length. There are no restrictions on the characters that you can use. However, if you use parentheses, ensure that for each left parenthesis there is a matching right one. If you use the CREATE command, for each single apostrophe in the text, code two apostrophes.

ENQMODEL(*name*)
specifies the name of this ENQMODEL definition. The name can be up to eight characters in length.

Acceptable characters:

`A-Z a-z 0-9 $ @ # . / - _ % & ¢ ? ! : | " = ¬ , ; < >`

For information about entering mixed case information, see "Entering mixed case attributes" on page 388.

This name is used to identify the ENQMODEL definition on the CSD file. It is not used within the active CICS system.

ENQNAME(*resource*)
specifies the 1 to 255-character resource name.

Acceptable characters:

`A-Z a-z 0-9 $ @ # . / - _ % & ¢ ? ! : | " = ¬ , ; < >`

For information about entering mixed case information, see "Entering mixed case attributes" on page 388.

You can also use a * (asterisk) as the last character, to denote a generic name.

ENQSCOPE(*scope*)
specifies the optional 4-character enqueue model scope name. If omitted or specified as blanks, matching enqueue models will have a local scope.

GROUP(*groupname*)
Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed.

Acceptable characters:

```
A-Z 0-9 $ @ #
```

Any lower case characters you enter are converted to upper case.

The GROUP name can be up to eight characters in length. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

STATUS({ENABLED|DISABLED})
specifies whether the enqueue model is to be installed in ENABLED or DISABLED status. ENABLED is the default.

ENABLED
Matching enqueue requests are processed in the normal way.

DISABLED
Matching enqueue requests are rejected, and the issuing task is abended. Matching INSTALL CREATE and DISCARD requests are processed.

Chapter 14. FILE resource definitions

A FILE resource defines the physical and operational characteristics of a file.

The FILE definition includes attributes that provide information about record characteristics, the types of operations allowed on the file, recovery attributes, and the operations that are to be journaled. CICS files usually correspond to physical data sets that must have been defined to VSAM before they are used. Using CICS files, your applications can:

- Access records in the data set directly
- Access records in a data table that has been loaded from the data set
- Access records in a coupling facility data table where there is no data set involved (because LOAD(NO) is specified on the CFDT file definition).

The following resources associated with CICS files can be managed using RDO:

- VSAM files (this includes files that refer to CICS-maintained, user-maintained, and coupling facility data tables as well as files that refer to VSAM data sets)
- Remote VSAM files
- Remote BDAM files
- VSAM local shared resource (LSR) pools

For the file to be used by an active CICS system, its definition must have been installed on to the system. CICS file control uses the installed definition to find the file when it needs to access it, to keep count of the number of tasks using the file, to capture processing statistics, and maintain other file control information.

Remote files

When multiple CICS systems are connected, they can share each other's files; all such files must be defined to CICS, including those belonging to another system. Files on other systems are defined as 'remote'. (This does not apply to files accessed in RLS mode, or coupling facility data tables, which are always defined as local files. Remote files are accessed through CICS function shipping of file control requests to the remote region that owns the file.)

The resource attributes needed by CICS for remote files are not specific to the access method used. You can therefore define both remote BDAM files and remote VSAM files using RDO.

If you name a REMOTESYSTEM, you may also supply a REMOTENAME, which is the name of the file used in the remote system.

If you specify a REMOTESYSTEM name that corresponds to the SYSIDNT of the CICS region in which the file definition is installed, CICS installs the definition as a local file. Otherwise, CICS installs the definition as a remote file.

When a file definition is installed as a remote file, only the following attributes are used:

REMOTESYSTEM
REMOTENAME
RECORDSIZE
KEYLENGTH

The other attributes are used when the same file definition is installed as a local definition. For more information, see the *CICS Intercommunication Guide*.

Coupling facility data tables

Coupling facility data table support provides a method of file data sharing, using CICS file control, without the need for a file-owning region, and without the need for VSAM RLS support. Data is held in a coupling facility list structure, in a table that is similar in many ways to a shared user-maintained data table.

Unlike user-maintained data tables, coupling facility data tables do not have to be pre-loaded from a source data set. Loading a coupling facility data table is controlled by the DSNAME and LOAD attributes of the file resource definition, which allows CFDTs to be populated entirely by the application programs that use them by specifying LOAD(NO).

The way you use LOAD(YES) and the DSNAME attributes allows you to control loading of a CFDT in various ways, such as:

1. Any CICS region can load the coupling facility data table. The first file open for the CFDT loads it, regardless of which CICS region issues the open. The data set is opened read-only by the loading CICS. All file definitions for the table specify LOAD(YES) and the DSNAME of a source data set. If you use this approach, ensure that the same data set is named on each file definition, otherwise the data set named on the first to be opened is the one that is loaded into the CFDT. CICS does not verify that the DSNAMEs are the same for all files that refer to the same CFDT.
2. One CICS region can be made responsible for loading the coupling facility data table. The loading region contains a file definition for the CFDT that specifies LOAD(YES) and the DSNAME for the data set, which is opened read-only by the loading CICS. Other CICS regions do not need access to the source data set, but they cannot open the CFDT until the loading region has opened it. The file definitions for the CFDT in non-loading regions must also specify LOAD(YES) but omit the DSNAME.

   You can restrict access to a coupling facility data table until after it has been loaded by using two (or more) file names that refer to the same coupling facility data table. To control access in this way:

   - Define only one file name as being capable of loading the data table, by specifying LOAD(YES) and DSNAME(*dataset_name*) Do not refer to this file name from application programs.
   - Define another file (or files) for application program use, ensuring that this file definition cannot initiate table loading. Specify LOAD(YES), but ensure the data set name is not specified on the DSNAME attribute, and that there is no DD statement for this file (or files).
   - Ensure that the load-capable file is opened before any application programs are likely to require access to the data table. For example, define the table-loading file name with OPENTIME(STARTUP) to ensure that the file is opened automatically toward the end of CICS initialization.
   - Ensure that application programs access the data table by referring to a filename that does not load the data.
3. Some hybrid of the above two approaches can be used, where some CICS regions can load the table, and others require it to be loaded on their behalf.

Shared data tables

For detailed information on defining CICS-maintained data tables and user-maintained data tables (collectively referred to as *shared data tables*), please see *CICS Shared Data Tables Guide*.

Defining files

You can define files in the following ways:

- Using the CEDA transaction; see "Defining files using CEDA."
- Using the DFHCSDUP utility; see *CICS Operations and Utilities Guide*.
- Using the CREATE FILE command; see the *CICS System Programming Reference*.
- Using CICSPlex SM Business Application Services; see *CICSPlex System Manager Managing Business Applications*.

Defining files using CEDA

From a CICS terminal, enter the command:

```
CEDA DEFINE FILE(name) GROUP(name)
```

The CEDA panel displayed when you enter a valid DEFINE FILE command is:

```
 File         ==>
 Group        ==>
 DEScription  ==>
VSAM PARAMETERS
 DSNAme       ==>
 Password     ==>                    PASSWORD NOT SPECIFIED
 RLsaccess    ==> No                 Yes|No
 LSrpoolid    ==> 1                  1-8 | None
 READInteg    ==> Uncommitted        Uncommitted|Consistent|Repeatable
 DSNSharing   ==> Allreqs            Allreqs | Modifyreqs
 STRings      ==> 001                1 - 255
 Nsrgroup     ==>
REMOTE ATTRIBUTES
 REMOTESystem ==>
 REMOTEName   ==>
REMOTE AND CFDATATABLE PARAMETERS
 RECORDSize   ==>                    1 - 32767
 Keylength    ==>                    1 - 255 (1-16 For CF Datatable)
INITIAL STATUS
 STAtus       ==> Enabled            Enabled | Disabled | Unenabled
 Opentime     ==> Firstref           Firstref | Startup
 DIsposition  ==> Share              Share | Old
BUFFERS
 DAtabuffers  ==>                    2 - 32767
 Indexbuffers ==>                    1 - 32767
DATATABLE PARAMETERS
 TABLE        ==> No                 No | CIcs | User | CF
 Maxnumrecs   ==> Nolimit            Nolimit | 1-99999999
CFDATATABLE PARAMETERS
 Cfdtpool     ==>
 TABLEName    ==>
 UPDATEModel  ==> Locking            Contention | Locking
 LOad         ==> No                 No | Yes
DATA FORMAT
 RECORDFormat ==> V                  V | F
OPERATIONS
 Add          ==> No                 No | Yes
 BRowse       ==> No                 No | Yes
 DELete       ==> No                 No | Yes
 READ         ==> Yes                Yes | No
 UPDATE       ==> No                 No | Yes
AUTO JOURNALING
 JOurnal      ==> No                 No | 1 - 99
 JNLRead      ==> None               None | Updateonly | Readonly | All
 JNLSYNCRead  ==> No                 No | Yes
 JNLUpdate    ==> No                 No | Yes
 JNLAdd       ==> None               None | Before | AFter |All
 JNLSYNCWrite ==> Yes                Yes | No
RECOVERY PARAMETERS
 RECOVery     ==> None               None | Backoutonly | All
 Fwdrecovlog  ==> No                 No | 1-99
 BAckuptype   ==> STAtic             STAtic | DYNamic
SECURITY
 RESsecnum      : 00                 0-24 | Public
```

Figure 9. The DEFINE panel for FILE

Installing file definitions

The following procedure uses the CICS CEMT and CEDA transactions to install a FILE definition:

1. If the file already exists, ensure that it is closed and disabled:

   `CEMT SET FILE(`*filename*`) CLOSED DISABLED`

2. Install the file definition:

   `CEDA INSTALL GROUP(`*groupname*`) FILE(`*filename*`)`

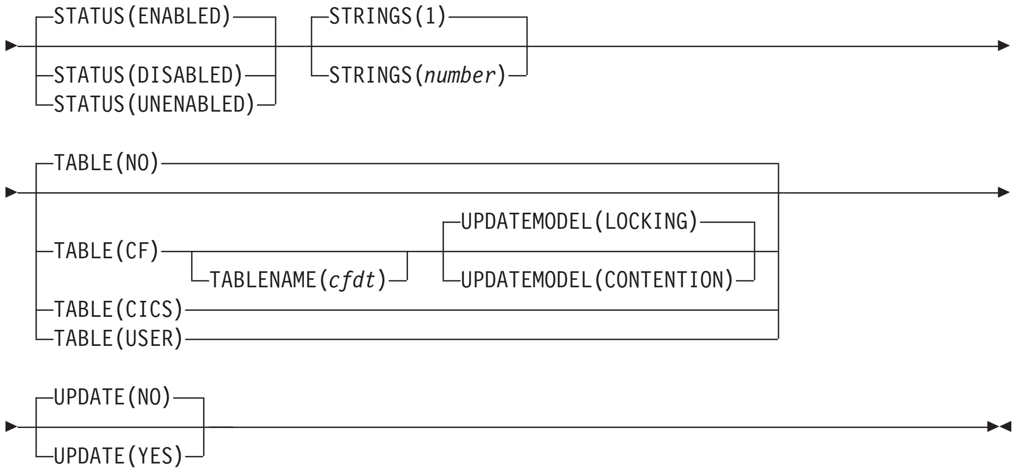
3. When you have successfully installed the group containing the file, use CEMT to open and enable the file (if it is not already defined as enabled, and if you want to open the file explicitly):

   ```
   CEMT SET FILE(filename) OPEN ENABLED
   ```

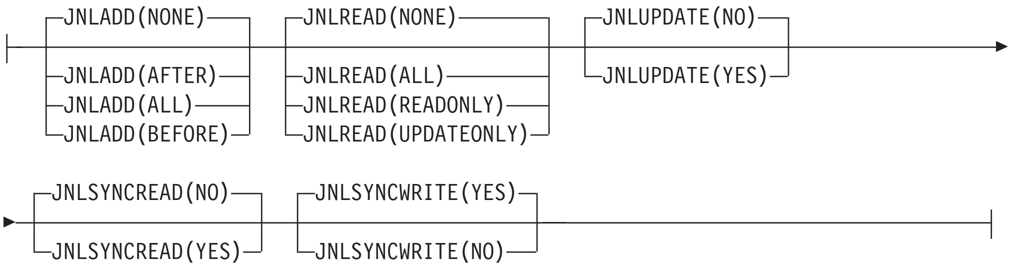
As an alternative to CEMT, you can use the EXEC CICS SET FILE command in a user-written transaction to disable and enable the file.

FILE definition attributes

```
                                                          ┌─ADD(NO)──┐
►►──FILE(name)──GROUP(groupname)──┬────────────────────┬──┼──────────┼─────────►
                                  └─DESCRIPTION(text)──┘  └─ADD(YES)─┘

   ┌─BACKUPTYPE(STATIC)──┐ ┌─BROWSE(NO)──┐
►──┼─────────────────────┼─┼─────────────┼──┬─────────────────────┬─────────────►
   └─BACKUPTYPE(DYNAMIC)─┘ └─BROWSE(YES)─┘  └─CFDTPOOL(cfdtpool)──┘

   ┌─DATABUFFERS(2)──────┐ ┌─DELETE(NO)──┐ ┌─DISPOSITION(SHARE)─┐
►──┼─────────────────────┼─┼─────────────┼─┼────────────────────┼───────────────►
   └─DATABUFFERS(value)──┘ └─DELETE(YES)─┘ └─DISPOSITION(OLD)───┘

                          ┌─DSNSHARING(ALLREQS)────┐ ┌─FWDRECOVLOG(NO)───────┐
►──┬───────────────────┬──┼────────────────────────┼─┼───────────────────────┼──►
   └─DSNAME(dsname)────┘  └─DSNSHARING(MODIFYREQS)─┘ └─FWDRECOVLOG(journal)──┘

   ┌─INDEXBUFFERS(1)───────┐ ┌─JOURNAL(NO)─────────────────────────────────────┐
►──┼───────────────────────┼─┼─────────────────────────────────────────────────┼►
   └─INDEXBUFFERS(number)──┘ └─JOURNAL(journal)──┤ Journaling attributes ├─────┘

                          ┌─LOAD(NO)──┐  ┌─LSRPOOLID(1)───────┐
►──┬───────────────────┬──┼───────────┼──┼────────────────────┼─────────────────►
   └─KEYLENGTH(value)──┘  └─LOAD(YES)─┘  ├─LSRPOOLID(NONE)────┤
                                         └─LSRPOOLID(lsrpool)─┘

   ┌─MAXNUMRECS(NOLIMIT)─┐                         ┌─OPENTIME(FIRSTREF)─┐
►──┼─────────────────────┼──┬───────────────────┬──┼────────────────────┼───────►
   └─MAXNUMRECS(number)──┘  └─NSRGROUP(group)───┘  └─OPENTIME(STARTUP)──┘

                           ┌─READ(YES)─┐  ┌─READINTEG(UNCOMMITTED)─┐
►──┬────────────────────┬──┼───────────┼──┼────────────────────────┼────────────►
   └─PASSWORD(password)─┘  └─READ(NO)──┘  ├─READINTEG(CONSISTENT)──┤
                                          └─READINTEG(REPEATABLE)──┘

   ┌─RECORDFORMAT(V)─┐                          ┌─RECOVERY(NONE)────────┐
►──┼─────────────────┼──┬────────────────────┬──┼───────────────────────┼───────►
   └─RECORDFORMAT(F)─┘  └─RECORDSIZE(number)─┘  ├─RECOVERY(ALL)─────────┤
                                                └─RECOVERY(BACKOUTONLY)─┘

                                                          ┌─RLSACCESS(NO)──┐
►──┬───────────────────────────────────────────────────┬──┼────────────────┼────►
   └─REMOTESYSTEM(connection)──┬────────────────────┬──┘  └─RLSACCESS(YES)─┘
                               └─REMOTENAME(file)───┘
```



Journaling attributes:



ADD({NO|**YES**})
specifies whether records can be added to the file.

BACKUPTYPE({**STATIC**|**DYNAMIC**})
CICS VSAM files can be defined as eligible for backup while open for update. This attribute is not used for files defined with RLSACCESS(YES), or if the recovery options are defined in the ICF catalog. For files that are accessed in RLS mode, you must specify the backup type on the data set definition in the ICF catalog.

This attribute is ignored for coupling facility data tables and, if there are any recovery attributes defined in the ICF catalog for a source data set associated with the table, these also are ignored. A CFDT is not eligible for backup-while-open (BWO).

Possible values are:

DYNAMIC
Specify this along with the RECOVERY attribute of ALL to make the file eligible for backup while open for update.

STATIC
The file is not eligible for backup while open for update.

BROWSE({**NO**|**YES**})
specifies whether records can be retrieved sequentially from the file.

CFDTPOOL(*cfdtpool*)
specifies the name of the coupling facility data table pool containing the table defined by this file definition. This attribute is required if you specify TABLE(CF).

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters you enter are converted to uppercase.

Coupling facility data tables can be separated (for purposes of accounting, security, administration, and so on) into groups (pools) of CFDTs. The names of all coupling facility data table pools must be unique within the sysplex, but can be the same as the names of other types of pools, such as TS data sharing pools.

Opening a file that references a coupling facility data table requires that a coupling facility data table server for the named pool is running in the MVS in which the open request is issued. If the required server has not been started, the file open request fails.

Note: The CFDTPOOL attribute is meaningful only for CFDTs. You can specify a pool name for a file that is not defined as TABLE(CF), but CICS ignores it. If you subsequently alter the file definition to reference a coupling facility data table, the CFDTPOOL name comes into effect.

DATABUFFERS({**2**|*value*})
specifies the number of buffers to be used for data. Use a value in the range 2 (the default) through 32767. The minimum value you can specify is one more than the number of strings defined in the STRINGS attribute.

DELETE({**NO**|**YES**})
specifies whether records can be deleted from the file.

DESCRIPTION(*text*)
You can provide a description of the resource you are defining in this field. The description text can be up to 58 characters in length. There are no restrictions on the characters that you can use. However, if you use parentheses, ensure that for each left parenthesis there is a matching right one. If you use the CREATE command, for each single apostrophe in the text, code two apostrophes.

DISPOSITION({**SHARE**|**OLD**})
specifies the disposition of this file.

OLD Equivalent to the DISP=OLD parameter in JCL.

SHARE
Equivalent to the DISP=SHR parameter in JCL.

DSNAME(*dsname*)
specifies the data set name (as known to the operating system) to be used for this file. DSNAME can be 1 through 44 characters, conforming to the rules for MVS data set names (see the DSNAME parameter in the z/OS MVS JCL Reference).

Acceptable characters:

`A-Z 0-9 $ @ # . -`

Any lowercase characters you enter are converted to uppercase.

At file open time, if no JCL statement exists for this file, the open is preceded by a dynamic allocation of the file using this DSNAME. If the file definition refers to a data table (CICS, USER, or CF) the DSNAME must be that of a VSAM base KSDS. It cannot be a path or alternate index data set.

The DSNAME specified on a DD statement for this file in the CICS start-up JCL takes precedence over the DSNAME specified in this file definition.

Coupling facility data tables

If the file definition specifies LOAD(YES) and it is not already opened, DSNAME specifies the name of the source data set from which the table is to be loaded. Alternatively, you can specify the source data set on a DD statement in the CICS startup JCL. The data set specified must be a VSAM base KSDS.

If there is a path or alternate index associated with the source data set, then any updates made via the file will not be reflected in either the source data set or its associated alternate indexes. A coupling facility data table is entirely independent of its source data set after loading has completed.

If you want table loading to be initiated by the opening of another file specified by a different file definition, omit this attribute. In this case, also ensure that the file name is not specified on a DD statement in the CICS JCL. Attempts to open the file fail until CFDT loading has been initiated. For more information about loading a coupling facility data table from a data set, see "Coupling facility data tables" on page 104.

If LOAD(NO) is specified, this attribute is not required and is ignored.

DSNSHARING({**ALLREQS**|**MODIFYREQS**})

specifies whether VSAM data set name sharing is used for the VSAM file. The possible values are:

ALLREQS

Data set name sharing is set in the ACB when the file is opened and is therefore used for all file requests.

MODIFYREQS

Data set name sharing is set in the ACB when the file is opened only if an operation of DELETE, ADD, or UPDATE is set for the file.

FILE(*name*)

specifies the name of the file. The name can be up to eight characters in length.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters you enter are converted to uppercase.

| The name must not start with a numeric character.

FWDRECOVLOG({**NO**|*journal*})

specifies the journal that corresponds to the MVS system logger log stream that is to be used for forward recovery.

This attribute is ignored for coupling facility data tables and, if there are any recovery attributes defined in the ICF catalog for a source data set associated with the table, these also are ignored. A CFDT is not forward recoverable.

NO Forward recovery logging is not required for this file.

journal The number that identifies the journal that CICS is to use for the forward recovery log. CICS journal names are of the form DFHJ*nn* where *nn* is in the range 1 through 99. The after images for forward recovery are written to the MVS log stream that corresponds to journal name DFHJ*nn*.

Note: In CICS Transaction Server for z/OS, DFHJ01 is not the system log.

This attribute is used by CICS only if:

- RECOVERY(ALL) is specified
- RLSACCESS(NO) is specified
- No recovery attributes are defined in the ICF catalog

If you define the recovery attributes for a file in the ICF catalog entry for the corresponding data set, CICS always uses the ICF catalog recovery attributes and ignores those in the file definition. You can alter the recovery attributes defined in the ICF catalog by using the IDCAMS ALTER command. This is not prevented while there are ACBs open for a data set. However, if you change the recovery attributes, be aware of the possible effect on data integrity.

CICS takes a copy of the recovery attributes for a data set from the ICF catalog on the first open-for-update in a sequence of open requests for a data set. This means that a single CICS region is not affected by an update to recovery attributes. However, if a data set is opened in RLS mode and the attributes on the ICF catalog are modified, a second CICS region could open the same data set for update and copy a different set of attributes, with a risk to data integrity.

If you need to alter recovery attributes defined in the ICF catalog (for example, to change the forward recovery log stream name), quiesce the data set before making any changes. This ensures that the data set cannot be used in RLS mode until you have made the change and unquiesced the data set.

GROUP(*groupname*)

Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed.

Acceptable characters:

`A-Z 0-9 $ @ #`

Any lower case characters you enter are converted to upper case.

The GROUP name can be up to eight characters in length. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

INDEXBUFFERS({<u>1</u>|*number*})

specifies the number of buffers to be used for the index. Use a value in the range 1 through 32767. The minimum value you can specify is the number of strings defined in the STRINGS attribute.

JNLADD({<u>**NONE**</u>|**BEFORE**|**AFTER**|**ALL**})

specifies the add operations you want recorded on the journal nominated by the JOURNAL attribute. Possible values are:

AFTER

Journal the file control write operation after the VSAM I/O operation.

ALL Journal the file control write operation both before and after the VSAM I/O operation has completed.

BEFORE
Journal the file control write operation before the VSAM I/O operation.

NONE Do not journal add operations.

JNLREAD({NONE|UPDATEONLY|READONLY|ALL})
specifies the read operations you want recorded on the journal nominated by the JOURNAL attribute. Possible values are:

ALL Journal all read operations.

NONE Do not journal read operations.

READONLY
Journal only READ ONLY operations (not READ UPDATE operations).

UPDATEONLY
Journal only READ UPDATE operations (not READ ONLY operations).

JNLSYNCREAD({NO|YES})
specifies whether you want the automatic journaling records, written for READ operations to the journal specified by JOURNAL, to be written synchronously or asynchronously.

JNLSYNCWRITE({YES|NO})
specifies whether you want the automatic journaling records, written for WRITE operations to the journal specified by JOURNAL, to be written synchronously or asynchronously.

JNLUPDATE({NO|YES})
specifies whether you want REWRITE and DELETE operations recorded on the journal nominated by the JOURNAL attribute.

JOURNAL({NO|*journal*})
specifies whether you want automatic journaling for this file. The journaled data is in the format of the VSAM record and is used for user controlled journaling.

The data to be journaled is identified by the JNLADD, JNLREAD, JNLSYNCREAD, JNLSYNCWRITE, and JNLUPDATE attributes.

For a CICS-maintained data table, journaling is performed only for requests that result in VSAM I/O requests.

For a user-maintained data table or a coupling facility data table journaling is not performed for any file control operations. However, although automatic journaling for these tables is not supported, if you specify a journal number, CICS tries to open the log stream for the specified journal when opening the file.

Note: Automatic journaling is independent of logging to the system and forward recovery logs, as specified by the RECOVERY and FWDRECOVLOG attributes.

Possible values are:

NO No automatic journaling is to take place for this file.

number
The number that identifies the journal that CICS is to use for the autojournal. CICS journal names are of the form DFHJ*nn*, where *nn* is in the range 1 through 99.

Note: In CICS Transaction Server for z/OS, DFHJ01 is not the system log.

KEYLENGTH(*value*)
specifies the length in bytes of the logical key of records in remote files, and in coupling facility data tables that are specified with LOAD(NO).

If KEYLENGTH is not defined here, the KEYLENGTH option must be specified on file control commands in the application programs that refer to this file. If KEYLENGTH is not defined here and not specified in the application program, and the key is longer than 4 characters, the default value is 4.

Remote files
The range for key length is 1 through 255.

Coupling facility data tables
The range for key length is 1 through 16. Key length is required only if LOAD(NO) is specified.

You can, optionally, specify a key length for coupling facility data tables specified with LOAD(YES), in which case you should be aware of the following:

- The key length is obtained from the ICF catalog entry for the data set from which the table is loaded. If you specify a key length, the key length must match that specified for the source data set, otherwise attempts to open the file fail with an error message.
- If, when opening the file, CICS finds that the CFDT has already been created, and the key length is different from that used when loading the data set, the open fails.

If you specify a key length for a file that is not a remote file, or does not refer to a CFDT, it has no effect unless the file is redefined, either as a remote file or to reference a CFDT. Note, however, that if you specify a key length, the value returned by an INQUIRE FILE command is as follows:

- If the file is open, CICS returns the value obtained from VSAM, which can be different from that specified on the file definition.
- If the file is closed, CICS returns the value specified on the file definition.

The value for this attribute must be the same throughout the sysplex in all file definitions that reference the same coupling facility data table.

LOAD({**NO**|**YES**})
specifies whether the coupling facility data table is to be loaded from a source data set when first opened.

NO Means the coupling facility data table does not require loading from a source data set; it is fully usable by application programs as soon as it is open. The table is loaded by the application programs that use it, which is the default method for a coupling facility data table.

YES Means the coupling facility data table has to be loaded from a source data set before it is fully usable; the application programs that use this coupling facility data table rely on it containing the records from a source data set. Loading does not have to be completed before data can accessed.

This attribute is meaningful only for files defined with the TABLE(CF) attribute. You can specify the LOAD attribute for a file that is not defined as TABLE(CF), but CICS ignores it. (CICS-maintained and user-maintained tables are loaded automatically always from a source data set.) If you subsequently alter the file definition to reference a coupling facility data table, the LOAD attribute comes into effect.

Ensure that the value for this attribute is the same throughout the sysplex in all file definitions that reference the same coupling facility data table.

For more information about using this attribute, see “Coupling facility data tables” on page 104.

LSRPOOLID({1|2|3|4|5|6|7|8|NONE})

specifies the identity of the local shared resource pool. The default value for LSRPOOLID is 1, unless a value has been specified for the NSRGROUP attribute, in which case the default value for LSRPOOLID is NONE.

NONE Specifies that the data set associated with this file uses VSAM nonshared resources (NSR).

Note:

1. You cannot specify NONE for a CICS shared data table (CICS- or user-maintained): both these types of data table must use an LSR pool. However, this restriction does not apply to a coupling facility data table, for which you can specify NONE.
2. VSAM nonshared resources (NSR) are not supported for transactions that use transaction isolation. You should specify ISOLATE(NO) when you define transactions that access VSAM files using NSR.

1|2|3|4|5|6|7|8

The value, in the range 1 through 8, identifies the number of the VSAM shared resource pool that is used by the VSAM data set associated with this file. The data set is defined as using VSAM local shared resources (LSR). You are recommended to define the buffers, strings, and other resources explicitly in an LSRPOOL resource definition that corresponds to this LSRPOOLID.

By default, if the file definition specifies RLSACCESS(YES), the LSRPOOLID is ignored when CICS opens the file. However, if you change a file definition that specifies an LSR pool from RLSACCESS(NO) to RLSACCESS(YES), you are recommended to keep the LSRPOOLID. This ensures that, if the file is switched at any time from RLS to LSR mode, the file correctly references an LSR pool.

MAXNUMRECS({**NOLIMIT**|*number*})

specifies the maximum number of records (entries) to be accommodated in the data table. You can use this attribute to prevent a runaway transaction from using:

- All the storage in the server's pool if the table is a coupling facility data table
- All the storage in the MVS data space if the table is a CICS- or user-maintained table.

This attribute is meaningful only for files defined with 'CICS', 'USER', or 'CF' for the TABLE attribute. You can specify MAXNUMRECS for a file that is defined with TABLE(NO), but it has no effect. If you subsequently alter the file definition to reference a data table, the MAXNUMRECS value comes into effect.

NOLIMIT

There is no user-specified limit placed on the number of records that can be stored in the table. CICS imposes a limit of 2 147 483 647, the maximum fullword value.

number

Specifies the maximum number of records allowed in the table, in the range 1 through 99 999 999.

If you are setting a limit for a recoverable coupling facility data table, specify a value that is about 5 to 10% greater than the maximum number of records the table is expected to contain. This is to allow for additional records that may be created internally for processing recoverable requests. The margin you allow for this internal processing depends on the level of use of the coupling facility data table, and the nature of that use. An effect of this internal processing is that the NOSPACE condition with a RESP2 of 102 can be raised on a WRITE or REWRITE request to a recoverable coupling facility data table that apparently has fewer records than the MAXNUMRECS limit that has been specified for it.

NSRGROUP(*group*)

specifies a symbolic name (up to eight characters) to group together file definitions that refer to the same VSAM base data set. The value is purely symbolic and need not refer to any particular file definition. It is merely necessary that all file definitions that need to be grouped together have the same name. You do not have to specify this attribute to ensure correct processing, but if you do not provide it, performance of your system may be degraded.

The NSRGROUP attribute takes effect only for files referencing data sets that use VSAM nonshared resources. The NSRGROUP attribute must not be coded for a data table. It is associated with the VSAM concept of data set name sharing which causes VSAM to create a single control block structure for the strings and buffers required by all the files that relate to the same base data set.

When the first member of such a group of files is opened, the total number of strings to be allocated for all file entries in the group must be specified to VSAM (by means of the BSTRNO value in the Access Control Block). The VSAM control block structure is built this time regardless of whether the first file to be opened is associated with a path or base data set. The value of BSTRNO is calculated at this time by adding together the STRINGS values in all the file definitions with the same NSRGROUP attribute. After the first file in the group is opened, any new files added to the group do not affect the VSAM control block structure already built. This would change only if all the files open against the base were closed and then re-opened.

Data set name sharing is forced by CICS as the default for all VSAM files. Data set name sharing is not in effect if a file is opened for read-only processing with DSNSHARING=MODIFYREQS. A file with DSNSHARING=MODIFYREQS still, however, contributes to the BSTRNO calculation.

If a file is using VSAM nonshared resources, and you do not provide an NSRGROUP attribute, the VSAM control block structure may be built with insufficient strings for later processing. When this happens, VSAM invokes the dynamic string addition feature to provide the extra control blocks for the strings as they are required. This mechanism is, however, inefficient and the extra storage is not released until the end of the CICS run.

For files specifying that VSAM local shared resources are to be used (LSRPOOLID=n, where n is in the range 1 to 8), NSRGROUP has no effect.

Figure 10 shows an example of how to specify the required file control definition for a VSAM base data set and alternate index path.

```
CEDA DEFINE FILE(VSAM10B)  GROUP(xxxxxx)
            DSNAME(DTGCAT.VSAM10B)
            DISPOSITION(SHARE)  ADD(YES)
            BROWSE(YES)  DELETE(YES)  READ(YES)
            UPDATE(NO)  RECORDFORMAT(F)
            STRINGS(8)  LSRPOOLID(NONE)
            RECOVERY(NONE)  NSRGROUP(GROUP1)
            INDEXBUFFERS(8)  DATABUFFERS(9)
CEDA DEFINE FILE(VSAM10P)  GROUP(xxxxxx)
            DSNAME(DTGCAT.VSAM10P)
            LSRPOOLID(NONE)  DISPOSITION(SHARE)
            STRINGS(5)  NSRGROUP(GROUP1)
            BROWSE(YES)  DELETE(NO)  READ(YES)
            ADD(NO)  UPDATE(NO)  RECORDFORMAT(F)
            RECOVERY(NONE)  INDEXBUFFERS(5)
            DATABUFFERS(6)
```

Figure 10. VSAM base data set and alternate index path definition.

OPENTIME({**FIRSTREF**|**STARTUP**})
specifies when the file is opened. Possible values are:

FIRSTREF
The file remains closed until a request is made to open it by:

- A master terminal command
- An EXEC CICS SET FILE OPEN command in an application program
- An implicit open

STARTUP
The file is opened immediately after CICS initialization by an automatically initiated CICS transaction (CSFU), unless the status of the file is UNENABLED when the file is left closed.

PASSWORD(*password*)
specifies the 1-to 8-character password that is used to verify user access to the file.

CICS masks the password you supply to avoid unauthorized access. You should therefore find a safe way of recording the password.

READ({**YES**|**NO**})
specifies whether records on this file can be read.

READINTEG({**UNCOMMITTED**|**CONSISTENT**|**REPEATABLE**})
specifies the level of read integrity required for files defined with RLSACCESS(YES). Read integrity does not apply to non-RLS access mode files, CICS shared data tables, or coupling facility data tables.

You can use READINTEG to set a default level of read integrity for a file. The default level of read integrity is used by programs that do not specify one of the API read integrity options UNCOMMITTED, CONSISTENT, or REPEATABLE on the READ, READNEXT, or READPREV commands. However, if an application program uses one of these explicitly to specify read integrity, the API option overrides any value specified on this READINTEG attribute.

Note: You can specify read integrity options only on CICS file control API commands or in CICS file resource definitions. You cannot use the equivalent parameter on the DD statement for files opened by CICS.

You can specify CONSISTENT or REPEATABLE in a file resource definition, to make read integrity available to programs written before these options were available on the API, and without having to modify those programs. However, if you do this, be aware that enforcing consistent or repeatable reads can introduce unexpected deadlocks. Programs may also encounter the LOCKED condition.

CONSISTENT

The record is read with consistent read integrity. If the record is being modified by another transaction, the READ request waits until the update is complete, the timing of which depends on whether the data set is recoverable or nonrecoverable:

- For a recoverable data set, the READ request completes when the updating transaction completes its next syncpoint or rollback.
- For a nonrecoverable data set, the READ completes as soon as the VSAM request performing the update completes.

CONSISTENT is valid only if you also specify RLSACCESS(YES)—the resource definition is rejected with an error if you specify CONSISTENT for a non-RLS file.

REPEATABLE

The record is read with repeatable read integrity. If the record is being modified by another transaction, the READ request waits until the update is complete, the timing of which depends on whether the data set is recoverable or nonrecoverable:

- For a recoverable data set, the READ request completes when the updating transaction completes its next syncpoint or rollback.
- For a nonrecoverable data set, the READ completes as soon as the VSAM request performing the update completes.

After the read completes, a shared lock remains held until syncpoint. This guarantees that any record read within a unit-of-work cannot be modified while the task makes further read requests. Error responses such as NOTFND may not be repeatable.

REPEATABLE is valid only if you also specify RLSACCESS(YES)—the resource definition is rejected with an error if you specify REPEATABLE for a non-RLS file.

UNCOMMITTED

The record is read without read integrity. CICS obtains the current value of the record as known to VSAM. No attempt is made to serialize this read request with any concurrent update activity for the same record. The record returned may be a version updated by another transaction, but not yet committed, and this record may change if the update is subsequently backed out.

Note:

1. UNCOMMITTED is the same level of integrity that is provided by those releases of CICS that do not support the READINTEG attribute.
2. Specify UNCOMMITTED for any kind of data table. Any value other than UNCOMMITTED is allowed if

RLSACCESS(YES) but is ignored if TABLE(CF), TABLE(CICS), or TABLE(USER) is also specified for the file.

RECORDFORMAT({V|F})
specifies the format of the records on the file.

F The records are fixed length. For VSAM files, specify this only if the VSAM access method services definition specifies fixed size records (that is, the average size is equal to the maximum size), and all the records in the file are of that size.

F is invalid for user-maintained data tables and coupling facility data tables

V The records are variable length. All user-maintained data tables and coupling facility data tables must be specified as variable length. Otherwise, CICS returns an error message stating that RECORDFORMAT(F) conflicts with TABLE(CF) or TABLE(USER) options and is ignored.

RECORDSIZE(*number*)
specifies the maximum length in bytes of records in a remote file or a coupling facility data table. The size specified can be in the range 1 through 32767.

For coupling facility data tables only
This value is required if the file definition for the table specifies LOAD(NO).

You can also specify this attribute if LOAD(YES) is specified (for example, to make it easier for switching the file definition between LOAD(NO) and LOAD(YES)). However, if you specify LOAD(YES), the record size value must match that for the source data set, otherwise CICS fails to open the table. There are three conditions in which CICS can detect an error because of an incorrect record size with LOAD(YES):

1. Before opening the table, CICS verifies that the VSAM-defined record size for the data set from which the coupling facility data table is to be loaded is the same as the size, if any, in the file definition. If the record size is different, CICS returns error message DFHFC7081.
2. The record size (if specified) on the file definition is the same as that defined to VSAM for the data set, but on opening the table, CICS finds the table is already loaded with data of a different record size. This is probably because the data was loaded from a different data set from the one specified by this file definition. In this case CICS returns error message DFHFC7082.
3. The file definition for the table being opened specifies a record size, but not a data set name because the table is to be loaded by the opening of a different file. If the table has already been created, the open of a file specifying a different record size fails with message DFHFC7083.

To avoid the above errors, ensure the value for this attribute is the same throughout the sysplex in all file definitions that reference the same coupling facility data table, or omit it altogether for files that specify LOAD(YES).

If you specify a record size for a file that is not a remote file, or does not refer to a CFDT, it has no effect unless the file is redefined, either as a remote file or to reference a coupling facility data table. Note, however, that if you specify a record size, the value returned by an INQUIRE FILE command is as follows:

- If the file is open, CICS returns the value obtained from VSAM, which can be different from that specified on the file definition.
- If the file is closed, CICS returns the value specified on the file definition.

Note: For coupling facility data tables, if you can keep the record size to 63 bytes or less, there is a signficant gain in performance as a result of the way records are held in the coupling facility.

RECOVERY({NONE|BACKOUTONLY|ALL})
specifies the type of recovery required for the file.

This attribute is not used for files defined with RLSACCESS(YES), or if the recovery options are defined in the ICF catalog. If LOG is defined in the ICF catalog, CICS ignores the RECOVERY option and takes the LOG value from the ICF catalog, even for files defined with RLSACCESS(NO). If LOG(ALL) is specified in the ICF catalog, CICS also takes the LOGSTREAMID and BWO values from the ICF catalog.

For files that are accessed in RLS mode, you must specify the recovery parameters with the data set definition in the ICF catalog. See the *CICS Recovery and Restart Guide* for more information.)

For coupling facility data tables and user-maintained tables that are defined with a source data set, any recovery attributes in the ICF catalog are ignored. The recovery attributes are a property of the file not the associated data set.

For coupling facility data tables, the recovery attribute must be the same throughout the sysplex in all file definitions that reference the same coupling facility data table.

ALL Except for coupling facility data tables, which manage their own recovery and do not use the services of log manager or recovery manager, before images are recorded in the system log, and after images in the journal specified in the FWDRECOVLOG attribute.

Records written to the FWDRECOVLOG are independent of any automatic journaling options that may be set.

RECOVERY=ALL together with FWDRECOVLOG provide a means of separating the needs of a forward recovery utility from those of automatic journaling. Additional information, not available via automatic journaling, is recorded on the FWDRECOVLOG. RECOVERY=ALL plus FWDRECOVLOG is the recommended way to provide forward recovery support.

Existing forward recovery utilities that used the JREQ=(WU,WN) and JID=FCT macro settings can still be used with these settings. The RDO equivalents of these automatic journaling settings are JNLADD=BEFORE, JNLUPDATE=YES, and the JOURNAL attribute.

For CICS-maintained data tables, the data table and its source data set are logged, journaled, and recovered together.

For user-maintained tables, specifying ALL has the same effect as specifying BACKOUTONLY: only dynamic backout is provided. There is no forward recovery support for user-maintained tables.

For coupling facility data tables you cannot specify ALL.

Note: When ALL is specified for VSAM ESDS files, CICS is unable to perform backout of ADDs. To cope with this situation, code user exit XFCLDEL to avoid the file being closed because of the error.

BACKOUTONLY

Except for coupling facility data tables, which manage their own recovery and do not use the services of log manager or recovery manager, before images are recorded in the system log.

For CICS-maintained data tables, BACKOUTONLY specifies that the data table and its source data set are recoverable. They are both updated in step and, if required, recovered in step.

For user-maintained tables, this specifies only dynamic backout. No log records are written and, therefore, there is no recovery at emergency restart.

For coupling facility data tables, BACKOUTONLY is permitted only if the coupling facility data table is defined with UPDATEMODEL(LOCKING). You cannot specify this attribute for UPDATEMODEL(CONTENTION). Specifying BACKOUTONLY implies that a coupling facility data table is UOW-recoverable. This means that updates made to the CFDT within a unit of work are backed out if the unit of work fails, or if CICS or the CFDT server fails while the unit of work is in-flight, or if MVS fails.

Note: When BACKOUTONLY is specified for VSAM ESDS files, CICS is unable to perform backout of ADDs. To cope with this situation, code user exit XFCLDEL to avoid the file being closed because of the error.

NONE There is no recovery logging for this file.

REMOTENAME(*file*)

specifies, if the file resides on a remote system, the name by which this file is known in the system or region in which it is resident. The name can be up to eight characters in length. If REMOTENAME is not specified, the name given in the FILE attribute is used.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters you enter are converted to uppercase.

If you specify a remote name, CICSPlex SM uses that name when assigning the file to a related system. If you specify a remote system but not a remote name, the local name (that is, the name of this file definition) is used in both the target and related systems.

REMOTESYSTEM(*connection*)

If you are operating in an ISC or MRO environment, and the file is held by a remote system, this specifies the name of the system or region in which the file is resident. The name can be up to four characters in length. If you specify REMOTESYSTEM, you may also supply a REMOTENAME, to specify the name of the file in the remote system.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters you enter are converted to uppercase.

Note: If you modify a resource definition from RLSACCESS(NO) to RLSACCESS(YES), you must remove the remote system name. Otherwise CICS will continue to function ship file requests.

RESSECNUM

This attribute is obsolete, but is supported to provide compatibility with earlier releases of CICS. For more information, see Appendix A, “Obsolete attributes,” on page 615.

RLSACCESS({**NO**|**YES**})

specifies whether CICS is to open the file in RLS mode.

NO The file is not to be opened in RLS mode. If you specify RLSACCESS(NO) or allow it to default, CICS opens the file in LSR or NSR access mode, depending on the LSRPOOLID attribute. If you also specify LSRPOOLID(NONE), the access mode is NSR; if LSRPOOLID(*number*), the access mode is LSR.

YES The file is to be opened in RLS mode. If you specify RLSACCESS(YES), it takes precedence over the LSRPOOLID attribute, which is ignored when the FILE is opened.

Specifying RLSACCESS(YES) alters the effect of some other attributes defined in the FILE definition, as shown in Table 5.

Table 5. Effects of RLSACCESS(YES) on other FILE attributes

Attribute	Effect of RLSACCESS(YES)
PASSWORD	Ignored.
LSRPOOLID	Ignored.
DSNSHARING	Ignored.
STRINGS	Ignored; RLS access-mode files always have 1024 strings.
REMOTESYSTEM REMOTENAME RECORDSIZE KEYLENGTH	The meanings of these attributes are unchanged. However, dual FILE definitions of local and remote is of less value for RLS access-mode files. With RLS, there may be many file-owning regions (FORs) instead of one, and a local CICS region may have the choice of several FORs.
DATABUFFERS INDEXBUFFERS	Ignored.
TABLE	TABLE(CICS) is not allowed; an error message is issued if specified. TABLE(USER) or TABLE(CF) is allowed. The source data set (if there is one) is accessed in RLS mode to load the data table, after which requests access the data table directly using data table services.
RECOVERY	Ignored. The recovery attribute is obtained from the ICF catalog for an RLS file.
FWDRCOVLOG	Ignored. The forward recovery log stream name is obtained from the ICF catalog for an RLS file.

Table 5. Effects of RLSACCESS(YES) on other FILE attributes (continued)

Attribute	Effect of RLSACCESS(YES)
BACKUPTYPE	Ignored. The type of backup is determined by the DFSMSdss backup utility for RLS.

Note:

1. As long as a file is opened in RLS mode, any values specified for PASSWORD, LSRPOOLID, DSNSHARING, STRINGS, DATABUFFERS, and INDEXBUFFERS are ignored, as described in Table 5 on page 121. However, if you use a CEMT, or EXEC CICS, SET FILE command to change the value of RLSACCESS from YES to NO, these values are no longer ignored, and CICS uses them when the file is closed and re-opened in non-RLS mode.
2. CICS always takes the RLS access mode from the file resource definition and you cannot override this using the RLS=NRI or RLS=CR parameter on a DD statement.

STATUS({ENABLED|DISABLED|UNENABLED})

specifies the initial status of the file following a CICS initialization with START=COLD or START=INITIAL. You can change the status of a closed file with the master terminal transaction CEMT. The status of a file (enabled, disabled, or unenabled) following a CICS restart is recovered to its status at the previous shutdown.

DISABLED

Any request against this file from a command-level application program causes the DISABLED condition to be passed to the program.

ENABLED

Normal processing is allowed against this file.

UNENABLED

This prevents the file being opened by an implicit open from an application program. Any such attempt to access the file raises the NOTOPEN condition. By contrast, an explicit request to open the file (for example, a CEMT or EXEC CICS SET FILE OPEN command) changes the status to ENABLED before attempting to open the file.

STRINGS({1|*value*})

specifies the number, in the range 1 through 255, of concurrent requests that can be processed against the file. When the number of requests reaches this value, CICS queues any additional requests until one of the active requests terminates. This applies both to files using shared resources, and to those not using shared resources. Note that if the file definition specifies RLSACCESS(YES), the strings is ignored; you always get 1024 strings with RLS mode access.

For files using local shared resources, this number is not used by VSAM. It is used by CICS, not only as described above, but also to calculate the default value in the buffer pool definition.

Notes:

1. When choosing a STRINGS value, be aware that a proportion (20%) of the specified number of strings is reserved by CICS for use in read-only requests

2. When choosing a STRINGS value for an ESDS, consider the following:
   - If an ESDS is used as an 'add-only' file (that is, it is used only in write mode), a string number of 1 is strongly recommended. Any string number greater than 1 can significantly affect performance, because of exclusive control conflicts that occur when more than one task attempts to write to the ESDS at the same time.
   - If an ESDS is used for both writing and reading, with writing being 80% of the activity, it is better to define two file definitions—using one file for writing and the other for reading.
3. For user-maintained data tables and coupling facility data tables, the STRINGS value does *not* limit the number of concurrent requests against the table. However, the value does limit the number of concurrent requests during the loading of a user-maintained table.
4. For CICS-maintained data tables, the STRINGS value limits the number of concurrent requests to update the table. It does not limit the number of concurrent read-only requests.

TABLE({**NO**|**CICS**|**USER**|**CF**})
specifies the type of data table that you require.

CF A coupling facility data table (CFDT). This remains independent of its source data set, and changes to the table are not reflected in the corresponding source data set, if there is one. A source data set is optional for a CFDT, and is specified by LOAD(YES) on the file definition.

If you specify CF, also specify:
- CFDTPOOL, to give the name of the coupling facility pool in which the table resides
- LOAD, to specify whether or not the table is to be loaded from a source data set (or let this default to NO)
- UPDATEMODEL to specify whether the table is to use the CONTENTION or the LOCKING update model (or let this default to LOCKING)
- RECORDFORMAT as V (or let this default to V)
- MAXNUMRECS with the value you require.

A coupling facility data table requires a coupling facility data table server. For information on how to start a coupling facility data table server, see *CICS System Definition Guide*.

CICS A CICS-maintained data table. This automatically reflects all modifications made to the table in its source data set. If you specify CICS, also specify:
- LSRPOOLID with a value of 1 through 8
- MAXNUMRECS with the value you require.

NO Data table not required.

USER A user-maintained table. This remains independent of its source data set, and changes to the user-maintained table are not reflected in corresponding source data set. If you specify USER, also specify:
- LSRPOOLID with a value of 1 through 8
- RECORDFORMAT as VARIABLE (or let this default to VARIABLE)
- MAXNUMRECS with the value you require.

TABLENAME(*cfdt*)
specifies the name of the coupling facility data table that is accessed through this file definition. The name can be up to 8 characters in length.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters you enter are converted to uppercase.

If you omit this attribute when TABLE(CF) is specified, it defaults to the name specified for the FILE. To enable CICS regions to share a coupling facility data table, the file definitions installed in each region must specify the same CFDTPOOL name and TABLENAME (or FILE name when TABLENAME is not used). The TABLENAME need only be unique within its pool.

Note that the table name is not only an identifier for the table, but is also used as the resource name in security checks.

This attribute is meaningful only for files defined with the TABLE(CF) attribute. You can specify a table name for a file that is not defined as TABLE(CF), but CICS ignores it. If you subsequently alter the file definition to reference a coupling facility data table, the TABLENAME attribute comes into effect.

UPDATE({NO|YES})
specifies whether records on this file can be updated.

UPDATEMODEL({LOCKING|CONTENTION})
specifies the type of update model to be used for a coupling facility data table.

LOCKING
specifies that the CFDT is updated using the locking model. This means that records are locked when they are read for update, so that they cannot be changed by any other units of work until the update request has been completed (at syncpoint, or by a REWRITE, DELETE, or UNLOCK command for non-recoverable tables) LOCKING is the default for a file that specifies TABLE(CF). With the LOCKING model, the CFDT can be defined as:

- **Non-recoverable**, meaning that CFDT updates are not backed out if a unit of work fails, and the locks are only held for the duration of a request. You specify that a CFDT is not recoverable by specifying RECOVERY(NONE).
- **Recoverable**, or UOW-recoverable, meaning that updates made to the CFDT within a unit of work are backed out if the unit of work fails, or if CICS or the CFDT server fails while the unit of work is in-flight, or if MVS fails. You specify that a CFDT is recoverable by specifying RECOVERY(BACKOUTONLY).

A recoverable CFDT that uses the locking model is very similar to a recoverable file or data set, except that it does not survive a failure of the coupling facility in which it resides. There is no forward recovery for a coupling facility data table.

CONTENTION
specifies that the CFDT is updated using the contention model. This means that records are *not* locked when they are read for update. An error is returned on a subsequent REWRITE or DELETE if the record was changed or deleted by another task after it was read for update.

The CFDT must be non-recoverable (RECOVERY(NONE)), meaning that updates are not backed out if a unit of work fails.

The value for this attribute must be the same throughout the sysplex in all file definitions that reference the same coupling facility data table.

This attribute is meaningful only for files defined with the TABLE(CF) attribute. You can specify the update model for a file that is not defined as TABLE(CF), but CICS ignores it. If you subsequently alter the file definition to reference a coupling facility data table, the UPDATEMODEL attribute comes into effect.

Chapter 15. JOURNALMODEL resource definitions

A JOURNALMODEL resource defines the connection between a CICS journal name (or identifier) and the associated physical log streams managed by the MVS system logger, or between the journal name and the SMF log.

Although they are intended mainly for user journals, you can also define journal models for the system log and forward recovery logs (non-RLS only). However, for forward recovery logs, you are recommended to define all log stream names for forward recovery in the VSAM catalog. This is mandatory for VSAM files processed in RLS mode, but optional for non-RLS mode files.

Unlike the journal control table, you do not need to define a journal model for every journal that CICS uses. Instead, define some generic model definitions that describe the mapping to log stream names for the majority of your CICS journals. You may find that you can use the default models supplied by CICS and need not define any of your own. In addition to generic models, you can define the necessary specific models where special handling is required (for example, SMF logging, or merging with other log streams).

You can change JOURNALMODEL definitions at any time, but any journal entries that CICS has already created using model definition cannot reflect the change unless you first delete the existing entry using a DISCARD JOURNALNAME() command.

Compatibility note: For API compatibility with releases earlier than CICS Transaction Server for z/OS, CICS continues to support numeric journal identifiers in the range 01 through 99, for the following purposes:

- For file control autojournaling, as specified in FILE resource definitions (or on DFHFCT macro entries)
- For terminal control autojournaling, as specified in PROFILE resource definitions
- For forward recovery logging, as specified in FILE resource definitions
- For user journaling using API journal commands, such as the EXEC CICS WRITE JOURNALNUM command.

Defining journal models

You can define journal models in the following ways:

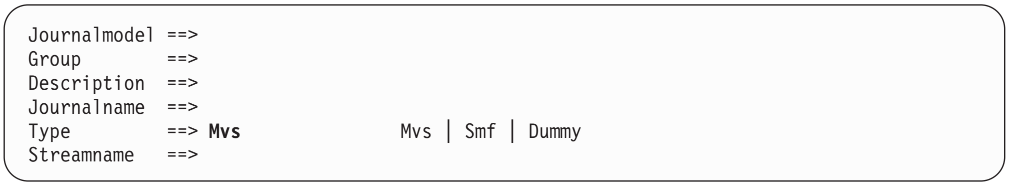
- Using the CEDA transaction; see “Defining journal models using CEDA.”
- Using the DFHCSDUP utility; see *CICS Operations and Utilities Guide*.
- Using the CREATE JOURNALMODEL command; see the *CICS System Programming Reference*.
- Using CICSPlex SM Business Application Services; see *CICSPlex System Manager Managing Business Applications*.

Defining journal models using CEDA

From a CICS terminal, enter the command:

```
CEDA DEFINE JOURNALMODEL(name) GROUP(name)
```

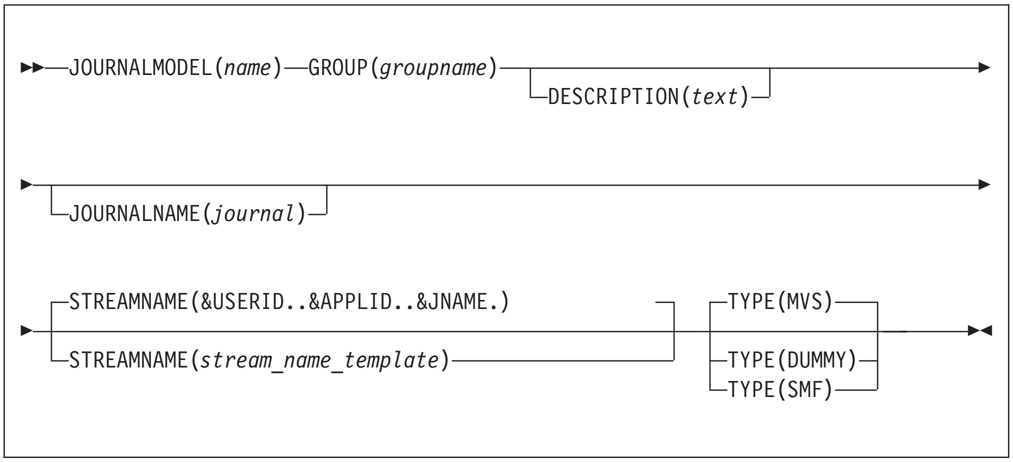
The CEDA panel that is displayed when you enter a valid DEFINE JOURNALMODE command is:



```
Journalmodel ==>
Group        ==>
Description  ==>
Journalname  ==>
Type         ==> Mvs              Mvs | Smf | Dummy
Streamname   ==>
```

Figure 11. The DEFINE panel for JOURNALMODEL

JOURNALMODEL definition attributes



DESCRIPTION(*text*)
You can provide a description of the resource you are defining in this field. The description text can be up to 58 characters in length. There are no restrictions on the characters that you can use. However, if you use parentheses, ensure that for each left parenthesis there is a matching right one. If you use the CREATE command, for each single apostrophe in the text, code two apostrophes.

GROUP(*groupname*)
Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed.

Acceptable characters:

`A-Z 0-9 $ @ #`

Any lower case characters you enter are converted to upper case.

The GROUP name can be up to eight characters in length. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

JOURNALMODEL(*name*)
specifies the name of this JOURNALMODEL definition.

The journal model name is used to refer to a specific JOURNALMODEL definition in the CSD file—it does not have to correspond to a CICS journal name. However, the JOURNALMODEL name is also used as the JOURNALNAME if you omit the JOURNALNAME attribute.

The name can be up to eight characters in length.

Acceptable characters:

```
A-Z 0-9 $ @ #
```

Unless you are using the CREATE command, any lowercase characters you enter are converted to uppercase.

JOURNALNAME(*journal*)

specifies the journal names to which this definition applies. If you omit the JOURNALNAME attribute, the name you specify on the JOURNALMODEL attribute is used as the journal name. Name can be either the specific name of a journal or a generic name, although using a generic name for system log and log-of-logs models does not serve much purpose.

The name can be up to eight characters in length.

Acceptable characters:

```
A-Z 0-9 $ @ #
```

Unless you are using the CREATE command, any lowercase characters you enter are converted to uppercase.

The forms of the names you can define are as follows:

For system logs

To define a JOURNALMODEL for system logs, specify the name as DFHLOG for the primary system log stream, and as DFHSHUNT for the secondary log stream. Install one journal model only for each of these log streams in a CICS region.

CICS-supplied definitions for DFHLOG, DFHSHUNT, and DFHLGLOG are contained in group DFHLGMOD in DFHLIST.

For log-of-logs

To define a JOURNALMODEL for the log-of-logs, specify the name as DFHLGLOG. See the *CICS System Definition Guide* for more information about the purpose of the log of logs.

For autojournals

For autojournals (file control and terminal control), the name must be of the form DFHJ*nn* where *nn* is a number in the range 1 through 99. The name can be either the specific name of a journal or a generic name.

For user journals

For user journals, the name can be up to 8 characters, and can be either the specific name of a journal or a generic name. If compatibility with releases earlier than CICS Transaction Server for z/OS, is required, the name must be of the form DFHJ*nn* where *nn* is a number in the range 1 through 99.

For forward recovery logs (non-RLS)

For non-RLS forward recovery logs, the name must be of the form DFHJ*nn* where *nn* is a number in the range 1 through 99. The name can be either the specific name of a journal or a generic name.

Note: You cannot define a journal model for use with VSAM RLS forward recovery logs. CICS obtains the fully-qualified LSN directly from the VSAM catalog, and therefore does not need a journal model to obtain the LSN.

You define generic names, using the special symbols %, +, and *, as follows:

- You can use the % or + symbols to represent any single character within a journal name.
- You can use the * symbol at end of a name to represent any number of characters. A default name of a single * is used to match any journal names that do match on a more specific name.

If there are several installed JOURNALMODEL definitions that match a journal name, CICS chooses the best match as follows:

1. If there is a JOURNALMODEL with a specific JOURNALNAME that exactly matches, CICS uses this model.
2. If there is no exact match, the journal name is compared with the matching generic entries and the most specific entry is used.

   In comparing names to see which one is more specific, the names are compared character by character. Where they first differ:
   - If one has a discrete character (not %, +, or *) and the other has a generic character (%, +, or *) the one with the discrete character is used.
   - If one has a % or a + and the other has a *, the one with % or + is used.
3. If there are duplicate JOURNALMODEL definitions (that is, definitions with the same JOURNALNAME), CICS uses the last one processed.

Attention: Take care when defining a completely generic journal name using only the single asterisk (*). This is particularly important if you have not defined a specific journal model for the system log (using journal name DFHLOG), and the log stream name is a fully-qualified literal name. If you define a journal model with JOURNALNAME(*) and do not define a journal model for the system log, CICS uses the log stream name defined on the generic model definition. This causes problems if other journals and forward recovery logs are assigned to the same log stream by means of the generic journal model.

STREAMNAME({**&USERID..&APPLID..&JNAME.**|*stream_name_template*})
specifies either an explicit MVS system logger log stream name, or a template used to construct the log stream name. STREAMNAME is applicable only to journal models defined with a LOGSTREAMTYPE of MVS.

The four symbolic names, from which you can use a maximum of three, are:

&USERID.
The symbolic name for the CICS region userid, which can be up to eight characters. If the region does not have a userid, the string 'CICS' will be used.

&APPLID.
The symbolic name for the CICS region APPLID as specified on the system initialization parameter, and which can be up to eight characters.

Note: If you are using XRF and you specify the APPLID system initialization parameter as APPLID=(generic_applid,specific_applid), it is the generic applid that CICS uses when resolving &APPLID..

&JNAME.
The symbolic name for a journal name that references, either by a specific or generic match, this journal model definition. &JNAME. can be up to eight characters in length.

&SYSID.
The symbolic name for the CICS region SYSID as specified on the SYSIDNT system initialization parameter. If SYSIDNT is not specified, the string 'CICS' will be used.

The default set of symbolic names is: &USERID..&APPLID..&JNAME.

For Example: &USERID..&APPLID..&JNAME. =

```
CICSHA##.CICSHAA1.DFHJ02
```

where:

CICSHA##
is the CICS region userid used by all the AORs.

CICSHAA1
is the applid of one AOR.

DFHJ02
is the journal name of an auto journal.

An alternative set of symbolic names could be:

```
&SYSID..&APPLID..&JNAME.  =
SYSA.CICSHAA1.DFHJ02
```

where:

SYSA is the character string as specified by the SYSIDNT system initialization parameter.

CICSHAA1
is the applid of one AOR.

DFHJ02
is the journal name of an auto journal.

CICS installs the JOURNALMODEL resource as defined, including the symbolic names.

stream_name_template
A log stream name can be either an unqualified name or a qualified name, as defined for MVS data set names:

- **Unqualified name**: 1 through 8 alphanumeric or national characters ($ # @), or a hyphen. The first character of the name must be alphabetic or national (A-Z $ # @).
- **Qualified name**: Multiple names joined by periods, up to a maximum of 26 characters. Each name in a qualified name must follow the rules for an unqualified name, with each qualified name (except the last) followed by a period. For example,

  `name_1.name_2...name_n`

  where the number of names is restricted by the 26-character limit.

For more information about the rules for qualified and unqualified data set names, see *z/OS MVS JCL Reference*.

You can construct log stream names consisting of a mixture of specific characters (from within the allowed set), and symbolic names for substitution. After substitution, the name must meet the rules for qualified and unqualified log stream names, and must not exceed 26 characters, including periods. Thus, if each name in a qualified name uses the maximum of eight characters, you are restricted to three names only, with the first and second names, and the second and third names separated by a period. For example:

```
CICSDA##.CICSDAA1.FWDRECOV
```

for a forward recovery log stream. The log stream name is determined by symbolic substitution when a journal name is first resolved to a JOURNALMODEL definition.

By specifying the same log stream name for multiple CICS general logs, you can merge the log streams from different CICS regions. However, you cannot merge general log streams with the CICS system log, nor can you merge system logs from different CICS regions.

When merging log streams from different CICS systems, the log data blocks are written to their log streams in strict MVS system logger time-stamp sequence. However, the individual records from different CICS regions may not be in strict time-stamp sequence across different blocks

CICS log streams should not be merged with log streams generated by other products unless any programs that read the log stream are prepared to handle the formats.

Security note: When you have defined a log stream name to CICS and the MVS system logger, you must ensure that the required security authorizations are defined to RACF (or an equivalent external security manager). This security authorization is necessary before you attempt to bring up a CICS region that references a new log stream. RACF supports the LOGSTRM general resource class for this purpose.

TYPE({DUMMY|MVS|SMF})
specifies where the journal records are to be written. It can be up to five characters, and can have the following values:

DUMMY
No log records are to be written. For example, you can use this to suppress unwanted log records without changing an application, or without changing file or profile resource definitions.

If you do not want a system log or a log-of-logs, specify DUMMY on the JOURNALMODEL definitions for the DFHLOG, DFHSHUNT, and DFHLGLOG, as required.

MVS Records are to be written to an MVS system logger log stream. The name of the log stream is specified in the STREAMNAME attribute.

SMF Journal records are to be written in SMF format to the MVS SMF log instead of to an MVS system logger log stream.

Note: SMF is not allowed for the CICS system log or for forward recovery logs.

The default JOURNALMODEL

If CICS cannot find an installed JOURNALMODEL definition, it assumes the attributes of the following “built-in” default definition:

```
DEFINE JOURNALMODEL(OTHERS) GROUP(LOGS)
          JOURNALNAME(*)
          STREAMNAME(&USERID..&APPLID..&JNAME.)
          TYPE(MVS)
```

JOURNALNAME(*) is the default journal model that CICS uses if there is no matching JOURNALMODEL entry for a journal name.

Examples

Given the following set of definitions for a CICS AOR with applid CICSHAA3 and region userid CICSHA##:

```
1.  DEFINE JOURNALMODEL(USERJNL8) GROUP(LOGS)
           JOURNALNAME(DFHJ08)
           TYPE(SMF)
```

Records written to autojournal 08 or user journal 08 using an EXEC CICS WRITE JOURNALNAME(DFHJ08)... or EXEC CICS WRITE JOURNALNUM(08)... command are written in SMF format to the MVS SMF data set.

```
2.  DEFINE JOURNALMODEL(USERJNL9) GROUP(LOGS)
           JOURNALNAME(DFHJ09)
           TYPE(DUMMY)
```

Records written to autojournal 09 or user journal 09 using an EXEC CICS WRITE JOURNALNAME(DFHJ09)... or EXEC CICS WRITE JOURNALNUM(09)... command are not written to any log stream, though the application program receives a normal response.

```
3.  DEFINE JOURNALMODEL(UJ10TO19) GROUP(LOGS)
           JOURNALNAME(DFHJ1%)
           STREAMNAME(&USERID..MERGED.USRJRNLS)
           TYPE(MVS)
```

Records written to user journals 10–19 (DFHJ10–DFHJ19) are merged together on log stream CICSHA##.MERGED.USRJRNLS, together with records from any other CICS regions running under the CICSHA## userid and with the same JOURNALMODELs installed.

```
4.  DEFINE JOURNALMODEL(LOGOFLOG) GROUP(LOGS)
           JOURNALNAME(DFHLGLOG)
           STREAMNAME(CICSVR.SHARED.DFHLGLOG)
           TYPE(MVS)
```

File tie-up records and other records written by file control and the CICS log manager to journal DFHLGLOG for use by forward recovery products, such as CICSVR, are written to a shared log stream CICSVR.SHARED.DFHLGLOG. This log stream is shared by all the CICS regions in the sysplex in which this JOURNALMODEL resource definition is installed.

```
5. DEFINE JOURNALMODEL(JNLMODL1) GROUP(LOGS)
          JOURNALNAME(USERJNL*)
          STREAMNAME(&USERID..ANYCORP.&JNAME..UK)
          TYPE(MVS)
```

Records written to any user journals or autojournals that begin with the letters USERJNL are merged together on a log stream with a name that is obtained by substituting the CICS region userid for &USERID. and the journal name for &JNAME..

With only the above examples installed, other forms of journaling, such as terminal control automatic message journaling defined with PROFILE ... JOURNAL(25), use the default JOURNALMODEL, with records written to log stream CICSHA##.CICSHAA3.DFHJ25. See “The default JOURNALMODEL” on page 133.

Chapter 16. LSRPOOL resource definitions

The LSRPOOL resource definse the size and characteristics of the local shared resources (LSR) pool. The LSR pool is a reserve of data buffers, strings, and Hiperspace buffers that VSAM uses when processing access requests for certain files.

A Hiperspace buffer is a high-performance storage area in the MVS image. This area is used for reading and writing 4KB pages. The type of Hiperspace used by VSAM resides entirely in expanded storage, which is additional processor storage used only for paging to and from real storage.

Up to eight LSR pools can be defined concurrently in the system, each identified by its LSRPOOLID. This LSRPOOLID is used to associate a FILE with an LSR pool if that file is to use shared resources.

When the LSRPOOL definition is installed in the active system, its information is stored and used when the pool with the specified ID is next built. A pool is built when the first file using a particular LSR pool is opened, and is dynamically deallocated only when no files are currently open against that pool. This means that when an LSRPOOL definition is installed into the system it may not take effect immediately.

CICS sets default attributes if an LSRPOOL is not defined, but you are advised to define the LSRPOOL anyway, for reasons of performance. In a production system, for example, delay may be incurred while pool requirements are being calculated by CICS. Another possible problem is that if files in the FCT are not allocated at the time the pool is built, the data set names will not be known to CICS. In this case, the pool is built based on the information available, but the subsequent performance of the system may suffer or files may fail to open.

You can associate the CSD file with a particular LSRPOOL by specifying the CSDLSRNO system initialization parameter. The default is pool 1; ensure that sufficient buffers of an appropriate size are provided to permit the CSD file to be used by CICS. See the *CICS System Definition Guide* for further information about CSDLSRNO and about calculating the buffer requirements for the CSD file.

Defining LSR pools

You can define LSR pools in the following ways:

- Using the CEDA transasction; see “Defining LSR pools using CEDA.”
- Using the DFHCSDUP utility; see *CICS Operations and Utilities Guide*.
- Using the CREATE LSRPOOL command; see the *CICS System Programming Reference*.
- Using CICSPlex SM Business Application Services; see *CICSPlex System Manager Managing Business Applications*.

Defining LSR pools using CEDA

From a CICS terminal, enter the following command:

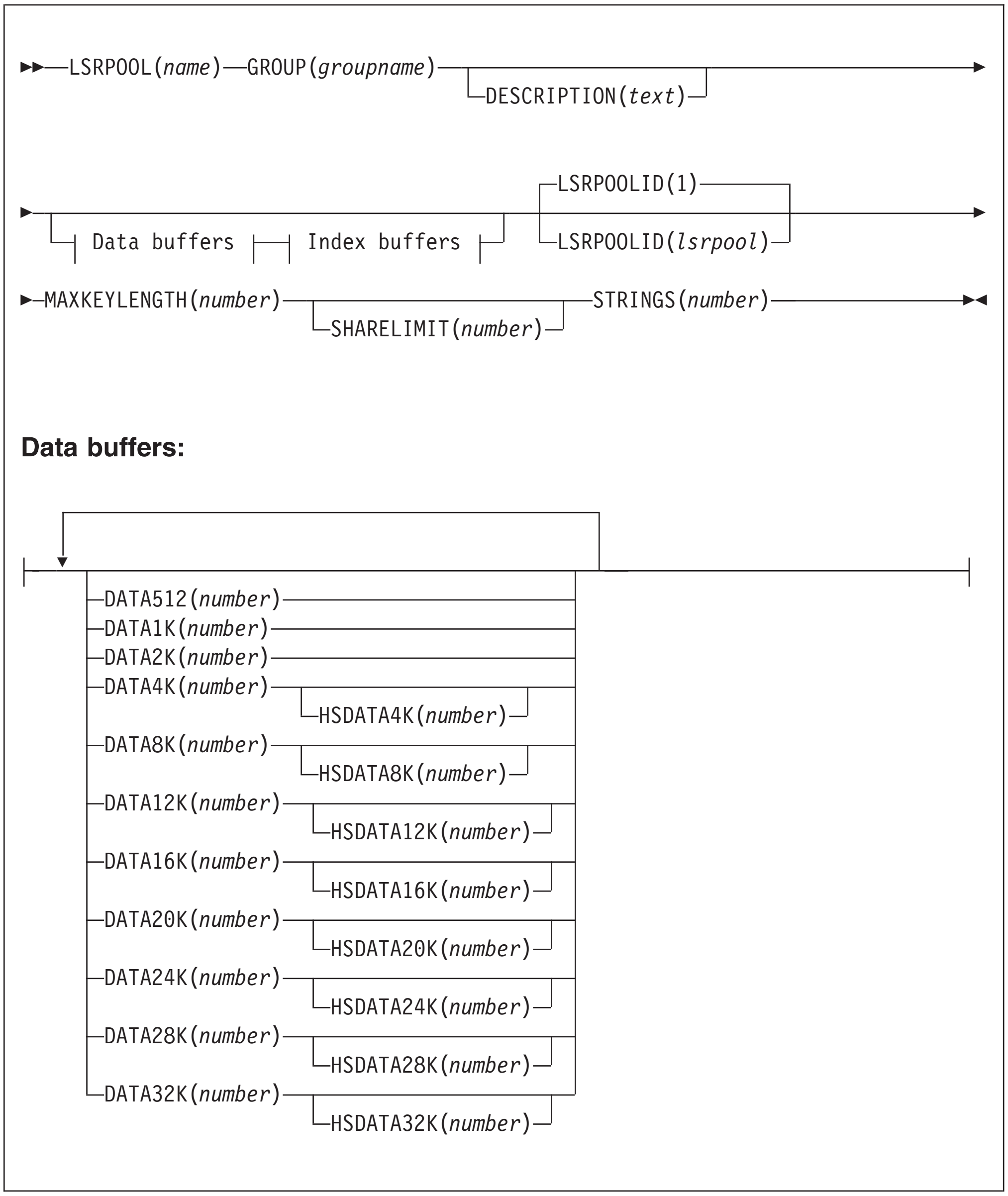
```
CEDA DEFINE LSRPOOL(name) GROUP(name)
```

The CEDA panel that is displayed when you enter a valid DEFINE LSRPOOL command is:

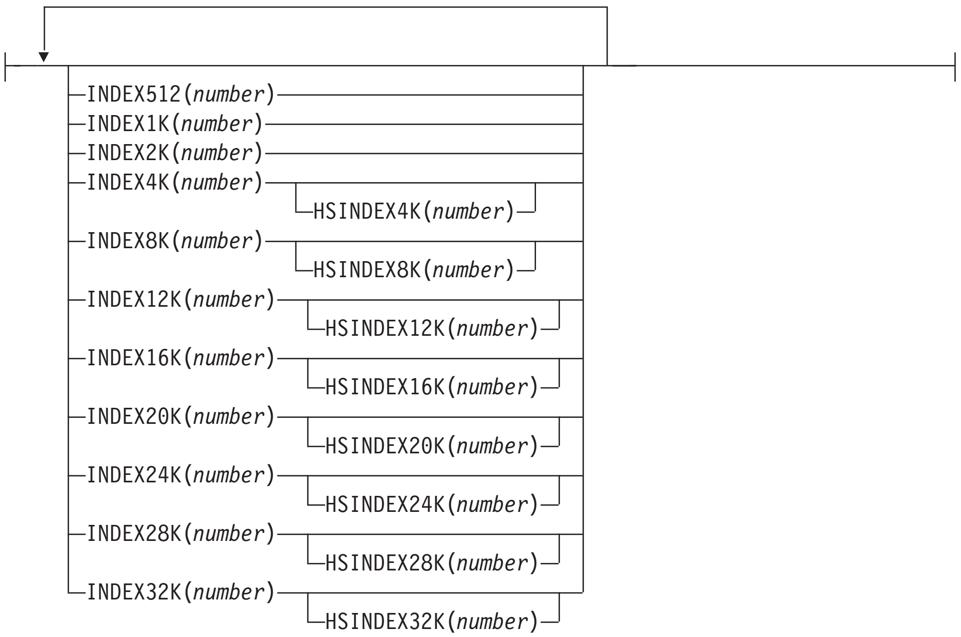
```
 Lsrpool      ==>
 Group        ==>
 DEscription  ==>
 Lsrpoolid    ==> 1                1 - 8
 Maxkeylength ==>                  0 - 255
 SHarelimit   ==>                  1 - 100
 STrings      ==>                  1 - 255
DATA BUFFERS
 DATA512      ==>                  3 - 32767
 DATA1K       ==>                  3 - 32767
 DATA2K       ==>                  3 - 32767
 DATA4k       ==>                  3 - 32767
 DATA8k       ==>                  3 - 32767
 DATA12k      ==>                  3 - 32767
 DATA16k      ==>                  3 - 32767
 DATA20k      ==>                  3 - 32767
 DATA24k      ==>                  3 - 32767
 DATA28k      ==>                  3 - 32767
 DATA32k      ==>                  3 - 32767
INDEX BUFFERS
 INDEX512     ==>                  3 - 32767
 INDEX1K      ==>                  3 - 32767
 INDEX2K      ==>                  3 - 32767
 INDEX4k      ==>                  3 - 32767
 INDEX8k      ==>                  3 - 32767
 INDEX12k     ==>                  3 - 32767
 INDEX16k     ==>                  3 - 32767
 INDEX20k     ==>                  3 - 32767
 INDEX24k     ==>                  3 - 32767
 INDEX28k     ==>                  3 - 32767
 INDEX32k     ==>                  3 - 32767
HIPERSPACE DATA BUFFERS
 HSDATA4k     ==>                  0 - 16777215
 HSDATA8k     ==>                  0 - 16777215
 HSDATA12k    ==>                  0 - 16777215
 HSDATA16k    ==>                  0 - 16777215
 HSDATA20k    ==>                  0 - 16777215
 HSDATA24k    ==>                  0 - 16777215
 HSDATA28k    ==>                  0 - 16777215
 HSDATA32k    ==>                  0 - 16777215
HIPERSPACE INDEX BUFFERS
 HSINDEX4k    ==>                  0 - 16777215
 HSINDEX8k    ==>                  0 - 16777215
 HSINDEX12k   ==>                  0 - 16777215
 HSINDEX16k   ==>                  0 - 16777215
 HSINDEX20k   ==>                  0 - 16777215
 HSINDEX24k   ==>                  0 - 16777215
 HSINDEX28k   ==>                  0 - 16777215
 HSINDEX32k   ==>                  0 - 16777215
```

Figure 12. The DEFINE panel for LSRPOOL

LSRPOOL definition attributes



Index buffers:



DATA BUFFERS
specify the number of data buffers of each size that you require, in the range 3 through 32767. If you leave this field blank, there are no default values.

DATA512(*number*)
specifies the number, in the range 3 through 32767, of 512-byte data buffers you require.

DATA1K(*number*)
specifies the number, in the range 3 through 32767, of 1KB data buffers you require.

DATA2K(*number*)
specifies the number, in the range 3 through 32767, of 2KB data buffers you require.

DATA4K(*number*)
specifies the number, in the range 3 through 32767, of 4KB data buffers you require.

DATA8K(*number*)
specifies the number, in the range 3 through 32767, of 8KB data buffers you require.

DATA12K(*number*)
specifies the number, in the range 3 through 32767, of 12KB data buffers you require.

DATA16K(*number*)
specifies the number, in the range 3 through 32767, of 16KB data buffers you require.

DATA20K(*number*)
specifies the number, in the range 3 through 32767, of 20KB data buffers you require.

DATA24K(*number*)
specifies the number, in the range 3 through 32767, of 24KB data buffers you require.

DATA28K(*number*)
specifies the number, in the range 3 through 32767, of 28KB data buffers you require.

DATA32K(*number*)
specifies the number, in the range 3 through 32767, of 32KB data buffers you require.

DESCRIPTION(*text*)
You can provide a description of the resource you are defining in this field. The description text can be up to 58 characters in length. There are no restrictions on the characters that you can use. However, if you use parentheses, ensure that for each left parenthesis there is a matching right one. If you use the CREATE command, for each single apostrophe in the text, code two apostrophes.

GROUP(*groupname*)
Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed.

Acceptable characters:

`A-Z 0-9 $ @ #`

Any lower case characters you enter are converted to upper case.

The GROUP name can be up to eight characters in length. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

HIPERSPACE DATA BUFFERS
Specify the number of Hiperspace data buffers of each size that you require, in the range 0 through 16777215. If you leave these fields blank, there are no default values.

Note: If you specify a value for a Hiperspace data buffer of a given size, you must also specify a value for the data buffer of the same size.

HSDATA4K(*number*)
specifies the number, in the range 0 through 16777215, of 4KB Hiperspace data buffers you require.

HSDATA8K(*number*)
specifies the number, in the range 0 through 16777215, of 8KB Hiperspace data buffers you require.

HSDATA12K(*number*)
specifies the number, in the range 0 through 16777215, of 12KB Hiperspace data buffers you require.

HSDATA16K(*number*)
specifies the number, in the range 0 through 16777215, of 16KB Hiperspace data buffers you require.

HSDATA20K(*number*)
specifies the number, in the range 0 through 16777215, of 20KB Hiperspace data buffers you require.

HSDATA24K(*number*)
specifies the number, in the range 0 through 16777215, of 24KB Hiperspace data buffers you require.

HSDATA28K(*number*)
specifies the number, in the range 0 through 16777215, of 28KB Hiperspace data buffers you require.

HSDATA32K(*number*)
specifies the number, in the range 0 through 16777215, of 32KB Hiperspace data buffers you require.

HIPERSPACE INDEX BUFFERS
Specify the number of Hiperspace index buffers of each size that you require, in the range 0 through 16777215. If you leave these fields blank, there are no default values.

Note: If you specify a value for a Hiperspace index buffer of a given size, you must also specify a value for the index buffer of the same size.

HSINDEX4K(*number*)
specifies the number, in the range 0 through 16777215, of 4KB Hiperspace index buffers you require.

HSINDEX8K(*number*)
specifies the number, in the range 0 through 16777215, of 8KB Hiperspace index buffers you require.

HSINDEX12K(*number*)
specifies the number, in the range 0 through 16777215, of 12KB Hiperspace index buffers you require.

HSINDEX16K(*number*)
specifies the number, in the range 0 through 16777215, of 16KB Hiperspace index buffers you require.

HSINDEX20K(*number*)
specifies the number, in the range 0 through 16777215, of 20KB Hiperspace index buffers you require.

HSINDEX24K(*number*)
specifies the number, in the range 0 through 16777215, of 24KB Hiperspace index buffers you require.

HSINDEX28K(*number*)
specifies the number, in the range 0 through 16777215, of 28KB Hiperspace index buffers you require.

HSINDEX32K(*number*)
specifies the number, in the range 0 through 16777215, of 32KB Hiperspace index buffers you require.

INDEX BUFFERS

INDEX512(*number*)
specifies the number, in the range 3 through 32767, of 512-byte index buffers you require.

INDEX1K(*number*)
specifies the number, in the range 3 through 32767, of 1KB index buffers you require.

INDEX2K(*number*)
specifies the number, in the range 3 through 32767, of 2KB index buffers you require.

INDEX4K(*number*)
specifies the number, in the range 3 through 32767, of 4KB index buffers you require.

INDEX8K(*number*)
specifies the number, in the range 3 through 32767, of 8KB index buffers you require.

INDEX12K(*number*)
specifies the number, in the range 3 through 32767, of 12KB index buffers you require.

INDEX16K(*number*)
specifies the number, in the range 3 through 32767, of 16KB index buffers you require.

INDEX20K(*number*)
specifies the number, in the range 3 through 32767, of 20KB index buffers you require.

INDEX24K(*number*)
specifies the number, in the range 3 through 32767, of 24KB index buffers you require.

INDEX28K(*number*)
specifies the number, in the range 3 through 32767, of 28KB index buffers you require.

INDEX32K(*number*)
specifies the number, in the range 3 through 32767, of 32KB index buffers you require.

LSRPOOL(*name*)
specifies the name of the local shared resource pool being defined. The name may be up to eight characters in length.

If only DATA BUFFERS is specified, one set of buffers is built for the pool to be used for both the index and the data components of a VSAM KSDS data set.

If no data buffers are specified, CICS calculates the buffers required for both data and index components, both components sharing the same set of buffers.

If INDEX BUFFERS is specified, two parts of the pool are built, one for data and the other for index buffers. If you specify INDEX BUFFERS, you must also specify DATA BUFFERS.

LSRPOOLID({**1**|*lsrpool*})
specifies the identifier of the local shared resource pool being defined. The value must be in the range 1 through 8.

MAXKEYLENGTH(*number*)
specifies the maximum key length of any of the files that are to share resources. The value must be in the range 0 through 255. This value overrides part of the CICS resource calculation. If you do not specify it, CICS determines the maximum key length, recalculating it each time the LSR is rebuilt.

SHARELIMIT(*number*)
specifies, as an integer, the percentage of the maximum amount of VSAM resources to be allocated. The number can be any value from 1 through 100.

Specify this if CICS is to calculate the maximum amount of resources required by the VSAM files that are to share resources. Because these resources are to be shared, some percentage of this maximum amount of resources must be allocated. If this attribute is omitted, 50 percent of the maximum amount of resources is allocated.

If both the STRINGS and SIZE attributes are specified, SHARELIMIT has no effect.

STRINGS(*number*)
specifies the limit, in the range 1 through 255, of all the strings of the files in the pool.

Chapter 17. MAPSET resource definitions

A MAPSET resource defines a BMS map sets.

Each interactive application using a display device can use specific screen layouts, or maps. These are not specified in the program itself. Instead, you use basic mapping support (BMS). This gives greater flexibility and allows the maps to be used by multiple invocations of the same program, or by several different programs. You specify maps, and the fields on them, using the DFHMSD, DFHMDI, and DFHMDF macros. For further guidance on this, see the *CICS Application Programming Guide*.

Instead of using the BMS map definition macros, you can define maps interactively with the Screen Definition Facility II (SDF II) program product, program numbers 5665-366 (for MVS) and 5664-307 (for VM). SDF II allows you to paint a screen interactively. You can then generate the screen to get the equivalent of a CICS/BMS map set. The test facilities of SDF II also enable you to see your map in its run-time appearance. For background information, see the *Screen Definition Facility II Primer for CICS/BMS Programs* and *Screen Definition Facility II General Information*.

An application can use a series of related maps at different times during the interaction with the user. It can also use several related maps at the same time and on the same display, to build up a complete screen.

These related maps belong to a map set, which you specify in a MAPSET definition. Even if your program has only one map, this must still belong to a map set. You can define your MAPSETs either by using CEDA or DFHCSDUP, or by setting the appropriate system initialization parameters to enable them to be autoinstalled. See Chapter 43, “Autoinstalling programs, map sets, and partition sets,” on page 483 for further information about autoinstall.

There is no link through resource definitions between a program and its map sets. Instead, you specify the MAPSET name in the BMS SEND MAP and RECEIVE MAP commands in your program.

Defining map sets

You can define map sets in the following ways:

- Using the CEDA transction; see “Defining map sets using CEDA.”
- Using the DFHCSDUP utility; see *CICS Operations and Utilities Guide*.
- Using the CREATE MAPSET command; see the *CICS System Programming Reference*.
- Using CICSPlex SM Business Application Services; see *CICSPlex System Manager Managing Business Applications*.

Defining map sets using CEDA

From a CICS terminal, enter the command:

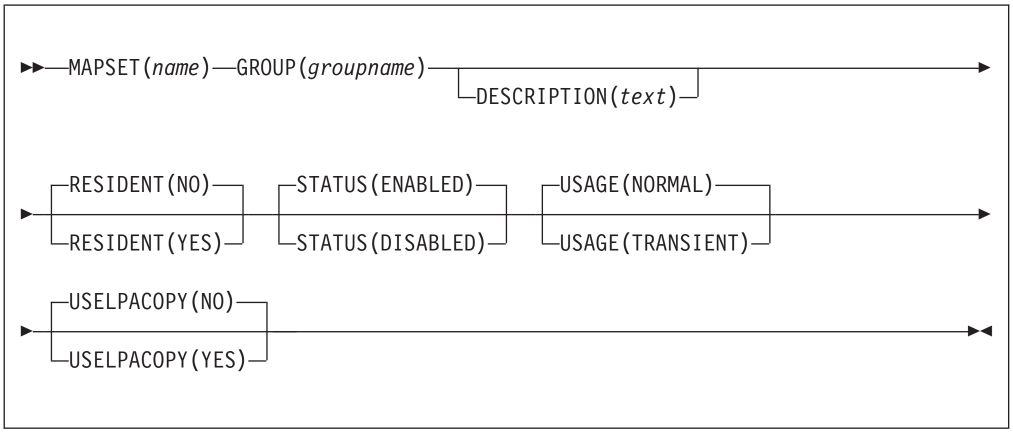
```
CEDA DEFINE MAPSET(name) GROUP(name)
```

The CEDA panel that is displayed when you enter a valid DEFINE MAPSET command is:

```
Mapset       ==>
Group        ==>
Description  ==>
REsident     ==> No                 No | Yes
USAge        ==> Normal             Normal | Transient
USElpacopy   ==> No                 No | Yes
Status       ==> Enabled            Enabled | Disabled
RSl            : 00                 0-24 | Public
```

Figure 13. The DEFINE panel for MAPSET

MAPSET definition attributes



DESCRIPTION(*text*)

You can provide a description of the resource you are defining in this field. The description text can be up to 58 characters in length. There are no restrictions on the characters that you can use. However, if you use parentheses, ensure that for each left parenthesis there is a matching right one. If you use the CREATE command, for each single apostrophe in the text, code two apostrophes.

GROUP(*groupname*)

Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed.

Acceptable characters:

`A-Z 0-9 $ @ #`

Any lower case characters you enter are converted to upper case.

The GROUP name can be up to eight characters in length. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

MAPSET(*name*)

specifies the name of this MAPSET definition. The name can be up to eight characters in length.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters you enter are converted to uppercase.

Do not use map set names beginning with DFH, because these characters are reserved for use by CICS.

For a BMS device-dependent map set, the map set name must be derived by adding the map set suffix to the original (1-to 7-character) map set name. The suffix depends on the parameter specified in the TERM operand of the DFHMSD macroinstruction that defined the map set.

To use device-dependent suffixes, you need to specify BMS=(,,,DDS) as a system initialization parameter. For programming information on map set suffixes, see the *CICS Application Programming Reference*.

RESIDENT({NO|YES})
specifies the residence status of the map set.

NO The map set is not to be permanently resident.

YES The map set is to be loaded on first reference and is then to be permanently resident in virtual storage, but is to be pageable by the operating system.

RSL
This attribute is obsolete, but is supported to provide compatibility with earlier releases of CICS. For more information, see Appendix A, “Obsolete attributes,” on page 615.

STATUS({ENABLED|DISABLED})
specifies the map set status.

DISABLED
The map set may not be used.

ENABLED
The map set may be used.

USAGE({NORMAL|TRANSIENT})
specifies when the storage for this map set will be released.

NORMAL
When the use count of the map set reaches zero, it will become eligible for removal from storage as part of the normal dynamic storage compression process.

TRANSIENT
When the use count for this map set becomes zero, the storage for this map set is released. This value should be specified for map sets that are referenced infrequently.

USELPACOPY({NO|YES})
specifies whether the map set is to be used from the link pack area (LPA).

NO The map set is not to be used from the LPA. It is loaded into the CICS partition.

YES The map set can be used from the LPA if LPA=YES is specified as a system initialization parameter. The use of the map set from the LPA requires that it has been installed there and that the map set is not named by the PRVMOD start-up option. For further guidance on this, see the *CICS Transaction Server for z/OS Installation Guide*.

Chapter 18. PARTITIONSET resource definitions

A PARTITIONSET resource defines a partition set, that is, is a table that describes to CICS how to partition a display screen.

Partition sets are created by coding and assembling a series of commands.

The screen areas of some display devices (the 8775 Display Terminal and the IBM 3290 Information Panel, for example), can be divided into **partitions**, which can be treated as several different small displays. Different programs or program steps in a transaction can write to or receive input from different partitions.

You specify the partition set with DFHPSD and DFHPDI macros, described for programming purposes in the *CICS Application Programming Reference*.

You specify each different partition configuration as a PARTITIONSET. PARTITIONSET definitions are created using CEDA or DFHCSDUP, or they can be autoinstalled if the appropriate system initialization parameters have been set. See Chapter 43, "Autoinstalling programs, map sets, and partition sets," on page 483 for information.

You can name the PARTITIONSET that you want the transaction to use in the TRANSACTION definition. When the transaction starts, the information is loaded into the internal buffer of the display device.

Alternatively, if you do not specify a PARTITIONSET, CICS sets the display device to its base state before the transaction is initiated.

The transaction may require CICS to load a PARTITIONSET, or change to a new one, by issuing the BMS SEND PARTNSET command. This loads the partition set dynamically, if its definition has been installed in the active CICS system.

Instead of using the BMS partition definition macros, you can define partitions interactively with the Screen Definition Facility II (SDF II) program product, program numbers 5665-366 (for MVS) and 5664-307 (for VM). SDF II allows you to paint a screen interactively. You can then generate the screen to get the equivalent of a CICS/BMS partitionset. The test facilities of SDF II also enable you to see your partition in its run-time appearance. For general information, see *Screen Definition Facility II Primer for CICS/BMS Programs* and *Screen Definition Facility II General Information*.

Defining partition sets

You can define partition sets in the following ways:

- Using the CEDA transction; see "Defining partition sets using CEDA" on page 148.
- Using the DFHCSDUP utility; see *CICS Operations and Utilities Guide*.
- Using the CREATE PARTITIONSET command; see the *CICS System Programming Reference*.
- Using CICSPlex SM Business Application Services; see *CICSPlex System Manager Managing Business Applications*.

Defining partition sets using CEDA

From a CICS terminal, enter the command:

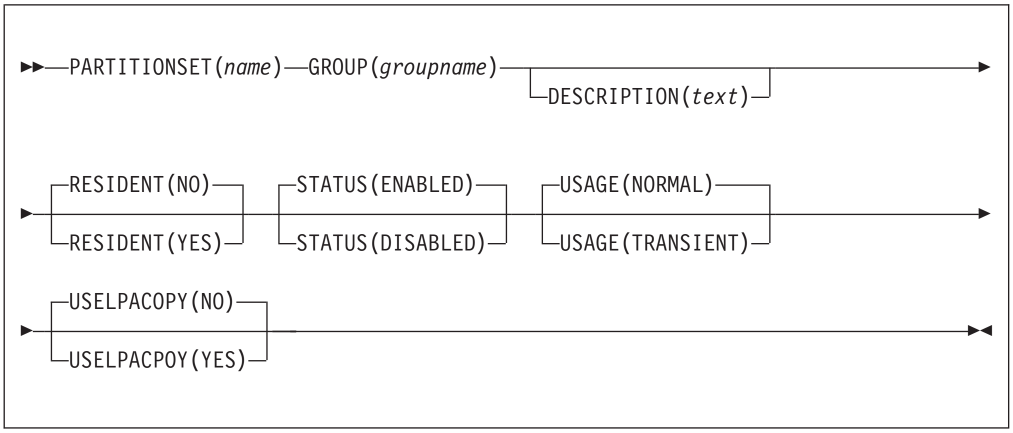
CEDA DEFINE PARTITIONSET(*name*) GROUP(*name*)

The CEDA panel that is displayed when you enter a vaid DEFINE PARTITIONSET command is:

```
PARTItionset ==>
Group        ==>
Description  ==>
REsident     ==> No                No | Yes
USAge        ==> Normal            Normal | Transient
USElpacopy   ==> No                No | Yes
Status       ==> Enabled           Enabled | Disabled
Rsl            : 00                0-24 | Public
```

Figure 14. The DEFINE panel for PARTITIONSET

PARTITIONSET definition attributes



DESCRIPTION(*text*)
You can provide a description of the resource you are defining in this field. The description text can be up to 58 characters in length. There are no restrictions on the characters that you can use. However, if you use parentheses, ensure that for each left parenthesis there is a matching right one. If you use the CREATE command, for each single apostrophe in the text, code two apostrophes.

GROUP(*groupname*)
Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed.

Acceptable characters:

A-Z 0-9 $ @ #

Any lower case characters you enter are converted to upper case.

The GROUP name can be up to eight characters in length. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

PARTITIONSET(*name*)
specifies the name of this PARTITIONSET definition. The name can be up to eight characters in length.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters you enter are converted to uppercase.

Do not use partition set names beginning with DFH, because these characters are reserved for use by CICS.

For a device-dependent partition set, the partition set name must be derived by adding the partition set suffix to the original (1- to 6-character) partition set name. The suffix depends on the parameter specified in the SUFFIX operand of the DFHPSD macro instruction that defined the partition set.

To use device-dependent suffixes, you need to specify BMS=(,,,DDS) as a system initialization parameter.

For programming information on partition set suffixes, see the *CICS Application Programming Reference*.

RESIDENT({NO|YES})
specifies the residence status of the partition set.

NO The partition set is not to be permanently resident.

YES The partition set is to be loaded on first reference and is then to be permanently resident in virtual storage, but is to be pageable by the operating system.

RSL
This attribute is obsolete, but is supported to provide compatibility with earlier releases of CICS. For more information, see Appendix A, “Obsolete attributes,” on page 615.

STATUS({ENABLED|DISABLED})
specifies the partition set status.

DISABLED
The partition set may not be used.

ENABLED
The partition set may be used.

USAGE({NORMAL|TRANSIENT})
specifies when the storage for this partition set is released.

NORMAL
When the use count for this partition set reaches zero, it becomes eligible for removal from storage as part of the normal dynamic program compression process.

TRANSIENT
When the use count for this partition set becomes zero, the storage for this partition set is released. This value should be specified for partition sets that are referenced infrequently.

USELPACOPY({NO|YES})
specifies whether the partition set is to be used from the link pack area (LPA).

NO The partition set is not to be used from the LPA. It is loaded into the CICS partition.

YES The partition set can be used from the LPA if LPA=YES is specified as a system initialization parameter. The use of the partition set from the LPA requires that it has been installed there and that the partition set is not named by the PRVMOD start-up option. For more details on this, see the *CICS Transaction Server for z/OS Installation Guide*.

Chapter 19. PARTNER resource definitions

A PARTNER resource enables CICS application programs to communicate, using APPC protocols, with a partner application program running on a remote logical unit.

The interaction between a CICS application program and a partner application program is called a *conversation*.

The PARTNER definition also facilitates the use of the call to the interface with the communications element of the System Application Architecture (SAA). For more information on the SAA communications interface, see the *Common Programming Interface Communications Reference*.

To allow the SAA communications interface to be used, you must specify the following resources:

- A PROFILE definition (see Chapter 22, “PROFILE resource definitions,” on page 165)
- A CONNECTION definition (see Chapter 6, “CONNECTION resource definitions,” on page 33)
- A SESSIONS definition (see Chapter 25, “SESSION resource definitions,” on page 201)

You can define your CICS partner information in one of two ways:

- Create a PARTNER definition
- In an application program, by setting SYMDESTNAME to a null value, and issuing the appropriate CPI SET calls. See the *CPI-C Communications Reference* for further details.

Defining partners

You can define partners in the following ways:

- Using the CEDA transaction; see “Defining partners using CEDA.”
- Using the DFHCSDUP utility; see *CICS Operations and Utilities Guide*.
- Using the CREATE PARTNER command; see the *CICS System Programming Reference*.
- Using CICSPlex SM Business Application Services; see *CICSPlex System Manager Managing Business Applications*.

Defining partners using CEDA

From a CICS terminal, enter the command:

```
CEDA DEFINE PARTNER(name) GROUP(name)
```

The CEDA panel that is displayed when you enter a valid DEFINE PARTNER command is:

```
 PARTNer      ==>
 Group        ==>
 DEscription  ==>
REMOTE LU NAME
 NETName      ==>
 NETWork      ==>
SESSION PROPERTIES
 Profile      ==> DFHCICSA
REMOTE TP NAME
 Tpname       ==>
              ==>
 Xtpname      ==>
              ==>
              ==>
```

Figure 15. The DEFINE panel for PARTNER

Installing partner definitions

When you install a PARTNER definition, CICS attempts to resolve references to CONNECTION and PROFILE definitions. CICS then creates an entry for the PARTNER definition in the **partner resource table (PRT)**. See the *CICS Intercommunication Guide* for more information.

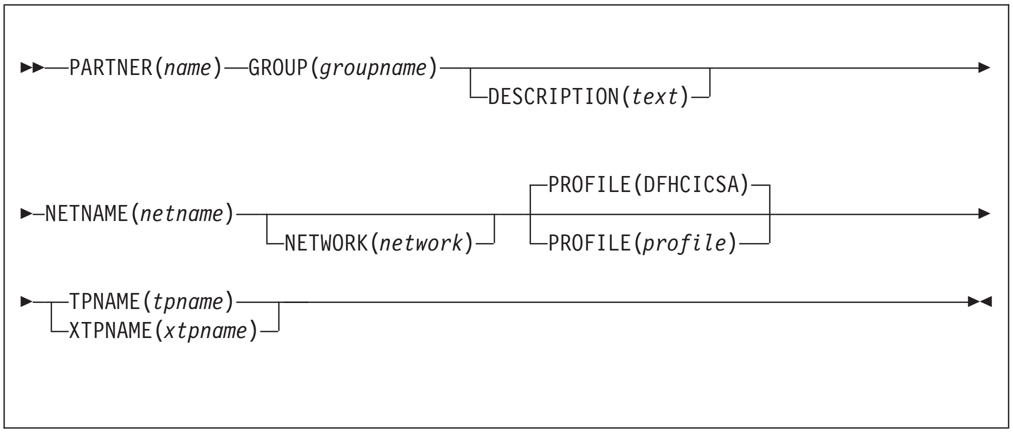
Because it is possible for programs to use the SAA communications interface SET calls to change the PARTNER name and the TPNAME name, CICS does not check that the CONNECTION definition is present when the PARTNER resource is being installed.

If you leave out the PROFILE attribute, CICS uses the default profile DFHCICSA. Because it is not possible for an SAA communications interface program to set a different profile, the PROFILE must be installed before the PARTNER resource. However, the PARTNER install does not fail if the PROFILE is missing; instead, a run-time error occurs when the partner conversation is attempted.

The MODENAME specified in the PROFILE need not be specified in a corresponding SESSIONS definition, as it is possible for the SAA communications interface program to set a different value for MODENAME.

CICS programs, and SAA communications interface programs that do not use the SET calls, require that all the relevant definitions be installed. You can use CEDA CHECK to help find out if all required definitions are in a group.

PARTNER definition attributes



DESCRIPTION(*text*)
You can provide a description of the resource you are defining in this field. The description text can be up to 58 characters in length. There are no restrictions on the characters that you can use. However, if you use parentheses, ensure that for each left parenthesis there is a matching right one. If you use the CREATE command, for each single apostrophe in the text, code two apostrophes.

GROUP(*groupname*)
Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed.

Acceptable characters:

`A-Z 0-9 $ @ #`

Any lower case characters you enter are converted to upper case.

The GROUP name can be up to eight characters in length. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

NETNAME(*netname*)
is the netname of the logical unit on which the partner application program is running. It matches the NETNAME attribute specified in the CONNECTION definition. The name can be up to eight characters in length.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters you enter are converted to uppercase.

NETWORK(*network*)
You can use this optional attribute to specify the name of the network on which the partner LU is located. The name can be up to eight characters in length.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters you enter are converted to uppercase.

PARTNER(*name*)

specifies the name of this PARTNER definition. The name can be up to eight characters in length.

Acceptable characters:

`A-Z 0-9`

Unless you are using the CREATE command, any lowercase characters you enter are converted to uppercase.

Do not use partner names beginning with DFH, because these characters are reserved for use by CICS.

A partner definition specifies the SAA communications interface information required to establish a conversation with a partner program. For further guidance on this, see *Common Programming Interface Communications Reference*.

PROFILE(*profile*)

specifies the name of the PROFILE definition which is to be used for the session and conversation. The default PROFILE is DFHCICSA. The name can be up to 8 characters in length.

Acceptable characters:

`A-Z a-z 0-9 $ @ # . / - _ % & ¢ ? ! : | " = ¬ , ; < >`

For information about entering mixed case information, see “Entering mixed case attributes” on page 388.

TPNAME(*tpname*)

specifies the name of the remote transaction program that will be running on the partner LU. The definition of a remote TP name is mandatory; you must specify either TPNAME or its alternative, XTPNAME. This name can be up to 64 characters in length.

Acceptable characters:

`A-Z a-z 0-9 $ @ # . / - _ % & ¢ ? ! : | " = ¬ , ; < >`

For information about entering mixed case information, see “Entering mixed case attributes” on page 388.

If this range of characters is not sufficient for a name that you wish to specify, you may use the XTPNAME attribute instead of TPNAME.

XTPNAME(*xtpname*)

This attribute may be used as an alternative to TPNAME; you **must** specify one of the two, because the definition of a remote TP name is mandatory.

Enter a hexadecimal string up to 128 characters in length, representing the name of the remote transaction program that runs on the partner LU. All hexadecimal combinations are acceptable **except X'40'**.

To specify an XTPNAME more than 72 characters long to DFHCSDUP, put an asterisk in column 72. This causes the following line to be concatenated.

Chapter 20. PIPELINE resource definitions

A PIPELINE resource definition is used when a CICS application is in the role of a Web service provider or requester. It provides information about the message handler programs that act on a service request and on the response. Typically, a single PIPELINE definition defines an infrastructure that can be used by many applications.

The information about the processing nodes is supplied indirectly: the PIPELINE specifies the name of an HFS file which contains an XML description of the nodes and their configuration.

An inbound Web service request (that is, a request by which a client invokes a Web service in CICS) is associated with a PIPELINE resource by the URIMAP resource. The URIMAP identifies the PIPELINE resource that applies to the URI associated with the request; the PIPELINE specifes the processing that is to be performed on the message.

Defining a PIPELINE

You can define a PIPELINE in the following ways:

- Using the CEDA transaction; see “Defining PIPELINEs using CEDA.”
- Using the DFHCSDUP utility; see “The DFHCSDUP DEFINE command” on page 436.
- Using the CREATE PIPELINE command. See the *CICS System Programming Reference*.

Defining PIPELINEs using CEDA

From a CICS terminal, issue the following command:

`CEDA DEFINE PIPELINE(`*`name`*`) GROUP(`*`name`*`)`

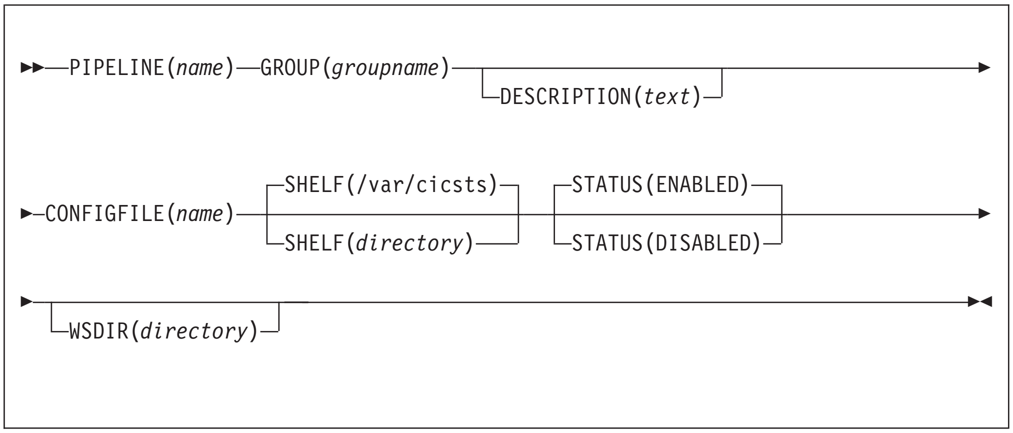
Figure 16 illustrates the CEDA DEFINE PIPELINE panel:

```
PIPELINE     ==>
Group        ==>
Description  ==>
Status       ==> Enabled           Enabled | Disabled
Configfile   ==>
(Mixed Case) ==>
             ==>
             ==>
             ==>
Shelf        ==>
(Mixed Case) ==>
             ==>
             ==>
             ==>
Wsdir        ==>
(Mixed Case) ==>
             ==>
             ==>
             ==>
```

Figure 16. The DEFINE panel for PIPELINE

Installing PIPELINE definitions

PIPELINE attributes



PIPELINE(*name*)
Specifies the name of this PIPELINE. The name can be up to eight characters in length.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters you enter are converted to uppercase.

GROUP(*groupname*)
Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed.

Acceptable characters:

`A-Z 0-9 $ @ #`

Any lower case characters you enter are converted to upper case.

The GROUP name can be up to eight characters in length. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

DESCRIPTION(*text*)
You can provide a description of the resource you are defining in this field. The description text can be up to 58 characters in length. There are no restrictions on the characters that you can use. However, if you use parentheses, ensure that for each left parenthesis there is a matching right one. If you use the CREATE command, for each single apostrophe in the text, code two apostrophes.

CONFIGFILE(*name*)
Specifies the name of an HFS file that contains information about the processing nodes that will act on a service request, and on the response.

Acceptable characters:

`A-Z a-z 0-9 . / _ # @`

For information about entering mixed case information, see "Entering mixed case attributes" on page 388.

The value specified must be a valid name for an HFS file:
- The name must not contain imbedded space characters
- The name must not contain consecutive instances of the / character

The name is case-sensitive.

SHELF({**/var/cicsts/**|*directory*})
Specifies the 1–255 character fully-qualified name of a directory (a *shelf*, primarily for Web service binding files) on HFS.

Acceptable characters:

`A-Z a-z 0-9 . / _ # @`

For information about entering mixed case information, see "Entering mixed case attributes" on page 388.

The value specified must be a valid name for an HFS file:
- The name must not contain imbedded space characters
- The name must not contain consecutive instances of the / character

The name is case-sensitive.

CICS regions into which the PIPELINE definition is installed must have full permissions to the shelf directory—read, write, and the ability to create subdirectories.

A single shelf directory can be shared by multiple CICS regions and by multiple PIPELINE definitions. Within a shelf directory, each CICS region uses a separate subdirectory to keep its files separate from those of other CICS regions. Within each region's directory, each PIPELINE uses a separate subdirectory.

After a CICS region performs a cold or initial start, it deletes its subdirectories from the shelf before trying to use the shelf.

You should not attempt to modify the contents of a shelf that is referred to by an installed PIPELINE definition. If you do, the effects are unpredictable.

STATUS({**ENABLED**|**DISABLED**})
Specifies the initial status of the PIPELINE when it is installed:

ENABLED
Web service requests for this PIPELINE are processed normally.

DISABLED
Web service requests for this PIPELINE cannot be processed.

WSDIR(*directory*)
specifies the 1–255 character fully-qualified name of the *Web service binding directory* (also known as the *pickup directory*) on HFS.

Acceptable characters:

`A-Z a-z 0-9 . / _ # @`

For information about entering mixed case information, see “Entering mixed case attributes” on page 388.

The value specified must be a valid name for an HFS file:
- The name must not contain imbedded space characters
- The name must not contain consecutive instances of the / character

The name is case-sensitive.

The Web service binding directory contains Web service binding files that are associated with a PIPELINE, and that are to be installed automatically by the CICS scanning mechanism. When the PIPELINE definition is installed, CICS scans the directory and automatically installs any Web service binding files it finds there. Note that this happens regardless of whether the PIPELINE is installed in enabled or disabled state.

If you specify a value for the WSDIR attribute, it must refer to a valid HFS directory to which the CICS region has at least read access. If this is not the case, any attempt to install the PIPELINE resource will fail.

If you do not specify a value for WSDIR, no automatic scan takes place on installation of the PIPELINE, and PERFORM PIPELINE SCAN commands will fail.

Chapter 21. PROCESSTYPE resource definitions

A PROCESSTYPE resource defines a BTS process-type. It names the CICS file which relates to the physical VSAM data set (repository) on which details of all processes of this type (and their activity instances) are to be stored.

Using the CICS business transaction services (BTS) API, you can define and execute complex business applications called *processes*. A process is represented in memory as a block of storage containing information relevant to its execution. It also has associated with it at least one additional block of information called an activity instance. When not executing under the control of the CICS business transaction services domain, a process and its activity instances are written to a data set called a *repository*.

You can categorize your BTS processes by assigning them to different process-types. This is useful, for example, for browsing purposes. The activities that constitute a process are of the same process-type as the process itself.

Note: Records for multiple process-types can be written to the same repository data set.

Figure 17 shows the relationship between PROCESSTYPE definitions, FILE definitions, and BTS repository data sets:

- More than one PROCESSTYPE resources can refer to the same FILE.
- More than one FILE can refer to the same BTS repository data set.

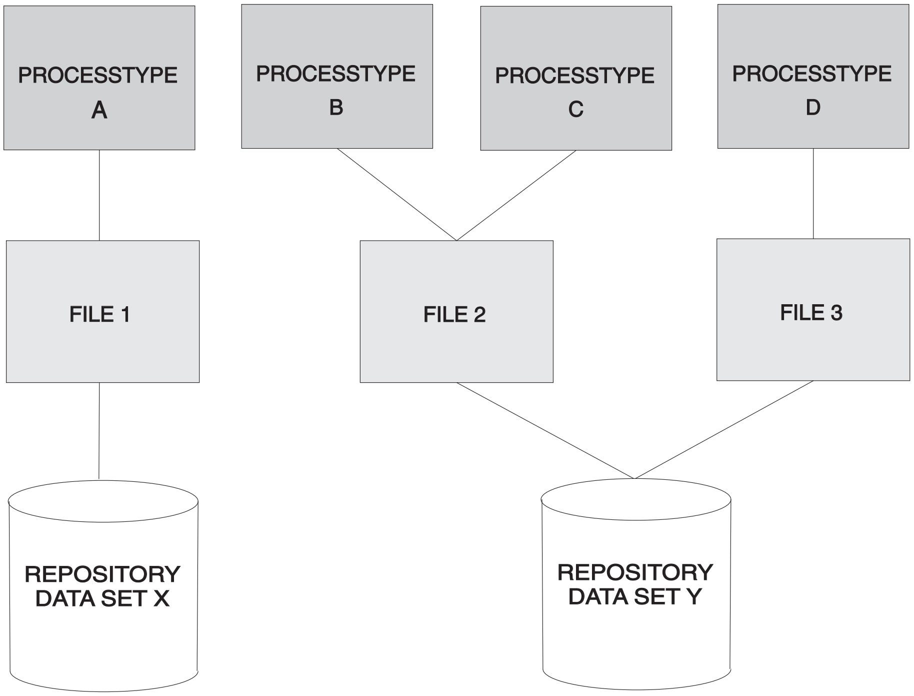


Figure 17. PROCESSTYPE definitions, FILE definitions, and BTS repository data sets

You may want to record the progress of BTS processes and activities for audit purposes, and to help diagnose errors in BTS applications. If so, you can name the

CICS journal to which audit records are to be written, and the level of auditing that is required, for processes of the specified type.

Defining process types

You can define process types in the following ways:

- Using the CEDA transaction; see “Defining process types using CEDA.”
- Using the DFHCSDUP utility; see *CICS Operations and Utilities Guide*.
- Using the CREATE PROCESSTYPE command; see the *CICS System Programming Reference*.
- Using CICSPlex SM Business Application Services; see *CICSPlex System Manager Managing Business Applications*.

Defining process types using CEDA

From a CICS terminal, enter the following command:

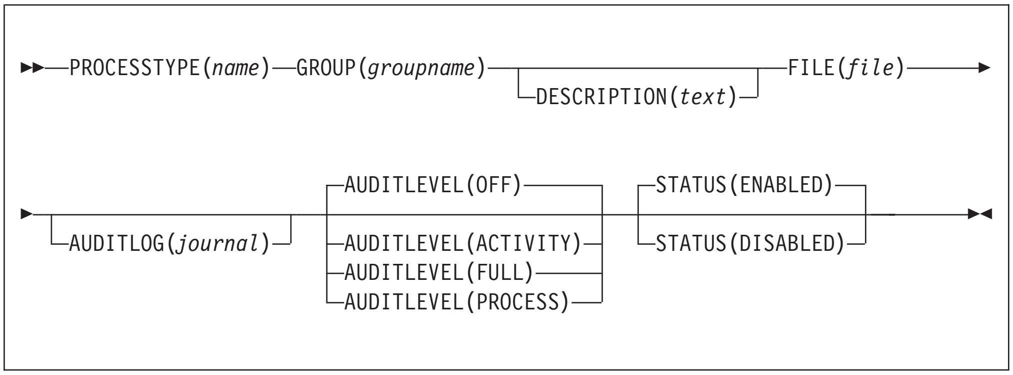
`CEDA DEFINE PROCESSTYPE(name) GROUP(name)`

The CEDA panel that is displayed when you enter a valid DEFINE PROCESSTYPE command is:

```
 Processtype  ==>
 Group        ==>
 Description  ==>
INITIAL STATUS
 Status       ==> Enabled           Enabled | Disabled
DATA SET PARAMETERS
 File         ==>
AUDIT TRAIL
 AUDITLOg     ==>
 AUDITLEvel   ==> Off                Off | Process | Activity | Full
```

Figure 18. The DEFINE panel for PROCESSTYPE

PROCESSTYPE definition attributes



AUDITLEVEL({OFF|**PROCESS**|**ACTIVITY**|**FULL**})
specifies the initial level of audit logging for processes of this type. If you specify any value other than OFF, you must also specify the AUDITLOG option.

ACTIVITY
Activity-level auditing. Audit records will be written from:

1. The process audit points

2. The activity primary audit points.

FULL Full auditing. Audit records will be written from:

1. The process audit points
2. The activity primary *and* secondary audit points.

OFF No audit trail records will be written.

PROCESS
Process-level auditing. Audit records will be written from the process audit points only.

For details of the records that are written from the process, activity primary, and activity secondary audit points, see *CICS Business Transaction Services*.

AUDITLOG(*journal*)
specifies the name of a CICS journal to which audit trail records will be written, for processes of this type and their constituent activities. The name can be up to eight characters long. If you do not specify an audit log, no audit records will be kept for processes of this type.

DESCRIPTION(*text*)
You can provide a description of the resource you are defining in this field. The description text can be up to 58 characters in length. There are no restrictions on the characters that you can use. However, if you use parentheses, ensure that for each left parenthesis there is a matching right one. If you use the CREATE command, for each single apostrophe in the text, code two apostrophes.

FILE(*file*)
specifies the name of the CICS file definition that will be used to write the process and activity records of this process-type to its associated repository data set. The name can be up to eight characters long.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters you enter are converted to uppercase.

GROUP(*groupname*)
Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed.

Acceptable characters:

`A-Z 0-9 $ @ #`

Any lower case characters you enter are converted to upper case.

The GROUP name can be up to eight characters in length. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

PROCESSTYPE(*name*)
specifies the name of this PROCESSTYPE definition.

Acceptable characters:

`A-Z a-z 0-9 $ @ # . / - _ % & ¢ ? ! : | " = ¬ , ; < >`

For information about entering mixed case information, see “Entering mixed case attributes” on page 388.

The name can be up to eight characters in length.. Leading and embedded blank characters are not permitted. If the name supplied is less than eight characters, it is padded with trailing blanks up to eight characters.

STATUS({ENABLED|DISABLED})
specifies the initial status of the process-type following a CICS initialization with START=COLD or START=INITIAL. After initialization, you can use the CEMT SET PROCESSTYPE command to change the status of the process-type. The status of the process-type following a restart is recovered to its status at the previous shutdown.

DISABLED
Processes of this type cannot be created. An EXEC CICS DEFINE PROCESS request that tries to create a process of this type results in the INVREQ condition being returned to the application program.

ENABLED
Processes of this type can be created.

Chapter 22. PROFILE resource definitions

A PROFILE resource specifies options that control the interactions between transactions and terminals or logical units. The PROFILE is a means of standardizing the use of such options as screen size and printer compatibility, and the use of such functions as message journaling and the node error program.

MODENAME
A profile is associated with the communication between a transaction and an LUTYPE6.1 or APPC session to another system. For APPC sessions, you refer on the PROFILE definition to the MODENAME that is also named on the SESSIONS definitions. This MODENAME is the name of the mode set to which the sessions belong. See Chapter 6, "CONNECTION resource definitions," on page 33.

When installed in CICS, the information from the PROFILE definition creates an entry in the profile table. This entry is later used by each transaction that references that PROFILE.

There are CICS-supplied PROFILE definitions suitable for most purposes. Each TRANSACTION definition names the PROFILE to be used. If you do not specify a PROFILE, the transaction uses the PROFILE supplied for using a terminal in a standard way.

With CICS intercommunication facilities (for example, function shipping), a PROFILE is needed for the communication between the transaction and the session. The attributes of the CICS-supplied profiles are shown in "PROFILE definitions in group DFHISC" on page 650. The *CICS Intercommunication Guide* gives further information about the CICS-supplied PROFILEs, and tells you about defining your own profiles.

Defining profiles

You can define profiles in the following ways:

- Using the CEDA transaction; see "Defining profiles using CEDA."
- Using the DFHCSDUP utility; see *CICS Operations and Utilities Guide*.
- Using the CREATE PROFILE command; see the *CICS System Programming Reference*.
- Using CICSPlex SM Business Application Services; see *CICSPlex System Manager Managing Business Applications*.

Defining profiles using CEDA

From a CICS terminal, enter the following command:

```
CEDA DEFINE PROFILE(name) GROUP(name)
```

Figure 19 on page 166 shows the panel that is displayed.

```
 PROFile      ==>
 Group        ==>
 DEscription  ==>
 Scrnsize     ==> Default            Default | Alternate
 Uctran       ==> No                 No | Yes
 MOdename     ==>
 Facilitylike ==>
 PRIntercomp  ==> No                 No | Yes
JOURNALLING
 Journal      ==> No                 No | 1-99
 MSGJrnl      ==> No                 No | INPut | Output | INOut
PROTECTION
 MSGInteg     ==> No                 No | Yes
 Onewte       ==> No                 No | Yes
 PROtect        : No                 No | Yes
 Chaincontrol ==> No                 No | Yes
PROTOCOLS
 DVsuprt      ==> All                All | Nonvtam | Vtam
 Inbfmh       ==> No                 No | All | Dip | Eods
 RAq          ==> No                 No | Yes
 Logrec       ==> No                 No | Yes
RECOVERY
 Nepclass     ==> 000                0-255
 RTimout      ==> No                 No | 1-7000
```

Figure 19. The DEFINE panel for PROFILE

PROFILE definition attributes

```
►►──PROFILE(name)──GROUP(groupname)──┬────────────────────┬──────────────────────►
                                     └─DESCRIPTION(text)─┘

  ┌─CHAINCONTROL(NO)──┐  ┌─DVSUPRT(ALL)─────┐
►─┼───────────────────┼──┼──────────────────┼──┬──────────────────────────┬──────►
  └─CHAINCONTROL(YES)─┘  ├─DVSUPRT(NONVTAM)─┤  └─FACILITYLIKE(terminal)─┘
                         └─DVSUPRT(VTAM)────┘

  ┌─INBFMH(NO)───┐  ┌─JOURNAL(NO)────────┐  ┌─LOGREC(NO)──┐
►─┼──────────────┼──┼────────────────────┼──┼─────────────┼────────────────────────►
  ├─INBFMH(ALL)──┤  └─JOURNAL(journal)─┘  └─LOGREC(YES)─┘
  ├─INBFMH(DIP)──┤
  └─INBFMH(EODS)─┘

                          ┌─MSGINTEG(NO)──┐  ┌─MSGJRNL(NO)─────┐
►─┬─────────────────────┬─┼───────────────┼──┼─────────────────┼───────────────────►
  └─MODENAME(modename)─┘ └─MSGINTEG(YES)─┘  ├─MSGJRNL(INOUT)──┤
                                             ├─MSGJRNL(INPUT)──┤
                                             └─MSGJRNL(OUTPUT)─┘

  ┌─NEPCLASS(0)─────────┐  ┌─ONEWTE(NO)──┐  ┌─PRINTERCOMP(NO)──┐
►─┼─────────────────────┼──┼─────────────┼──┼──────────────────┼───────────────────►
  └─NEPCLASS(nepclass)─┘  └─ONEWTE(YES)─┘  └─PRINTERCOMP(YES)─┘

  ┌─PROTECT(NO)──┐  ┌─RAQ(NO)──┐  ┌─RTIMOUT(NO)───┐
►─┼──────────────┼──┼──────────┼──┼───────────────┼────────────────────────────────►
  └─PROTECT(YES)─┘  └─RAQ(YES)─┘  └─RTIMOUT(mmss)─┘

  ┌─SCRNSIZE(DEFAULT)───┐  ┌─UCTRAN(NO)──┐
►─┼─────────────────────┼──┼─────────────┼─────────────────────────────────────────►◄
  └─SCRNSIZE(ALTERNATE)─┘  └─UCTRAN(YES)─┘
```

CHAINCONTROL({**NO**|**YES**})
specifies whether the application program can control the outbound chaining of request units. If you specify CHAINCONTROL(YES), ONEWTE(YES) means one chain and not one terminal control output request.

DESCRIPTION(*text*)
You can provide a description of the resource you are defining in this field. The description text can be up to 58 characters in length. There are no restrictions on the characters that you can use. However, if you use parentheses, ensure that for each left parenthesis there is a matching right one. If you use the CREATE command, for each single apostrophe in the text, code two apostrophes.

DVSUPRT({**ALL**|**NONVTAM**|**VTAM**})
specifies the devices (terminals or logical units) that are to be supported. The access method used by a particular terminal or logical unit is specified in its associated TCTTE.

ALL The profile can be used with any terminal or logical unit.

NONVTAM
The profile can be used only with non-VTAM terminals.

VTAM The profile can be used only with logical units.

FACILITYLIKE(*terminal*)
This is an optional attribute that specifies the name of an existing (four-character) terminal resource definition to be used as a template for the bridge facility. It can be overridden by specifying FACILITYLIKE in the bridge exit.

There is no default value for this attribute.

If you are running in a CICS system started with the VTAM=NO system initialization (SIT) parameter, the resource definition specified by FACILITYLIKE must be defined as a remote terminal.

GROUP(*groupname*)
Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed.

Acceptable characters:

`A-Z 0-9 $ @ #`

Any lower case characters you enter are converted to upper case.

The GROUP name can be up to eight characters in length. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

INBFMH({**NO**|**ALL**|**DIP**|**EODS**}) **(SNA LUs only)**
specifies, for profiles used with logical units, whether a function management header (FMH) received from a logical unit is to be passed to the application program.

ALL All FMHs (except APPC FMHs and LU6.1 ATTACH and SYNCPOINT FMHs that are processed by CICS) are passed to the application program. This value is required for function shipping transactions such as CSMI, transactions which use distributed transaction processing, and for distributed program link requests.

DIP The batch data interchange program (DFHDIP) is to process inbound FMHs. BMS issues a batch data interchange receive request if a BMS receive request has been issued, and a batch data interchange receive request is issued instead of a terminal control receive request.

EODS An FMH is passed to the application program only if it indicates end of data set (EODS).

NO The FMHs are discarded.

JOURNAL({**NO**|*journal*})
specifies that you want automatic journaling of messages to take place, by giving the identifier of the journal.

NO No automatic journaling of messages is to take place.

journal The journal identification to be used for automatic journaling. This can be any number in the range 01 through 99. This number is appended to the letters DFHJ to give a journal identification of the form DFHJ*nn* and this maps to an MVS system logger general log stream.

Note: In CICS Transaction Server for z/OS, DFHJ01 is not the system log.

In a transaction routing environment, message journaling is performed in the application-owning region (AOR). Therefore, you should specify the JOURNAL attribute on the transaction profile in the AOR.

LOGREC({NO|YES})

specifies whether the design of the application requires that each EXEC CICS RECEIVE request is to be satisfied by a logical record. This option allows existing 2770-and 2780-based application programs to be attached to a batch logical unit (for example, 3790 or 8100) without modification to the program.

MODENAME(*modename*)

specifies the name that identifies a group of sessions for use on an APPC connection. The name can be up to eight characters in length, and must be the name of a VTAM LOGMODE entry defined to VTAM. It must not be the reserved name SNASVCMG. If you omit the modename, it defaults to blanks. See the *CICS Intercommunication Guide* for more information about VTAM modenames.

If a transaction that specifies this profile has been started using an EXEC CICS START command, the MODENAME is used for allocation of the principal facility. If a transaction performs an EXEC CICS ALLOCATE command specifying this profile, the MODENAME is used for allocation of the alternate facility.

If you do not specify a MODENAME, CICS selects a session from any one of the mode sets that have been defined.

The CICS-supplied profile DFHCICSA is used, if PROFILE is not specified on an EXEC CICS ALLOCATE command. For function shipping, the profile DFHCICSF is always used. MODENAME is not specified on the definition for either of these profiles, but you can add a MODENAME if you make your own copy. You must then ensure that the mode sets using your MODENAME have been defined in the TERMINAL or SESSIONS definition for all the systems with which communication takes place using APPC.

If a MODENAME is specified and you wish to remove it, delete completely the value previously specified by pressing the ERASE EOF key.

MSGINTEG({NO|YES}) (SNA LUs only)

specifies whether a definite response is to be requested with an output request to a logical unit. You cannot specify YES for a pipeline transaction.

MSGJRNL({NO|INPUT|OUTPUT|INOUT})

specifies which messages are to be automatically journaled. If you specify a value other than NO, you must also supply a value for the JOURNAL attribute.

NO No message journaling is required.

INPUT Journaling is required for input messages.

OUTPUT

Journaling is to be performed for output messages.

INOUT

Journaling is to be performed for input and output messages.

In a transaction routing environment, message journaling is performed in the application-owning region (AOR) for routed APPC (LU type 6.2) sessions, and you should specify the MSGJRNL attribute on the transaction profile in the AOR. For other routed sessions, message journaling is performed in the terminal-owning region (TOR). In this case, you should specify the MSGJRNL attribute on the transaction profile in the TOR.

NEPCLASS({**0**|*nepclass*}) **(VTAM only)**

specifies the node error program transaction class. This value overrides the value specified on the TYPETERM and SESSION definitions.

0 This results in a link to the default node error program module for VTAM devices, or is the default value for non-VTAM devices.

value The transaction class for the (nondefault) node error program module. The value can be in the range 1 through 255. For programming information on the node error program, see the *CICS Customization Guide*.

The NEPCLASS attribute applies only to user transactions, and is ignored for SNASVCMGR sessions.

ONEWTE({**NO**|**YES**})

specifies whether the transaction is permitted only one write operation or EXEC CICS SEND during its execution. YES has the effect of forcing the LAST option on the first write of the transaction. Any additional write requests are treated as errors, and the task is made ready for abnormal termination.

You must specify YES for a PIPELINE transaction.

PRINTERCOMP({**NO**|**YES**})

specifies the level of compatibility required for the generation of data streams to support the printer compatibility option for the BMS SEND TEXT command.

NO Each line of output starts with a blank character, so that the format is equivalent to that on a 3270 display where an attribute byte precedes each line.

YES No blank character is inserted, so that forms-feed characters included as the first character of your data are honored and the full width of the printer is available for your data.

If you use the BMS forms feed option, specify YES.

PROFILE(*name*)

specifies the name of this PROFILE definition. The name can be up to eight characters in length.

Acceptable characters:

`A-Z a-z 0-9 $ @ # . / - _ % & ¢ ? ! : | " = ¬ , ; < >`

For information about entering mixed case information, see “Entering mixed case attributes” on page 388.

Do not use profile names beginning with DFH, because these characters are reserved for use by CICS.

Note: If you use a comma (,) in a name, you will be unable to use those commands such as

```
CEMT INQUIRE PROFILE(value1,value2)
```

where the comma serves as a list delimiter. See *CICS Supplied Transactions* for information about using lists of resource identifiers.

A profile specifies the options that control the interaction between CICS and a terminal or logical unit. A profile name is specified on the transaction definition to indicate the set of options that control the communication between the transaction and its principal terminal. You can also specify a profile name on an EXEC CICS ALLOCATE command to indicate the options that control communication between the transaction and the allocated session.

CICS supplies a number of profile definitions that are suitable for most purposes. For more information, see the *CICS Intercommunication Guide*.

PROTECT
This attribute is obsolete, but is supported to provide compatibility with earlier releases of CICS. For more information, see Appendix A, “Obsolete attributes,” on page 615.

RAQ({**NO**|**YES**}) **(SNA terminals only)**
specifies whether the 'read ahead queuing' option is required.

NO The transaction obeys SNA protocols and only SEND and RECEIVE when in the correct mode. If it does not follow the protocol, it may be abended with code ATCV.

YES The transaction may not obey SNA protocols, and CICS queues incoming data on temporary storage until the data is specifically requested by the transaction. RAQ(YES) is provided only for compatibility with transactions that support both bisynchronous devices and logical units, and its use is not recommended.

RTIMOUT({**NO**|*mmss*})
specifies the time-out value:

- For the read time-out feature. The task that is timed out receives an AKCT , AZCT or AZIG abend. (Note that if a value is specified and you wish to let it default to NO, you must completely delete the value previously specified.)
- To terminate an IIOP request processor task that has been waiting for a method request for longer than the RTIMOUT value.

RTIMOUT has no effect for basic (unmapped) APPC connections.

NO The read time-out feature is not required.

value This is an interval (MMSS for minutes and seconds) after which the task is terminated if no input has been received from the terminal. The maximum value that can be specified is 70 minutes.

SCRNSIZE({**DEFAULT**|**ALTERNATE**})
specifies whether the DEFAULT or ALTERNATE buffer size for a 3270 display or printer is to be used. For further information on the choice of screen sizes and buffer sizes, refer to the ALTSCREEN and DEFSCREEN attributes on the TYPETERM definition.

The SCRNSIZE value is ignored if the TYPETERM definition has ALTSCREEN(0,0) and DEFSCREEN(0,0). That is, the screen size is assumed from the related TERMMODEL attribute in the TYPETERM definition; the page size is taken from PAGESIZE, and the ALTPAGE value is ignored. The 3270 erase write (EW) command is inserted for output requests with the ERASE option.

ALTERNATE
If the TYPETERM definition has nonzero ALTSCREEN, the alternate screen size mode is applied, using the erase write alternate (EWA) command. That is, whenever a terminal output request with the ERASE option is issued, the 3270 EWA command is inserted in the data

stream. The ALTSCREEN value is assumed as the screen size, and BMS uses the value in ALTPAGE as the page size.

SCRNSIZE(ALTERNATE) may be used for all CICS service transactions (for example, CSMT).

DEFAULT

If the TYPETERM definition has nonzero ALTSCREEN or nonzero DEFSCREEN, the default screen size mode is applied, using the erase write (EW) command. That is, whenever the terminal issues a terminal output request with the ERASE option, the 3270 EW command is inserted in the data stream. The screen size specified in the DEFSCREEN attribute is assumed, and BMS uses the value specified in the PAGESIZE attribute as the page size.

Note: Both DEFAULT and ALTERNATE can be overridden by the DEFAULT and ALTERNATE options on the SEND MAP, SEND TEXT, and SEND CONTROL commands.

UCTRAN({NO|YES}) (VTAM only)

specifies whether terminal input is to be translated to uppercase before passing to programs for the transaction using this profile.

You can also request translation to uppercase at the terminal level on the associated TYPETERM definition (see “TYPETERM definition attributes” on page 321) but be aware of the following points:

- A TYPETERM UCTRAN(YES) definition overrides a PROFILE UCTRAN(NO) definition. So, if you specify TYPETERM UCTRAN(YES), a PROFILE UCTRAN(NO) has no effect.
- A PROFILE UCTRAN(YES) definition overrides a TYPETERM UCTRAN(NO) definition.
- Specifying TYPETERM UCTRAN(TRANID) causes the tranid to be translated to uppercase so that CICS can locate the transaction definition. All other input received by the application is translated according to what is specified for PROFILE UCTRAN.
- UCTRAN(YES) on a profile definition does not cause translation of the input data until an EXEC CICS RECEIVE or CONVERSE is executed. This means that if the transaction is routed through a dynamic routing program, for example DFHDYP, the copy of the input data passed to the routing program is unaffected by the UCTRAN option of the PROFILE definition.

Note: In a transaction routing environment where your VTAM terminals have a remote definition on the AOR, and the AOR has a different UCTRAN value from the TOR, the TOR value of UCTRANST (as specified in an EXEC CICS SET TERMINAL command) overrides that on the AOR.

Table 6 shows which portion of the terminal input is translated (transaction id and/or data) according to the setting of the UCTRAN on the PROFILE and TYPETERM resource definitions.

Table 6. The effect of UCTRAN attributes on tranid and data translation

UCTRAN in PROFILE	UCTRAN in TYPETERM	TRANID translated?	Data Translated?
YES	YES	Yes	Yes
YES	NO	No	Yes
YES	TRANID	Yes	Yes

Table 6. The effect of UCTRAN attributes on tranid and data translation (continued)

UCTRAN in PROFILE	UCTRAN in TYPETERM	TRANID translated?	Data Translated?
NO	YES	Yes	Yes
NO	NO	No	No
NO	TRANID	Yes	No

Chapter 23. PROGRAM resource definitions

A PROGRAM resources describes the control information for a program that is stored in the program library and used to process a transaction, or part of a transaction.

For example, this is where you would tell CICS whether the program can handle data located above the 16MB line. You can create PROGRAM definitions either by using CEDA or DFHCSDUP, or by setting the appropriate system initialization parameters and allowing programs to be autoinstalled. See Chapter 43, “Autoinstalling programs, map sets, and partition sets,” on page 483 for information on autoinstall for programs.

Defining programs

You can define programs in the following ways:

- Using the CEDA transaction; see “Defining programs using CEDA.”
- Using the DFHCSDUP utility; see *CICS Operations and Utilities Guide*.
- Using the CREATE PROGRAM command; see the *CICS System Programming Reference*.
- Using CICSPlex SM Business Application Services; see *CICSPlex System Manager Managing Business Applications*.

Defining programs using CEDA

From a CICS terminal, enter the following command:

```
CEDA DEFINE PROGRAM(name) GROUP(name)
```

Figure 20 on page 176 shows the panel that is displayed.

```
  PROGram      ==>
  Group        ==>
  DEscription  ==>
  Language     ==>                   CObol | Assembler | Le370 | C | Pli
  RELoad       ==> No                No | Yes
  RESident     ==> No                No | Yes
  USAge        ==> Normal            Normal | Transient
  USElpacopy   ==> No                No | Yes
  Status       ==> Enabled           Enabled | Disabled
  RSl            : 00                0-24 | Public
  Cedf         ==> Yes               Yes | No
  DAtalocation ==> Below             Below | Any
  EXECKey      ==> User              User | CICS
  COncurrency  ==> Quasirent         Quasirent | Threadsafe
  Api          ==> Cicsapi           Cicsapi | Openapi
REMOTE ATTRIBUTES
  DYnamic      ==> No                No | Yes
  REMOTESystem ==>
  REMOTEName   ==>
  Transid      ==>
  EXECUtionset ==> Fullapi           Fullapi | Dplsubset
 JVM ATTRIBUTES
  JVM          ==> No                No | Yes
  JVMClass     ==>
  (Mixed Case) ==>
               ==>
               ==>
               ==>
  JVMProfile   ==> DFHJVMPR          (Mixed Case)
```

Figure 20. The DEFINE panel for PROGRAM

For information about input to mixed case fields, see “Entering mixed case attributes” on page 388.

Installing program definitions

Use the INSTALL command to install a new PROGRAM definition in your CICS system.

When you put a new version of the program in your library, you do not need to install the definition again, unless any of the attributes specified on the definition have changed. To make the new version available, use the CEMT transaction:

```
CEMT SET PROGRAM(pgmid) NEWCOPY
```

See *CICS Supplied Transactions* for further information.

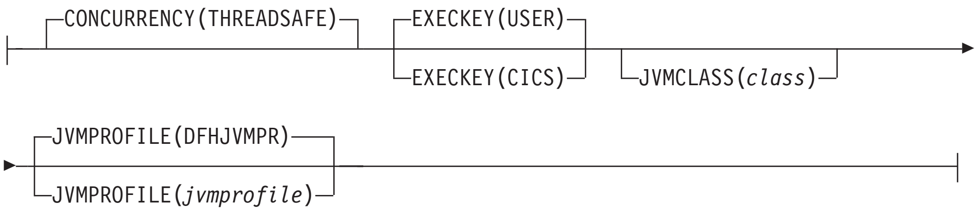
PROGRAM definition attributes

```
►►──PROGRAM(name)──GROUP(groupname)──┬─────────────────────┬─────────────────────►
                                     └─DESCRIPTION(text)─┘

   ┌─API(CICSAPI)─┐   ┌─CEDF(YES)─┐   ┌─DATALOCATION(BELOW)─┐
►──┼──────────────┼───┼───────────┼───┼─────────────────────┼────────────────────►
   └─API(OPENAPI)─┘   └─CEDF(NO)──┘   └─DATALOCATION(ANY)───┘

   ┌─DYNAMIC(NO)──┐   ┌─EXECKEY(USER)─┐   ┌─EXECUTIONSET(FULLAPI)───┐
►──┼──────────────┼───┼───────────────┼───┼─────────────────────────┼────────────►
   └─DYNAMIC(YES)─┘   └─EXECKEY(CICS)─┘   └─EXECUTIONSET(DPLSUBSET)─┘

   ┌─JVM(NO)──┤ Attributes for non-JVM programs ├─┐
►──┼──────────────────────────────────────────────┼──────────────────────────────►
   └─JVM(YES)─┤ Attributes for JVM programs ├─────┘

►──┬─────────────────────────────────────────────────┬───────────────────────────►
   └─REMOTESYSTEM(connection)──┬────────────────────┬┘
                               └─REMOTENAME(program)─┘

   ┌─STATUS(ENABLED)──┐
►──┼──────────────────┼──┬────────────────┬──────────────────────────────────────►◄
   └─STATUS(DISABLED)─┘  └─TRANSID(char4)─┘
```

Attributes for non-JVM programs:

```
                                  ┌─CONCURRENCY(QUASIRENT)───┐   ┌─EXECKEY(USER)─┐
├──┬───────────────────────┬──────┼──────────────────────────┼───┼───────────────┼──►
   ├─LANGUAGE(ASSEMBLER)───┤      └─CONCURRENCY(THREADSAFE)──┘   └─EXECKEY(CICS)─┘
   ├─LANGUAGE(C)───────────┤
   ├─LANGUAGE(COBOL)───────┤
   ├─LANGUAGE(LE370)───────┤
   └─LANGUAGE(PLI)─────────┘

   ┌─RELOAD(NO)──┐   ┌─RESIDENT(NO)──┐   ┌─USAGE(NORMAL)────┐
►──┼─────────────┼───┼───────────────┼───┼──────────────────┼────────────────────►
   └─RELOAD(YES)─┘   └─RESIDENT(YES)─┘   └─USAGE(TRANSIENT)─┘

   ┌─USELPACOPY(NO)──┐
►──┼─────────────────┼───────────────────────────────────────────────────────────┤
   └─USELPACOPY(YES)─┘
```

Attributes for JVM programs:



API({CICSAPI|OPENAPI})

specifies which API is to be used by the program. The API attribute applies to:

- User application programs
- PLT programs
- User-replaceable programs
- Task-related user exit programs. For more information, see the *CICS Customization Guide*.

The API attribute does not apply to global user exits.

CICSAPI

The program uses CICS application programming interfaces only.

CICS determines whether the program runs on the quasi-reentrant (QR) TCB, or on another TCB. This depends upon the value of the CONCURRENCY attribute in the PROGRAM resource definition. If the program is defined as threadsafe it may run on whichever TCB, in use by CICS at the time, is determined as suitable.

OPENAPI

The program is not restricted to the CICS application program interfaces.

CICS executes the program on its own L8 or L9 mode open TCB dependent upon the value of the EXECKEY attribute in the PROGRAM resource definition. If, while executing a CICS command, CICS requires a switch to the QR TCB, it returns to the open TCB before handing control back to the application program.
OPENAPI requires the program to be coded to threadsafe standards and defined with CONCURRENCY(THREADSAFE). The primary use for OPENAPI programs is to allow application workloads to be moved off QR TCB and onto multiple open TCBs allowing better exploitation of machine resources to achieve better throughput.
Use of other (non CICS) APIs in OPENAPI programs is possible. This is because, if an open TCB is blocked by an operating system wait, then only the single application is affected not the whole of CICS. Such OPENAPI programs are not permitted to execute on the QR TCB precisely because of this risk of blocking the TCB by an operating system wait and thus affecting the whole of CICS. Nevertheless OPENAPI programs still have obligations to the CICS system as a whole. See the *CICS Application Programming Guide*.

Important: Use of other (non-CICS) APIs within CICS is entirely at the discretion and risk of the user. No testing of other (non CICS) APIs within CICS has been undertaken and use of such APIs is not supported by IBM Service.

CEDF({YES|NO})
specifies the action of the execution diagnostic facility (EDF) when the program is running under EDF control.

NO The EDF diagnostic screens are not displayed.

YES The EDF diagnostic screens are displayed. If the program is translated with the NOEDF option, only the program initiation and termination EDF screens are displayed. See Table 7.

Table 7. The effect on programs of CEDF(NO) and NOEDF

CEDF option on PROGRAM	EDF specified for translator	NOEDF specified for translator
YES	ALL EDF screens	Program initiation and termination screens only
NO	NO EDF screens	NO EDF screens
Note: The table shows how the CEDF option on the program resource definition interacts with the EDF option specified for the translator.		

CONCURRENCY({QUASIRENT|THREADSAFE})
specifies whether the program is written to threadsafe standards, or is only quasi-reentrant. You can specify the CONCURRENCY attribute for all CICS executable program objects:

- User application programs
- PLT programs
- User-replaceable programs
- Global user exit programs. For more information, see the *CICS Customization Guide*.
- Task-related user exit programs. For more information, see the *CICS Customization Guide*.

QUASIRENT
The program is quasi-reentrant only, and relies on the serialization provided by CICS when accessing shared resources.

The program is restricted to the CICS permitted programming interfaces, and must comply with the CICS quasi-reentrancy rules. For details of these, seethe *CICS Application Programming Guide*.

This value is supported for all executable programs.

CICS ensures that the program always executes under the QR TCB, even when control is returned after it has invoked a JVM or an open API task-related user exit, or when it interacts with threadsafe programs.

THREADSAFE
The program is written to threadsafe standards, and when it accesses shared resources it takes into account the possibility that other programs may be executing concurrently and attempting to modify the same resources. The program, therefore, uses appropriate serialization techniques when accessing any shared resources.

Note that JVM programs and any C and C++ programs compiled with the XPLink option must be defined as threadsafe.

For information about CICS DB2 application programs, see the *CICS DB2 Guide*.

For information about writing threadsafe application programs, see the *CICS Application Programming Guide*.

This value is supported for all executable programs. Threadsafe programs must be Language Environment®-conforming, or be assembler programs.

You can also specify the program CONCURRENCY attribute using a program autoinstall exit, if program autoinstall is active.

DATALOCATION({BELOW|ANY})
Commands using the SET option can return a data address to an application program; this operand specifies the location of the data. For example, in the command EXEC CICS RECEIVE SET(ptr-ref), ptr-ref is less than 16MB if DATALOCATION(BELOW) is specified or allowed to default, but may be greater than 16MB if DATALOCATION(ANY) is specified. Note that DATALOCATION does not affect the operation of the GETMAIN command. See the *CICS Application Programming Reference* for programming information about where CICS obtains storage in response to a GETMAIN command.

ANY The program can handle 31-bit addresses. The address of the data can be above or below the 16MB line. The values specified for the DATALOCATION attribute are independent of the addressing mode of the link-edited program. Programs link-edited with addressing mode AMODE=24 cannot access data above 16MB; you should therefore ensure that the value you specify is compatible with the addressing mode of the link-edited application program. For example:

- You are recommended to specify ANY for all 31-bit programs, unless they pass CICS data addresses on to other 24-bit programs.
- Specify DATALOCATION(BELOW) for an AMODE=24 program, unless storage addresses are being passed to a program that can access storage above 16MB, or the program explicitly switches addressing mode.

BELOW
The program can handle only 24-bit addresses and must therefore only be given data located below the 16MB line. If necessary, data is copied below the 16MB line before passing its address to the application program.

DESCRIPTION(*text*)
You can provide a description of the resource you are defining in this field. The description text can be up to 58 characters in length. There are no restrictions on the characters that you can use. However, if you use parentheses, ensure that for each left parenthesis there is a matching right one. If you use the CREATE command, for each single apostrophe in the text, code two apostrophes.

DYNAMIC({NO|YES})
specifies whether, if the program is the subject of a program-link request, the request can be dynamically routed.

NO If the program is the subject of a program-link request, the dynamic routing program is not invoked.

For a distributed program link (DPL) request, the server region on which the program is to execute must be specified explicitly on the REMOTESYSTEM attribute of the PROGRAM definition or on the SYSID option of the EXEC CICS LINK command; otherwise it defaults to the local region.

YES If the program is the subject of a program-link request, the CICS dynamic routing program is invoked. Providing that a remote server region is not named explicitly on the SYSID option of the EXEC CICS LINK command, the routing program can route the request to the region on which the program is to execute.

The DYNAMIC attribute takes precedence over the REMOTESYSTEM attribute—see the description of the REMOTESYSTEM attribute.

For guidance information about the dynamic routing of DPL requests, see the *CICS Intercommunication Guide*.

EXECKEY({USER|CICS})
specifies the key in which CICS gives control to the program, and determines whether the program can modify CICS-key storage. For all except reentrant programs (that is, programs link-edited with the RENT attribute), EXECKEY also defines, in conjunction with the residency mode, into which of the DSAs CICS loads the program (see note 2).

CICS This specifies that CICS is to give control to the program in CICS key when it is invoked. CICS loads the program into one of the CICS-key DSAs—either the CDSA or the ECDSA, depending on the residency mode specified for the program (see note 2).

In a CICS region with storage protection active, a CICS-key program has read and write access to CICS-key and user-key storage of its own task and all other tasks, whether or not transaction isolation is active.

USER This specifies that CICS is to give control to the program in user key when it is invoked. CICS loads the program into one of the user-key shared DSAs—either the SDSA or the ESDSA, depending on the residency mode specified for the program (see Note 2 below).

In a CICS region with storage protection only active, a user-key program has read and write access to all user-key storage, but read-only access to CICS-key storage.

In a storage protection **and** transaction isolation environment, a user-key program has read and write access to the user-key task-lifetime storage of its own task only, and to any shared DSA storage, if the transaction is defined with ISOLATE(YES).

However, if a transaction is defined with ISOLATE(NO) in a transaction isolation environment, its user-key programs also have read and write access to the user-key task-lifetime storage of other transactions that are defined with ISOLATE(NO).

User-key programs always have read-only access to CICS-key storage.

Note:

1. First-level global user exit programs, task-related user exit programs, user-replaceable programs, and PLT programs always execute in CICS key, regardless of the EXECKEY definition.
2. If the program is link-edited with the RENT attribute, CICS loads the program into one of the read-only DSAs—either the RDSA or the ERDSA, depending on the residency mode specified for the program, regardless of the EXECKEY attribute. The read-only DSAs are allocated from read-only storage only if RENTPGM=PROTECT is specified as a system initialization parameter.

3. Programs called by COBOL dynamic CALL always execute in the same key as the caller, regardless of the EXECKEY definition.

EXECUTIONSET({**FULLAPI**|**DPLSUBSET**})
specifies whether you want CICS to link to and run a program as if it were running in a remote CICS region.

DPLSUBSET
Specify DPLSUBSET if you want CICS to link to the program and run it with the API restrictions of a remote DPL program. See the *CICS Application Programming Guide* for details of the API restrictions for a DPL program.

FULLAPI
Specify FULLAPI if you want CICS to link to the program and run it without the API restrictions of a DPL program. The program can use the full CICS API.

The EXECUTIONSET attribute applies only:

- to programs which are being linked to, and not to those which are the first to be given control by a transaction.
- when the REMOTESYSTEM name is the same name as the local CICS region. Its purpose is to test programs in a local CICS environment as if they were running as DPL programs.

GROUP(*groupname*)
Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed.

Acceptable characters:

`A-Z 0-9 $ @ #`

Any lower case characters you enter are converted to upper case.

The GROUP name can be up to eight characters in length. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

JVM({**NO**|**YES**})
specifies whether or not the program is a Java program that has to execute in a Java Virtual Machine (JVM).

NO The program is not to operate under a JVM.

YES The program is to operate under a JVM. Specify a class name in the JVMCLASS attribute if you specify JVM(YES).

Note: In addition to YES and NO, you can also specify DEBUG, but in compatibility mode only (see “Compatibility mode (CSD file sharing)” on page 15). DEBUG is valid only in CICS Transaction Server for OS/390®, Version 1 Release 3.

JVMCLASS(*class*)
specifies the fully qualified name of the main class in a Java program to be run under the control of a JVM. The fully qualified name is the class name qualified by the package name. For example, the package `example.HelloWorld` contains the class `HelloCICSWorld`; in this case, the fully qualified class name is `example.HelloWorld.HelloCICSWorld`.

The names are case-sensitive and must be entered with the correct combination of upper and lower case letters. For example, `com.ibm.cics.iiop.RequestProcessor` is the class specified for the CICS IIOP request processor program, DFJIIRP. The CEDA panels accept mixed case input for the JVMCLASS field irrespective of your terminal's UCTRAN setting. However, this does not apply when values for this field are supplied on the CEDA command line, or by using another CICS transaction such as CEMT or CECI. If you need to enter a class name in mixed case when you use CEDA from the command line or when you use another CICS transaction, ensure that the terminal you use is correctly configured, with upper case translation suppressed.

The value for JVMCLASS can include the following characters:

Acceptable characters:

```
A-Z a-z 0-9 $ @ # . / - _ % & ¢ ? ! : | " = ¬ , ; < >
```

For information about entering mixed case information, see "Entering mixed case attributes" on page 388.

If the program uses a single-use JVM (that is, with a JVM profile that specifies the option REUSE=NO or the older option Xresettable=NO), you can also use the user-replaceable program DFHJVMAT to override the JVMCLASS specified on the installed PROGRAM resource definition (see the *CICS Customization Guide*). On the PROGRAM resource definition, the limit for the JVMCLASS attribute is 255 characters, but you can use DFHJVMAT to specify a class name longer than 255 characters.

Note that this attribute applies only to Java applications running under the control of a JVM. If you specify JVM(NO), then at program execution time CICS ignores any value specified in the JVMClass field.

JVMPROFILE({**DFHJVMPR**|*jvmprofile*})

specifies the name (up to 8 characters in length) of a JVM profile. The JVM profile is a file in the HFS directory that is specified by the system initialization parameter JVMPROFILEDIR. Alternatively, the file can be in another place in the HFS file system, and be referenced by a UNIX soft link from the JVMPROFILEDIR directory. The profile contains the JVM options for the execution of the program.

If you do not specify a JVM profile for the program, the default JVM profile is the CICS-supplied sample JVM profile DFHJVMPR. You can customize this sample JVM profile, or substitute your own. If you want the JVM for this program to use the shared class cache, you can use this option to name the alternative supplied sample JVM profile DFHJVMPC, or your own version of this profile. *Java Applications in CICS* tells you how to select or create JVM profiles.

PROGRAM resource definitions for CICS-supplied system programs, in particular the default request processor program DFJIIRP (used by the CICS-supplied CIRP request processor transaction), specify the JVM profile DFHJVMCD. This profile is reserved for use by CICS-supplied system programs, to make them independent of any changes you make to the default JVM profile DFHJVMPR. Only make the changes to DFHJVMCD that are necessary to run your applications, as described in *Java Applications in CICS*. Do not specify this profile for JVMs that are to be used by your own applications.

The supplied sample JVM profiles DFHJVMPR and DFHJVMPC, and the JVM profile DFHJVMCD for CICS-supplied system programs, are in the HFS directory `/usr/lpp/cicsts/cicsts31/JVMProfiles`, where `cicsts31` is the value that you chose for the CICS_DIRECTORY variable used by the DFHIJVMJ job during CICS installation.

The name of a JVM profile can include the following characters:

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters you enter are converted to uppercase.

If you create your own JVM profiles, do not give them names beginning with DFH, because these characters are reserved for use by CICS.

As JVM profiles are HFS files, case is important. When you specify the name of the JVM profile, you must enter it using the same combination of upper and lower case characters that is present in the HFS file name. The CEDA panels accept mixed case input for the JVMPROFILE field irrespective of your terminal's UCTRAN setting. However, this does not apply when values for this field are supplied on the CEDA command line, or by using another CICS transaction such as CEMT or CECI. If you need to enter the name of a JVM profile in mixed case when you use CEDA from the command line or when you use another CICS transaction, ensure that the terminal you use is correctly configured, with upper case translation suppressed.

LANGUAGE({**COBOL**|**ASSEMBLER**|**LE370**|**C**|**PLI**})

specifies the program language.

ASSEMBLER

This is an assembler language program which was not translated using the LEASM translator option. LEASM is used to translate those assembler programs which are to be Language Environment-conforming MAIN programs.

C This is a C/370™ program not compiled by a Language Environment-conforming compiler.

COBOL

This is a COBOL program.

LE370 The program exploits multi-language support, or has been compiled by a Language Environment-conforming compiler, or it is an assembler MAIN program which was translated using the LEASM option to produce a Language Environment-conforming program.

PLI This is a PL/I program.

In most cases, you do not need to specify the LANGUAGE attribute, because the CICS program manager deduces the correct language and ignores the value you have specified. However, in the following cases, CICS cannot deduce the language, and you must specify the appropriate value:

- Programs written in assembler that do not have the DFHEAI stub

If the language is not specified, and CICS cannot deduce it, transactions that attempt to use the program will aband with code ALIG.

Although, in most cases, you do not need to specify a value for this attribute, you should be aware that the value specified is returned in the

LANGDEDUCED and LANGUAGE options of the INQUIRE PROGRAM command. Programs that use this command may be affected if you change the value of this attribute.

This attribute is irrelevant for JVM programs; CICS deduces that the program is a Java program to run under the control of a JVM when JVM(YES) is specified.

If you intend to share the CSD file with a level of CICS prior to CICS/ESA 4.1, do not leave this field blank, because — in the earlier release — the default value is COBOL, which may not be correct.

PROGRAM(*name*)

specifies the name of this PROGRAM definition. The name can be up to eight characters in length.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters you enter are converted to uppercase.

Do not use program names beginning with DFH, because these characters are reserved for use by CICS.

To use the program in an active CICS system, it must have been link-edited into one of the libraries specified as part of the DFHRPL DD statement or, if it is reentrant, it may have been placed in the link pack area (LPA). For more information about installing application programs, see the *CICS Application Programming Guide*.

RELOAD({**NO**|**YES**})

specifies whether a program control link, load, or XCTL request is to bring in a fresh copy of a program. This attribute does not apply to JVM programs.

NO Any valid copy of the program currently in storage is reused for the request.

YES A fresh copy of the program is brought into storage for every request. Furthermore, each of these program copies must be removed from storage explicitly, using a storage control FREEMAIN request, when it is no longer required and before the transaction terminates. If the relevant FREEMAINs are not issued, areas of the DSA/EDSA become tied up with inaccessible program copies, potentially causing storage shortage or fragmentation.

RELOAD(YES) can be used to load tables or control blocks that are modified by execution of any associated programs. It should not be specified for the first program loaded for a task. This is because the task would have no way of issuing a FREEMAIN for the program.

You must specify RELOAD(YES) for nonreentrant programs.

For more information about the RELOAD attribute, see *CICS Performance Guide*.

REMOTENAME(*program*)

specifies, if the program resides on a remote system, the name by which the program is known in the remote CICS region. If you specify REMOTESYSTEM and omit REMOTENAME, the REMOTENAME attribute defaults to the same name as the local name (that is, the program name on this resource definition).

REMOTESYSTEM(*connection*)

specifies the name of a remote CICS region, if you want CICS to ship a distributed program link (DPL) request to another CICS region. The name you specify must be the name of the connection resource definition for the link to the remote CICS.

Note that, besides the REMOTESYSTEM attribute of the program definition, the DPL server region can also be specified by:

- The application program, using the SYSID option of the EXEC CICS LINK PROGRAM command
- The dynamic routing program.

The rules of precedence are as follows:

1. If an application program issues a DPL request, and the SYSID option on the EXEC CICS LINK command specifies a remote CICS region, CICS ships the request to the remote region.

   If the installed program definition specifies DYNAMIC(YES)—or there is no installed program definition—the dynamic routing program is invoked for notification only—it cannot re-route the request.
2. If an application program issues a DPL request, but the SYSID is the same name as the local CICS region or the SYSID option is not specified:
   a. If the installed program definition specifies DYNAMIC(YES)—or there is no installed program definition—the dynamic routing program is invoked, and can route the request.

      The REMOTESYSTEM attribute of the program definition, if specified, names the default server region passed to the dynamic routing program.
   b. If the installed program definition specifies DYNAMIC(NO), CICS ships the request to the remote system named on the REMOTESYSTEM attribute. If REMOTESYSTEM is not specified, CICS runs the program locally.

The rules for specifying the remote system name are the same as for the CONNECTION attribute of the CONNECTION resource definition.

Note: You must not specify remote attributes for any user-written CICS programs, such as the dynamic transaction routing or autoinstall user programs.

RESIDENT({NO|YES})

specifies the residence status of the program. This attribute does not apply to JVM programs.

NO The program is not to be permanently resident. This value must be specified if RELOAD(YES) is specified.

YES The program is to be loaded on first reference and is then to be permanently resident in virtual storage, but is to be pageable by the operating system. When you specify RESIDENT(YES), CICS assumes a specification of USAGE(NORMAL).

For more information about the effects of the RESIDENT attribute, see the *CICS Performance Guide*.

RSL

This attribute is obsolete, but is supported to provide compatibility with earlier releases of CICS. For more information, see Appendix A, “Obsolete attributes,” on page 615.

STATUS({ENABLED|DISABLED})
specifies the program status.

DISABLED
The program may not be used.

ENABLED
The program may be used.

TRANSID(*name*)
If the program is dynamic, this is the default TRANSID used for the distributed program link (DPL) request. If the program is not dynamic, this specifies the name of the transaction you want the remote CICS to attach, and under which it is to run the remote program. If you do not specify a transaction name on the TRANSID attribute, the remote region executes the DPL program under one of the following CICS-supplied default mirror transactions:

CPMI This is the CICS mirror transaction for LU6.2 connections that specify data conversion.

CSMI This is the CICS ISC mirror transaction for MRO and LU6.2 connections with sync level 2.

CVMI This is the CICS/VM mirror transaction for LU6.2 connections with synclevel 1.

USAGE({NORMAL|TRANSIENT})
specifies when the storage for this program is released. This attribute does not apply to JVM programs.

NORMAL
When the use count for this program reaches zero, it becomes eligible for removal from storage as part of the normal dynamic program compression process.

This value must be specified if RELOAD(YES) is specified.

TRANSIENT
When the use count for this program becomes zero, the storage for this program is released. This value should be specified for programs that are referenced infrequently.

USELPACOPY({NO|YES})
specifies whether the program is to be used from the link pack area (LPA). This attribute does not apply to JVM programs.

NO The program is not to be used from the LPA. It is loaded into the CICS address space.

YES The program can be used from the LPA if LPA=YES is specified as a system initialization parameter. The use of the program from the LPA requires that it has been installed there and that the program is not named by the PRVMOD system initialization parameter. For guidance on this, see the *CICS Transaction Server for z/OS Installation Guide*.

Chapter 24. REQUESTMODEL resource definitions

A REQUESTMODEL resource defines how an Internet Inter-ORB Protocol (IIOP) inbound request is mapped to the CICS transaction that is to be initiated.

IIOP inbound requests may be:
- Client requests for enterprise beans
- Client requests for CORBA stateless objects

The inbound IIOP request is formatted according to CORBA standards; it does not specify a CICS transaction name explicitly. REQUESTMODEL definitions define templates that are compared with the inbound IIOP message to identify the type of request. CICS uses the following attributes to select the request model that most closely matches the inbound request:
- CORBASERVER
- TYPE
- BEANNAME
- INTFACETYPE
- MODULE
- INTERFACE
- OPERATION

For detailed information about how inbound requests are matched with request models, see *Java Applications in CICS*.

The TRANSACTION attribute of the selected REQUESTMODEL specifies the name of a CICS TRANSID, which associates the IIOP request with a set of execution characteristics such as security, priority, and monitoring data.

Note:

1. You cannot install a REQUESTMODEL definition if the attributes used for matching requests have identical values to a previously installed definition with a different name. Upper case, lower case, and mixed case values of attributes which are otherwise similar are considered to be identical.

   If you try, the install is rejected and a message is written to CSMT indicating the name of the conflicting REQUESTMODEL.
2. The following attributes were introduced in CICS Transaction Server for z/OS, Version 2 Release 1:
   - BEANNAME
   - CORBASERVER
   - INTFACETYPE
   - INTERFACE
   - MODULE
   - OPERATION
   - TYPE

   If you specify any of these attributes in a request model definition, then you cannot specify OMGMODULE, OMGINTERFACE, or

OMGOPERATION. You can install the definition in CICS Transaction Server for z/OS, Version 2 or later, but not in CICS Transaction Server for OS/390, Version 1 Release 3

The following attributes, introduced in CICS Transaction Server for OS/390, Version 1 Release 3, are obsolete, but supported for compatibility purposes:

- OMGMODULE
- OMGINTERFACE
- OMGOPERATION

If you specify any of these attributes in a request model definition, then you cannot specify BEANNAME, CORBASERVER, INTFACETYPE, MODULE, OPERATION, or TYPE. You can install the definition in CICS Transaction Server for OS/390, Version 1 Release 3 but not in CICS Transaction Server for z/OS, Version 2 or later.

3. The CORBA attributes (MODULE and INTERFACE) must specify the interface which is directly implemented by the objects they are required to match (known as the **most derived interface**). If you specify an interface which is not the most derived interface, the CORBA attributes will not match requests for objects that implement that interface.

   Consider this example:

   - Interface `B` is derived by inheritance from interface `A`.
   - Object `x` implements interface `B` (and, indirectly, interface `A`)

   In this case, you must specify CORBA attributes which will match the most derived interface (`B`), and not interface `A`.

Defining request models

You can define request models in the following ways:

- Using the CEDA transaction; see "Defining request models using CEDA."
- Using the DFHCSDUP utility; see *CICS Operations and Utilities Guide*.
- Using the CREATE REQUESTMODEL command; see the *CICS System Programming Reference*.
- Using CICSPlex SM Business Application Services; see *CICSPlex System Manager Managing Business Applications*.

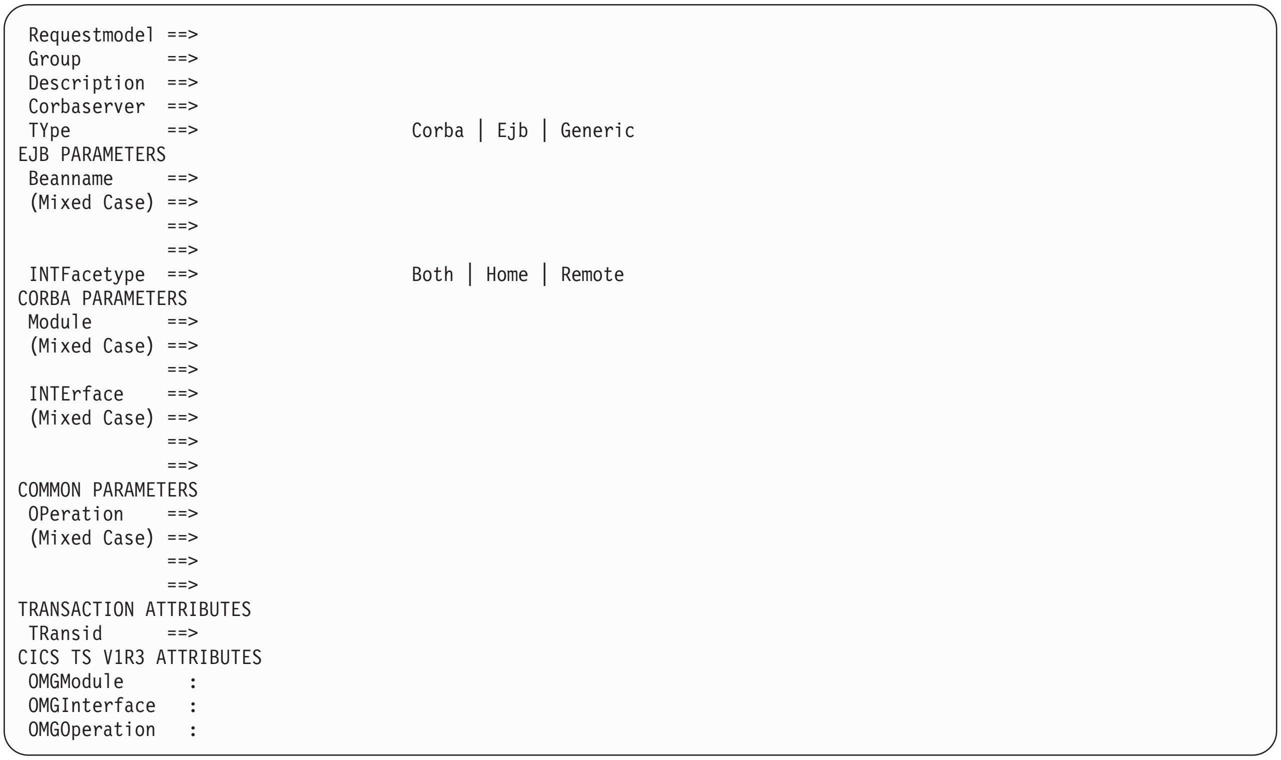
Note: You cannot define a request model that specifies both current and previous attributes. See "Installing request models" on page 191.

Defining request models using CEDA

From a CICS terminal, enter the following command:

```
CEDA DEFINE REQUESTMODEL(name) GROUP(name)
```

The CEDA panel that is displayed when you enter a valid DEFINE REQUESTMODEL command is:



```
 Requestmodel ==>
 Group        ==>
 Description  ==>
 Corbaserver  ==>
 TYpe         ==>                  Corba | Ejb | Generic
EJB PARAMETERS
 Beanname     ==>
 (Mixed Case) ==>
              ==>
              ==>
 INTFacetype  ==>                  Both | Home | Remote
CORBA PARAMETERS
 Module       ==>
 (Mixed Case) ==>
              ==>
 INTErface    ==>
 (Mixed Case) ==>
              ==>
              ==>
COMMON PARAMETERS
 OPeration    ==>
 (Mixed Case) ==>
              ==>
              ==>
TRANSACTION ATTRIBUTES
 TRansid      ==>
CICS TS V1R3 ATTRIBUTES
 OMGModule      :
 OMGInterface   :
 OMGOperation   :
```

Figure 21. The DEFINE panel for REQUESTMODEL

For information about input to mixed case fields, see “Entering mixed case attributes” on page 388.

Installing request models

You cannot install a REQUESTMODEL definition which has identical pattern-matching options (CORBASERVER, TYPE, EJB, CORBA, and COMMON attributes) as an installed REQUESTMODEL with a different name. If you try, the install is rejected and a message is written to either the console or user's terminal indicating the name of the conflicting REQUESTMODEL.

You cannot install a request model with CICS Transaction Server for OS/390, Version 1 Release 3 attribute values in a CICS Transaction Server for z/OS, Version 2 Release 1 or later system.

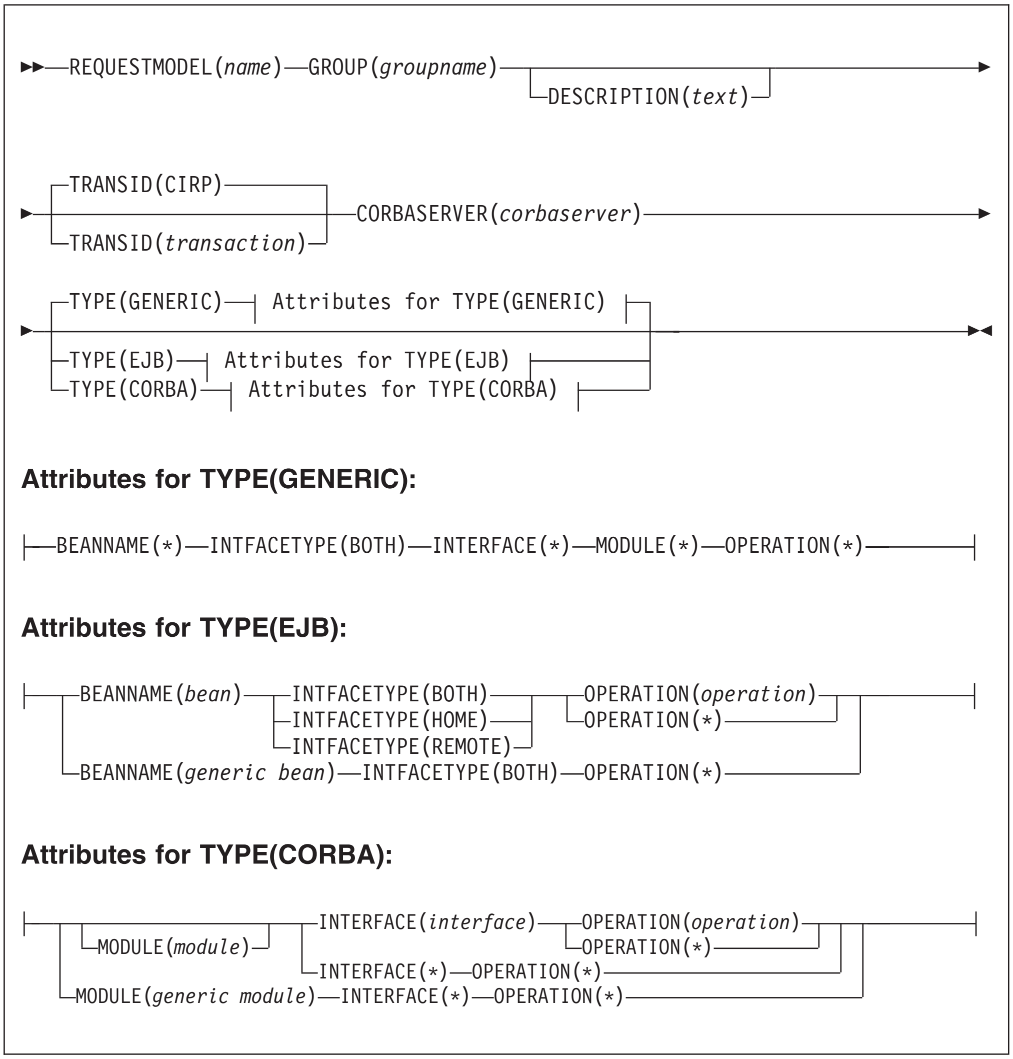
REQUESTMODEL definition attributes

You can specify generic values for some of the attributes in a request model definition. A generic value consists of:

- An asterisk (*)
- *Or* a string consisting of the acceptable characters for the attribute, followed by an asterisk.

A generic attribute matches more than one value in a request: the characters preceding the asterisk are matched exactly, and the remaining characters are ignored. For example:

- A generic attribute of `get_*` matches `get_firstname` and `get_lastname`, but not `set_firstname` or `getName`
- A generic attribute of `*` matches all possible values in a request.



```
>>--REQUESTMODEL(name)--GROUP(groupname)--+--------------------+---------->
                                          '-DESCRIPTION(text)--'

   .-TRANSID(CIRP)--------.
>--+----------------------+--CORBASERVER(corbaserver)-------------------->
   '-TRANSID(transaction)-'

   .-TYPE(GENERIC)--| Attributes for TYPE(GENERIC) |-.
>--+-------------------------------------------------+------------------><
   +-TYPE(EJB)--| Attributes for TYPE(EJB) |---------+
   '-TYPE(CORBA)--| Attributes for TYPE(CORBA) |-----'
```

Attributes for TYPE(GENERIC):

```
|--BEANNAME(*)--INTFACETYPE(BOTH)--INTERFACE(*)--MODULE(*)--OPERATION(*)------|
```

Attributes for TYPE(EJB):

```
|--+-BEANNAME(bean)--+-INTFACETYPE(BOTH)---+--+-OPERATION(operation)-+-+------|
   |                 +-INTFACETYPE(HOME)---+  '-OPERATION(*)---------' |
   |                 '-INTFACETYPE(REMOTE)-'                           |
   '-BEANNAME(generic bean)--INTFACETYPE(BOTH)--OPERATION(*)-----------'
```

Attributes for TYPE(CORBA):

```
|--+-+------------------+--+-INTERFACE(interface)--+-OPERATION(operation)-+-+-+-+------|
   | '-MODULE(module)-'    |                       '-OPERATION(*)---------' |   |
   |                       '-INTERFACE(*)--OPERATION(*)---------------------'   |
   '-MODULE(generic module)--INTERFACE(*)--OPERATION(*)-------------------------'
```

BEANNAME(*bean*)

specifies a bean name, of up to 240 characters, matching the name of the enterprise bean in the XML deployment descriptor.

Acceptable characters:
`A-Z a-z 0-9 . - _`
You can also use accented alphabetic characters. For information about entering mixed case information, see "Entering mixed case attributes" on page 388.

Characters outside this range may give unpredictable results. However, you can use an asterisk as the last (or only) character to specify a generic name.

If you specify a generic value for BEANNAME, then you must specify INTFACETYPE(BOTH) and OPERATION(*).

For CORBA REQUESTMODELs—that is, if TYPE is CORBA—this field should be blank.

CORBASERVER(*corabserver*)

specifies the name of the destination CORBASERVER for this REQUESTMODEL. The name can be up to 4 characters in length.

Acceptable characters:

`A-Z a-z 0-9`

For information about entering mixed case information, see “Entering mixed case attributes” on page 388.

You can also use an asterisk as the last (or only) character to specify a generic name.

If a generic CORBASERVER is specified, BEANNAME, the CORBA attributes (MODULE and INTERFACE), and the COMMON attributes (OPERATION) must all be an asterisk (*); INTFACETYPE must be BOTH.

If any of the obsolete attribute values (OMGINTERFACE, OMGMODULE and OMGOPERATION) is present in the request model definition, CORBASERVER must be blank.

DESCRIPTION(*text*)
You can provide a description of the resource you are defining in this field. The description text can be up to 58 characters in length. There are no restrictions on the characters that you can use. However, if you use parentheses, ensure that for each left parenthesis there is a matching right one. If you use the CREATE command, for each single apostrophe in the text, code two apostrophes.

GROUP(*groupname*)
Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed.

Acceptable characters:

`A-Z 0-9 $ @ #`

Any lower case characters you enter are converted to upper case.

The GROUP name can be up to eight characters in length. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

INTFACETYPE({**BOTH**|**HOME**|**REMOTE**})
specifies the Java interface type for this REQUESTMODEL:

BOTH
matches either the home or component interface for the bean. OPERATION must be an asterisk (*).

HOME
specifies that this is the home interface for the bean.

REMOTE
specifies that this is the component interface for the bean.

For CORBA REQUESTMODELs—that is, if TYPE is CORBA—this field should be blank.

If any of the obsolete attribute values (OMGINTERFACE, OMGMODULE and OMGOPERATION) is present in the request model definition, INTFACETYPE must be blank.

INTERFACE(*interface*)
specifies a name, of up to 255 characters, matching the IDL interface name.

Acceptable characters:

`A-Z a-z 0-9 _`

You can also use accented alphabetic characters. For information about entering mixed case information, see “Entering mixed case attributes” on page 388.

Characters outside this range may give unpredictable results. However, you can use an asterisk as the last (or only) character to specify a generic name.

Case is significant and should match the original Java or IDL source. However, to comply with CORBA, installation of REQUESTMODELS that specify INTERFACE with values differing only in case from previously installed definitions, will be rejected.

If a generic INTERFACE is specified, the common attributes (OPERATION) must be an asterisk (*).

For EJB REQUESTMODELs—that is, if TYPE is EJB—this field should be blank.

If any of the obsolete attribute values (OMGINTERFACE, OMGMODULE and OMGOPERATION) is present in the request model definition, INTERFACE must be blank.

MODULE(*module*)

specifies a name, of up to 255 characters, matching the IDL module name (which defines the name scope of the interface and operation).

Acceptable characters:

`A-Z a-z 0-9 _`

You can also use accented alphabetic characters. For information about entering mixed case information, see “Entering mixed case attributes” on page 388.

Characters outside this range may give unpredictable results. However, you can use an asterisk as the last (or only) character to specify a generic name.

Case is significant and should match the original Java or IDL source. However, to comply with CORBA, installation of REQUESTMODELS that specify MODULE with values differing only in case from previously installed definitions, will be rejected.

If you specify a generic value for MODULE, then you must specify INTERFACE(*) and OPERATION(*).

To indicate the default package, leave this field blank and specify a non-blank (but possibly generic) INTERFACE.

For EJB REQUESTMODELs—that is, if TYPE is EJB—this field should be blank.

If any of the obsolete attribute values (OMGINTERFACE, OMGMODULE and OMGOPERATION) is present in the request model definition, MODULE must be blank.

OMGINTERFACE

This attribute is obsolete, but is supported to provide compatibility with earlier releases of CICS. For more information, see Appendix A, “Obsolete attributes,” on page 615.

If this attribute is present in the request model definition, the following attributes must be blank:

- BEANNAME
- CORBASERVER
- INTFACETYPE
- INTERFACE
- OPERATION
- TYPE

OMGMODULE(*text*)

This attribute is obsolete, but is supported to provide compatibility with earlier releases of CICS. For more information, see Appendix A, “Obsolete attributes,” on page 615.

If this attribute is present in the request model definition, the following attributes must be blank:

- BEANNAME
- CORBASERVER
- INTFACETYPE
- INTERFACE
- OPERATION
- TYPE

OMGOPERATION

This attribute is obsolete, but is supported to provide compatibility with earlier releases of CICS. For more information, see Appendix A, “Obsolete attributes,” on page 615.

If this attribute is present in the request model definition, the following attributes must be blank:

- BEANNAME
- CORBASERVER
- INTFACETYPE
- INTERFACE
- OPERATION
- TYPE

OPERATION(*operation*)

specifies a name, of up to 255 characters, matching the IDL operation or a Java-to-IDL mangled representation of the bean or CORBA stateless object's method signature.

Acceptable characters:

`A-Z a-z 0-9  _`

You can also use accented alphabetic characters. For information about entering mixed case information, see “Entering mixed case attributes” on page 388.

However, you can use an asterisk as the last (or only) character to specify a generic name. Characters outside this range may give unpredictable results. Case is significant and should match the original Java or IDL source. However, to comply with CORBA, installation of REQUESTMODELS that specify OPERATION with values differing only in case from previously installed definitions, will be rejected.

In general, Java method names are mapped to an equivalent IDL name. However, there are cases where this is not possible, for example:

- Java method names that contain characters which are not permitted in IDL names.
- Overloaded Java method names.
- Java method names that begin with `get` and `set`.

Instead, IDL uses a “mangled” form of the Java method name—that is, a valid and unambiguous IDL name derived from the Java method name. The OPERATION attribute of the REQUESTMODEL must match the mangled name in this case.

You can use the CREA supplied transaction to manage REQUESTMODEL definitions for enterprise beans. CREA creates REQUESTMODEL definitions with correctly-mangled method names in the OPERATION field.

For detailed information about how Java names are mapped to IDL names, see the *OMG Java to IDL mapping*, published by the Object Management Group (OMG), and available from *www.omg.org*.

If any of the obsolete attribute values (OMGINTERFACE, OMGMODULE and OMGOPERATION) is present in the request model definition, OPERATION must be blank.

REQUESTMODEL(*name*)

specifies the 8–character name of this request model definition.

Acceptable characters:

`A-Z a-z 0-9`

For information about entering mixed case information, see “Entering mixed case attributes” on page 388.

Do not use names beginning with DFH, because these characters are reserved for use by CICS.

TRANSID(*transaction*)

defines the 4-character name of the CICS transaction to be used when a new request processor transaction instance is required to process a method request matching the specification of the REQUESTMODEL.

The transaction definition must have as its initial program a JVM program whose JVMClass is com.ibm.cics.iiop.RequestProcessor. It must be installed in all the AORs of the logial EJB server; it need not be installed in listener regions that are not also AORs.

TYPE({**GENERIC**|**CORBA**|**EJB**})

specifies the type of REQUESTMODEL:

GENERIC

matches both enterprise bean and CORBA requests. If you specify TYPE(GENERIC), you must also specify:

- BEANNAME(*)
- INTERFACE(*)
- INTFACETYPE(BOTH)
- MODULE(*)
- OPERATION(*)

CORBA

matches CORBA requests as specified by the CORBA attributes (MODULE and INTERFACE). Only the CORBA attributes and OPERATION attribute can be specified; the EJB attributes (BEANNAME and INTFACETYPE) and CICS TS V1R3 attributes (OMGINTERFACE, OMGMODULE and OMGOPERATION) must be blank.

EJB

matches enterprise bean requests as specified by the EJB (BEANNAME and INTFACETYPE). Only the EJB attributes and COMMON attributes (OPERATION) are valid; the CORBA attributes (MODULE and INTERFACE) must be blank.

If any of the obsolete attribute values (OMGINTERFACE, OMGMODULE and OMGOPERATION) is present in the request model definition, TYPE must be blank.

Table 8 shows the attributes that are valid for each type:

Table 8. Attributes valid for each value of the TYPE attribute

	TYPE(GENERIC)	**TYPE(EJB)**	**TYPE(CORBA)**
BEANNAME	valid	valid	invalid
INTFACETYPE	valid	valid	invalid
MODULE	valid	invalid	valid
INTERFACE	valid	invalid	valid
OPERATION	valid	valid	valid

Examples

Figure Figure 22 on page 198 shows an example of an enterprise bean-specific REQUESTMODEL definition.

```
 Requestmodel   : DFH$EJB
 Group          : DFH$EJB
 Description  ==> EJB HelloWorld sample
 Corbaserver  ==> EJC1
 TYpe         ==> Ejb               Corba | Ejb | Generic
EJB PARAMETERS
 Beanname     ==> HelloWorld
 (Mixed Case) ==>
              ==>
              ==>
 INTFacetype  ==> Both              Both | Home | Remote
CORBA PARAMETERS
 Module       ==>
 (Mixed Case) ==>
              ==>
              ==>
 INTErface    ==>
 (Mixed Case) ==>
              ==>
              ==>
COMMON PARAMETERS
 OPeration    ==> *
 (Mixed Case) ==>
              ==>
              ==>
TRANSACTION ATTRIBUTES
 TRansid      ==> EJHE
CICS TS V1R3 ATTRIBUTES
 OMGModule      :
 OMGInterface   :
 OMGOperation   :
```

Figure 22. Example of an enterprise bean-specific REQUESTMODEL definition

Note: The transaction definition for EJHE should be copied from that of CIRP. Any attributes of the transaction definition can be changed except the program name, which must be that of a JVM program whose JVMClass is `com.ibm.cics.iiop.RequestProcessor`.

Figure Figure 23 on page 199 shows an example of a stateless CORBA REQUESTMODEL.

```
 Requestmodel   : DFH$IIRH
 Group          : DFH$IIOP
 Description  ==> Hello world CORBA Java server sample
 Corbaserver  ==> IIOP
 TYpe         ==> Corba              Corba | Ejb | Generic
EJB PARAMETERS
 Beanname     ==>
 (Mixed Case) ==>
              ==>
              ==>
 INTFacetype  ==>                    Both | Home | Remote
CORBA PARAMETERS
 Module       ==> hello
 (Mixed Case) ==>
              ==>
              ==>
 INTErface    ==> HelloWorld
 (Mixed Case) ==>
              ==>
              ==>
COMMON PARAMETERS
 OPeration    ==> *
 (Mixed Case) ==>
              ==>
              ==>
TRANSACTION ATTRIBUTES
 TRansid      ==> IIHE
CICS TS V1R3 ATTRIBUTES
 OMGModule      :
 OMGInterface   :
 OMGOperation   :
```

Figure 23. Example of a stateless CORBA REQUESTMODEL

Note: The transaction definition for IIHE should be copied from that of CIRP. Any attributes of the transaction definition can be changed except the program name, which must be that of a JVM program whose JVMClass is `com.ibm.cics.iiop.RequestProcessor`.

Figure Figure 24 on page 200 shows an example of a generic definition that matches any enterprise bean or stateless CORBA object request. This example changes the default request processor transaction from CIRP to EJB1.

```
 Requestmodel   : GENERIC
 Group          : TEST
 Description  ==> Generic default definition
 Corbaserver  ==> *
 TYpe         ==> Generic            Corba | Ejb | Generic
EJB PARAMETERS
 Beanname     ==> *
              ==>
              ==>
              ==>
 INTFacetype  ==> Both               Both | Home | Remote
CORBA PARAMETERS
 Module       ==> *
              ==>
              ==>
              ==>
 INTErface    ==> *
              ==>
              ==>
              ==>
COMMON PARAMETERS
 OPeration    ==> *
              ==>
              ==>
              ==>
TRANSACTION ATTRIBUTES
 TRansid      ==> EJB1
CICS TS V1R3 ATTRIBUTES
 OMGModule      :
 OMGInterface   :
 OMGOperation   :
```

Figure 24. Example of a generic definition that matches any enterprise bean or stateless CORBA object request

Note: The transaction definition for EJB1 should be copied from that of CIRP. Any attributes of the transaction definition can be changed except the program name, which must be that of a JVM program whose JVMClass is `com.ibm.cics.iiop.RequestProcessor`.

Chapter 25. SESSION resource definitions

A SESSIONS resource defines the logical link between two CICS systems that communicate using intersystem communication (ISC) or multiregion operation (MRO).

Before two systems can communicate using , they must be logically linked through one or more sessions. The nature of the logical link determines how they can communicate. CICS does **not** use the SESSIONS name when the definition has been installed in the active system. This name is used only to identify the definition in the CSD file.

You use the CONNECTION attribute of the SESSIONS resource definition to name the CONNECTION with which these SESSIONS are associated when they are installed in the active systems.

Special considerations for different session types are:

MRO links and sessions
When you install a SESSIONS definition for MRO, you are telling CICS about a set of parallel sessions between this CICS and another CICS. The number of sessions is determined by the SENDCOUNT and RECEIVECOUNT attributes. The SEND sessions are identified by names created from the SENDPFX and SENDCOUNT attributes. The RECEIVE sessions are identified by names created from the RECEIVEPFX and RECEIVECOUNT attributes.

APPC (LUTYPE6.2) links and parallel sessions
When you install the SESSIONS definition, the sessions are grouped (for the benefit of VTAM) into a modeset, which is identified by the MODENAME. The individual sessions are named by a counter; the first session created is named -999, the second -998, and so on. The value of this counter is retained over a warm or emergency start. The number of sessions created is controlled by the MAXIMUM attribute on the SESSIONS definition.

LUTYPE6.1 CICS-CICS ISC links and sessions
The way in which the sessions are identified by CICS depends on the way you defined them, using SENDPFX, SENDCOUNT, RECEIVEPFX, and RECEIVECOUNT like MRO sessions, or using SESSNAME as for CICS-IMS sessions.

Note: Use APPC for all new CICS-CICS ISC links.

LUTYPE6.1 CICS-IMS links and sessions
When you install the SESSIONS definitions in the active CICS system, CICS identifies each session by the SESSNAME attribute.

INDIRECT connections
Because the association between an INDIRECT link and the intermediate systems used for communicating with it is made at installation time, install the definition for the intermediate system before the definition for the INDIRECT link. If you install the INDIRECT link first, it remains dormant until the intermediate definition is installed, and until any other already installed connections that make reference to it are resolved. For example, System A is indirectly connected with system C through system B. In system A, install the following definitions in this order:

1. The intermediate system:

   ```
   CONNECTION(B) NETNAME(B) ACCESSMETHOD(IRC) ...
   ```

2. The INDIRECT link

   ```
   CONNECTION(C) NETNAME(C) ACCESSMETHOD(INDIRECT)
      INDSYS(B) ...
   ```

Defining sessions

You can define sessions in the following ways:

- Using the CEDA transaction; see “Defining sessions using CEDA.”
- Using the DFHCSDUP utility; see *CICS Operations and Utilities Guide*.
- Using the CREATE SESSIONS command; see the *CICS System Programming Reference*.
- Using CICSPlex SM Business Application Services; see *CICSPlex System Manager Managing Business Applications*.

Defining sessions using CEDA

From a CICS terminal, enter the following command:

```
CEDA DEFINE SESSIONS(name) GROUP(name)
```

Figure 25 on page 203 shows the panel that is displayed.

```
 Sessions     ==>
 Group        ==>
 DEscription  ==>
SESSION IDENTIFIERS
 Connection   ==>
 SESSName     ==>
 NETnameq     ==>
 MOdename     ==>
SESSION PROPERTIES
 Protocol     ==>                    Appc | Lu61 | Exci
 MAximum      ==> 000 , 000          0-999
 RECEIVEPfx   ==>
 RECEIVECount ==>                    1-999
 SENDPfx      ==>
 SENDCount    ==>                    0-999
 SENDSize     ==>                    1-30720
 RECEIVESize  ==>                    1-30720
 SESSPriority ==> 000                0-255
 Transaction    :
OPERATOR DEFAULTS
 OPERId         :
 OPERPriority   : 000                0-255
 OPERRsl        : 0                                                 0-24,...
 OPERSecurity   : 1                                                 1-64,...
PRESET SECURITY
 USERId       ==>
OPERATIONAL PROPERTIES
 Autoconnect  ==> No                 No | Yes | All
 INservice      :
 Buildchain   ==> Yes                Yes | No
 USERArealen  ==> 000                0-255
 IOarealen    ==> 00000 , 00000      0-32767
 RELreq       ==> No                 No | Yes
 DIscreq      ==> No                 No | Yes
 NEPclass     ==> 000                0-255
RECOVERY
 RECOVOption  ==> Sysdefault         Sysdefault | Clearconv | Releasesess
                                     | Uncondrel | None
 RECOVNotify    : None               None | Message | Transaction
```

Figure 25. The DEFINE panel for SESSIONS

Installing session definitions

If you use the INSTALL command to install a new SESSIONS definition for MRO when a definition is already installed, you must close down all interregion communication (IRC) and open it again before you can use the definition.

1. Close IRC down:

   ```
   CEMT SET IRC CLOSED
   ```

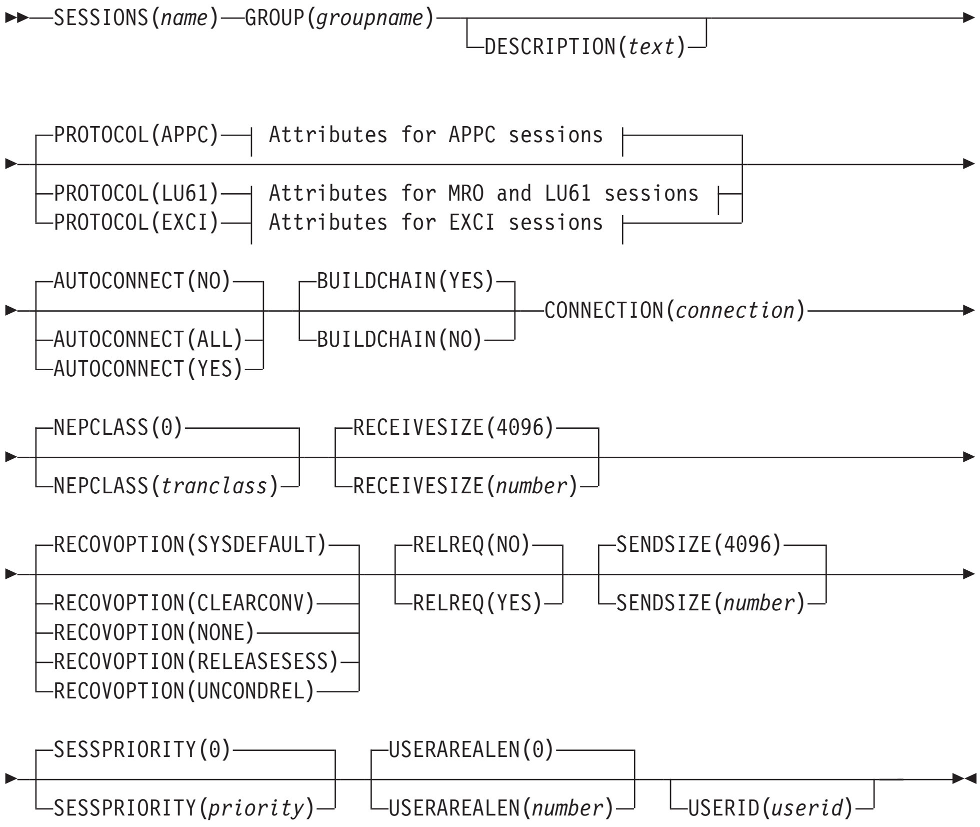
2. Install the resource definitions:

   ```
   CEDA INSTALL GROUP(groupname)
   ```

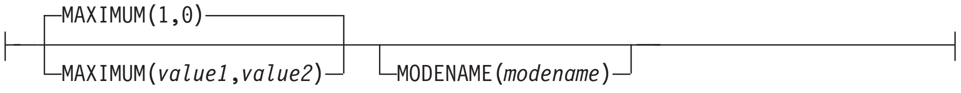
3. When you have successfully installed the group containing the definitions, open IRC again:

   ```
   CEMT SET IRC OPEN
   ```

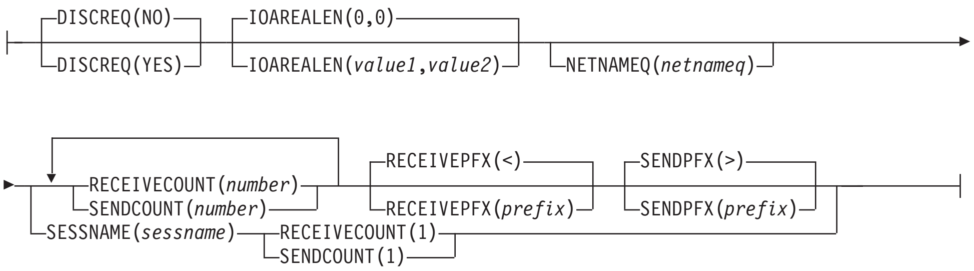
SESSIONS definition attributes



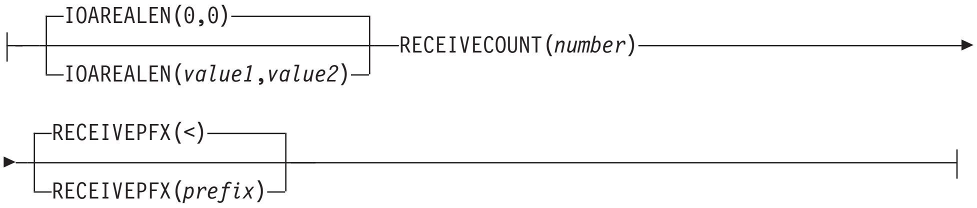
Attributes for APPC sessions:



Attributes for MRO and LU61 sessions:



Attributes for EXCI sessions:



AUTOCONNECT({NO|YES|ALL})
specifies how connections are to be established. What you have to specify for LU6.1 and APPC sessions is discussed below:

APPC sessions
For a VTAM-connected system that has AUTOCONNECT(YES) or (ALL) on the connection definition:

NO CICS does not attempt to bind any sessions when the connection is established. However, one or more user sessions may be allocated as part of any ACQUIRE CONNECTION processing which takes place.

YES or ALL
A contention-winner session is established (that is, BIND is performed) during CICS initialization, or when communication with VTAM is started using the CEMT SET VTAM OPEN command. If the connection cannot be made at this time because the remote system is unavailable, the link must be subsequently acquired using the CEMT SET CONNECTION(sysid) INSERVICE ACQUIRED command, unless the remote system becomes available in the meantime and itself initiates communications.

AUTOCONNECT(ALL) should not be specified for sessions to other CICS systems, because this can caused a bind race.

For a VTAM-connected system that has AUTOCONNECT(NO) on the CONNECTION definition:

ALL All sessions, not just contention winners, are established when the connection is acquired by issuing CEMT SET CONNECTION(name) ACQUIRED, or when the remote system itself initiates communication.

NO CICS does not attempt to bind any sessions when the connection is established. However, one or more user sessions may be allocated as part of any ACQUIRE CONNECTION processing that takes place.

YES Contention-winner sessions are established when the connection is acquired by issuing CEMT SET CONNECTION(sysid) ACQUIRED, or when the remote system itself initiates communication.

LU6.1 sessions

Specify AUTOCONNECT(YES) on the SESSIONS if you want the connection to be established at initialization or CEDA install.

Specify AUTOCONNECT(NO) on the SESSIONS if you do not want the connection to be established at initialization or CEDA installation.

BUILDCHAIN({**YES**|**NO**})

specifies whether CICS is to perform chain assembly before passing the input data to the application program.

NO Any TIOA received by an application program from this logical unit contains one request unit (RU).

YES Any terminal input/output area (TIOA) received by an application program from this logical unit contains a complete chain.

CONNECTION(*connection*)

specifies the name of the connection definition that you want to use with this session definition. The name can be up to four characters in length.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters you enter are converted to uppercase.

Note that the CONNECTION definition must be in the same GROUP as the SESSIONS definition.

DESCRIPTION(*text*)

You can provide a description of the resource you are defining in this field. The description text can be up to 58 characters in length. There are no restrictions on the characters that you can use. However, if you use parentheses, ensure that for each left parenthesis there is a matching right one. If you use the CREATE command, for each single apostrophe in the text, code two apostrophes.

DISCREQ({**NO**|**YES**})

specifies whether disconnect requests are to be honored. DISCREQ applies to LUTYPE6.1 ISC sessions, but not to MRO sessions where CICS is not dealing with VTAM devices.

DISCREQ does not apply to APPC (LUTYPE6.2) sessions. When APPC is used, individual sessions are acquired as transactions need them, then are subsequently freed. Because it is possible to have multiple sessions between APPC logical units, there should never be a problem of one request holding up another. It is not possible to disconnect an individual APPC session; instead, you can issue a CEMT SET CONNECTION RELEASED command.

NO CICS is not to honor a disconnect request for a VTAM device.

YES CICS is to honor a disconnect request for a VTAM device, and issue a VTAM CLSDST macro instruction to terminate the VTAM session with that logical unit.

CESF LOGOFF or GOODNIGHT commands issued from the terminal also cause disconnection if you specify DISCREQ(YES).

GROUP(*groupname*)

Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed.

Acceptable characters:

`A-Z 0-9 $ @ #`

Any lower case characters you enter are converted to upper case.

The GROUP name can be up to eight characters in length. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

INSERVICE

This attribute is obsolete, but is supported to provide compatibility with earlier releases of CICS. For more information, see Appendix A, “Obsolete attributes,” on page 615.

IOAREALEN({**0**|*value1*},{**0**|*value2*})

specifies the length, in bytes, of the terminal input/output area to be used for processing messages transmitted on the MRO link.

value1 *value1* specifies the minimum size of a terminal input/output area to be passed to an application program when a RECEIVE command is issued.

value2 If *value2* is not specified, or is less than *value1*, it defaults to the value of *value1*.

You can specify *value2* as greater than or equal to *value1*. In this case, when the size of an input message exceeds value1, CICS uses a terminal input/output area (TIOA) *value2* bytes long. When a transaction is attached on an MRO link, CICS uses a TIOA that is long enough to contain the initial input message. Otherwise, if the input message size also exceeds *value2*, the node abnormal condition program sends an exception response to the terminal.

You can waste both real and virtual storage by specifying an IOAREALEN value that is too large for most messages transmitted on your MRO link. On the other hand, if you specify an IOAREALEN value that is either zero or smaller than most of your messages, excessive FREEMAIN and GETMAIN activity may occur. This results in additional processor requirements.

MAXIMUM({**1**|*value1*},{**0**|*value2*}) **(APPC only)**

specifies the maximum number of sessions that are to be supported for the modeset. Value1 must be greater than or equal to value2.

1|*value1*

The maximum number of sessions in the group. This value can be in the range 1 through 999. The default is 1.

0|*value2*

The maximum number of sessions that are to be supported as contention winners. This value can be in the range 0 to 999. The default is 0. Note that this operand has no meaning for a single session connection. (For further information on the effects of the MAXIMUM option, see the *CICS Intercommunication Guide*.)

SNA allows some resources (for example, switched lines) to be defined in the network as **limited resources**. At bind time, VTAM indicates to CICS whether the bind is over a limited resource. When a CICS task frees a session across a limited resource, CICS unbinds the session if no other task wants to use it.

If the sessions are to use limited resources, specify **MAXIMUM(***value1***,0)**. This causes any unbound session to be reset so that either side can then bind it as a winner when it is next required. For more information on limited resources, see the *CICS Intercommunication Guide*.

MODENAME(*modename*) **(APPC only)**

specifies the name that identifies a group of sessions for use on an APPC connection. The name can be up to eight characters in length, and must be the name of a VTAM LOGMODE entry defined to VTAM. It must not be the reserved name SNASVCMG. If you omit the modename it defaults to blanks. See the *CICS Intercommunication Guide* for more information about VTAM modenames.

The MODENAME must be unique for each group of sessions defined for any one intersystem link. That is, the MODENAME must be unique among the SESSIONS definitions related to one CONNECTION definition. It is passed to VTAM as the LOGMODE name.

NEPCLASS({**0**|*tranclass*})

specifies the transaction class for the node error program. This value acts as the default.

0 This results in a link to the default node error program module.

tranclass

The transaction class for the (nondefault) node error program module. The value can be in the range 1 through 255. For programming information about the node error program, see the *CICS Customization Guide*.

The NEPCLASS attribute is ignored for SNASVCMGR sessions.

NETNAMEQ(*netnameq*)

specifies the name by which the remote IMS system knows this particular session. This is used for CICS-IMS sessions. The name can be up to eight characters in length. The acceptable characters are: A-Z 0-9 $ @ # . / - _ % & ¢ ? ! : | " = ¬ , ; < and >. Lowercase characters are converted to uppercase except when using the CREATE command.

OPERID

This attribute is obsolete, but is supported to provide compatibility with earlier releases of CICS. For more information, see Appendix A, “Obsolete attributes,” on page 615.

OPERPRIORITY
This attribute is obsolete, but is supported to provide compatibility with earlier releases of CICS. For more information, see Appendix A, “Obsolete attributes,” on page 615.

OPERRSL
This attribute is obsolete, but is supported to provide compatibility with earlier releases of CICS. For more information, see Appendix A, “Obsolete attributes,” on page 615.

OPERSECURITY
This attribute is obsolete, but is supported to provide compatibility with earlier releases of CICS. For more information, see Appendix A, “Obsolete attributes,” on page 615.

PROTOCOL({**APPC**|**LU61**|**EXCI**})
specifies the type of protocol that is to be used for an intercommunication link (ISC or MRO).

APPC (LUTYPE6.2)
Advanced program-to-program communication (APPC) protocol. Specify this for CICS-CICS ISC.

EXCI The external CICS interface. Specify this to indicate that the sessions are for use by a non-CICS client program using the external CICS interface.

LU61 LUTYPE6.1 protocol. Specify this for CICS-CICS ISC, for CICS-IMS, or for MRO.

RECEIVECOUNT(*number*)
For MRO, and VTAM LU6.1 sessions, and for sessions with EXCI clients, specifies the number of *receive sessions*; that is, sessions that normally receive before sending:
- MRO receive sessions (including sessions with EXCI clients) always receive before sending
- VTAM LU6.1 receive sessions normally receive before sending, but may send before receiving when there is a shortage of suitable send sessions

The number of receive sessions you can specify depends upon the length of the prefix specified in the RECEIVEPFX attribute:
- If you use the default receive prefix (<), or your own 1-character prefix, you can specify 1 through 999 receive sessions
- If you use a 2-character prefix, you can specify 1 through 99 receive sessions.

You should also ensure that the value specified matches the number of send sessions in the partner system:
- If the partner is another CICS system, the value should match the SENDCOUNT specified in the partner system
- If the partner is an EXCI client, you cannot specify the number of send session in the partner. However, there is an upper limit of 100 send sessions in an EXCI address space. When this limit is reached, IRP rejects further requests for a session with SYSTEM_ERROR reason code 608.

If you do not specify the RECEIVECOUNT attribute, there are no receive sessions

RECEIVEPFX({**<**|*prefix*})
specifies a 1-or 2-character prefix that CICS is to use as the first one or two

characters of the receive session names (the names of the terminal control table terminal entries (TCTTEs) for the sessions).

Prefixes must not cause a conflict with an existing connection or terminal name.

< (MRO and EXCI sessions)

For MRO and EXCI sessions, if you do not specify your own receive prefix, CICS enforces the default prefix—the less-than symbol (<), which is used in conjunction with the receive count to generate receive session names.

CICS creates the last three characters of the session names. The acceptable characters are A-Z 1-9. These 3-character identifiers begin with the letters AAA, and continue in ascending sequence until the number of session entries reaches the limit set by the RECEIVECOUNT value. Note that receive session names are generated **after** the send sessions, and they follow in the same sequence.

For example, if the last session name generated for the send sessions is >AAJ, using the default sendprefix (>) CICS generates the receive session names as <AAK, <AAL, <AAM, and so on. (This method of generation of session identifiers is the same as for APPC sessions, except for the initial prefix symbol.)

If you use more than 46656 sessions (<AAA to <999), CICS allocates the next range of AAA< to 999<, again in a similar manner to APPC sessions.

A region with more than 46656 sessions might not perform well. You should consider the alternative of increasing the number of CICS regions.

Although you can define up to 93312 MRO sessions there is a current restriction that prevents you from attempting to acquire more than 65535 sessions in one attempt. This might occur during CICS start up or for a CEDA install for more than 65536 sessions if ALL the partner regions are up and running. Further sessions can be acquired later.

Note: If you specify your own prefix, CICS generates the session names in the same way as it does for LUTYPE6.1 sessions.

prefix **(LUTYPE6.1 sessions)**

If the sessions are on LUTYPE6.1 ISC connections, you must specify a 1-or 2-character prefix. Do not use the default < symbol for LUTYPE6.1 sessions.

For LUTYPE6.1 sessions (and MRO if you specify your own 1-or 2-character prefix), CICS generates session names by appending a number to the prefix, either in the range 1 through 99, or 1 through 999. The number begins with 1 and is incremented by 1 until the specified RECEIVECOUNT is reached.

RECEIVESIZE({**4096**|*number*})

specifies the maximum VTAM request unit (RU) size that these sessions are capable of receiving. The value must be between 1 and 30720 for LU61 sessions, or 256 and 30720 for APPC sessions. The default is 4096.

The value specified is transmitted to the connected logical unit. This value may be rounded down by CICS, depending on what value you specified, because the value must be transmitted in an architected form. The value may be negotiated down still further at BIND time.

If CICS is the secondary LU session, this indicates the maximum VTAM request unit (RU) size that these sessions are capable of sending.

RECOVNOTIFY
This attribute is obsolete, but is supported to provide compatibility with earlier releases of CICS. For more information, see Appendix A, “Obsolete attributes,” on page 615.

RECOVOPTION({**SYSDEFAULT**|**CLEARCONV**| **RELEASESESS**|**UNCONDREL**|**NONE**})
This option applies to the recovery of sessions in a CICS region running with VTAM persistent sessions, or with XRF.

VTAM persistent sessions: In a CICS region running with persistent session support, this option specifies how you want CICS to recover the session, and return the terminal to service on system restart within the persistent session delay interval.

XRF: In a CICS region running with XRF support, this option specifies how you want CICS to recover the session, and return the terminal to service after an XRF takeover.

For all recovery options other than NONE, if the action taken is a VTAM UNBIND, the UNBIND is followed by a VTAM SIMLOGON.

CLEARCONV
VTAM persistent sessions: CLEARCONV is not supported for APPC sessions. It defaults to SYSDEFAULT.

XRF: If AUTOCONNECT(YES) is specified, the session is restarted. If AUTOCONNECT(NO) is specified, the session is unbound.

NONE
VTAM persistent sessions: In a CICS region running with persistent sessions support, this specifies that the session is not to be recovered at system restart within the persistent session delay interval: in effect, the sessions on the modegroup have no persistent sessions support. LU6.2 sessions are unbound and the modegroup CNOS value is reset to zero. After system restart, the session is reconnected automatically if you specify AUTOCONNECT(YES).

XRF: In a CICS region running with XRF support, this specifies that the logon state is not tracked by the alternate system, and the terminal session is not automatically recovered after a takeover; in effect, the terminal has no XRF support. After takeover, the terminal is reconnected automatically by the alternate system, if you specify AUTOCONNECT(YES).

RELEASESESS
VTAM persistent sessions: RELEASESESS is not supported for APPC sessions. It defaults to SYSDEFAULT.

XRF: If AUTOCONNECT(YES) is specified, the session is restarted. If AUTOCONNECT(NO) is specified, the session is unbound.

SYSDEFAULT
VTAM persistent sessions: In a CICS region running with persistent sessions support, this specifies that CICS is to select the optimum procedure to recover a session on system restart within the persistent session delay interval, depending on the session activity and on the characteristics of the terminal.

Although sessions are recovered, any transactions in-flight at the time of the failure are abended and not recovered. Transactions are also abended if the recovered session is being used by another CICS region over an APPC connection.

CICS recovers the session with the least possible impact, in one of the following ways:

- If the session was not busy at the time that CICS failed, no action is required.
- If the session was busy at the time that CICS failed, CICS issues a DEALLOCATE(ABEND) (equivalent to an EXEC CICS ISSUE ABEND) for the APPC conversation in progress at the time of the failure.
- If neither of the above applies, the session is unbound.

XRF: If AUTOCONNECT(YES) is specified, the session is restarted. If AUTOCONNECT(NO) is specified, the session is unbound.

UNCONDREL

Requires CICS to send an UNBIND request to release the active session. The UNBIND is sent whether or not the session was busy at the time of system restart (in the case of persistent sessions support) or takeover (in the case of XRF).

RELREQ({NO|YES})

specifies whether CICS is to release the logical unit upon request by another VTAM application program.

SENDCOUNT(*number*)

For MRO, and VTAM LU6.1 sessions only, specifies the number of *send sessions*; that is, sessions that normally send before receiving:

- MRO send sessions always send before receiving
- VTAM LU6.1 send sessions normally send before receiving, but may receive before sending when there is a shortage of suitable receive sessions

The number of send sessions you can specify depends upon the length of the prefix specified in the SENDPFX attribute:

- If you use the default send prefix (>), or your own 1-character prefix, you can specify 1 through 999 send sessions
- If you use a 2-character prefix, you can specify 1 through 99 send sessions.

You should also ensure that the value specified matches the number of receive sessions in the partner system:

- If the partner is another CICS system, the value should match the RECEIVECOUNT specified in the partner system

If you do not specify the SENDCOUNT attribute, there are no send sessions. Do not specify the SENDCOUNT attribute when the partner is an EXCI client

SENDPFX({>|*prefix*})

specifies a 1-or 2-character prefix that CICS is to use as the first one or two characters of the send session names (the names of the terminal control table terminal entries (TCTTEs) for the sessions).

Prefixes must not cause a conflict with an existing connection or terminal name.

> (MRO sessions)

For MRO sessions, if you do not specify your own send prefix, CICS enforces the default prefix—the greater-than symbol (>), which is used in conjunction with the send count to generate send session names.

CICS creates the last three characters of the session names from the alphanumeric characters A through Z, and 1 through 9. These 3-character identifiers begin with the letters AAA, and continue in ascending sequence until the number of session entries reaches the limit set by the SENDCOUNT value.

For example, using the default prefix (>), CICS generates session names as >AAA, >AAB, >AAC, and so on. If you use more than 46656 sessions (>AAA to >999), CICS allocates the next range of AAA> to 999>. (This method of generation of session identifiers is the same as for APPC sessions, except for the initial symbol.)

A region with more than 46656 sessions might not perform well. You should consider the alternative of increasing the number of CICS regions.

Although you can define up to 93312 MRO sessions there is a current restriction that prevents you from attempting to acquire more than 65535 sessions in one attempt. This might occur during CICS start up or for a CEDA install for more than 65536 sessions if ALL the partner regions are up and running. Further sessions can be acquired later.

Note: If you specify your own prefix, CICS generates the session names in the same way as it does for LUTYPE6.1 sessions.

prefix **(for LUTYPE6.1 sessions)**

If the sessions are on LUTYPE6.1 ISC connections, you must specify a 1-or 2-character prefix. Do not use the default > symbol for LUTYPE6.1 sessions.

For LUTYPE6.1 sessions (and MRO if you specify your own 1-or 2-character prefix), CICS generates session names by appending a number to the prefix, either in the range 1 through 99, or 1 through 999. The number begins with 1 and are incremented by 1 until the specified SENDCOUNT is reached.

SENDSIZE({**4096**|**number**})

specifies the maximum VTAM request unit (RU) size that these sessions are capable of sending. The value must be between 1 and 30720 for LU61 sessions, or between 256 and 30720 for APPC sessions. The default is 4096. The value may be negotiated down at bind time. Increasing the value of SENDSIZE causes more storage to be allocated for the session but may decrease the number of physical messages sent between the two nodes.

If CICS is the secondary LU session, this attribute indicates the maximum VTAM request unit (RU) size that these sessions are capable of receiving. The value must be between 256 and 30720.

SESSIONS(*name*)

specifies the name of this SESSIONS definition. The name can be up to eight characters in length.

Acceptable characters:

`A-Z a-z 0-9 $ @ # . / - _ % & ¢ ? ! : | " = ¬ , ; < >`

For information about entering mixed case information, see “Entering mixed case attributes” on page 388.

This name is used to identify the SESSIONS definition on the CSD file. It is not used within the active CICS system.

SESSNAME(*sessname*)
specifies the symbolic identification to be used as the local half of a session qualifier pair in a CICS intercommunication parallel session. The name can be up to four characters in length.

Acceptable characters:

`A-Z a-z 0-9 $ @ # . / - _ % & ¢ ? ! : | " = ¬ , ; < >`

For information about entering mixed case information, see “Entering mixed case attributes” on page 388.

SESSPRIORITY({**0**|*priority*})
specifies the terminal priority. This decimal value (0 through 255) is used in establishing the overall transaction processing priority. (Transaction processing priority is equal to the sum of the terminal priority, transaction priority, and operator priority; this must not exceed 255.)

TRANSACTION
This attribute is obsolete, but is supported to provide compatibility with earlier releases of CICS. For more information, see Appendix A, “Obsolete attributes,” on page 615.

USERAREALEN({**0**|*number*})
Specify the length, in bytes, of the user area for this session, in the range 0 through 255. It should be made as small as possible. The TCT user area is initialized to zeros when the session is installed.

The TCT user area may be located above or below the 16Mb line in virtual storage. Where it is located depends on the value of the TCTUALOC operand of the DFHSIT macro. You should ensure that this is specified correctly to allow successful operation of any programs that are not capable of handling 31-bit addressing.

USERID(*userid*)
specifies a user identifier used for sign-on (SEC=YES or MIGRATE) and referred to in security error messages, security violation messages, and the audit trail. It must be a valid userid defined to the security manager, or operators will be unable to sign on. All access to protected resources depends on USERID.

This USERID overrides a SECURITYNAME specified on the CONNECTION definition.

The name can be up to eight characters in length.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters you enter are converted to uppercase.

Chapter 26. TCPIPSERVICE resource definitions

A TCPIPSERVICE resource to defines which TCP/IP services are to use CICS internal sockets support. The internal CICS services that can be defined are ECI over TCP/IP (for CICS Clients), IIOP, CICS Web support (HTTP), or a user-defined protocol.

The TCPIPSERVICE definition allows you to manage these internal CICS interfaces, with CICS listening on multiple ports, with different flavors of ECI, IIOP, CICS Web support or the user-defined protocol on different ports.

TCPIPSERVICE definitions are for use only with the CICS-provided TCP/IP services, and have nothing to do with the z/OS Communications Server IP CICS Sockets interface. The TCP/IP Socket Interface for CICS is supplied with z/OS Communications Server, which is an integral part of z/OS and does not use the CICS SO domain.

To select dynamic DNS (domain name service), you need to provide a group name for the DNSGROUP attribute. The Listener registers with MVS workload management services (WLM) using the APPLID specified in the system initialization table (SIT). The APPLID is passed to MVS as the **Server**. If the APPLID=(gname,sname) format is used in the SIT, then **`sname`** is the value passed to MVS.

Note:

1. Both the client and the CICS server must use the same TCP/IP **nameserver**.
2. The **nameserver** must be able to perform a reverse look-up, that is, it must be able to translate the IP address of the server into a full hostname.

TCPIPSERVICE definitions that specify PROTOCOL(IIOP) must be installed in both the listener region and AOR in a CICS logical server. See *Java Applications in CICS*

Defining TCPIPSERVICE resources

You can define TCPIPSERVICEs in the following ways:

- Using the CEDA transaction; see "Defining TCPIPSERVICEs using CEDA."
- Using the DFHCSDUP utility; see *CICS Operations and Utilities Guide*.
- Using the CREATE TCPIPSERVICE command; see the *CICS System Programming Reference*.
- Using CICSPlex SM Business Application Services; see *CICSPlex System Manager Managing Business Applications*.

Defining TCPIPSERVICEs using CEDA

From a CICS terminal, enter the command:

```
CEDA DEFINE TCPIPSERVICE(name) GROUP(name)
```

Figure 26 on page 216 shows the panel that is displayed.

```
 TCpipservice ==>
 GROup        ==>
 DEscription  ==>
 Urm          ==>
 POrtnumber   ==> 00000             1-65535
 STatus       ==> Open              Open | Closed
 PRotocol     ==>                Iiop | Http | Eci | User
 TRansaction  ==>
 Backlog      ==> 00001             0-32767
 TSqprefix    ==>
 Ipaddress    ==>
 SOcketclose  ==> No                No | 0-240000 (HHMMSS)
 Maxdatalen   ==>                        3-524288
SECURITY
 SSl          ==> Yes                Yes | No | Clientauth
 CErtificate  ==>
 (Mixed Case) ==>
 PRIvacy      ==> Supported         Notsupported | Required | Supported
 CIphers      ==> 0504352F0A0903060102
 AUthenticate ==> No                No | Basic | Certificate | AUTORegister
                                    | AUTOMatic | ASserted

 ATtachsec    ==> Verify            Local | Verify
  DNS CONNECTION BALANCING
 DNsgroup     ==>
 GRPcritical  ==> No                No | Yes
```

Figure 26. The DEFINE panel for TCPIPSERVICE

For information about input to mixed case fields, see “Entering mixed case attributes” on page 388.

TCPIPSERVICE: interrelated attributes

The attributes and the values you can specify depend in some cases on which other attributes you have specified. For TCPIPSERVICE resources:

- The values you can specify for the AUTHENTICATE attribute depend upon the value of the PROTOCOL attribute:

AUTHENTICATE	PROTOCOL(ECI)	PROTOCOL(HTTP) or PROTOCOL(USER)	PROTOCOL(IIOP)
NO	invalid	valid	valid
BASIC	invalid	valid	invalid
CERTIFICATE	invalid	valid	valid
AUTOREGISTER	invalid	valid	invalid
AUTOMATIC	invalid	valid	invalid
ASSERTED	invalid	invalid	valid

- If you specify PROTOCOL(HTTP) , PROTOCOL(USER) or PROTOCOL(IIOP), ATTACHSEC must be blank. You can specify the ATTACHSEC attribute only when you specify PROTOCOL(ECI).
- If you specify PROTOCOL(HTTP), the default for URM is the CICS-supplied default analyzer program DFHWBAAX.
- If you specify PROTOCOL(IIOP) and AUTHENTICATE(ASSERTED) or AUTHENTICATE(CERTIFICATE), URM must be blank.
- If you specify AUTHENTICATE(CERTIFICATE) or AUTHENTICATE(AUTOREGISTER), you must specify SSL(CLIENTAUTH).

- If you specify a well known port number in the PORT attribute, CICS sets the values of other attributes:

PORT	PROTOCOL	TRANSACTION	SSL
80	HTTP	CWXN	NO
443	HTTP	CWXN	YES
683	IIOP	CIRR	NO
684	IIOP	CIRR	YES
1435	ECI	CIEP	NO

- If you specify the PROTOCOL attribute, but not the TRANSACTION attribute, CICS sets the TRANSACTION attribute. Similarly, if you supply one of the following values in the TRANSACTION attribute, but not the PROTOCOL attribute, CICS sets the PROTOCOL attribute:

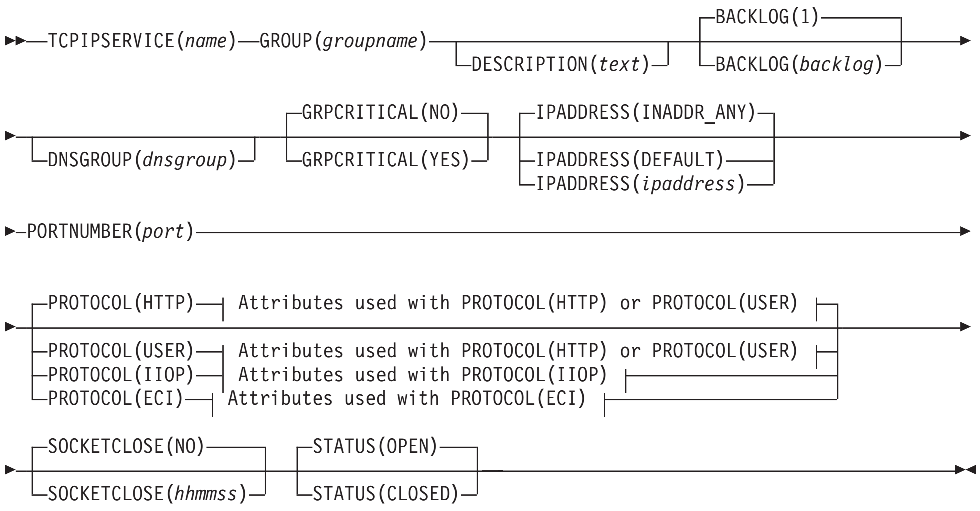
PROTOCOL	TRANSACTION
HTTP	CWXN
USER	CWXU
IIOP	CIRR
ECI	CIEP

- You can change the value that CICS supplies for the TRANSACTION attribute. Depending on the value that you specify for the PROTOCOL attribute, some values are not permitted:

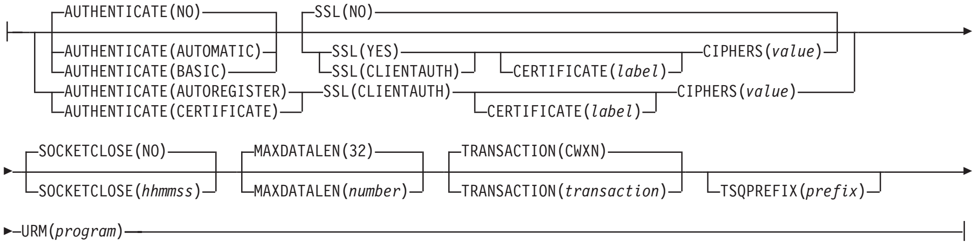
PROTOCOL	TRANSACTION (CWXN)	TRANSACTION (CIRR)	TRANSACTION (CIEP)	TRANSACTION (CWXU)
HTTP	Default	Invalid	Invalid	Invalid
USER	Invalid	Invalid	Invalid	Default
IIOP	Invalid	Default	Invalid	Invalid
ECI	Invalid	Invalid	Default	Invalid

- If you specify PROTOCOL(ECI) you must specify SOCKETCLOSE(NO).

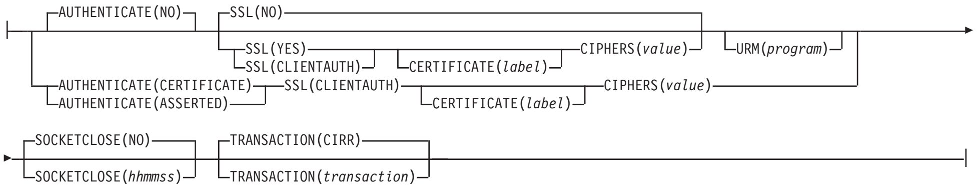
TCPIPSERVICE definition attributes



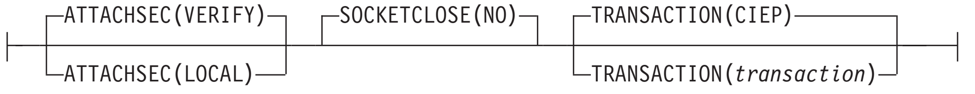
Attributes used with PROTOCOL(HTTP) or PROTOCOL(USER):



Attributes used with PROTOCOL(IIOP):



Attributes used with PROTOCOL(ECI):



ATTACHSEC({LOCAL|VERIFY})
specifies the level of attach-time security required for TCP/IP connections to CICS Clients.

LOCAL
specifies that CICS does not require a user ID or password from clients.

VERIFY
specifies that incoming attach requests must specify a user identifier and a user password. Specify VERIFY when connecting systems are unidentified and cannot be trusted.

AUTHENTICATE({**NO**|**BASIC**|**CERTIFICATE**|**AUTOREGISTER**|**AUTOMATIC**})
specifies the authentication and identification scheme to be used for inbound TCP/IP connections for the HTTP, USER and IIOP protocols. The HTTP and USER protocols, and the IIOP protocol, support a different set of authentication schemes. For the ECI protocol, this attribute is invalid. For more information about authentication, see *CICS RACF Security Guide*.

| Note that when CICS document templates and HFS files are delivered directly from a URIMAP definition, as a static response, basic authentication does not operate.

When PROTOCOL(HTTP) or PROTOCOL(USER) is specified:

NO The client is not required to send authentication or identification information. However, if the client sends a valid certificate that is already registered to the security manager, and associated with a user ID, then that user ID identifies the client.

BASIC
HTTP Basic authentication is used to obtain a user ID and password from the client.

If the client has sent an Authorization header, its contents are decoded as a user ID and password. If these are valid, the user ID is passed to the user-replaceable program for this TCPIPSERVICE definition. Otherwise, an HTTP 401 response is returned, together with a WWW-Authenticate header, which causes the client program to prompt the user for a new user ID and password. This process continues until the client either supplies a valid user ID and password, or cancels the connection.

When the end user has been successfully authenticated, the user ID supplied identifies the client.

CERTIFICATE
SSL client certificate authentication is used to authenticate and identify the client. The client must send a valid certificate which is already registered to the security manager, and associated with a user ID. If a valid certificate is not received, or the certificate is not associated with a user ID, the connection is rejected.

When the end user has been successfully authenticated, the user ID associated with the certificate identifies the client.

Note: If you specify AUTHENTICATE(CERTIFICATE), you must also specify SSL(CLIENTAUTH).

AUTOREGISTER
SSL client certificate authentication is used to authenticate the client.

- If the client sends a valid certificate that is already registered to the security manager, and associated with a user ID, then that user ID identifies the client.

- If the client sends a valid certificate that is not registered to the security manager, then HTTP Basic authentication is used to obtain a user ID and password from the client. Provided that the password is valid, CICS registers the certificate with the security manager, and associates it with the user ID. The user ID identifies the client.

Note: If you specify AUTHENTICATE(AUTOREGISTER), you must also specify SSL(CLIENTAUTH).

AUTOMATIC
This combines the AUTOREGISTER and BASIC functions.

- If the client sends a certificate that is already registered to the security manager, and associated with a user ID, then that user ID identifies the client.
- If the client sends a certificate that is not registered to the security manager, then HTTP Basic authentication is used to obtain a user ID and password from the client. Provided that the password is valid, CICS registers the certificate with the security manager, and associates it with the user ID. The user ID identifies the client.
- If the client does not send a certificate, then HTTP Basic authentication is used to obtain a user ID and password from the user. When the end user has been successfully authenticated, the user ID supplied identifies the client.

Note: For the HTTP or USER protocol, the analyzer program (named by the URM attribute) may change the user ID supplied by the authentication process. If the authentication process does not supply a user ID, the analyzer program or URIMAP definition may supply one; otherwise the default user ID is used.

When PROTOCOL(IIOP) is specified:

NO The client is not required to send authentication or identification information. However, if the client sends a valid certificate that is already registered to the security manager, and associated with a user ID, then that user ID identifies the client.

CERTIFICATE
SSL client certificate authentication is used to authenticate and identify the client. The client must send a valid certificate which is already registered to the security manager, and associated with a user ID. If a valid certificate is not received, or the certificate is not associated with a user ID, the connection is rejected.

When the end user has been successfully authenticated, the user ID associated with the certificate identifies the client.

Note: If you specify AUTHENTICATE(CERTIFICATE), you must also specify SSL(CLIENTAUTH).

ASSERTED
Asserted identity authentication is used to authenticate and identify the client.

Asserted identity authentication can be used when an IIOP client communicates with the target server through an intermediate server, and both servers use the same security manager:

1. The intermediate server's identity is authenticated by the target server using SSL client certificate authentication.

2. Through the security manager, the target server verifies that the intermediate server can be trusted to authenticate its clients.
3. When the intermediate server receives a request, it authenticates the client using whatever authentication protocol is appropriate. If the client is successfully authenticated, the intermediate server passes the request to the target server
4. Because the target server trusts the intermediate server to authenticate the client, it makes no further checks of the client's authenticity before processing the client's request.

Note: For the IIOP protocol, the IIOP user-replaceable program (named by the URM attribute) may supply a user ID if the authentication process does not supply one; if the user-replaceable program does not supply one, the default user ID is used.

BACKLOG(1|*backlog*)
specifies the number of TCP/IP connections for this service which are queued in TCP/IP before TCP/IP starts to reject incoming client requests.

CERTIFICATE(*label*)
specifies the label of an X.509 certificate that is used as a server certificate during the SSL handshake for the TCP/IP service. If this attribute is omitted, the default certificate defined in the key ring for the CICS region user ID is used.

Certificate labels can be up to 32 bytes long.

The certificate must be stored in a key ring in the external security manager's database. For more information, see*CICS RACF Security Guide*.

This attribute cannot be specified unless SSL(YES) or SSL(CLIENTAUTH) is also specified.

CIPHERS(*value*)

Specifies a string of up to 56 hexadecimal digits that is interpreted as a list of up to 28 2-digit cipher suite codes. When you use the CEDA transaction to define the resource, CICS automatically initializes the attribute with a default list of acceptable codes. For CICS to initialize the attribute, the KEYRING system initialization parameter must be specified in the CICS region where you are running CEDA. If KEYRING is not set, CICS does not initialize the attribute. The default list of codes depends on the level of encryption that is specified by the ENCRYPTION system initialization parameter.

- For ENCRYPTION=WEAK, the default value is `03060102`
- For ENCRYPTION=MEDIUM, the initial value is `0903060102`
- For ENCRYPTION=STRONG, the initial value is `0504352F0A0903060102`

You can reorder the cipher codes or remove them from the initial list. However, you cannot add cipher codes that are not in the default list for the specified encryption level. To reset the value to the default list of codes, delete all of the cipher suite codes and the field will automatically repopulate with the default list. See Cipher suites for more information.

DESCRIPTION(*text*)
You can provide a description of the resource you are defining in this field. The description text can be up to 58 characters in length. There are no restrictions on the characters that you can use. However, if you use parentheses, ensure that for each left parenthesis there is a matching right one. If you use the CREATE command, for each single apostrophe in the text, code two apostrophes.

DNSGROUP(*dnsgroup*)

Specifies the group name with which CICS will register to Workload Manager, for connection optimization. The value may be up to 18 characters, and any trailing blanks are ignored. This parameter is referred to as group_name by the TCP/IP DNS documentation and is the name of a cluster of equivalent server applications in a sysplex. It is also the name within the sysplex domain that clients use to access the CICS TCPIPSERVICE.

More than one TCPIPSERVICE may specify the same group name. The register call is made to WLM when the first service with a specified group name is opened. Subsequent services with the same group name do not cause more register calls to be made. The deregister action is dictated by the GRPCRITICAL attribute. It is also possible to explicitly deregister CICS from a group by issuing a master terminal or SPI command.

GROUP(*groupname*)

Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed.

Acceptable characters:

`A-Z 0-9 $ @ #`

Any lower case characters you enter are converted to upper case.

The GROUP name can be up to eight characters in length. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

GRPCRITICAL({**NO**|**YES**})

Marks the service as a critical member of the DNS group, meaning that this service closing or failing causes a deregister call to be made to WLM for this group name. The default is NO, allowing two or more services in the same group to fail independently and CICS still remains registered to the group. Only when the last service in a group is closed is the deregister call made to WLM, if it has not already been done so explicitly. Multiple services with the same group name can have different GRPCRITICAL settings. The services specifying GRPCRITICAL(NO) can be closed or fail without causing a deregister. If a service with GRPCRITICAL(YES) is closed or fails, the group is deregistered from WLM.

IPADDRESS({**INADDR_ANY**|**DEFAULT**|*ipaddress*})

specifies the dotted decimal IP address on which this TCPIPSERVICE will listen for incoming connections. It must be of the form nnn.nnn.nnn.nnn where nnn is 0 through 255. Possible values are:

INADDR_ANY

The TCPIPSERVICE listens on any of the addresses known to TCP/IP for the host system. It is possible to have multiple IP addresses defined for a host. Specifying INADDR_ANY also allows for the TCPIPSERVICE definition to be shared among CICS servers.

If you specify INADDR_ANY, CICS will attempt to bind to the port on every stack where it is defined. If, in addition, you want more than one CICS region to bind to the port **you must specify the SHAREPORT option in every stack where the port is defined**. If you do not do so, only one CICS region will be able to bind to the port number in those stacks that do not have the SHAREPORT option. Subsequent attempts by other regions to bind to every stack will fail: CICS will issue a message indicating that the port is in use. For information about the SHAREPORT option, see *z/OS Communications Server: IP Configuration Reference*.

DEFAULT
This will assign affinity to the TCP/IP stack that has been defined as the default in a multi stack CINET environment. If this is used in a non-CINET environment or there is no default TCP/IP stack, then an exception trace will be written and no affinity will be assigned.

value The TCPIPSERVICE accepts connections on this particular address. If the address specified is not known to TCP/IP on the host system, the TCPIPSERVICE will not open. If you enter a specific address here, this definition may not be valid for CICS servers running on other regions, and you may not be able to share the definition with those servers.

MAXDATALEN({**32**|*number*})
defines the maximum length of data that may be received by CICS as an HTTP server, on the HTTP protocol or the USER protocol. The default value is 32K. The minimum is 3K, and the maximum is 524288K. To increase security for CICS Web support, specify this option on every TCPIPSERVICE definition for the HTTP protocol. It helps to guard against denial of service attacks involving the transmission of large amounts of data.

PORTNUMBER(*port*)
specifies, in the range 1 through 65535, the decimal number of the port on which CICS is to listen for incoming client requests.

The well-known ports are those from 1 through 1023. It is advisable to use well known port numbers only for those services to which they are normally assigned. The well-known ports for services supported by CICS are:

80	HTTP (non-SSL)
443	HTTP with SSL
683	IIOP (non-SSL)
684	IIOP with SSL
1435	ECI (Registered port number)

You should take care to resolve conflicts with any other servers on the same MVS image that might use the well-known ports.

Port sharing has to be enabled for any port that you want to share across CICS systems within an MVS image. For more information, see *z/OS Communications Server: IP Configuration Reference*.

PRIVACY
This attribute is obsolete, but is supported to provide compatibility with earlier releases of CICS. For more information, see Appendix A, "Obsolete attributes," on page 615.

PROTOCOL({**ECI**|**HTTP**|**IIOP**|**USER**})
specifies the application level protocol used on the TCP/IP port.

ECI The CICS ECI protocol is used.

HTTP HTTP protocol is used. HTTP protocol is handled by CICS Web support. CICS performs basic acceptance checks for messages sent and received using this protocol. This protocol is required for the well-known ports 80 (used for HTTP without SSL) and 443 (used for HTTP with SSL).

IIOP IIOP protocol is used. Specify IIOP for TCPIPSERVICEs that are to accept inbound requests for enterprise beans.

USER The user-defined protocol is used. Messages are processed as non-HTTP messages. They are flagged as non-HTTP and passed unchanged to the analyzer program for the TCPIPSERVICE. CICS Web support facilities are used for handling the request, but no acceptance checks are carried out for messages sent and received using this protocol. Processing for all non-HTTP requests must be carried out under the USER protocol, so that they are protected from the basic acceptance checks which CICS carries out for requests using the HTTP protocol. If an HTTP message is handled by the USER protocol, you are responsible for checking its validity.

SOCKETCLOSE({NO|*hhmmss*})

specifies if, and for how long, CICS should wait before closing the socket. The interval is measured from the time of the initial receive request for incoming data on that socket.

NO The socket is left open until it is closed by the client, or by a user application program in CICS.

hhmmss

The interval (in HHMMSS format) from the time of the initial receive request for incoming data, after which CICS is to time out the socket. Choose a value that is appropriate to the responsiveness of the client, and the reliability of your network. Specifying 000000 closes the socket immediately if no data is available for any RECEIVEs other than the first one.

If you are using a TCPIPSERVICE for CICS Web Support with the HTTP protocol, SOCKETCLOSE(0) should **not** be specified. A zero setting for SOCKETCLOSE means that CICS closes the connection immediately after receiving data from the Web client, unless further data is waiting. This means that persistent connections cannot be maintained.

If you specify PROTOCOL(ECI) you must specify SOCKETCLOSE(NO).

If you specify PROTOCOL(USER), persistent sessions are not supported, and you should specify SOCKETCLOSE(000000).

The SOCKETCLOSE attribute does not apply to the first RECEIVE issued after a connection is made. On the first RECEIVE request, for the HTTP, USER and ECI protocols, CICS waits for data for 30 seconds before closing the socket. For the IIOP protocol, CICS waits indefinitely.

After the TCPIPSERVICE is installed, you cannot change this value using CEMT; you must set the TCPIPSERVICE out of service, then re-install the TCPIPSERVICE with the modified definition.

SSL({NO|YES|CLIENTAUTH})

specifies whether the TCP/IP service is to use the secure sockets layer (SSL) for encryption and authentication. You can specify this attribute for the HTTP, USER and IIOP protocol, but not for the ECI protocol.

NO SSL is not to be used.

YES An SSL session is to be used; CICS will send a server certificate to the client.

CLIENTAUTH
An SSL session is to be used; CICS will send a server certificate to the client, and the client must send a client certificate to CICS.

STATUS({**OPEN**|**CLOSED**})
Indicates the initial status of the service after installation. Set it to OPEN if CICS is to begin listening for this service after installation. Set to CLOSE if CICS is not to listen on behalf of this service after installation.

TCPIPSERVICE(*name*)
specifies the 8-character name of this service.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters you enter are converted to uppercase.

TRANSACTION(*transaction*)
specifies the 4-character ID of the CICS transaction attached to process new requests received for this service. For an HTTP TCPIPSERVICE definition, specify CWXN (or another transaction that executes program DFHWBXN). For a USER TCPIPSERVICE definition, specify CWXU (or another transaction that executes program DFHWBXN). For an IIOP TCPIPSERVICE definition, specify CIRR (or another transaction that executes program DFHIIRRS). For an ECI over TCP/IP TCPIPSERVICE definition, specify CIEP (or another transaction that executes program DFHIEP).

TSQPREFIX(*prefix*)
specifies the 6-character prefix of the temporary storage queues used to store CICS Web support data.

Acceptable characters:

`A-Z a-z 0-9 $ @ # . / - _ % & ¢ ? ! : | " = ¬ , ; < >`

For information about entering mixed case information, see “Entering mixed case attributes” on page 388.

The TS queue prefix must match a corresponding TSMODEL definition to meet your system and application requirements.

Do not specify a TSMODEL that specifies the POOLNAME attribute: CICS Web support does not support the use of shared temporary storage queues. Also, the use of recoverable temporary storage queues is not recommended for CICS Web support, because this can cause locking issues and reduce throughput.

URM(*program*)
specifies the name of a user-replaceable program to be invoked by this service. The name you specify depends upon the value of the PROTOCOL attribute:

| - For the HTTP protocol, specify the name of an analyzer program that is associated with this TCPIPSERVICE definition. The CICS-supplied default analyzer program DFHWBAAX is the default. DFHWBAAX provides basic error handling when all requests on the port should be handled by URIMAP definitions (for example, Web service requests). It does not provide support for requests using the URL format that CICS Web support used before CICS TS 3.1. If you need to provide support for requests that are not handled by URIMAP definitions, the analyzer program specified on your TCPIPSERVICE definition should be the CICS-supplied sample analyzer program

DFHWBADX or your own customized analyzer program. See *CICS Internet Guide* for more information about analyzer programs.

- For the USER protocol, specify the name of an analyzer program that is associated with this TCPIPSERVICE definition. The analyzer program must be present, and it handles all requests on this protocol. See *CICS Internet Guide* for more information about analyzer programs.
- For the IIOP protocol, specify the name of the IIOP security user-replaceable program. See *Java Applications in CICS* for more information.

Chapter 27. TDQUEUE resource definitions

A TDQUEUE definition defines the attributes of a transient data queue.

The following transient data resources can be managed using RDO:
- Intrapartition
- Extrapartition
- Indirect
- Remote

Intrapartition definitions contain attributes that provide information about recovery characteristics, trigger levels, associated transactions, facilities, and userids.

Extrapartition definitions contain information about the associated QSAM data set, and the number of buffers that are to be used.

Indirect definitions identify the underlying queue name.

Remote definitions contain the name of the remote system and the name by which the queue is known on that remote system.

Before a transient data queue can be used by an active CICS system, you must install its definition in the running system. CICS uses the definition to access the data set associated with the queue, and records the number of read and write operations on the queue.

Remote transient data queues can be defined using the CEDA transaction in one of two ways:
- If the queue TYPE is omitted and data is entered into only the REMOTE ATTRIBUTES section of the definition, a remote definition will be created.
- If a TYPE of INTRA or EXTRA is specified and the REMOTE ATTRIBUTES section is completed, both a local and a remote resource definition will be established at the same time.

  See Figure 27 on page 228 for an example of defining a dual-purpose transient data resource definition.

You can use CEDA to define and redefine transient data resources in groups on the CSD file, from where they can be installed on the CICS region. You can also use CEDA to remove these resources. Figure 28 on page 229 shows the TDQUEUE resource definition screen with the various default values displayed. These defaults are appropriate only for specific queue types.

Dual-purpose resource definition for transient data

You cannot specify TYPE=REMOTE for transient data queues.

Instead, you may wish to consider dual-purpose resource definition (see “Shared resources for intercommunication” on page 10). Dual-purpose resource definition can be used with transient data definitions. Figure 27 on page 228 gives an example of dual-purpose resource definition for transient data resources.

If the definition shown in Figure 27 on page 228 is installed in a system called CICQ, that definition becomes a local intrapartition queue (the value of REMOTESYSTEM is CICQ).

If the definition shown in Figure 27 is installed in a system other than CICQ, the definition becomes a REMOTE queue.

```
 TDqueue        : TDQ1
 Group          : Example
 DEscription  ==>
 TYPE         ==> Intra                         Extra | INTra | INDirect
EXTRA PARTITION PARAMETERS
 DAtabuffers    :                               1-255
 DDname         :
 DSname         :
 Sysoutclass    :
 Erroroption    :                               Ignore | Skip
 Opentime       :                               Initial | Deferred
 REWind         :                               Leave | Reread
 TYPEFile       :                               Input | Output | Rdback
 RECORDSize     :                               0-32767
 BLOCKSize      :                               0-32767
 RECORDFormat   :                               Fixed | Variable
 BLOCKFormat    :                               Blocked | Unblocked
 Printcontrol   :                               A | M
 DIsposition  :                                 Shr | Old |Mod
INTRA PARTITION PARAMETERS
 Atifacility  ==> Terminal           Terminal | File | System
 RECOVstatus  ==> Logical            No | Physical | Logical
 Facilityid   ==> FR1
 TRAnsid      ==>
 TRIggerlevel ==> 00001              0-32767
 Userid       ==>

 INDOUBT ATTRIBUTES
 WAIT         ==> Yes                           Yes|No
 WAITAction   ==> Reject                        Queue|Reject

 INDIRECT PARAMETERS
 Indirectname :

 REMOTE PARAMETERS
 REMOTEName   ==> FR1
 REMOTESystem ==> CICQ
 REMOTELength ==>                                        0-32767
```

Figure 27. Dual-purpose resource definition for transient data

Defining transient data queues

You can define transient data queues in the following ways:

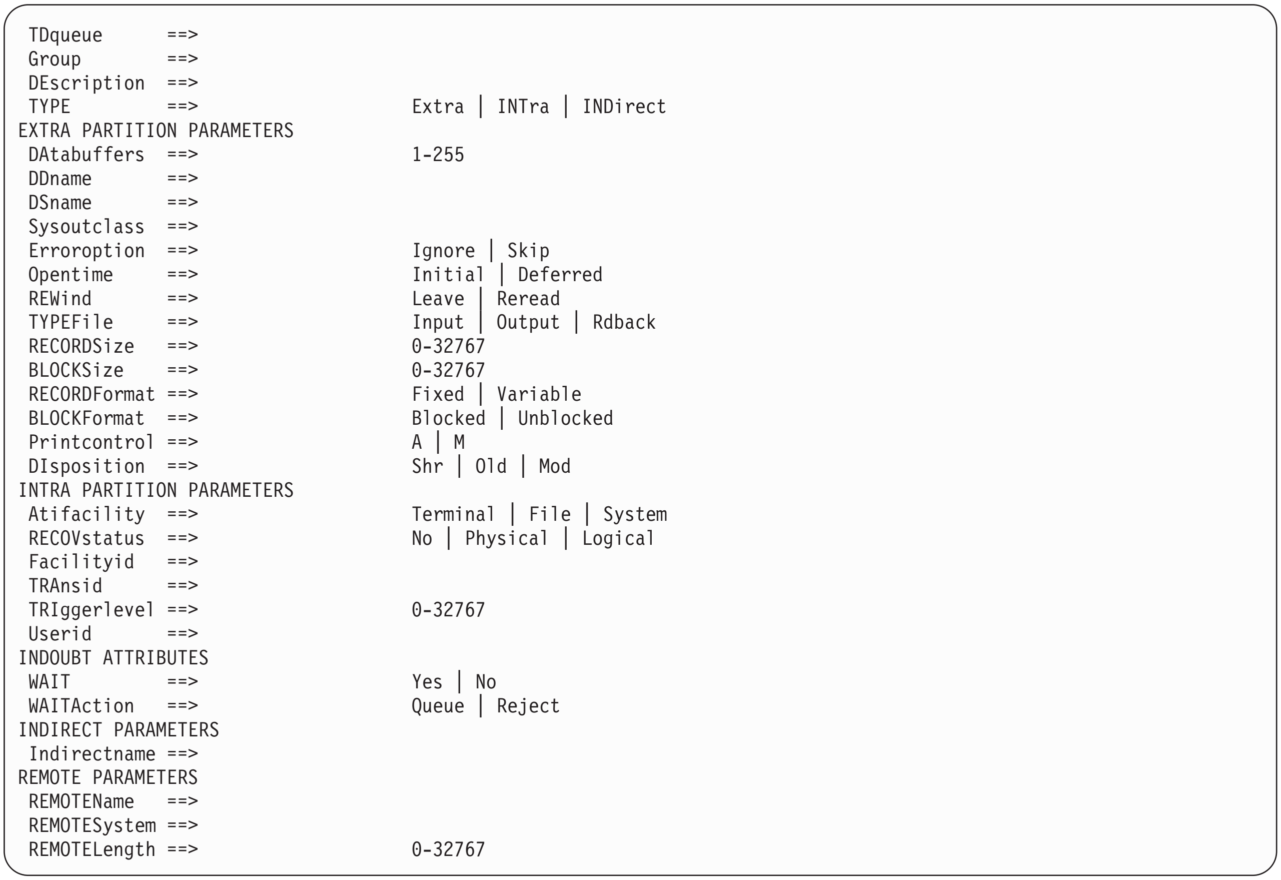
- Using the CEDA transaction; see “Defining transient data queues using CEDA.”
- Using the DFHCSDUP utility; see *CICS Operations and Utilities Guide*.
- Using the CREATE TDQUEUE command; see the *CICS System Programming Reference*.
- Using CICSPlex SM Business Application Services; see *CICSPlex System Manager Managing Business Applications*.

Defining transient data queues using CEDA

From a CICS terminal, enter the command:

```
CEDA DEFINE TDQUEUE(name) GROUP(name)
```

The panel that is displayed when you enter a valid CEDA DEFINE TDQUEUE command is:



```
 TDqueue      ==>
 Group        ==>
 DEscription  ==>
 TYPE         ==>                    Extra | INTra | INDirect
EXTRA PARTITION PARAMETERS
 DAtabuffers  ==>                    1-255
 DDname       ==>
 DSname       ==>
 Sysoutclass  ==>
 Erroroption  ==>                    Ignore | Skip
 Opentime     ==>                    Initial | Deferred
 REWind       ==>                    Leave | Reread
 TYPEFile     ==>                    Input | Output | Rdback
 RECORDSize   ==>                    0-32767
 BLOCKSize    ==>                    0-32767
 RECORDFormat ==>                    Fixed | Variable
 BLOCKFormat  ==>                    Blocked | Unblocked
 Printcontrol ==>                    A | M
 DIsposition  ==>                    Shr | Old | Mod
INTRA PARTITION PARAMETERS
 Atifacility  ==>                    Terminal | File | System
 RECOVstatus  ==>                    No | Physical | Logical
 Facilityid   ==>
 TRAnsid      ==>
 TRIggerlevel ==>                    0-32767
 Userid       ==>
INDOUBT ATTRIBUTES
 WAIT         ==>                    Yes | No
 WAITAction   ==>                    Queue | Reject
INDIRECT PARAMETERS
 Indirectname ==>
REMOTE PARAMETERS
 REMOTEName   ==>
 REMOTESystem ==>
 REMOTELength ==>                    0-32767
```

Figure 28. The DEFINE panel for TDQUEUE

Installing transient data queue definitions

After CICS has been initialized, you can install additional resources using the CEDA transaction, or the EXEC CICS CREATE commands. A transient data queue is **always** installed in an enabled state. Any queues that were disabled when a CICS system terminated, will still be enabled when the system is restored using a warm start or emergency restart.

Replacing existing transient data queue definitions

You can replace an existing transient data queue definition if the following rules are satisfied:
- CICS initialization is complete
- The queue TYPE is the same as the existing definition
- The intrapartition queue is disabled
- The extrapartition queue is disabled and closed

Existing definitions **cannot** be replaced during a cold start of CICS. If you are using multiple groups, take great care to ensure that duplicate names do not exist. Duplicate names cause error messages to be issued. The duplicate definition is not used to replace the existing one.

You can use the following transactions and commands to inquire about, set, and discard transient data definitions after they have been installed:

- CEMT INQUIRE TDQUEUE (or EXEC CICS INQUIRE TDQUEUE)
- CEMT SET TDQUEUE (or EXEC CICS SET TDQUEUE)
- CEMT DISCARD TDQUEUE (or EXEC CICS DISCARD TDQUEUE)
- The CECI transaction

Disabling transient data queues

A transient data queue cannot be disabled when:

- It is in use
- Other tasks are waiting to use it

This section relates only to intrapartition and extrapartition queues.

If tasks are waiting to use an extrapartition queue, a physically recoverable queue, or a nonrecoverable intrapartition queue, the queue enters a “disable pending” state. The last task to use the queue fully disables it.

If you try to disable a logically recoverable intrapartition transient data queue when units of work are enqueued on it, the queue enters a “disable pending” state. The last unit of work to obtain the enqueue fully disables the intrapartition queue.

If a unit of work owns an enqueue on a queue that is in a “disable pending” state, it is allowed to continue making updates.

When a queue is in a “disable pending” state, no new tasks can alter the queue's state, or its contents. CICS returns a disabled response when you issue a READQ TD, WRITEQ TD, or DELETEQ TD request against a queue that is in a “disable pending” state.

TDQUEUE definition attributes

```
►►──TDQUEUE(name)──GROUP(groupname)──┬─────────────────────┬─────────────────────►
                                     └─DESCRIPTION(text)─┘

►──┬─TYPE(EXTRA)──┤ Attributes for extrapartition queues ├──┬──────────────────►◄
   ├─TYPE(INTRA)──┤ Attributes for intra-partition queues ├─┤
   ├─TYPE(INDIRECT)──┤ Attributes for indirect queues ├─────┤
   └─┤ Attributes for remote queues of unspecified TYPE ├───┘
```

Attributes for extrapartition queues:

```
                             ┌─DATABUFFERS(1)──────┐                ┌─DISPOSITION(SHR)─┐
├──┬────────────────────┬───┼─────────────────────┼─DDNAME(ddname)─┼──────────────────┼───►
   └─BLOCKSIZE(length)──┘   └─DATABUFFERS(number)─┘                ├─DISPOSITION(OLD)─┤
                                                                    └─DISPOSITION(MOD)─┘

   ┌─ERROROPTION(IGNORE)─┐   ┌─OPENTIME(INITIAL)──┐
►──┼─────────────────────┼───┼────────────────────┼──────────────────────────────────────►
   └─ERROROPTION(SKIP)───┘   └─OPENTIME(DEFERRED)─┘

►──┬──────────────────────────────────────────────────────────────────────────────────┬──►
   └─┬─RECORDFORMAT(FIXED)────┬─┬─BLOCKFORMAT(BLOCKED)───┬─┬──────────────────┬──────┘
     └─RECORDFORMAT(VARIABLE)─┘ └─BLOCKFORMAT(UNBLOCKED)─┘ └─┬─PRINTCONTROL(A)─┤
                                                              └─PRINTCONTROL(M)─┘

   ┌─RECORDSIZE(1)──────┐
►──┼────────────────────┼────────────────────────────────────────────────────────────────►
   └─RECORDSIZE(number)─┘

►──┬──────────────────────────────────────────────────────────────────────────────────┬──►
   └─REMOTESYSTEM(connection)─┬──────────────────────┬─┬──────────────────────┬──────┘
                              └─REMOTELENGTH(number)─┘ └─REMOTENAME(tdqueue)──┘

►──┬───────────────┬─┬──────────────────────────────────────────────┬────────────────────┤
   ├─REWIND(LEAVE)─┤ │ ┌─TYPEFILE(INPUT)─┐                          │
   └─REWIND(REREAD)┘ ├─┴─────────────────┴─┬───────────────────┬────┤
                     │                      ├─DSNAME(DUMMY)─────┤    │
                     │                      └─DSNAME(dsname)────┘    │
                     │                  ┌─SYSOUTCLASS(*)─────┐       │
                     ├─TYPEFILE(OUTPUT)─┼────────────────────┼───────┤
                     │                  ├─SYSOUTCLASS(class)─┤       │
                     │                  ├─DSNAME(DUMMY)──────┤       │
                     │                  └─DSNAME(dsname)─────┘       │
                     └─TYPEFILE(RDBACK)─┬────────────────────┬───────┘
                                        ├─DSNAME(DUMMY)──────┤
                                        └─DSNAME(dsname)─────┘
```

Attributes for intrapartition queues:

```
   ┌─ATIFACILITY(TERMINAL)──────────────────┐ ┌─RECOVSTATUS(NO)───────┐
   │                    └─FACILITYID(terminal)─┘ │                       │
├──┼────────────────────────────────────────┼─┼───────────────────────┼──────────►
   ├─ATIFACILITY(FILE)──────────────────────┤ ├─RECOVSTATUS(LOGICAL)──┤
   └─ATIFACILITY(SYSTEM)─┬──────────────────┤ └─RECOVSTATUS(PHYSICAL)─┘
                        └─FACILITYID(connection)─┘

►─┬─────────────────────────────────────────────────────────────────┬──────────►
  └─REMOTESYSTEM(connection)─┬──────────────────────┬─┬───────────────────────┬─┘
                             └─REMOTELENGTH(number)─┘ └─REMOTENAME(tdqueue)─┘

                                  ┌─TRIGGERLEVEL(1)──────┐
►─┬─────────────────────┬─┼──────────────────────┼─┬────────────────┬──────────►
  └─TRANSID(transaction)─┘ └─TRIGGERLEVEL(number)─┘ └─USERID(userid)─┘

                    ┌─WAITACTION(REJECT)─┐
    ┌─WAIT(YES)─────┼────────────────────┼─┐
    │               └─WAITACTION(QUEUE)──┘ │
►───┼──────────────────────────────────────┼───────────────────────────────────┤
    └─WAIT(NO)─────────────────────────────┘
```

TDQUEUE attributes for indirect queues:

```
├──INDIRECTNAME(tdqueue)──────────────────────────────────────────────────────►

►─┬─────────────────────────────────────────────────────────────────┬─────────┤
  └─REMOTESYSTEM(connection)─┬──────────────────────┬─┬───────────────────────┬─┘
                             └─REMOTELENGTH(number)─┘ └─REMOTENAME(tdqueue)─┘
```

TDQUEUE attributes for remote queues of unspecified TYPE:

```
├──REMOTESYSTEM(connection)─┬──────────────────────┬───────────────────────────►
                            └─REMOTELENGTH(number)─┘

►─┬─────────────────────┬─────────────────────────────────────────────────────┤
  └─REMOTENAME(tdqueue)─┘
```

ATIFACILITY({TERMINAL|FILE|SYSTEM}) (intrapartition queues only)
specifies the type of destination the queue represents.

FILE The transient data queue is to be used as a file of data records that are not associated with a particular terminal or system. ATI does not require a terminal to be available.

SYSTEM
The transient data queue is to be associated with the specified system identifier. The system must be defined to the local CICS system using an RDO CONNECTION definition.

Specifying ATIFACILITY(SYSTEM) initiates a distributed transaction processing (DTP) session. For more information about DTP considerations in application programming, see the *CICS Application Programming Guide*.

TERMINAL
The transient data queue is to be associated with the terminal. The terminal must be defined to CICS. If you do not specify TERMINAL, it defaults to the value of FACILITYID. If ATI is used, as specified in the TRANSID and TRIGGERLEVEL attributes, the transaction that is initiated is associated with the specified terminal, which must be available before the transaction can be initiated.

BLOCKFORMAT({**BLOCKED**|**UNBLOCKED**|*blank*}) **(extrapartition queues only)**
specifies the block format of the data set. There is no default. If you specify the record format (RECORDFORMAT attribute) as undefined (or allow it to default), you cannot specify anything for the BLOCKFORMAT attribute.

blank Indicates that no block format is defined for this data set. Leave this field blank if you leave RECORDFormat blank.

BLOCKED
Blocked record format.

UNBLOCKED
Unblocked record format.

You are strongly advised to specify an unblocked record format for extrapartition queues that are used as an interface to the JES internal reader. If you use a blocked record format, your job is held in the SYSOUT data set, and not sent directly to JES until you do one of the following:

- You follow the JES `/*EOF` control statement with a second `/*EOF` statement
- Your application writes another job to the same queue
- You explicitly close the queue after the job is written
- You shut down CICS normally

BLOCKSIZE({**length**}) **(extrapartition queues only)**
specifies the length of the block, in bytes.

The maximum value you can specify depends on whether SYSOUTCLASS is specified, either explicitly or by default, and on whether RECORDFORMAT is FIXED or VARIABLE.

- If you specify SYSOUTCLASS, the maximum value of RECORDSIZE is 8968.
- Each block in a variable format data set consists of a block descriptor word followed by one or more logical records. Therefore, if you specify RECORDFORMAT(VARIABLE), the value you specify for BLOCKSIZE must include four bytes for the block descriptor word, and space for the largest possible logical record.

These limits are summarized in the following table:

Is SYSOUTCLASS specified?	Yes	Yes	No	No
RECORDFORMAT	VARIABLE	FIXED	VARIABLE	FIXED
Maximum value of RECORDSIZE	8968	8968	32763	32767
Maximum value of BLOCKSIZE	8972	8968	32767	32767

DATABUFFERS({**1**|*number*}) **(extrapartition queues only)**
specifies the number of buffers to be provided, up to a maximum of 255.

DDNAME(*ddname*)
specifies a 1-to 8-character value that may refer to a data set defined in the startup JCL.

DESCRIPTION(*text*)
You can provide a description of the resource you are defining in this field. The description text can be up to 58 characters in length. There are no restrictions on the characters that you can use. However, if you use parentheses, ensure that for each left parenthesis there is a matching right one. If you use the CREATE command, for each single apostrophe in the text, code two apostrophes.

DISPOSITION({**SHR**|**OLD**|**MOD**}) **(extrapartition queues only)**
specifies the disposition of the data set.

MOD CICS first assumes that the data set exists. For an existing sequential data set, MOD causes the read/write mechanism to be positioned after the last record in the data set. The read/write mechanism is positioned after the last record each time the data set is opened for output.

If CICS cannot find volume information for the data set:
- On the DD statement
- In the catalog
- Passed with the data set from a previous step

it assumes that the data set is being created in this job step. A data set allocated dynamically in this way is deleted when the queue is closed, and all records are lost.

For a new data set, MOD causes the read/write mechanism to be positioned at the beginning of the data set.

OLD The data set existed before this job step.

SHR The data set existed before this job step and can be read by other concurrent jobs.

DSNAME({*dsname*|**DUMMY**}) **(extrapartition queues only)**
specifies the name of the QSAM data set that is to be used to store records written to this extrapartition queue.

When CICS receives a request to open an extrapartition transient data queue, the startup JCL is referenced to check if a data set definition has been created. If one is not found, the 44-character name specified on the DSNAME attribute is used to dynamically allocate the required data set.

If you have JCL that preallocates this queue's DSCNAME to a DSNAME, the DSNAME in the resource definition is overridden by the DSNAME from the JCL. JCL allocation always takes priority.

Partitioned data sets (PDS) are not supported on the DSNAME attribute. If you want to use a PDS member for an extrapartition queue data set, code it explicitly in your JCL. Bear in mind that if you inquire upon this queue, the DSNAME returned will not give you any indication of the member name.

DUMMY
A dummy data set name.

name The 44-character name of a physical data set.

Note: You are strongly recommended **not** to use log streams for extrapartition queue data sets. If you do, unpredictable results may occur.

ERROROPTION({IGNORE|**SKIP**}) **(extrapartition queues only)**
specifies the action to be taken if an I/O error occurs. This can be one of the following:

IGNORE
The block that caused the error is accepted.

SKIP The block that caused the error is skipped.

FACILITYID(*terminal*|*connection*) **(intrapartition queues only)**
specifies a 4-character field that contains either:

- The system identifier for an intrapartition queue that specifies ATIFACILITY(SYSTEM)
- The terminal identifier where ATIFACILITY(TERMINAL) is specified.

If you do not specify anything in the FACILITYID field, it defaults to the name of the queue in each case.

If ATIFACILITY(FILE) is specified, the FACILITYID field must be left blank.

GROUP(*groupname*)
Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed.

Acceptable characters:

`A-Z 0-9 $ @ #`

Any lower case characters you enter are converted to upper case.

The GROUP name can be up to eight characters in length. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

INDIRECTNAME(*tdqueue*) **(indirect queues only)**
specifies the name of a transient data queue. The queue can be intrapartition, extrapartition, remote, or indirect. If a DCT entry does not exist for the queue with this name, you get an error when you try to use the queue.

OPENTIME({INITIAL|**DEFERRED**}) **(extrapartition queues only)**
specifies the initial status of the data set. The initial status can be one of the following:

DEFERRED
The data set remains closed until you indicate that you want to open it by using the CEMT INQUIRE|SET TDQUEUE command.

INITIAL
The data set is to be opened at install time. However, if the DSNAME attribute is not specified, and the data set name is not specified in the DD statement in the startup JCL, the transient data queue is allocated to JES during CICS startup.

PRINTCONTROL({**ASA**|**MACHINE**|*blank*}) **(extrapartition queues only)**
specifies the control characters to be used. There is no default.

If you allow RECORDFormat to default to blank, you cannot specify anything in the PRINTCONTROL field. The control characters that can be used are:

ASA ASA control characters.

blank No control characters are to be used.

MACHINE
Machine control characters.

RECORDFORMAT({**FIXED**|**VARIABLE**|**blank**) **(extrapartition queues only)**
specifies the record format of the data set.

blank If RECORDFormat is not specified (that is, left blank), the BLOCKFORMAT and PRINTCONTROL fields must also be left blank. If the RECORDFormat is not specified in the resource definition, TD will attempt to derive this attribute from the CICS startup JCL or from the QSAM dataset definition at the time it attempts to open the queue. The open request will fail if this information cannot be derived from either of these sources.

FIXED Fixed records. If you specify `RECORDFormat(Fixed)`, you must also specify a block format.

VARIABLE
Variable records. If you specify RECORDFormat(Variable), you must also specify a block format.

RECORDSIZE({**1**|*number*}) **(extrapartition and remote queues)**
specifies the record length in bytes, in the range 0 through 32767.

1 The default record length is 1 byte.

number
The record length, in bytes, up to 32767.

The maximum value you can specify depends on whether SYSOUTCLASS is specified, either explicitly or by default, and on whether RECORDFORMAT is FIXED or VARIABLE.

- If you specify SYSOUTCLASS, the maximum value of RECORDSIZE is 8968.
- Each block in a variable format data set consists of a block descriptor word followed by one or more logical records. Therefore, if you specify RECORDFORMAT(VARIABLE), the value you specify for BLOCKSIZE must include four bytes for the block descriptor word, and space for the largest possible logical record.

These limits are summarized in the following table:

Is SYSOUTCLASS specified?	Yes	Yes	No	No
RECORDFORMAT	VARIABLE	FIXED	VARIABLE	FIXED
Maximum value of RECORDSIZE	8968	8968	32763	32767
Maximum value of BLOCKSIZE	8972	8968	32767	32767

RECOVSTATUS({NO|PHYSICAL|LOGICAL}) (intrapartition queues only)

specifies the recoverability attributes of the queue in the event of an abnormal termination of either CICS or the transaction that is processing the queue. The recoverability attributes are:

LOGICAL

This queue is logically recoverable. Automatic logging is to be performed to keep track of accesses by application programs. If a transaction that accessed this queue was in-flight at the time of abnormal termination, or in the subsequent emergency restart or dynamic transaction backout, the queue is restored to the status it was in before the in-flight UOW modified it.

When this queue is accessed, the task that issued the DELETEQ TD, WRITEQ TD, or READQ TD command is enqueued on the input, the output, or both ends of the transient data queue. The enqueue is maintained until the task terminates (or issues a syncpoint request to signal the end of a UOW) to ensure the integrity of the data being accessed. This means that enqueues can be maintained for a longer time, and can result in a queue lockout if an application program accessing the queue performs more than one UOW against the queue without defining each separate UOW to CICS by issuing a syncpoint request.

Furthermore, when a DELETEQ request is issued for a logically recoverable queue, both the input and output ends of the queue are enqueued upon. This can increase the possibility of an enqueue lockout.

Note: CICS provides an enqueuing protection facility for logically recoverable (as distinct from physically recoverable) TD queues similar to that for recoverable files. However, CICS regards each logically recoverable destination as two separate recoverable resources—one for writing and one for reading.

In the case of a file record, a record is treated as a single resource and requires only one lock. The TD queue, on the other hand, has two 'ends'—the read end and the write end, and these can be enqueued on (locked) independently. This is because, to control both reading and writing from the TD queue (at the same time), CICS has to maintain two pointers (cursors)—one for reading and one for writing, and these need to be protected from conflicting transactions.

Queue records are held on one or more control intervals (CIs). Each CI is marked for release as soon as the last record on it has been read. However, the release does not occur until the end of task, or until after the next user syncpoint.

NO This queue is not recoverable. Automatic logging is not performed to keep track of accesses to this queue. Queue records are held on one or more control intervals (CIs). Each CI is released as soon as the last record on it has been read.

PHYSICAL
This queue is physically recoverable. Automatic logging is to be performed to keep track of accesses by application programs. If emergency restart occurs, this queue is to be recovered to its status at the time CICS terminated.

The queue is **not** recovered to its status at the time CICS terminated if the last action on the queue was a READQ request, and if the associated unit of work (UOW) did not commit the changes. On emergency restart, the last read operation is backed out, and appears never to have taken place.

Queue records are held on one or more control intervals (CIs). Each CI is released as soon as the last record on it has been read.

REMOTENAME(*tdqueue*) **(remote queues only)**
specifies, if the transient data queue resides on a remote system, the 4-character name by which the queue is known in the system or region on which the queue resides.

REMOTELENGTH({**1**|*number*}) **(remote queues only)**
specifies the length in bytes, in the range 1 through 32767.

For SYSOUT data sets, the value entered in the REMOTELENGTH field must not be greater than 8968 bytes (when the SYSOUTCLASS attribute has been specified).

1 The length is 1 byte.

number
The length in bytes, up to 32767.

If the queue is defined with TYPE=EXTRA, and no value is specified for REMOTELENGTH, the value on the RECORDSIZE attribute is used at installation time.

REMOTESYSTEM(*connection*)
specifies the 4-character alphanumeric name of the system or region in which the remote transient data queue resides. The name entered must be the same as the name specified on the RDO CONNECTION definition. For more information about the CONNECTION definition, see“CONNECTION definition attributes” on page 38.

When the transient data queue definition is installed, the name entered in the REMOTESYSTEM attribute is compared with the system identifier. If the names are different, the system or region is remote. If the names are the same, the value specified in the TYPE attribute is used. If the TYPE attribute is blank, the installation fails.

REWIND({**LEAVE**|**REREAD**}) **(extrapartition queues only)**
specifies the disposition of a tape data set. The disposition can be one of the following:

LEAVE
The current tape is positioned at the logical end of the data set.

REREAD
The current tape is positioned at the logical start of the data set.

SYSOUTCLASS({**A..Z**|**0..9**|*****|*blank*}) **(extrapartition queues only)**

Instead of allocating an extrapartition queue to a physical data set, you can allocate it to a system output data set (referred to as SYSOUT).

Use the SYSOUTCLASS attribute to specify the class of the SYSOUT data set.

A..Z|0..9

A single alphabetic or numeric character that represents an output class that has been set up on the MVS system on which the CICS job is to run.

Acceptable characters:

`A-Z 0-9`

Unless you are using the CREATE command, any lowercase characters you enter are converted to uppercase.

*****

This is the default class. SYSOUTCLASS defaults to an asterisk (*) if you leave the DSNAME attribute blank and specify OUTPUT for the Typefile field.

blank

SYSOUTCLASS defaults to a blank character if you leave the DSNAME attribute blank and specify INPUT or RDBACK for the Typefile attribute. In the latter case, the open operation will fail because a DSNAME **must** be specified for TYPEFILE=INPUT or TYPEFILE=RDBACK.

You can use SYSOUTCLASS as an alternative to DSNAME. As with DSNAME, the queue may already be preallocated to SYSOUT using a JCL DD statement. A JCL DD statement overrides any specification made using the TDQUEUE resource definition.

When CICS receives a request to open an extrapartition transient data queue, the startup JCL is referenced to check if a data set definition has been created. If one is not found, the 44-character name specified on the DSNAME attribute is used to dynamically allocate the required data set.

When SYSOUT is specified for a queue in the JCL, attributes other than class can also be specified (for example, form types).

Note: Specifying SYSOUT data sets using RDO supports the class parameter only. If you require other parameters, you specify SYSOUT data sets in the JCL.

For more information about SYSOUT and its associated classes, see the *z/OS MVS JCL User's Guide*.

TDQUEUE(*name*)

specifies the 1- to 4-character name of a transient data queue.

Acceptable characters:

`A-Z a-z 0-9 $ @ # . / - _ % & ¢ ? ! : | " = ¬ , ; < >`

For information about entering mixed case information, see “Entering mixed case attributes” on page 388.

If the name supplied is fewer than four characters, it is left-justified and padded with blanks up to four characters.

Note:

1. If you use a comma (,) in a name, you will be unable to use those commands such as

   ```
   CEMT INQUIRE TDQUEUE(value1,value2)
   CEMT SET     TDQUEUE(value1,value2)
   ```

   where the comma serves as a list delimiter. See *CICS Supplied Transactions* for information about using lists of resource identifiers.
2. If you protect your transient data queues using RACF, avoid using `%` and `&` in the name. RACF commands assign a special meaning to these characters when they are used in a profile name. See *CICS RACF Security Guide*.

TRANSID(*transaction*) **(intrapartition queues only)**

specifies the name of the transaction that is to be automatically initiated when the trigger level is reached. Transactions are initiated in this way to read records from the queue. If the TRANSID attribute is not specified (or if TRIGGERLEVEL(0) is specified), you must use another method to schedule transactions to read records from transient data queues.

The transaction specified must not reside in a remote CICS system. If it does, transaction initiation fails and a warning message is issued to the console.

TRIGGERLEVEL({**1**|*number*}) **(intrapartition queues only)**

specifies the number of records to be accumulated before a task is automatically initiated to process them. (This number is known as the trigger level.)

If you specify the TRANSID attribute, TRIGGERLEVEL defaults to 1. Specify a trigger level of 0 if you want to disable ATI processing. If you do not specify a transaction id, the trigger level is ignored.

If you have specified ATIFACILITY(TERMINAL), the task is not initiated until the specified terminal is available. If you have specified ATIFACILITY(FILE), a terminal is not necessary for the task to be initiated.

If, at maximum task, a short-on-storage or a no-space condition exists for a nonterminal destination, the task is not initiated. This is also true during stages 1 and 2 of initialization, and during the final stage of shutdown. The task is initiated when the stress condition no longer exists, and a subsequent TD WRITE occurs.

For logically recoverable transient data queues, the ATI task is not attached until the task commits forward. This may mean that the trigger level is far exceeded before ATI occurs.

If a VTAM terminal is defined as the destination for the CSTL transaction on two ISC CICS systems with a trigger level of 1, a performance problem may arise when both systems repeatedly acquire and release the terminal to write the session-started and session-ended messages.

You can change the trigger level when CICS is running using the CEMT transaction. If you reduce the trigger level to a number that is equal to (or less than) the number of records accumulated so far, the task is initiated when the next record is successfully put on the queue.

1
Only one record can accumulate.

number
The number of records that can accumulate (up to a maximum of 32767) before ATI occurs.

TYPE({EXTRA|INTRA|INDIRECT})
specifies the following types of transient data queue:

EXTRA
A queue that is outside the CICS region is allocated to CICS.

Extrapartition queues are used for:

- Sending data outside the CICS region: for example, data created by a transaction for processing by a batch program.
- Retrieving data from outside the region: for example, data received from terminals as input to a transaction.

Extrapartition data is sequential and is managed by QSAM.

INDIRECT
An indirect queue is a queue that does not point to an actual data set, but to another queue. An indirect queue can be extrapartition, intrapartition, remote, or even another indirect queue.

For example, you can give a different symbolic name, INDIRECTDEST, to each of several different message types. You can then send all these message types to the same physical queue (INDIRECTDEST), or to different physical queues.

The DFH$TDWT sample program demonstrates how you can use indirect queues to send different categories of message to the same terminal. For programming information about DFH$TDWT, see the *CICS Customization Guide*. DFH$TDWT sample definitions are given in the *CICS/ESA 4.1 Sample Applications Guide*.

If the QUEUE operand of an EXEC CICS WRITEQ TD, EXEC CICS READQ, or EXEC CICS DELETEQ command specifies an indirect queue, access is determined by the security setting of the final target queue.

INTRA
A queue for data that is to be stored temporarily.

An intrapartition destination can be a terminal, a file, or another system. A single data set, managed by VSAM, is used to hold the data for all intrapartition queues.

You can specify a transaction to process the records and a trigger level for each intrapartition queue. The trigger level represents a number of records that are allowed to accumulate before the specified transaction is initiated. See the description of the TRIGGERLEVEL attribute for more information about trigger levels.

The intrapartition queue can be defined as logically recoverable, physically recoverable, or not recoverable.

A logically recoverable queue is restored (after an individual transaction failure or a total system failure) to the status it had at the end of the last completed unit of work (UOW). (A UOW begins at start of task or at a syncpoint, and ends at end of task or at a syncpoint).

Physically recoverable queues are restored (after a total system failure) to the statuses they had when the system failure occurred.

TYPE=REMOTE cannot be specified on the TDQUEUE resource definition. If you want to define a remote transient data queue, leave the TYPE attribute blank and specify values for the remote attributes, REMOTELENGTH, REMOTENAME, and REMOTESYSTEM. Alternatively, you can include the remote attributes as part of the resource definitions for the other transient data queue types. See *CICS Resource Definition Guide* for further information.

TYPEFILE({**INPUT**|**OUTPUT**|**RDBACK**})
specifies the type of data set the queue is to be associated with.

INPUT An input data set.

OUTPUT
An output data set.

RDBACK
An input data set that is to be read backward.

Note: This is appropriate only for data sets that have been defined on magnetic tape.

An extrapartition queue can be input or output, but not both.

For more information about the DCB macro fields, see the *z/OS DFSMS Macro Instructions for Data Sets*.

USERID(*userid*) **(intrapartition queues only)**
specifies the userid you want CICS to use for security checking when verifying the trigger-level transaction specified in the TRANSID field. The userid can be up to eight characters in length.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters you enter are converted to uppercase.

The value entered in the USERID field is valid only when ATIFACILITY(FILE) is also specified.

When security is active, the trigger-level transaction runs under the authority of the specified userid. This userid must be authorized to all the resources used by the trigger-level transaction.

If you omit the userid from a transient data queue definition, CICS uses the CICS default userid, specified on the DFLTUSER system initialization parameter. Security checking takes place when you are installing an intrapartition definition containing a userid. If the security check fails, the resource definition for that intrapartition queue is not installed.

For further information about surrogate user security, see the *CICS RACF Security Guide*.

WAIT({**YES**|**NO**}) **(intrapartition queues only)**
specifies whether an in-doubt unit of work (UOW) that has modified a logically recoverable queue should wait for resynchronization with its coordinator to determine whether to commit or back out the changes.

NO The UOW is not to wait. Any changes made to recoverable resources are to be backed out or committed, as specified by the ACTION attribute on the TRANSACTION resource definition.

YES The UOW is to wait, and any action required while waiting is determined by the WAITACTION attribute.

This attribute overrides the WAIT attribute defined on the UOW's transaction definition. See Table 9 on page 296 for an explanation of the interactions of in-doubt attributes on the TDQUEUE and TRANSACTION definitions.

WAITACTION({REJECT|QUEUE}) (intrapartition queues only)
specifies the action CICS is to take for an in-doubt unit of work (UOW) if the definition for this queue specifies WAIT(YES). The possible actions are:

QUEUE
The UOW is in-doubt and waiting; any locks held by the UOW for this queue remain active until the final state of the UOW is known. This means that tasks are suspended rather than receiving the LOCKED response. When the final state of the UOW is known, any changes that it has made are committed or backed out. Until then, any further requests of the following types that need one of the active locks must wait:

- READQ, if the in-doubt UOW had issued READQ or DELETEQ requests.
- WRITEQ, if the in-doubt UOW had issued WRITEQ or DELETEQ requests.
- DELETEQ, if the in-doubt UOW had issued READQ, WRITEQ or DELETEQ requests.

REJECT
The UOW is in-doubt and is waiting. Any lock held by the UOW for this queue is retained until the final state of the UOW is known. When the final state is known, any changes the UOW has made are committed or backed out. Until then, any further request that needs one of the retained locks is rejected, and a LOCKED response is returned. WAITACTION=REJECT causes LOCKED to be raised in exactly the same circumstances as those in which QUEUE causes a transaction to wait.

Required TDQUEUE definitions

Some transient data queues are used by CICS services, and it is important that the associated TDQUEUE definitions are installed as soon as possible during cold start. You can ensure that this is the case in one of two ways:

- You can specify DFHLIST as the first list in the GRPLIST system initialization parameter; DFHLIST contains group DFHDCTG, which, in turn, contains the relevant TDQUEUE definitions.
- If you do not use DFHLIST, you ensure that group DFHDCTG is the first group in the first list in the GRPLIST system initialization parameter.

The transient data queues in group DFHDCTG are:

CADL (needed to log VTAM resource definitions)
For VTAM resources, this destination keeps a log of each RDO definition installed in the active CICS system. The log records both the installation of entries in the TCT, and the deletion of autoinstalled entries from the TCT. It records definitions installed:

- By autoinstall
- Using CEDA INSTALL
- At system initialization

For details about defining CADL and CSDL, see the *CICS System Definition Guide*.

CAIL (needed to log autoinstall terminal model definitions)
The autoinstall terminal model manager (AITM) uses this destination to log all autoinstall terminal model entries installed in, and deleted from, the TCT.

CCPI (needed for CPI Communications messages)
The common programming interface for communications (CPI Communications) writes messages to this destination.

CCSE (needed for C language support)
CICS directs the C standard streams to transient data queues. (Queue names are fixed in CICS: thus, the C standard streams cannot be redirected to other queues.) C programs write to the CCSE queue by writing to stderr. You may code this destination as extrapartition, intrapartition, or indirect. If you do not provide a TDQUEUE definition for the CCSE queue, writing to stderr in C programs will fail.

CCSI (optional, for C language support)
The CCSI queue is reserved for stdin, the C standard stream for input data. Although the CCSI queue name is reserved for stdin, any attempt to read from stdin in CICS results in EOF being returned. For this reason, this destination is optional. You may code it as extrapartition, intrapartition, or indirect.

CCSO (needed for C language support)
CCSO is associated with stdout, the C standard stream for output data. You may code this destination as extrapartition, intrapartition, or indirect. If you do not define the CCSO queue, writing to stdout in C programs will fail.

CDBC (needed for DBCTL DFHDB81xx messages)
CDBC is defined as an indirect queue, which points to the CSML extrapartition queue. Only DBCTL DFHDB81xx messages use this data log; other messages use either the terminal or the console.

CDUL (needed for transaction dump messages)
CDUL is the destination for transaction dump messages. If a transaction dump is requested, for example after a transaction abend, a message is written to this destination to show that a dump has been taken or to give a reason why the dump was suppressed.

CESE (needed for run-time output from Language Environment)
For Language Environment, all run-time output is written to this transient data queue. For further information, see the *z/OS Language Environment Programming Guide*.

CMIG (needed for migration log)
CMIG is a **migration log**, which receives messages reporting the use of functions that are no longer supported in CICS (for example, the EXEC CICS ADDRESS CSA command). You can define CMIG as an intrapartition, extrapartition, or indirect destination.

| **CPLI (needed for CICS PL/I support)**
CPLI is the destination for SYSPRINT output. The minimum logical record size is 137. If this destination is extrapartition (direct or indirect), it must be V format. See the installation manual for your PL/I compiler for more details.

CRDI (needed to log program resource definitions)
This destination provides a log of installed resource definitions for programs, transactions, maps, and mapsets.

CSCS (needed for the sign-on transaction)
CSCS receives a message giving details of each sign-on and sign-off. It also

receives a message about each rejected attempt at sign on and each resource authorization failure. This destination can be of any type.

CSDL (needed to log RDO commands)

The resource definition online (RDO) transactions write to this destination all commands that result in changes to the CICS system definition (CSD) file or active CICS system.

You need CSDL only if you use RDO and want to keep a log of commands.

The maximum length of data records written to CSDL is 128 bytes. If you define CSDL as extrapartition, the associated SDSCI or DD statement should specify V format records with a minimum blocksize of 136 bytes.

CSFL (needed to log file resource definitions)

CSFL is a log of all file resource definitions installed in the active CICS system. Deletions of file resource entries are also logged here.

CSJE and CSJO (needed for redirected output from Java programs that execute in a JVM)

CSJE and CSJO receive output from JVMs that has been intercepted by the CICS-supplied sample class com.ibm.cics.samples.SJMergedStream. This sample class can optionally be specified by the USEROUTPUTCLASS option in a JVM profile. CSJE is for stderr output, internal messages, and unresettable event logging, and CSJO is for stdout output. The com.ibm.cics.samples.SJMergedStream class handles both types of output, and directs them to the correct transient data queue. CSJE and CSJO are defined as indirect queues that point to the CSSL queue.

The length of messages issued by the JVM can vary, and the maximum record length for the CSSL queue (133 bytes) might not be sufficient to contain some of the messages you receive. If this happens, the sample output redirection class issues an error message, and the text of the message might be affected. If you find that you are receiving messages longer than 133 bytes from the JVM, you should redefine CSJO and CSJE as separate transient data queues. Make them extrapartition destinations, and increase the record length for the queue. You can allocate the queue to a physical data set or to a system output data set. You might find a system output data set more convenient in this case, because you do not then need to close the queue in order to view the output. If you redefine CSJO and CSJE, ensure that they are installed as soon as possible during a cold start, in the same way as for transient data queues that are defined in group DFHDCTG.

CSKL (needed to log transaction and profile resource definitions)

CSKL is a log of all transaction and profile resource definitions installed in the active CICS system. Deletions are also logged here.

CSML (needed for the sign-off transaction)

CICS sign-off writes data to this destination.

CSMT (needed for terminal error and abend messages)

The terminal abnormal condition program (DFHTACP) and abnormal condition program (DFHACP) write terminal error and ABEND messages, respectively, to this destination. You may code this destination as extrapartition, intrapartition, or indirect.

CSNE (needed for node error messages)

The node abnormal condition program (DFHZNAC) and the node error program (DFHZNEP) write terminal error messages and data to this destination. You can code this destination as extrapartition, intrapartition, or indirect.

CSPL (needed to log program resource definitions)
CSPL is a log of all program resource definitions installed in the active CICS system. Deletions are also logged here.

CSRL (needed to log partner resource definitions)
CSRL is a log of all partner resources installed in the active CICS system. Deletions are also recorded here. For more information about partner resources, see "PARTNER definition attributes" on page 153.

CSSL (needed for recovery utility statistics)
The recovery utility program (DFHRUP) writes statistics to this destination. This destination needs a minimum logical record length of 132 bytes and a minimum blocksize of 136 bytes.

CSTL (needed for terminal I/O error messages)
The terminal abnormal condition program (DFHTACP) writes terminal I/O error messages to this destination. You may code this destination as extrapartition, intrapartition, or indirect.

CSZL (needed for the Front End Programming Interface)
If you have installed the CICS FEPI feature, CSZL is used as the destination for FEPI messages. For information on FEPI transient data destinations, see the *CICS Front End Programming Interface User's Guide*.

CSZX (needed for the Front End Programming Interface)
If you have installed the CICS FEPI feature, CSZX is intended for use with a triggered transaction. For information on FEPI transient data destinations, see the *CICS Front End Programming Interface User's Guide*.

Chapter 28. TERMINAL resource definitions

A TERMINAL resource defines the characteristics of a terminal device which communicates with CICS. Terminal devices include visual display units, printers, operating system consoles, and more specialized devices such as facsimile (FAX) machines.

The unique and possibly dynamic properties of terminals are defined in the TERMINAL definition in the CSD file.

However, many of your terminals have identical properties, and you do not need to define each of them separately and fully to CICS. There are two ways you can reduce the time and effort needed to define each terminal. They are:

1. **TYPETERM definitions**, with or without the QUERY function. Each TERMINAL definition must refer to a TYPETERM definition that defines the properties that are common, often more complex, and usually static. Together, information from the TERMINAL and TYPETERM definitions makes up a terminal entry in the TCT (a TCTTE).

   One TYPETERM can represent a lot of the properties of many terminals. Some of these properties can be left undefined at the time of creating the TYPETERM definition. These properties can be determined at logon time for each terminal, from the QUERY structured field.

   There are, however, still more properties that many terminals have in common, to the extent that their TERMINAL definitions would all be identical. CICS provides a facility that avoids the need for each terminal to have its own resource definition installed in the TCT the whole time CICS is active.
2. **Autoinstall**, using one TERMINAL definition to represent many terminals. You can let CICS create and install the resource definition dynamically when the terminal is needed, at logon time. To do this, CICS uses a **model TERMINAL definition** from the CSD file. This process is known as automatic installation, or autoinstall.

   Autoinstall reduces the virtual storage required for the terminal control table (TCT) if some of your terminals are not logged on when CICS is active.

   If you are involved in planning for and managing CICS communications resources such as terminals, read Chapter 40, “Autoinstalling VTAM terminals,” on page 461 for further information.

Terminals for printing

A TERMINAL definition for a display device can name TERMINAL definitions for printers, using the PRINTER and ALTPRINTER attributes. Such a reference is not resolved when the TERMINAL definitions are installed. Instead, the reference is resolved when the printer is needed by the display device.

There are several ways in which printed output can be created and sent to a printer.

- BMS page building
- Screen copying, using one of the following:
  - A hardware copy key
  - A local copy key
  - The ISSUE PRINT command

For programming information about creating output by these methods, see the *CICS Application Programming Reference*.

The TYPETERM and TERMINAL definitions are used for both printers and display devices. A number of attributes apply only to printers, or have special meanings for printers. There are also some attributes that you need to specify for a display device that is to be used for screen-copying.

Printers

Supply a TERMINAL definition for each printer. Specify NO for AUTINSTMODEL, unless you are using autoinstall for printers. (For more information about this, see “Autoinstall and output-only devices” on page 463.)

ALTPAGE

For BMS, the PAGESIZE attribute determines the default page size, and also the size of the print buffer. You specify the number of lines in the page (the length) and the number of characters in each line (the width).

Another attribute, ALTPAGE, indicates the page size to be used when the alternate screen size (ALTSCREEN) is selected. The width you specify in ALTPAGE must be the same as the width specified in the ALTSCREEN attribute. However, the length of ALTPAGE and ALTSCREEN can be different. This could be useful if you are using the same BMS map to display and to print. For instance, you could make the screen one line longer than the page, to reserve the bottom line of the screen for error messages.

The ALTPAGE, DEFSCREEN, and ALTSCREEN attributes do not normally apply to printers.

AUTOPAGE

AUTOPAGE must be YES for printers, but you do not need to worry about it, because RDO fills it in for all printer DEVICE types. Autopaging means that BMS multiple page messages are printed continuously, without operator intervention. This is what is normally required for a printer. (Contrast the requirement for multiple page messages, displayed on a 3270-type display, when the operator wants to finish reading a page before requesting the next page.)

Only BMS SEND commands with the PAGING option use autopaging. BMS SEND with TERMINAL or SET does not use autopaging.

You need at least one TYPETERM definition for each type of printer you use. You may need more, if you want to allow printers to be used only for some functions and not for others.

DEVICE

The TERMINAL definition for each printer must refer to a TYPETERM with an appropriate DEVICE type. The DEVICE attribute and, in one case, the SESSIONTYPE attribute, determine whether a TYPETERM defines printers or display devices. The values that you can specify for printers are:

DEVICE	SESSIONTYPE	Printers
3270P	-	All printers that support the 3270 data stream (not SNA-connected).
LUTYPE3	-	All printers that support the 3270 data stream (SNA-connected).
SCSPRINT	-	All printers that support the SNA character set (SNA-connected).
3790	SCSPRINT	IBM 3793 keyboard-printers that support the SNA character set (SNA-connected).

FORMFEED
Define FORMFEED as YES for BMS page building.

PAGESIZE
specifies the default page size for this terminal. The product of lines and columns must not exceed 32767, where lines = the number of lines in the page, and columns = the number of characters in each line.

If PGESIZE is not coded, the following defaults are used:

TW33, TW35	(12,80)
3270 display model 1	(12,40)
3270 display model 2	(24,80)
3270 printer	(12,80)

TERMINAL
The name of the printer is the TERMINAL name on the resource definition for that printer.

Note: The PRINTER attribute is used on a display device definition to refer to a printer device to be used for output from the display. Do not specify PRINTER on the printer definition. See "Associating printers with display devices."

Associating printers with display devices

If you want to copy the contents of a screen direct to a printer, associate a specific printer with the display device in the TERMINAL definition. You do this using the PRINTER and ALTPRINTER attributes.

ALTPRINTCOPY
Specify YES for ALTPRINTCOPY if you want to use the hardware COPY feature on the alternative printer.

For programming information about screen copying, see the *CICS Application Programming Reference*.

ALTPRINTER
The alternative printer is used if the primary printer is unavailable. ALTPRINTER and ALTPRINTCOPY can be set dynamically by the autoinstall control program, if the display device definition is autoinstalled.

PRINTER
The primary printer is to be used. PRINTER and PRINTERCOPY can be set dynamically by the autoinstall control program, if the display device definition is autoinstalled.

PRINTERCOPY
Specify YES for PRINTERCOPY if you want to use the hardware COPY feature on the primary printer.

Pipeline terminal definitions

When you define a 3600 pipeline logical unit, you generate a TCTTE that is associated with a pool of TCTTEs. As messages enter CICS from the 3600 pipeline logical unit, a task is attached to process this message, using as an anchor block one of the TCTTEs from the pool. In this way, consecutive messages sent via the pipeline logical unit can be processed concurrently, with the number of concurrent transactions being limited by the number of TCTTEs in the pool. The number of

TCTTEs in the pool should represent the high-water mark of inquiry activity. In this way, the pipeline facility allows fewer TCTTEs to be defined to CICS than the total number of pipeline inquiry terminals.

All the TERMINAL definitions within a named POOL must be in the same group in the CSD file. TASKLIMIT must have been specified on at least one of the definitions in the group. If it is specified on more than one definition, the value used is the maximum value of TASKLIMIT over the definitions in the group.

TERMINAL and TYPETERM definitions are resolved as for ordinary terminals.

If you do not install PIPELINE terminals by GROUP, the results can be unpredictable.

| **Note:** CICS does not support automatic transaction initiation (ATI) on pipeline
| terminals.

Defining pipeline terminals

Define pipeline terminals with the following attributes:

NETNAME
The VTAM session that is used.

POOL
All the TERMINAL definitions having the same POOL name belong to the same pipeline pool. The presence of a value for the POOL attribute distinguishes these from ordinary TERMINAL definitions.

SESSIONTYPE
Use this attribute on the TYPETERM definition to identify the TYPETERM as representing pipeline terminals. Specify PIPELINE as the value.

TASKLIMIT
Specify the maximum number of concurrent tasks that can be active for the pool of terminals on at least one of the TERMINAL definitions.

One TYPETERM would normally suit all the definitions. The TYPETERM may be in another group.

Pipeline transactions are associated with a PROFILE definition that has the ONEWTE attribute. A program associated with these transactions is permitted only one write or EXEC CICS SEND operation, or else it is terminated with an ATCC abend code. This means that CICS tasks rapidly appear and disappear across the pool of sessions.

There is an example of definitions for a pool of pipeline terminals in the description of the POOL attribute in “Terminal definition attributes” on page 263.

Note:

1. If you install a pipeline terminal naming a pipeline that already exists in CICS, both the old pipeline and all its related terminals are deleted before the new definitions are installed.
2. If you discard the terminal that is defined as owning the existing pipeline, the existing pipeline and all its related terminals are deleted.
3. If you discard a terminal that is not the pipeline owner or change it to a different pipeline, or to a nonpipeline terminal, the rest of the pipeline definition is unchanged. (The owning terminal of a pipeline is the terminal

with the first name in alphanumeric sequence that is related to the pipeline in the group from which the pipeline was installed.)

4. You cannot change a terminal in an existing pipeline to a nonpipeline terminal, or change it to a new pipeline, if the old pipeline is also being reinstalled in the same group. To do this, you divide the installation into two stages. If you are installing the group twice, remember to set the relevant terminals out of service in the meantime.

Devices with LDC lists

For 3600, 3770 batch, 3770, and 3790 batch data interchange, and LUTYPE 4 logical units, you can specify the name of an LDC (logical device code) list. The list specifies which LDCs are valid for this logical unit and, optionally, which device characteristics are valid for each LDC. The first LDC in this list is the default when CICS must choose a default LDC for a logical unit.

All the TERMINAL definitions for devices that reference a particular LDC list must name the same TYPETERM, because the LDCLIST attribute is on the TYPETERM definition.

The LDC list itself must be defined using a DFHTCT TYPE=LDCLIST macro. It may be a local LDC list or an extended local LDC list. There is an example of the coding for each in “TYPETERM definition attributes” on page 321, and further guidance in “DFHTCT logical device codes: VTAM non-3270” on page 577. You use the label coded on the macro instruction to identify the LDC list on the TYPETERM definition, specifying it in the LDCLIST attribute.

APPC (LUTYPE6.2) single session terminal

An APPC (LUTYPE6.2) single session terminal can be defined as a TERMINAL, with a reference to a TYPETERM with DEVICE(APPC). When these definitions are installed, the resources they define are known to CICS as a connection and a modeset, just as they are when defined in RDO as CONNECTION and SESSIONS. The name of the connection is the TERMINAL name and the name of the modeset is the MODENAME on the TERMINAL definition.

An APPC terminal may be a PS/2, an Application System/400® (AS/400®), a System/38, or similar. You can define an APPC terminal either by a TERMINAL-TYPETERM definition or by a CONNECTION-SESSIONS definition. Both kinds of definition can be autoinstalled (see Chapter 40, “Autoinstalling VTAM terminals,” on page 461 and Chapter 42, “Autoinstalling APPC connections,” on page 479 for information about autoinstall). If you decide to use the TERMINAL-TYPETERM method, the following attributes are important:

DEVICE
The TERMINAL definition references a TYPETERM with APPC (advanced program-to-program communications) specified as the DEVICE. One such TYPETERM definition suffices for many terminals.

MODENAME
This is the name that CICS uses to identify the session when the definition is installed in the active system.

Terminals for transaction routing

Transaction routing enables terminals in one CICS system to invoke transactions in another CICS system. (In this section, the word “system” means a CICS system communicating with other systems using MRO or ISC.) You can use transaction routing between systems connected by MRO or by an APPC link. (See the *CICS Intercommunication Guide* for further information.)

You can define a terminal to be used in transaction routing as:
- A local terminal
- A remote terminal
- A dual-purpose terminal

The type of terminal you define is dependent on how the definition is made available to the application-owning CICS system (AOR):
- Duplicating terminal definitions
- Sharing terminal definitions
- Shipping terminal definitions

Types of terminal definitions used in transaction routing

Local definition

A **local definition** a full definition of the terminal, installed in the terminal-owning system. It is used in the **duplicating** and in the **shipping** methods.
- No REMOTESYSTEM, REMOTESYSNET, or REMOTENAME is needed on the TERMINAL or CONNECTION definition.

  If the REMOTESYSTEM named on the TERMINAL definition is actually the name of the local system (as specified by the SYSIDNT system initialization operand), the definition is treated as a local terminal when it is installed, rather than a remote one.
- SHIPPABLE on the TYPETERM is NO if duplicating definitions.
- SHIPPABLE on the TYPETERM is YES if shipping definitions.
- SHIPPABLE on the TYPETERM is obligatory for APPC devices.
- All other necessary attributes on the TERMINAL and TYPETERM definitions must be specified.

Remote definition

When a terminal belonging to (local to and fully defined in) one system invokes a transaction belonging to another system, it is known to the application-owning region as a **remote terminal**. The application-owning system needs to have access to at least a partial definition of the remote terminal. This partial definition is often known as a **remote definition**. This is a partial definition of the terminal, installed in the application-owning region and intermediate regions. It contains the minimum information necessary for the terminal to access a transaction in that system. You create remote definitions only if you are using the **duplicating** method.
- The REMOTESYSTEM name must be the name of the CONNECTION definition for the next region in the transaction routing path to the terminal-owning region.
- REMOTESYSNET must be the netname (generic applid) of the terminal-owning region. If REMOTESYSTEM names a direct CONNECTION to the terminal-owning region, REMOTESYSNET is not required unless the terminal-owning region is a member of a VTAM generic resource group, and the direct connection is an APPC link.

- The REMOTENAME is the name by which the terminal or APPC device is known by in the terminal-owning region. It may be the same as or different from the TERMINAL or CONNECTION name, which must be the name the terminal is known by in the application-owning system. REMOTENAME defaults to the TERMINAL name if not specified.
- SHIPPABLE on the TYPETERM is NO for non-APPC devices.
- SHIPPABLE on the TYPETERM is obligatory for APPC devices.
- Some of the attributes on the TERMINAL and TYPETERM definitions may be omitted. For further guidance about these definitions, see *CICS Intercommunication Guide*.

The following terminals and logical units cannot use transaction routing and therefore cannot be defined as remote:

- Pooled 3600 or 3650 pipeline logical units
- IBM 2260 terminals
- The MVS console

Dual-purpose definition

This is a full definition of the terminal, installed in the terminal-owning system and in the application-owning and intermediate regions. It is used in the **sharing** method only.

- The REMOTESYSTEM name must be the SYSIDNT of the terminal-owning region. This must also be the name of the CONNECTION that you define from the application-owning region to the intermediate region (if any), and from the intermediate region to the terminal-owning region. All the CONNECTION definitions on the path from the application-owning region to the terminal-owning region must be given this same name.
- REMOTESYSNET must be the netname (generic applid) of the terminal-owning region.
- The REMOTENAME is the same as the TERMINAL or CONNECTION name.
- SHIPPABLE on the TYPETERM is NO for non-APPC devices.
- SHIPPABLE on the TYPETERM is obligatory for APPC devices.
- All other necessary attributes on the TERMINAL and TYPETERM definitions must be specified.

Making partial definitions available for transaction routing

Making a partial definition of a terminal available to the application-owning CICS system(s) can be done in one of the following ways:

- “Duplicating terminal definitions”
- “Sharing dual-purpose terminal definitions” on page 255
- “Shipping terminal definitions” on page 257

Duplicating terminal definitions

Having a separate terminal definition for each system involved, each on a CSD file that is accessible to that system. One is created as a local definition and one or more are created as remote definitions. This is referred to as **duplicating terminal definitions**, because there is more than one resource definition for the same terminal (the definitions are not necessarily exact duplicates of each other).

To duplicate terminal definitions:

1. Create a local definition for the terminal, in the CSD file of the terminal-owning system, or on a shared CSD file.

2. Create a remote definition for the terminal, in the CSD file of the application-owning system, or in a shared CSD file. If you have more than one application-owning system, you may need more than one remote definition, but if the systems are sharing a CSD file, you may be able to use the same remote definition for them all.
3. Install the local definition in the terminal-owning system. This definition can be autoinstalled.
4. Install the remote definition in the application-owning system(s).

Note: If your systems share a CSD file, make sure the definitions are in different groups, because:

- You want to install them in different systems
- The TERMINAL names are probably the same, so the definitions cannot be in the same group.

Advantages:

- You can use this method whether or not your systems share a CSD file, so you can use it for transaction routing between different MVS images.
- This is the **only** method you can use if your terminals are known by different names in different systems.
- You can use automatic transaction initiation (ATI) in the application-owning system for a remote terminal without having to set up XALTENF and XICTENF exits. (See the *CICS Customization Guide* for programming information on these exits.) This is especially useful for printers, because they must be acquired **before** any ATI can be successful.

Disadvantages:

- The CSD file uses at least twice the necessary amount of disk storage for your definitions.
- The TCT uses more than the necessary amount of virtual storage for your definitions.
- Unnecessary work is involved in maintaining the definitions.
- You can autoinstall the terminal in the terminal-owning system, but you cannot autoinstall it in the application-owning systems.

Example: In this example, an APPC device (netname APPC1) is connected to a terminal-owning region (applid CICA), which is connected in turn to an application-owning region (applid CICB). Resources which are installed in the terminal-owning region are maintained in CSD1; those installed in the application-owning region are maintained in CDS2. The configuration is illustrated in Figure 29 on page 255.

This table shows the resource definitions required in each region:

Purpose of defintions	Definitions in the terminal-owning region	Definitions in the application-owning region

Defines the connection between the systems	`CONNECTION(AOR)`
	`NETNAME(CICB)`
		`CONNECTION(TOR)`
		`NETNAME(CICA)`

Purpose of defintions	Definitions in the terminal-owning region	Definitions in the application-owning region

Defines the connection to the APPC device, using a TERMINAL and TYPETERM definition	`TERMINAL(APC1)`
	`TYPETERM(APPC0001)`
	`NETNAME(APPC1)`
	
	`TYPETERM(APPC0001)`
	`DEVICE(APPC)`
		`TERMINAL(BPC1)`
		`TYPETERM(APPC0001)`
		`NETNAME(APPC1)`
		`REMOTESYSTEM(TOR)`
		`REMOTENAME(APC1)`
		
		`TYPETERM(APPC0001)`
		`DEVICE(APPC)`

Defines the connection to the APPC device, using a CONNECTION and SESSIONS definition	`CONNECTION(APC1)`
	`NETNAME(APPC1)`
	
	`SESSIONS(APPC0001)`
	`CONNECTION(APC1)`
		`CONNECTION(BPC1)`
		`NETNAME(APPC1)`
		`REMOTESYSTEM(TOR)`
		`REMOTENAME(APC1)`

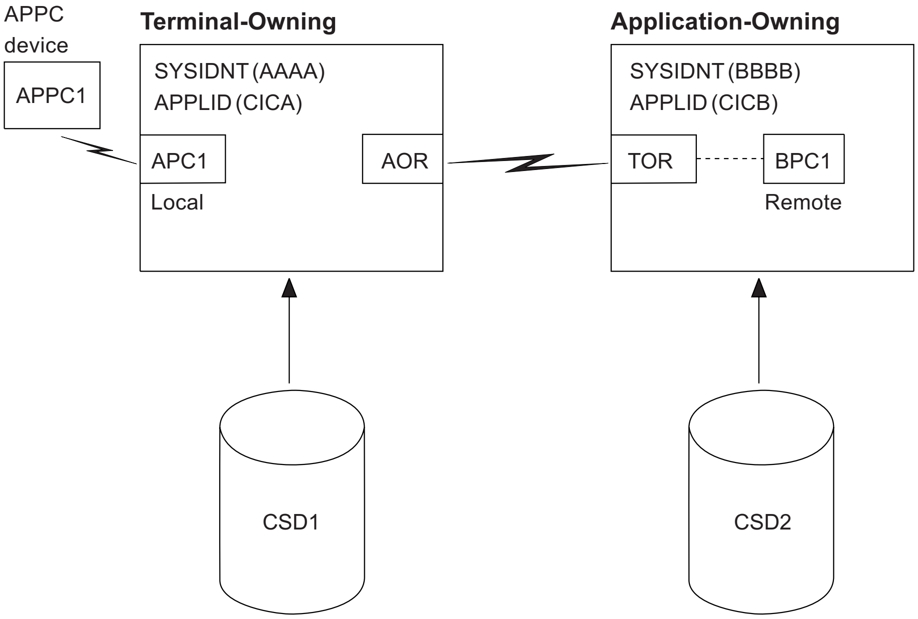


Figure 29. Maintaining local and remote definitions separately.

Sharing dual-purpose terminal definitions

Having one dual-purpose definition in one, shared CSD file available to all the systems involved, both terminal-owning and application-owning. This method is known as **sharing terminal definitions**.

1. Create a dual-purpose definition for the terminal, in the shared CSD file.
2. Install the definition in all the systems: it becomes a remote definition in a system whose SYSIDNT is different from the REMOTESYSTEM name, and a local definition in a system whose SYSIDNT is the same as the REMOTESYSTEM name.

Advantages:

- You can use automatic transaction initiation (ATI) in the application-owning system for a remote terminal without having to set up XALTENF and XICTENF exits. (See the *CICS Customization Guide* for programming information on these exits.) This is especially useful for printers, because they must be acquired **before** any ATI can be successful.

- Disk storage use is reduced because you need only one CSD file record.
- Maintenance is reduced because you need only one CSD file record.

Disadvantages:

- The TCT uses more than the necessary amount of virtual storage for your definitions.
- You cannot use this method if your systems do not share a CSD file, so you can use it only for transaction routing within the same MVS image.
- You cannot use this method if your terminals are known by different names in different systems.

Example: In this example, an APPC device (netname APPC1) is connected to a terminal-owning region (applid CICA), which is connected in turn to an application-owning region (applid CICB). Resources which are installed in the terminal-owning region and the application-owning region are maintained in a shared CSD. The configuration is illustrated in Figure 30 on page 257.

This table shows the resource definitions required in each region:

Purpose of defintions	**Definitions in the application-owning region**	**Definitions in the terminal-owning region**

Defines the connection between the systems	`CONNECTION(AOR1)`
	`NETNAME(CICB)`
		`CONNECTION(TOR1)`
		`NETNAME(CICA)`

	Definitions shared by the terminal-owning region and the application-owning region	

Defines the connection to the APPC device, using a TERMINAL and TYPETERM definition	`TERMINAL(APC1)`
	`TYPETERM(APPC0001)`
	`NETNAME(APPC1)`
	`REMOTESYSTEM(TOR1)`
	`REMOTENAME(APC1)`
	
	`TYPETERM(APPC0001)`
	`DEVICE(APPC)`	

Defines the connection to the APPC device, using a CONNECTION and SESSIONS definition	`CONNECTION(APC1)`
	`NETNAME(APPC1)`
	`REMOTESYSTEM(TOR1)`
	`REMOTENAME(APC1)`
	
	`SESSIONS(APPC0000)`
	`CONNECTION(APC1)`	

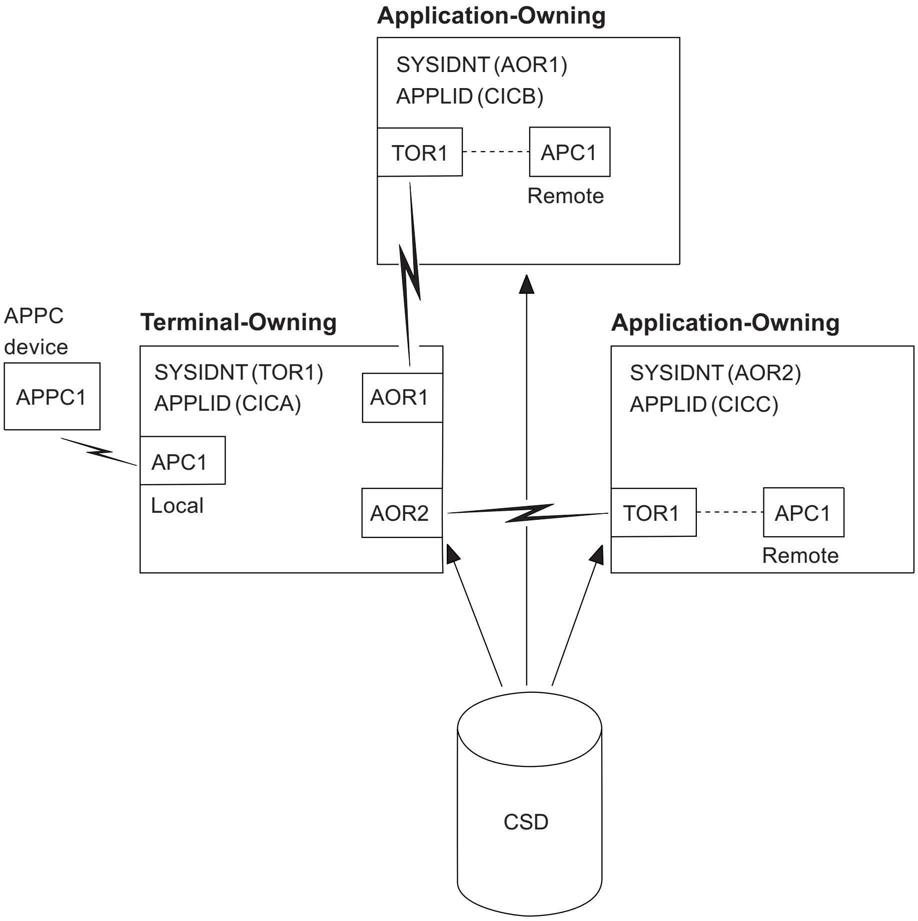


Figure 30. Sharing dual-purpose definitions.

Shipping terminal definitions

Having, in the CSD file available to the terminal-owning system, one **local** terminal definition that can be shipped to other systems when required. This method is known as **shipping terminal definitions**.

1. You create a local definition for the terminal, in the CSD file of the terminal-owning system. (This can be a shared CSD file.)
2. You install the local definition in the terminal-owning system. (This definition can be installed at system initialization, or by using CEDA INSTALL, or by autoinstall.)
3. When the terminal invokes a transaction belonging to another system, the information necessary to create a remote definition is shipped to that system, and a temporary definition is installed there automatically.

If the local definition was autoinstalled, the shipped definition lasts until the terminal is logged off. Otherwise, the shipped definition lasts until the local definition is installed again, or until the link between the systems is broken.

Advantages: The advantages of sharing dual-purpose definitions are:

- You can use this method whether or not your systems share a CSD file, so you can use it for transaction routing between different MVS images.
- Disk storage use is reduced because you need only one CSD file record.

- Maintenance is reduced because you need only one CSD file record.
- Virtual storage use is reduced because you install the definition in only one system.
- You can autoinstall the terminal in the terminal-owning system, and **in effect** autoinstall it in the application-owning systems. (Shipping terminal definitions has the same effect as autoinstall, but does not itself involve the autoinstall process.)

Disadvantages: The disadvantages of sharing dual-purpose definitions are:

- You cannot use this method if your terminals are known by different names in different systems.
- You may need to use the global exits XALTENF and XICTENF if you use ATI in the transaction owning system. See the *CICS Customization Guide* for programming information on these exits.

Example: In this example, an APPC device (netname APPC1) is connected to a terminal-owning region (applid CICA), which is connected in turn to an application-owning region (applid CICB). Resource definitions for the APPC device are maintained in a CSD used by the terminal-owning region and installed there. The definitions used in the application-owning region shipped from the terminal-owning region. The configuration is illustrated in Figure 31 on page 259.

This table shows the resource definitions required in each region:

Purpose of defintions	Definitions in the application-owning region	Definitions in the terminal-owning region

Defines the connection between the systems	`CONNECTION(AOR1)`
	`NETNAME(CICB)`
		`CONNECTION(TOR1)`
		`NETNAME(CICA)`

Defines the connection to the APPC device, using a TERMINAL and TYPETERM definition	none required	`TERMINAL(APC1)`
		`TYPETERM(APPC0001)`
		`NETNAME(APPC1)`
		
		`TYPETERM(APPC0001)`
		`DEVICE(APPC)`
		`SHIPPABLE(YES)`

Defines the connection to the APPC device, using a CONNECTION and SESSIONS definition	none required	`CONNECTION(APC1)`
		`NETNAME(APPC1)`
		
		`SESSIONS(APPC0000)`
		`CONNECTION(APC1)`

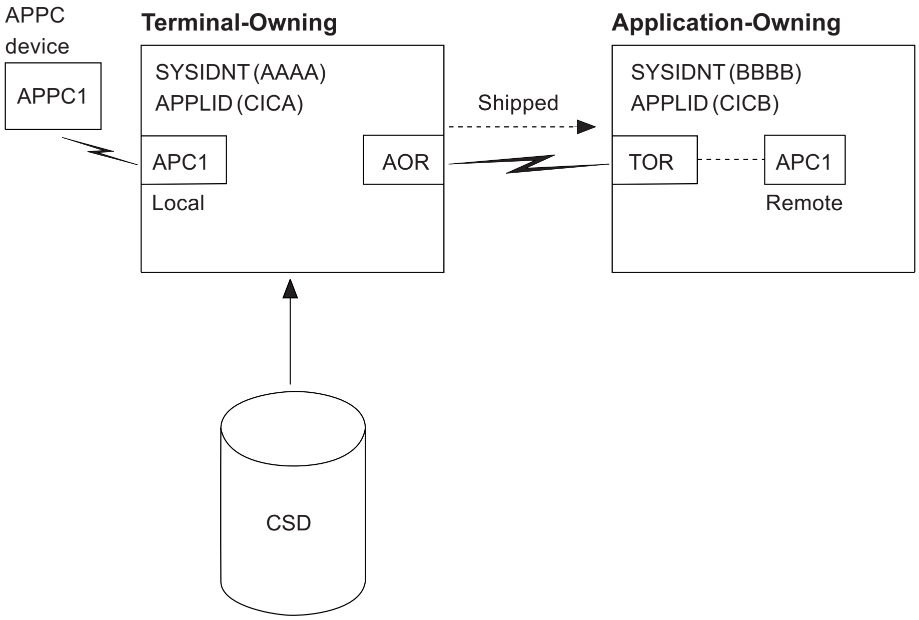


Figure 31. Shipping local definitions to an application-owning system.

APPC devices for transaction routing

APPC transaction routing allows an APPC device belonging to one CICS system to invoke transactions in another CICS system. The three methods of defining a terminal for transaction routing, described in “Terminals for transaction routing” on page 252, are also applicable to APPC devices. These methods can involve the use of either TERMINAL-TYPETERM or CONNECTION-SESSION definitions. For APPC single session terminals, the TERMINAL-TYPETERM definition method is recommended (see “APPC (LUTYPE6.2) single session terminal” on page 251.)

Transaction routing—summary

Consider carefully the methods of defining terminals for transaction routing, and decide which is most suitable for your network before you start to use RDO:

- Use the **shipping method**, unless you use terminals that are known by different names in different systems. For ATI to work with the shipping method in a transaction owning system, you may need to use the XALTENF and XICTENF global exits. See the *CICS Customization Guide* for programming information on these exits.
- Use the **sharing method** for systems with a shared CSD file, if you use the same names in different systems and you do not want to use global exits to ensure that ATI works.
- Use the **duplicating method** if you use terminals that are known by different names in different systems, or if you use ATI to acquire terminals but do not have a shared CSD file, and you do not want to use the XALTENF and XICTENF global user exits.

You could use a mixture of methods: perhaps shipping for display terminals, and duplicating for printers that need ATI to acquire them but without the use of the XALTENF and XICTENF global user exits.

Before you start creating definitions for intercommunication resources, see the *CICS Intercommunication Guide* for further information. There, you can find useful examples of the attributes you must specify for different types of links and sessions.

Defining terminals

You can define terminals in the following ways:

- Using the CEDA transaction; see “Defining terminals using CEDA.”
- Using the DFHCSDUP utility; see *CICS Operations and Utilities Guide*.
- Using the CREATE TERMINAL command; see the *CICS System Programming Reference*.
- Using CICSPlex SM Business Application Services; see *CICSPlex System Manager Managing Business Applications*.

Defining terminals using CEDA

From a CICS terminal, enter the command:

`CEDA DEFINE TERMINAL(name) GROUP(name)`

Figure 32 shows the panel that is displayed:

```
 TErminal     ==>
 Group        ==>
 Description  ==>
 AUTINSTModel ==> No                 No | Yes | Only
 AUTINSTName  ==>
TERMINAL IDENTIFIERS
 TYpeterm     ==>
 NEtname      ==>
 CONSOle      ==> No                 No | 0-99
 CONSName     ==>
 REMOTESYSTem ==>
 REMOTEName   ==>
 REMOTESYSNet ==>
 Modename     ==>
ASSOCIATED PRINTERS
 PRINTER      ==>
 PRINTERCopy  ==> No                 No | Yes
 ALTPRINTEr   ==>
 ALTPRINTCopy ==> No                 No | Yes
PIPELINE PROPERTIES
 POol         ==>
 TAsklimit    ==> No                 No | 1-32767
OPERATOR DEFAULTS
 OPERId         :
 OPERPriority   : 000                0-255
 OPERRsl        : 0                                         0-24,...
 OPERSecurity   : 1                                         1-64,...
PRESET SECURITY
 Userid       ==>
 NAtlang      ==>
TERMINAL USAGES
 TRansaction  ==>
 TErmpriority ==> 000                0-255
 Inservice    ==> Yes                Yes | No
 SOlicited    ==> No                 No | YesSESSION SECURITY
 Securityname ==>
 ATtachsec    ==> Local              Local | Identify | Verify | Persistent
                                     | Mixidpe
 BINDPassword ==>                    PASSWORD NOT SPECIFIED
 BINDSecurity ==> No                 No | Yes
 Usedfltuser  ==> No                 No | Yes
```

Figure 32. The DEFINE panel for TERMINAL

Installing terminal definitions

For groups of TERMINAL definitions, use the following procedure:

1. Make sure that nobody is using the terminals that you want to install. Remember that CEMT INQUIRE TERMINAL puts a lock on the TCT entry, and this also prevents installation of a group containing that terminal.
2. Make sure that there are no ATIs outstanding for the terminals.
3. Use CEMT, with a generic name if appropriate:
   ```
   CEMT SET TERMINAL(trmid) RELEASED OUTSERVICE NOATI
   ```
4. Install the resource definitions:
   ```
   CEDA INSTALL GROUP(groupname)
   ```
5. Use CEMT to make the terminals available again:
   ```
   CEMT SET TERMINAL(trmid) ACQUIRED INSERVICE ATI
   ```

TERMINAL and TYPETERM definitions are resolved during installation to become a TCT entry, sometimes known as a TCT terminal entry or TCTTE. Each definition contains only some of the information necessary to build a TCT entry.

Each TYPETERM definition must be installed before or at the same time as the TERMINAL definitions that reference it. When you are using CEDA to install groups, if the TYPETERMs are in a separate group from the TERMINALs, you must install the TYPETERMs group before the TERMINALs. You may include TYPETERMs and TERMINALs in the same group for testing purposes, although it is not recommended for long-term use. (See “What should be in a group?” on page 17.)

Because the TERMINAL definition is not necessarily in the same group as its associated TYPETERM definition, the global catalog is used to store the TYPETERMs.

Changing a TYPETERM definition and then reinstalling it has no effect on an already installed terminal entry, even though the TERMINAL definition used to create it refers to the TYPETERM. To change the terminal entry, you must reinstall both the TYPETERM and the TERMINAL.

Checking terminal definitions

Although you can use the CHECK command to check a group of TERMINAL definitions (it resolves references from display devices to printers, for instance), it is not very useful in resolving TYPETERM references if these are in a separate group because it would produce many unwanted messages for missing TYPETERMs.

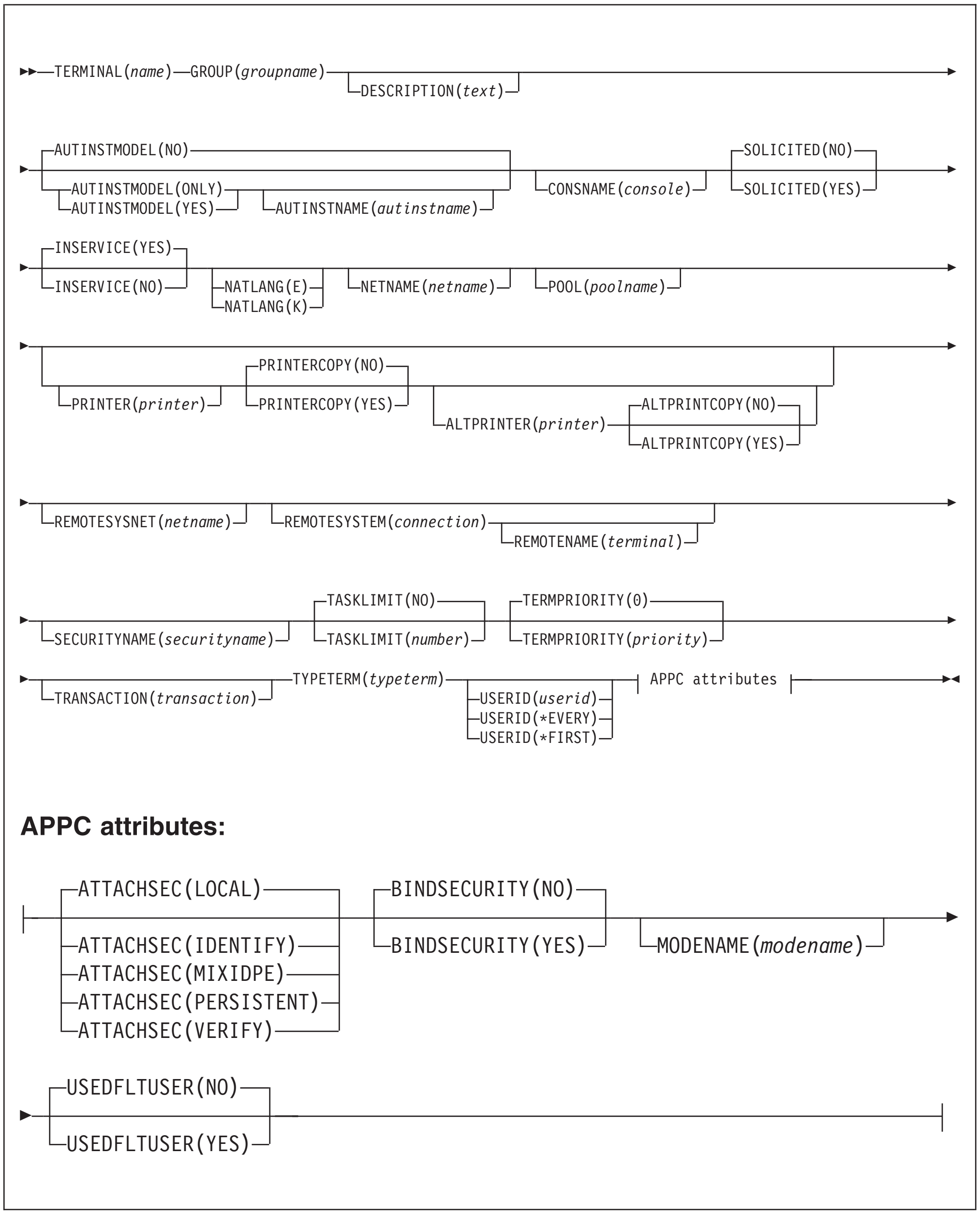
When you add a new cluster of terminal devices, create a new group for them, and then create a list containing your TYPETERM definitions group and the new group of TERMINAL definitions. You can then use the CHECK command to check the whole list, without it being too time-consuming. This list is needed only for the duration of the checking, and is never named as the GRPLIST.

To avoid duplicating TERMINAL names, you could maintain a list of all groups containing TERMINAL definitions. You can use CHECK LIST to ensure that all new TERMINAL names are unique. If this is too lengthy a process, you can avoid it if TERMINAL names beginning with similar characters are kept in separate groups, for example:

```
TERMINAL(AZ01) GROUP(AZTERMS)
TERMINAL(AZ02) GROUP(AZTERMS)
TERMINAL(AZ03) GROUP(AZTERMS)
          .
          .
          .
TERMINAL(AZnn) GROUP(AZTERMS)

TERMINAL(BJ01) GROUP(BJTERMS)
TERMINAL(BJ02) GROUP(BJTERMS)
TERMINAL(BJ03) GROUP(BJTERMS)
          .
          .
          .
TERMINAL(BJnn) GROUP(BJTERMS)
```

If you are using autoinstall for terminals, you must install the TYPETERM definitions **before** installing the autoinstall model definitions, to ensure that the model is created. The CHECK command does not check the order of such definitions.

Terminal definition attributes



ALTPRINTCOPY({NO|YES})
specifies whether the hardware COPY feature is to be used to satisfy a print request on the printer named in the ALTPRINTER attribute. For further details, see the PRINTERCOPY attribute.

NO CICS should use the hardware COPY feature.

YES CICS should not use the hardware COPY feature.

ALTPRINTER(*printer*)
specifies the name of a 3270 printer to be used, if the printer named in the PRINTER attribute of this terminal definition is unavailable. The name may be

up to four characters in length. For further details, see the PRINTER attribute. If you specify an ALTPRINTER without specifying a PRINTER, ALTPRINTER is ignored.

The printer you name must be owned by the same CICS system that owns this terminal definition.

If you want to specify the hardware COPY feature for the alternative printer, specify YES for ALTPRINTCOPY on this terminal definition.

ATTACHSEC({**LOCAL**|**IDENTIFY**|**VERIFY**| **PERSISTENT**|**MIXIDPE**}) **(APPC only)**
specifies the level of attach time user security required for the connection. PERSISTENT and MIXIDPE are valid only with VTAM as the access method and when APPC is being used.

LOCAL
The authority of the user is taken to be that of the link itself, and you rely on link security alone to protect your resource.

IDENTIFY
Incoming attach requests must specify a user identifier. Specify IDENTIFY when the connecting terminal has a security manager.

MIXIDPE
A connection is able to support attaches using either or both of the IDENTIFY and PERSISTENT security types. The security type used depends on the incoming attach.

As in previous releases, IDENTIFY implies a degree of trust between the two systems that allows this system to accept the sign-on logic of the other system. In effect, this is a distributed security manager, with one system doing the sign-on and the other doing the security check.

PERSISTENT
This involves a user sign-on to a remote system that persists over multiple conversations until the user signs off from the remote system. In this way, the user's ID and password are passed only on the first (sign-on) attach. Subsequent attach requests require only the user's ID.

VERIFY
Incoming attach requests must specify a user identifier and a user password. Specify VERIFY when the connecting terminal has no security manager and therefore requires verification.

AUTINSTMODEL({**NO**|**YES**|**ONLY**})
specifies whether this terminal definition can be used as a model terminal definition for autoinstall. For more information on autoinstall and model terminal definitions, see Chapter 40, “Autoinstalling VTAM terminals,” on page 461.

NO This definition is not used as a model for autoinstall. It is used only as a definition for a specific device that is not autoinstalled.

ONLY This definition is used only as a model for autoinstall. It is not used as a definition for a specific device.

YES This definition is used for a specific device that is not autoinstalled. The definition is also used as a model for automatic installation.

AUTINSTNAME(*autinstname*)
specifies the name by which this model definition is known in the autoinstall control program. The name can be up to eight characters in length.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters you enter are converted to uppercase.

You need specify this only if AUTINSTMODEL is YES or ONLY. You can let it default to the terminal name followed by four blanks, as long as this is acceptable to the autoinstall control program. For more information about autoinstall models, autoinstall names, and the autoinstall control program, see "Autoinstall control program" on page 459.

BINDPASSWORD

This attribute is obsolete, but is supported to provide compatibility with earlier releases of CICS. For more information, see Appendix A, "Obsolete attributes," on page 615.

BINDSECURITY({**NO**|**YES**}) **(APPC only)**

specifies whether an external security manager (ESM) is being used for bind-time security.

NO No external bind-time security is required.

YES If security is active and the XAPPC system initialization parameter is set to YES, CICS attempts to extract the session key from RACF in order to carry out bind-time security. If no RACF profile is available, the bind fails.

CONSOLE({**NO**|**number**})

This attribute is obsolete, but is supported to provide compatibility with earlier releases of CICS. See "Obsolete attributes retained for compatibility" on page 615 for more information.

CONSNAME(*console*)

Using CONSNAME, you can install a CICS console definition without having an existing console, and without the console being previously defined in the CONSOL*nn* member of the MVS SYS1.PARMLIB. However, before you can use the console, you must define the name to MVS, either in the CONSOL*nn* member of SYS1.PARMLIB or by dynamic allocation. The length of CONSNAME must be 2–8 characters and must begin with an alphabetic character or one of #, @, or $. It uniquely identifies the console device within a CICS region, regardless of the MVS image to which it is connected; that is, you cannot install two console definitions with the same CONSNAME. The CONSNAME corresponds to the name defined for the console in the MVS SYS1.PARMLIB member, CONSOL*nn*.

To define a TSO user as a console device, specify CONSNAME(*name*), where *name* is the TSO userid. This enables a TSO user authorized to use the TSO CONSOLE command to initiate CICS transactions. The TSO userid does not have to be defined in the CONSOL*nn* member of SYS1.PARMLIB member.

The equivalent of CONSOLE(00) is CONSNAME(INTERNAL) or CONSNAME(INSTREAM), depending on the service level of CICS and the release of MVS being used; specify this if you want to initiate a CICS transaction and issue a command to it in a JCL statement. For guidance about using JCL to issue CICS commands, see the *CICS Operations and Utilities Guide*.

DESCRIPTION(*text*)

You can provide a description of the resource you are defining in this field. The description text can be up to 58 characters in length. There are no restrictions on the characters that you can use. However, if you use parentheses, ensure that for each left parenthesis there is a matching right one. If you use the CREATE command, for each single apostrophe in the text, code two apostrophes.

GROUP(*groupname*)

Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed.

> **Acceptable characters:**
>
> `A-Z 0-9 $ @ #`
>
> Any lower case characters you enter are converted to upper case.

The GROUP name can be up to eight characters in length. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

INSERVICE({**YES**|**NO**})

specifies the status of the terminal that is being defined.

YES Transactions may be initiated and messages may automatically be sent to the terminal.

NO The terminal can neither receive messages nor transmit input.

MODENAME(*modename*) **(APPC single session terminals only)**

specifies the name that is passed to VTAM as the LOGMODE name. The name may be up to eight characters in length, but may not have the reserved name SNASVCMG. The name follows assembler language rules. It must start with an alphabetic character.

> **Acceptable characters:**
>
> `A-Z 0-9 $ @ #`
>
> Unless you are using the CREATE command, any lowercase characters you enter are converted to uppercase.

For further guidance on the LOGMODE name, see the *CICS Transaction Server for z/OS Installation Guide*.

NATLANG({**blank**|**E**|**K**})

specifies the language in which all NLS-enabled messages are displayed for this terminal.

Use only one character, which can be A-Z 1-9.

blank If you leave this blank and do not supply a value, CICS uses the system default as specified in the system initialization table (SIT).

E English

K Japanese

NETNAME(*netname*)

specifies the network name that identifies the terminal to ACF/VTAM. The name may be up to 8 characters in length. The name follows assembler language rules. It must start with an alphabetic character.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters you enter are converted to uppercase.

If you do not specify a name, the NETNAME defaults to the TERMINAL name.

The NETNAME must be unique except in the case of a remote terminal. That is, you **cannot** install two local terminals with the same NETNAME, or a local terminal and any connection with the same NETNAME. However, the NETNAME for a remote terminal **can** be the same as the NETNAME for any other terminal or the NETNAME for any connection.

If the CICS region supports VTAM dynamic LU alias (that is, LUAPFX=*xx* is specified on the CICS region's APPL statement), the terminal with this NETNAME is assumed to be in the same network as the CICS region. If the terminal is in another network, it must be defined to VTAM on a CDRSC definition with a predefined LUALIAS (LUALIAS=*netname*) to override VTAM dynamic allocation. In this case, *netname* on the LUALIAS parameter must match the NETNAME defined on this terminal resource definition.

OPERID

This attribute is obsolete, but is supported to provide compatibility with earlier releases of CICS. For more information, see Appendix A, “Obsolete attributes,” on page 615.

OPERPRIORITY

This attribute is obsolete, but is supported to provide compatibility with earlier releases of CICS. For more information, see Appendix A, “Obsolete attributes,” on page 615.

OPERRSL

This attribute is obsolete, but is supported to provide compatibility with earlier releases of CICS. For more information, see Appendix A, “Obsolete attributes,” on page 615.

OPERSECURITY

This attribute is obsolete, but is supported to provide compatibility with earlier releases of CICS. For more information, see Appendix A, “Obsolete attributes,” on page 615.

POOL(*poolname*)

specifies the pool name for a 3600 or 3650 pipeline terminal pooled with other pipeline terminals.

When you define a 3600 pipeline logical unit, you generate a TCTTE that is associated with a pool of TCTTEs. A pool of pipeline TCTTEs can be used by one pipeline logical unit, or it can be shared by a number of pipeline logical units.

The pool name is used only as a method of identifying the related TERMINAL definitions on the CSD file. It is not used within the active CICS system. The name can be up to 8 characters in length.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters you enter are converted to uppercase.

For a pipeline terminal, you must specify a TYPETERM with SESSIONTYPE(PIPELINE) specified. You must specify a TASKLIMIT on at least one of the pool of pipeline terminals. You must name the same group for each of the pipeline terminals in a pool.

An example of the definitions for a pool of pipeline terminals follows.

```
DEFINE TERMINAL(ttt1) GROUP(g) POOL(poolid)
       TYPETERM(xxxxxxxx) NETNAME(nnnnnnn1)...
DEFINE TERMINAL(ttt2) GROUP(g) POOL(poolid)
       TYPETERM(xxxxxxxx) NETNAME(nnnnnnn2)...
DEFINE TERMINAL(ttt3) GROUP(g) POOL(poolid)
       TYPETERM(xxxxxxxx) NETNAME(nnnnnnn3)...
DEFINE TERMINAL(ttt4) GROUP(g) POOL(poolid)
       TASKLIMIT(nn) TYPETERM(xxxxxxxx)
       NETNAME(nnnnnnn4)...
DEFINE TYPETERM(xxxxxxxx) GROUP(g)
       DEVICE(3650) SESSIONTYPE(PIPELINE)
```

PRINTER(*printer*)

specifies the name of the primary 3270 printer to be used to respond to an ISSUE PRINT command, or a PRINT request from an operator pressing a program access (PA) key. The name may be up to four characters in length. The name is the TERMINAL name on the definition for the printer. If you name a PRINTER here, the TYPETERM referenced by this TERMINAL definition must have PRINTADAPTER(NO).

The printer you name must be owned by the same CICS system that owns this TERMINAL definition.

You can name a PRINTER if this TERMINAL definition is for one of the following:
- A 3270 display without the printer-adapter feature
- A 3270 display attached to a 3274 control unit
- A 3276 control unit display station
- A 3790 in 3270 compatibility mode

If you want to specify the hardware COPY feature, specify PRINTERCOPY(YES) on this TERMINAL definition.

Note that SNA character string (SCS) printers accept only 3790 data streams; they do not accept 3270 data streams. They therefore cannot be used to print the contents of a display unit's buffer.

If you use a program attention key (for example, PA1) to print the contents of the screen on an associated VTAM printer, the screen size of the printer is chosen according to the SCRNSIZE operand as defined in the CICS-supplied default profile DFHCICST. This profile is defined with SCRNSIZE(DEFAULT) and, if you want to use the alternate screen size of the printer, you have to change the profile entry for transaction CSPP.

PRINTERCOPY({**NO**|**YES**})

specifies whether the hardware COPY feature is to be used to satisfy a print request on the printer named in the PRINTER attribute of this terminal definition.

CICS uses the hardware COPY feature of the 3270 to perform the print, unless a task is currently attached to the display.

You need not specify COPY(YES) on the typeterm definition, because this is implied by PRINTERCOPY(YES) on the terminal definition.

If you have named an ALTPRINTER as well as a PRINTER, you may specify ALTPRINTCOPY(YES).

To use the COPY feature, both the printer and the display terminal must be on the same 3270 control unit. Otherwise, either the COPY may fail, raising an error condition or, if the display device address is valid for the printer's control unit, copying might be performed from a different display.

Do not specify PRINTERCOPY(YES) if, in a networking environment, the 3270 control unit is connected to a TCAM system in one domain, and a CICS system in another domain has access to the control unit via VTAM. This is because the hardware COPY address is not available to CICS and cannot therefore be used by terminals attached to such a control unit.

The COPY command is invalid for a 3270 compatibility mode display.

REMOTENAME(*terminal*)

specifies the name by which the terminal is known in the system or region that owns the terminal. The name can be up to four characters in length.

Acceptable characters:

`A-Z a-z 0-9 $ @ # . / - _ % & ¢ ? ! : | " = ¬ , ; < >`

For information about entering mixed case information, see “Entering mixed case attributes” on page 388.

REMOTESYSNET(*netname*)

specifies the network name (APPLID) of the region that owns the terminal. The name can be up to eight characters in length. It follows assembler language rules, and must start with an alphabetic character.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters you enter are converted to uppercase.

REMOTESYSNET is used where there is no direct link between the region in which this definition is installed and the terminal-owning region. You do not need to specify REMOTESYSNET if either of the following is true:

- You are defining a local terminal (that is, REMOTESYSTEM is not specified, or specifies the sysid of the local system).
- REMOTESYSTEM names a direct link to the terminal-owning region. However, if the terminal-owning region is a member of a VTAM generic resources group and the direct link is an APPC connection, you may need to specify REMOTESYSNET. REMOTESYSNET is needed in this case if the NETNAME specified on the CONNECTION definition for the direct link is the generic resource name of the TOR (not the applid).

REMOTESYSTEM(*connection*)

specifies the name that identifies the intercommunication link to the system that owns the terminal. The name can be up to 4 characters in length.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters you enter are converted to uppercase.

This is the CONNECTION name on the CONNECTION definition for the intercommunication link. If it is not specified, or if it is specified as the sysid of the local system, this terminal is local to this system. If the name is that of another system, the terminal is remote. You can therefore use the same definition for the terminal in both the local system and a remote system.

If there are intermediate systems between this CICS and the terminal-owning region, REMOTESYSTEM should specify the first link in the path to the TOR. If there is more than one possible path, it should specify the first link in the preferred path.

REMOTESYSTEM is ignored if you specify AUTINSTMODEL(YES) or (ONLY).

SECURITYNAME(*securityname*)

specifies the security name of the remote system.

In a CICS system with security initialized (SEC=YES or MIGRATE), the security name is used to establish the authority of the remote system.

Note: If USERID is specified in the session definition (DEFINE SESSIONS command) associated with the connection definition, it overrides the userid specified in the SECURITYNAME attribute, and is used for link security.

The security name (or USERID on the sessions definition) must be a valid RACF userid on your system. Access to protected resources on your system is based on the RACF user profile and its group membership.

For further information on defining security for MRO, LUTYPE6.1, and APPC connections, see the*RACF Security Guide*.

SOLICITED(**NO**|**YES**)

specifies whether CICS messages issued to a console should be treated by NetView as solicited or unsolicited.

NO CICS messages are to be treated as unsolicited

YES CICS messages are to be treated as solicited. When SOLICITED(YES) is specified for a console, CICS adds the console name or the console identification number, and a command and response token to each console message.

The SOLICITED attribute applies only to consoles; it is ignored for other TERMINAL definitions.

TASKLIMIT({**NO**|*number*})

specifies the number of concurrent tasks allowed to run in a pipeline session or in a pool of pipeline sessions.

NO No concurrent tasks are allowed.

number

The number of concurrent tasks allowed to run, in the range 1 through 32767.

When you define a 3600 pipeline logical unit, you generate a TCTTE that is associated with a pool of TCTTEs. As messages enter CICS from the 3600 pipeline logical unit, a task is attached to process this message, using as an anchor block one of the TCTTEs from the pool. In this way, consecutive messages sent via the pipeline logical unit can be processed concurrently, the number of concurrent transactions being limited by the number of TCTTEs in the pool. The number of TCTTEs in the pool should represent the high-water mark of inquiry activity. In this way, the pipeline facility allows fewer TCTTEs to be defined to CICS than the total number of pipeline inquiry terminals.

TERMINAL(*name*)

specifies the terminal identifier. For a terminal, the name can be up to four characters in length.

Acceptable characters:

`A-Z a-z 0-9 $ @ # . / - _ % & ¢ ? ! : | " = ¬ , ; < >`

For information about entering mixed case information, see “Entering mixed case attributes” on page 388.

For an APPC LU6.2 single session terminal, the valid characters are A-Z 0-9 $ @ #. If the name supplied is fewer than four characters, it is left-justified and padded with blanks up to four characters. You should not have a TERMINAL definition and a CONNECTION definition with the same name.

Note: If you use a comma (,) in a name, you will be unable to use those commands such as

```
CEMT INQUIRE TERMINAL(value1,value2)
CEMT SET     TERMINAL(value1,value2)
```

where the comma serves as a list delimiter. See *CICS Supplied Transactions* for information about using lists of resource identifiers.

Also, if you are allowing CICS to generate automatically session names, or terminal IDs for consoles, avoid using any of the following symbols as the first or fourth character in the terminal name:

-
The hyphen is used by CICS for automatically generated terminal names for APPC sessions

> *and* **<**
The > (greater than) and < (less than) symbols are used by CICS for automatically generated terminal names for IRC sessions

¬
The ¬ (logical not) symbol is used by CICS for automatically generated terminal names for MVS consoles.

The name specified becomes the name of the TCT entry, when this TERMINAL definition is installed. For this reason, the TERMINAL name should be unique (note that the value CERR is reserved for the identification generated for the error console). If you specify AUTINSTMODEL(ONLY), you need not worry about making the TERMINAL name unique, because it is **not** used as the name of a TCT entry. If you specify AUTINSTMODEL(YES), the TERMINAL name is used as the name of the TCT entry that is installed in the TCT when the TERMINAL definition is installed; the names of the TCT entries for the autoinstalled terminals are determined by the autoinstall user program.

If the terminal is to be associated with a transient data destination, the terminal name and the destination identification in the DCT must be the same.

TERMPRIORITY({**0**|*priority*})

specifies the terminal priority. This decimal value (0 through 255) is used in establishing the overall transaction processing priority. (Transaction processing priority is equal to the sum of the terminal priority, transaction priority, and operator priority, not exceeding 255.)

TRANSACTION(*transaction*)

specifies a 1-to 4-character name of the transaction that is to be initiated each time input is received from the terminal when there is no active task.

Acceptable characters:

`A-Z a-z 0-9 $ @ # . / - _ % & ¢ ? ! : | " = ¬ , ; < >`

For information about entering mixed case information, see "Entering mixed case attributes" on page 388.

For VTAM non-3270 devices, a TRANSACTION name of fewer than four characters requires a delimiter.

For information on what happens when a transaction is initiated, see the *CICS Application Programming Guide*.

If you specify this operand for a 3270 display, the only CICS functions the operator can invoke, other than this transaction, are paging commands and print requests.

You are unlikely to specify the TRANSACTION attribute for a 3270 display or SCS printer. It is optional for 3601 logical units, but is mandatory for 3614 logical units.

If this operand is specified for a 3790 Communication System, and multiple sessions are used to connect the same 3791, specify the same TRANSACTION name for all sessions.

TYPETERM(*typeterm*)

specifies the name of the TYPETERM definition to be associated with this TERMINAL definition. The name can be up to eight characters in length.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters you enter are converted to uppercase.

The TYPETERM definition specifies many attributes for a number of similar terminals. For more information, see "TYPETERM definition attributes" on page 321 and "How resources are defined" on page 3. This attribute is mandatory for all TERMINAL definitions.

The TYPETERM definition should already be installed when you install this TERMINAL definition.

USEDFLTUSER ({**NO**|**YES**}) **(APPC only)**

specifies the kind of security checking that will take place for each inbound attach FMH.

NO Indicates that each inbound attach FMH will be checked for the presence of those fields required by the ATTACHSEC option and if the required fields are not present a protocol violation message will be issued and the attach will fail. NO is the default.

YES Indicates that some checks on the validity of the attach FMH are bypassed. This provides the same level of security as in releases of CICS prior to CICS/ESA 4.1. See the *CICS RACF Security Guide*.

USERID({**name**|***EVERY**|***FIRST**})
specifies a user identifier used for sign-on and referred to in security error messages, security violation messages, and the audit trail. It must be a valid userid defined to the security manager.

This is the only way to specify a user identifier for devices such as printers that are unable to sign on using CESN. You can also specify USERID for a display device; if so, the display is permanently signed on. Operators are unable to sign on. All access to protected resources depends on the authorizations permitted by RACF for the specified USERID.

For an APPC single session terminal, this USERID overrides any SECURITYNAME that you have specified for the connection.

name This can be up to eight characters in length.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters you enter are converted to uppercase.

***EVERY**
This is a special operand for autoinstalled consoles only. It means that CICS is to use the userid passed on the MVS MODIFY command every time a MODIFY command is received. The console is signed on using the MVS userid as the preset userid for the console being autoinstalled. The console remains signed on with this userid until the console is deleted or another MODIFY is received with another userid. If a MODIFY command is received without a userid, CICS signs on the default CICS userid until a MODIFY command is received that has a valid userid. For non-console terminals, or if security is not enabled, this value is ignored.

***FIRST**
This is a special operand for autoinstalled consoles only. It means that CICS is to use the userid passed on the first MVS MODIFY command that requires the console to be autoinstalled. The console is signed on with the MVS userid as the preset userid. The console remains signed on with this userid until the console is deleted. If a MODIFY command is received without a userid, CICS signs on the default CICS userid. For non-console terminals, or if security is not enabled, this value is ignored.

Note:

1. If this terminal definition defines a console, the userid must be authorized to the appropriate profile in the CONSOLE general resource class, (see the *CICS RACF Security Guide* for information about preset security on consoles and terminals).

Chapter 29. TRANCLASS resource definitions

A TRANCLASS resource defines the characteristics of a transaction class.

Transactions that are defined as belonging to a transaction class are subject to scheduling constraints before they are allowed to execute. If transactions belonging to an active transaction class are already running, any new transactions are queued. Use the MAXACTIVE attribute to specify the maximum number of transactions that you want to run. To limit the size of the queue, you can use the PURGETHRESH attribute.

By putting your transactions into transaction classes, you can control how CICS dispatches tasks. For example, you can separate transactions into those that are heavy resource users and those that are of lesser importance, such as the “Good morning” broadcast messages. You can then use the attributes on the TRANCLASS definition to control the number of active tasks allowed from each transaction class.

Defining transaction classes

You can define transaction classes in the following ways:

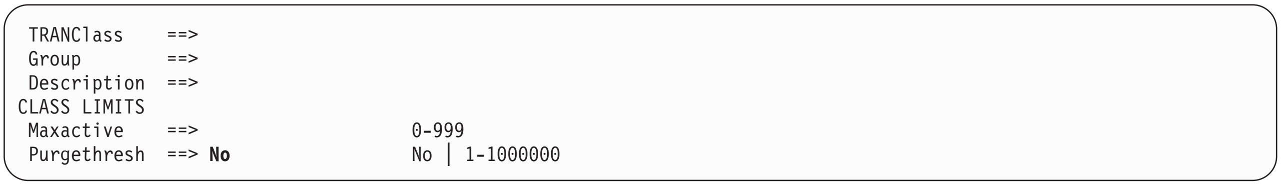
- Using the CEDA transaction; see “Defining transaction classes using CEDA.”
- Using the DFHCSDUP utility; see *CICS Operations and Utilities Guide*.
- Using the CREATE TRANCLASS command; see the *CICS System Programming Reference*.
- Using CICSPlex SM Business Application Services; see *CICSPlex System Manager Managing Business Applications*.

Defining transaction classes using CEDA

From a CICS terminal, enter the following command:

`CEDA DEFINE TRANCLASS(`*`name`*`) GROUP(`*`name`*`)`

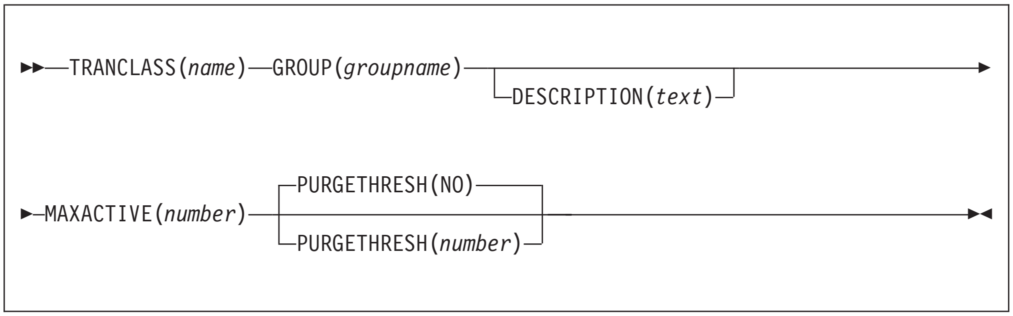
The CEDA panel that is displayed when you enter a valid DEFINE TRANCLASS command is:



```
 TRANClass    ==>
 Group        ==>
 Description  ==>
CLASS LIMITS
 Maxactive    ==>                   0-999
 Purgethresh  ==> No                No | 1-1000000
```

Figure 33. The DEFINE panel for TRANCLASS

TRANCLASS definition attributes



The transaction class definition attribute descriptions are:

DESCRIPTION(*text*)
You can provide a description of the resource you are defining in this field. The description text can be up to 58 characters in length. There are no restrictions on the characters that you can use. However, if you use parentheses, ensure that for each left parenthesis there is a matching right one. If you use the CREATE command, for each single apostrophe in the text, code two apostrophes.

GROUP(*groupname*)
Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed.

Acceptable characters:

`A-Z 0-9 $ @ #`

Any lower case characters you enter are converted to upper case.

The GROUP name can be up to eight characters in length. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

MAXACTIVE(*number*)
specifies the maximum number of transactions in this transaction class that are allowed to be active. You must specify a MAXACTIVE value when you define a transaction class, in the range 0 through 999.

New transactions attached when the number of active transactions has reached the MAXACTIVE limit are considered for queueing subject to the PURGETHRESH limit.

Defining a transaction class with a zero MAXACTIVE value signifies that **all** tasks are to be queued.

PURGETHRESH({**NO**|*number*})
This is an optional purge threshold for the transaction class; it defines a threshold number at which transactions queuing for membership of the transaction class are purged. Specify it if you want to limit the number of transactions queueing in this transaction class. It can have the following values:

NO The size of the queue is unlimited (other than by the storage available to attach tasks).

number

The purge threshold number in the range 1—1 000 000.

If you specify this as 1, no transactions are allowed to queue. If you specify it as any other number (*n*), the size of the queue is restricted to *number-1*. All new transactions attached after the limit of *n-1* is reached are purged.

Example of PURGETHRESH: In the case of a transaction class where the maximum number of active tasks (MAXACTIVE) is set to 50, and the purge threshold (PURGETHRESH) is set to 10 to limit queuing transactions, CICS begins to abend new transactions for the class when:

- The number of active transactions reaches 50, and
- The number of transactions queuing for membership of the transaction class has reached 9

CICS accepts new transactions for this transaction class queue only when the number queued falls below the maximum size of the queue (9 in our example).

TRANCLASS(*name*)

specifies the name of the transaction class. Transactions belonging to a transaction class are subject to scheduling constraints before they are allowed to execute. The reserved TRANCLASS name DFHTCL00 is used to indicate that the transaction does not belong to any transaction class.

For compatibility with releases that support a TCLASS attribute, CICS provides the following TRANCLASS equivalents:

TCLASS	TRANCLASS
NO	DFHTCL00
1	DFHTCL01
2	DFHTCL02
3	DFHTCL03
4	DFHTCL04
5	DFHTCL05
6	DFHTCL06
7	DFHTCL07
8	DFHTCL08
9	DFHTCL09
10	DFHTCL10

Sample definitions for these transaction classes are in group DFHTCL, supplied as part of DFHLIST.

Note: If a transaction is run and its associated TRANCLASS definition is not installed, the transaction runs without any of the scheduling constraints specified in the TRANCLASS. Attention message DFHXM0212 is issued.

TRANCLASS can be up to eight characters in length.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters you enter are converted to uppercase.

Chapter 30. TRANSACTION resource definitions

A TRANSACTION resource defines transaction attributes that relate to functions provided by CICS.

A CICS application consists of one or more programs written to perform a specific function. A particular invocation of such an application is known as a *transaction*, and the CICS transaction manager identifies it by its transaction identifier (TRANSID). You tell CICS how you want your transaction to run, primarily in a TRANSACTION definition, by providing such information as the transaction priority, security key, and the length of the transaction work area (TWA). The name of this definition, the TRANSACTION name, is the same as the TRANSID. You also link the transaction with other resources by coding the names of their definitions in the TRANSACTION definition. These other resources are PROGRAM, PROFILE, PARTITIONSET, REMOTESYSTEM, and TRANCLASS:

PROGRAM
You specify options related to the software implementation of your application in the PROGRAM definition. This defines the program to which control is to be given to process the transaction. The TRANSACTION definition references the PROGRAM definition.

PROFILE
You do not have to specify, for each transaction, the attributes that control the interaction with a terminal or logical unit. Instead, the TRANSACTION definition references a PROFILE definition, which specifies them for a number of transactions.

REMOTESYSTEM
For transaction routing, instead of specifying a PROGRAM name in the TRANSACTION definition, you specify the name of a REMOTESYSTEM. This can be the name of another CICS system, which itself is defined to this CICS system in a CONNECTION definition of the same name.

If you name a REMOTESYSTEM, you may also supply a REMOTENAME, which is the name of the transaction to be run in the remote system. The remote system decides which program it gives control to.

If you specify a REMOTESYSTEM name that corresponds to the system in which the definition is installed, CICS installs a local transaction resource definition. Otherwise CICS installs a remote transaction resource definition.

TRANCLASS
This specifies the name of the transaction class to which the transaction belongs. Transactions belonging to a transaction class are subject to scheduling constraints before they are allowed to execute. The constraints are specified in the associated TRANCLASS definition. The TRANCLASS definition is described in Chapter 29, “TRANCLASS resource definitions,” on page 275.

Defining transactions

You can define transactions in the following ways:

- Using the CEDA transaction; see “Defining transactions using CEDA” on page 280.
- Using the DFHCSDUP utility; see *CICS Operations and Utilities Guide*.
- Using the CREATE TRANSACTION command; see the *CICS System Programming Reference*.

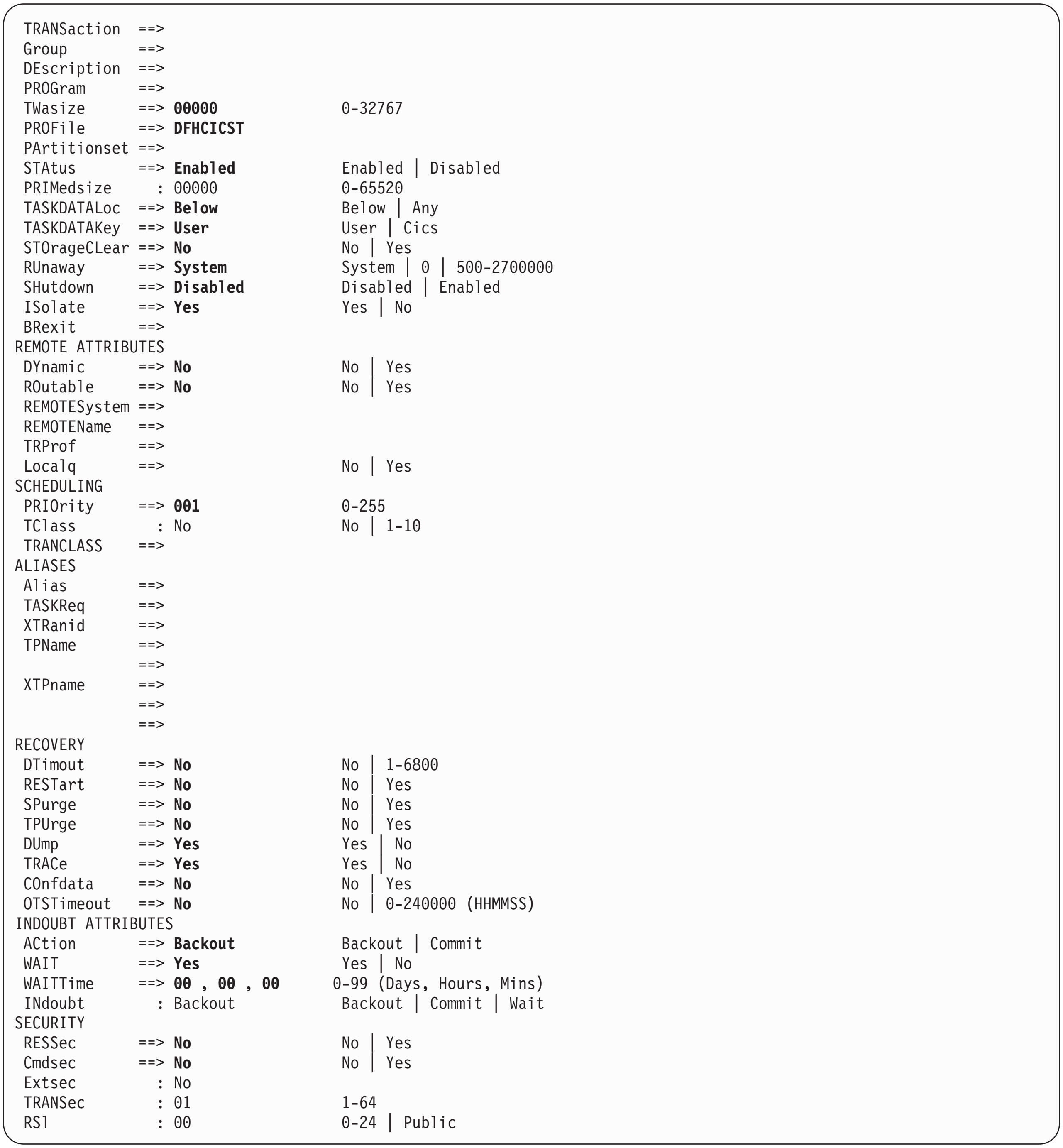
- Using CICSPlex SM Business Application Services; see *CICSPlex System Manager Managing Business Applications*.

Defining transactions using CEDA

From a CICS terminal, enter the following command:

`CEDA DEFINE TRANSACTION(`*name*`) GROUP(`*name*`)`

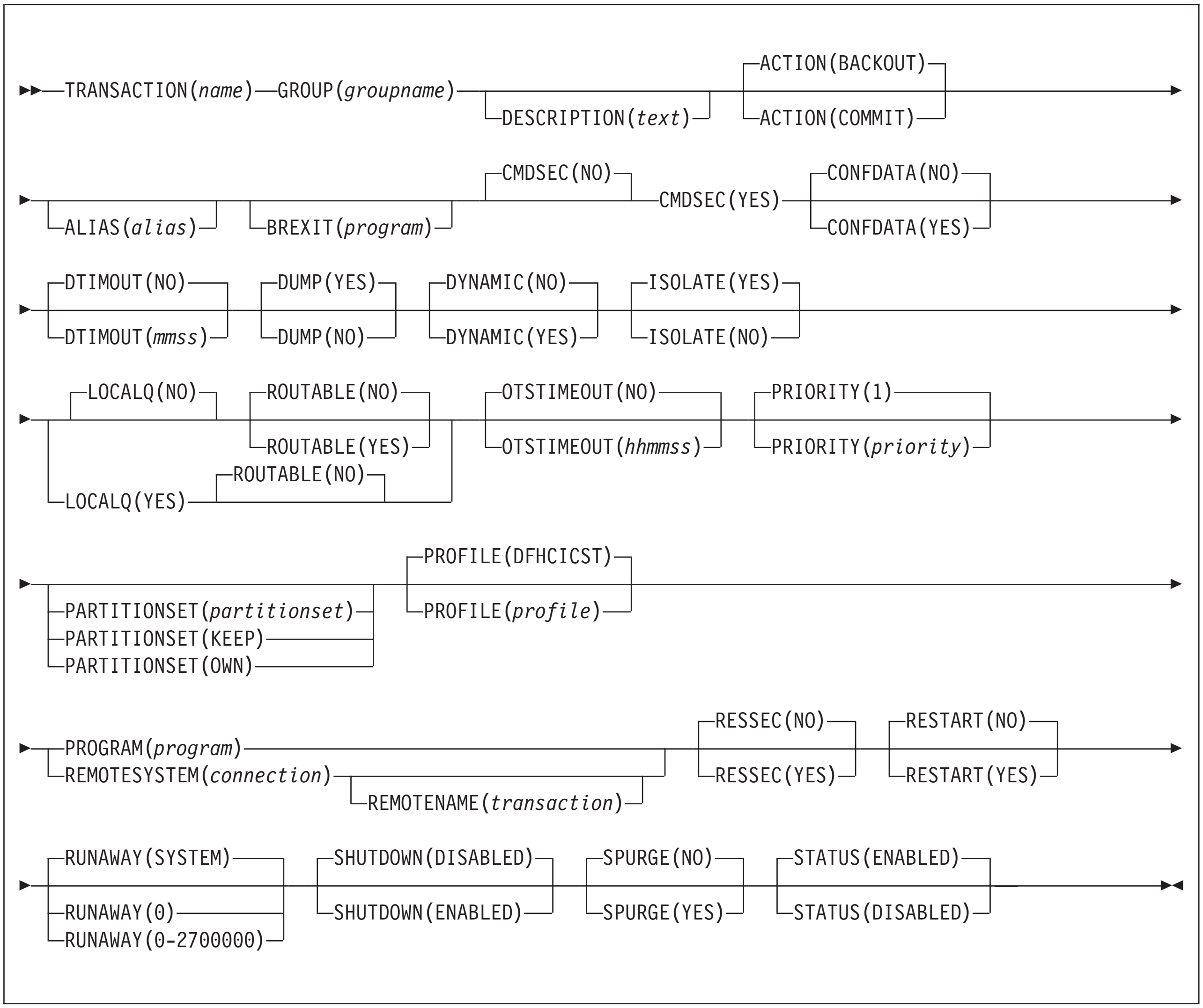
Figure 34 shows the panel that is displayed.



```
 TRANSaction  ==>
 Group        ==>
 DEscription  ==>
 PROGram      ==>
 TWasize      ==> 00000              0-32767
 PROFile      ==> DFHCICST
 PArtitionset ==>
 STAtus       ==> Enabled            Enabled | Disabled
 PRIMedsize     : 00000              0-65520
 TASKDATALoc  ==> Below              Below | Any
 TASKDATAKey  ==> User               User | Cics
 STOrageCLear ==> No                 No | Yes
 RUnaway      ==> System             System | 0 | 500-2700000
 SHutdown     ==> Disabled           Disabled | Enabled
 ISolate      ==> Yes                Yes | No
 BRexit       ==>
REMOTE ATTRIBUTES
 DYnamic      ==> No                 No | Yes
 ROutable     ==> No                 No | Yes
 REMOTESystem ==>
 REMOTEName   ==>
 TRProf       ==>
 Localq       ==>                    No | Yes
SCHEDULING
 PRIOrity     ==> 001                0-255
 TClass         : No                 No | 1-10
 TRANCLASS    ==>
ALIASES
 Alias        ==>
 TASKReq      ==>
 XTRanid      ==>
 TPName       ==>
              ==>
 XTPname      ==>
              ==>
              ==>
RECOVERY
 DTimout      ==> No                 No | 1-6800
 RESTart      ==> No                 No | Yes
 SPurge       ==> No                 No | Yes
 TPUrge       ==> No                 No | Yes
 DUmp         ==> Yes                Yes | No
 TRACe        ==> Yes                Yes | No
 COnfdata     ==> No                 No | Yes
 OTSTimeout   ==> No                 No | 0-240000 (HHMMSS)
INDOUBT ATTRIBUTES
 ACtion       ==> Backout            Backout | Commit
 WAIT         ==> Yes                Yes | No
 WAITTime     ==> 00 , 00 , 00      0-99 (Days, Hours, Mins)
 INdoubt        : Backout            Backout | Commit | Wait
SECURITY
 RESSec       ==> No                 No | Yes
 Cmdsec       ==> No                 No | Yes
 Extsec         : No
 TRANSec        : 01                 1-64
 RSl            : 00                 0-24 | Public
```

Figure 34. The DEFINE panel for TRANSACTION

TRANSACTION definition attributes



```
                                                                ┌─ACTION(BACKOUT)─┐
►►──TRANSACTION(name)──GROUP(groupname)──┬────────────────────┬─┼─────────────────┼──────►
                                         └─DESCRIPTION(text)──┘ └─ACTION(COMMIT)──┘

                                          ┌─CMDSEC(NO)──┐            ┌─CONFDATA(NO)──┐
►──┬──────────────┬──┬─────────────────┬──┴─────────────┴─CMDSEC(YES)─┼───────────────┼──►
   └─ALIAS(alias)─┘  └─BREXIT(program)─┘                              └─CONFDATA(YES)─┘

   ┌─DTIMOUT(NO)───┐  ┌─DUMP(YES)─┐  ┌─DYNAMIC(NO)──┐  ┌─ISOLATE(YES)─┐
►──┼───────────────┼──┼───────────┼──┼──────────────┼──┼──────────────┼──────►
   └─DTIMOUT(mmss)─┘  └─DUMP(NO)──┘  └─DYNAMIC(YES)─┘  └─ISOLATE(NO)──┘

      ┌─LOCALQ(NO)─┐  ┌─ROUTABLE(NO)──┐     ┌─OTSTIMEOUT(NO)─────┐  ┌─PRIORITY(1)────────┐
►──┬──┴────────────┴──┼───────────────┼──┬──┼────────────────────┼──┼────────────────────┼──►
   │                  └─ROUTABLE(YES)─┘  │  └─OTSTIMEOUT(hhmmss)─┘  └─PRIORITY(priority)─┘
   │                 ┌─ROUTABLE(NO)─┐    │
   └─LOCALQ(YES)─────┴──────────────┴────┘

                                       ┌─PROFILE(DFHCICST)─┐
►──┬─────────────────────────────┬─────┼───────────────────┼──────►
   ├─PARTITIONSET(partitionset)──┤     └─PROFILE(profile)──┘
   ├─PARTITIONSET(KEEP)──────────┤
   └─PARTITIONSET(OWN)───────────┘

                                                              ┌─RESSEC(NO)──┐  ┌─RESTART(NO)──┐
►──┬─PROGRAM(program)─────────────────────────────────────┬───┼─────────────┼──┼──────────────┼──►
   └─REMOTESYSTEM(connection)──┬─────────────────────────┬┘   └─RESSEC(YES)─┘  └─RESTART(YES)─┘
                               └─REMOTENAME(transaction)─┘

   ┌─RUNAWAY(SYSTEM)────┐  ┌─SHUTDOWN(DISABLED)─┐  ┌─SPURGE(NO)──┐  ┌─STATUS(ENABLED)──┐
►──┼────────────────────┼──┼────────────────────┼──┼─────────────┼──┼──────────────────┼──►◄
   ├─RUNAWAY(0)─────────┤  └─SHUTDOWN(ENABLED)──┘  └─SPURGE(YES)─┘  └─STATUS(DISABLED)─┘
   └─RUNAWAY(0-2700000)─┘
```

```
▸▸──┬─STORAGECLEAR(NO)──┬──┬─TASKDATAKEY(USER)─┬──┬─TASKDATALOC(BELOW)─┬──────────▸
    └─STORAGECLEAR(YES)─┘  └─TASKDATAKEY(CICS)─┘  └─TASKDATALOC(ANY)───┘


                                                 ┌─TPURGE(NO)──┐
▸──┬─────────────────┬──┬──────────────────┬──┼─────────────┼────────────────────▸
   ├─TASKREQ(LPA)────┤  ├─TPNAME(tpname)───┤  └─TPURGE(YES)─┘
   ├─TASKREQ(MSRE)───┤  └─XTPNAME(xtpname)─┘
   ├─TASKREQ(OPID)───┤
   ├─TASKREQ(PA1-3)──┤
   └─TASKREQ(PF1-24)─┘


   ┌─TRACE(YES)─┐  ┌─TRANCLASS(DFHTCL00)───┐  ┌─TRPROF(DFHCICSS)─┐
▸──┼────────────┼──┼───────────────────────┼──┼──────────────────┼──────────────▸
   └─TRACE(NO)──┘  └─TRANCLASS(tranclass)──┘  └─TRPROF(profile)──┘


                                   ┌─WAITTIME(0,0,0)────┐
                       ┌─WAIT(YES)─┼────────────────────┼─┐
   ┌─TWASIZE(0)──────┐ │           └─WAITTIME(dd,hh,mm)─┘ │
▸──┼─────────────────┼─┼──────────────────────────────────┼─────────────────────▸
   └─TWASIZE(number)─┘ └─WAIT(NO)─────────────────────────┘

▸──┬────────────────────┬────────────────────────────────────────────────────▸◂
   └─XTRANID(xtranid)───┘
```

ACTION({**BACKOUT**|**COMMIT**})

specifies the action to be taken when a CICS region fails, or loses connectivity with its coordinator, during two-phase commit processing after the unit of work has entered the in-doubt period. The action depends on the WAIT attribute. If WAIT specifies YES, ACTION has no effect unless the WAITTIME expires before recovery from the failure.

If WAIT specifies NO, the action taken is one of the following:

BACKOUT

All changes made to recoverable resources are backed out, and the resources are returned to the state they were in before the start of the UOW.

COMMIT

All changes made to recoverable resources are committed, and the UOW is marked as completed.

ALIAS(*alias*)

allows you to specify an alias transaction name for this transaction. The name may be up to four characters in length. This useful if you wish to run on a terminal defined with UCTRAN(NO), or a transaction that allows mixed case input (PROFILE UCTRAN(NO)). For example, you can invoke via alias(**abcd**) the same transaction as **ABCD**.

When you install a TRANSACTION definition which contains the ALIAS attribute, the result depends upon whenter the alias name is already in use in the system:

- If the alias name is in use as a primary transaction ID, the ALIAS attribute is ignored.
- If the alias name is in use as the alias for a different transaction, the original alias is replaced by the new one. In other words, after the TRANSACTION definition has been installed, the alias name refers to the new transaction, and not the original.

BREXIT(*program*)

This is an optional attribute that defines the name of the default bridge exit to be associated with this transaction, if it is started in the 3270 bridge environment with a START BREXIT command that does not specify a name on its BREXIT option. The name may be up to eight characters in length.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters you enter are converted to uppercase.

If BREXIT is defined, REMOTESYSTEM, REMOTENAME, DYNAMIC(YES), and RESTART(YES) should not be specified, and will be ignored.

Note: The Link3270 mechanism is now the recommended way to use the 3270 bridge. Use of the START BREXIT interface is not described in CICS documentation for CICS TS Version 2, and you should refer to the publications for CICS Transaction Server for OS/390, Version 1 Release 3 if you need to implement new applications using this interface.

CMDSEC({**NO**|**YES**})

specifies whether security checking is to be applied on system programming commands. For programming information on the system programming commands, see the *CICS System Programming Reference*.

NO No check is made. The commands are always executed.

YES A call is made to the external security manager (ESM). CICS either authorizes or prevents access. If the ESM cannot identify the resource or resource type, access is prevented.

CONFDATA({**NO**|**YES**})

specifies whether CICS is to suppress user data from CICS trace entries when the CONFDATA system initialization parameter specifies HIDETC. If the system initialization parameter specifies CONFDATA=SHOW, CONFDATA on the transaction definition is ignored.

If the system initialization parameter specifies CONFDATA=HIDETC, the following options are effective:

NO CICS does not suppress any user data. VTAM and MRO initial user data is traced in trace point AP FC92. FEPI user data is traced in the normal CICS FEPI trace points.

YES CICS suppresses user data from the CICS trace points.

DESCRIPTION(*text*)

You can provide a description of the resource you are defining in this field. The description text can be up to 58 characters in length. There are no restrictions on the characters that you can use. However, if you use parentheses, ensure that for each left parenthesis there is a matching right one. If you use the CREATE command, for each single apostrophe in the text, code two apostrophes.

DTIMOUT({NO|*mmss*})

specifies whether deadlock time-out is be applied to the task. If the execution of the task gets suspended (for example, through lack of storage), a purge of the task is initiated if the task stays suspended for longer than the DTIMOUT value. If the purge leads to a transaction abend, the abend code used depends on which part of CICS suspended the task. When using CEDF, the user task should, if possible, specify DTIMOUT(NO), or a large value. This is also now used as the timeout on all RLS file requests if DTIMOUT is non-zero, otherwise the request gets the SIT FTIMEOUT value. FTIMEOUT applies to transactions that do not have a deadlock timeout interval active. If the DTIMOUT keyword of the TRANSACTION definition is specified, it is used as the file timeout value for that transaction.

Note: When using CEDF, if any DTIMOUT value has been specified for the user task, the DTIMOUT value is ignored while the user task is suspended and a CEDF task is active. Therefore the suspended user task cannot terminate with a deadlock timeout (abend AKCS) while a CEDF task is waiting for a user response.

For DTIMOUT to be effective in non-RLS usage, SPURGE must be set to YES.

CICS inhibits deadlock time-out at certain points.

DTIMOUT is not triggered for terminal I/O waits. Because the relay transaction does not access resources after obtaining a session, it has little need for DTIMOUT except to trap suspended allocate requests. However, for I/O waits on a session, the RTIMOUT attribute can be specified on PROFILE definitions for transaction routing on MRO sessions and mapped APPC connections.

It is important that you define some transactions with a DTIMOUT value, because deadlock time-out is the mechanism that CICS uses to deal with short-on-storage (SOS) situations.

NO The deadlock time-out feature is not required.

mmss The length of time (MMSS for minutes and seconds) after which the deadlock time-out facility terminates a suspended task. The maximum value that you can specify is 68 minutes; this is accurate to one second.

DUMP({YES|NO})

specifies whether a call is to be made to the dump domain to produce a transaction dump if the transaction terminates abnormally.

YES CICS calls the dump domain to produce a transaction dump. Note that the final production or suppression of the transaction dump is controlled by the transaction dump table. For more information about the dump table, see the *CICS Problem Determination Guide*.

If no transaction dump table entry exists for the given dump code when a transaction abends, CICS creates a temporary entry for which the default is to produce a transaction dump.

You control dump table entries for transaction dumps using the CEMT transaction (for more information, see the *CICS Supplied Transactions*) or the EXEC CICS SET TRANDUMPCODE command (for programming information, see the *CICS System Programming Reference*).

NO No call is made to the dump domain, suppressing any potential transaction dump.

Note: This operand has no effect on the following:

- An EXEC CICS DUMP command, which always produces a dump.
- The system dumps for dump codes AP0001 and SR0001 that CICS produces in connection with ASRA, ARSB, or ASRD abends. If you specify NO on the transaction DUMP attribute, CICS suppresses the transaction dump, but not the system dump.

DYNAMIC({**NO**|**YES**})

specifies whether the transaction can be dynamically routed to a remote region, using the CICS dynamic transaction routing facility.

NO Creates a local or remote definition according to the REMOTESYSTEM attribute.

YES Allows the dynamic transaction routing program to determine the local or remote status dynamically at invocation time. For programming information about the dynamic transaction routing program, see the *CICS Customization Guide*.

Note: If the TRANDEF is either named in a resource assignment or dynamically installed with a Usage value of REMOTE, the Mode value (DYNAM or STAT) overrides this value in determining whether the transaction can be dynamically routed.

EXTSEC

This attribute is obsolete, but is supported to provide compatibility with earlier releases of CICS. For more information, see Appendix A, "Obsolete attributes," on page 615.

GROUP(*groupname*)

Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed.

Acceptable characters:

`A-Z 0-9 $ @ #`

Any lower case characters you enter are converted to upper case.

The GROUP name can be up to eight characters in length. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

INDOUBT

This attribute is obsolete, but is supported to provide compatibility with earlier releases of CICS. For more information, see Appendix A, "Obsolete attributes," on page 615.

ISOLATE({**YES**|**NO**})

specifies whether CICS is to isolate the transaction's user-key task-lifetime storage to provide transaction-to-transaction protection. (See the TASKDATAKEY attribute for a description of user-key storage.) Isolation means that the user-key task-lifetime storage is protected from both reading and writing by the user-key programs of other transactions—that is, from programs defined with EXECKEY(USER). Figure 35 on page 287 shows the effect of the ISOLATE attribute.

Note:

1. The ISOLATE attribute does not provide any protection against application programs that execute in CICS key—that is, from programs defined with EXECKEY(CICS).
2. VSAM nonshared resources (NSR) are not supported for transactions that use transaction isolation. You should specify ISOLATE(NO) when you define transactions that access VSAM files using NSR.

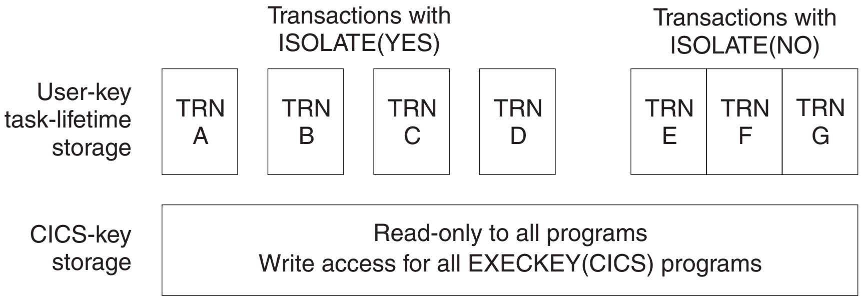
YES The transaction's user-key task-lifetime storage is isolated from the user-key programs of all other transactions—that is, from programs defined with EXECKEY(USER), but not from programs defined with EXECKEY(CICS).

Also, the user-key task-lifetime storage of **all** other transactions is protected **from** the user-key programs of transactions defined with ISOLATE(YES).

NO If you specify ISOLATE(NO), the transaction's task-lifetime storage is isolated from the user-key programs of those transactions defined with ISOLATE(YES). The transaction's storage is not, however, isolated from user-key programs of other transactions that also specify ISOLATE(NO) because, with this option, the transactions are all allocated to the common subspace.

Note also that the user-key task-lifetime storage of all transactions defined with ISOLATE(YES) is protected **from** the user-key programs of transactions defined with ISOLATE(NO).

Specify ISOLATE(NO) for those transactions that share any part of their user-key task-lifetime storage.


Transactions with ISOLATE(YES)
Transactions with ISOLATE(NO)
User-key task-lifetime storage
TRN A
TRN B
TRN C
TRN D
TRN E
TRN F
TRN G
CICS-key storage
Read-only to all programs
Write access for all EXECKEY(CICS) programs

This figure shows four transactions — A, B, C, and D — defined with the ISOLATE(YES), and three transactions — E, F, and G — defined with ISOLATE(NO):

- The user-key task-lifetime storage of each of the transactions A, B, C, and D is isolated from all other transactions.
- The user-key task-lifetime storage of transactions E, F, and G is accessible by all the user-key application programs of transactions E, F and G, but is isolated from the user-key programs of transactions A, B, C, and D.
- All the transactions have read-only access to CICS-key storage.

Figure 35. The effect of the ISOLATE attribute of storage access

LOCALQ({NO|YES})
specifies whether queuing on the local system is to be performed.

NO No local queuing is to be performed.

YES Local queuing can be attempted for an EXEC START NOCHECK request when the system is not available and the system name is valid. A system is defined as not available when:

- The system is OUT OF SERVICE when the request is initiated.
- The attempt to initiate any session to the remote system fails and the corrective action taken by the abnormal condition program (DFHZNAC) or the node error program (DFHZNEP) is to place the system OUT OF SERVICE.
- No sessions to the remote system are immediately available, and your XISCONA global user exit program specifies that the request is not to be queued in the issuing region.

Local queuing should be used only for those EXEC START commands that represent time independent requests. The delay implied by local queuing affects the time at which the request is actually started. It is your responsibility to ensure that this condition is met.

If you specify LOCALQ(YES), you cannot specify ROUTABLE(YES).

You can use the global user exit XISLCLQ for the intersystem communication program to override the setting of the LOCALQ attribute. For programming information on the user exits in the intersystem communication program, see the *CICS Customization Guide*.

OTSTIMEOUT({NO|*hhmmss*)
specifies, in hours, minutes, and seconds, the length of time for which an Object Transaction Service (OTS) transaction, created in an enterprise beans environment and executing as a task under this CICS transaction, is allowed to

execute before the initiator of the OTS transaction must take a syncpoint or roll back the transaction. If the specified period expires, CICS purges the task.

The initiator of the OTS transaction may be:
- The client of the enterprise bean.
- The EJB container. (The container issues a syncpoint at the end of the bean method.)
- A session bean that manages its own OTS transactions.

Methods of session beans that manage their own OTS transactions can override the default timeout value by using the `setTransactionTimeout` method of the `javax.Transaction.UserTransaction` interface.

NO OTS transactions will not time out. This is the default.

hhmmss
The period of time (in HHMMSS format) before the task is purged. The maximum period is 24 hours (240000).

PARTITIONSET({*partitionset*|**KEEP**|**OWN**})
specifies the name of the partition set that is to be the default application partition set. The name can be up to eight characters in length.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters you enter are converted to uppercase.

If you do not specify a partition set name or either of the reserved names, CICS destroys existing partitions before the first BMS output to the terminal from the transaction.

partitionset
CICS destroys existing partitions and loads the named partition set before the first BMS output to the terminal from the transaction. (Existing partitions are not destroyed if the terminal partition set matches the application partition set.)

This name must not be the same as that specified in PROGRAM(*name*).

KEEP The transaction uses the application partition set for this terminal, whatever it may be. This option is normally used for successor transactions in a chain of pseudoconversational transactions.

OWN The transaction performs its own partition management.

PRIMEDSIZE
This attribute is obsolete, but is supported to provide compatibility with earlier releases of CICS. For more information, see Appendix A, “Obsolete attributes,” on page 615.

PRIORITY({**1**|*priority*})
specifies the transaction priority. This 1-to 3-digit decimal value from 0 to 255 is used in establishing the overall transaction processing priority. (Transaction processing priority is equal to the sum of the terminal priority, transaction priority, and operator priority, not exceeding 255.) The higher the number, the higher the priority.

PROFILE({**DFHCICST**|*profile*})

is the name of the PROFILE definition that specifies the processing options used in conjunction with the terminal that initiated the transaction.

Acceptable characters:

`A-Z a-z 0-9 $ @ # . / - _ % & ¢ ? ! : | " = ¬ , ; < >`

For information about entering mixed case information, see "Entering mixed case attributes" on page 388.

The default is DFHCICST.

The processing options provided by the default DFHCICST are shown in "PROFILE definitions in group DFHISC" on page 650. DFHCICST is not suitable for use with a distributed program link. Instead, specify DFHCICSA, which has INBFMH=ALL.

PROGRAM(*program*)

specifies the name of the program to which CICS gives control to process this transaction. The name can be up to eight characters in length.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters you enter are converted to uppercase.

Ensure that this name is not the same as that specified in PARTITIONSET(name).

Note: If a name is specified for REMOTESYSTEM, and it differs from that of the current system, no name need be specified for PROGRAM. If, in these circumstances, a name is specified for PROGRAM, it may be ignored.

If this transaction definition is for use on a remote program link request, the program name you specify in this attribute must be the name of the CICS mirror program, DFHMIRS. See the TRANSID attribute on the PROGRAM definition in "TRANSACTION definition attributes" on page 281.

REMOTENAME(*transaction*)

specifies the name of this transaction as it is known in a remote system, if it is to be executed in a remote system or region using intersystem communication. The remote system can be another CICS region or an IMS system. REMOTENAME can be 1 through 4 characters in length if the REMOTESYSTEM attribute specifies another CICS region, or 1 through 8 characters in length if REMOTESYSTEM specifies an IMS system. IMS uses 8-character names and, if REMOTENAME has fewer than 8 characters, IMS translates it into a usable format.

Acceptable characters:

`A-Z a-z 0-9 $ @ # . / - _ % & ¢ ? ! : | " = ¬ , ; < >`

For information about entering mixed case information, see "Entering mixed case attributes" on page 388.

If you specify REMOTESYSTEM and omit REMOTENAME, the value of REMOTENAME defaults to the local name; that is, the TRANSACTION name on this definition. Note that the transaction need not necessarily reside on the remote system or region.

REMOTESYSTEM(*connection*)

specifies the name of the CONNECTION definition of the intercommunication link on which the transaction attach request is sent.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters you enter are converted to uppercase.

This attribute is used for CICS function request shipping (asynchronous processing and transaction routing).

RESSEC({<u>**NO**</u>|**YES**})

specifies whether resource security checking is to be used for resources accessed by this transaction.

<u>**NO**</u>	All resources are available to any user who has the authority to use this transaction.
YES	An external security manager is used. For more details about external security checking, see the *CICS RACF Security Guide*.

RESTART({<u>**NO**</u>|**YES**})

specifies whether the transaction restart facility is to be used to restart those tasks that terminate abnormally and are subsequently backed out by the dynamic transaction backout facility.

If RESTART(YES) is specified, the task that failed is restarted from the beginning of the initial program. If dynamic transaction backout fails, or if restart is suppressed dynamically, DFHPEP is invoked in the normal way. The transaction restart facility is especially useful in such situations as a program isolation deadlock, where the task can be restarted automatically rather than resubmitted manually. A terminal-initiated transaction will be allowed to restart during CICS shutdown even if the transaction is defined as SHUTDOWN(DISABLED). For more details of automatic transaction restart, see the *CICS Recovery and Restart Guide*.

<u>**NO**</u>	The restart facility is not required.
YES	The restart facility is to be used.

ROUTABLE({<u>**NO**</u>|**YES**})

specifies whether, if the transaction is the subject of an eligible EXEC CICS START command, it will be routed using the enhanced routing method.

<u>**NO**</u>	If the transaction is the subject of a START command, it will be routed using the “traditional” method.
YES	If the transaction is the subject of an eligible START command, it will be routed using the enhanced method. If you specify ROUTABLE(YES), you cannot specify LOCALQ(YES).

For details of the enhanced and “traditional” methods of routing transactions invoked by EXEC CICS START commands, see the *CICS Intercommunication Guide*.

RSL

This attribute is obsolete, but is supported to provide compatibility with earlier releases of CICS. For more information, see Appendix A, "Obsolete attributes," on page 615.

RUNAWAY({SYSTEM|0|*milliseconds*})

The amount of time, in milliseconds, for which any task running under this transaction definition can have control of the processor before it is assumed to be in a runaway condition (logical loop). When this interval expires, CICS can abnormally terminate the task.

SYSTEM
CICS is to use the ICVR system initialization parameter value as the runaway time limit for this transaction.

0 There is no limit and no runaway task detection is required for the transaction.

milliseconds
The runaway time limit in the range 500 through 2700000. CICS rounds the value you specify downwards, to a multiple of 500.

SHUTDOWN({DISABLED|ENABLED})

applies to all transactions, and specifies whether it can be run during CICS shutdown. This supplements the XLT option the PERFORM SHUTDOWN command. For a transaction to be attached during shutdown, it must either be defined as SHUTDOWN(ENABLED) or, in the case of terminal-based transactions, be named in the XLT specified in the PERFORM SHUTDOWN command.

DISABLED
The transaction is disabled from running during CICS shutdown.

ENABLED
The transaction is enabled to run during CICS shutdown.

SPURGE({NO|YES})

specifies whether the transaction is initially "system purgeable" or not.

SPURGE=NO prevents a transaction being purged by the deadlock time-out (DTIMOUT) facility, an EXEC CICS ... PURGE command, TWAOCT (Cancel Task) being set in the node error program (NEP), or a CEMT SET ... PURGE command.

SPURGE=YES allows such purges to go ahead as far as the user is concerned. CICS may, however, prevent the purge if it is not safe to allow a purge at the point the transaction has reached.

Note that SPURGE=NO does not prevent a transaction being purged by the read time-out (RTIMOUT) facility, an EXEC CICS SET ... FORCEPURGE command, or a CEMT SET TRANSACTION(tranid) FORCEPURGE command. SPURGE determines only the initial value, which can be changed by the transaction while it is running.

NO The transaction is not initially system purgeable.

YES The transaction is initially system purgeable.

STATUS({ENABLED|DISABLED})

specifies the transaction status.

ENABLED
Allows the transaction to be executed normally.

DISABLED
Prevents the transaction being executed.

STORAGECLEAR({NO|YES})
specifies whether task-lifetime storage for this transaction is to be cleared on release. This can be used to prevent other tasks accidentally viewing any confidential or sensitive data that was being stored by this transaction in task lifetime storage.

TASKDATAKEY({USER|CICS})
specifies the storage key of the storage CICS allocates at task initialization for the duration of the task (task-lifetime storage), and which is accessible by the application. These storage areas are the EXEC interface block (EIB) and the transaction work area (TWA).

TASKDATAKEY also specifies the key of the storage that CICS obtains on behalf of all programs that run under the transaction. The program-related storage that CICS allocates in the specified key includes:

- The copies of working storage that CICS obtains for each execution of an application program.
- The storage CICS obtains for the program in response to implicit and explicit GETMAIN requests. For example, the program can request storage by a GETMAIN command, or as a result of the SET option on other CICS commands.

You must specify TASKDATAKEY(USER) if any of the programs in the transaction is defined with EXECKEY(USER). If you specify TASKDATAKEY(CICS) for a transaction, an attempt to run any program in user key under this transaction leads to a task abend, with abend code AEZD.

USER CICS obtains user-key storage for this transaction. Application programs executing in any key can both read and modify these storage areas.

Note: User-key programs of transactions defined with ISOLATE(YES) have access only to the user-key task-lifetime storage of their own tasks.

User-key programs of transactions defined with ISOLATE(NO) also have access to the user-key task-lifetime storage of other tasks defined with ISOLATE(NO).

See the description of the EXECKEY attribute on the PROGRAM definition for more information about task storage protection.

CICS CICS obtains CICS-key storage for this transaction. Application programs executing in CICS key can both read and modify these storage areas. Application programs executing in user key can only read these storage areas.

TASKDATALOC({BELOW|ANY})
specifies whether task life-time storage acquired by CICS for the duration of the transaction can be located above the 16MB line in virtual storage. These areas, which relate to specific CICS tasks, include the EXEC interface block (EIB) and the transaction work area (TWA).

You must specify TASKDATALOC(BELOW) if any of the programs that make up the transaction runs in 24-bit addressing mode (this also applies to task-related user exits running on behalf of the transaction).

For transactions that do not satisfy any of these conditions, you can specify ANY to obtain the associated virtual storage constraint relief.

CICS polices the use of TASKDATALOC(ANY). In particular:

- An attempt to invoke an AMODE 24 program running under a transaction defined with TASKDATALOC(ANY) results in an AEZC abend.
- An attempt to issue an EXEC CICS command or call a task related user exit while running AMODE(24) with TASKDATALOC(ANY) specified results in an AEZA abend.
- An AMODE 31 program running as a transaction with TASKDATALOC(ANY), which attempts to invoke a task-related user exit that is forced to run AMODE(24), results in an AEZB abend.
- If a task-related user exit that is forced to run in AMODE 24 is enabled for task start, CICS forces TASKDATALOC(BELOW) for all transactions for the remainder of the CICS run.

BELOW
Storage areas that CICS acquires for the transaction must be located below the 16MB line.

ANY Storage areas that CICS acquires for the transaction can be located above the 16MB line in virtual storage.

TASKREQ(*value*)
specifies whether a transaction is to be initiated by pressing a PF key, by using a light pen, or by using a card. Possible values are:

- **PA1**, **PA2**, or **PA3** for PA keys.
- **PF1** through **PF24** for PF keys.
- **OPID** for the operator identification card reader.
- **LPA** for a light-pen-detectable field on a 3270 device.
- **MSRE** for the 10/63 character magnetic slot reader.

Here are some notes on the use of PF and PA keys:

- If a PA or PF key is specified in the PRINT system initialization parameter, you cannot use the same PF key as the TASKREQ to initiate a transaction.
- PA or PF keys specified in the SKR*xxxx* system initialization parameter as page retrieval keys are interpreted as such during a page retrieval session. You can use the same keys to initiate transactions at other times. The keys should be defined with the following values:

```
TASKREQ=KEY-ID
PROGRAM=DFHTPR
TWASIZE=1024
TPURGE=NO
SPURGE=NO
```

- If you define a transaction with PROGRAM(DFHTPR), and define a TASKREQ key, the key initiates the transaction and opens the page retrieval session at the same time.

TCLASS
This attribute is obsolete, but is supported to provide compatibility with earlier releases of CICS. For more information, see Appendix A, “Obsolete attributes,” on page 615.

TPNAME(*name*)
specifies the name of the transaction that may be used by an APPC partner if the 4-character length limitation of the TRANSACTION attribute is too restrictive. This name can be up to 64 characters in length.

Acceptable characters:

`A-Z a-z 0-9 $ @ # . / - _ % & ¢ ? ! : | " = ¬ , ; < >`

For information about entering mixed case information, see "Entering mixed case attributes" on page 388.

If this range of characters is not sufficient for a name that you wish to specify, you may use the XTPNAME attribute instead of TPNAME.

TPURGE({NO|YES})
specifies (for non-VTAM terminals only) whether the transaction can be purged because of a terminal error.

NO The task cannot be purged when a terminal error occurs. Manual intervention by the master terminal operator is required when this happens.

YES The task can be purged when a terminal error occurs.

TRACE({YES|NO})
specifies whether the activity of this transaction is to be traced.

YES Trace the activity for this transaction.

NO Do not trace the activity for this transaction.

Note: The CICS-provided transaction definitions for CEDF and CSGM specify TRACE(NO).

TRANCLASS(DFHTCL00|*tranclass*)
specifies the name of the transaction class to which the transaction belongs. Transactions belonging to a transaction class are subject to scheduling constraints before they are allowed to execute. The reserved TRANCLASS name DFHTCL00 is used to indicate that the transaction does not belong to any transaction class.

Note: If a transaction is run and its associated TRANCLASS definition is not installed, the transaction runs without any of the scheduling constraints specified in the TRANCLASS. Message DFHXM0212 is issued as a warning.

TRANCLASS can be up to 8 characters in length.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters you enter are converted to uppercase.

TRANSACTION(*name*)
specifies the name of the transaction, or transaction identifier (TRANSID). The name can be up to four characters in length.

Acceptable characters:

`A-Z a-z 0-9 $ @ # . / - _ % & ¢ ? ! : | " = ¬ , ; < >`

For information about entering mixed case information, see "Entering mixed case attributes" on page 388.

Do not use transaction names beginning with C, because these are reserved for use by CICS.

Note:

1. If you use a comma (,) in a name, you will be unable to use those commands such as

   ```
   CEMT INQUIRE TRANSACTION(value1,value2)
   CEMT SET     TRANSACTION(value1,value2)
   ```

   where the comma serves as a list delimiter. See *CICS Supplied Transactions* for information about using lists of resource identifiers.
2. If you protect your transient data queues using RACF, avoid using `%` and `&` in the name. RACF commands assign a special meaning to these characters when they are used in a profile name. See the *CICS RACF Security Guide*.

If you wish to use other special characters in a transaction identifier, use the XTRANID attribute to specify another name that can be used to initiate the transaction. You must also specify a TRANSACTION name, because this is the name by which the TRANSACTION definition is known on the CSD file.

When defining a transaction, you must also name either a PROGRAM or a REMOTESYSTEM.

TRANSEC

This attribute is obsolete, but is supported to provide compatibility with earlier releases of CICS. For more information, see Appendix A, “Obsolete attributes,” on page 615.

TRPROF({**DFHCICSS**|*profile*})

specifies the name of the PROFILE for the session that carries intersystem flows during ISC transaction routing. The name can be up to eight characters in length.

Acceptable characters:

`A-Z a-z 0-9 $ @ # . / - _ % & ¢ ? ! : | " = ¬ , ; < >`

For information about entering mixed case information, see “Entering mixed case attributes” on page 388.

You can specify this only for remote transactions.

TWASIZE({**0**|**number**})

specifies the size (in bytes) of the transaction work area to be acquired for this transaction. Specify a 1-to 5-digit decimal value in the range 0 through 32767.

Note:

1. Your storage may be corrupted if your TWASIZE is too small.
2. Do not change the TWASIZE of the CICS-supplied transactions.

WAIT({**YES**|**NO**})

specifies whether an in-doubt unit of work (UOW) is to wait, pending recovery from a failure that occurs after the UOW has entered the in-doubt state.

Note: Old-style transaction definitions using INDOUBT(WAIT) are accepted by CICS, and are interpreted as WAIT(YES) ACTION(BACKOUT).

YES The UOW is to wait, pending recovery from the failure, to resolve its in-doubt state and determine whether recoverable resources are to be backed out or committed. In other words, the UOW is to be **shunted**.

Recoverable resources can include:

- DBCTL databases
- DB2 databases
- Temporary storage queues
- Logically-recoverable intrapartition transient data queues that specify WAIT(YES) in the TDQUEUE definition
- VSAM data sets
- BDAM data sets.

The WAIT(YES) option takes effect **provided that none of the following applies**:

- The transaction has subordinate MRO sessions to back-level systems.
- The transaction has LU6.1 subordinate sessions. (Note that, in this context, LU6.1 IMS sessions are not subordinates.)
- The transaction has more than one session and its coordinator session is to a back-level system, or LU6.1.
- The task-related user exits attached to the transaction do not support the CICS in-doubt protocols.

If none of the above exceptions applies, but there are subordinate LU6.2 sessions to non-CICS Transaction Server for z/OS systems (for example, CICS/6000®) that do not use the CICS Transaction Server for z/OS in-doubt architecture, CICS can indicate that the subordinate should wait by forcing session outage.

If any resources cannot wait for the coordinator's in-doubt resolution, a decision is taken for the transaction in accordance with the ACTION attribute. In practice, the only circumstances that force decisions in this way are updates to transient data queues with WAIT(NO) specified in the TDQUEUE definition, and installations of terminal-related resources. The latter are normally installed using an INSTALL command.

Table 9 shows how the WAIT attribute defined on a TRANSACTION definition and a logically recoverable TDQUEUE definition are resolved when there is a conflict.

NO The UOW is not to wait. CICS immediately takes whatever action is specified on the ACTION attribute.

Table 9. Resolution of WAIT attributes on TRANSACTION and TDQUEUE definitions

WAIT attribute of TDQUEUE definition	WAITACTION attribute of TDQUEUE definition	WAIT attribute of TRANSACTION definition	Action
NO	not applicable	YES	The TD WAIT(NO) overrides WAIT(YES) on the TRANSACTION definition. The UOW is forced to either commit or back out, in accordance with the transaction's ACTION attributes.

Table 9. Resolution of WAIT attributes on TRANSACTION and TDQUEUE definitions (continued)

WAIT attribute of TDQUEUE definition	WAITACTION attribute of TDQUEUE definition	WAIT attribute of TRANSACTION definition	Action
NO	not applicable	NO	The UOW is forced to either commit or back out, in accordance with the transaction's ACTION attributes.
YES	QUEUE	YES	The UOW waits (that is, it is shunted). A request from another task for a lock on the TD queue must wait, and is queued by CICS.
YES	QUEUE	NO	The transaction WAIT(NO) overrides the TDQUEUE definition. The UOW is forced to either commit or back out, in accordance with the transaction's ACTION attributes.
YES	REJECT	YES	The UOW waits (that is, it is shunted). A request from another task for a lock on the TD queue is rejected with the LOCKED condition.
YES	REJECT	NO	The transaction WAIT(NO) overrides the TDQUEUE definition. The UOW is forced to either commit or back out, in accordance with the transaction's ACTION attributes.

Note: If the UOW references more than one transient data queue, and the queues have inconsistent WAIT options, WAIT(NO) always takes precedence and overrides a WAIT(YES). Thus a WAIT(NO) on one TDQUEUE definition forces a failed in-doubt UOW to take either the BACKOUT or COMMIT attribute defined on the UOW's TRANSACTION definition.

WAITTIME({**00,00,00**|*dd,hh,mm*})

specifies how long a transaction is to wait before taking an arbitrary decision about an in-doubt unit of work, based on what is specified in the ACTION attribute.

00,00,00

The transaction waits indefinitely.

dd,hh,mm

The time, in days, hours, and minutes, for which the transaction is to wait. The maximum value is 93,23,59.

WAITTIME takes effect only if WAIT(YES) is specified.

XTPNAME(*value*)

This attribute may be used as an alternative to TPNAME. Enter a hexadecimal string up to 128 characters in length, representing the name of the transaction that may be used by an APPC partner. All hexadecimal combinations are acceptable **except X'40'**. To specify an XTPNAME more than 72 characters long to DFHCSDUP, put an asterisk in column 72. This causes the following line to be concatenated to the current line.

XTRANID(*xtranid*)

You can use this optional attribute to specify another name to be used instead of the TRANSACTION name for initiating transactions. The name may be up to eight hexadecimal digits in length. Because XTRANID is specified in hexadecimal form, you can use a name that contains characters that you cannot specify in the TRANSACTION attribute.

(See also TASKREQ, another transaction alias that can be specified.)

value A 4-byte transaction identifier in hexadecimal notation (the identifier therefore uses up to eight hexadecimal digits). If you specify fewer than eight hexadecimal digits, the identifier is padded on the right with blanks.

Certain values are reserved for use by CICS, and so there are restrictions on the values you can specify:

- The first byte must not be X'C3'.
- The first byte must not be less than or equal to X'40'.
- The value must not be X'00000000'.
- The last three bytes must not be X'FFFFFF'.

Avoid using values in the range X'00' through X'3F' in the second, third and fouth bytes if the transaction is to be attached by unsolicited data received from a terminal defined as a 3270 device, because CICS will interpret these values as control characters, and not as part of the transaction identifier. For example, if you issue EXEC CICS RETURN or EXEC CICS START and specify TRANSID(X'41303238'), then the correct transaction will be attached. However, if you issue EXEC CICS RETURN without specifying a TRANSID, and the 3270 device transmits data that begins with X'41303238', CICS will attempt to attach a transaction as if X'41404040' had been transmitted.

Chapter 31. TSMODEL resource definitions

A TSMODEL resource defines a TS queue name prefix, and associates attributes with that name.

You can also map names directly to a shared TS pool (without the need for a shared sysid).

Note: CICS takes default actions on a region where a TSMODEL is not defined. This means that if you have an AOR and a QOR, and a TSMODEL defined in the AOR directs requests to the QOR, then unless a corresponding TSMODEL exists in the QOR, some queue attributes are taken from default values. For example, the location of a queue (MAIN or AUX) is determined from default settings within CICS. If there is no matching model, the location specified in the EXEC CICS command is used; if there is a model match, the location in this is used.

Defining temporary storage models

You can define temporary storage models in the following ways:

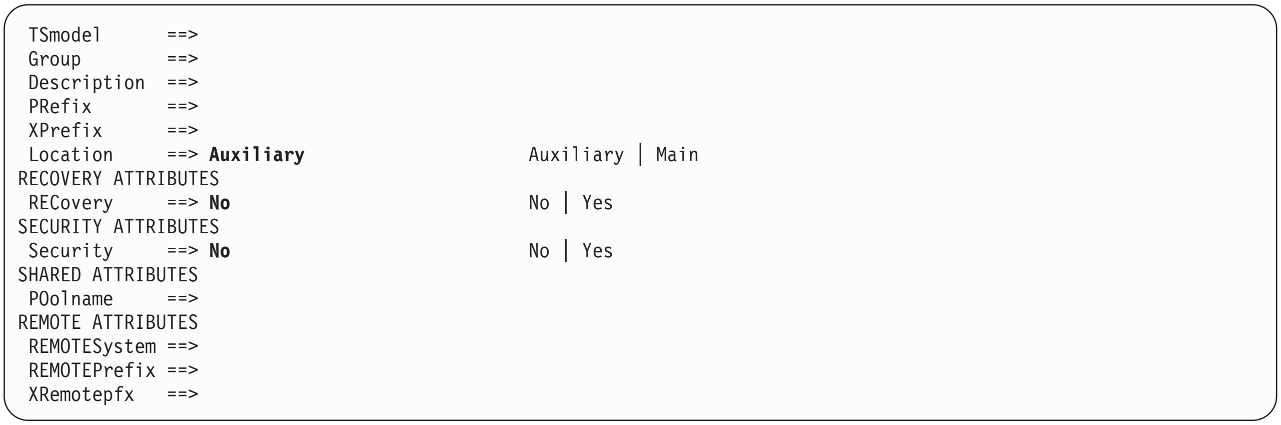
- Using the CEDA transaction; see “Defining temporary storage models using CEDA.”
- Using the DFHCSDUP utility; see *CICS Operations and Utilities Guide*.
- Using the CREATE TSMODEL command; see the *CICS System Programming Reference*.
- Using CICSPlex SM Business Application Services; see *CICSPlex System Manager Managing Business Applications*.

Defining temporary storage models using CEDA

From a CICS terminal, enter the command:

```
CEDA DEFINE TSMODEL(name) GROUP(name)
```

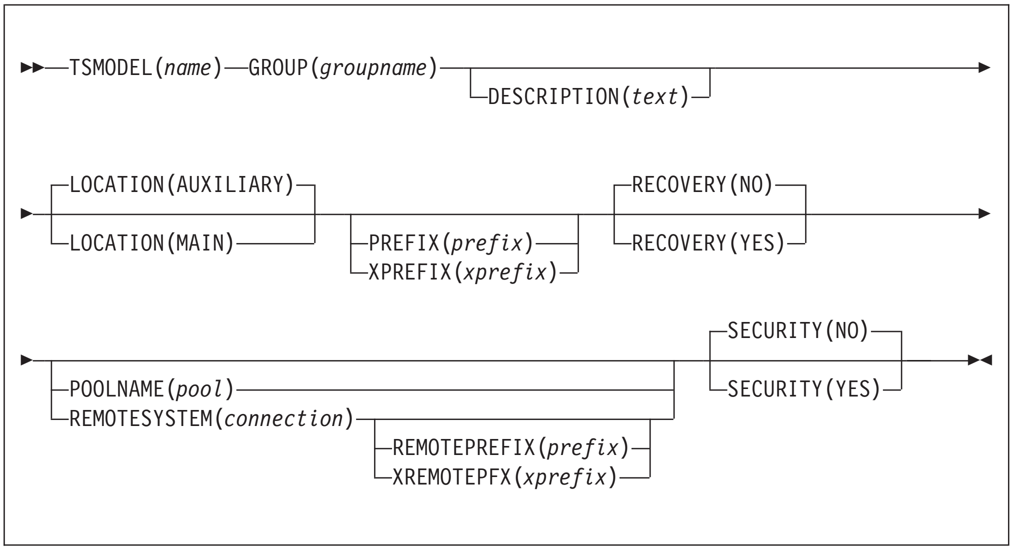
The CEDA panel that is displayed when you enter a valid DEFINE TSMODEL command is:



```
 TSmodel      ==>
 Group        ==>
 Description  ==>
 PRefix       ==>
 XPrefix      ==>
 Location     ==> Auxiliary                    Auxiliary | Main
RECOVERY ATTRIBUTES
 RECovery     ==> No                           No | Yes
SECURITY ATTRIBUTES
 Security     ==> No                           No | Yes
SHARED ATTRIBUTES
 POolname     ==>
REMOTE ATTRIBUTES
 REMOTESystem ==>
 REMOTEPrefix ==>
 XRemotepfx   ==>
```

Figure 36. The DEFINE panel for TSMODEL

TSMODEL definition attributes



DESCRIPTION(*text*)
You can provide a description of the resource you are defining in this field. The description text can be up to 58 characters in length. There are no restrictions on the characters that you can use. However, if you use parentheses, ensure that for each left parenthesis there is a matching right one. If you use the CREATE command, for each single apostrophe in the text, code two apostrophes.

GROUP(*groupname*)
Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed.

Acceptable characters:

`A-Z 0-9 $ @ #`

Any lower case characters you enter are converted to upper case.

The GROUP name can be up to eight characters in length. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

LOCATION({**AUXILIARY**|**MAIN**})
specifies whether the queue is to be held in auxiliary or main storage:

AUXILIARY
Queues matching this model are to be held on auxiliary storage. Whatever is specified on the API request is disregarded.

MAIN Queues matching this model are to be held in main storage. Whatever is specified on the API request is disregarded.

Note:

1. TSMODEL definitions created using the Migrate command have their location attribute set to the default value *AUXILIARY*.

2. LOCATION is ignored for remote TSMODELs and shared TS pool models. Using LOCATION on a remote entry allows the same definition to be installed in both a local and remote region. See "Shared resources for intercommunication" on page 10.

POOLNAME(*pool*)

specifies the 8-character name of the shared TS pool definition that you want to use with this TSMODEL definition. The name can be up to eight characters in length.

> **Acceptable characters:**
>
> `A-Z 0-9 $ @ # -`
>
> Any lowercase characters you enter are converted to uppercase.

Embedded blanks are not acceptable and a name consisting entirely of blanks is treated as though no Poolname had been supplied.

You cannot specify POOLNAME if REMOTESYSTEM is also specified.

Note: CICS does not search for a matching TSMODEL if an application program specifies a SYSID on the EXEC CICS temporary storage command, or if a SYSID is added by an XTSEREQ global user exit program. To enable CICS to find the name of a temporary storage data sharing pool when the application program explicitly specifies a SYSID, you need to use a TST with a suitable TYPE=SHARED entry. See *CICS Operations and Utilities Guide* for more information about migrating a TST with TYPE=SHARED entries.

PREFIX(*prefix*)

specifies the character string that is to be used as the prefix for this model. The prefix may be up to 16 characters in length.

> **Acceptable characters:**
>
> `A-Z a-z 0-9 $ @ # . / - _ % & ¢ ? ! : | " = ¬ , ; < >`
>
> For information about entering mixed case information, see "Entering mixed case attributes" on page 388.

You can specify generic values for the PREFIX attribute. To specify a generic value, use the following wildcard character:

+ Matches exactly one character. You can use the wildcard character one or more times in the PREFIX attribute.

For example:
ABC+ matches ABCD and ABCE, but not ABC or ABDE
P++S matches PQRS, but not PQS or PQRSS

Creating a TSMODEL definition with a blank prefix can produce unexpected results. A TSMODEL definition with a blank prefix matches any queue name that is not matched by any other TSMODEL definition.

Note: To enable CICS to find the name of a temporary storage data sharing pool when the application program explicitly specifies a SYSID, you need to use a TST with a suitable TYPE=SHARED entry. See *CICS Operations and Utilities Guide* for more information about migrating a TST with TYPE=SHARED entries.

RECOVERY({NO|YES})
specifies whether or not queues matching this model are to be recoverable.

NO queues matching this model are to be non-recoverable.

YES queues matching this model are to be recoverable.

RECOVERY(YES) is not allowed with LOCATION(MAIN).

REMOTEPREFIX(*prefix*)
specifies the character string that is to be used as the prefix on the remote system. The prefix may be up to 16 characters in length.

Acceptable characters:

`A-Z a-z 0-9 $ @ # . / - _ % & ¢ ? ! : | " = ¬ , ; < >`

For information about entering mixed case information, see “Entering mixed case attributes” on page 388.

You can specify generic values for the REMOTEPREFIX attribute. To specify a generic value, use the following wildcard character:

+ Matches exactly one character. You can use the wildcard character one or more times in the PREFIX attribute.

For example:
ABC+ matches ABCD and ABCE, but not ABC or ABDE
P++S matches PQRS, but not PQS or PQRSS

REMOTEPREFIX is not allowed unless REMOTESYSTEM is also specified.

If REMOTEPREFIX is specified:

- Its length must be the same as the length of Prefix.
- If wild characters are used, they must be in the same position in Prefix and Remoteprefix as in the following example:

```
Prefix:        A++D
Remoteprefix:  X++Y
```

REMOTESYSTEM(*connection*)
specifies the name of the connection that links the local system to the remote system where the temporary storage queue resides.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters you enter are converted to uppercase.

Embedded blanks are not acceptable and a name consisting entirely of blanks is treated as though no Remotesystem had been specified.

REMOTESYSTEM and POOLNAME are mutually exclusive. If REMOTESYSTEM is specified, POOLNAME is ignored.

SECURITY({NO|YES})
specifies whether security checking is to be performed for queues matching this model.

NO security checking is not to be performed for queues matching this model.

YES security checking is to be performed for queues matching this model.

For more information, see the *CICS RACF Security Guide*.

TSMODEL(*name*)
specifies the name of this TSMODEL definition. The name can be up to eight characters in length.

Acceptable characters:

`A-Z a-z 0-9 $ @ # . / - _ % & ¢ ? ! : | " = ¬ , ; < >`

For information about entering mixed case information, see “Entering mixed case attributes” on page 388.

Embedded blanks are not acceptable.

This name is used to identify the TSMODEL definition on the CSD file. It is not used within the active CICS system.

XPREFIX(*xprefix*)
may be used as an alternative to PREFIX. Enter a hexadecimal string, up to 32-characters in length, that is to be used as the prefix for this model. Because XPREFIX is specified in hexadecimal form, you can use a name that contains characters that you cannot enter in the PREFIX attribute.

You can specify generic values for the XPREFIX attribute. To specify a generic value, use the following wildcard character:

X'4E' Matches exactly one character. You can use the wildcard character one or more times in the XPREFIX attribute.

XREMOTEPFX(*xprefix*)
may be used as an alternative to REMOTEPREFIX. Enter a hexadecimal string, up to 32-characters in length, that is to be used as the prefix on the remote system. Because XREMOTEPREFIX is specified in hexadecimal form, you can use a name that contains characters that you cannot enter in the REMOTEPREFIX attribute.

You can specify generic values for the XREMOTEPREFIX attribute. To specify a generic value, use the following wildcard character:

X'4E' Matches exactly one character. You can use the wildcard character one or more times in the XPREFIX attribute.

Chapter 32. TYPETERM resource definitions

A TYPETERM resource defines a set of attributes that are common to a group of terminals.

The resource is a logical extension of the TERMINAL resource. If you have a number of terminals with the same properties, you would define one TYPETERM with the required values, and then name that TYPETERM in each TERMINAL definition (or in the autoinstall model definition if you are using autoinstall).

Each TERMINAL definition must name a TYPETERM definition. This single attribute represents many other characteristics, and thus can save considerable effort, and reduce the chance of making mistakes. TYPETERMs make it easier to define your terminals if you have many terminals of the same kind.

Two TYPETERM attributes are worthy of note here, because they further simplify the terminal definition process:
  DEVICE
  QUERY

DEVICE

specifies the **device type** that the TYPETERM represents. This is a key attribute, because the default values for a number of other attributes depend on the value you supply for it:

- Some attributes are always the same for every device of the same type. You do not need to define all these attributes yourself, because RDO knows what they are. All you need to tell RDO is the device type of your terminals, when you define the TYPETERM for them. Values for the fixed attributes are supplied automatically.
- Other attributes are given default values, depending on the device type. However, you do not have to use the values that CICS supplies; you can specify different values if you wish. If you change the device type in a TYPETERM definition, the default values are not reset.

You must supply a value for the DEVICE attribute, because there is no default.

For a list of terminals supported by RDO, see “Devices supported” on page 312. There is also a list of valid values for the DEVICE attribute of TYPETERM in “Default values for TYPETERM attributes” on page 307. This shows you the other attribute values supplied for different device types. In some cases, these values depend also on your values for SESSIONTYPE and TERMMODEL, but these too have defaults that depend on the DEVICE specified.

Apart from ordinary display devices, printers, and other more specialized input and output devices, you can create a TYPETERM definition for your CICS consoles.

QUERY

The QUERY attribute allows you to leave some features of your terminals undefined until they are connected. Information about these attributes can then be obtained by CICS itself using the QUERY structured field.

All attributes for which you can use QUERY are also TYPETERM attributes. They are:
  ALTPAGE
  ALTSCREEN
  APLTEXT

BACKTRANS
CGCSGID
COLOR
EXTENDEDDS
HILIGHT
MSRCONTROL
OBFORMAT
OUTLINE
PARTITIONS
PROGSYMBOLS
SOSI
VALIDATION

The use of QUERY overrides any value that is explicitly defined for any of the TYPETERM attributes listed above, **except ALTSCREEN**. QUERY-supplied ALTSCREEN values are used only if no ALTSCREEN value is explicitly defined in the TYPETERM.

You can use QUERY for 3270 devices with the extended 3270 data stream. The DEVICE types for which you can use QUERY are:

3270
3270P
LUTYPE2
LUTYPE3
SCSPRINT

You can specify that QUERY be used in one of two ways:

- QUERY(COLD) specifies that the QUERY is to be issued only when the terminal is first connected after an initial or a cold start.
- QUERY(ALL) specifies that the QUERY is to be issued each time the terminal is connected.

The QUERY function is particularly useful with configurable devices, such as the IBM Personal System/2 (PS/2) and the IBM 3290. It enables you to reconfigure the device between logging off and logging on to CICS, without having to change any resource definitions.

The QUERY function is also particularly useful when used in conjunction with autoinstall.

Note that the QUERY facility obtains only the information required by CICS. If an application program needs to determine other device characteristics, it still needs to send a QUERY structured field and analyze the reply.

To summarize, you may need only one TYPETERM definition for each device type. If the attributes that can be determined by QUERY differ among the terminals, you still need only one TYPETERM for each device type. If other attributes of your terminals vary, you may need more than one TYPETERM definition for a device type.

There are some CICS-supplied TYPETERM definitions suitable for the more frequently used terminals. These are described in “TYPETERM definitions in group DFHTYPE” on page 643.

When all your terminals are basically the same, you can have only one TYPETERM definition, and one TERMINAL definition with AUTINSTMODEL(YES). You might like to use QUERY to deal with different features used by your terminals.

Default values for TYPETERM attributes

When you specify the DEVICE, SESSIONTYPE and TERMMODEL in a TYPETERM definition, CICS supplies default values for many of the other attributes. The default values are shown in Table 10. Note that for some attributes, the supplied values are mandatory, and you cannot change them.

Table 10. Default values for TYPETERM attributes

DEVICE	SESSIONTYPE	TERMMODEL	Default values

3270
3277
L3277
See note 1 on page 312
		1	DEFSCREEN(12,40)
			PAGESIZE(12,40)
			AUTOPAGE(N)
			BRACKET(Y)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

3270		2 (default value)	DEFSCREEN(24,80)
			PAGESIZE(24,80)
			AUTOPAGE(N)
			BRACKET(Y)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

3275		1	DEFSCREEN(12,40)
			PAGESIZE(12,40)
			AUTOPAGE(N)
			BRACKET(Y)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

3275		2 (default value)	DEFSCREEN(24,80)
			PAGESIZE(24,80)
			AUTOPAGE(N)
			BRACKET(Y)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

3270P
3284
L3284
3286
L3286
See note 2 on page 312
		1	DEFSCREEN(12,40)
			PAGESIZE(12,40)
			AUTOPAGE(Y)
			BRACKET(Y)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

3270P		2 (default value)	DEFSCREEN(24,80)
			PAGESIZE(24,80)
			AUTOPAGE(Y)
			BRACKET(Y)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

APPC			DEFSCREEN(0,0)
			PAGESIZE(1,40)
			AUTOPAGE(Y)
			BRACKET(Y) (mandatory)
			BUILDCHAIN(Y) (mandatory)
			ROUTEDMSGS(NONE) (mandatory)

Table 10. Default values for TYPETERM attributes (continued)

DEVICE	SESSIONTYPE	TERMMODEL	Default values

CONSOLE			DEFSCREEN(0,0) (mandatory)
			PAGESIZE(1,124) (mandatory)
			AUTOPAGE(N)
			BRACKET(N) (mandatory)
			BUILDCHAIN(N) (mandatory)
			ROUTEDMSGS(NONE)

LUTYPE2		1	DEFSCREEN(12,40)
			PAGESIZE(12,40)
			AUTOPAGE(N)
			BRACKET(Y) (mandatory)
			BUILDCHAIN(Y) (mandatory)
			ROUTEDMSGS(ALL)

LUTYPE2		2 (default value)	DEFSCREEN(24,80)
			PAGESIZE(24,80)
			AUTOPAGE(N)
			BRACKET(Y) (mandatory)
			BUILDCHAIN(Y) (mandatory)
			ROUTEDMSGS(ALL)

LUTYPE3		1	DEFSCREEN(12,40)
			PAGESIZE(12,40)
			AUTOPAGE(Y)
			BRACKET(Y) (mandatory)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

LUTYPE3		2 (default value)	DEFSCREEN(24,80)
			PAGESIZE(24,80)
			AUTOPAGE(Y)
			BRACKET(Y) (mandatory)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

LUTYPE4			DEFSCREEN(0,0)
			PAGESIZE(50,80)
			AUTOPAGE(Y)
			BRACKET(Y) (mandatory)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

BCHLU	(default value)		DEFSCREEN(0,0)
			PAGESIZE(12,80)
			AUTOPAGE(Y)
			BRACKET(Y) (mandatory)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

BCHLU	BATCHDI		DEFSCREEN(0,0)
			PAGESIZE(12,80)
			AUTOPAGE(Y)
			BRACKET(Y) (mandatory)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

BCHLU	USERPROG		DEFSCREEN(0,0)
			PAGESIZE(12,80)
			AUTOPAGE(Y)
			BRACKET(Y) (mandatory)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

Table 10. Default values for TYPETERM attributes (continued)

DEVICE	SESSIONTYPE	TERMMODEL	Default values

INTLU			DEFSCREEN(0,0)
			PAGESIZE(12,80)
			AUTOPAGE(Y)
			BRACKET(Y)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

SCSPRINT			DEFSCREEN(0,0) (mandatory)
			PAGESIZE(24,80)
			AUTOPAGE(Y)
			BRACKET(Y) (mandatory)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

TLX or TWX	CONTLU (default value)		DEFSCREEN(0,0)
			PAGESIZE(1,40)
			AUTOPAGE(Y)
			BRACKET(Y)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

TLX or TWX	INTLU		DEFSCREEN(0,0)
			PAGESIZE(1,40)
			AUTOPAGE(Y)
			BRACKET(Y)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

3600	(default value)		DEFSCREEN(0,0)
			PAGESIZE(1,40)
			AUTOPAGE(Y)
			BRACKET(Y)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

3600	PIPELINE		DEFSCREEN(0,0)
			PAGESIZE(6,30)
			AUTOPAGE(Y)
			BRACKET(Y)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

3614			DEFSCREEN(0,0)
			PAGESIZE(1,40)
			AUTOPAGE(Y)
			BRACKET(Y)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

3650	USERPROG (default value)		DEFSCREEN(0,0)
			PAGESIZE(3,80)
			AUTOPAGE(Y)
			BRACKET(Y)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

3650	3270		DEFSCREEN(12,40)
			PAGESIZE(23,80)
			AUTOPAGE(Y)
			BRACKET(Y)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

Table 10. Default values for TYPETERM attributes (continued)

DEVICE	SESSIONTYPE	TERMMODEL	Default values

3650	3653		DEFSCREEN(0,0)
			PAGESIZE(6,30)
			AUTOPAGE(Y)
			BRACKET(Y)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

3650	PIPELINE		DEFSCREEN(0,0)
			PAGESIZE(6,30)
			AUTOPAGE(Y)
			BRACKET(Y)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

3767			DEFSCREEN(0,0)
			PAGESIZE(12,80)
			AUTOPAGE(Y)
			BRACKET(Y) (mandatory)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

3767C			DEFSCREEN(0,0)
			PAGESIZE(12,80)
			AUTOPAGE(Y)
			BRACKET(Y) (mandatory)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

3767I			DEFSCREEN(0,0)
			PAGESIZE(12,80)
			AUTOPAGE(Y)
			BRACKET(Y) (mandatory)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

3770	(default value)		DEFSCREEN(0,0)
			PAGESIZE(12,80)
			AUTOPAGE(Y)
			BRACKET(Y) (mandatory)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

3770	USERPROG		DEFSCREEN(0,0)
			PAGESIZE(12,80)
			AUTOPAGE(Y)
			BRACKET(Y) (mandatory)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

3770	BATCHDI		DEFSCREEN(0,0)
			PAGESIZE(12,80)
			AUTOPAGE(Y)
			BRACKET(Y) (mandatory)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

3770B	(default value)		DEFSCREEN(0,0)
			PAGESIZE(12,80)
			AUTOPAGE(Y)
			BRACKET(Y) (mandatory)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

Table 10. Default values for TYPETERM attributes (continued)

DEVICE	SESSIONTYPE	TERMMODEL	Default values

3770B	BATCHDI		DEFSCREEN(0,0)
			PAGESIZE(12,80)
			AUTOPAGE(Y)
			BRACKET(Y) (mandatory)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

3770B	USERPROG		DEFSCREEN(0,0)
			PAGESIZE(12,80)
			AUTOPAGE(Y)
			BRACKET(Y) (mandatory)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

3770C			DEFSCREEN(0,0)
			PAGESIZE(12,80)
			AUTOPAGE(Y)
			BRACKET(Y) (mandatory)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

3770I			DEFSCREEN(0,0)
			PAGESIZE(12,80)
			AUTOPAGE(Y)
			BRACKET(Y) (mandatory)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

3790	(default value)		DEFSCREEN(0,0)
			PAGESIZE(1,40)
			AUTOPAGE(Y)
			BRACKET(Y) (mandatory)
			BUILDCHAIN(N)
			ROUTEDMSGS(NONE) (mandatory)

3790	SCSPRINT		DEFSCREEN(0,0)
			PAGESIZE(24,80)
			AUTOPAGE(Y)
			BRACKET(Y) (mandatory)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

3790	USERPROG		DEFSCREEN(0,0)
			PAGESIZE(12,80)
			AUTOPAGE(Y)
			BRACKET(Y) (mandatory)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

3790	BATCHDI		DEFSCREEN(0,0)
			PAGESIZE(12,80)
			AUTOPAGE(Y)
			BRACKET(Y) (mandatory)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

3790	3277CM
	See note 3 on page 312
		1	DEFSCREEN(12,40)
			PAGESIZE(12,40)
			AUTOPAGE(N)
			BRACKET(Y) (mandatory)
			BUILDCHAIN(Y) (mandatory)
			ROUTEDMSGS(ALL)

Table 10. Default values for TYPETERM attributes (continued)

DEVICE	SESSIONTYPE	TERMMODEL	Default values

3790	3277CM
	See note 3
		2 (default value)	DEFSCREEN(24,80)
			PAGESIZE(24,80)
			AUTOPAGE(N)
			BRACKET(Y) (mandatory)
			BUILDCHAIN(Y) (mandatory)
			ROUTEDMSGS(ALL)

3790	3284CM
	See note 4
		1	DEFSCREEN(12,40)
			PAGESIZE(12,40)
			AUTOPAGE(Y)
			BRACKET(Y) (mandatory)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

3790	3284CM
	See note 4
		2 (default value)	DEFSCREEN(24,80)
			PAGESIZE(24,80)
			AUTOPAGE(Y)
			BRACKET(Y) (mandatory)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

3790	3286CM
	See note 4
		1	DEFSCREEN(12,40)
			PAGESIZE(12,40)
			AUTOPAGE(Y)
			BRACKET(Y) (mandatory)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

3790	3286CM
	See note 4
		2 (default value)	DEFSCREEN(24,80)
			PAGESIZE(24,80)
			AUTOPAGE(Y)
			BRACKET(Y) (mandatory)
			BUILDCHAIN(N)
			ROUTEDMSGS(ALL)

Note:

1. If you specify DEVICE(3277) or DEVICE(L3277), CICS replaces the value you specify with DEVICE(3270)
2. If you specify DEVICE(3284), DEVICE(3286), DEVICE(L3284) or DEVICE(L3286), CICS replaces the value you specify with DEVICE(3270P)
3. If you specify DEVICE(3790) and SESSIONTYPE(3277CM), CICS replaces the values you specify with DEVICE(LUTYPE2). There is no SESSIONTYPE value DEVICE(LUTYPE2).
4. If you specify DEVICE(3790) and SESSIONTYPE(3284CM) or SESSIONTYPE(3286CM), CICS replaces the values you specify with DEVICE(LUTYPE3). There is no SESSIONTYPE value DEVICE(LUTYPE3).

Devices supported

This topic lists the device names that you can use on the TYPETERM definition.

Table 11 on page 313 is a list of terminal types supported by RDO.

To use Table 11 on page 313, find the family number of your device in the leftmost column (headed **Terminal or System Type**). Then look across at the second column (headed **Units**) to see if your type of units is specifically mentioned. Next look at the third column (headed **Attachment**) to see what device type you should use on your TYPETERM definition.

There is further explanation of the information in Table 11 in the notes that follow. The following abbreviations have been used:

local	channel or adapter attached
s/s	start/stop transmission
SDLC	synchronous data link control
sw	switched
BSC	binary synchronous
nonsw	nonswitched communications

Table 11. VTAM terminals and subsystems supported by RDO

Terminal or System Type	Units	Attachment	Notes
3101		Supported as TWX 33/35	9 on page 316
3230		Supported as INTLU (VTAM)	
3270	3178, 3179, 3180, 3262, 3271, 3272, 3274, 3276, 3290	local, SDLC, BSC nonsw	1 on page 315, 2 on page 315
	3275, 3277, 3278, 3279, 3284, 3286, 3287, 3288, 3289	BSC sw or nonsw	2 on page 315
3270PC	3270PC, 3270PC/G, 3270PC/GX	Supported as 3270	
3287	models 11, 12	SDLC supported as SCSPRT	12 on page 316
3600	3601, 3602, 3690, 3604, 3610, 3612, 3618, 3614, 3624	SDLC, BSC nonsw	3 on page 315,4 on page 316,13 on page 316
3630	3631, 3632, 3643, 3604	attached as 3600	3 on page 315,10 on page 316
3640	3641, 3644, 3646, 3647	SDLC attached as INTLU	12 on page 316
	3642	SDLC attached as SCSPRT	12 on page 316
	3643	SDLC supported as LUTYPE2	12 on page 316
	3645	SDLC supported as SCSPRT	12 on page 316
3650	3651, 3653, 3275, 3284	SDLC	3 on page 315
3680	3684	Supported as 3790/3650	3 on page 315
3730	3791	Supported as 3790	3 on page 315
3767		SDLC s/s supported as 2740/2741	
3770	3771, 3773, 3774	SDLC	3 on page 315,5 on page 316
	3775, 3776, 3777	BSC supported as 2770	
3790	3791	SDLC or local	3 on page 315,6 on page 316
4300	4331, 4341, 4361, 4381	BSC or SDLC	3 on page 315,7 on page 316

Table 11. VTAM terminals and subsystems supported by RDO (continued)

Terminal or System Type	Units	Attachment	Notes
4700	4701-1	Supported as 3600	3 on page 315,4 on page 316
5280		Supported as 3270 (VTAM)	
5520		SDLC supported as 3790 full-function LU BSC supported as 2770 SDLC attached as APPC	3 on page 315
5550		Supported as 3270	
5937		SDLC/BSC attached as 3270	2 on page 315
6670		SDLC BSC supported as 2770	
8100	8130/8140 processors with DPCX	Supported as 3790	3 on page 315
	DPPX/BASE using Host Presentation Services or Host Transaction Facility	Attached as 3790	3 on page 315
	DPPX/DSC or DPCX/DSC (including 8775 attach)	Supported as 3270	3 on page 315,11 on page 316
8775		SDLC supported as LUTYPE2	
8815		Supported as APPC	
Displaywriter		Supported as APPC SNA for EDDS Supported as 3270; attached as 2741 (s/s)or 3780 (BSC) SDLC attached as APPC	
Personal Computer		Supported as 3270 and as APPC	13 on page 316
PS/2		Supported as 3270 and as APPC	13 on page 316
Scanmaster		Supported as APPC	
Series/1		Attached as System/3;supported as 3650 Pipeline (VTAM) or 3790 (full function LU)	3 on page 315
System/32	5320	SDLC supported as 3770 BSC supported as 2770	3 on page 315,8 on page 316
System/34	5340	SDLC supported as 3770 BSC attached as System/3	3 on page 315,8 on page 316
System/36		Supported as System/34 SDLC attached as APPC	

Table 11. VTAM terminals and subsystems supported by RDO (continued)

Terminal or System Type	Units	Attachment	Notes
System/38	5381	SDLC attached as 3770 SDLC attached as APPC BSC attached as System/3	3,8 on page 316
AS/400	5381	SDLC attached as 3770 SDLC attached as APPC BSC attached as System/3	3,8 on page 316
System/370		BSC or SDLC and APPC	3,7 on page 316
System/390®		BSC or SDLC and APPC	3,7 on page 316
TWX 33/35		VTAM (via NTO) ss sw	9 on page 316
WTTY		VTAM (via NTO) ss nonsw	9 on page 316

Note:

1. CICS supports the 3290 through both the terminal control and the BMS interfaces. The 3290 can be in one of three states: default, alternate, or partitioned. Up to 16 partitions can be defined. The 3290 also has the programmed symbols and extended highlighting features, as well as two kinds of data validation feature, mandatory fill and mandatory enter. A 3290 terminal can be configured as from one to five logical units. You define the size of each logical unit when setting up the 3290. You must ensure that the resource definitions of each logical unit match the set-up size, to prevent unpredictable results. Up to four interactive screens in any configuration can be active at the same time, but only one interactive screen can be defined as having programmed symbols at any time; that is, all programmed symbol sets must be assigned to the interactive screen.

   To display long lines of data, such as the 132-character lines of CEMT output, specify a default screen width of 132 characters.

   If you intend to use the large buffer, you might have to specify a much larger value for IOAREALEN (see "TYPETERM definition attributes" on page 321). Whether you need to do this depends on whether operators are likely to modify, or enter, large quantities of data. If a terminal is used for inquiry only, or for limited data entry, IOAREALEN need not be large.
2. SDLC 3270s are supported only through VTAM. Printers attached to local or SDLC 3274s and SDLC 3276s are supported through VTAM either as LU Type 3 using the 3270 printer data stream or as LU Type 1 using the SCS data stream (which is a subset of that used for SDLC 3767, 3770, and 3790 printers). The 3288 is supported as a 3286 Model 2. CICS supports the 3270 copy feature (#1550).
3. Devices and features supported by a system or programmable controller are generally transparent to CICS. In some cases, CICS provides specific device support, in which case the units are listed.

4. SDLC is supported through VTAM. The 3614 is supported both for loop attachment to the 3601 and SDLC attachment to the host via a 3704/3705 Communications Controller.

   The 3614 is supported by CICS as BSC only when loop-attached to the 3601/3602 Controllers. The 3624 is supported as a 3614.

   The 3690 is supported as a 3602.
5. CICS supports the Data Transfer Function of the SDLC Programmable Models of the 3770 Data Communication System. In using this function, you are responsible for allocating data sets and managing the program library.
6. CICS does not support the 3790/Data Entry Configuration using 3760s. The #9165 or #9169 configuration is required to support the CICS enhancement first made available in Version 1 Release 3.0.

   Printers on 3790 systems are supported with one of the following:
   - A function program that you provide
   - 3270 data stream compatibility with a 3270 printer data stream (LU3)
   - An SCS data stream supporting a subset of that for SDLC 3767 (LU1)

   When operating in 3270 mode, the 3288 Model 2 is supported as a 3286 Model 2.
7. System/370 and 4300 attachment by BSC requires a suitable telecommunications program (for example, the VSE/3270 Bisync Pass Through Program) in the system connected to CICS. CICS is **not** a suitable program for the remote CPU. Attachment by SDLC is supported by CICS intersystem communication.
8. The System/32 with its SNA/SDLC workstation system utility program, and the System/34 and System/38, are supported as compatible versions of an appropriately featured 3770 Communication System operating as a batch logical unit. The System/34 or System/38 user-written program is responsible for supporting the correct SNA sequences of the attached subsystem.
9. TWX and WTTY are supported through VTAM via the Network Terminal Option program product (5735-XX7), with attachments as defined by NTO.

   WTTY is attached at 50 bps on common-carrier switched networks where the terminals supported are those interfacing through IBM World Trade Corporation Telegraph Terminal Control with Telegraph Line Adapter.

   The transmission code used is International Telegraph Alphabet No. 2 (CCITT No. 2). CICS does not support autocall or automatic host disconnect via WRITE break.
10. The 3643 is supported as a 3604.
11. 8775 support includes validation of mandatory fill and mandatory enter field attributes.
12. Attachment is via the Loop Adapter #4830, #4831, and Data Link Adapter #4840 of the 4331 processor.
13. 3270 support requires that the 3278/3279 Emulation Adaptor be installed in the Personal Computer or PS/2.
14. The 3600 pipeline logical unit is designed to provide high throughput for particular types of transaction, such as credit card authorization or general inquiry applications. To achieve a high throughput of inquiry

messages and their replies, the CICS pipeline session uses a restricted set of the communication protocols that are used with the 3601 logical unit.

These restrictions result in a full duplex message flow whereby many inquiry messages are outstanding at any one time, and the replies may flow back in a different order from that of the original inquiries. The 4700/3600 application program controlling the inquiry terminals is responsible for maintaining the protocols as well as correlating replies with inquiries, and controlling message flow to the group of terminals associated with the pipeline logical unit.

CICS does not support automatic transaction initiation (ATI) on pipeline terminals.

Extended recovery (XRF) for terminals

XRF-capable, or class 1, terminals are SNA terminals connected to both active and alternate CICS systems through a boundary network node communications controller, using NCP and VTAM with XRF capability.

Three TYPETERM attributes relate specifically to the use of XRF for terminals:

`RECOVNOTIFY`

This applies only to class 1 terminals. You use it to specify how the terminal user is notified when an XRF takeover has occurred. You can specify either a simple message to be displayed, or a transaction that can do more than that. In either case, all the terminals for which you specify MESSAGE get the same message, and all the terminals for which you specify TRANSACTION get the same transaction.

There are two messages, DFHXRC1 and DFHXRC2, that you may edit in mapset DFHXMSG. Alternatively you can change the name of the map passed to the node error program. You specify the transaction using the RMTRAN system initialization operand, which defaults to the 'good morning' transaction specified in GMTRAN system initialization operand.

MESSAGE is more efficient than TRANSACTION, and minimizes the takeover time.

`RECOVOPTION`

specifies how CICS is to recover the terminal session and return the terminal to service, after an XRF takeover. The **NONE** option leaves the terminal with no XRF support: the logon status of the terminal is not tracked by the alternate system and the terminal session is not automatically recovered after a takeover. The system default allows CICS to optimize the recovery of the terminal. However, there are circumstances in which you must specify one of the other options.

For XRF-capable, or class 1, terminals there are five options: NONE and four others. If, at takeover, a terminal is executing a transaction in the active CICS, the transaction is backed out, but the session remains busy. **SYSDEFAULT** allows CICS to clean up this busy session in the most efficient way. CICS uses one of three methods, in this order of preference:

1. Send an end-bracket (EB) indicator to close the in-bracket state.
2. Send a CLEAR request to reset all session states.
3. Send an UNBIND request to release the session.

If the terminal cannot handle an unexpected EB, specify **CLEARCONV**: CICS sends a CLEAR or an UNBIND request. This might apply if the terminal is programmable (intelligent).

If the terminal cannot handle an unexpected EB indicator or a CLEAR request, specify **RELEASESESS**: CICS sends an UNBIND request to release the session.

If the terminal must know at all times to which system it is connected, specify **UNCONDREL**: CICS sends an UNBIND request to release the session, **whether it is busy or not**. This might apply if the terminal is programmable (intelligent).

If, for any reason, an UNBIND request is sent, a new session is initiated by CICS, if the terminal is capable of performing a SIMLOGON.

For other terminals (class 2 and class 3), there is effectively a choice between NONE (no XRF support) and any one of the other options. Any option other than NONE causes the alternate system to track the logon status of the terminal and, if the terminal was logged on, to initiate a logon, and to re-establish a session, if possible.

RSTSIGNOFF

You can specify whether terminal users are signed off automatically in the event of a persistent sessions restart or an XRF takeover. For example, if a terminal becomes unresponsive because of a session failure, the terminal user may take the opportunity to leave the terminal for a break. If the terminal becomes active while unattended, it could be used by a malicious user. In a secure area, where access is restricted to known individuals, this may not be an issue, and the terminal user could remain signed on. However, in an open area, accessible to large numbers of people, it may be advisable to sign the terminal off.

You can specify this behaviour at three levels:

At the system level

Specify RSTSIGNOFF=FORCE as a system initialization parameter, to ensure that all users are signed off in the event of a persistent sessions restart or XRF takeover, regardless of what is specified at the other levels

At the terminal level

Specify RSTSIGNOFF(FORCE) in the TYPETERM definition, to ensure that all users of a group of terminals are signed off, regardless of what is specified at the other levels

At the individual user level

Specify XRFSOFF(FORCE) in the CICS segment of the RACF profile for a user, to ensure that an individual user is signed off, regardless of what is specified at the other levels.

To ensure that the terminal user remains signed on, you must specify all of the following:

- RSTSIGNOFF=NOFORCE as a system initialization parameter
- RSTSIGNOFF(NOFORCE) in the TYPETERM definition
- XRFSOFF(NOFORCE) in the CICS segment of the RACF profile for the user

Defining typeterms

You can define typeterms in the following ways:

- Using the CEDA transaction; see “Defining typeterms using CEDA.”
- Using the DFHCSDUP utility; see *CICS Operations and Utilities Guide*.
- Using the CREATE TYPETERM command; see the *CICS System Programming Reference*.
- Using CICSPlex SM Business Application Services; see *CICSPlex System Manager Managing Business Applications*.

Defining typeterms using CEDA

From a CICS terminal, enter the command:

```
CEDA DEFINE TYPETERM(name) GROUP(name)
```

Figure 37 on page 320 shows the panel that is displayed.

```
 TYpeterm     ==>
 Group        ==>
 DEScription  ==>
RESOURCE TYPE
 DEVice       ==>
 TERmmodel    ==>
 SESsiontype  ==>
 LDclist      ==>
 SHippable    ==> No                   No | Yes
MAPPING PROPERTIES
 PAGesize     ==> 000 , 080          0-255
 ALTPage      ==> 000 , 000          0-255
 ALTSUffix    ==>
 FMhparm      ==> No                 No | Yes
 OBOperid     ==> No                 No | Yes
PAGING PROPERTIES
 AUTOPage     ==>                    No | Yes
```

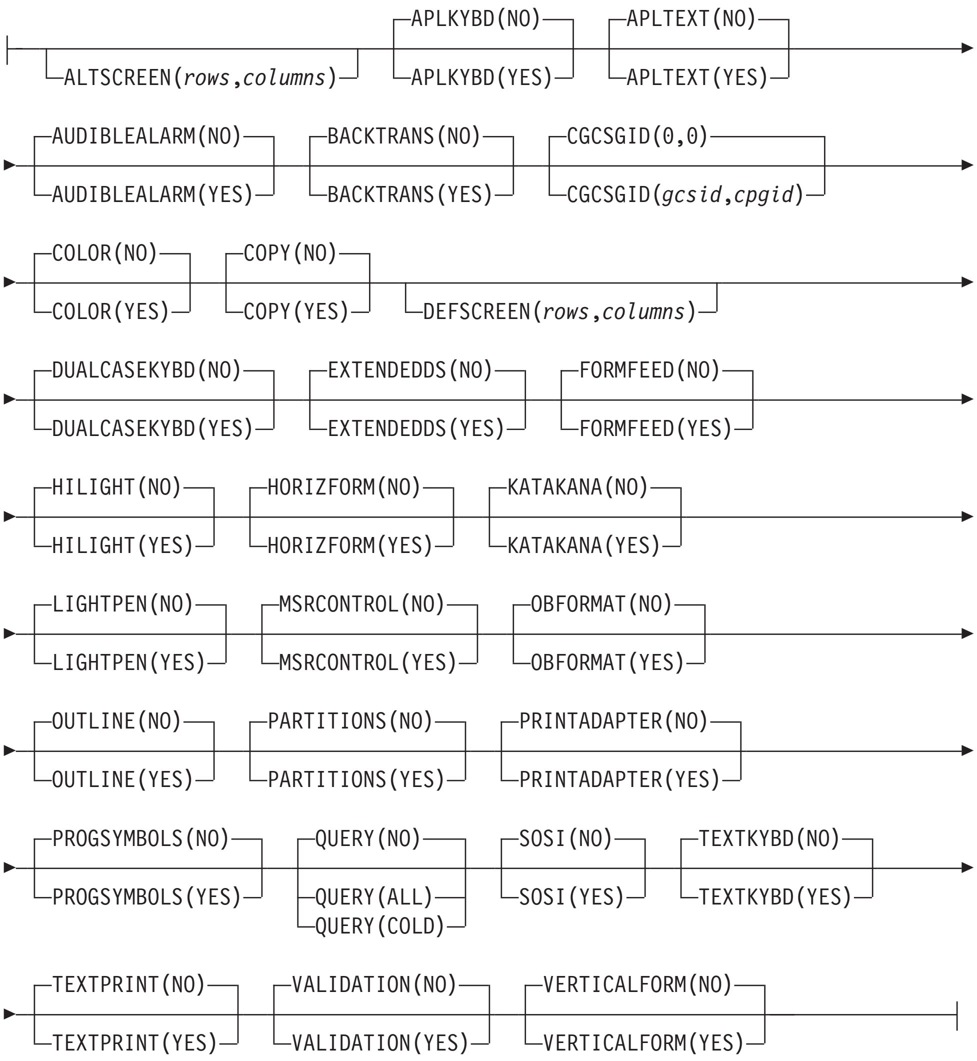
```
DEVICE PROPERTIES
 DEFscreen    ==> 000 , 000          0-255
 ALTSCreen    ==>     ,              0-255
 APLKybd      ==> No                 No | Yes
 APLText      ==> No                 No | Yes
 AUDiblealarm ==> No                 No | Yes
 COLor        ==> No                 No | Yes
 COPy         ==> No                 No | Yes
 DUalcasekybd ==> No                 No | Yes
 EXtendedds   ==> No                 No | Yes
 HIlight      ==> No                 No | Yes
 Katakana     ==> No                 No | Yes
 LIghtpen     ==> No                 No | Yes
 Msrcontrol   ==> No                 No | Yes
 OBFormat     ==> No                 No | Yes
 PARtitions   ==> No                 No | Yes
 PRIntadapter ==> No                 No | Yes
 PROgsymbols  ==> No                 No | Yes
 VAlidation   ==> No                 No | Yes
 FOrmfeed     ==> No                 No | Yes
 HOrizform    ==> No                 No | Yes
 VErticalform ==> No                 No | Yes
 TEXTKybd     ==> No                 No | Yes
 TEXTPrint    ==> No                 No | Yes
 Query        ==> No                 No | Cold | All
 OUtline      ==> No                 No | Yes
 SOsi         ==> No                 No | Yes
 BAcktrans    ==> No                 No | Yes
 CGcsgid      ==> 00000 , 00000      0-65535
SESSION PROPERTIES
 AScii        ==> No                 No | 7 | 8
 SENdsize     ==> 00000              0-30720
 RECEivesize  ==>                    0-30720
 BRacket      ==> Yes                Yes | No
 LOGMODE      ==>
 LOGMODECom     : No                 No | Yes
DIAGNOSTIC DISPLAY
 ERRLastline  ==> No                 No | Yes
 ERRIntensify ==> No                 No | Yes
 ERRColor     ==> NO                 NO | Blue | Red | Pink | Green
                                     | Turquoise  | Yellow | NEutral
 ERRHilight   ==> No                 No  | Blink | Reverse | Underline
OPERATIONAL PROPERTIES
 AUTOConnect  ==> No                 No | Yes | All
 ATi          ==> No                 No | Yes
 TTi          ==> Yes                Yes | No
 CReatesess   ==> No                 No | Yes
 RELreq       ==> No                 No | Yes
 DIscreq      ==> Yes                Yes | No
 Nepclass     ==> 000                0-255
 SIgnoff      ==> Yes                Yes | No | Logoff
 Xrfsignoff   ==> Noforce            Noforce | Force
 RStsignoff   ==> Noforce            Noforce | Force
```

```
MESSAGE RECEIVING PROPERTIES
 ROutedmsgs   ==>                    All | None | Specific
 LOGOnmsg     ==> No                 No | Yes
APPLICATION FEATURES
 BUildchain   ==> No                 No | Yes
```

TYPETERM definition attributes

```
                                                              ┌─ALTPAGE(0,0)──────────┐
►►──TYPETERM(name)──GROUP(groupname)──┬───────────────────┬──┼───────────────────────┼──────────►
                                      └─DESCRIPTION(text)─┘  └─ALTPAGE(rows,columns)─┘

                          ┌─ASCII(NO)─┐  ┌─ATI(NO)──┐  ┌─AUTOCONNECT(NO)──┐
►──┬───────────────────┬──┼───────────┼──┼──────────┼──┼──────────────────┼──┬────────────────┬──►
   └─ALTSUFFIX(char1)──┘  ├─ASCII(7)──┤  └─ATI(YES)─┘  ├─AUTOCONNECT(ALL)─┤  ├─AUTOPAGE(NO)──┤
                          └─ASCII(8)──┘                └─AUTOCONNECT(YES)─┘  └─AUTOPAGE(YES)─┘

   ┌─BRACKET(YES)─┐  ┌─BUILDCHAIN(NO)──┐  ┌─CREATESESS(NO)──┐                   ┌─DISCREQ(YES)─┐
►──┼──────────────┼──┼─────────────────┼──┼─────────────────┼──DEVICE(char8)──┼──────────────┼──►
   └─BRACKET(NO)──┘  └─BUILDCHAIN(YES)─┘  └─CREATESESS(YES)─┘                   └─DISCREQ(NO)──┘

   ┌─ERRCOLOR(NO)────────┐
►──┼─────────────────────┼──────────────────────────────────────────────────────────────────────►
   ├─ERRCOLOR(BLUE)──────┤
   ├─ERRCOLOR(GREEN)─────┤
   ├─ERRCOLOR(NEUTRAL)───┤
   ├─ERRCOLOR(PINK)──────┤
   ├─ERRCOLOR(RED)───────┤
   ├─ERRCOLOR(TURQUOISE)─┤
   └─ERRCOLOR(YELLOW)────┘

   ┌─ERRHILIGHT(NO)────────┐  ┌─ERRINTENSIFY(NO)──┐  ┌─ERRLASTLINE(NO)──┐  ┌─FMHPARM(NO)──┐
►──┼───────────────────────┼──┼───────────────────┼──┼──────────────────┼──┼──────────────┼──────►
   ├─ERRHILIGHT(BLINK)─────┤  └─ERRINTENSIFY(YES)─┘  └─ERRLASTLINE(YES)─┘  └─FMHPARM(YES)─┘
   ├─ERRHILIGHT(REVERSE)───┤
   └─ERRHILIGHT(UNDERLINE)─┘

   ┌─IOAREALEN(0,0)─────────────┐                                            ┌─LOGONMSG(NO)──┐
►──┼────────────────────────────┼──┬──────────────┬──┬──────────────────┬──┼───────────────┼───►
   └─IOAREALEN(value1,value2)───┘  └─LDCLIST(list)┘  ├─LOGMODE(logmode)─┤  └─LOGONMSG(YES)─┘
                                                     └─LOGMODE(0)───────┘

   ┌─NEPCLASS(0)──────────┐  ┌─OBOPERID(NO)──┐
►──┼──────────────────────┼──┼───────────────┼──┬───────────────────────┬──┬──────────────────────┬──►
   └─NEPCLASS(tranclass)──┘  └─OBOPERID(YES)─┘  └─PAGESIZE(rows,columns)┘  └─RECEIVESIZE(number)──┘

   ┌─RECOVNOTIFY(NONE)────────┐  ┌─RECOVOPTION(SYSDEFAULT)──┐  ┌─RELREQ(NO)──┐
►──┼──────────────────────────┼──┼──────────────────────────┼──┼─────────────┼──────────────────────►
   ├─RECOVNOTIFY(MESSAGE)─────┤  ├─RECOVOPTION(CLEARCONV)───┤  └─RELREQ(YES)─┘
   └─RECOVNOTIFY(TRANSACTION)─┘  ├─RECOVOPTION(NONE)────────┤
                                 ├─RECOVOPTION(RELEASESESS)─┤
                                 └─RECOVOPTION(UNCONDREL)───┘

                                ┌─RSTSIGNOFF(NOFORCE)─┐
►──┬──────────────────────────┬──┼─────────────────────┼──┬───────────────────┬──┬───────────────────┬──►
   ├─ROUTEDMSGS(ALL)──────────┤  └─RSTSIGNOFF(FORCE)───┘  └─SENDSIZE(number)──┘  └─SESSIONTYPE(type)─┘
   ├─ROUTEDMSGS(NONE)─────────┤
   └─ROUTEDMSGS(SPECIFIC)─────┘

   ┌─SHIPPABLE(NO)──┐  ┌─SIGNOFF(YES)────┐                     ┌─TTI(YES)─┐  ┌─UCTRAN(NO)─────┐
►──┼────────────────┼──┼─────────────────┼──┬────────────────┬──┼──────────┼──┼────────────────┼──►
   └─SHIPPABLE(YES)─┘  ├─SIGNOFF(NO)─────┤  ├─TERMMODEL(1)───┤  └─TTI(NO)──┘  ├─UCTRAN(TRANID)─┤
                       └─SIGNOFF(LOGOFF)─┘  └─TERMMODEL(2)───┘                └─UCTRAN(YES)────┘

   ┌─USERAREALEN(0)──────┐
►──┼─────────────────────┼──┤ Device properties ├──────────────────────────────────────────────►◄
   └─USERAREALEN(0-255)──┘
```

Device properties:



The typeterm definition attribute descriptions are:

ALTPAGE({0|*rows*},{0|*columns*})
specifies the page size to be used by BMS for this terminal entry when ALTSCREEN has been selected as the screen size. The default is the PAGESIZE. The values for both *rows* and *columns* must be in the range 0 through 999. The product of *rows* and *columns* must not exceed 32767.

You will get unexpected results if the *columns* value of ALTPAGE is different from that of ALTSCREEN. The *rows* value of ALTPAGE can usefully be less than that of ALTSCREEN, perhaps to reserve the bottom line of the screen for error messages.

If you use the QUERY structured field (see Chapter 32, "TYPETERM resource definitions," on page 305), the alternate page size used is the size set up as the alternate screen size. For terminals that can be queried, you can set ALTPAGE to zero and have the ALTSCREEN value defined explicitly by the CINIT BIND. If ALTPAGE is not zero, it is possible to have different values for the ALTPAGE and the ALTSCREEN.

ALTSCREEN(*rows,columns*)

specifies the 3270 screen size to be used for a transaction that has an alternate screen size specified in its profile definition. The values that can be specified are:

Device	Alternate Screen Size
3276-1, 3278-1	(12,80)
3276-2, 3278-2	(24,80)
3276-3, 3278-3	(32,80)
3276-4, 3278-4	(43,80)
3278-5	(27,132)
3279-2A, 3279-2B	(24,80)
3279-3A, 3279-3B	(32,80)

No validity checking is performed on the screen size selected, and incorrect sizes may lead to unpredictable results.

For BSC devices, both the alternate and default screen sizes are determined by the device hardware. The alternate screen size is the maximum screen size. For the 3290 display, both the default and alternate screen sizes are determined by the customer setup procedure. For further guidance, see the *IBM 3290 Information Panel Description and Reference*.

For SNA devices (LUTYPE2 and LUTYPE3), you can specify any value for both alternate and default screen sizes, up to the maximum physical screen size. In particular, both the alternate and default screen sizes can be the maximum screen size, or the default screen size can be the maximum screen size with no alternate screen size specified. The SNA bind is generated by CICS from this information. You do not need to provide logmode table entries, or to customize the device.

For non-SNA 3270 and LUTYPE2 devices, you can use the QUERY structured field to determine the alternate screen size that has been set up for the display. To use QUERY, leave the DEFSCREEN to default to (24,80) and leave ALTSCREEN unspecified. The alternate screen size is the size set up by the terminal user. Otherwise, QUERY(COLD) or QUERY(ALL) has no effect on the alternate screen size. Leaving ALTSCREEN unspecified without using QUERY under the conditions above results in an alternate screen size of (00,00). For more information about QUERY, see Chapter 32, “TYPETERM resource definitions,” on page 305.

If you use dual screen sizes, you can make a CICS transaction use the alternate screen size by coding SCRNSIZE(ALTERNATE) in its associated profile. If an application consists of several pseudo-conversationally linked transactions, specify SCRNSIZE(ALTERNATE) in the profile for each of these transactions if the application uses the alternate screen size.

For 3287 and 3289 printers, the value specified must equal the buffer size of the particular device. For non-SNA 3287 and 3289 printers, the sizes depend on the feature ordered, not on the model number. For SNA printers, there are no features, and any two sizes can be specified from the list of valid sizes. When printing to a printer whose associated TERMINAL definition has

PRINTERCOPY(YES) specified, the ALTSCREEN value should match the screen size of the terminal whose screen is to be printed. If the values differ, unpredictable results may occur.

ALTSUFFIX({**blank**|*number*})
A 1-character numeric suffix that BMS is to append to map set names (specified in the SUFFIX operand of the application programmer's DFHMSD TYPE={DSECT|MAP} macro).

blank Leave this attribute blank if you do not want a suffixed map set.

number
BMS appends this suffix to map set names if the screen size being used is the same value as the alternate screen size; that is, if the transaction has an alternate screen size specified in the PROFILE definition, or if the default and alternate screen size are the same. In this case, BMS map selection routines attempt to load the map set with the suffix specified in the ALTSUFFIX operand.

If there is no such map set, BMS tries to load a map set suffixed with M or L and, if this load fails, BMS tries to load an unsuffixed map set version.

If the transaction uses default screen size, BMS first tries to load a map set suffixed with M or L and, if this load fails, BMS tries to load an unsuffixed map set version.

To use a suffixed map set, you must specify the BMS=(,,,DDS) system initialization parameter.

APLKYBD({**NO**|**YES**})
specifies whether the 3270 device has the APL keyboard feature:

YES The 3270 device has the APL keyboard feature.

NO The 3270 device does not have the APL keyboard feature.

APLTEXT({**NO**|**YES**})
specifies whether the 3270 device has the APL text feature:

YES The 3270 device has the APL text feature.

NO The 3270 device does not have the APL text feature.

Do not specify YES for a 3288 printer, with or without TEXTPRINT(YES). The APLTEXT feature is used in conjunction with the TEXTKYBD and APLKYBD operands.

You can use the QUERY structured field to determine whether the device is set up to use the APL text feature (see Chapter 32, “TYPETERM resource definitions,” on page 305).

ASCII({**NO**|**7**|**8**})
specifies whether the terminal has an ASCII feature.

NO This terminal does not have an ASCII feature.

7 Specify this to communicate with ASCII-7 terminals. Devices configured with the ASCII-7 feature must be LUTYPE2 or LUTYPE3 without extended 3270 features. Only the following devices are supported:
3274 Model 1C and 51C
3276 Model 12
3278
3287

Any terminal configured with the ASCII-7 option has all FM data outbound from CICS converted to ASCII-7, and all FM data inbound to CICS converted to EBCDIC. Only FM request data is translated. All other data in the RU such as LU status or sense data is assumed to be in EBCDIC on output. ASCII-7 does **not** support data streams that contain extended attributes, such as structured fields and function management headers.

The ASCII-7 support is available on 3274-1C as an option on the configuration of the standard microcode. The use of the ASCII-7 option is determined at session initiation by BIND parameters set by CICS as a result of the TCT definition described above.

8 Specify this to communicate with ASCII-8 terminals. Devices configured with the ASCII-8 feature can be LUTYPE1, LUTYPE2, or LUTYPE3 with or without extended 3270 and SCS data stream features.

Any terminal configured with the ASCII-8 option has all FM data outbound from CICS converted to ASCII-8, and all FM data inbound to CICS converted to EBCDIC. All FM request data is translated. This includes the AID, cursor address, FM headers and structured fields. Any other form of the RU such as LU status or sense data is assumed to be in EBCDIC on input and is transmitted in EBCDIC on output.

Note that this ASCII-8 support is intended only for devices that operate in EBCDIC but translate or retranslate the data stream to or from ASCII-8, as is done by this CICS support. This is because the data stream is treated as a character string, and any binary number fields are translated byte by byte as though they were graphic characters. Thus they may not represent their true value while in ASCII form.

The ASCII-8 support is available as a microcode RPQ on the 3274 and is mutually exclusive with the ASCII-7 option. The use of the ASCII-8 option is determined at session initiation by BIND parameters set by CICS as a result of the TCT definitions described above.

ATI({NO|YES})
specifies whether transactions can start at the terminal by automatic transaction initiation:

YES Transactions can start at the terminal by automatic transaction initiation.

NO Transactions cannot start at the terminal by automatic transaction initiation.

ATI(YES) allows transactions to be started at the terminal by transient data control or by an EXEC CICS START command issued by another transaction. If there is already a transaction at the terminal, the ATI transaction is held until it ends. If you specify ATI(YES), you must specify an IOAREALEN of at least one byte, except for DEVICE(APPC) when ATI and IOAREALEN have forced default values of YES and 0.

If ATI is specified as YES and CREATESESS is specified as YES, and if a transaction is initiated when the terminal is not ACQUIRED, it is automatically acquired.

See also the TTI attribute.

AUDIBLEALARM({NO|YES})
specifies whether the audible alarm feature is installed for a 3270 display or for a 3270 printer attached to a 3651 controller:

YES The audible alarm feature is installed.

NO The audible alarm feature is not installed.

AUTOCONNECT({NO|YES|ALL})
specifies whether autoconnect processing is to occur for the terminal. AUTOCONNECT(YES) or (ALL) specifies that the session with the terminal is to be established (that is, BIND is to be performed) during CICS initialization, or when communication with VTAM is started using the CEMT SET VTAM OPEN command. If the connection cannot be made at this time because the terminal is unavailable, the link must be subsequently acquired using the CEMT SET TERMINAL(*termid*) INSERVICE ACQUIRED command, unless the terminal becomes available in the meantime and itself initiates communications.

Note: If you use the VTAM LOGAPPL function, do not specify AUTOCONNECT(YES), because this can lead to race conditions causing errors or hung logical units.

NO CICS does not attempt to bind sessions when the connection is established.

YES CICS attempts to bind as a contention winner session, when the connection is established.

ALL Not applicable.

For background information about AUTOCONNECT, see the *CICS Intercommunication Guide*.

AUTOPAGE({NO|YES})
specifies whether BMS autopaging is to be used. Specify YES for printers and NO for display devices.See the description of the AUTOPAGE attribute in “Terminal definition attributes” on page 263 for details. The default depends on the value you specify for the DEVICE attribute: the default values are indicated in Table 10 on page 307.

BACKTRANS({NO|YES})
specifies whether the device has the background transparency feature:

NO The device does not have the background transparency feature.

YES The device does have the background transparency feature.

You can use the QUERY structured field to determine whether the device is set up to use the background transparency feature (see Chapter 32, “TYPETERM resource definitions,” on page 305).

BRACKET({YES|NO})
specifies whether bracket protocol is to be enforced for this logical unit. The default depends on the value you specify for the DEVICE attribute (see Table 10 on page 307).

YES Bracket protocol is to be used. This option is required for the 3790 inquiry and full function logical units. BRACKET(YES) is forced for many DEVICE types (see Table 10 on page 307).

NO Bracket protocol is not to be used. You must specify BRACKET(NO) for a 3614 logical unit and the 3650 Host Command Processor (HCP) session.

Bracket protocol is a feature of SNA; if you specify BRACKET(YES) for non-SNA devices, CICS will neither follow, nor enforce, strict bracket protocol.

BUILDCHAIN({NO|YES})

specifies whether CICS is to perform chain assembly prior to passing the input data to the application program.

The default depends on the value you specify for the DEVICE attribute.

NO Any terminal input/output area (TIOA) received by an application program from this logical unit contains one request unit (RU).

YES Any TIOA received by an application program from this logical unit contains a complete chain.

CGCSGID({0,0|*value1*,*value2*})

The coded graphic character set global identifier (CGCSGID) enables application programs to determine the character set supported at the device.

You can get this information from a QUERY structured field for some devices (see Chapter 32, "TYPETERM resource definitions," on page 305). For others, you must supply this information here, so that application programs can retrieve it using the EXEC CICS ASSIGN command.

0,0 No CGCSGID is specified.

gcsid,cpgid

The CGCSGID consists of two 5-digit decimal numbers which can take values in the range 1 through 65535. *gcsid* is the graphic character set global identifier (GCSGID) and *cpgid* is a specification of the code points for the set, the code page global identifier (CPGID).

COLOR({NO|YES})

specifies whether the 3270 device or the SCS printer has the extended color feature, which allows colors to be selected for each field or character:

NO The device does not have the extended color feature.

YES The device has the extended color feature.

You can use the QUERY structured field to determine whether the device is set up to use the color feature. (See Chapter 32, "TYPETERM resource definitions," on page 305).

COPY({NO|YES})

specifies whether the copy feature for a 3270 display or printer is included in the 3270 control unit:

NO The copy feature is included.

YES The copy feature is not included.

Leave it to default to COPY(NO) for 3270 compatibility mode logical units, because COPY(YES) is ignored.

See also the PRINTERCOPY and ALTPRINTCOPY attributes of the TERMINAL definition.

For further details about screen copying, see the CICS 3270 Data Stream Device Guide.

CREATESESS({NO|YES})

specifies whether sessions are to be created.

NO Specify this to prevent internally generated session requests from actually creating a session. During CICS execution, this can be changed only by a CEMT command.

CREATESESS(NO) prevents EXEC START requests and automatic transaction initiation (ATI) requests for this terminal causing a session to be created. This means that the requests are either queued or rejected when no session is currently established.

YES Specify this for a status that allows internally generated session requests to create a session. During CICS execution, this status can be generated only by a CEMT command.

CREATESESS(YES) allows EXEC START requests and automatic transaction initiation (ATI) requests for this terminal to cause a session to be created automatically.

DEFSCREEN(*rows , columns*)
specifies the 3270 screen size or 3270 printer page size to be used on this device when attached to a transaction or used by BMS for which the default screen size has been specified in the profile definition. The default depends on the value you specify for the DEVICE attribute (see Table 10 on page 307). The values that can be specified for a BSC 3270 are:

Device	Screen size
3278-1	(12,40)
3278-2	(24,80)
3276-3, 3278-3	(24,80)
3276-4, 3278-4	(24,80)
3278-5	(24,80)
3279-2A, 3279-2B	(24,80)
3279-3A, 3279-3B	(24,80)

For BSC devices, both default and alternate screen sizes are determined by the terminal hardware. The default screen size is (24,80), except for the 3278-1 where it is (12,40).

For SNA devices (LUTYPE2 and LUTYPE3), both default and alternate screen sizes can be any value you choose, up to the maximum physical screen size (see ALTSCREEN). In particular, both default and alternate screen sizes can be the maximum screen size; or the default screen size can be the maximum screen size with no alternate screen size specified. The SNA bind is generated by CICS from this TCT information. You do not need to provide logmode table entries, or to customize the device.

DESCRIPTION(*text*)
You can provide a description of the resource you are defining in this field. The description text can be up to 58 characters in length. There are no restrictions on the characters that you can use. However, if you use parentheses, ensure that for each left parenthesis there is a matching right one. If you use the CREATE command, for each single apostrophe in the text, code two apostrophes.

DEVICE(*device*)
specifies the device type which this TYPETERM defines. This attribute is mandatory for all TYPETERM definitions.

If you type DEVICE(*xxxx*), where *xxxx* is a valid device type, on the command line, together with SESSIONTYPE and TERMMODEL if appropriate, other attributes are given appropriate default values. For further guidance, see “Default values for TYPETERM attributes” on page 307. Entering or overtyping the DEVICE, SESSIONTYPE, or TERMMODEL values on the overtype-to-modify panel does **not** provide these defaults.

The valid attributes and the defaults for each device type are listed in Table 10 on page 307. The recommended attributes for non-SNA VTAM 3270 devices are 3270 and 3270P for displays and printers, respectively. The following attributes can also be specified and are retained for compatibility with previous releases:
- Displays: 3277 and L3277
- Printers: 3284 and L3284, 3286 and L3286

For SNA VTAM 3270 devices, use the LUTYPE2 or LUTYPE3 attribute as appropriate. LUTYPE2 logical units are those defined by SNA, which accept a 3270-display data stream. LUTYPE3 logical units are those defined by SNA, which accept a data stream similar to that for a 3270 printer.

For a list of device types supported by CICS, see "DFHTCT: CICS terminals list" on page 594. See also Table 10 on page 307 for a list of valid device names and the default attributes that they generate.

DISCREQ({**YES**|**NO**})
specifies whether disconnect requests are to be honored.

YES CICS is to honor a disconnect request for a VTAM device, and issue a VTAM CLSDST macroinstruction to terminate the VTAM session with that logical unit.

In addition, CESF LOGOFF or GOODNIGHT from the terminal causes disconnection if you specify YES.

YES is essential if the TYPETERM definition is referenced by AUTINSTMODEL TERMINAL definitions, so that autoinstalled terminal entries can be deleted automatically.

YES is the default, but in some situations, if your resource definition does not specify this attribute, CICS enforces the NO value for the attribute if this value is required for compatibility with other options in your resource definition.

NO CICS is not to honor a disconnect request for a VTAM device.

DUALCASEKYBD({**NO**|**YES**})
specifies whether a 3270 display has a typewriter keyboard or an operator console keyboard. Both uppercase and lowercase data can be transmitted with either of these keyboards

NO The device does not have a dual-case keyboard.

YES The device has a dual-case keyboard.

ERRCOLOR({**NO**|*color*})
specifies whether the error message is to be displayed in color. Coding ERRCOLOR(*color*) implies ERRLASTLINE(YES).

The colors you can specify are:

BLUE
RED
PINK
GREEN
TURQUOISE
YELLOW
NEUTRAL

ERRHILIGHT({NO|BLINK|REVERSE|UNDERLINE})
specifies the highlighting, if any, with which error messages are to be displayed.

ERRINTENSIFY({NO|YES})
specifies whether the error message is to be displayed in an intensified field. Coding ERRINTENSIFY(YES) implies ERRLASTLINE(YES).

ERRLASTLINE({NO|YES})
specifies where error messages are to be displayed.

NO	An error message is displayed at the current cursor position and without any additional attributes.
YES	An error message is displayed starting at the beginning of the line nearest the bottom of the screen so that the whole message fits on the screen. Because all error messages occupy the same line, if the messages are received in quick succession, they overlay one another and earlier messages may disappear before they have been read.

EXTENDEDDS({NO|YES})
specifies whether the 3270 device or the SCS printer supports extensions to the 3270 data stream:

NO	The device does not support 3270 data stream extensions.
YES	The device supports 3270 data stream extensions.

EXTENDEDDS(YES) is implied if you specify YES for any one of the COLOR, HILIGHT, PROGSYMBOLS, QUERY, or VALIDATION (3270 only) attributes.

If extended data stream (EXTENDEDDS) is set to YES, the device will support the write structured field COMMAND and Outbound Query structured field.

You can use the QUERY structured field to determine whether the device is set up to use the extended data stream (see Chapter 32, “TYPETERM resource definitions,” on page 305). Using the QUERY structured field sets EXTENDEDDS to YES if query is valid.

FMHPARM({NO|YES})
specifies whether BMS is to accept user-supplied parameters for inclusion in the function management header built by BMS:

NO	Do not accept user-supplied parameters for inclusion in the function management header built by BMS.
YES	Accept user-supplied parameters for inclusion in the function management header built by BMS.

Specify YES only if the DEVICE type is 3650.

FORMFEED({NO|YES})
specifies whether or not the device has the forms feed feature, which means that BMS uses the form-feed character when formatting output documents:

NO	The device does not have the form feed feature.
YES	The device has the form feed feature.

If DEVICE(SCSPRINT) is specified, BMS inserts a form-feed character at the beginning of the data stream. This causes the device to skip to the top margin of a new page before starting to print.

The top margin is defined by a set vertical format (SVF) data stream, and may be a line number equal to or greater than one. If a SVF data stream has not been sent to the printer, the top margin is line one. The line counter in the device is set to 1 when the operator sets up the paper.

Note that the device may also perform an automatic form feed if you try to print beyond a bottom margin. The bottom margin is also determined by the SVF data stream and defaults to the maximum presentation line (MPL). The MPL is the last line on the page and its value represents the page or form length as a number of lines (that is, physical page size times the line density). Both the MPL and the line density can be determined by the SVF data stream. Otherwise the MPL (the number of lines) can be set up on the device by the operator.

If DEVICE(3270), DEVICE(3270P), DEVICE(LUTYPE2), or DEVICE(LUTYPE3) is specified, use FORMFEED(YES) in conjunction with the FORMFEED option in the BMS SEND commands. Using form feed on display devices provides for a skip to a new page when the screen data is copied to a printer.

The options discussed above for SCSPRINT operation do not apply when the devices are operating as 3270P or LUTYPE3 devices. In this case there is only the concept of a form length, and this can be set on the device only by the operator. See the *CICS Application Programming Reference* for programming information on the use of the FORMFEED option.

GROUP(*groupname*)

Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed.

Acceptable characters:

`A-Z 0-9 $ @ #`

Any lower case characters you enter are converted to upper case.

The GROUP name can be up to eight characters in length. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

HILIGHT({**NO**|**YES**})

specifies whether the 3270 device or SCS printer has the extended highlight facility, which enables fields or characters to be displayed in reverse-video, underline mode, or blink (3270 only):

NO The device does not have the extended highlight facility.

YES The device has the extended highlight facility.

You can use the QUERY structured field to determine whether the device is set up to use the extended highlight facility (see Chapter 32, “TYPETERM resource definitions,” on page 305).

HORIZFORM({**NO**|**YES**})

specifies whether or not the device has the horizontal form feature, which means that BMS should use the horizontal tabbing when formatting output documents:

NO The device does not have the horizontal form feature.

YES The device has the horizontal form feature.

The devices that can use this feature are batch, batch data interchange, interactive, SCSPRT or LUTYPE4 logical units.

NO The HTAB option in the BMS map definition is ignored.

YES BMS uses horizontal tabbing when formatting output documents.

IOAREALEN({0|*value1*},{0|*value2*})
specifies the length in bytes of a terminal input/output area to be passed to a transaction.

If you specify ATI(YES), you must specify an IOAREALEN of at least one byte.

value1 *Value1* specifies the minimum size of a terminal input/output area to be passed to an application program when a RECEIVE command is issued.

value2 You can specify *value2* as greater than or equal to *value1*. In this case, when the size of an input message exceeds *value1*, CICS uses a terminal input/output area *value2* bytes long. If the input message size also exceeds *value2*, the node abnormal condition program sends an exception response to the terminal.

If *value2* is not specified, or is less than *value1*, it defaults to the value of *value1*.

The maximum value that may be specified for IOAREALEN is 32767 bytes.

KATAKANA({NO|YES})
specifies whether Katakana support is required. Katakana terminals cannot display mixed case output; uppercase characters appear as uppercase English characters, but lowercase characters appear as Katakana characters. If you have any Katakana terminals connected to your CICS system, specify the MSGCASE=UPPER system initialization parameter. For further information about the MSGCASE parameter, see the *CICS System Definition Guide*.

NO Katakana support is not required.

YES Katakana support is required. All lowercase characters sent to the terminal from the following transactions are translated to uppercase:

CBRC CDBC CDBI CEBR CECI CEDA CEDF CEMT CEOT CESN CEST CMSG CRTE CSPG CWTO

| **Important:** For emulated Katakana terminals, results depend on the code page that is in use. In some cases, lowercase English characters are not translated to uppercase.

LDCLIST(*list*)
specifies the name of a logical device code (LDC) list. The name may be up to eight characters in length. The name follows assembler language rules. It must start with an alphabetic character.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters you enter are converted to uppercase.

Define the LDCLIST and its contents using macroinstruction(s).

A local LDC list is defined by:

```
listname  DFHTCT TYPE=LDCLIST,
LDC(aa=nnn,bb=nnn,....)
```

An extended local LDC list is defined by:

```
listname  DFHTCT TYPE=LDC,LOCAL=INITIAL
          DFHTCT TYPE=LDC=(aa=nnn)....
          DFHTCT TYPE=LDC=(bb=nnn)....
          DFHTCT TYPE=LDC,LOCAL=FINAL
```

You specify this *listname* as the value for the LDCLIST attribute on the TYPETERM definition.

This attribute applies only to 3600, 3770 batch, 3770, and 3790 batch data interchange, and LUTYPE4 logical units. The list specifies which LDCs are valid for this logical unit and, optionally, which device characteristics are valid for each LDC. CICS uses the first LDC generated in this list when choosing a default LDC for a logical unit. For further guidance, see “DFHTCT logical device codes: VTAM non-3270” on page 577.

LIGHTPEN({**NO**|**YES**})
specifies whether a 3270 display has the selector pen feature:

NO The 3270 display does not have the selector pen feature.

YES The 3270 display has the selector pen feature.

LOGMODE({**blank**|**0**|*logmode*})
specifies how CICS is to build the BIND to be sent to the logical unit.

blank A defined terminal definition uses the BIND image generated by the CICS definitions for this device by means of this TYPETERM definition and its associated terminal definitions. An autoinstalled terminal uses the fields specified in the incoming CINIT.

name This is the LOGMODE name from a VTAM logon mode table that has been set up for use by this logical unit. The name may be up to eight characters in length and must follow assembler language rules. The name must start with an alphabetic character.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters you enter are converted to uppercase.

This allows you to override the BIND image provided by CICS for the logical unit. For further information, see the appropriate CICS subsystem guide.

You cannot code a LOGMODE name when the terminal is a cross-domain resource.

The TCTTE is updated to reflect the logmode bind image fields. These include SEND and RECEIVE sizes and default and alternate screen sizes. If the logmode indicates that the terminal is not queriable, the extended data stream fields are all set to zero.

0 (zero)
This causes CICS to use some of the information from the BIND image contained in the CINIT coming from the logical unit. The BIND image in the CINIT was created by VTAM based on the LOGMODE entry defined for the logical unit requesting to log on to CICS. The node initialization block (NIB) is built with LOGMODE=0 and BNDAREA=0. When the

TYPETERM's SENDSIZE and RECEIVESIZE have been specified as zero, CICS replaces them with the values from the LOGMODE's RUSIZES.

The TCTTE is updated to reflect the incoming CINIT fields. These include SEND and RECEIVE sizes and default and alternate screen sizes. If the logmode indicates that the terminal is not queriable, the extended data stream fields are all set to 0. Use LOGMODE(0) only in exceptional circumstances. Although the LU is bound with the VTAM definition, CICS keeps the main session characteristics from the CICS definition. For example, if a printer is defined to VTAM as LUTYPE1 but to CICS as an LUTYPE3 with LOGMODE(0), CICS accepts the bind but sends LUTYPE3 control characters to the printer, giving rise to incorrect results. This restriction does not apply to pipeline terminals.

Note:

1. You should only need to use this value for the logmode attribute in exceptional circumstances.
2. For a logical unit in a cross-domain environment, specify LOGMODE(0) and provide the logical unit mode information in the DLOGMOD and MODETAB operands of the VTAM(LU) statement (see *CICS Family: Communicating from CICS on System/390* for more information about the VTAM(LU) statement). (In a cross-domain environment, LOGMODE with a name causes a VTAM error).

LOGMODECOM

This attribute is obsolete, but is supported to provide compatibility with earlier releases of CICS. For more information, see Appendix A, “Obsolete attributes,” on page 615.

LOGONMSG({**NO**|**YES**})

specifies whether the 'good morning' transaction, specified in the GMTRAN system initialization parameter, will be:

- Automatically initiated when the logical unit is first logged on to CICS through VTAM
- Initiated after the terminal user's TIMEOUT period has expired under certain conditions.

If you have specified ERRLASTLINE(YES), the messages written by the transaction do not overwrite the error message line.

NO CICS does not run the 'good morning' transaction.

Note: If you are using a non-SNA terminal such as a Telnet 3270, LOGONMSG(NO) does not automatically release the keyboard lock. You need to press the Reset key to release the keyboard lock.

YES CICS runs the 'good morning' transaction when the OPNDST exit is successfully completed and a session is established. The transaction is initiated by automatic task initiation (ATI) and competes with other ATI transactions for use of the terminal. Specify ATI(YES) for this TYPETERM.

Note: If you are using a non-SNA terminal such as a Telnet 3270, LOGONMSG(YES) also automatically releases the keyboard lock.

MSRCONTROL({**NO**|**YES**})
specifies whether the terminal, an 8775 or 3643, has a magnetic slot reader. This option is not valid for SCS printers.

You can use the QUERY structured field to determine whether the device is set up to use a magnetic slot reader (see Chapter 32, "TYPETERM resource definitions," on page 305).

NEPCLASS({**0**|*tranclass*})
specifies the node error program transaction class.

0 This results in a link to the default node error program module.

tranclass
The transaction class for the (nondefault) node error program module. *tranclass* can be in the range 1 through 255. For programming information about the node error program, see the *CICS Customization Guide*.

OBFORMAT({**NO**|**YES**})
specifies whether outboard formatting is used. If the devices for which you are defining this TYPETERM use BMS outboard formatting, specify OBFORMAT(YES). OBFORMAT(YES) can be specified for two device types only:

- 3650, SESSIONTYPE(3270)
- LUTYPE2, for an 8100 Information System using the DPPX operating system with DPPX/DPS Version 2 for presentation services

For further guidance, see the *CICS/OS/VS IBM 3650/3680 Guide*, the *CICS/OS/VS IBM 3790/3730/8100 Guide*, and the *DPPX/Distributed Presentation Services Version 2: System Programming Guide*.

Use the QUERY structured field to determine whether the device is set up to use outboard formatting (see Chapter 32, "TYPETERM resource definitions," on page 305).

OBOPERID({**NO**|**YES**})
specifies whether CICS uses the outboard operator identifiers to support the BMS routing facilities required for this terminal. This option applies only to the 3790 and 3770 batch data interchange logical units.

NO CICS does not use the outboard operator identifiers.

YES CICS uses the outboard operator identifiers.

OUTLINE({**NO**|**YES**})
specifies whether the device supports field outlining:

NO The device does not support field outlining.

YES The device supports field outlining.

Use the QUERY structured field to determine whether the device is set up to use field outlining (see Chapter 32, "TYPETERM resource definitions," on page 305).

PAGESIZE(*rows* , *columns*)
specifies the default page size for this printer. The default page size is used by BMS when the default screen size has been selected in the DEFSCREEN attribute.

rows Indicates the number of rows in the page. The PAGESIZE *rows* value can usefully be less than the DEFSCREEN *rows* value, perhaps to reserve the bottom line of a screen for error messages (see the ERRLASTLINE attribute), if the same BMS map is being used for both printing and display.

columns

Indicates the number of characters in each line. Unexpected results occur if the *columns* value specified in PAGESIZE differs from the *columns* value specified in DEFSCREEN.

The product of *rows* and *columns* must not exceed 32767.

The default value depends on the value you specify for the DEVICE attribute. See Table 10 on page 307 for details.

BMS uses the page size values when preparing output data streams. The specified number of characters in each line of the page should not exceed the physical line width of the terminal. In the case of printers that automatically perform a new-line function on reaching the end of the carriage (for example, 3270 printers), the line width specified here should be less than the physical line width.

This ensures that the formatting of the output data is governed entirely by the new-line (NL) characters supplied by BMS or by you, not by new-line functions performed by the device itself, which would produce additional lines of output, resulting in a physical page depth greater than that specified here.

For 3270-type printers, the hardware limits the amount of data that BMS may transmit. If the map or application program request specifies L40, L64, or L80, or does not specify NLEOM on the SEND MAP command, the product of *lines* and *columns* specified in PAGESIZE must not be greater than the buffer size.

If the BMS request specifies NLEOM, the page length may be any number of lines, but the product of *lines* and *columns* specified in the DEFSCREEN or ALTSCREEN attributes must not exceed the buffer size of the device. In other words, the number of characters that BMS transmits must not exceed the physical buffer size of the printer.

Note: BMS divides a large page into smaller segments for transmission. PAGESIZE should therefore correspond to the required **logical** page size (the product of *lines* and *columns*), and the DEFSCREEN value should correspond to the actual buffer size.

For a VTAM 3600, the PAGESIZE specified is used if a BMS page build operation is attempted without specifying a logical device code (LDC). A default device type of 3604 is assumed.

For 3770, LUTYPE4, or 3790 batch data interchange logical units, the PAGESIZE specified is used if a BMS page build operation is requested without specifying a logical device code (LDC). The default device type is the console printer.

Take care when routing a message to a list of terminals. If the PAGESIZE you have defined (or allowed to default) is too small to accommodate the message, the transaction abends.

For cumulative text processing, the maximum allowed buffer size is 32767. If this is exceeded, BMS internally forces a reduced page length to ensure that the PAGESIZE stays within the limit.

PARTITIONS({NO|YES})

specifies whether a device is to use partitions. This option is not valid for SCS printers.

NO The device is not to use partitions.

YES The device is to use partitions.

You can use the QUERY structured field to determine whether the device is set up to use partitions (see Chapter 32, “TYPETERM resource definitions,” on page 305).

PRINTADAPTER({NO|YES})

For the 3275: specifies whether the printer adapter feature and corresponding 3284 Printer Model 3 are present on the 3275 Display Station. This feature makes the 3284 eligible for print requests through the PA key from the host 3275.

NO The printer adapter feature and corresponding 3284 Printer Model 3 are not available.

YES The printer adapter feature and corresponding 3284 Printer Model 3 are available.

For LUTYPE2 logical units: specifies whether, for print requests initiated by the PRINT key or by an ISSUE PRINT command, printer allocation is handled by the 3790, or by the 3274 or 3276, according to the printer authorization matrix for both VTAM and non-VTAM attachments.

NO Print requests are not handled according to the printer authorization matrix for both VTAM and non-VTAM attachments.

YES Print requests are handled according to the printer authorization matrix for both VTAM and non-VTAM attachments.

Further, 3270 printers attached to the same 3790 are available for print requests sent to the 3270-display logical unit by a terminal control print request or initiated by the operator. If PRINTADAPTER is NO, printer allocation is determined by the PRINTER and ALTPRINTER attributes of the TERMINAL definition.

If output is created on the screen by BMS requests with the PRINT option, by BMS requests with the NLEOM option, or by the CMSG command, the contents of the screen are automatically copied to a 3270 printer, whether or not the CICS-defined PRINT key (usually a PA key) was pressed.

PROGSYMBOLS({NO|YES})

specifies whether the programmed symbol (PS) facility can be used on this 3270 device or SCS printer. The facility enables up to six 191-character sets, with customer-defined and program-loaded fonts and codes, to be stored and accessed.

NO Programmed symbol (PS) facility cannot be used.

YES Programmed symbol (PS) facility can be used.

You can use the QUERY structured field to determine whether the device is set up to use programmed symbols (see Chapter 32, “TYPETERM resource definitions,” on page 305).

QUERY({NO|COLD|ALL})

specifies whether CICS should use the QUERY structured field to determine the characteristics of the device. For more information about this function, and a list of the attributes which can be determined by using it, see Chapter 32, “TYPETERM resource definitions,” on page 305.

NO CICS does not use the QUERY function.

COLD CICS uses the QUERY function to determine the characteristics of the device only when the device is first connected after an initial or a cold start of CICS. The device characteristics are stored in the CICS global catalog for use on subsequent warm and emergency starts.

ALL CICS uses the QUERY function to determine the characteristics of the device each time the device is connected.

RECEIVESIZE(*number*)

For a **defined nonautoinstalled terminal**, specify the maximum size of a request unit that can satisfy a VTAM RECEIVE request. The RECEIVESIZE value is transmitted to the connected logical unit, and must be in the range 0 through 30720. It may be rounded down by CICS, because it must be transmitted in an architected form.

The effect of RECEIVESIZE depends on whether a RECEIVE RUSIZE is present in the VTAM LOGMODE table. Table 12 shows the RECEIVE RUSIZE used to bind a session for each possible combination of TYPETERM and LOGMODE values.

Table 12. RECEIVE RUSIZE for defined (nonautoinstalled) terminals

RECEIVE RUSIZE (VTAM)	TYPETERM RECEIVESIZE	RUSIZE used in bind
0	0	0
0	specified	TYPETERM RECEIVESIZE size
specified	0	This combination is invalid and results in a bind failure with message DFHZC2403
specified	specified	TYPETERM RECEIVESIZE size
Note: The exception to this table is LOGMODE(0). If you specify this in your TYPETERM definition, VTAM values are used, irrespective of what else is specified.		

APPC terminal For an APPC (LUTYPE6.2) single session terminal, 256 would be a suitable value.

Autoinstalled terminal For an autoinstalled terminal, a nonzero value for RECEIVESIZE specifies either the maximum or actual RECEIVE RUSIZE value used in binding a session for a logical unit defined with this TYPETERM.

The effect of RECEIVESIZE depends on whether a RECEIVE RUSIZE is present in the VTAM LOGMODE table. Table 13 shows the RECEIVE RUSIZE used to bind a session for each possible combination of TYPETERM and LOGMODE values.

Table 13. RECEIVE RUSIZE for autoinstalled terminals

RECEIVE RUSIZE (VTAM)	TYPETERM RECEIVESIZE	RUSIZE used in bind
0	0 and BUILDCHAIN(YES)	256
0	0 and BUILDCHAIN(NO)	0
0	specified	TYPETERM RECEIVESIZE size
specified	0	VTAM RECEIVE RUSIZE size

Table 13. RECEIVE RUSIZE for autoinstalled terminals (continued)

RECEIVE RUSIZE (VTAM)	TYPETERM RECEIVESIZE	RUSIZE used in bind
specified less than or equal to TYPETERM RECEIVESIZE	specified	VTAM RECEIVE RUSIZE size
specified greater than TYPETERM RECEIVESIZE	specified	this combination is invalid and results in message DFHZC5963

RECOVNOTIFY({NONE|MESSAGE|TRANSACTION})

This option applies to the recovery of sessions for terminals in a CICS region running with either VTAM persistent sessions or with XRF. It is for use in situations where a terminal user may have to take action, such as sign on again, after a CICS restart. Use RECOVNOTIFY to specify how such a user should be notified.

VTAM persistent sessions: In a CICS region running with persistent session support, this specifies how a terminal end user is notified that the terminal session has been recovered.

XRF: In a CICS region running with XRF support, this specifies how the terminal user is notified that an XRF takeover has occurred.When TRANSACTION is specified, the first transaction named in the RMTRAN system initialization parameter is used.

This option is not applicable to APPC sessions.

NONE There is no notification that a takeover has occurred.

MESSAGE

A message is displayed on the screen to say that the system has recovered. The message is specified in two BMS maps (DFHXRC1 and DFHXRC2) for XRF and in one BMS map (DFHXRC3) for VTAM persistent sessions. . These maps are in map set DFHXMSG. If reduced takeover time is important, use MESSAGE rather than TRANSACTION.

The terminal must be defined with the ATI(YES) option, and must be capable of displaying a BMS map.

TRANSACTION

A transaction is initiated at the terminal. The name of the transaction is specified by the RMTRAN system initialization parameter. (The default transaction for RMTRAN is the one specified in the GMTRAN system initialization parameter: the good-morning transaction.)

For the TRANSACTION option, the terminal must be defined with the ATI(YES) option. If reduced takeover time is important, use MESSAGE rather than TRANSACTION.

RECOVOPTION({SYSDEFAULT|CLEARCONV|RELEASESESS| UNCONDREL|NONE})

This option applies to the recovery of sessions in a CICS region running with VTAM persistent sessions, or with XRF.

VTAM persistent sessions: In a CICS region running with persistent session support, this option specifies how you want CICS to recover the session, and return the terminal to service on system restart within the persistent session delay interval.

XRF: In a CICS region running with XRF support, this option specifies how you want CICS to recover the session, and return the terminal to service after an XRF takeover.

For all recovery options other than NONE, if the action taken is a VTAM UNBIND, the UNBIND is followed by a VTAM SIMLOGON.

| SYSDEFAULT is the default, but in some situations, if your resource definition does not specify this attribute, CICS enforces the NONE value for the attribute if this value is required for compatibility with other options in your resource definition.

SYSDEFAULT

VTAM persistent sessions: In a CICS region running with persistent sessions support, this specifies that CICS is to select the optimum procedure to recover a session on system restart within the persistent session delay interval, depending on the session activity and on the characteristics of the terminal.

Although sessions are recovered, any transactions in-flight at the time of the failure are abended and not recovered. Transactions are also abended if the recovered session is being used by another CICS region over an APPC connection.

CICS recovers the session with the least possible impact, in one of the following ways:

- If the terminal was not executing a transaction at the time of the CICS failure, no recovery action is required, and CICS takes the appropriate recovery notification action as defined by the RECOVNOTIFY attribute.
- If the terminal was busy (that is, executing a transaction) when CICS failed, CICS first tries to recover the session by sending a VTAM end-bracket indicator. If the end-bracket does not recover the session (for example, CICS may be in RECEIVE mode), CICS issues a CLEAR command. If the terminal does not support the CLEAR command, the recovery action taken is a VTAM UNBIND followed by a SIMLOGON.

  See the *CICS Recovery and Restart Guide* for more information about persistent sessions.

XRF: In a CICS region running with XRF support, this specifies that CICS is to select the optimum procedure to recover a busy session at takeover, depending on the session activity and on the characteristics of the terminal.

CLEARCONV

Prevents CICS from sending an end-bracket indicator to close an in-bracket session. Instead CICS sends a CLEAR request, to reset the conversation states. If the session does not support the CLEAR request, CICS sends an UNBIND request. The CLEAR or UNBIND is sent only if the session was busy at the time of system restart (in the case of persistent sessions) or takeover (in the case of XRF).

RELEASESESS

Requires CICS to send an UNBIND request to release the active session. The UNBIND is sent only if the session was busy at the time of system restart (in the case of persistent sessions), or takeover (in the case of XRF). Following the UNBIND, the session is queued for SIMLOGON. If the session is not busy, the requested recovery notification is carried out.

UNCONDREL
Requires CICS to send an UNBIND request to release the active session. The UNBIND is sent whether or not the session was busy at the time of system restart (in the case of persistent sessions support) or the takeover (in the case of XRF). Following the UNBIND, the session is queued for SIMLOGON.

NONE
VTAM persistent sessions: In a CICS region running with persistent sessions support, this specifies that the terminal session is not to be recovered at system restart within the persistent session delay interval: in effect, the terminal has no persistent sessions support. LU6.2 sessions are unbound, but the latest negotiated CNOS value is returned to the CICS system after the restart. After system restart, the terminal is reconnected automatically if you specify AUTOCONNECT(YES), subject to the operation of the AIRDELAY system initialization parameter (AIRDELAY=0 overrides AUTOCONNECT(YES), and the terminal is not reconnected).

RECOVOPTION(NONE) should be used if this terminal or autoinstall model is to be used with persistent sessions (PSDINT = nnn in the SIT) but the terminal may be the subject of an EXEC CICS ISSUE PASS LUNAME() LOGONLOGMODE.

XRF: In a CICS region running with XRF support, this specifies that the logon state is not tracked by the alternate system, and the terminal session is not automatically recovered after a takeover: in effect, the terminal has no XRF support. After takeover, the terminal is reconnected automatically by the alternate system, if you specify AUTOCONNECT(YES).

RELREQ({NO|YES})
specifies whether CICS is to release the logical unit upon request by another VTAM application program.

NO CICS is not to release the logical unit.

YES CICS is to release the logical unit, if the logical unit is not currently part of a transaction.

ROUTEDMSGS({ALL|NONE|SPECIFIC})
specifies which messages are to be routed to this terminal by an EXEC CICS ROUTE command. The default depends on the value you specify for the DEVICE attribute. See Table 10 on page 307 for details.

ALL BMS routes to this terminal messages that are destined for **all** terminals as well as those specifically destined for **this** terminal.

NONE BMS does not route any messages to this terminal, whether they are destined for all terminals or for this terminal specifically.

SPECIFIC
BMS routes messages to this terminal when they are destined specifically for this terminal, but not when they are destined for **all** terminals.

`RSTSIGNOFF({NOFORCE|FORCE})`
specifies whether the terminal user should be signed off in the event of a persistent sessions restart or an XRF takeover.

FORCE
The terminal will be signed off after a persistent sessions restart or XRF takeover.

NOFORCE
The terminal will remain signed on after a persistent sessions restart or XRF takeover, provided that:
- the RSTSIGNOFF system initialization parameter is set to NOFORCE
- *and* the XRFSOFF entry in the CICS segment of the RACF user profile is set to NOFORCE.

For more information, see “Extended recovery (XRF) for terminals” on page 317.

`SENDSIZE(number)`
Defined terminal (nonautoinstalled): For a nonautoinstalled terminal, this is the maximum size in bytes of a request unit that can satisfy a VTAM RECEIVE request. The SENDSIZE value is transmitted to the connected logical unit, and must be in the range 0 through 30720. It may be rounded down by CICS, because it must be transmitted in an architected form.

The effect of SENDSIZE depends on whether a RECEIVE RUSIZE is present in the VTAM LOGMODE table. Table 14 shows the RECEIVE RUSIZE used to bind a session for each possible combination of TYPETERM and LOGMODE values.

Table 14. SEND RUSIZE for defined (nonautoinstalled) terminals

SEND RUSIZE (VTAM)	TYPETERM SENDSIZE	RUSIZE used in bind
0	0	0
0	specified	TYPETERM SENDSIZE size
specified	0	0
specified	specified	TYPETERM SENDSIZE size
Note: The exception to this table is LOGMODE(0). If you specify this in your TYPETERM definition, VTAM values are used, irrespective of what else is specified.		

APPC terminal: For an APPC (LUTYPE6.2) single session terminal, 256 is a suitable value.

Autoinstalled terminal: For an autoinstalled terminal, a nonzero value for SENDSIZE specifies either the maximum or actual SEND RUSIZE value used in binding a session for a logical unit defined with this TYPETERM.

The effect of SENDSIZE depends on whether a SEND RUSIZE is present in the VTAM LOGMODE table. Table 15 shows the SEND RUSIZE used to bind a session for each possible combination of TYPETERM and LOGMODE values.

Table 15. SEND RUSIZE for autoinstalled terminals

SEND RUSIZE (VTAM)	TYPETERM SENDSIZE	RUSIZE used in bind
0	0	0
0	specified	TYPETERM SENDSIZE size
specified	0	VTAM SEND RUSIZE size

Table 15. SEND RUSIZE for autoinstalled terminals (continued)

SEND RUSIZE (VTAM)	TYPETERM SENDSIZE	RUSIZE used in bind
specified less than or equal to TYPETERM SENDSIZE	specified	VTAM SEND RUSIZE size
specified greater than TYPETERM SENDSIZE	specified	this combination is invalid and results in message DFHZC5963

SESSIONTYPE(*type*)
specifies the type of session that can be used for a VTAM SNA logical unit. For details, see Table 10 on page 307.

SHIPPABLE({NO|YES})
specifies whether the definition is allowed to be sent to a remote system if this device tries to initiate a remote transaction.

NO This definition cannot be shipped to a remote system.

YES This definition can be shipped to a remote system.

This function may be used for any terminal, whether autoinstalled or with its own TERMINAL definition. The shipping does not work unless the terminal has a definition installed, by one of these methods, in the local system.

Using SHIPPABLE(YES) means that you do not need to ensure that a definition of the terminal exists on the remote system for a locally defined terminal to initiate a transaction in that system. This can be useful when the remote system cannot share the CSD file with the local system.

A definition for the terminal must already be installed in (or already shipped to) the remote system.

For guidance on deciding whether to use SHIPPABLE(YES), see “Terminals for transaction routing” on page 252.

SIGNOFF({YES|NO|LOGOFF})
specifies the actions taken when GNTRAN (CESF or user-defined transaction) is attached and attempts to sign off the terminal. If you are using RACF 1.9 or later, specify the TIMEOUT limit in the RACF segment.

YES When the specified time has elapsed after the last input from the operator, the terminal is automatically signed off from CICS.

NO The terminal is not timed out.

LOGOFF
When the specified time has elapsed after the last input from the operator, the terminal is automatically signed off from CICS and then logged off from VTAM. LOGOFF is useful for an autoinstall model, because virtual storage is not wasted on entries for terminals that have been timed out.

If GNTRAN fails to attach because of unprocessed data in the terminal buffer (resulting in a BID failure), the terminal will be signed off and logged off. GNTRAN will not run and will have no effect.

Note: You cannot change the value of this attribute when DEVICE(APPC) is specified. The default value in that case is SIGNOFF(NO).

SOSI({NO|YES})
specifies whether the device supports mixed EBCDIC and double-byte character set (DBCS) fields.

NO The device supports mixed EBCDIC and double-byte character set (DBCS) fields.

YES The device supports mixed EBCDIC and double-byte character set (DBCS) fields.

You can use the QUERY structured field to determine whether the device is set up to use mixed EBCDIC and DBCS fields (see Chapter 32, “TYPETERM resource definitions,” on page 305).

TERMMODEL({1|2})
specifies the model number of the terminal. If the device is a component of the 3270 Information Display System, specify the model number of the terminal:

1 Specify 1 for the 3270 Model 1 displays and printers (for example, 3277 Model 1) with a default screen or buffer size of 12x40 (480 bytes/characters). TERMMODEL(1) is the default for 3270 Model 1 printers and displays.

Specify 1 for the 3275 Display Station Model 11. The CICS support obtained is identical to that obtained by coding TERMMODEL(1) for 3275 Display Station Model 1.

2 Specify 2 for the 3270 displays and printers (for example, 3278 Model 4) with a default screen or buffer size of 24x80 (1920 bytes/characters). TERMMODEL(2) is the default for the 3286 printer in 3270 compatibility mode.

Specify 2 for the 3275 Display Station Model 12. The CICS support obtained is identical to that obtained by coding TERMMODEL(2) for 3275 Display Station Model 2.

TEXTKYBD({NO|YES})
specifies whether the 3270 device has the text-keyboard feature.

NO The 3270 device does not have the text-keyboard feature.

YES The 3270 device has the text-keyboard feature.

TEXTPRINT({NO|YES})
specifies whether the 3288 printer has the text-print feature.

NO The 3288 printer doe not have the text-print feature.

YES The 3288 printer has the text-print feature.

TTI({YES|NO})
specifies whether transactions can be initiated at the terminal by a user.

YES Transactions can be initiated at the terminal by a user. If you also specify ATI(YES), transactions can also be initiated automatically. In this case, the automatic transaction initiation, either by transient data control or interval control, sets a condition in an appropriate terminal control table terminal entry. If both ATI and TTI are specified as YES, and if there is no transaction at the terminal, terminal control initiates the user-defined task. This task is expected to send messages to the terminal.

For a terminal used in the processing of transactions such as inquiries or order entries, specify TTI(YES) and ATI(NO). This also applies to a display station or hard-copy terminal to which no messages are sent without a terminal request and through which transactions are entered. Note that this is the only specification allowed for 3790 inquiry logical units.

NO
Transactions cannot be initiated at the terminal by a user. If you specify NO, specify ATI(YES) to allow transactions to be initiated automatically. An example of this type of terminal is one that is located in a remote location, such as a warehouse, and is unattended but may receive messages.

TYPETERM(*name*)
specifies the name of this extension of a TERMINAL definition. The name can be up to eight characters in length.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters you enter are converted to uppercase.

This name is referred to in all the TERMINAL definitions using this TYPETERM. Note that this TYPETERM definition must be installed before or at the same time as the TERMINAL definitions that reference it.

UCTRAN({**NO**|**YES**|**TRANID**})
specifies whether the input data stream from a terminal is to be translated to uppercase. The input data stream may include a transaction identifier as well as program data. CICS supports transaction identifier definition in mixed case, and the UCTRAN attribute can be used to ensure that the correct transaction is located. Uppercase translation is done for both 3270 and non-3270 data streams.

NO
No uppercase translation is performed.

YES
All the data input from the terminal, both the transaction identifier if present and the program data, is translated to uppercase before any processing.

TRANID
When the input data stream includes a transaction identifier, CICS translates it to uppercase before attempting to locate its definition. However, all the input data, both the transaction identifier and the program data, is passed to the program without any translation.

Therefore both the YES and the TRANID options allow transaction identifiers to be defined in uppercase and to be entered from the terminal in either uppercase or lowercase, but the TRANID option causes the transaction identifier and program data to be passed to the program without any translation.

You can also request translation to uppercase at the transaction level on PROFILE definitions (see “PROFILE definition attributes” on page 167), but be aware that a TYPETERM UCTRAN(YES) definition overrides a PROFILE UCTRAN(NO) definition. So, if you specify TYPETERM UCTRAN(YES), a PROFILE UCTRAN(NO) has no effect. Translation can be overridden by the application program for all RECEIVE requests except the first, by using the ASIS option.

Table 16 shows which portion of the terminal input is translated (transaction id and/or data) according to the setting of the UCTRAN on the PROFILE and TYPETERM resource definitions.

Table 16. The effect of UCTRAN attributes on tranid and data translation

UCTRAN in PROFILE	UCTRAN in TYPETERM	TRANID translated?	Data Translated?
YES	YES	Yes	Yes
YES	NO	No	Yes
YES	TRANID	Yes	Yes
NO	YES	Yes	Yes
NO	NO	No	No
NO	TRANID	Yes	No

USERAREALEN({**0**|*number*})

specifies the length in bytes (0 to 255) of the user area for this terminal. It should be made as small as possible. The TCT user area is initialized to zeros at system initialization.

The TCT user area may be located above or below the 16Mb line in virtual storage. Where it is located depends on the value of the TCTUALOC system initialization parameter. Specify this so that it caters for any programs you may have that are not capable of handling 31-bit addressing.

VALIDATION({**NO**|**YES**})

For the 8775, specifies whether the 8775 device has the extended validation feature, which allows fields to be defined as TRIGGER, MANDATORY FILL, or MANDATORY ENTER.

For the 3290, specifies whether the 3290 device has the validation feature, which allows fields to be defined as MANDATORY FILL or MANDATORY ENTER.

This option is not valid for SCS printers. If VALIDATION(YES) is specified for an SCS printer, an error message is raised and the option is ignored.

You can use the QUERY structured field to determine whether the device is set up to use the validation feature (see Chapter 32, “TYPETERM resource definitions,” on page 305).

VERTICALFORM({**NO**|**YES**})

specifies whether the device has the vertical form feature. The devices that can use this feature are batch, batch data interchange, interactive, SCSPRT or LUTYPE4 logical units.

NO	The device does not have the vertical form feature.
YES	The device has the vertical form feature.

XRFSIGNOFF

This attribute is obsolete, but is supported to provide compatibility with earlier releases of CICS. For more information, see Appendix A, “Obsolete attributes,” on page 615.

Chapter 33. URIMAP resource definitions

URIMAP definitions are resource definitions that match the URIs of HTTP or Web service requests, and provide information on how to process the requests.

URIMAP definitions are used to provide three different Web-related facilities in CICS:

1. **Requests from a Web client, to CICS as an HTTP server.** URIMAP definitions for requests for CICS as an HTTP server have a USAGE attribute of SERVER. These URIMAP definitions match the URLs of HTTP requests that CICS expects to receive from a Web client, and they define how CICS should provide a response to each request. You can use a URIMAP definition to tell CICS to:
   - **Provide a static response** to the HTTP request, using a document template or z/OS UNIX System Services HFS file.
   - **Provide a dynamic response** to the HTTP request, using an application program.

   Planning your CICS Web support architecture for CICS as an HTTP server has planning information for CICS as an HTTP server, and Resource definition for CICS Web support has instructions for creating a URIMAP definition for these purposes.
2. **Requests to a server, from CICS as an HTTP client.** URIMAP definitions for requests from CICS as an HTTP client have a USAGE attribute of CLIENT. These URIMAP definitions specify URLs that are used when a user application, acting as a Web client, makes a request through CICS Web support to an HTTP server. Setting up a URIMAP definition for this purpose means that you can avoid identifying the URL in your application program. HTTP client requests from a CICS application has instructions for creating a URIMAP definition for this purpose.
3. **Web service requests.** URIMAP definitions for Web service requests have a USAGE attribute of PIPELINE. These URIMAP definitions associate a URI for an inbound Web service request (that is, a request by which a client invokes a Web service in CICS) with a PIPELINE or WEBSERVICE resource that specifies the processing to be performed. Web services - start here has further information about Web services in CICS.

For CICS as an HTTP server, URIMAP definitions incorporate most of the functions that were previously provided by the analyzer program associated with the TCPIPSERVICE definition. An analyzer program may still be involved in the processing path if required.

Defining URIMAP resource definitions

You can create URIMAP resource definitions in the following ways:

- Using the CEDA transaction; see “Defining URIMAP definitions using CEDA” on page 348.
- Using the DFHCSDUP utility; see *CICS Operations and Utilities Guide*.
- Using the CREATE URIMAP command; see the *CICS System Programming Reference*.
- Using CICSPlex SM Business Application Services; see *CICSPlex System Manager Managing Business Applications*.

Defining URIMAP definitions using CEDA

From a CICS terminal, issue the following command:

```
CEDA DEFINE URIMAP(urimap) GROUP(name)
```

Figure 38 illustrates the CEDA DEFINE URIMAP panel:

```
    Urimap    ==>
    Group       ==>
    DEscription  ==>
    STatus       ==> Enabled        Enabled | Disabled
    USAge        ==> Server         Server | Client | Pipeline
UNIVERSAL RESOURCE IDENTIFIER
    SCheme       ==> HTTP            HTTP | HTTPS
    HOST         ==>
    (Lower Case) ==>
    PAth         ==>
    (Mixed Case) ==>
                 ==>
                 ==>
                 ==>
ASSOCIATED CICS RESOURCES
    TCpipservice ==>
    Analyzer     ==>No                No | Yes
    COnverter    ==>
    TRansaction  ==>
    PRogram      ==>
    PIpeline     ==>
    Webservice   ==>
SECURITY ATTRIBUTES
    USErid       ==>
    CIphers      ==>
    CErtificate  ==>                           (Mixed Case)
STATIC DOCUMENT PROPERTIES
    Mediatype    ==>                           (Lower Case)
    CHaracterset ==>                           (Mixed Case)
    HOSTCodepage ==>
    TEmplatename ==>
    (Mixed Case)
    HFsfile      ==>
    (Mixed Case) ==>
                 ==>
                 ==>
                 ==>
REDIRECTION
    Redirecttype ==>                    None | Temporary | Permanent
    Location     ==>
    (Mixed Case) ==>
                 ==>
                 ==>
                 ==>
```

Figure 38. The DEFINE panel for URIMAP

For information about input to mixed case fields, see "Entering mixed case attributes" on page 388.

Installing URIMAP resource definitions

This procedure uses the CEMT and CEDA transactions to install a URIMAP resource definition. If the URIMAP resource already exists, it has to be disabled before it can be reinstalled.

1. If the URIMAP resource already exists, ensure that it is disabled. Use the following command:

   ```
   CEMT SET URIMAP(name) DISABLED
   ```

While the URIMAP resource is disabled, if a web client makes an HTTP request that requires the resource, CICS issues error message DFHWB0763, and returns an HTTP 503 response (Service Unavailable) to the web client through a web error program. You can tailor this response by changing the web error program.

2. Install the URIMAP definition. Use the following command:

   ```
   CEDA INSTALL GROUP(groupname) URIMAP(name)
   ```

   When you install a URIMAP definition, CICS carries out the following security checks:

   - If the URIMAP definition specifies SCHEME(HTTPS), CICS checks at install time that SSL is active in the CICS region. This is indicated by the use of the KEYRING system initialization parameter to specify the key ring used by the CICS region. If SSL is not active in the CICS region, CICS issues message DFHAM4095, and the URIMAP definition is not installed.
   - If the URIMAP definition specifies the CIPHERS attribute, CICS validates the list of ciphers against the ciphers supported in the running system. If no valid ciphers are found in the list, CICS issues message DFHAM4918 and the URIMAP definition is not installed. However, if some but not all of the ciphers in the list are supported, CICS issues message DFHAM4917 and the URIMAP is installed with the reduced set of cipher codes.
   - If the URIMAP definition specifies the CERTIFICATE attribute, CICS validates the certificate against those specified in the key ring. If the specified certificate is not valid, then CICS issues messages DFHAM4889 and DFHAM4928, and the URIMAP definition is not installed.
3. Optional: When you have successfully installed the URIMAP definition, use CEMT to enable the resource. Perform this step only if the URIMAP resource is not already defined as ENABLED, and you want to make the resource available for web clients or web services. Use the following command:

   ```
   CEMT SET URIMAP(name) ENABLED
   ```

URIMAP: related resources

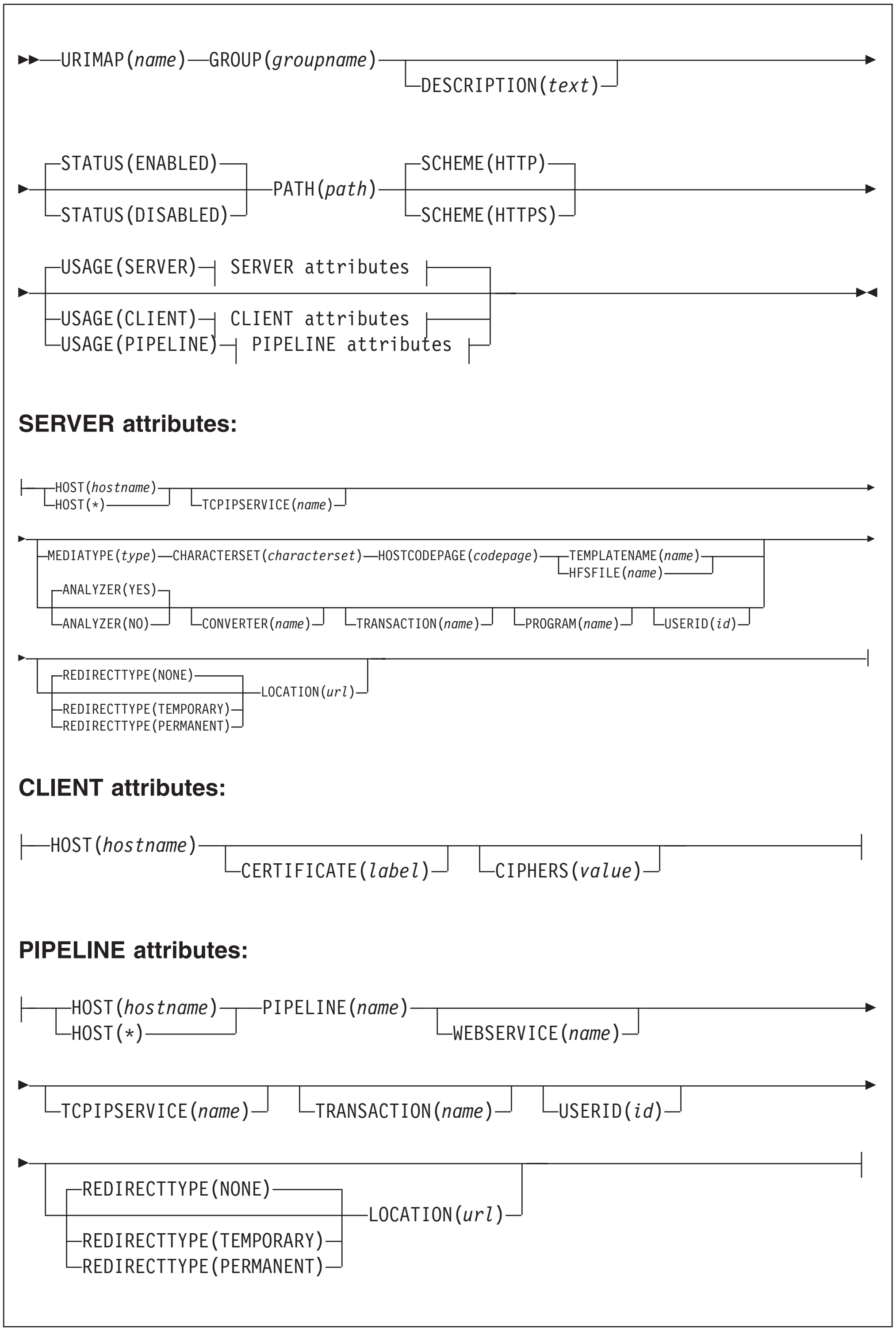
The attributes and values you specify for a URIMAP resource must be consistent with those specified on other resources. However, CICS does not check consistency of all related resources when the URIMAP definition is installed, and therefore does not report most inconsistencies at install time. The exception is the check described in “Installing URIMAP resource definitions” on page 348.

- In URIMAP definitions for CICS as an HTTP server and Web services, the TCPIPSERVICE attribute specifies the name of a TCPIPSERVICE resource definition that defines an inbound port to which this URIMAP definition relates. The attribute is optional, and if it is not specified, the URIMAP definition applies to any inbound request on all TCPIPSERVICE definitions. If the TCPIPSERVICE attribute is specified:
  - The selected TCPIPSERVICE resource definition must specify PROTOCOL(HTTP).
  - If SSL(YES) or SSL(CLIENTAUTH) is specified in the TCPIPSERVICE resource definition, the SCHEME attribute of the URIMAP definition must be HTTPS. When a URIMAP definition with HTTPS as the scheme matches a request that a Web client is making, CICS checks that the inbound port used by the request is using SSL. If SSL is not specified for the port, the request is rejected with a 403 (Forbidden) status code.

You must install the selected TCPIPSERVICE definition before the URIMAP definition can be used.

- In URIMAP definitions for CICS as an HTTP server where a static response is to be provided, the TEMPLATENAME attribute specifies the 1-48 character name of a CICS document template that will form the static response. The document template must be defined using a DOCTEMPLATE resource definition, and the TEMPLATENAME attribute of that definition specifies the name that is used in the URIMAP definition. The DOCTEMPLATE resource definition must be available before the URIMAP definition can be used.

URIMAP definition attributes



ANALYZER({NO|YES})

This attribute is for USAGE(SERVER), where an application-generated response is to be provided. (For USAGE(CLIENT) or USAGE(PIPELINE), the attribute is forced to NO.) It specifies whether an analyzer program is to be used in processing the HTTP request. The analyzer that can be run using this attribute is the analyzer associated with the TCPIPSERVICE definition or definitions to which this URIMAP definition relates. (An analyzer program must be in the local CICS region.) YES runs the analyzer. NO means that the analyzer is not used.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters you enter are converted to uppercase.

Note: As supplied, the CICS-supplied default analyzer DFHWBAAX and sample analyzer DFHWBADX do not perform any analysis of a request when a matching URIMAP definition has been found for the request, even if the URIMAP specifies ANALYZER(YES).

If an analyzer program is used, you can still specify the CONVERTER, TRANSACTION, USERID, and PROGRAM attributes. The values that you specify for these attributes are used as input to the analyzer program, but they can be overridden by it. Alternatively, you can leave these attributes blank and let the analyzer program specify them.

CERTIFICATE(*label*)

This attribute is for USAGE(CLIENT). It specifies the label of the X.509 certificate that is to be used as the SSL client certificate during the SSL handshake. Certificate labels can be up to 32 characters long. This attribute is only used when the URI specified by the URIMAP definition is to be used for an HTTPS request made by CICS as a client. It is up to the server to request a SSL client certificate, and if this happens, CICS supplies the certificate label which is specified in the URIMAP definition. If this attribute is omitted, the default certificate defined in the key ring for the CICS region user ID is used. The certificate must be stored in a key ring in the external security manager's database. Building a key ring manually tells you how to do this.

CIPHERS(*value*)

This attribute is for USAGE(CLIENT).

Specifies a string of up to 56 hexadecimal digits that is interpreted as a list of up to 28 2-digit cipher suite codes. When you use the CEDA transaction to define the resource, CICS automatically initializes the attribute with a default list of acceptable codes. For CICS to initialize the attribute, the KEYRING system initialization parameter must be specified in the CICS region where you are running CEDA. If KEYRING is not set, CICS does not initialize the attribute. The default list of codes depends on the level of encryption that is specified by the ENCRYPTION system initialization parameter.

- For ENCRYPTION=WEAK, the default value is `03060102`
- For ENCRYPTION=MEDIUM, the initial value is `0903060102`
- For ENCRYPTION=STRONG, the initial value is `0504352F0A0903060102`

You can reorder the cipher codes or remove them from the initial list. However, you cannot add cipher codes that are not in the default list for the specified encryption level. To reset the value to the default list of codes, delete all of the cipher suite codes and the field will automatically repopulate with the default list. See Cipher suites for more information.

CHARACTERSET(*characterset*)

This attribute is for USAGE(SERVER), where a static response is to be provided. It specifies the 1-40 character name of the character set into which

CICS converts the entity body of the response that is sent to the Web client. CICS does not support all the character sets named by IANA. HTML coded character sets lists the IANA character sets that are supported by CICS. Note that where a CICS document is used (TEMPLATENAME attribute), the UTF-8 and UTF-16 character encodings are not supported. The value of this attribute is included in the Content-Type header of the response.

CHARACTERSET must be specified if a static response is being provided and the MEDIATYPE attribute specifies a text type.

CONVERTER(*name*)

This attribute is for USAGE(SERVER), where an application-generated response is to be provided. It specifies the 1-8 character name of a converter program that is to be run to perform conversion or other processing on the request and response. Typically, a converter program transforms the HTTP request into a COMMAREA that can be used by an application program, and transforms the output into an HTTP response. The converter program can be any converter program that is available in the local CICS region.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters you enter are converted to uppercase.

There is no association between the converter program and the TCPIPSERVICE definition, as there is for the analyzer program.

If the ANALYZER attribute is specified as YES, the CONVERTER attribute is used as input to the analyzer program, but it can be overridden by the analyzer program. If a converter program is used, you can still specify the PROGRAM attribute of the URIMAP definition, but the values that you specify for this attribute can be overridden by the converter program. Alternatively, you can leave this attribute blank and let the converter program specify it.

DESCRIPTION(*text*)

You can provide a description of the resource you are defining in this field. The description text can be up to 58 characters in length. There are no restrictions on the characters that you can use. However, if you use parentheses, ensure that for each left parenthesis there is a matching right one. If you use the CREATE command, for each single apostrophe in the text, code two apostrophes.

GROUP(*groupname*)

Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed.

Acceptable characters:

`A-Z 0-9 $ @ #`

Any lower case characters you enter are converted to upper case.

The GROUP name can be up to eight characters in length. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

HFSFILE(*name*)

This attribute is for USAGE(SERVER), where a static response is to be

provided. It specifies the fully qualified (absolute) or relative name of a z/OS UNIX System Services HFS file that forms the body of the static response which is sent to the HTTP request from the Web client. The name can be specified as an absolute path including all directories and beginning with a slash, for example, `/u/facts/images/bluefish.jpg`. Alternatively, it can be specified as a path relative to the HOME directory of the CICS region userid, for example, `facts/images/bluefish.jpg`. Up to 255 characters can be used.

Acceptable characters:

`A-Z a-z 0-9 . / _ # @`

For information about entering mixed case information, see "Entering mixed case attributes" on page 388.

The value specified must be a valid name for an HFS file:
- The name must not contain imbedded space characters
- The name must not contain consecutive instances of the / character

The name is case-sensitive.

Note: Resource level security is not applied to items delivered as a static response. If you need to apply access controls based on a user ID to an item delivered in this way, you need to deliver the material as an application-generated response instead.

If TEMPLATENAME or HFSFILE is specified, ANALYZER must be set to NO, and the other attributes relating to application-generated responses (TRANSACTION, CONVERTER, PROGRAM, and USERID) must be left blank.

If you want to use path matching, include an asterisk as a wildcard character at the end of the path for the HFS file, and also at the end of the path specified by the PATH attribute. CICS takes the portion of each HTTP request's path that is covered by the wildcard character, and substitutes this as the last part of the file path.

For example, you could create a URIMAP definition with the PATH attribute specified as:

```
findout/pictures/*
```

and the HFSFILE attribute specified as:

```
/u/facts/images/*
```

The URIMAP definition is used to process an incoming HTTP request

```
http://www.example.com/findout/pictures/bluefish.jpg
```

CICS appends `bluefish.jpg` to the HFS file path specified in the URIMAP definition in place of the asterisk, so that the HFS file

```
/u/facts/images/bluefish.jpg
```

is used as the static response.

Note: You cannot use an asterisk alone in the HFSFILE specification. At least one level of the directory structure must be specified.

A query string cannot be substituted into an HFS file (unless you define the HFS file as a CICS document template, and specify it using the TEMPLATENAME option instead of the HFSFILE option).

HOST(*hostname*|*)

This attribute is for all USAGE options. It specifies the host component of the URI to which the URIMAP definition applies, which can be up to 116 characters. An example of a host name is `www.example.com`. The components of a URL explains each of the components and how they are delimited.

The HOST attribute must be present, and must contain only alphanumeric characters, hyphens (-) or periods (.). Hexadecimal escape sequences cannot be used in a host name. CICS validates this at define time. The host name can be entered in any case, but it is converted to lower case in the URIMAP definition.

An IPv4 address can be used as a host name, but IPv6 addresses are not supported.

When USAGE(SERVER) or USAGE(PIPELINE) is specified, a single asterisk can be used as the HOST attribute. This makes the URIMAP definition match any host name. An asterisk cannot be used as a wildcard in the HOST attribute along with any other characters.

For URIMAP definitions relating to CICS as an HTTP client, USAGE(CLIENT), if you need to specify a port number in the URL for the request to the server, include it in the HOST attribute, together with the colon preceding it. You only need to specify the port number if it is other than the default for the scheme (80 for HTTP without SSL, or 443 for HTTPS, HTTP with SSL).

HOSTCODEPAGE(*codepage*)

This attribute is for USAGE(SERVER), where a static response is to be provided. It specifies the 1-10 character name of the IBM code page (EBCDIC) in which the text document that forms the static response is encoded. This information is needed by CICS to perform code page conversion for the entity body of the static response.

HOSTCODEPAGE must be specified if a static response is being provided and the MEDIATYPE attribute specifies a text type.

LOCATION(*url*)

This attribute is for USAGE(SERVER) and USAGE(PIPELINE). It specifies a URL of up to 255 characters to which the client's request should be redirected. This must be a complete URL, including scheme, host, and path components, and appropriate delimiters. CICS does not check that the URL is valid, so you must ensure that the destination exists and that the URL is specified correctly.

The description for the PATH attribute lists the characters that should be excluded from a URL. These characters must not be used in the LOCATION attribute. The exception is the # character, which can be used in the LOCATION attribute as a separator before a fragment identifier which follows the URL.

The REDIRECTTYPE attribute is used to specify the type of redirection. If temporary or permanent redirection is specified, the URL in the LOCATION attribute is used for redirection. If no redirection is specified, the URL in the LOCATION attribute is ignored. You can use the SET URIMAP command to change the REDIRECTTYPE attribute and the LOCATION attribute.

MEDIATYPE(*type*)

This attribute is for USAGE(SERVER), where a static response is to be provided. It specifies the media type (data content) of the static response that CICS provides to the HTTP request, for example `image/jpg`, `text/html` or `text/xml`. Up to 56 characters can be used. The media type must contain exactly one forward slash (/). The media type can be entered in any case, but it is converted to lower case in the URIMAP definition.

The name for each formally recognized type of data content is defined by IANA. A list is available at http://www.iana.org/assignments/media-types/. CICS creates a Content-Type header for the response using the value of this attribute.

There is no default for this attribute, and it must be specified. If the MEDIATYPE attribute specifies a text type (such as a type that begins with `text/`, or a type that contains `+xml`), the CHARACTERSET and HOSTCODEPAGE attributes must also be specified so that code page conversion can take place. Text media types are identified by RFC 3023, which is available at http://www.ietf.org/rfc/rfc3023.txt.

For a dynamic (application-generated) response, this attribute is not used. The media type for the response is specified by the WEB SEND command.

PATH(*path*)

This attribute is for all USAGE options. It specifies the path component of the URI to which the URIMAP definition applies, which can be up to 255 characters. An example of a path is `software/htp/cics/index.html`. The components of a URL explains each of the components and how they are delimited. The minimum possible path is a / (forward slash), which represents the root of the URL structure for the specified host name. For paths that have content beyond this minimum, the forward slash at the beginning of the path component can either be included or omitted. If you omit it, CICS adds it at runtime.

The PATH attribute is specified in mixed case, and the case is preserved in the URIMAP definition. The PATH attribute must contain only the characters allowed in URIs. Specifically, the characters < > # % “ { } | \ ^ [ ] ` and imbedded blanks should be excluded (except that % should be allowed when it introduces a valid hexadecimal escape sequence: that is, when it is followed by two valid hexadecimal digits in upper or lower case). The tilde character (~) cannot be specified in CICS and must be replaced by the corresponding hexadecimal escape sequence (%7E). CICS validates the use of characters at define time.

For URIMAP definitions relating to CICS as an HTTP server and Web services, if you want the URIMAP definition to match more than one path, you can use an asterisk as a wildcard character at the end of the path. For example, specifying the path `/software/htp/cics/*` would make the URIMAP definition match all requests whose path begins with the string to the left of the asterisk. Specifying a path of /* makes the URIMAP definition match any requests directed to the host named in the HOST attribute. If an HTTP request is matched by more than one URIMAP definition, the most specific match is taken.

If a query component is present, and you want to apply the URIMAP definition to that specific query alone, you can include this as part of the path component. Include the question mark at the beginning of the string. The query string must contain only the characters allowed in URIs. A query string may not itself include an asterisk as a wildcard, but it may follow a path that includes an asterisk as a wildcard. If you do not include a query string in the URIMAP definition, any query string that is present in the HTTP request is automatically ignored for matching purposes.

For URIMAP definitions for CICS as an HTTP client, you cannot use an asterisk as a wildcard; you must specify the complete path for the request. If the URIMAP definition is referenced on a WEB OPEN command, this path becomes the default path for WEB SEND commands relating to that connection. If the URIMAP definition is referenced on a WEB SEND command, the path is used for that WEB SEND command, but note that the host attribute for that URIMAP definition must match the host specified on the WEB OPEN command for the connection.

PIPELINE(*name*)

This attribute is for USAGE(PIPELINE). When a client makes an inbound Web service request to CICS with the URI specified by this URIMAP definition, PIPELINE specifies the 1-8 character name of the PIPELINE resource definition for the Web service. The PIPELINE resource definition provides information about the message handlers which act on the service request from the client. Chapter 20, “PIPELINE resource definitions,” on page 157 describes these resource definitions.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters you enter are converted to uppercase.

PROGRAM(*name*)

This attribute is for USAGE(SERVER), where an application-generated response is to be provided. It specifies the 1-8 character name of the user application program that composes the HTTP response. For CICS as an HTTP server, this attribute is required unless an analyzer or converter program is specified, or a template name or HFS file is specified, or redirection is specified.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters you enter are converted to uppercase.

If the ANALYZER attribute is specified as YES, or a converter program is specified using the CONVERTER attribute, the PROGRAM attribute is used as input to the analyzer or converter program, but it can be overridden by those programs. Alternatively, you can leave this attribute blank and let the analyzer or converter program specify it.

REDIRECTTYPE({**NONE**|**TEMPORARY**|**PERMANENT**})

This attribute is for USAGE(SERVER) and USAGE(PIPELINE). It specifies the type of redirection for requests that match this URIMAP definition. The URL specified by the LOCATION attribute is used for redirection when required.

- NONE means that requests are not redirected. Any URL specified by the LOCATION attribute is ignored.
- TEMPORARY means that requests are redirected on a temporary basis. The URL specified by the LOCATION attribute is used for redirection, and the status code used for the response is 302 (Found).
- PERMANENT means that requests are redirected permanently. The URL specified by the LOCATION attribute is used for redirection, and the status code used for the response is 301 (Moved Permanently).

You can use the SET URIMAP command to change the REDIRECTTYPE attribute and the LOCATION attribute.

If REDIRECTTYPE(TEMPORARY) or REDIRECTTYPE(PERMANENT) is specified when creating a URIMAP definition, the following attributes are optional: ANALYZER, CONVERTER, HFSFILE, PIPELINE, PROGRAM, TEMPLATENAME, TRANSACTION, USERID, and WEBSERVICE. If you use a CEMT or EXEC CICS command to set the REDIRECTTYPE attribute to NONE after the URIMAP definition is installed, any of the listed attributes that were specified in the URIMAP definition are activated.

SCHEME({HTTP|**HTTPS**})

This attribute is for all USAGE options. It specifies the scheme component of the URI to which the URIMAP definition applies, which is either HTTP (without SSL) or HTTPS (with SSL). Do not include the delimiters `://` (colon and two forward slashes) that follow the scheme component in the URI.

Note: A URIMAP specifying the HTTP scheme accepts Web client requests made using either the HTTP scheme, or the HTTPS scheme. A URIMAP specifying the HTTPS scheme accepts only Web client requests made using the HTTPS scheme.

STATUS({ENABLED|**DISABLED**})

This attribute is for all USAGE options. It specifies whether the URIMAP definition is to be installed in an enabled or disabled state. The default is enabled.

TCPIPSERVICE(*name*)

This attribute is for USAGE(SERVER) and USAGE(PIPELINE). It specifies the 1- to 8-character name of a TCPIPSERVICE resource definition, with PROTOCOL(HTTP), that defines an inbound port to which this URIMAP definition relates. If this attribute is not specified, the URIMAP definition applies to a request on any inbound ports.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters you enter are converted to uppercase.

When a URIMAP definition with HTTPS as the scheme matches a request that a Web client is making, CICS checks that the inbound port used by the request is using SSL. If SSL is not specified for the port, the request is rejected with a 403 (Forbidden) status code. When the URIMAP definition applies to all inbound ports, this check ensures that a Web client cannot use an unsecured port to access a secured resource. No check is carried out for a URIMAP definition that specifies HTTP as the scheme, so Web clients can use either unsecured or secured (SSL) ports to access these resources.

Note: The TCPIPSERVICE resource definition is the place where you specify the security measures that are applied for each port. You can choose whether or not to use SSL, and if you do use SSL, you need to choose the exact security measures that are applied (for example, the authentication method, the sending of certificates by client and server, and encryption of messages). Read Security for CICS Web support for more information about the security features that you can use to keep your CICS Web support facility safe.

TEMPLATENAME(*name*)

This attribute is for USAGE(SERVER), where a static response is to be provided. It specifies the 1-48 character name of a CICS document template that forms the body of the static response that is sent to the HTTP request from the Web client. It must be defined using a DOCTEMPLATE resource definition, and the TEMPLATENAME attribute of that definition specifies the name that is used in the URIMAP definition. See the *Application Programming Guide* for instructions on forming a CICS document template.

Acceptable characters:

`A-Z a-z 0-9 $ @ # . / - _ % & ¢ ? ! : | " = ¬ , ; < >`

For information about entering mixed case information, see “Entering mixed case attributes” on page 388.

Note: Resource level security is not applied to items delivered as a static response. If you need to apply access controls based on a user ID to an item delivered in this way, you need to deliver the material as an application-generated response instead.

If TEMPLATENAME or HFSFILE is specified, ANALYZER must be set to NO, and the other attributes relating to application-generated responses (TRANSACTION, CONVERTER, PROGRAM, and USERID) must be left blank.

If you want to use path matching, include an asterisk as a wildcard character at the end of the name of the CICS document template, and also at the end of the path specified by the PATH attribute. CICS takes the portion of each HTTP request's path that is covered by the wildcard character, and substitutes this as the last part of the template name.

For example, you could create a URIMAP definition with the PATH attribute specified as:

```
findout/about/*
```

and the TEMPLATENAME attribute specified as:

```
templates.facts.*
```

The URIMAP definition is used to process an incoming HTTP request

```
http://www.example.com/findout/about/fish.html
```

CICS appends `fish.html` to the template name specified in the URIMAP definition in place of the asterisk, so that the template

```
templates.facts.fish.html
```

is used to form the static response.

Note: Specifying an asterisk alone for the TEMPLATENAME attribute means that the selected template will have the same name as the part of the URL that corresponds to the wildcard character in the PATH attribute.

When the TEMPLATENAME attribute is specified, if a query string is present on the URI, but is not used in the PATH attribute, CICS automatically passes the content of the query string into the named CICS document template as a symbol list. If you want to use the content of the query string in the document template, you need to include appropriate variables in your document template to be substituted for the content of the query string.

TRANSACTION(*name*)

This attribute is for USAGE(SERVER), where an application-generated response is to be provided, and USAGE(PIPELINE). It specifies the 1-4 character name of an alias transaction that is to be used to run the user application that composes the HTTP response, or to start the pipeline.

Acceptable characters:

`A-Z a-z 0-9 $ @ # . / - _ % & ¢ ? ! : | " = ¬ , ; < >`

For information about entering mixed case information, see “Entering mixed case attributes” on page 388.

The default alias transaction is CWBA for USAGE(SERVER), or CPIH for USAGE(PIPELINE). You can select a different transaction name for the purposes of security, monitoring and accounting, or transaction class limitation. Whatever name you choose for the alias transaction, it must always run the same program, which is determined by the USAGE attribute. For USAGE(SERVER), the program is DFHWBA, which links to the application program named in the PROGRAM attribute of the URIMAP definition (or named by the analyzer program). For USAGE(PIPELINE), the program is DFHPIDSH, which starts the pipeline named in the PIPELINE attribute (and the Web service named in the WEBSERVICE attribute, if specified).

For USAGE(SERVER), if the ANALYZER attribute is specified as YES, the TRANSACTION attribute is used as input to the analyzer program, but the analyzer program can override it. Alternatively, you can leave this attribute blank and let the analyzer program specify it. (For USAGE(PIPELINE), the analyzer is not used.)

URIMAP(*name*)
specifies the name of this URIMAP definition. The name can be up to eight characters in length. The attribute is specified in mixed case, and the case is preserved in the URIMAP definition.

Acceptable characters:

`A-Z 0-9 $ @ #`

For information about entering mixed case information, see “Entering mixed case attributes” on page 388.

USAGE({**SERVER**|**CLIENT**|**PIPELINE**})
Specifies whether this URIMAP definition is for CICS as an HTTP server (SERVER), CICS as an HTTP client (CLIENT), or a Web service (PIPELINE). The USAGE attribute governs which other attributes in the URIMAP definition can be used.

Specifying SERVER creates a URIMAP definition for CICS as an HTTP server. This type of URIMAP definition is used to map the URI of an incoming HTTP request from a Web client, to CICS resources. An application-generated response or a static response can be provided.

Specifying CLIENT creates a URIMAP definition for CICS as an HTTP client. This type of URIMAP definition is used when CICS makes a request for an HTTP resource on a server, so that you can avoid identifying the URI in your application program.

Specifying PIPELINE creates a URIMAP definition for a Web service. This type of URIMAP definition is used for an inbound Web service request (that is, a request by which a client invokes a Web service in CICS). The URI of the incoming request is associated with WEBSERVICE and PIPELINE resources, which specify the processing that is to be performed on the message.

USERID(*id*)
This attribute is for USAGE(SERVER), where an application-generated response is to be provided, and USAGE(PIPELINE).

USERID specifies a 1- to 8-character default user ID that can be used by any client. For an application-generated response or a web service, the alias transaction is attached under this user ID.

When authentication is required for the connection, so that CICS requests an authenticated user ID directly from the client, the default user ID that you specify in the URIMAP definition is not used. The authenticated user ID of the client is used instead, or if authentication fails, the request is rejected. Authentication procedures are specified by the AUTHENTICATE attribute of the TCPIPSERVICE definition for the connection.

If ANALYZER(YES) is specified, a user ID from a URIMAP definition or from the client can be changed by the analyzer program, or the analyzer program can set a user ID. If no user ID is specified by any of these means, the default user ID is the CICS default user.

For USAGE(SERVER), if the ANALYZER attribute is specified as YES, the USERID attribute is used as input to the analyzer program, but the analyzer program can override it. Alternatively, you can leave this attribute blank and let the analyzer program specify it. (For USAGE(PIPELINE), the analyzer is not used.)

If surrogate user checking is enabled in the CICS region (with XUSER=YES specified as a system initialization parameter), CICS checks that the user ID used to install the URIMAP definition, is authorized as a surrogate of the user ID specified for the USERID attribute. Where surrogate user checking applies explains surrogate user checking.

WEBSERVICE(*name*)

This attribute is for USAGE(PIPELINE). When a client makes an inbound Web service request to CICS with the URI specified by this URIMAP definition, WEBSERVICE specifies the name of the Web service. This can be the 1-8 character name of a WEBSERVICE resource definition, or a name up to 32 characters (in mixed case) representing a Web service generated by the CICS Web services assistant.

Acceptable characters:

`A-Z a-z 0-9 $ @ # . / - _ % & ¢ ? ! : | " = ¬ , ; < >`

For information about entering mixed case information, see “Entering mixed case attributes” on page 388.

A Web service definition defines aspects of the run time environment for a CICS application program deployed in a Web services setting, where the mapping between application data structure and SOAP messages has been generated using CICS-supplied tools. Chapter 34, “WEBSERVICE resource definitions,” on page 363 describes these resource definitions.

Chapter 34. WEBSERVICE resource definitions

A WEBSERVICE resource defines aspects of the run time environment for a CICS application program deployed in a Web services setting, where the mapping between application data structure and SOAP messages has been generated using the CICS Web services assistant. Although CICS provides the usual resource definition mechanisms for WEBSERVICE resources, they are typically installed dynamically, using the output produced by the assistant.

The aspects of the run time environment that are defined by the WEBSERVICE resource are:

A pipeline
Defines the set of message handlers that operate on Web service requests and responses. The WEBSERVICE resource specifies a separate PIPELINE resource which, in turn, specifies the pipeline configuration file.

A Web service binding file
Contains information that is used at run time to perform the mapping between application data structures and SOAP messages. The Web service binding file is generated by the CICS-supplied tools.

A Web service description
The Web services description is used only when runtime validation of SOAP messages is required. Validation of each message is performed against its schema, which is imbedded within the Web service description.

An inbound Web service request (that is, a request by which a client invokes a Web service in CICS) is associated with a WEBSERVICE resource by the URIMAP resource. The URIMAP identifies the WEBSERVICE resource that applies to the URI in the inbound message; the WEBSERVICE specifies the processing that is to be performed on the message.

Although CICS provides the usual resource definition mechanisms for creating WEBSERVICE resources, and installing them in your CICS region, you can instead use the scanning mechanism to dynamically install WEBSERVICE resources in your running CICS system. The advantages of this approach are that it reduces the amount of resource definition required, and that CICS can make direct use of information provided at development time.

To invoke the scanning mechanism, use the **`PERFORM PIPELINE`** command.

The name of a dynamically-installed WEBSERVICE is derived from the name of the Web service binding file from which the WEBSERVICE definition is generated, and has a maximum length of 32 characters; the names of WEBSERVICE definitions installed from the CSD or with the **`EXEC CICS CREATE WEBSERVICE`** are limited to eight characters. For example, a Webservice binding file whose HFS name is `/samples/Webservices/WSDir/InquireSingle.wsbind` generates a WEBSERVICE definition named `InquireSingle`

Defining WEBSERVICE resources

You can define WEBSERVICEs in the following ways:

- Using the CEDA transaction; see “Defining WEBSERVICE resources using CEDA” on page 364.

- Using the DFHCSDUP utility; see "The DFHCSDUP DEFINE command" on page 436.
- Using the CREATE WEBSERVICE command. See the *CICS System Programming Reference*.

Defining WEBSERVICE resources using CEDA

From a CICS terminal, issue the following command:

`CEDA DEFINE WEBSERVICE(`*name*`) GROUP(`*name*`)`

Figure 39 illustrates the CEDA DEFINE WEBSERVICE panel:

```
Webservice   ==>
Group        ==>
Description  ==>
Pipeline     ==>
Validation   ==> No                No | Yes
WSBind       ==>
(Mixed Case) ==>
             ==>
             ==>
             ==>
WSDlfile     ==>
(Mixed Case) ==>
             ==>
             ==>
             ==>
```

Figure 39. The DEFINE panel for WEBSERVICE

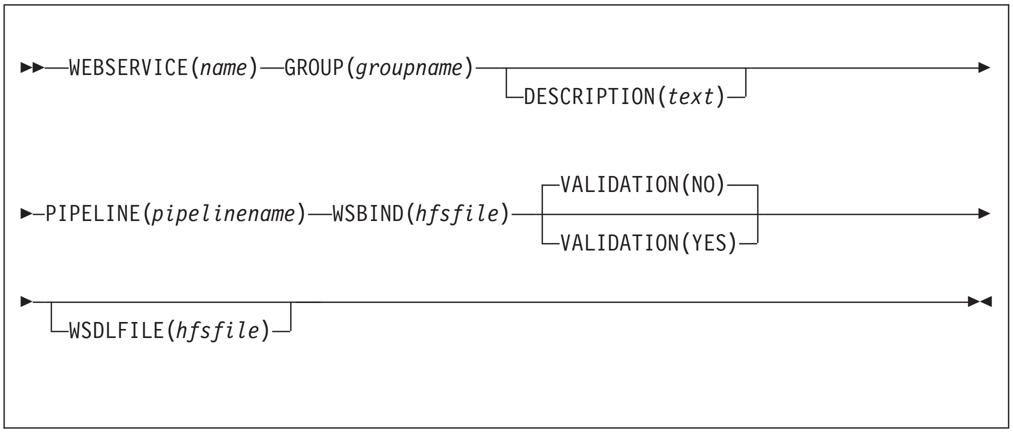
Installing WEBSERVICE resource definitions

Although CICS provides the usual resource definition mechanisms for creating WEBSERVICE resources, and installing them in your CICS region, there is an alternative strategy which you can use. You can use the scanning mechanism to install WEBSERVICE resources in your running CICS system.

There are three ways to install a WEBSERVICE resource definition.

- Use the **PERFORM PIPELINE SCAN** command (using the CEMT transaction, or the system programming interface) to initiate a scan of the pickup directory for a PIPELINE resource. Use this method when you have added or updated a Web service binding file in the pickup directory of a PIPELINE that is already been installed. CICS scans the pickup directory and uses each Web service binding file that it finds there to dynamically install a WEBSERVICE resource.
- Install a PIPELINE resource. Use this method when the pickup directory of a PIPELINE resource contains a Web service binding file that you want to associate with the PIPELINE, and the PIPELINE has not been installed. When you install the PIPELINE, CICS scans the pickup directory and uses each Web service binding file that it finds there to install a WEBSERVICE resource.
- Install a WEBSERVICE resource from the CSD. Use this method if neither of the two other methods is appropriate - for example, when you want to use a PIPELINE definition with a Web service binding file that is not in the PIPELINE's pickup directory.

WEBSERVICE attributes



WEBSERVICE(*name*)

Specifies the 1-8 character name of the WEBSERVICE.

Acceptable characters:

`A-Z a-z 0-9 $ @ # . / - _ % & ¢ ? ! : | " = ¬ , ; < >`

For information about entering mixed case information, see “Entering mixed case attributes” on page 388.

Do not use names beginning with DFH, because these characters are reserved for use by CICS.

GROUP(*groupname*)

Every resource definition must have a GROUP name. The resource definition becomes a member of the group and is installed in the CICS system when the group is installed.

Acceptable characters:

`A-Z 0-9 $ @ #`

Any lower case characters you enter are converted to upper case.

The GROUP name can be up to eight characters in length. Lowercase characters are treated as uppercase characters. Do not use group names beginning with DFH, because these characters are reserved for use by CICS.

DESCRIPTION(*text*)

You can provide a description of the resource you are defining in this field. The description text can be up to 58 characters in length. There are no restrictions on the characters that you can use. However, if you use parentheses, ensure that for each left parenthesis there is a matching right one. If you use the CREATE command, for each single apostrophe in the text, code two apostrophes.

PIPELINE(*pipelinename*)

Specifies the 1-8 character name of the PIPELINE with which this WEBSERVICE is associated.

Acceptable characters:

`A-Z 0-9 $ @ #`

Unless you are using the CREATE command, any lowercase characters you enter are converted to uppercase.

VALIDATION(NO|YES)
Specifies whether full validation of SOAP messages against the corresponding schema in the Web service description should be performed at run time. Validating a SOAP message against its schema incurs considerable processing overhead, and you should normally specify VALIDATION(NO).

Full validation ensures that all SOAP messages that are sent and received are valid XML with respect to the XML schema. If VALIDATION(NO) is specified, sufficient validation is performed to ensure that the message contains well-formed XML.

WSBIND(*hfsfile*)
Specifies the 1-255 character fully-qualified file name of the Web service binding file on HFS.

Acceptable characters:

`A-Z a-z 0-9 . / _ # @`

For information about entering mixed case information, see "Entering mixed case attributes" on page 388.

The name is case-sensitive, and cannot contain spaces. The name must not end with a / character, and must not contain consecutive instances of the / character.

WSDLFILE(*hfsfile*)
Specifies the 1-255 character fully-qualified file name of the Web service description (WSDL) file on HFS. This file is used when full runtime validation is active.

Acceptable characters:

`A-Z a-z 0-9 . / _ # @`

For information about entering mixed case information, see "Entering mixed case attributes" on page 388.

The name is case-sensitive, and cannot contain spaces. The name must not end with a / character, and must not contain consecutive instances of the / character.

Part 3. Resource definition online (RDO) transaction CEDA

This part tells you how to use the CEDA transaction to add, remove, or change resource definitions online.

Chapter 35. The CEDA transaction tutorial

This tutorial shows you how to use the RDO transactions CEDA, CEDB, and CEDC. It assumes that you have read the information on resources, groups, and lists in Chapter 3, “Groups and lists,” on page 17.

At the end of this tutorial, you should be familiar with the CEDA panels, and be able to manage your resources efficiently.

The examples in the tutorial all use CEDA because, if you have CEDA authorization, you can issue all RDO commands. If you have access to only CEDB or CEDC, you can issue the following commands:

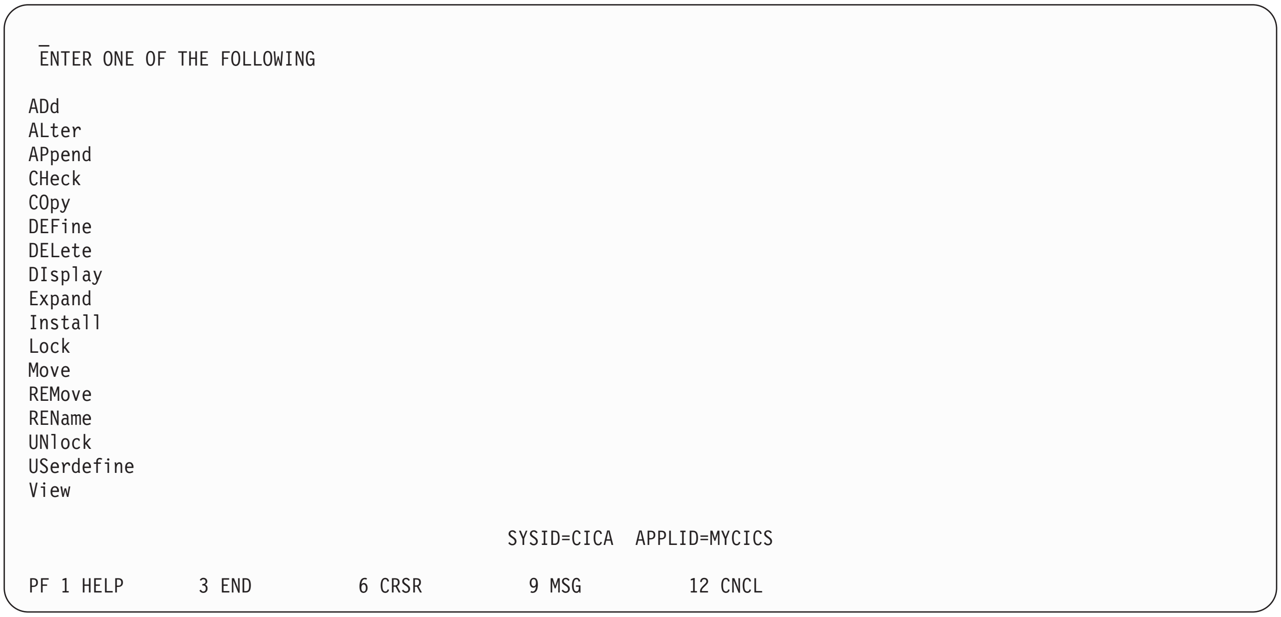
CEDB All RDO commands except INSTALL. You can update the CSD but not a running CICS system.

CEDC DISPLAY, EXPAND, and VIEW commands only. You cannot update the CSD or a running CICS system.

Accessing CEDA

To access CEDA:

1. Enter `CEDA` at a CICS terminal. The panel shown in Figure 40 appears. The cursor is indicated by the symbol '_'.



```
 _
 ENTER ONE OF THE FOLLOWING

ADd
ALter
APpend
CHeck
COpy
DEFine
DELete
DIsplay
Expand
Install
Lock
Move
REMove
REName
UNlock
USerdefine
View

                                          SYSID=CICA  APPLID=MYCICS

PF 1 HELP       3 END          6 CRSR          9 MSG          12 CNCL
```

Figure 40. CEDA transaction: initial panel

Figure 40 shows a list of all the CEDA commands. The CEDB transaction does not support the INSTALL command; the CEDC transaction supports only the DISPLAY, EXPAND, and VIEW commands.

Using the CEDA panels

This topic takes you through some CEDA actions using the CEDA panels. The features and functions of the panels are described in “CEDA panel functions” on page 384. The topics covered are:

- “Creating a resource definition”
- “Displaying a resource definition” on page 372
- “Altering a resource definition” on page 376
- “Copying a resource definition” on page 376.

Tutorial topics

“Using the command line” on page 377

“Displaying messages” on page 378

“Using CEDA HELP” on page 379

“CEDA panel functions” on page 384

Tutorial overview

Chapter 35, “The CEDA transaction tutorial,” on page 369

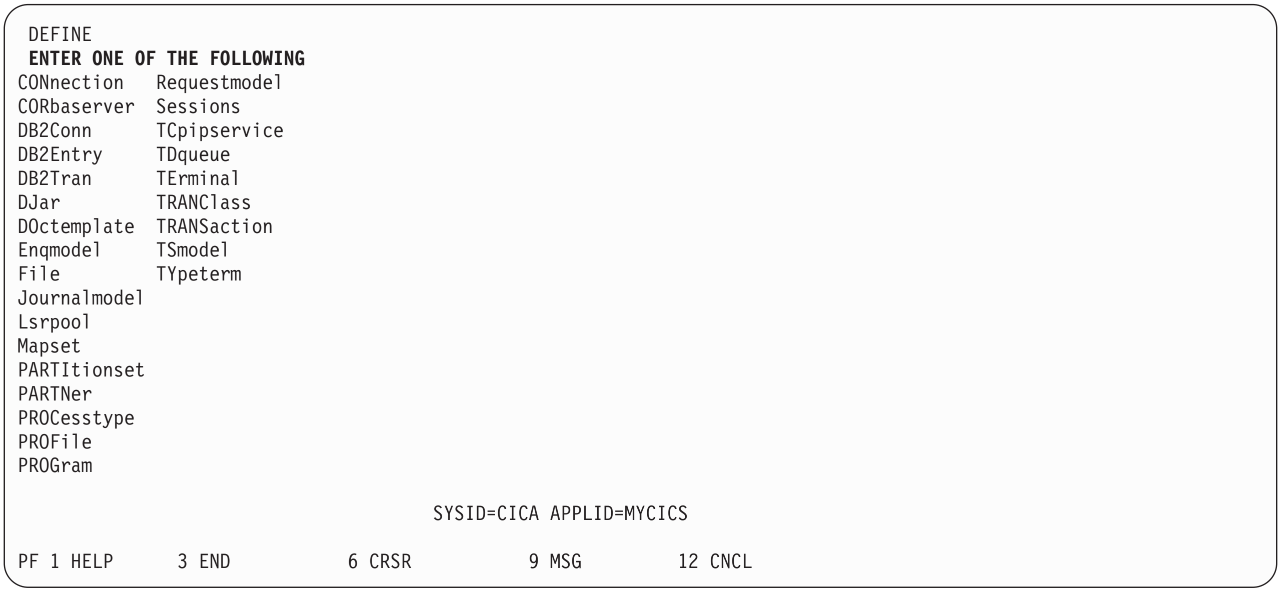
Creating a resource definition

To create a map set definition:

1. To create a new resource definition, type:

   ```
   DEFINE
   ```

   See “Using abbreviations” on page 384 for information on abbreviating commands. Press the Enter key. You see the panel shown in Figure 41.



```
 DEFINE
 ENTER ONE OF THE FOLLOWING
CONnection   Requestmodel
CORbaserver  Sessions
DB2Conn      TCpipservice
DB2Entry     TDqueue
DB2Tran      TErminal
DJar         TRANClass
DOctemplate  TRANSaction
Enqmodel     TSmodel
File         TYpeterm
Journalmodel
Lsrpool
Mapset
PARTItionset
PARTNer
PROCesstype
PROFile
PROGram
                                      SYSID=CICA APPLID=MYCICS

PF 1 HELP      3 END           6 CRSR           9 MSG         12 CNCL
```

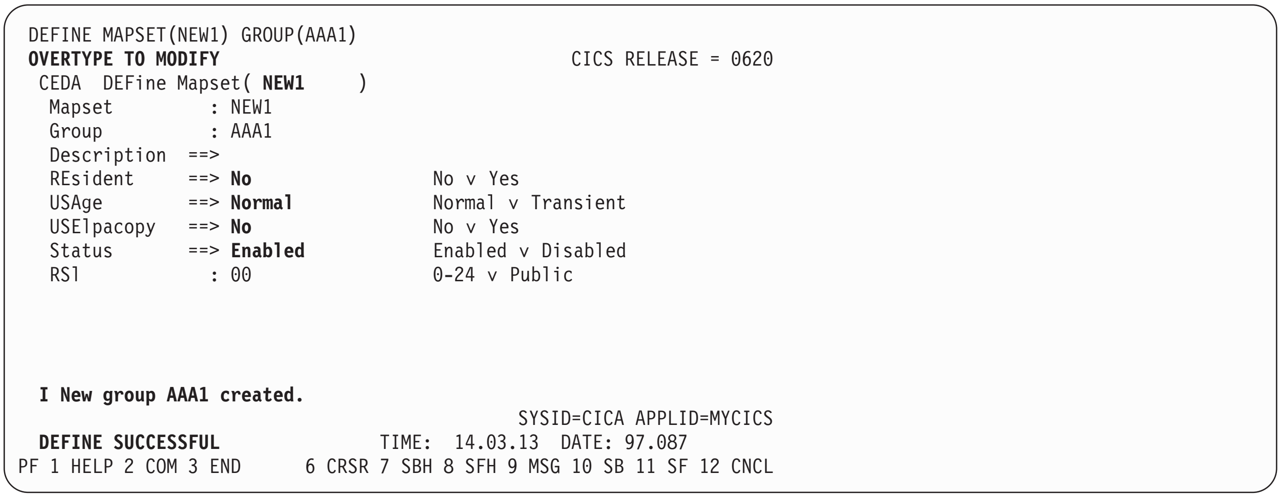
Figure 41. CEDA DEFINE panel

   This is a list of all the resource types you can define for CICS using CEDA. The PF keys are described in “Using the PF keys” on page 386.

2. To create a map set definition, after DEFINE, type

   ```
   MAPSET(NEW1) GROUP(AAA1)
   ```

The panel in Figure 42 is displayed.



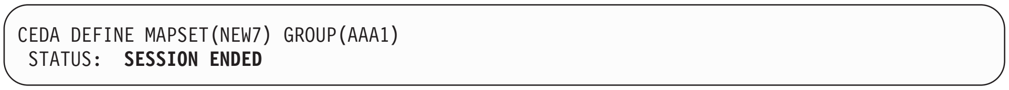
```
DEFINE MAPSET(NEW1) GROUP(AAA1)
OVERTYPE TO MODIFY                                CICS RELEASE = 0620
 CEDA  DEFine Mapset( NEW1     )
  Mapset         : NEW1
  Group          : AAA1
  Description  ==>
  REsident     ==> No                 No v Yes
  USAge        ==> Normal             Normal v Transient
  USElpacopy   ==> No                 No v Yes
  Status       ==> Enabled            Enabled v Disabled
  RSl            : 00                 0-24 v Public




 I New group AAA1 created.
                                                   SYSID=CICA APPLID=MYCICS
 DEFINE SUCCESSFUL               TIME:  14.03.13  DATE: 97.087
PF 1 HELP 2 COM 3 END      6 CRSR 7 SBH 8 SFH 9 MSG 10 SB 11 SF 12 CNCL
```

Figure 42. CEDA DEFINE MAPSET panel

The whole command (DEFINE MAPSET(NEW1) GROUP(AAA1)) remains at the top of the screen. You must specify a group name for every resource you want to define or work with; if you do not, CEDA displays a severe error message informing you that you have not supplied a group.

The main part of the screen shows the attributes of the MAPSET that you have just defined. All the attributes and values that you see are described in “MAPSET definition attributes” on page 144; initially, the CEDA screen shows the default value (or the required value) for each attribute.

3. Press PF3 to exit CEDA. The panel shown in Figure 43 is displayed.



```
CEDA DEFINE MAPSET(NEW7) GROUP(AAA1)
 STATUS:  SESSION ENDED
```

Figure 43. SESSION ENDED panel

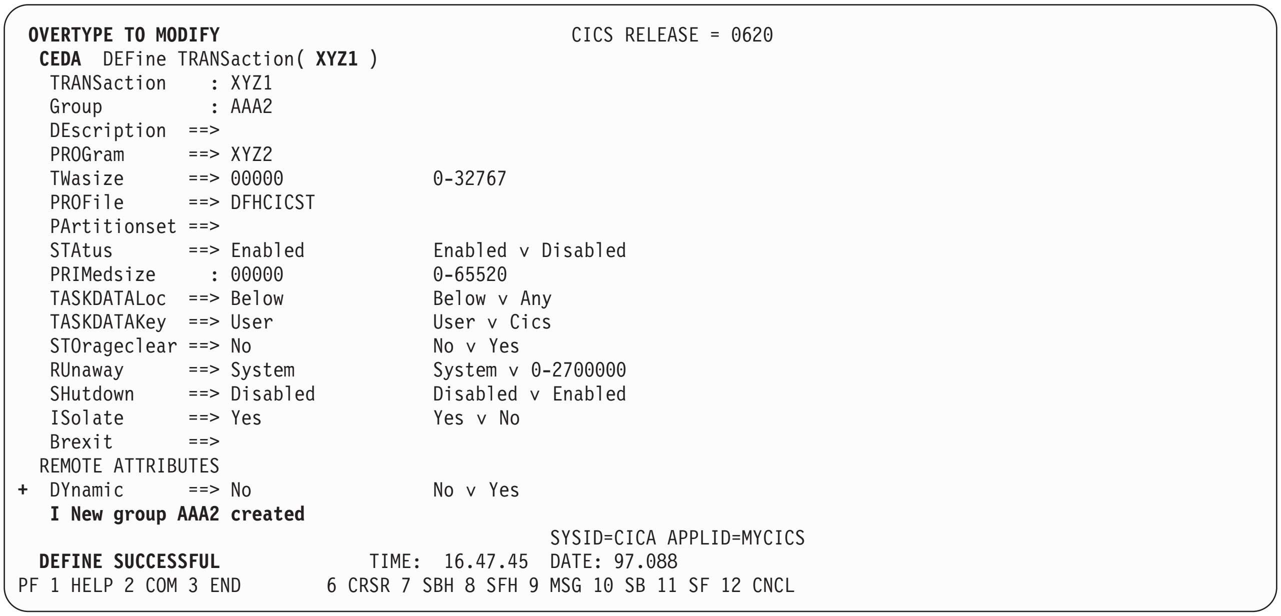
To create a transaction definition:

1. Clear the screen and start the CEDA transaction.
2. Create a transaction definition. You do not have to step through all the panels are you did when you created the map set definition. You can type the whole command on the CEDA initial panel. Type:

   ```
   DEFINE TRANSACTION(XYZ1) PROGRAM(XYZ2) GROUP(AAA2)
   ```

   A panel similar to Figure 44 on page 372 is displayed.

   .



```
 OVERTYPE TO MODIFY                                 CICS RELEASE = 0620
  CEDA  DEFine TRANSaction( XYZ1 )
   TRANSaction    : XYZ1
   Group          : AAA2
   DEscription  ==>
   PROGram      ==> XYZ2
   TWasize      ==> 00000             0-32767
   PROFile      ==> DFHCICST
   PArtitionset ==>
   STAtus       ==> Enabled           Enabled v Disabled
   PRIMedsize     : 00000             0-65520
   TASKDATALoc  ==> Below             Below v Any
   TASKDATAKey  ==> User              User v Cics
   STOrageclear ==> No                No v Yes
   RUnaway      ==> System            System v 0-2700000
   SHutdown     ==> Disabled          Disabled v Enabled
   ISolate      ==> Yes               Yes v No
   Brexit       ==>
  REMOTE ATTRIBUTES
+  DYnamic      ==> No                No v Yes
   I New group AAA2 created
                                                  SYSID=CICA APPLID=MYCICS
  DEFINE SUCCESSFUL             TIME:  16.47.45  DATE: 97.088
PF 1 HELP 2 COM 3 END        6 CRSR 7 SBH 8 SFH 9 MSG 10 SB 11 SF 12 CNCL
```

Figure 44. CEDA DEFINE TRANSACTION panel

You must specify a PROGRAM whenever you define a new TRANSACTION; if you do not, CEDA displays a severe error message saying that you must specify either a PROGRAM or REMOTESYSTEM. The attributes of the TRANSACTION definition are described in "TRANSACTION definition attributes" on page 281.

You can see that the TRANSACTION definition has many more attributes than the MAPSET definition. The **plus sign (+)** to the left of the last attribute in the list means that there are more attributes, so you can use either PF8 or PF11 to scroll down through them, then PF7 or PF10 to scroll back up. See "Using the PF keys" on page 386.

You now have two new resources to work with: a MAPSET in group AAA1, and a TRANSACTION in group AAA2. These resources are used throughout the remainder of the tutorial to demonstrate the other CEDA commands.

3. Press PF3 to exit CEDA.

Tutorial topics - using the CEDA panels

"Displaying a resource definition"

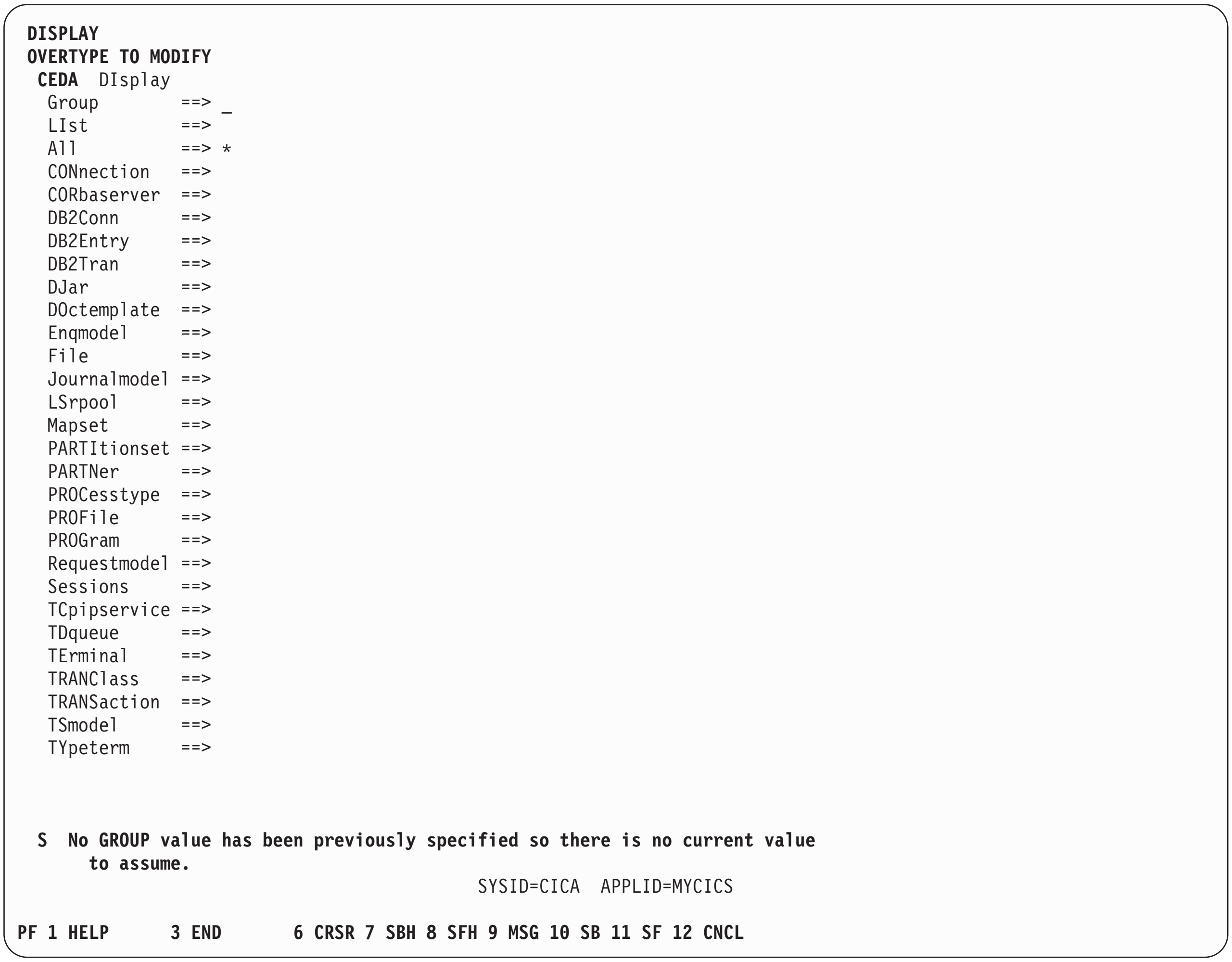
Tutorial overview

Chapter 35, "The CEDA transaction tutorial," on page 369

Displaying a resource definition

To display a resource definition:

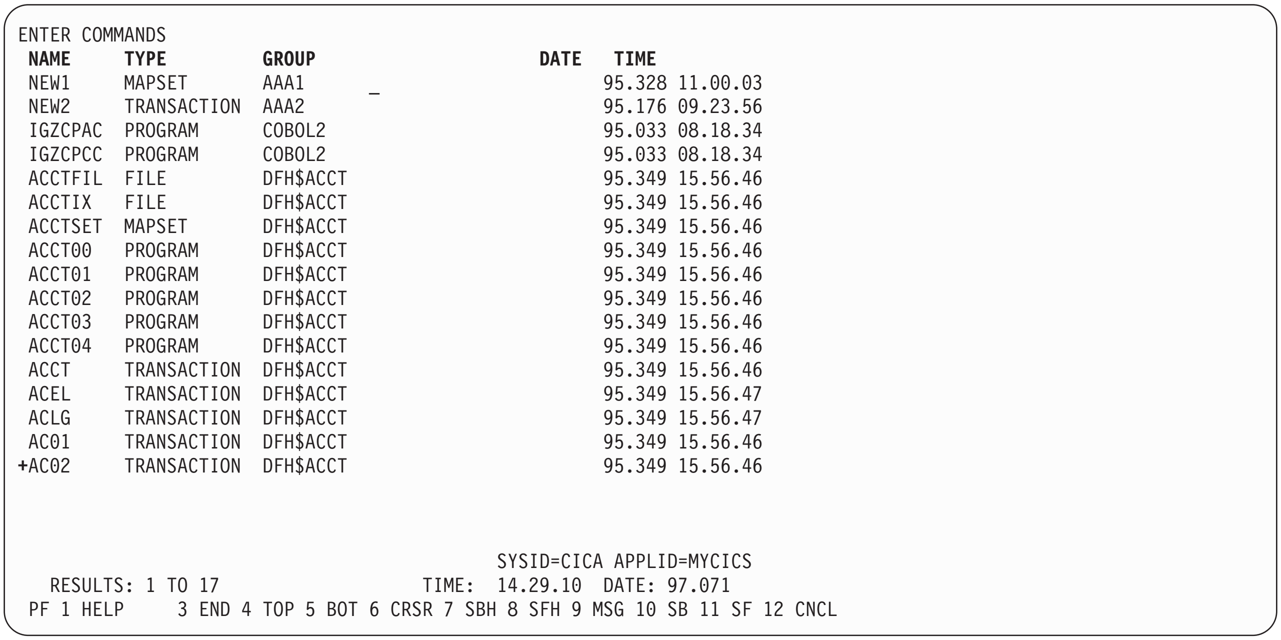
1. Do not clear the screen this time. Type `DISPLAY` over `DEFINE` and delete the rest of the line. Press the Enter key. A panel similar to Figure 45 on page 373 is displayed.



```
 DISPLAY
 OVERTYPE TO MODIFY
  CEDA  DIsplay
   Group        ==> _
   LIst         ==>
   All          ==> *
   CONnection   ==>
   CORbaserver  ==>
   DB2Conn      ==>
   DB2Entry     ==>
   DB2Tran      ==>
   DJar         ==>
   DOctemplate  ==>
   Enqmodel     ==>
   File         ==>
   Journalmodel ==>
   LSrpool      ==>
   Mapset       ==>
   PARTItionset ==>
   PARTNer      ==>
   PROCesstype  ==>
   PROFile      ==>
   PROGram      ==>
   Requestmodel ==>
   Sessions     ==>
   TCpipservice ==>
   TDqueue      ==>
   TErminal     ==>
   TRANClass    ==>
   TRANSaction  ==>
   TSmodel      ==>
   TYpeterm     ==>



  S  No GROUP value has been previously specified so there is no current value
       to assume.
                                             SYSID=CICA  APPLID=MYCICS

PF 1 HELP      3 END       6 CRSR 7 SBH 8 SFH 9 MSG 10 SB 11 SF 12 CNCL
```

Figure 45. CEDA DISPLAY panel

2. You may not know any group names or list names yet, so type in an asterisk (*) where the cursor is, beside GROUP, then press Enter. The asterisk means that you want to display all groups. If your system has a large number of groups in it, this command may take some time to execute. You get a panel like that in Figure 46 on page 374:



```
ENTER COMMANDS
 NAME     TYPE         GROUP                     DATE   TIME
 NEW1     MAPSET       AAA1      _                     95.328 11.00.03
 NEW2     TRANSACTION  AAA2                            95.176 09.23.56
 IGZCPAC  PROGRAM      COBOL2                          95.033 08.18.34
 IGZCPCC  PROGRAM      COBOL2                          95.033 08.18.34
 ACCTFIL  FILE         DFH$ACCT                        95.349 15.56.46
 ACCTIX   FILE         DFH$ACCT                        95.349 15.56.46
 ACCTSET  MAPSET       DFH$ACCT                        95.349 15.56.46
 ACCT00   PROGRAM      DFH$ACCT                        95.349 15.56.46
 ACCT01   PROGRAM      DFH$ACCT                        95.349 15.56.46
 ACCT02   PROGRAM      DFH$ACCT                        95.349 15.56.46
 ACCT03   PROGRAM      DFH$ACCT                        95.349 15.56.46
 ACCT04   PROGRAM      DFH$ACCT                        95.349 15.56.46
 ACCT     TRANSACTION  DFH$ACCT                        95.349 15.56.46
 ACEL     TRANSACTION  DFH$ACCT                        95.349 15.56.47
 ACLG     TRANSACTION  DFH$ACCT                        95.349 15.56.47
 AC01     TRANSACTION  DFH$ACCT                        95.349 15.56.46
+AC02     TRANSACTION  DFH$ACCT                        95.349 15.56.46



                                             SYSID=CICA APPLID=MYCICS
   RESULTS: 1 TO 17                   TIME:  14.29.10  DATE: 97.071
 PF 1 HELP     3 END 4 TOP 5 BOT 6 CRSR 7 SBH 8 SFH 9 MSG 10 SB 11 SF 12 CNCL
```

Figure 46. CEDA DISPLAY GROUP(*) panel

Plus sign
The plus sign (+) beside the last value means that there are more resources, so you can use PF8 or PF10 to scroll down to see them, then PF7 or PF11 to scroll back up again. PF7 and PF8 enable you to scroll down and up half a screen at a time. PF10 and PF11 enable you to scroll down and up a full screen at a time.

NAME
The list under the NAME heading tells you the name of each individual resource definitions installed on your system. You can have duplicate resource names only if the resource definitions are in different groups. The resource names are listed alphabetically according to their resource types (that is, within any one group, all the transactions are listed alphabetically, then all the programs, and so on).

TYPE
This tells you what resource type each definition is for. The resource types are introduced briefly in Chapter 5, “RDO resource types and their attributes,” on page 29. Within each group, the similar resource types are shown together (that is, all the transactions, then all the programs, and so on).

GROUP
This tells you which group each resource definition belongs to. This whole display of resource definitions is listed in alphabetic sequence of group names.

DATE and TIME
This shows the date and time when the resource definition was last updated. The time and date immediately above the PF key descriptions at the bottom of the screen are the current time and date.

RESULTS: 1 TO 17
Below the list of groups, there is a line that says “RESULTS: 1 TO 17”. This tells you how many group names are displayed on the screen. If there are more than 17, this message changes as you scroll up and down the list of

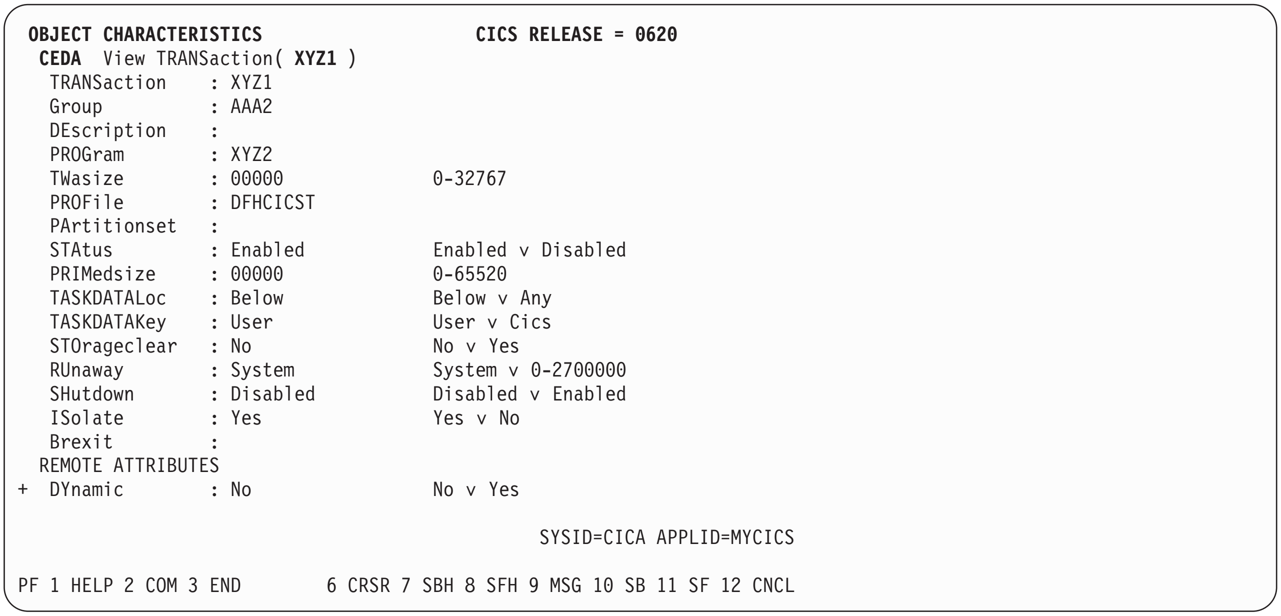
group names. At the beginning of a CEDA DISPLAY GROUP(*) command, it says “RESULTS: 1 TO 17”, but as you scroll down, CEDA builds up a count of the total number of groups, and eventually the message changes to be of the form “RESULTS: 52 TO 68 OF 97”. If the list is very long, you can use PF5 to go straight to the bottom of it, and PF4 to get back to the top of it.

`ENTER COMMANDS`

You can enter commands in this area of the screen. The commands you can enter for each transaction are:

Command	CEDA	CEDB	CEDC
ALTER	Yes	Yes	
COPY	Yes	Yes	
DELETE	Yes	Yes	
INSTALL	Yes		
MOVE	Yes	Yes	
RENAME	Yes	Yes	
VIEW	Yes	Yes	Yes
?	Yes	Yes	Yes
=	Yes	Yes	Yes

3. Move the cursor down to the TRANSACTION XYZ1 that you defined earlier and type in `VIEW` beside it. A screen like this is displayed:



```
 OBJECT CHARACTERISTICS                    CICS RELEASE = 0620
  CEDA  View TRANSaction( XYZ1 )
   TRANSaction    : XYZ1
   Group          : AAA2
   DEscription    :
   PROGram        : XYZ2
   TWasize        : 00000             0-32767
   PROFile        : DFHCICST
   PArtitionset   :
   STAtus         : Enabled           Enabled v Disabled
   PRIMedsize     : 00000             0-65520
   TASKDATALoc    : Below             Below v Any
   TASKDATAKey    : User              User v Cics
   STOrageclear   : No                No v Yes
   RUnaway        : System            System v 0-2700000
   SHutdown       : Disabled          Disabled v Enabled
   ISolate        : Yes               Yes v No
   Brexit         :
  REMOTE ATTRIBUTES
+  DYnamic        : No                No v Yes

                                                SYSID=CICA APPLID=MYCICS

PF 1 HELP 2 COM 3 END        6 CRSR 7 SBH 8 SFH 9 MSG 10 SB 11 SF 12 CNCL
```

Figure 47. CEDA VIEW panel

If you notice at this point that you have defined TRANSACTION(XYZ1) incorrectly, you may want to alter one or more of its values.

4. Press PF12 to return to the DISPLAY screen. There is now an asterisk (*) beside the transaction to indicate that you have worked with it.

Tutorial topics - using the CEDA panels

“Altering a resource definition” on page 376

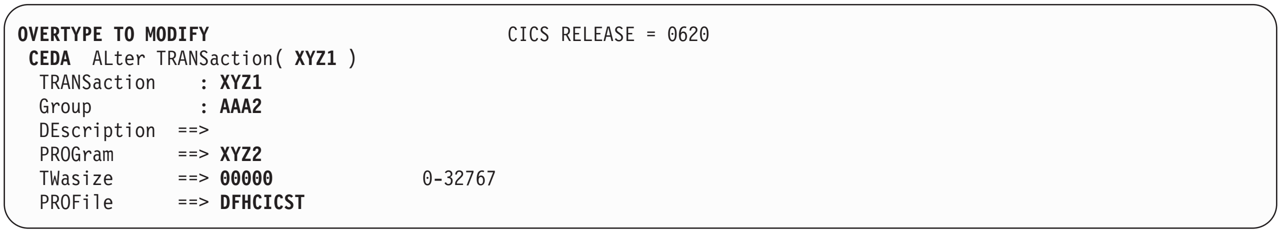
Tutorial overview

Chapter 35, “The CEDA transaction tutorial,” on page 369

Altering a resource definition

To alter a resource definition:

1. Type `ALTER` over the asterisk, and you will see a panel that begins like this:



```
OVERTYPE TO MODIFY                            CICS RELEASE = 0620
 CEDA  ALter TRANSaction( XYZ1 )
  TRANSaction    : XYZ1
  Group          : AAA2
  DEscription  ==>
  PROGram      ==> XYZ2
  TWasize      ==> 00000              0-32767
  PROFile      ==> DFHCICST
```

Figure 48. CEDA ALTER panel

   This is almost identical to the panel you saw when you defined this transaction (shown in Figure 44 on page 372), with the difference that on the VIEW panel there is a colon (:) between each attribute and its value. You cannot change any values from a VIEW panel.
2. The highlighted text at the top left of the screen, 'OVERTYPE TO MODIFY', means that you can overtype any of the highlighted values. Overtype the TWASIZE value, changing it from 00000 to 32767. When you press Enter, CEDA displays an 'ALTER SUCCESSFUL' message at the bottom of the screen.
3. Press PF12 to return to the DISPLAY screen, where the 'ALTER SUCCESSFUL' message is displayed on the same line as the TRANSACTION. Type `VIEW` against the TRANSACTION, and you can see that the value of TWASIZE has been changed.

Tutorial topics - using the CEDA panel

“Copying a resource definition”

Tutorial overview

Chapter 35, “The CEDA transaction tutorial,” on page 369

Copying a resource definition

To copy a resource definition:

1. Press PF12 to return to the DISPLAY screen. Beside TRANSACTION(XYZ1) type in:

   `COPY TO(AAA1) AS(XYZ2)`

   A 'COPY SUCCESSFUL' message is displayed in the right hand column of the screen. The COPY command has copied the definition for TRANSACTION(XYZ1) from group AAA2 to group AAA1, renaming it as TRANSACTION(XYZ2). The original transaction, TRANSACTION(XYZ1), still exists in group AAA2.
2. Press PF3 to display the SESSION ENDED panel, and overtype the existing 'CEDA DISPLAY' with:

   `CEDA DISPLAY GROUP(AAA1)`
3. Group AAA1 now contains two resource definitions: a MAPSET called NEW1 and a TRANSACTION called XYZ2. Because this is a DISPLAY screen similar in format to Figure 46 on page 374, you can enter the same commands against the definitions.

```
DISPLAY GROUP(AAA1)
ENTER COMMANDS
 NAME     TYPE         GROUP                          DATE   TIME
 NEW1     MAPSET       AAA1                           01.325 11.22.12
 XYZ2     TRANSACTION  AAA1                           01.325 11.34.00
```

Figure 49. CEDA DISPLAY GROUP(AAA1) panel

Using the command line

So far, this tutorial has taken you through panels to execute CEDA commands, but when you become familiar with your system's resources and with CEDA, you can enter most CEDA commands on the command line.

Here is a sequence of commands; if you follow them, you can see that entering commands on the command line is quicker than going through all the CEDA panels. You do not need to use PF3 or PF12 at this point. The topics covered are:

- “Creating a resource definition”
- “Renaming a resource definition”
- “Moving a resource definition” on page 378
- “Checking resource definitions” on page 378
- “Removing resource definitions from the CSD file” on page 378.

Tutorial topics

“Displaying messages” on page 378

“Using CEDA HELP” on page 379

“CEDA panel functions” on page 384

Tutorial overview

Chapter 35, “The CEDA transaction tutorial,” on page 369

Creating a resource definition

To create a resource definition using the command line:

1. Press PF6 to move the cursor to the top left corner of the screen.
2. Insert a transaction name and remove the group; the command now looks like this:
   ```
   CEDA DEFINE TRANSACTION(BBB1) PROGRAM(CCC1)
   ```
3. Press the Enter key.

When you press Enter, the new transaction BBB1 is defined. Note that it has been defined without an associated group name; this is because, as long as you are within the same CEDA session, the current group (that is, the one you have most recently been working with) is used by default. If you had used PF3 before this, your CEDA session would have ended, so there would be no current group name for CEDA to assume.

Renaming a resource definition

To rename a resource definition:

1. Rename the transaction by overtyping the command to read:
   ```
   RENAME TRANSACTION(BBB1) AS(DDD1)
   ```

Moving a resource definition

To move a transaction to another group:

1. Move the transaction to group AAA2 by overtyping the command to read:
   ```
   MOVE TRANSACTION(DDD1) TO(AAA2)
   ```

Checking resource definitions

Before installing groups AAA1 and AAA2, you can check them by using the CHECK command. This ensures that all transactions have access to their related programs, that terminal definitions have access to their related typeterm definitions, and so on.

1. Overtype the command to read:
   ```
   CHECK GROUP(AAA1)
   ```

   This should result in the message:
   ```
   W PROGRAM CCC1 referenced by TRANSACTION DDD1 in group AAA2
     cannot be found
   ```

   This is because when you moved transaction DDD1, you did not also move its related program, CCC1.

   Note: You will not see this message if you have autoinstall programs active. If autoinstall programs is active, CEDA assumes that the program will be installed at execution time and does not check the program definitions.
2. You can remedy this by using the COPY command:
   ```
   COPY PROGRAM(CCC1) G(AAA1) TO G(AAA1)
   ```

   If you repeat the CHECK command on both groups, there should be no more error messages.
3. Press PF3 to exit CEDA and clear the screen.

Removing resource definitions from the CSD file

The resource definitions that you have created for the tutorial can be removed; this allows other people to follow the tutorial, and ensures that your CSD file space is not being used unnecessarily. Using the DELETE command, you can delete the whole of groups AAA1 and AAA2 from your CSD file:

```
CEDA DELETE ALL GROUP(AAA1)
CEDA DELETE ALL GROUP(AAA2)
```

Note that you cannot delete the group itself; it ceases to exist only when it contains no resource definitions. See “The CEDA DELETE command” on page 400 for more information on the DELETE command.

Displaying messages

If you have followed the tutorial, you will see that CEDA has produced the informational message 'I New group AAA1 created'. There are four levels of error messages in CEDA, as follows:

S Severe. CEDA cannot continue until you correct what is wrong.

E Error. Commands resulting in these messages will be executed when you press enter, but the results may not be what you intended; for example, if you abbreviate a command to the point where it becomes ambiguous, CEDA warns you, and tells you which command it is going to assume when you press enter. It may not be the command you intended.

`W` Attention.

`I` Information.

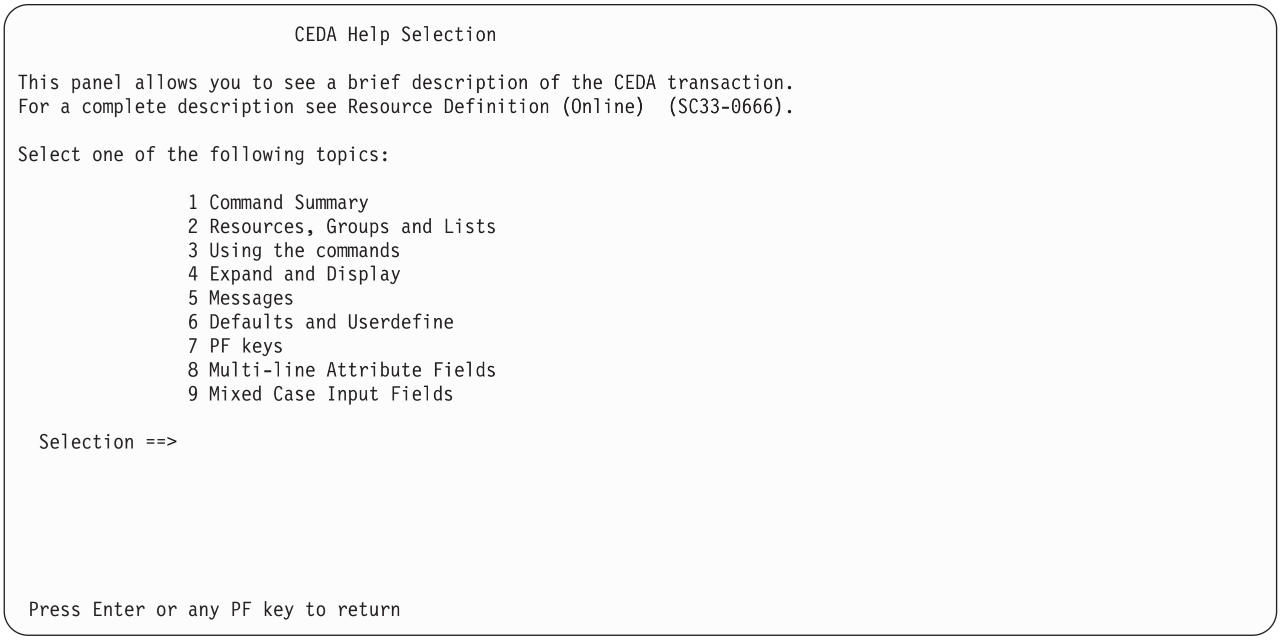
You can use PF9 to view CEDA messages. If you press PF9 now, the result will be as shown in Figure 42 on page 371 because there is only one message. When you have read the messages, press the Enter key to get back to where you were.

- **Invoking CMAC from CEDA**

  If the CMAC transaction is available, you can also place the cursor under any of the messages and press the Enter key to link to the Messages and Codes online information for that specific message.

Using CEDA HELP

Press the help key (PF1) to display the CEDA help panels.



```
                          CEDA Help Selection

This panel allows you to see a brief description of the CEDA transaction.
For a complete description see Resource Definition (Online)  (SC33-0666).

Select one of the following topics:

                1 Command Summary
                2 Resources, Groups and Lists
                3 Using the commands
                4 Expand and Display
                5 Messages
                6 Defaults and Userdefine
                7 PF keys
                8 Multi-line Attribute Fields
                9 Mixed Case Input Fields

  Selection ==>





 Press Enter or any PF key to return
```

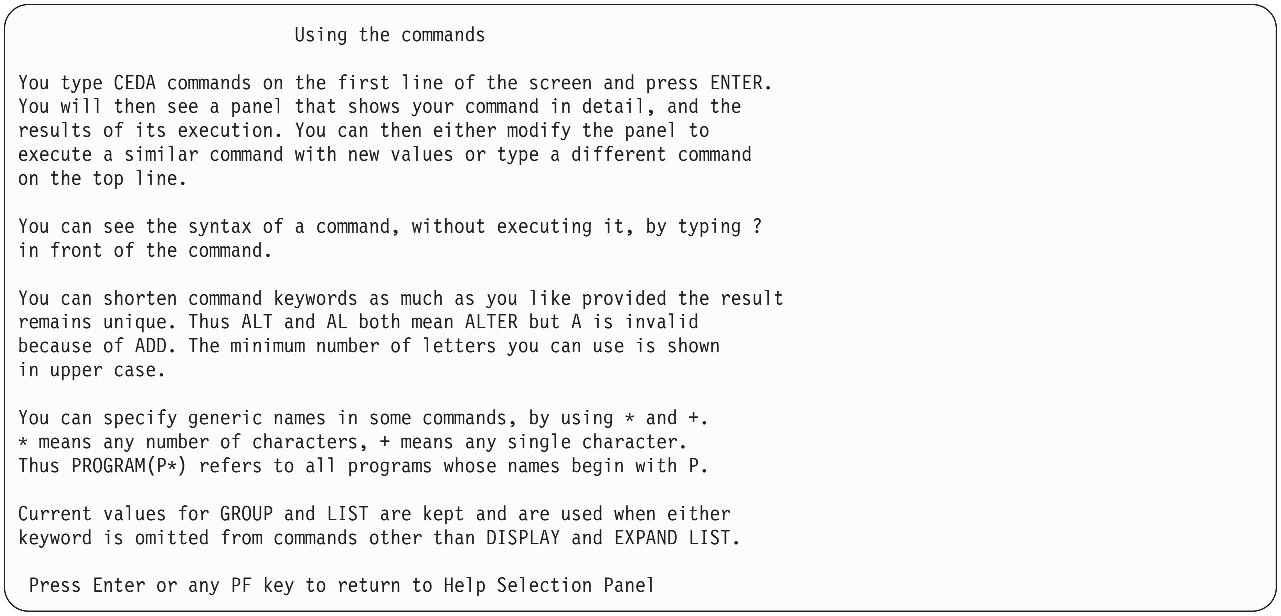
Figure 50. CEDA transaction: initial HELP panel

```
                             Command Summary

Resource management commands:
  DEFINE        creates a resource definition (see Topic 6 for USERDEFINE)
  ALTER,VIEW    modify and display the attributes of a resource (or resources)
  COPY          creates new resources from existing definitions
  DELETE        destroys resource definitions
  MOVE,RENAME   change the names and/or groupings of resources

List management commands:
  ADD           creates or extends a list
  REMOVE        reduces or destroys a list
  APPEND        copies a list or combines lists

General purpose commands:
  CHECK         cross-checks definitions in a group or list
  DISPLAY       shows the names of groups or lists on the CSD file
  EXPAND        shows the contents of groups or lists
  INSTALL       dynamically adds resources to the running CICS system
  LOCK,UNLOCK   control access to a group or list

CEDB does not have INSTALL. CEDC has DISPLAY, EXPAND and VIEW only.

 Press Enter or any PF key to return to Help Selection Panel
```

Figure 51. CEDA transaction: HELP Panel 1

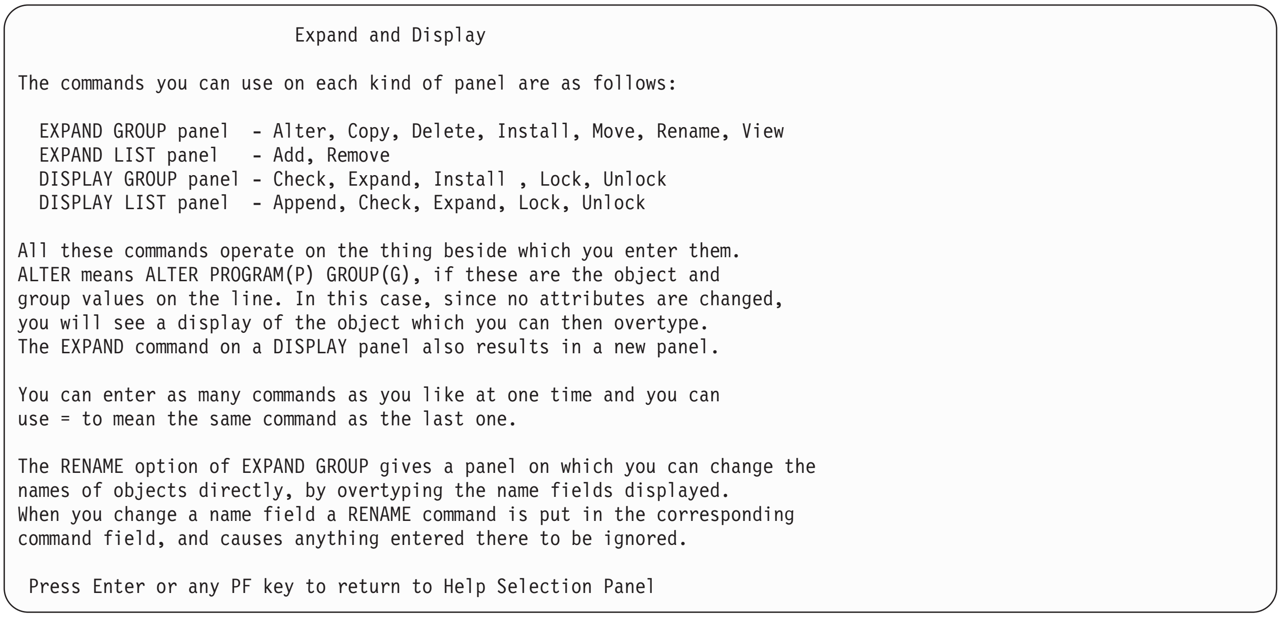
```
                      Resources, Groups and Lists

You use CEDA to create and modify resource definitions. Using the DEFINE
command, you specify a resource's type, name and attributes, which are
then stored on the CICS System Definition (CSD) file.

You can see what types of resource there are by using DEFINE on its own
as a command. Similarly you can see what attributes any resource may have
by adding just the type of resource, as in, for example, DEFINE PROGRAM.

Each resource must belong to a GROUP, which is a collection of resources,
usually related in some way. A group of resources can be installed on
your running CICS system.

A LIST is a collection of group names, and can be used to specify large
numbers of resources during a cold start.

Note that program P, say, may be defined in more than one group. Such
definitions are separate resources and may have different attributes.
By contrast the same group names in different lists refer to the same group.
The DELETE command destroys a resource, but REMOVE does not destroy a group.
A group has no attributes and need not even exist to be used in a list.

 Press Enter or any PF key to return to Help Selection Panel
```

Figure 52. CEDA transaction: HELP Panel 2



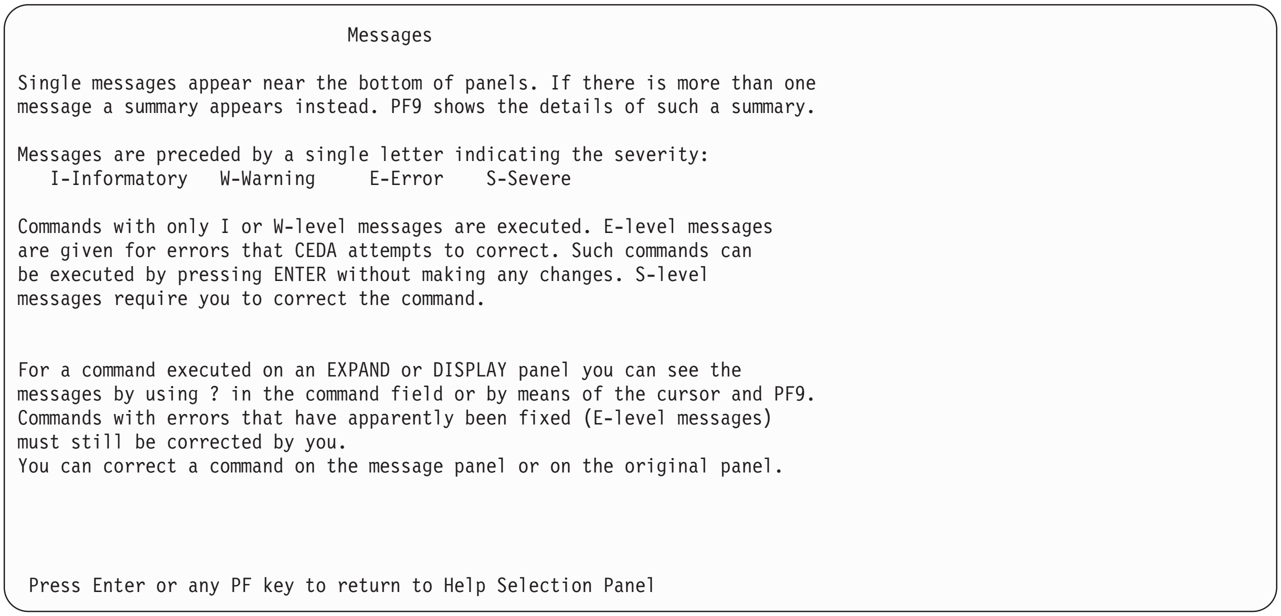
```
                          Using the commands

You type CEDA commands on the first line of the screen and press ENTER.
You will then see a panel that shows your command in detail, and the
results of its execution. You can then either modify the panel to
execute a similar command with new values or type a different command
on the top line.

You can see the syntax of a command, without executing it, by typing ?
in front of the command.

You can shorten command keywords as much as you like provided the result
remains unique. Thus ALT and AL both mean ALTER but A is invalid
because of ADD. The minimum number of letters you can use is shown
in upper case.

You can specify generic names in some commands, by using * and +.
* means any number of characters, + means any single character.
Thus PROGRAM(P*) refers to all programs whose names begin with P.

Current values for GROUP and LIST are kept and are used when either
keyword is omitted from commands other than DISPLAY and EXPAND LIST.

 Press Enter or any PF key to return to Help Selection Panel
```

Figure 53. CEDA transaction: HELP Panel 3



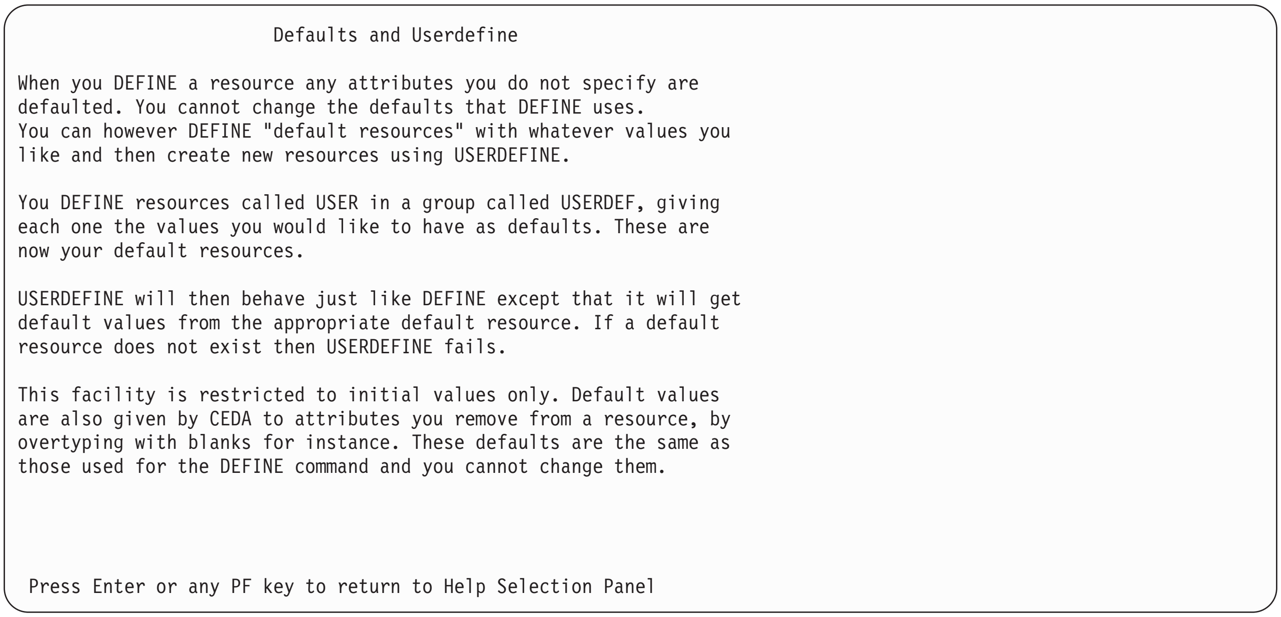
```
                          Expand and Display

The commands you can use on each kind of panel are as follows:

  EXPAND GROUP panel  - Alter, Copy, Delete, Install, Move, Rename, View
  EXPAND LIST panel   - Add, Remove
  DISPLAY GROUP panel - Check, Expand, Install , Lock, Unlock
  DISPLAY LIST panel  - Append, Check, Expand, Lock, Unlock

All these commands operate on the thing beside which you enter them.
ALTER means ALTER PROGRAM(P) GROUP(G), if these are the object and
group values on the line. In this case, since no attributes are changed,
you will see a display of the object which you can then overtype.
The EXPAND command on a DISPLAY panel also results in a new panel.

You can enter as many commands as you like at one time and you can
use = to mean the same command as the last one.

The RENAME option of EXPAND GROUP gives a panel on which you can change the
names of objects directly, by overtyping the name fields displayed.
When you change a name field a RENAME command is put in the corresponding
command field, and causes anything entered there to be ignored.

 Press Enter or any PF key to return to Help Selection Panel
```

Figure 54. CEDA transaction: HELP Panel 4



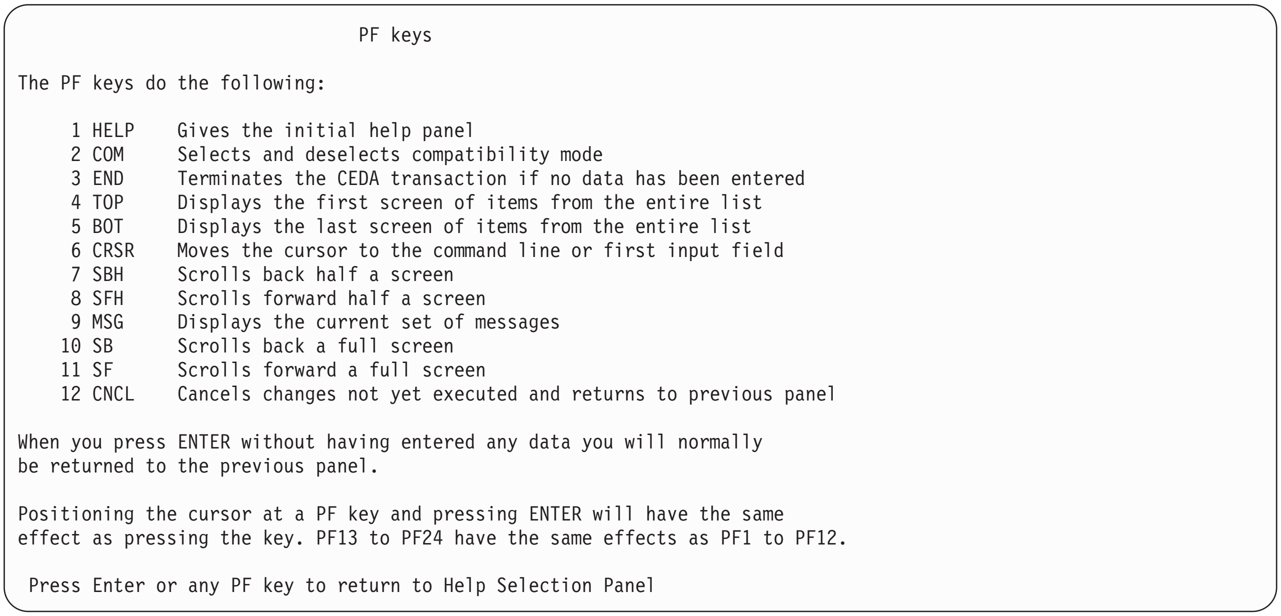
```
                               Messages

Single messages appear near the bottom of panels. If there is more than one
message a summary appears instead. PF9 shows the details of such a summary.

Messages are preceded by a single letter indicating the severity:
   I-Informatory   W-Warning     E-Error    S-Severe

Commands with only I or W-level messages are executed. E-level messages
are given for errors that CEDA attempts to correct. Such commands can
be executed by pressing ENTER without making any changes. S-level
messages require you to correct the command.


For a command executed on an EXPAND or DISPLAY panel you can see the
messages by using ? in the command field or by means of the cursor and PF9.
Commands with errors that have apparently been fixed (E-level messages)
must still be corrected by you.
You can correct a command on the message panel or on the original panel.




 Press Enter or any PF key to return to Help Selection Panel
```

Figure 55. CEDA transaction: HELP Panel 5



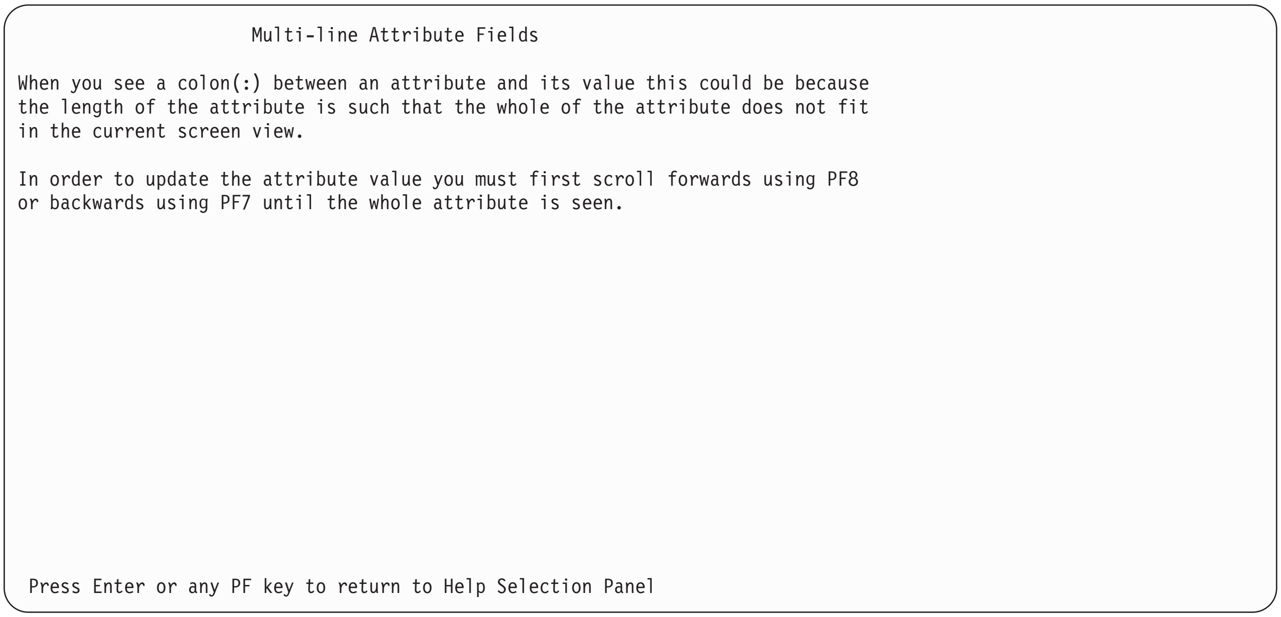
```
                        Defaults and Userdefine

When you DEFINE a resource any attributes you do not specify are
defaulted. You cannot change the defaults that DEFINE uses.
You can however DEFINE "default resources" with whatever values you
like and then create new resources using USERDEFINE.

You DEFINE resources called USER in a group called USERDEF, giving
each one the values you would like to have as defaults. These are
now your default resources.

USERDEFINE will then behave just like DEFINE except that it will get
default values from the appropriate default resource. If a default
resource does not exist then USERDEFINE fails.

This facility is restricted to initial values only. Default values
are also given by CEDA to attributes you remove from a resource, by
overtyping with blanks for instance. These defaults are the same as
those used for the DEFINE command and you cannot change them.




 Press Enter or any PF key to return to Help Selection Panel
```

Figure 56. CEDA transaction: HELP Panel 6



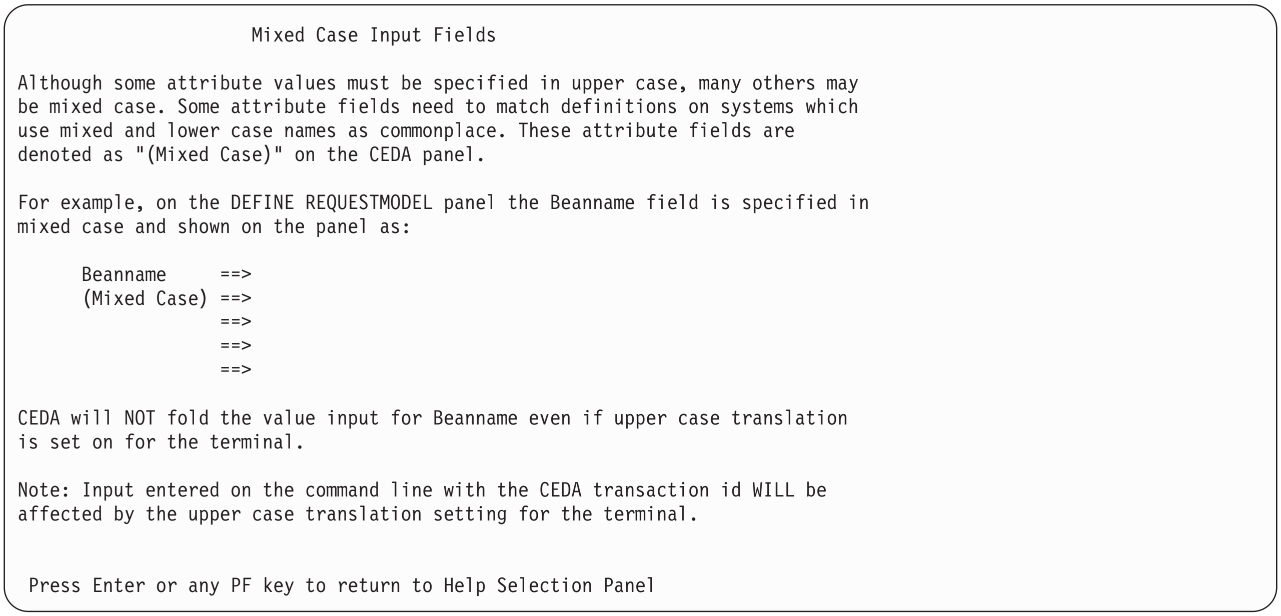
```
                              PF keys

The PF keys do the following:

     1 HELP    Gives the initial help panel
     2 COM     Selects and deselects compatibility mode
     3 END     Terminates the CEDA transaction if no data has been entered
     4 TOP     Displays the first screen of items from the entire list
     5 BOT     Displays the last screen of items from the entire list
     6 CRSR    Moves the cursor to the command line or first input field
     7 SBH     Scrolls back half a screen
     8 SFH     Scrolls forward half a screen
     9 MSG     Displays the current set of messages
    10 SB      Scrolls back a full screen
    11 SF      Scrolls forward a full screen
    12 CNCL    Cancels changes not yet executed and returns to previous panel

When you press ENTER without having entered any data you will normally
be returned to the previous panel.

Positioning the cursor at a PF key and pressing ENTER will have the same
effect as pressing the key. PF13 to PF24 have the same effects as PF1 to PF12.

 Press Enter or any PF key to return to Help Selection Panel
```

Figure 57. CEDA transaction: HELP panel 7



```
                       Multi-line Attribute Fields

When you see a colon(:) between an attribute and its value this could be because
the length of the attribute is such that the whole of the attribute does not fit
in the current screen view.

In order to update the attribute value you must first scroll forwards using PF8
or backwards using PF7 until the whole attribute is seen.















 Press Enter or any PF key to return to Help Selection Panel
```

Figure 58. CEDA transaction: HELP panel 8



```
                     Mixed Case Input Fields

Although some attribute values must be specified in upper case, many others may
be mixed case. Some attribute fields need to match definitions on systems which
use mixed and lower case names as commonplace. These attribute fields are
denoted as "(Mixed Case)" on the CEDA panel.

For example, on the DEFINE REQUESTMODEL panel the Beanname field is specified in
mixed case and shown on the panel as:

      Beanname     ==>
      (Mixed Case) ==>
                   ==>
                   ==>
                   ==>

CEDA will NOT fold the value input for Beanname even if upper case translation
is set on for the terminal.

Note: Input entered on the command line with the CEDA transaction id WILL be
affected by the upper case translation setting for the terminal.


 Press Enter or any PF key to return to Help Selection Panel
```

Figure 59. CEDA transaction: HELP panel 9

CEDA panel functions

This topic contains descriptions of the features and functions of the CEDA panels. The topics covered are:

- "Using abbreviations"
- "Changing attribute values" on page 385
- "Using the PF keys" on page 386
- "Generic naming in CEDA" on page 386.
- "Entering mixed case attributes" on page 388

Using abbreviations

Each command can be abbreviated. The minimum abbreviations are shown in uppercase—for example, you can enter REM for REMOVE, but not just R or RE, because to CEDA that would be ambiguous with RENAME.

Note: Minimum abbreviations may change between CICS releases because of the introduction of new commands.

SYSID
This is your system identifier specified in the SYSIDNT system initialization parameter.

APPLID
This is the VTAM application identifier for the CICS system, as specified in the APPLID system initialization parameter.

PF keys
The PF keys on this screen are:

PF1 HELP
Provides help in using CEDA.

PF3 END
Takes you out of CEDA. After using PF3, you can clear the screen and continue with another transaction.

PF6 CRSR
Puts the cursor in the top left corner of the screen.

PF9 MSG
Shows you any error messages produced by CEDA. If the CMAC transaction is available, after you press PF9, placing the cursor under a message and pressing the Enter key will link to the Messages and Codes Online transaction (CMAC) for that message.

PF12 CNCL
Takes you back to the previous panel.

Tutorial topics - CEDA panel functions

"Changing attribute values"

Tutorial overview

Chapter 35, "The CEDA transaction tutorial," on page 369

Changing attribute values

The attributes of a resource definition are listed in the first column, and their associated values are listed in the second column. For example:

```
Status       ==> Enabled            Enabled v Disabled
```

In this example:

Status is the attribute.
Enabled is the defined value.
Enabled v **Disabled** shows the possible values.

When you see a '==>' symbol between an attribute and its value, it means that you can change the value. The values that can be changed are also highlighted.

When you see a colon (:) between an attribute and its value, it means that you cannot change the value. This can be for several reasons:

- You do not have authority to change the values (for example, if you are a CEDC user).
- You are using the VIEW command.
- The length of the attribute is such that the whole of the attribute does not fit in the current screen view. In order to update the attribute value you must first scroll half a screen forward (PF8) or backwards (PF7) until the whole attribute is seen.
- The attribute is the resource name or the group name (in this example, MAPSET name NEW1 and GROUP name AAA1).
- The attribute is obsolete for the current release of CICS (for example, the RSL attribute). To change the value of obsolete attributes, you must use the **compatibility mode** option, as described in the PF keys below.

Tutorial topics - CEDA panel functions

"Using the PF keys" on page 386

Tutorial overview

Chapter 35, "The CEDA transaction tutorial," on page 369

Using the PF keys

The PF keys on this screen which were not on the previous screen are:

PF2 COM
Allows you to use **compatibility mode** to change the value of obsolete attributes. In Figure 42 on page 371, if you press PF2, you see that the symbol between RSL and its value changes from '==>' to ':', the value is highlighted, and the display at the top right of the screen changes from `CICS RELEASE = 0620` to `COMPATIBILITY MODE`. You can now overtype the value to change it, then press PF2 again to get out of compatibility mode. Compatibility mode is described in “Compatibility mode (CSD file sharing)” on page 15.

PF7 SBH
Scrolls back half a screen. Because MAPSET has a small number of attributes, this does not apply to this panel.

PF8 SFH
Scrolls forward half a screen. Because MAPSET has a small number of attributes, this does not apply to this panel.

PF9 MSG
Shows you any error messages produced by CEDA. If you now press PF9, you see the message “NEW GROUP AAA1 CREATED”. This is the same message as is displayed on the screen. If you issue a command that generates more than one message, you may have to use PF9 to see them all. If the CMAC transaction is available, after you press PF9, placing the cursor under a message and pressing the Enter key will link to the Messages and Codes Online transaction (CMAC) for that message.

PF10 SB
Scrolls up one full screen. Because MAPSET has a small number of attributes, this does not apply to this panel.

PF11 SF
Scrolls down one full screen. Because MAPSET has a small number of attributes, this does not apply to this panel.

Tutorial topics - CEDA panel functions

“Generic naming in CEDA”

Tutorial overview

Chapter 35, “The CEDA transaction tutorial,” on page 369

Generic naming in CEDA

Generic names allow you to use one command to perform the same operation on many objects. You used this feature of CEDA in “Using the CEDA panels” on page 370 when you used an asterisk to mean 'all' groups.

The asterisk can be used to mean 'all' resource names, groups, or lists. For example, CEDA VIEW TRANSACTION(DISC) GROUP(*) shows you transactions called DISC in any group where they occur. CEDA DISPLAY GROUP(*) TRANSACTION(*) shows you all the transactions in every group.

Another way to see groups without having to specify their exact names is to use the plus sign (+) as part of the group name to represent one character. For example, whereas CEDA DISPLAY GROUP(DFH*) displays all groups beginning with DFH, CEDA DISPLAY GROUP(DFH+++) displays only those groups that begin with DFH and are six characters long, CEDA DISPLAY GROUP(DFH++++) displays those that begin with DFH and are seven characters long, and so on.

You can also use the ALL attribute in some commands, instead of specifying a resource type. The command then operates on all resource definitions that fit the type specified with ALL.

Table 17 tells you which CEDA commands that accept generic naming.

yes means that you may use a generic name or an actual name.

no means that you must use an actual name.

— means that generic naming is not applicable for this command.

Table 17. CEDA commands accepting generic names

Command	Generic resource name	Generic group name	Generic list name	ALL resource types
ADD	—	no	no	—
ALTER	yes	yes	—	no
APPEND	—	—	no	—
CHECK GROUP	—	no	—	—
CHECK LIST	—	—	no	—
COPY	yes	no	—	yes
DEFINE	no	no	—	no
DELETE	yes	no	—	yes
DISPLAY GROUP	—	yes	—	—
DISPLAY GROUP ALL	yes	yes	—	yes
DISPLAY LIST	—	—	yes	—
DISPLAY LIST GROUP	—	yes	yes	—
EXPAND GROUP	yes	yes	—	yes
EXPAND LIST	—	yes	yes	—
INSTALL	—	no	no	—
INSTALL GROUP	—	no	—	—
LOCK GROUP	—	no	—	—
LOCK LIST	—	—	no	—
MOVE	yes	no	—	yes
REMOVE	—	yes	no	—
RENAME	no	no	—	yes
UNLOCK GROUP	—	no	—	—
UNLOCK LIST	—	—	no	—
USERDEFINE	no	no	—	no
VIEW	yes	yes	—	no

Tutorial topics - CEDA panel functions

“Entering mixed case attributes” on page 388

Tutorial overview

Chapter 35, “The CEDA transaction tutorial,” on page 369

Entering mixed case attributes

CEDA is often used in circumstances where the CICS system, or the particular terminals, are defined so that all input is folded (or translated) to upper case. However there are some resource definition attribute values which must be entered in lower case or mixed case, because their values must match those in other systems, where the use of lower case fields is commonplace.

Note: When upper case translation is active for a terminal, characters that appear in lower case as you type them are translated to upper case before CICS processes them.

CEDA knows that certain fields may be required in mixed case. When you use the CEDA input panels, upper case translation of the values entered in these fields does not occur, irrespective of the way upper case translation is specified for your terminal. These fields are marked *(Mixed Case)* on the CEDA input panels. Figure 60 shows an example:

```
DJar         ==>
Group        ==>
Description  ==>
Corbaserver  ==>
Hfsfile      ==>
(Mixed Case) ==>
             ==>
             ==>
```

Figure 60. The DEFINE panel for DJAR

The action of suppressing upper case translation, if it is active, applies to input on the CEDA panels, but it does not apply when values for these fields are supplied on the CEDA command line. If you need to enter mixed case values when you use CEDA from the command line, you must ensure that the terminal you use is correctly configured, with upper case translation suppressed.

So, for example, using a terminal which has UCTRAN set to cause upper case translation, If you enter:

```
CEDA DEFINE DJAR GROUP(ONE) CORBASERVER(TWO) HFSFILE(three)
```

the result is HFSFILE `THREE` instead of the `three` that you intended.

If however you enter:

```
CEDA DEFINE DJAR GROUP(ONE) CORBASERVER(TWO)
```

and then supply the value `three` for HFSFILE using the panel, the result is as you intended.

CEDA has a help panel for mixed case input, see Figure 59 on page 384

Tutorial overview

Chapter 35, “The CEDA transaction tutorial,” on page 369

Altering the setting of UCTRAN

If you need to specify mixed case values on the command line of a terminal that is defined to fold lower case input to upper case, here are some things you can do to make that possible:

- You can use the CEOT transaction to suppress upper case translation for your terminal for as long as you need to enter mixed case data. See *CICS Supplied Transactions* for more information about the CEOT transaction.
- You can specify the UCTRAN(NO) or UCTRAN(TRANID) in the TYPETERM definition for the terminal.
- You can specify UCTRAN(NO) in the profile for the CEDA transaction.

Chapter 36. Resource management transaction CEDA commands

This topic explains the syntax for each of the CEDA commands and shows examples of use. The commands are:

- "The CEDA ADD command"
- "The CEDA ALTER command" on page 392
- "The CEDA APPEND command" on page 394
- "The CEDA CHECK command" on page 395
- "The CEDA COPY command" on page 396
- "The CEDA DEFINE command" on page 399
- "The CEDA DELETE command" on page 400
- "The CEDA DISPLAY command" on page 402
- "The CEDA EXPAND command" on page 404
- "The CEDA INSTALL command" on page 406
- "The CEDA LOCK command" on page 408
- "The CEDA MOVE command" on page 409
- "The CEDA REMOVE command" on page 412
- "The CEDA RENAME command" on page 413
- "The CEDA UNLOCK command" on page 414
- "The CEDA USERDEFINE command" on page 415
- "The CEDA VIEW command" on page 419

The CEDA ADD command

Add a group to a list.

Syntax

```
►►──CEDA──ADd──Group(groupname)──LIst(listname)──────────────────────────────────────────►◄
```

Description

You can use the ADD command from a DISPLAY screen.

Options

After(*groupname3***)**
You can use this to control the placing of the new group name. If you do not specify BEFORE or AFTER, the group name is added at the end of the list.

Before(*groupname2***)**
You can use this to control the placing of the new group name. If you do not specify BEFORE or AFTER, the group name is added at the end of the list.

Group(*groupname1***)**
specifies the name of the group to be added. The name must not already exist in the list. A generic group name is not accepted. If you do not specify a group, the current group name is added.

LIst(*listname***)**
specifies the name of the list to which the group is to be added. If the list does

not already exist, a new one is created. If LIST is not specified, the group name is added to the current list if there is one. A generic list name is not accepted.

Examples

To create a list LA01 by adding a group to it:

```
ADD GROUP(GA001) LIST(LA01)
```

To add another group to list LA01, without specifying where:

```
ADD GROUP(GA002) LIST(LA01)
```

LA01 now looks like this:
  GA001
  GA002

To add another group at the top of the list:

```
ADD GROUP(GA003) LIST(LA01) BEFORE(GA001)
```

and another group between GA001 and GA002:

```
ADD GROUP(GA004) LIST(LA01) AFTER(GA001)
```

LA01 now looks like this:
  GA003
  GA001
  GA004
  GA002

The CEDA ALTER command

Change some or all of the attributes of an **existing** resource definition.

Syntax

```
►►──CEDA──ALter──┬─Connection(name)──────┬──Group(groupname)──attribute list(new value)──────────────►◄
                 ├─CORbaserver(name)─────┤
                 ├─DB2Conn(name)─────────┤
                 ├─DB2Entry(name)────────┤
                 ├─DB2Tran(name)─────────┤
                 ├─DJar(name)────────────┤
                 ├─DOctemplate(name)─────┤
                 ├─Enqmodel(name)────────┤
                 ├─File(name)────────────┤
                 ├─Journalmodel(name)────┤
                 ├─Lsrpool(name)─────────┤
                 ├─Mapset(name)──────────┤
                 ├─PARTItionset(name)────┤
                 ├─PARTNer(name)─────────┤
                 ├─PROCesstype(name)─────┤
                 ├─PROFile(name)─────────┤
                 ├─PROGram(name)─────────┤
                 ├─Requestmodel(name)────┤
                 ├─Sessions(name)────────┤
                 ├─TCpipservice(name)────┤
                 ├─TDqueue(name)─────────┤
                 ├─TErminal(name)────────┤
                 ├─TRANClass(name)───────┤
                 ├─TRANSaction(name)─────┤
                 ├─TSmodel(name)─────────┤
                 └─TYpeterm(name)────────┘
```

Description

Do **not** use ALTER to change the value of the attributes of a TYPETERM definition on which other attributes depend. If you make a mistake with DEVICE, SESSIONTYPE, or TERMMODEL, delete the definition and define a new one with the correct values.

You can specify null attribute values, for example:

```
ALTER FILE(TEST) GROUP(ACT1) DESCRIPTION()
```

If an attribute for which you have specified a null value has a default, the value used depends upon the type of field. For example:

- The command:

  ```
  ALTER FILE(TEST) GROUP(ACT1) RLSACCESS()
  ```

  behaves as if RLSACCESS was not specified. The RLSACCESS attribute has a CVDA default value which is ignored.
- The command:

  ```
  ALTER FILE(TEST) GROUP(ACT1) DESCRIPTION()
  ```

  has the effect of blanking out the description, as there is no default value for the DESCRIPTION field, and it is option.
- The command:

  ```
  ALTER FILE(TEST) GROUP(ACT1) PROFILE()
  ```

puts the default value of DFHCICSA into the PROFILE field. In this case, the default value is a character string, not a CVDA value.

Changes to resource definitions in the CSD file do not affect the running CICS system until you install the definition, or the group in which the resource definition resides.

You can use CEDA ALTER from a DISPLAY panel. If you use PF12 after making your alterations, CEDA gives you the DISPLAY panel again, with an 'ALTER SUCCESSFUL' message in the Date and Time fields. If you do this but do not make any alterations, an asterisk replaces your 'ALTER' command.

With a generic name, you can use one ALTER command to change the same attributes in the same way on more than one resource definition.

Options

Attribute list
specifies the attributes to be altered.

Group(*groupname***)**
specifies the name of the group containing the resource to be altered.

Resource(*name***)**
specifies the resource whose attributes you want to alter.

Examples

To make a program resident:

```
ALTER PROGRAM(ERR01) GROUP(GENMODS) RESIDENT(YES)
      DATALOCATION()
```

To change the status of a whole group of programs:

```
ALTER PROGRAM(*) GROUP(GENMODS) STATUS(ENABLED)
```

If you do not specify an attribute list and type in:

```
ALTER PROGRAM(ERR01) GROUP(GENMODS)
```

CEDA gives an “ALTER SUCCESSFUL” message followed by the 'overtype to modify' panel.

The CEDA APPEND command

Add the groups in one list to the end of another list.

Syntax

```
►►—CEDA—APpend—LIst(listname1)—To(listname2)———————————————————————————————►◄
```

Options

LIst(*listname1***)**
specifies the source list to be appended. A generic list name is not accepted.

To(*listname2*)
specifies the target list to be appended to. A generic list name is not accepted. If **listname2** already exists, the source list is appended to it. If **listname2** does not exist, it is created.

Examples

A list called LISTA contains the following groups:
GB001
GB002
GB003

A list called LISTB contains the following groups:
G001
G002
G003

Append LISTB to LISTA, like this:

```
APPEND LIST(LISTB) TO(LISTA)
```

After this, LISTA contains the following groups, in this order:
GB001
GB002
GB003
G001
G002
G003

and LISTB still contains:
G001
G002
G003

The CEDA CHECK command

Check the consistency of definitions.

Syntax

```
►►──CEDA──CHeck──┬─Group(groupname)──────────────────────────────────┬──┬──────────────────────┬──────►◄
                 └─List(listname1, listname2, listname3, listname4)──┘  └─Remotesystem(sysid)──┘
```

Description

The CHECK command performs a cross-check of a group, list, or lists of resource definitions, and should be used before the resource definitions are installed.

It checks that the resource definitions within the group or lists are consistent with one another.

For example: for each TRANSACTION in the list being checked, a check is made that the named PROGRAM definition exists in one of the groups. The success of the check does not necessarily mean that the PROGRAM is available to the running system.

Lists should be checked before being used to initialize CICS during an initial or cold start (when the list or lists are specified in the GRPLIST system initialization parameter).

A group should be checked before you use the INSTALL command to install it on the running CICS system.

A group can be checked before you use the ADD command to add the group to a list. (The group might not be self-contained, in which case there is no point in checking it alone. Put it into a list with the groups containing related resource definitions.)

You can use the CHECK command from a DISPLAY panel.

Options

Group(*groupname***)**
specifies the group you want to check. A generic group name is not accepted.

List(*listname1, listname2, etc.***)**
specifies the list or lists you want to check. A generic list name is not accepted.

Remotesystem(*sysid***)**
specifies that a check is to be run on a group or list in a CICS region with a different sysid from the region that the CHECK command is being issued from. If this option is not used, the CHECK command will use the sysid of the region from which the CHECK command is issued.

Checking groups and lists of resource definitions for consistency

The CHECK command checks the consistency of definitions within a group or within all of the groups within a list. It does not, however, cross-check every attribute of a resource. You may still get error messages when installing a group although you found no problems when using the CHECK command.

If you use the CHECK GROUP command, CEDA cross-checks all of the resources in a specified group to ensure that the group is ready to be used. For example, CHECK might warn you that a transaction definition within the group does not name a program within the same group. (Note, however, that this might not be an error. The group might intentionally be paired with a group that does contain the program, or you may want the program to be autoinstalled, in which case it would not have a definition.)

If you use the CHECK LIST command, CEDA cross-checks every group named in the list or lists. It does not simply check each group in turn, but merges the definitions in all of the listed groups, and checks them all. In this way it warns you if there are duplicate resource definitions, or references to definitions that do not exist.

The CEDA COPY command

Copy a resource definition, either within the same group or to a different group.

Syntax

```
        ┌─All─────────────────────┐
►►─CEDA─COpy─┼─────────────────────────┼─Group(groupname)──┬─AS(newname)──────────────────┬──────────►
        ├─Connection(name)────────┤                   ├─TO(newgroupname)─────────────┤
        ├─CORbaserver(name)───────┤                   └─AS(new-name) TO(newgroupname)┘
        ├─DB2Conn(name)───────────┤
        ├─DB2Entry(name)──────────┤
        ├─DB2Tran(name)───────────┤
        ├─DJar(name)──────────────┤
        ├─DOctemplate(name)───────┤
        ├─Enqmodel(name)──────────┤
        ├─File(name)──────────────┤
        ├─Journalmodel(name)──────┤
        ├─Lsrpool(name)───────────┤
        ├─Mapset(name)────────────┤
        ├─PARTItionset(name)──────┤
        ├─PARTNer(name)───────────┤
        ├─PROCesstype(name)───────┤
        ├─PROFile(name)───────────┤
        ├─PROGram(name)───────────┤
        ├─Requestmodel(name)──────┤
        ├─Sessions(name)──────────┤
        ├─TCpipservice(name)──────┤
        ├─TDqueue(name)───────────┤
        ├─TErminal(name)──────────┤
        ├─TRANClass(name)─────────┤
        ├─TRANSaction(name)───────┤
        ├─TSmodel(name)───────────┤
        └─TYpeterm(name)──────────┘

►──┬─────────┬──────────────────────────────────────────────────────────────────────►◄
   ├─Replace─┤
   └─MErge───┘
```

Description

If you do not specify either MERGE or REPLACE, a message warns you that you are attempting to create duplicate resources, and your COPY will be unsuccessful.

Options

AS(*newname*)
If you copy a definition within a group, you must use AS to rename it. You can also use AS if you want to copy a definition to another group and rename it at the same time. You cannot use a generic name when using AS.

Group(*groupname*)
specifies the group containing the definitions to be copied.

MErge
This applies when there are duplicate definition names in the groups named in the COPY command. If you specify MERGE, duplicate definitions in the TO group are not replaced.

Replace
This applies when there are duplicate definition names in the groups named in

the COPY command. If you specify REPLACE, the definitions being copied replace those in the group named in the TO operand.

resource(*name*)
specifies the resource you want to copy. The default is ALL, which copies all the resource definitions in a group to another group.

TO(*newgroupname***)**
You can copy definitions to a different group, using TO to specify the new group.

Examples

You can copy a single resource definition into a new group, using the TO option to specify the new group. For example:

```
COPY SESSIONS(L122) GROUP(CICSC1) TO(CICSC2)
```

You can copy a resource definition within the same group. If you do this, you must rename it using the AS option. For example:

```
COPY TERMINAL(TD12) AS(TD34) GROUP(TERMVDU1)
```

When copying between groups, you can give the copy a new name, using the AS option to specify the new name.

```
COPY PROGRAM(ABC01) GROUP(XYZ) AS(ABC02) TO(NEWXYZ)
```

(If you leave the copy with the same name as the original definition, be careful that you install the one you want when the time comes.)

Using the ALL option, without a name, you can copy all the resource definitions in the group to the new group. For example:

```
COPY ALL GROUP(N21TEST) TO(N21PROD)
```

You can copy more than one resource definition to a new group, using the TO option to specify the new group.

Using a generic resource definition name, you can copy all or some definitions of the same resource type to the new group. For example:

```
COPY CONNECTION(*) GROUP(CICSG1) TO(CICSG2)
COPY PROGRAM(N21++) GROUP(NTEST) TO(NPROD)
```

Using the ALL option with a generic name, you can copy all or some of the resource definitions in the group to the new group. For example:

```
COPY ALL(N21*) GROUP(N21OLD) TO(N21NEW)
```

Using the ALL option with a specific name, you can copy all the resource definitions of that name (which must necessarily be for different resource types) in the group to the new group. For example:

```
COPY ALL(XMPL) GROUP(EXAMPLE) TO(EX2)
```

If you are copying a number of definitions into another group, and the groups contain duplicate resource names, you must specify either MERGE or REPLACE. For example:

```
COPY ALL GROUP(TAX1) TO(TAX2) MERGE
COPY ALL GROUP(TAX1NEW) TO(TAX1) REPLACE
```

The following example copies a group named GA001 to a group named GA002, which already exists, replacing any duplicate resource definitions by those in group GA001.

```
COPY GROUP(GA001) TO(GA002) REPLACE
```

The following example copies group GA003 to group GA004, but if any duplicate definitions occur, preserves the group GA004 definitions.

```
COPY GROUP(GA003) TO(GA004) MERGE
```

The CEDA DEFINE command

Create new resource definitions.

Syntax

```
►►──CEDA──DEFine──┬─All──────────────────┬─Group(groupname)──attribute list(newvalue)──────────────►◄
                  ├─Connection(name)─────┤
                  ├─CORbaserver(name)────┤
                  ├─DB2Conn(name)────────┤
                  ├─DB2Entry(name)───────┤
                  ├─DB2Tran(name)────────┤
                  ├─DJar(name)───────────┤
                  ├─DOctemplate(name)────┤
                  ├─Enqmodel(name)───────┤
                  ├─File(name)───────────┤
                  ├─Journalmodel(name)───┤
                  ├─LSRpool(name)────────┤
                  ├─Mapset(name)─────────┤
                  ├─PARTItionset(name)───┤
                  ├─PARTNer(name)────────┤
                  ├─PROCesstype(name)────┤
                  ├─PROFile(name)────────┤
                  ├─PROGram(name)────────┤
                  ├─Requestmodel(name)───┤
                  ├─Sessions(name)───────┤
                  ├─TCpipservice(name)───┤
                  ├─TDqueue(name)────────┤
                  ├─TErminal(name)───────┤
                  ├─TRANClass(name)──────┤
                  ├─TRANSaction(name)────┤
                  ├─TSmodel(name)────────┤
                  └─TYpeterm(name)───────┘
```

Description

You can use the same name for more than one resource definition in a group, if the definitions are for different resource types. For example:

```
DEFINE PROGRAM(N28A) GROUP(N28APPL)
DEFINE TRANSACTION(N28A) GROUP(N28APPL)

DEFINE TERMINAL(USER) GROUP(USERDEF)
DEFINE PROGRAM(USER) GROUP(USERDEF)
```

Be careful, when you have any resource definitions with the same name, that you install the one you really want. See “Duplicate resource definition names” on page 25.

You must specify the resource type and name on the command line. You may also specify the group and other attributes on the command line.

The whole definition is displayed on an overtype-to-modify panel, and you can change any of the attributes there, unless you entered a complete DEFINE command on the command line, in which case you can not change the **name** or **groupname** attributes.

The definition was created when you entered the DEFINE... command. If you do not wish to further modify it, you may enter another command from the command line.

If a resource definition of the same name and type already exists in the group, any attributes specified on the command line are ignored, and the **existing** resource definition is displayed. You can then overtype and modify any of the existing values if you wish. If you do not wish to modify the definition, you may enter another command from the command line.

Beware of overtyping values on which other attribute values are dependent. See “Creating groups and lists” on page 20.

Options

Attribute list
The attribute list depends on the resource type being defined; some resources have attributes that must be included in the definition. Attributes that you do not specify are given default values.

Group(*groupname***)**
specifies the name of the group containing the resource definition being defined. Do not use a generic group name. If you specify the name of a group which does not already exist, the group is created.

*resource***(***name***)**
specifies the name of the resource you want to define. Do not use a generic resource name.

The CEDA DELETE command

Delete one or more resource definitions from the CSD file.

Syntax

```
►►──CEDA──DELete──┬─All──────────────────┬──Group(groupname)──┬────────┬────────────────────────────►◄
                  ├─Connection(name)─────┤                    └─REMove─┘
                  ├─CORbaserver(name)────┤
                  ├─DB2Conn(name)────────┤
                  ├─DB2Entry(name)───────┤
                  ├─DB2Tran(name)────────┤
                  ├─DJar(name)───────────┤
                  ├─DOctemplate(name)────┤
                  ├─Enqmodel(name)───────┤
                  ├─File(name)───────────┤
                  ├─Journalmodel(name)───┤
                  ├─LSRpool(name)────────┤
                  ├─Mapset(name)─────────┤
                  ├─PARTItionset(name)───┤
                  ├─PARTNer(name)────────┤
                  ├─PROCesstype(name)────┤
                  ├─PROFile(name)────────┤
                  ├─PROGram(name)────────┤
                  ├─Requestmodel(name)───┤
                  ├─Sessions(name)───────┤
                  ├─TCpipservice(name)───┤
                  ├─TDqueue(name)────────┤
                  ├─TErminal(name)───────┤
                  ├─TRANClass(name)──────┤
                  ├─TRANSaction(name)────┤
                  ├─TSmodel(name)────────┤
                  └─TYpeterm(name)───────┘
```

Description

Deleting a resource definition is different from removing a group from a list (see “The CEDA REMOVE command” on page 412). A deleted resource definition really does disappear from the CSD file.

When you DELETE the last resource in a group, the group is automatically deleted. An empty group cannot exist.

This command does **not** affect definitions installed on the active CICS system. To remove installed definitions from the active CICS system, you can use either the CEMT DISCARD transaction or the EXEC CICS DISCARD command in an application program. You can discard AUTINSTMODEL, FILE, PARTNER, PROFILE, PROGRAM, TRANCLASS, and TRANSACTION resources. For information on the CEMT transaction, see *CICS Supplied Transactions*. For programming information on the EXEC CICS DISCARD command, see the *CICS System Programming Reference*.

Options

All
specifies that all resources are to be deleted from the group.

Group(*groupname*)
specifies the group containing the resource. Do not use a generic group name.

REMove
specifies that, when a group is deleted, the group is to be removed from all lists that had contained it.

Resource(*name***)**
specifies the resource you want to delete. You can use a generic resource name.

Examples

To delete all resources in a group:

```
DELETE ALL GROUP(TOPS)
```

To delete all programs in a group:

```
DELETE PROGRAM(*) GROUP(NSOS)
```

The CEDA DISPLAY command

Display one or more group names, list names, or resources on a full screen panel.

Syntax

```
►►──CEDA──DISplay──┬─List(listname)──┬──────────────────┬────────────────┬─────────────────►◄
                   │                 └─Group(groupname)─┘                │
                   └─Group(groupname)─┬─────────────────────┬─┬────────┬─┘
                                      ├─ALl(name)───────────┤ └─REname─┘
                                      ├─Connection(name)────┤
                                      ├─CORbaserver(name)───┤
                                      ├─DB2Conn(name)───────┤
                                      ├─DB2Entry(name)──────┤
                                      ├─DB2Tran(name)───────┤
                                      ├─DJar(name)──────────┤
                                      ├─DOctemplate(name)───┤
                                      ├─Enqmodel(name)──────┤
                                      ├─File(name)──────────┤
                                      ├─Journalmodel(name)──┤
                                      ├─Lsrpool(name)───────┤
                                      ├─Mapset(name)────────┤
                                      ├─PARTItionset(name)──┤
                                      ├─PARTNer(name)───────┤
                                      ├─PROCesstype(name)───┤
                                      ├─PROFile(name)───────┤
                                      ├─PROGram(name)───────┤
                                      ├─Requestmodel(name)──┤
                                      ├─Sessions(name)──────┤
                                      ├─TCpipservice(name)──┤
                                      ├─TDqueue(name)───────┤
                                      ├─TErminal(name)──────┤
                                      ├─TRANClass(name)─────┤
                                      ├─TRANSaction(name)───┤
                                      ├─TSmodel(name)───────┤
                                      └─TYpeterm(name)──────┘
```

Description

Options

Group(*groupname*)
specifies the name of the group to be displayed. You can use a generic group name.

List(*listname*)
specifies the name of the list to be displayed. You can use a generic list name.

REname
This option applies only to GROUP. Specifying RENAME allows you to rename resource definitions within the group.

*resource***(***name***)**
specifies the name of the resource to be displayed.

Examples

To display all groups on the CSD file:

```
DISPLAY GROUP(*)
```

To display all groups whose names begin with PROD and have seven characters:

```
DISPLAY GROUP(PROD+++)
```

To display all lists on the CSD file:

```
DISPLAY LIST(*)
```

To display all lists whose names begin with PROD and have five characters:

```
DISPLAY LIST(PROD+)
```

The CEDA DISPLAY GROUP command

You can enter the following commands next to the names on the panel:

CHECK
DISPLAY ALL
EXPAND[1]
INSTALL [2]
LOCK
UNLOCK

On this panel, all these commands can be abbreviated down to their initial letter. It is unnecessary to type the group name. For the syntax of each command, see that command in this section.

To DISPLAY the group names, you must use a generic name. For more information about using the DISPLAY panel, see Figure 45 on page 373 and Figure 46 on page 374.

The CEDA DISPLAY LIST command

- Displays one or more list names on a full screen panel.
- You can enter the following commands next to the names on the panel:
  CHECK
  DISPLAY GROUP

---

[1] Only for compatibility with previous releases.

[2] You cannot install CONNECTION and SESSIONS resources from a DISPLAY panel. They have to be installed in groups.

EXPAND[1]
LOCK
UNLOCK

On this panel, all these commands can be abbreviated down to their initial letter. It is not necessary to type the list name. For the syntax of each command, see that command in this section.

- To DISPLAY the list names, you must use a generic list name.
- For more information about using the DISPLAY panel, see Figure 45 on page 373 and Figure 46 on page 374.

The CEDA EXPAND command

Show the resource definitions in one or more groups or lists. This command has been retained for compatibility with previous releases.

Syntax

```
►►─CEDA─EXPand──┬─List(listname)──┬─────────────────┬───────────────────┬────────────────────►◄
                │                 └─Group(groupname)┘                   │
                └─Group(groupname)──┬──────────────────────┬──┬────────┬┘
                                    ├─ALl(name)────────────┤  └─REname─┘
                                    ├─Connection(name)─────┤
                                    ├─CORbaserver(name)────┤
                                    ├─DB2Conn(name)────────┤
                                    ├─DB2Entry(name)───────┤
                                    ├─DB2Tran(name)────────┤
                                    ├─DJar(name)───────────┤
                                    ├─DOctemplate(name)────┤
                                    ├─Enqmodel(name)───────┤
                                    ├─File(name)───────────┤
                                    ├─Journalmodel(name)───┤
                                    ├─Lsrpool(name)────────┤
                                    ├─Mapset(name)─────────┤
                                    ├─PARTItionset(name)───┤
                                    ├─PARTNer(name)────────┤
                                    ├─PROCesstype(name)────┤
                                    ├─PROFile(name)────────┤
                                    ├─PROGram(name)────────┤
                                    ├─Requestmodel(name)───┤
                                    ├─Sessions(name)───────┤
                                    ├─TCpipservice(name)───┤
                                    ├─TDqueue(name)────────┤
                                    ├─TErminal(name)───────┤
                                    ├─TRANClass(name)──────┤
                                    ├─TRANSaction(name)────┤
                                    ├─TSmodel(name)────────┤
                                    └─TYpeterm(name)───────┘
```

Description

Options

Group(*groupname*)
specifies the group to be expanded.

List(*listname*)
specifies the list to be expanded.

REname
This option applies only to GROUP. Specifying RENAME allows you to rename resource definitions within the group.

resource(*name*)
specifies the resource you want to see within the expanded group.

The CEDA EXPAND GROUP command

Shows the resource definitions in one or more groups on a full screen panel.

You can enter the following commands next to the names on the panel:
ALTER
COPY
DELETE
INSTALL
MOVE
RENAME
VIEW

All these commands can be abbreviated down to their initial letter. It is unnecessary to type the group or list name. For the syntax of each command, see that command in this section.

You may EXPAND a generic group name. For example:

- Show all the resource definitions in all groups on the CSD file:
```
EXPAND GROUP(*)
```
- Show all the resource definitions in groups whose names begin with PROD and are seven characters long:
```
EXPAND GROUP(PROD+++)
```

You may EXPAND a group to show only one resource type. The name you specify as the resource name may be a generic name. For example:

- Show all PROFILE definitions in all groups on the CSD file:
```
EXPAND GROUP(*) PROFILE(*)
```
- Show all TERMINAL definitions that begin with SZ in a group:
```
EXPAND GROUP(ZEMGROUP) TERMINAL(SZ++)
```

You may EXPAND a group or groups, limiting the resource definitions to those that share a generic name. For example:

- Show all resource definitions, of all types, ending in A1:
```
EXPAND GROUP(REINDEER) ALL(*A1)
```

If you use the RENAME option, you get a special panel on which you can overtype the resource definition names. This is a quick way of renaming many resource definitions.

The CEDA EXPAND LIST command

Shows the group names in one or more lists on a full screen panel.

When expanding a list, you can enter the following commands next to the names on the panel:

ADD
REMOVE

You may EXPAND part of a list, by using a generic group name, for example:

```
EXPAND LIST(INITLIST) GROUP(DFH*)
```

You may EXPAND more than one list, by using a generic list name. For example, to show the groups in all lists on the CSD file:

```
EXPAND LIST(*)
```

Show the groups in lists whose names begin with PROD and are five characters long:

```
EXPAND LIST(PROD+)
```

The CEDA INSTALL command

Dynamically make the resource definitions in the named group or group list available to the active CICS system.

Syntax

```
►►──CEDA──Install──┬──────────────────────┬──┬─Group(groupname)─┬────────────►◄
                   ├─ALl(name)────────────┤  └─List(listname)───┘
                   ├─Connection(name)─────┤
                   ├─CORbaserver(name)────┤
                   ├─DB2Conn(name)────────┤
                   ├─DB2Entry(name)───────┤
                   ├─DB2Tran(name)────────┤
                   ├─Djar(name)───────────┤
                   ├─DOctemplate(name)────┤
                   ├─Enqmodel(name)───────┤
                   ├─File(name)───────────┤
                   ├─Journalmodel(name)───┤
                   ├─Lsrpool(name)────────┤
                   ├─Mapset(name)─────────┤
                   ├─PARTItionset(name)───┤
                   ├─PARTNer(name)────────┤
                   ├─PROCesstype(name)────┤
                   ├─PROFile(name)────────┤
                   ├─PROGram(name)────────┤
                   ├─Requestmodel(name)───┤
                   ├─Sessions(name)───────┤
                   ├─TCpipservice(name)───┤
                   ├─TDqueue(name)────────┤
                   ├─TErminal(name)───────┤
                   ├─TRANClass(name)──────┤
                   ├─TRANSaction(name)────┤
                   ├─TSmodel(name)────────┤
                   └─TYpeterm(name)───────┘
```

Description

You can use single-resource install to install only the resources you require.

When applied to telecommunication and intercommunication resources, there are restrictions on the single-resource INSTALL command. The restrictions apply to resource definitions that are linked—for example, CONNECTION and SESSIONS definitions.

You can install the following resource types **only** as part of a group:

- CONNECTION definitions, except a CONNECTION with ACCESSMETHOD(INDIRECT)
- SESSIONS definitions
- TERMINAL definitions for pipeline terminals that share the same POOL.

If you want to use single-resource INSTALL for TERMINAL and related TYPETERM definitions, you must install the TYPETERM that is referred to by a TERMINAL definition **before** you install the TERMINAL definition.

The same applies when installing groups containing TERMINAL and TYPETERM definitions; install the group containing the TYPETERM definition before you install the group containing the TERMINAL definition. Similarly, if you install a list that contains groups containing TERMINAL and TYPETERM definitions, the group containing the TYPETERM definition must be before the group containing the TERMINAL definition. Also, in a list containing groups of DB2 resource definitions (DB2CONN, DB2ENTRY, and DB2TRAN definitions), the DB2CONN should be defined in the first group in the list.

A CORBASERVER definition must be either in the same group as the DJAR definitions that refer to it, or in a group that is installed before the group containing those DJAR definitions.

If the named resource already exists in the active CICS system, the existing definition is replaced by the new one.

Replacement of an existing definition occurs only if it is not actually in use.

If the installation of one or more of the resources in the group(s) being installed fails because the resource is in use or for any other reason, the following takes place:

1. The install process continues with the next resource in the group.
2. When the group install is complete, if the resource that failed was part of an **installable set**, all the resources in the installable set are backed out. Resources that were committed at the individual resource level are not backed out. For a list of the resource types that are committed as part of an installable set, see “What happens when you use the INSTALL command” on page 24.
3. A message is displayed to indicate that the group has been only partially installed. A message is also produced on the message panel for each of the resources that failed to install, stating the reason for each failure. No messages are produced for those resources that have been backed out.

In addition, a message is written to the CEMT log, saying that the install completed with errors.

CEDA INSTALL can be performed from a console, using the MVS MODIFY command.

Options

Group(*groupname***)**
specifies the group to be installed, or containing the resource to be installed. A generic group name is not accepted.

List(*listname***)**
specifies the list of groups to be installed, or containing the resource to be installed. A generic list name is not accepted.

*resource***(***name***)**
specifies the resource to be installed.

Note: If you want to use singe-resource install for ENQMODEL, remember that ENQMODELs usually have the default status of *ENABLED*, so the order of installing ENQMODELs must follow the rules for ENABLING ENQMODELs; that is, ENQMODELs forming nested generic ENQnames must be enabled in order from the most to the least specific. For example, ABCD* then ABC* then AB*.

The CEDA LOCK command

Restrict update and delete access to a single operator identifier.

Syntax

```
►►──CEDA──Lock──┬─Group(groupname)─┬──────────────────────────────────────────────►◄
                └─List(listname)───┘
```

Description

The group or list can be used, looked at, and copied by other users of RDO, but cannot be changed or deleted by them.

You can LOCK a nonexistent group or list, thereby reserving the named group or list for your own future use.

The only RDO command that releases a lock is the UNLOCK command. No other RDO commands can unlock a group or list. For example, if you DELETE all the resources in a group, or all the groups in a list, the lock remains.

You must specify either GROUP or LIST, even if you are locking the current group or list.

A generic group or list name is not accepted.

Options

Group(*groupname***)**
specifies the group to be locked.

List(*listname***)**
specifies the list to be locked.

Examples

To lock a list L1:

```
LOCK LIST(L1)
```

To lock a group G1:

```
LOCK GROUP(G1)
```

Controlling access to a group or list—LOCK and UNLOCK

The LOCK and UNLOCK commands enable you to control update access to a group or list so that only operators with the same operator identifier can make changes.

The lock is held on the CSD file and remains in effect across restarts of CICS. The lock is owned by the user, who is identified by a combination of the CICS generic applid (specified by the APPLID system initialization parameter), and the user's operator identifier (OPIDENT).

The OPIDENT is the one associated with the user when he or she signs on to the terminal used for RDO. For further information on OPIDENT, see the *CICS RACF Security Guide*. Any user who is not signed on or who has a different OPIDENT is not allowed to perform any operation that would change the locked group. However, any user is allowed to do the following things to a locked group:
- CHECK
- COPY
- DISPLAY
- INSTALL
- VIEW

The lock can be removed, using the UNLOCK command, only by a user on the same system and with the same operator identifier.

It would be wise to put a lock on your group of TYPETERMs and on your group of AUTINSTMODEL TERMINALs.

The CEDA MOVE command

Move one or more resource definitions from the group named by the GROUP option to the group named by the TO option.

Syntax

```
                   ┌─All──────────────────┐
►►──CEDA──Move─────┤                      ├──Group(groupname)──┬────────┬──────────────────────────────►
                   ├─Connection(name)─────┤                    └─REMove─┘
                   ├─CORbaserver(name)────┤
                   ├─DB2Conn(name)────────┤
                   ├─DB2Entry(name)───────┤
                   ├─DB2Tran(name)────────┤
                   ├─DJar(name)───────────┤
                   ├─DOctemplate(name)────┤
                   ├─Enqmodel(name)───────┤
                   ├─File(name)───────────┤
                   ├─Journalmodel(name)───┤
                   ├─Lsrpool(name)────────┤
                   ├─Mapset(name)─────────┤
                   ├─PARTItionset(name)───┤
                   ├─PROCesstype(name)────┤
                   ├─PROFile(name)────────┤
                   ├─PROGram(name)────────┤
                   ├─Requestmodel(name)───┤
                   ├─Sessions(name)───────┤
                   ├─TCpipservice(name)───┤
                   ├─TDqueue(name)────────┤
                   ├─TErminal(name)───────┤
                   ├─TRANClass(name)──────┤
                   ├─TRANSaction(name)────┤
                   ├─TSmodel(name)────────┤
                   └─TYpeterm(name)───────┘

►──┬─AS(newname)──────────────────┬──┬──────────┬───────────────────────────────────────►◄
   ├─TO(newgroupname)─────────────┤  ├─REPlace──┤
   └─AS(newname) TO(newgroupname)─┘  └─MErge────┘
```

Description

This command has the effect of copying the resource definitions from the first group into the second, followed by the deletion of the resource definitions from the first group.

When you MOVE the last resource in a group TO a different group, the group is automatically deleted. An empty group cannot exist.

If you do not specify either MERGE or REPLACE, a message warns you that you are attempting to create duplicate resource definitions. The definitions are not moved.

Options

AS(*newname***)**
If you move a definition within a group, you must use AS to rename it. You can also use AS if you want to move a definition to another group and rename it at the same time. You cannot use a generic name when using AS.

Group(*groupname***)**
specifies the group containing the definitions to be moved.

MErge
This applies when there are duplicate definition names in the groups named in the MOVE command. If you specify MERGE, duplicate definitions in the TO group are not replaced.

REMove
specifies that, when a group is deleted because the last resource in the group is moved elsewhere, the group is to be removed from all lists that had contained it.

REPlace
This applies when there are duplicate definition names in the groups named in the MOVE command. If you specify REPLACE, the definitions being moved replace those in the group named in the TO operand.

resource(*name*)
specifies the resource you want to move. The default is ALL, which moves all the resource definitions in a group to another group.

TO(*newgroupname***)**
You can move definitions to a different group, using TO to specify the new group.

Examples

When you move a single resource definition, you can simultaneously rename it, using the AS option to specify the new name. For example:

```
MOVE PARTITIONSET(PSETQ1) GROUP(PSET1) AS(PSETQ4)
TO(PSET2)
```

A generic resource definition name can be specified, to move all or some definitions of the same resource type. For example:

```
MOVE TRANSACTION(*) GROUP(DENTRY) TO(TEST1)
MOVE MAPSET(ACCT+++) GROUP(ACCOUNTS1) TO(ACCOUNTS2)
```

To move all the resource definitions in a group to the new group, you can use ALL. For example:

```
MOVE ALL GROUP(N21TEST) TO(N21PROD)
```

You can use ALL with a generic name, to move all qualifying resource definitions in the group to the new group. For example:

```
MOVE ALL(N21*) GROUP(N21OLD) TO(N21NEW)
```

You can use ALL with a specific name, to move all the resource definitions of that name (which must be for different resource types) in the group to the new group. For example:

```
MOVE ALL(XMPL) GROUP(EXAMPLE) TO(EXAMPLE2)
```

To merge definitions from group X in with the definitions in group Y, keeping the Y version of any duplicates:

```
MOVE GROUP(X) TO(Y) MERGE
```

To combine definitions from group X in with definitions in group Y, keeping the X version of any duplicates:

```
MOVE GROUP(X) TO(Y) REPLACE
```

The CEDA REMOVE command

Remove a group name from a list.

Syntax

```
►►──CEDA──Remove──Group(groupname)──LIst(listname)──────────────────────────────────►◄
```

Description

The group, and all its resource definitions, still exists on the CSD file. When the last group is removed from a list, the list no longer exists on the CSD file.

A generic list name is not accepted.

A generic group name can be specified to remove many or all groups from a list with one command.

When a group is deleted, the user may have requested that the group be removed from all lists that had contained it. When the last group is removed from a list, the list is deleted.

Options

Group(*groupname*)
specifies the group to be removed.

List(*listname*)
specifies the list from which the group is to be removed.

Examples

A list LL02 contains the following groups:
- G001
- X001
- XG001
- G002
- G003
- X002
- G004

To remove all groups beginning with G:

```
REMOVE GROUP(G*) LIST(LL02)
```

This leaves:
- X001
- XG001
- X002

To remove the list completely:

```
REMOVE GROUP(*) LIST(LL02)
```

The CEDA RENAME command

Rename a resource definition to the new name specified in the AS option.

Syntax

```
►►──CEDA──REName──┬─────────────────────┬──┬────────────────────┬──┬──────────────┬──────────►
                  ├─All(name)───────────┤  └─Group(groupname)───┘  └─AS(newname)──┘
                  ├─Connection(name)────┤
                  ├─CORbaserver(name)───┤
                  ├─DB2Conn(name)───────┤
                  ├─DB2Entry(name)──────┤
                  ├─DB2Tran(name)───────┤
                  ├─DJar(name)──────────┤
                  ├─DOctemplate(name)───┤
                  ├─Enqmodel(name)──────┤
                  ├─File(name)──────────┤
                  ├─Journalmodel(name)──┤
                  ├─Lsrpool(name)───────┤
                  ├─Mapset(name)────────┤
                  ├─PARTItionset(name)──┤
                  ├─PARTNer(name)───────┤
                  ├─PROCesstype(name)───┤
                  ├─PROFile(name)───────┤
                  ├─PROGram(name)───────┤
                  ├─REQuestmodel(name)──┤
                  ├─Sessions(name)──────┤
                  ├─TCpipservice(name)──┤
                  ├─TDqueue(name)───────┤
                  ├─TErminal(name)──────┤
                  ├─TRANClass(name)─────┤
                  ├─TRANSaction(name)───┤
                  ├─TSmodel(name)───────┤
                  └─TYpeterm(name)──────┘

►──┬──────────────────────┬──┬──────────┬──────────────────────────────────────────────────────►◄
   └─TO(newgroupname)─────┘  └─REMove───┘
```

Description

You can also rename a resource definition by using the DISPLAY command or the EXPAND command with the RENAME option. See “The CEDA DISPLAY command” on page 402 and “The CEDA EXPAND command” on page 404 for information about these commands.

Options

AS(*newname*)
If you copy a definition within a group, you must use AS to rename it. You can also use AS if you want to copy a definition to another group and rename it at the same time. You cannot use a generic name when using AS.

Group(*groupname*)
specifies the group containing the definitions to be copied. A generic group name is not accepted.

REMove
specifies that, when a group is deleted, the group is to be removed from all lists that had contained it.

resource(*name*)
specifies the resource you want to copy. The default is ALL, which copies all the resource definitions in a group to another group. A generic resource definition name is not accepted.

TO(*newgroupname***)**
You can copy definitions to a different group, using TO to specify the new group.

Examples

To rename a resource and keep it in its current group:

```
RENAME PROFILE(PROF1) AS(NEWPROF) GROUP(PROFS)
```

You can rename all resource definitions which share the same name, to a new name, using the ALL option instead of a resource type. For example:

```
RENAME ALL(TVA) AS(XTVA) GROUP(XTVA1)
RENAME ALL(USER) AS(OLDU) GROUP(USERDEF)
```

You can move a resource definition to a new group, which you specify in the TO option, at the same time as renaming it. (You can also do this with the MOVE command.) For example:

```
RENAME PROGRAM(N20ZA) AS($SOSERR) GROUP(N20) TO($MODULES)
```

You can move all the resource definitions of the same name from one group to another, using the TO option, at the same time as renaming them. For example:

```
RENAME ALL(USER) GROUP(USERDEF) AS(TEMP) TO(TEMPGRP)
```

You cannot rename a resource definition to a name that already exists in the target group.

The CEDA UNLOCK command

Remove the lock from a group or a list of definitions.

Syntax

```
►►──CEDA──UNLock──┬─Group(groupname)─┬──────────────────────────────────────────►◄
                  └─List(listname)───┘
```

Description

The UNLOCK command is the only RDO command that can remove a lock on a list or group put there by use of the RDO LOCK command.

You can UNLOCK a nonexistent group or list.

You must specify either the GROUP or the LIST option, even if you are unlocking the current group or list, because the UNLOCK command can be used with both.

For more information about UNLOCK, see “Security of resource definitions” on page 11.

Options

`Group(`*`groupname`*`)`
specifies the group to be unlocked. A generic group name is not accepted.

`List(`*`listname`*`)`
specifies the list to be unlocked. A generic list name is not accepted.

Examples

To unlock a group G1:

```
UNLOCK GROUP(G1)
```

To unlock a LIST L1:

```
UNLOCK LIST(L1)
```

Controlling access to a group or list—LOCK and UNLOCK

The LOCK and UNLOCK commands enable you to control update access to a group or list so that only operators with the same operator identifier can make changes.

The lock is held on the CSD file and remains in effect across restarts of CICS. The lock is owned by the user, who is identified by a combination of the CICS generic applid (specified by the APPLID system initialization parameter), and the user's operator identifier (OPIDENT).

The OPIDENT is the one associated with the user when he or she signs on to the terminal used for RDO. For further information on OPIDENT, see the *CICS RACF Security Guide*. Any user who is not signed on or who has a different OPIDENT is not allowed to perform any operation that would change the locked group. However, any user is allowed to do the following things to a locked group:
- CHECK
- COPY
- DISPLAY
- INSTALL
- VIEW

The lock can be removed, using the UNLOCK command, only by a user on the same system and with the same operator identifier.

It would be wise to put a lock on your group of TYPETERMs and on your group of AUTINSTMODEL TERMINALs.

The CEDA USERDEFINE command

Create a new resource definition.

Syntax

```
►►──CEDA──USerdefine──┬─Connection(name)──────┬──Group(groupname)──attribute list(newvalue)──────────►◄
                      ├─CORbaserver(name)─────┤
                      ├─DB2Conn(name)─────────┤
                      ├─DB2Entry(name)────────┤
                      ├─DB2Tran(name)─────────┤
                      ├─DJar(name)────────────┤
                      ├─DOctemplate(name)─────┤
                      ├─Enqmodel(name)────────┤
                      ├─File(name)────────────┤
                      ├─Journalmodel(name)────┤
                      ├─Lsrpool(name)─────────┤
                      ├─Mapset(name)──────────┤
                      ├─PARTItionset(name)────┤
                      ├─PARTNer(name)─────────┤
                      ├─PROCesstype(name)─────┤
                      ├─PROFile(name)─────────┤
                      ├─PROGram(name)─────────┤
                      ├─Requestmodel(name)────┤
                      ├─Sessions(name)────────┤
                      ├─TCpipservice(name)────┤
                      ├─TDqueue(name)─────────┤
                      ├─TErminal(name)────────┤
                      ├─TRANClass(name)───────┤
                      ├─TRANSaction(name)─────┤
                      ├─TSmodel(name)─────────┤
                      └─TYpeterm(name)────────┘
```

Description

USERDEFINE is an alternative to the DEFINE command. Instead of using CICS-supplied default values, USERDEFINE uses your own defaults. Otherwise it operates in exactly the same way as DEFINE.

To set up your own defaults, use DEFINE to create a dummy resource definition named USER in a group named USERDEF. Each dummy resource definition must be complete (for example, a transaction definition must name a program definition, even though you always supply a program name when you USERDEFINE a transaction). You need not install the dummy resource definitions before using USERDEFINE.

Do this for each type of resource for which you want to set default values. Each of them is named USER, but this does not matter because the fact that they are definitions of different resource types makes them unique.

So you could have the following resources in your USERDEF group:
- CONNECTION(USER)
- CORBASERVER(USER)
- DB2CONN(USER)
- DB2ENTRY(USER)
- DB2TRAN(USER)
- DJAR(USER)
- DOCTEMPLATE(USER)
- ENQMODEL(USER)

- FILE(USER)
- JOURNALMODEL(USER)
- LSRPOOL(USER)
- MAPSET(USER)
- PARTITIONSET(USER)
- PARTNER(USER)
- PROCESSTYPE(USER)
- PROFILE(USER)
- PROGRAM(USER)
- REQUESTMODEL(USER)
- SESSIONS(USER)
- TCPIPSERVICE(USER)
- TDQUEUE(USER)
- TERMINAL(USER)
- TRANCLASS(USER)
- TRANSACTION(USER)
- TSMODEL(USER)
- TYPETERM(USER).

This example is reviewed in the 'Examples' section for this command.

Options

Attribute list
The attribute list depends on the resource type being defined; some resources have attributes that must be included in the definition. Attributes that you do not specify are given default values.

Group(*groupname*)
The name of the group to be defined.

Examples

Assembler programmers at an installation have created a dummy program definition called USER with Assembler as the default language. They use USERDEFINE to define their programs to CICS.

First you must define a program called USER in group USERDEF. You could do this with the command:

```
CEDA DEFINE PROGRAM(USER) GROUP(USERDEF)
```

The following figure shows the panel you would see as a result of this command:

```
  DEFINE PROGRAM(USER)
GROUP(USERDEF)            CICS RELEASE = 0620
  OVERTYPE TO MODIFY
   CEDA  DEFine
    PROGram        : USER
    Group          : USERDEF
    DEscription  ==>
    Language     ==>                    CObol v Assembler v Le370 v C v Pli
    RELoad       ==> No                 No v Yes
    RESident     ==> No                 No v Yes
    USAge        ==> Normal             Normal v Transient
    USElpacopy   ==> No                 No v Yes
    Status       ==> Enabled            Enabled v Disabled
    RSl            : 00                 0-24 v Public
    Cedf         ==> Yes                Yes v No
    DAtalocation ==> Below              Below v Any
 I New group USERDEF created
                                                 SYSID=ABCD    APPLID=DBDCCICS
   DEFINE SUCCESSFUL                      TIME:  11.24.39   DATE:  97.359
 PF 1 HELP 2 COM 3 END           6 CRSR 7 SBH 8 SFH 9 MSG 10 SB 11 SF 12 CNCL
```

Type in `ASSEMBLER` as the LANGUAGE option and press ENTER:

```
  OVERTYPE TO MODIFY
   CEDA  USerdefine
    PROGram        : USER
    Group          : USERDEF
    DEscription  ==>
    Language     ==> Assembler          CObol v Assembler v Le370 v C v Pli
    RELoad       ==> No                 No v Yes
    RESident     ==> No                 No v Yes
    USAge        ==> Normal             Normal v Transient
    USElpacopy   ==> No                 No v Yes
    Status       ==> Enabled            Enabled v Disabled
    RSl            : 00                 0-24 v Public
    Cedf         ==> Yes                Yes v No
    DAtalocation ==> Below              Below v Any



                                                 SYSID=ABCD    APPLID=DBDCCICS
   DEFINE SUCCESSFUL                      TIME:  11.24.41   DATE:  97.359
 PF 1 HELP 2 COM 3 END           6 CRSR 7 SBH 8 SFH 9 MSG 10 SB 11 SF 12 CNCL
```

Now, each time you want to define a new program, you can use the USERDEFINE command to get the default value ASSEMBLER automatically. So, if you want to define a new program P2 in group GRP you enter the command:

```
CEDA USERDEFINE PROGRAM(P2) GROUP(GRP)
```

The following figure shows the panel resulting from this command.

```
  USERDEFINE PROGRAM(P2)
GROUP(GRP)
  OVERTYPE TO MODIFY
   CEDA  USerdefine
    PROGram       : P2
    Group         : GRP
    DEscription  ==>
    Language     ==> Assembler          CObol v Assembler v Le370 v C v Pli
    RELoad       ==> No                 No v Yes
    RESident     ==> No                 No v Yes
    USAge        ==> Normal             Normal v Transient
    USElpacopy   ==> No                 No v Yes
    Status       ==> Enabled            Enabled v Disabled
    RSl           : 00                  0-24 v Public
    Cedf         ==> Yes                Yes v No
    DAtalocation ==> Below              Below v Any
                                                               APPLID=DBDCCICS
   USERDEFINE SUCCESSFUL                  TIME:  11.25.48   DATE:  97.359
 PF 1 HELP 2 COM 3 END           6 CRSR 7 SBH 8 SFH 9 MSG 10 SB 11 SF 12 CNCL
```

You see that the ASSEMBLER option has appeared for the LANGUAGE attribute. You can overtype the option values on this panel to complete the definition just as you can with the DEFINE command panel.

After you have set up your own defaults in a USER resource definition, anyone using the USERDEFINE command for that resource type gets those default values.

By renaming your USER to something else and defining your own dummy resource definition, you can use your own default values. Normally, however, your installation probably agrees on default values for standardization reasons, and puts a LOCK on the USERDEF GROUP.

The CEDA VIEW command

View the attributes of an existing resource definition.

Syntax

```
►►──CEDA ──View──Group(groupname)──┬───────────────────────┬──────────────────────────►◄
                                   ├─All(name)─────────────┤
                                   ├─Connection(name)──────┤
                                   ├─CORbaserver(name)─────┤
                                   ├─DB2Conn(name)─────────┤
                                   ├─DB2Entry(name)────────┤
                                   ├─DB2Tran(name)─────────┤
                                   ├─DJar(name)────────────┤
                                   ├─DOctemplate(name)─────┤
                                   ├─Enqmodel(name)────────┤
                                   ├─File(name)────────────┤
                                   ├─Journalmodel(name)────┤
                                   ├─Lsrpool(name)─────────┤
                                   ├─Mapset(name)──────────┤
                                   ├─PARTItionset(name)────┤
                                   ├─PARTNer(name)─────────┤
                                   ├─PROFile(name)─────────┤
                                   ├─PROCesstype(name)─────┤
                                   ├─PROGram(name)─────────┤
                                   ├─Requestmodel(name)────┤
                                   ├─Sessions(name)────────┤
                                   ├─TCpipservice(name)────┤
                                   ├─TDqueue(name)─────────┤
                                   ├─TErminal(name)────────┤
                                   ├─TRANClass(name)───────┤
                                   ├─TRANSaction(name)─────┤
                                   ├─TSmodel(name)─────────┤
                                   └─TYpeterm(name)────────┘
```

Description

The VIEW command lets you look at the resource definition attributes in the same way as the ALTER command. However, you cannot update any of the definitions.

Options

Group(*groupname*)
specifies the group to be viewed. If no name is given, the current group is assumed.

Examples

```
VIEW TERMINAL(SZT1) GROUP(ZEMTERMS)

VIEW MAPSET(N20MAP01) GROUP(N20)
```

See Figure 47 on page 375 for an example of the VIEW panel.

Part 4. The resource definition batch utility DFHCSDUP

This part explains what the CSDUP offline utility is, and how you use batch jobs submitted offline to change definitions in the CSD file.

Chapter 37. System definition file utility program (DFHCSDUP)

The CICS system definition utility program, DFHCSDUP, is a component of resource definition online (RDO). DFHCSDUP is an offline utility program that allows you to read from and write to a CICS system definition (CSD) file, either while CICS is running or while it is inactive.

You can use the DFHCSDUP program to:

- ADD a group to the end of a named list in a CSD file
- ALTER attributes of an existing resource definition
- APPEND a group list from one CSD file to a group list in another, or in the same, CSD file
- COPY all of the resource definitions in one group or several generically named groups to another group or several other generically named groups in the same, or in a different, CSD file
- DEFINE a single resource, or a group of resources, on the CSD
- DELETE from the CSD a single resource definition, all of the resource definitions in a group, or all of the group names in a list
- EXTRACT data from the CSD and pass it to a user program for processing
- INITIALIZE a new CSD file, and add to it CICS-supplied resource definitions
- LIST selected resource definitions, groups, and lists
- MIGRATE the contents of a table from a CICS load library to a CSD file
- LIST a specific APAR
- REMOVE a single group from a list on the CSD file
- SCAN all IBM-supplied groups and user defined groups for a resource. The definition of the matched resource in an IBM supplied group is compared to the definition(s) of the corresponding matched resource in the user groups.
- SERVICE a CSD file when necessary
- UPGRADE the CICS-supplied resource definitions in a primary CSD file for a new release of CICS
- Define resources using a set of user-defined default values (USERDEFINE command)
- VERIFY a CSD file by removing internal locks on groups and lists.

See Chapter 38, “Resource management utility DFHCSDUP commands,” on page 431 for information on each of these commands.

Note that the DFHCSDUP utility opens the CSD in non-RLS mode (even if you request RLS access on your JCL). This means that, if you access the CSD from CICS in RLS mode, it cannot be open when you run DFHCSDUP. The reason for the restriction is that the DFHCSDUP utility does not have the capabilities that are needed in order to open a recoverable file in RLS mode. The restriction also applies, however, if your CSD is nonrecoverable.

You can invoke the DFHCSDUP program in two ways:

1. As a batch program (see “Invoking DFHCSDUP as a batch program” on page 425.)
2. From a user program running either in batch mode or in a TSO environment (see “Invoking the DFHCSDUP program from a user program” on page 427).

Sharing the CSD between CICS Transaction Server for z/OS, Version 3 Release 1 and earlier releases

If you want to share the CSD between CICS regions at different release levels, to enable you to share common resource definitions, you must update the CSD from the higher level region - CICS Transaction Server for z/OS, Version 3 Release 1.

In CICS Transaction Server for z/OS, Version 3 Release 1, some attributes are obsolete, and are removed from the CSD definitions. Using the ALTER command on definitions that specify obsolete attributes does not cause the loss of these attributes in CICS Transaction Server for z/OS, Version 3 Release 1, so you can safely update resource definitions from a CICS Transaction Server for z/OS, Version 2 Release 3 region. If you are sharing the CSD between a CICS Transaction Server for z/OS, Version 3 Release 1 region and a CICS/MVS 2.1.2 or a CICS/OS/VS 1.7 region, you can use the CICS Transaction Server for z/OS, Version 3 Release 1 CSD utility, DFHCSDUP, to update resources that specify obsolete attributes. A compatibility option is added for this purpose, which you must specify on the PARM parameter on the EXEC PGM=DFHCSDUP statement. You indicate the compatibility option by specifying COMPAT or NOCOMPAT. The default is NOCOMPAT, which means that you cannot update obsolete attributes. (See Figure 62 on page 425.) the *CICS Transaction Server for z/OS, Version 3 Release 1 Migration from CICS TS Version 2.2* discusses these obsolete attributes and their compatibility with earlier releases.

Note: You cannot use the EXTRACT command of the CICS Transaction Server for z/OS, Version 3 Release 1 DFHCSDUP utility when the COMPAT option is specified.

Input and output for the DFHCSDUP program

Input to the DFHCSDUP program (see Figure 61 on page 425) is from:

- A **primary CSD file**, which must be present, and have a ddname of DFHCSD
- Optionally, a **secondary CSD file**, for which you can specify any ddname
- A CICS table, as specified on the MIGRATE command.

The result of running the DFHCSDUP program (see Figure 61 on page 425) may be an updated primary file, or a print file.

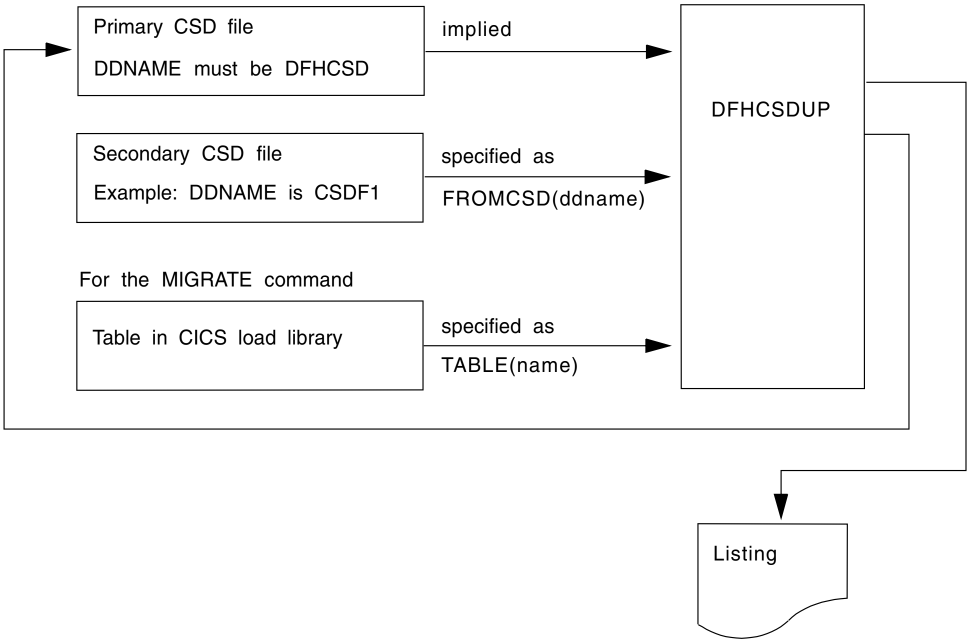


Figure 61. The DFHCSDUP offline utility program

Invoking DFHCSDUP as a batch program

The job in Figure 62 shows you an example of the job control statements you can use to invoke DFHCSDUP as a batch program.

```
//CSDJOB  JOB  accounting info,name,MSGLEVEL=1
//STEP1   EXEC PGM=DFHCSDUP,REGION=0M,                             1
//             PARM='CSD(READWRITE),PAGESIZE(60),NOCOMPAT'
//STEPLIB DD   DSN=CICSTS31.SDFHLOAD,DISP=SHR
//*******************************************************************
//*        If you are running DFHCSDUP with the MIGRATE command,
//*        and your CICS load tables are not in CICSTS31.SDFHLOAD,
//*        concatenate your own private library here:
//*******************************************************************
//        DD   DSN=CICSTS31.userlib.tables,DISP=SHR
//DFHCSD   DD  DISP=SHR,DSN=CICSTS31.DFHCSD
//SECNDCSD DD  UNIT=SYSDA,DISP=SHR,DSN=CICSTS31.SECNDCSD        2
//indd     DD  UNIT=SYSDA,DISP=SHR,DSN=extract.input.dataset        3
//outdd    DD  UNIT=SYSDA,DISP=SHR,DSN=extract.output.dataset       4
 5
//* or                                                             4
//outdd    DD  SYSOUT=A                                            4
 5
//SYSPRINT DD  SYSOUT=A
//SYSIN    DD  *

     DFHCSDUP commands                                             6
/*
//
```

Figure 62. Sample job to run DFHCSDUP

Notes:

1 The EXEC statement should specify a suitable REGION size and a PARM parameter:

- **The REGION size**. A region size of 512KB is generally recommended for the execution of the DFHCSDUP program. However, for the MIGRATE command, the table to be migrated is loaded into main storage, so the region size should be at least 512KB plus the size of the largest table.
- **The PARM parameter**. Use this to specify any of the following options:

  UPPERCASE
  specifies that you want all output from DFHCSDUP to be in uppercase. If you want all output to be in mixed case (the default), do not code this option.

  CSD({READWRITE|READONLY})
  specifies whether you want read/write or read-only access to the CSD from this batch job. The default value is READWRITE.

  PAGESIZE(nnnn)
  specifies the number of lines per page on output listings. Values for nnnn are 4 through 9999. The default value is 60.

  NOCOMPAT or COMPAT
  specifies whether the DFHCSDUP utility program is to run in compatibility mode (that is, whether it can update definitions that are obsolete in CICS Transaction Server for z/OS). The default is NOCOMPAT, which means that you cannot update obsolete attributes. For further information about this option, see “Sharing the CSD between CICS Transaction Server for z/OS, Version 3 Release 1 and earlier releases” on page 424.

2 You need a DD statement for a secondary CSD if you specify the FROMCSD parameter on an APPEND, COPY, or SERVICE command. The ddname for this DD statement is the name you specify on the FROMCSD parameter. The secondary CSD must be a different data set from the primary; you must not define primary and secondary DD statements that reference the same data set.

3 If you specify the EXTRACT command, you may need to:

- Concatenate with STEPLIB the libraries that contain your USERPROGRAM programs.
- Include a DD statement for any input data set that is defined in your user program. For example, the CICS-supplied user program, DFH$CRFA, needs a DD statement with a ddname of CRFINPT.

  The input file specified by CRFINPT is needed by the user programs DFH$CRFx (where x=A for Assembler or x=P for PL/I) and DFH0CRFC (for COBOL) to supply the list of resource types or attributes for which you want a cross reference listing. You can specify (in uppercase) any resource type known to CEDA, one resource type per line (starting in column 1). For example, your CRFINPT file may contain the following resource types (one per line) to be cross referenced:

  ```
  PROGRAM
  TRANSACTION
  TYPETERM
  XTPNAME
  DSNAME
  ```

  For programming information about the use of the CRFINPT file by the programs DFH$CRFx or DFH0CRFC (for COBOL), see the *CICS Customization Guide*.

4 If you specify the EXTRACT command, you need to include the DD statements for any data sets that receive output from your extract program. The ddname is whatever ddname you define in the user program. The CICS-supplied sample programs need DD statements for the following ddnames:

Table 18. DD statements for the CICS-supplied sample programs

program name	ddname	example DD statement
DFH$CRFx or DFH0CRFC (COBOL)	CRFOUT	`//CRFOUT DD SYSOUT=A`
DFH$FORx or DFH0FORC (COBOL)	FOROUT	`//FOROUT DD SYSOUT=output.dataset`

DFH0CBDC	CBDOUT
	SYSABOUT
		`//CBDOUT DD SYSOUT=A`
		`//SYSABOUT DD SYSOUT=A`

5 The output data sets in these examples are opened and closed for each EXTRACT command specified in SYSIN. If you are writing the output to a sequential disk data set, specify DISP=MOD to ensure that data is not overwritten by successive EXTRACT commands. Alternatively, provided you do not specify SYSOUT on the DD statement, you can change the OPEN statement in the program (for example, in the COBOL versions, to OPEN EXTEND). For programming information about the CICS-supplied user programs, see the *CICS Customization Guide*.

6 Syntax

You can code commands and keywords using abbreviations and mixed case, as given in the syntax box in the description of each command. If you enter an ambiguous command or keyword, the DFHCSDUP program issues a message indicating the ambiguity.

You can specify keyword values longer than one line, if you use the continuation character (an asterisk) at the end of a line (in column 72). Subsequent lines start in column 1. For example, you can use this facility to specify XTPNAME values of up to 128 hexadecimal characters.

You can use a data set or a partitioned data set member for your commands, rather than coding them in the input stream.

Invoking the DFHCSDUP program from a user program

Invoking the DFHCSDUP program from a user program enables you to create a flexible interface to the utility. By specifying the appropriate entry parameters, your program can cause the DFHCSDUP program to pass control to an exit routine at any of five exit points. The exits can be used, for example, to pass commands to the DFHCSDUP program, or to respond to messages produced by its processing.

You can run your user program:
- In batch mode
- Under TSO.

Note:

1. In a TSO environment, it is normally possible for the terminal user to interrupt processing at any time by means of an ATTENTION interrupt. In order to protect the integrity of the CSD file, the DFHCSDUP program does not respond to such an interrupt until after it has completed the processing associated with the current command. It then writes message number DFH5618 to the put-message exit, where this is available, and also to the default output file:

   ```
   AN ATTENTION INTERRUPT HAS BEEN REQUESTED DURING DFHCSDUP PROCESSING
   ```

   Your put-message exit routine can terminate the DFHCSDUP program, if desired. (You **must** supply a put-message routine if you want your operators to regain control after an ATTENTION interrupt.)
2. Suitably authorized TSO users can use the CEDA INSTALL transaction to install resources that have previously been defined with the DFHCSDUP program.

The CICS-supplied sample program, DFH$CUS1, illustrates how the DFHCSDUP program can be invoked from a user program. It is written as a command processor (CP) for execution under the TSO/E operating system.

The following sections outline the entry parameters of the DFHCSDUP program and the responsibilities of the user program. For programming information about invoking the DFHCSDUP program from a user program, see the *CICS Customization Guide*.

Entry parameters for the DFHCSDUP program

When invoking the DFHCSDUP program, your program passes a list of up to five parameters, as described below:

OPTIONS

A list of character strings, separated by commas. (The information passed here is that which would otherwise be passed on the PARM keyword of the EXEC statement of JCL.)

Note: A maximum of three options may be specified:

UPPERCASE

specifies that you want all output from DFHCSDUP to be in uppercase. If you want all output to be in mixed case (the default), do not code this option.

CSD({READWRITE|READONLY})

specifies whether you require read/write or read-only access to the CSD. The default value is READWRITE.

PAGESIZE(nnnn)

specifies the number of lines per page on output listings. Valid values for nnnn are 4 through 9999. The default value is 60.

NOCOMPAT|COMPAT

specifies whether the DFHCSDUP utility program is to run in compatibility mode (that is, whether it can update definitions that are obsolete in CICS Transaction Server for z/OS). The default is NOCOMPAT, which means that you cannot update obsolete attributes. For further information about this option, see “Sharing the CSD between CICS Transaction Server for z/OS, Version 3 Release 1 and earlier releases” on page 424.

DDNAMES
A list of ddnames that, if specified, are substituted for those normally used by the DFHCSDUP program.

HDING
The starting page number of any listing produced by the DFHCSDUP program. You can use this parameter to ensure that subsequent invocations produce logically numbered listings. If this parameter is not specified, the starting page number is set to 1.

The page number, if supplied, must be four numeric EBCDIC characters.

DCBs
The addresses of a set of data control blocks for use internally by the DFHCSDUP program. Any DCBs (or ACBs) that you specify are used internally, instead of those normally used by the DFHCSDUP program.

Note that if you specify both replacement DDNAMES and replacement DCBs, the alternative DCBs are used, but the alternative DDNAMES are disregarded.

EXITS
The addresses of a set of user exit routines to be invoked during processing of the DFHCSDUP program.

Responsibilities of the user program

Before invoking the DFHCSDUP program, your calling program must ensure that:

- AMODE(24) and RMODE(24) are in force
- S/370 register conventions are obeyed
- If the EXITS parameter is passed, any programming environment needed by the exit routines has been initialized
- Any ACBs or DCBs passed for use by the DFHCSDUP program are OPEN.

Rules for the syntax and preparation of commands for the DFHCSDUP program

Enter the commands in columns 1 through 71 of 80-character input records. You can specify keyword values longer than one line, if you use the continuation character (an asterisk) at the end of a line (in column 72). Subsequent lines start in column 1. For example, you can use this facility to specify XTPNAME values of up to 128 hexadecimal characters.

The command keywords can be specified by abbreviations and in mixed case, as shown in the command syntax under each command description. The minimum abbreviation is given in uppercase in the command syntax, with the optional characters given in lower case; for example:

```
ALter Connection(name) Group(groupname)
```

Leading blanks are ignored, and blanks between keywords and operands are permitted.

Comment records are permitted; they must have an asterisk (*) in column 1. Comment material is not permitted on a record that contains a command.

Blank records between commands are ignored.

Follow the conventions for the names of groups and lists when coding the GROUP, LIST, TO, and TYPESGROUP parameters. If you use a generic specification for the GROUP or LIST parameter in the LIST command, you can use the symbols * and + in the same way as for CEDA.

The FROMCSD parameter must contain a valid ddname conforming to the rules for the JCL of the operating system.

An example of a valid sequence of commands is shown in Figure 63. Other examples of commands are given in the command descriptions that follow.

```
*                                SET UP INITIAL CSD FILE
INITialize
*
LIst LIst(DFHLIST) Objects
*                                UPGRADE FROM EARLIER RELEASE
UPgrade
*                                MIGRATE MAIN TABLES
*
MIgrate TAble(DFHTCTT1)
*
LI Group(PPTM1)
LI G(SETM*)
*                                   CREATE GROUP PCTZ4
Copy G(PCTM1)  To(PCTZ4)
C G(SETMP3) T(PCTZ4) Replace
LI G(P++M+)
*                                   CREATE LIST MODLIST
APpend LIst(TESTLIST) TO(MODLIST) FRomcsd(CSDF1)
AP LI(SECLIST)  To(MODLIST) FR(CSDF1)
AP LI(DFHLIST)  To(MODLIST)
*
LI ALL OBJECTS
```

Figure 63. Sample commands of the DFHCSDUP program

Command processing in DFHCSDUP following internal error detection

If you have provided a put-message-exit routine for the DFHCSDUP program, it is invoked whenever a message is issued. You can use this exit to respond to error messages produced by DFHCDSUP processing, when the DFHCSDUP program is invoked from a user program. The put-message-exit routine is not used if the DFHCSDUP program is running as a batch program. For programming information about the DFHCSDUP exits, see the *CICS Customization Guide*.

The reaction of the DFHCSDUP program to an error (with return code 8 or greater) depends on the nature of the error and on how the DFHCSDUP program is invoked.

If an error is detected while the DFHCSDUP program is running as a batch program, one of the following two reactions occurs:

1. If the error occurs during connection of the CSD, no subsequent commands are completed.
2. If the error occurs elsewhere, no subsequent commands are executed other than LIST commands.

If an error is detected while the DFHCSDUP program is receiving commands from a get-command exit, all subsequent commands are processed if possible.

Chapter 38. Resource management utility DFHCSDUP commands

This topic describes the commands available with the DFHCSDUP utility program. Commands can be abbreviated, but the minimum abbreviation allowed differs from some of the CEDA command abbreviations.

The DFHCSDUP ADD command

Add a group to a list.

ADD syntax

```
►►──ADd──Group──(──groupname──)──LIst──(──listname──)──────────────────────────────►◄
```

Options

Group*(groupname)*
specifies the name of the group to be added. The name must not already exist in the list. A generic group name is not accepted. If you do not specify a group, the current group name is added.

LIst*(listname)*
specifies the name of the list to which the group is to be added. If the list does not already exist, a new one is created. If LIST is not specified, the group name is added to the current list if there is one. A generic list name is not accepted.

Examples

To create a list LA01, by adding a group to it

```
ADD GROUP(GA001) LIST(LA01)
```

To add another group to list LA01

```
ADD GROUP(GA002) LIST(LA01)
```

LA01 now looks like this

- GA001
- GA002

The DFHCSDUP ALTER command

Change some or all of the attributes of an existing resource definition.

ALTER syntax

```
| ►►──ALter──┬─CONnection(name)───┬──Group──(──groupname──)──attribute list──(──new value──)──────────►◄
             ├─CORbaserver(name)──┤
             ├─DB2Conn(name)──────┤
             ├─DB2Entry(name)─────┤
             ├─DB2Tran(name)──────┤
             ├─DJar(name)─────────┤
             ├─DOctemplate(name)──┤
             ├─Enqmodel(name)─────┤
             ├─File(name)─────────┤
             ├─Journalmodel(name)─┤
             ├─LSRpool(name)──────┤
             ├─Mapset(name)───────┤
             ├─PARTItionset(name)─┤
             ├─PARTNer(name)──────┤
             ├─PIpeline(name)─────┤
             ├─PROCesstype(name)──┤
             ├─PROFile(name)──────┤
             ├─PROGram(name)──────┤
             ├─Requestmodel(name)─┤
             ├─Sessions(name)─────┤
             ├─TCpipservice(name)─┤
             ├─TDqueue(name)──────┤
             ├─TErminal(name)─────┤
             ├─TRANClass(name)────┤
             ├─TRANSaction(name)──┤
             ├─TSmodel(name)──────┤
             ├─TYpeterm(name)─────┤
             ├─Urimap(name)───────┤
             └─Webservice(name)───┘
```

Description

For information about the attributes that you can specify on the ALTER command for the various resource types, and for a description of the attributes and default values of each resource type, see About resource definition.

Do not use ALTER to change the value of the attributes of a TYPETERM definition on which other attributes depend. If you make a mistake with DEVICE, SESSIONTYPE, or TERMMODEL, delete the definition and define a new one with the correct values.

You can specify null attribute values, for example:

```
ALTER FILE(TEST) GROUP(ACT1) DESCRIPTION()
```

If an attribute for which you have specified a null value has a default, the value used depends upon the type of field:

- The command:
  ```
  ALTER FILE(TEST) GROUP(ACT1) RLSACCESS() DESCRIPTION()
  ```
  uses the default value of NO for RLSACCCESS and the description is blanked out.
- The command:
  ```
  ALTER FILE(TEST) GROUP(ACT1) PROFILE()
  ```

uses the default value DFHCICSA for the PROFILE field.

Changes to resource definitions in the CSD file do not take effect, in a running CICS system, until you install the group in which the resource definition resides.

Options

Attribute list
specifies the attributes to be altered.

Group*(groupname)*
specifies the name of the group containing the resource to be altered.

Resource*(name)*
specifies the resource whose attributes you want to alter. You can specify a generic name by using the characters + and *.

Examples

To make a program resident:

```
ALTER PROGRAM(ERR01) GROUP(GENMODS) RESIDENT(YES)
     DATALOCATION()
```

To make all programs in the group GENMOD resident:

```
ALTER PROGRAM(*) GROUP(GENMOD) RESIDENT(YES)
    DATALOC()
```

REQTEXT

Generic naming in the ALTER command

The ALTER command accepts both generic resource names and group names.

For each resource in the CSD file matching the specified combination of resource name and group name, an ALTER is attempted. In the case of an individual ALTER failing, processing terminates when all attempts for the command have been processed.

The DFHCSDUP APPEND command

Add the groups in one list to the end of another list.

APPEND syntax

```
►►──APpend──FRomcsd──(──ddname──)──LIst──(──listname1──)──To──(──listname2──)────────────────────►◄
```

Description

No duplicate group names are allowed in a list. If DFHCSDUP finds any duplicate names during the APPEND operation it ignores them, and they are not appended. The DFHCSDUP output listing contains a warning message if this happens.

Options

FRomcsd(*ddname*)
specifies the ddname of the secondary CSD file from which you are appending *listname1*.

List(*listname1*)
specifies the name of the list that is appended. Do not use a generic list name.

The list being appended can be on the primary CSD file, or on another CSD file. If you are appending from another CSD file, you must identify it by specifying the FROMCSD parameter.

To(*listname2*)
specifies the name of the list to which you want the group names appended. If you are appending from another CSD file, you can give this list the same name as the one you are appending from. Do not use a generic list name.

If this target list already exists, the source list is appended to the end of it. If the target list does not exist, it is created. (In effect, you are copying the source list.)

Examples

A list called LISTA contains the following groups:

- GB001
- GB002
- GB003

A list called LISTB contains the following groups:

- G001
- G002
- G003

Append LISTB to LISTA, like this:

```
APPEND LIST(LISTB) TO(LISTA)
```

After this, LISTA contains the following groups, in this order:

- GB001
- GB002
- GB003
- G001
- G002
- G003

and LISTB still contains:

- G001
- G002
- G003

The DFHCSDUP COPY command

Copy a resource definition, either within the same group or to a different group.

Note: Single resources cannot be copied as in the CEDA version of the COPY command.

COPY syntax

```
►►──Copy──Group──(──groupname1──)──To──(──groupname2──)──┬─────────┬──FRomcsd──(──ddname──)──────────►◄
                                                         ├─Replace─┤
                                                         └─MErge───┘
```

Description

The COPY command copies all the resource definitions in **groupname1** to **groupname2**. The group to be copied (*groupname1*) can be on the primary CSD, or it can be on the CSD file specified by the FROMCSD parameter.

The group is copied to the group named on the TO parameter (*groupname2*) in the primary file. If this group already exists, the definitions from the source group (*groupname1*) are added to those already in the *groupname2* group. If the group specified on the TO parameter does not already exist, a new group of that name is created. However, if duplicate definitions exist in the two groups, the whole copy operation fails unless you specify REPLACE or MERGE to indicate how duplicates should be handled.

Options

FRomcsd*(ddname)*
: specifies the ddname of the secondary CSD file from which you are copying *groupname1*.

Group*(groupname1)*
: specifies the name of the group to be copied. You can specify a generic name by using an asterisk (*). See “Generic naming in the COPY command” on page 436 for details.

MErge
: If *groupname2* already exists and duplicate definitions occur, the original definitions in *groupname2* are preserved.

Replace
: If *groupname2* already exists and duplicate definitions occur, the definitions in *groupname1* replace those in *groupname2*.

To*(groupname2)*
: specifies the name of the group to which the definitions are copied. If you are copying from another CSD file, you can give this group the same name as the one you are copying from. You can specify a generic name by using an asterisk (*). See “Generic naming in the COPY command” on page 436 for details.

Examples

The following example copies a group named GA001 to a group named GA002, which already exists, replacing any duplicate resource definitions with those in group GA001.

```
COPY GROUP(GA001) TO(GA002) REPLACE
```

The following example copies group GA003 to group GA004, but if any duplicate definitions occur, preserves the group GA004 definitions.

```
COPY GROUP(GA003) TO(GA004) MERGE
```

The following example copies all the CICS-supplied groups to user-named groups with a prefix of USR, with the result that DFHOPER becomes USROPER, DFHSTAND becomes USRSTAND, and so on.

```
COPY GROUP(DFH*) TO(USR*)
```

The following example copies every group starting with ABCD to the group called NEWGROUP:

```
COPY GROUP(ABCD*) TO(NEWGROUP)
```

Generic naming in the COPY command

The COPY command accepts generic group names, both on the GROUP option and on the TO option, subject to the following rules:

- The only generic character permitted on the COPY command is the asterisk (*) symbol.
- The prefix length of *groupname1* must be equal to or greater than the prefix length of *groupname2*. Thus COPY GROUP(DFHCOMP*) TO(USRCMP*) is valid, but COPY GROUP(DFHCO*) TO(USRCOMP*) is not.

You can use the asterisk (*) symbol to copy from generically named groups to other generically named groups or from generically named groups to a specific group, as shown in "Examples" on page 435.

Note: There is no AS parameter as in the CEDA version of the COPY command.

The DFHCSDUP output listing tells you which definitions were copied, and what happened if duplicates were found.

The DFHCSDUP DEFINE command

Create new resource definitions.

DEFINE syntax

```
| ►►──DEFine──┬─CONnection(name)───┬─Group──(──groupname──)──attribute list──(──newvalue──)──────────►◄
              ├─CORbaserver(name)──┤
              ├─DB2Conn(name)──────┤
              ├─DB2Entry(name)─────┤
              ├─DB2Tran(name)──────┤
              ├─DJar(name)─────────┤
              ├─DOctemplate(name)──┤
              ├─Enqmodel(name)─────┤
              ├─File(name)─────────┤
              ├─Journalmodel(name)─┤
              ├─LSRpool(name)──────┤
              ├─Mapset(name)───────┤
              ├─PARTItionset(name)─┤
              ├─PARTNer(name)──────┤
              ├─PIpeline(name)─────┤
              ├─PROCesstype(name)──┤
              ├─PROFile(name)──────┤
              ├─PROGram(name)──────┤
              ├─Requestmodel(name)─┤
              ├─Sessions(name)─────┤
              ├─TCpipservice(name)─┤
              ├─TDqueue(name)──────┤
              ├─TErminal(name)─────┤
              ├─TRANClass(name)────┤
              ├─TRANSaction(name)──┤
              ├─TSmodel(name)──────┤
              ├─TYpeterm(name)─────┤
              ├─Urimap(name)───────┤
              └─Webservice(name)───┘
```

Options

Attribute list
The attribute list depends on the resource type being defined; some resources have attributes that must be included in the definition. For a description of the attributes and default values of each resource type, see Chapter 5, “RDO resource types and their attributes,” on page 29. Attributes that you do not specify are given default values.

Group*(groupname)*
specifies the name of the group containing the resource definition to be altered. Do not use a generic group name. If you specify the name of a group which does not already exist, the group is created.

Resource*(name)*
specifies the name of the resource you want to define. Do not use a generic resource name. The resource option must always be the first operand of the DEFINE command.

Examples

You can use the same name for more than one resource definition in a group, if the definitions are for different resource types. For example:

```
DEFINE PROGRAM(N28A) GROUP(N28APPL)
DEFINE TRANSACTION(N28A) GROUP(N28APPL)

DEFINE TERMINAL(USER) GROUP(USERDEF)
DEFINE PROGRAM(USER) GROUP(USERDEF)
```

The next example defines two consoles to CICS. (You do not need continuation symbols if a definition spans several lines).

```
DEFINE TERMINAL(CON0)     GROUP(CONTERMS)
       CONSOLE(00)        TYPETERM(DFHCONS)
       DESCRIPTION(MVS CONSOLE ID 00, FOR ISSUING
          JCL COMMANDS)

DEFINE TERMINAL(CON1)     GROUP(CONTERMS)
       CONSOLE(01)        TYPETERM(DFHCONS)
       DESCRIPTION(MVS CONSOLE ID 01, MVS MASTER
          CONSOLE)
```

The INITIALIZE command generates a TYPETERM definition, but not a TERMINAL definition, for a console. You must have at least one console defined in order to issue MVS MODIFY commands to CICS. Console id 00 is used to issue commands using MVS job control language, and by authorized programs that use that MGCR macro to issue MVS commands.

The DFHCSDUP DELETE command

Delete a single resource definition in a group, all the resource definitions in a group, or all the group names in a group list.

DELETE syntax

```
| ►►──DELete──┬─All──────────────────────┬──┬─Group──(──groupname──)─┬──Remove──────────────────►◄
              └──┬─CONnection(name)───┬──┘  └─List──(──listname──)───┘
                 ├─CORbaserver(name)──┤
                 ├─DB2Conn(name)──────┤
                 ├─DB2Entry(name)─────┤
                 ├─DB2Tran(name)──────┤
                 ├─DJar(name)─────────┤
                 ├─DOctemplate(name)──┤
                 ├─Enqmodel(name)─────┤
                 ├─File(name)─────────┤
                 ├─Journalmodel(name)─┤
                 ├─LSRpool(name)──────┤
                 ├─Mapset(name)───────┤
                 ├─PARTItionset(name)─┤
                 ├─PARTNer(name)──────┤
                 ├─PIpeline(name)─────┤
                 ├─PROCesstype(name)──┤
                 ├─PROFile(name)──────┤
                 ├─PROGram(name)──────┤
                 ├─Requestmodel(name)─┤
                 ├─Sessions(name)─────┤
                 ├─TCpipservice(name)─┤
                 ├─TDqueue(name)──────┤
                 ├─TErminal(name)─────┤
                 ├─TRANClass(name)────┤
                 ├─TRANSaction(name)──┤
                 ├─TSmodel(name)──────┤
                 ├─TYpeterm(name)─────┤
                 ├─Urimap(name)───────┤
                 └─Webservice(name)───┘
```

Description

Deleting a resource definition is different from removing a group from a list (see "The DFHCSDUP REMOVE command" on page 448). A deleted resource definition really does disappear from the CSD file.

Note:

> When you DELETE the last resource in a group, the group is automatically deleted. An empty group cannot exist.
>
> When a group is deleted, the group is removed from all lists that had contained it, except when running UPGRADE commands.

You cannot delete the definitions of groups and lists supplied by IBM.

If you delete a list, the definitions of the resources within the groups contained in the list are not deleted. To do this, you must also delete each group individually.

Options

Group*(groupname)*
If this is specified alone, it indicates the name of the group to be deleted. If a resource is also specified, it indicates the group to which the resource belongs. Do not use a generic group name.

List(*listname*)
specifies the name of the list to be deleted. Do not use a generic list name.

Remove
If this is specified when the group is deleted, the group is removed from all lists that contained it unless UPGRADE commands are running.

Resource(*name*)
specifies the name of the resource to be deleted. Do not use a generic resource name.

This operand can be used only with the GROUP option.

Examples

A list in the primary CSD file called LISTA contains the following groups:

- GB001
- GB002

Group GB001 contains the following resource definitions:

TERMINAL(CON0)
TERMINAL(CON1)
TERMINAL(TEST)

The following command deletes the resource definition for the terminal TEST from group GB001:

```
DELETE TERMINAL(TEST) GROUP(GB001)
```

The following command deletes all the resource definitions in group GB002:

```
DELETE GROUP(GB002)
```

This leaves only group GB001 in the group list LISTA. The following command deletes all group names in the group list LISTA:

```
DELETE LIST(LISTA)
```

Note: The resource definitions in the groups in LISTA are not deleted.

The DFHCSDUP EXTRACT command

Extract a resource definition, group, or list from the CSD file.

EXTRACT syntax

```
►►──EXtract──┬─Group──(──groupname──)─┬──┬─USerprogram──(──DFHxCRFy──)─────────────┬──┬─────────┬──────►◄
             └─LIst──(──listname──)───┘  ├─USerprogram──(──DFHxFORy──)─────────────┤  └─Objects─┘
                                         ├─USerprogram──(──DFH0CBDC──)─────────────┤
                                         └─USerprogram──(──user-written program──)─┘
```

Description

You can use the EXTRACT command to extract resource definition data from the CSD file, either from a list or from a group, and invoke a user program to process the extracted data. You specify the user program on the USERPROGRAM parameter.

Note: For programming information about coding user programs for the EXTRACT command, see the *CICS Customization Guide*.

Options

Group*(groupname)*
specifies only those resource definitions within the named group. You can specify a generic group name.

LIst*(listname)*
specifies only those resource definitions within the groups contained in the named list. You can use a generic list name only if you are not using the OBJECTS option.

Objects
returns the detail of each resource definition. You can extract resource definition data at two levels of detail:

- Without the OBJECTS option, the command extracts either the names of all the groups within a specified list, or the names of all the resource definitions within a specified group.
- With the OBJECTS option, all the resource definition attributes are also extracted.

You must specify OBJECTS for the CICS-supplied sample user programs DFHxCRFy and DFHxFORy. It is optional for DFH0CBDC and user-written user programs.

USerprogram*(user-written program)*
specifies the name of the user-written program that is to process the data retrieved by the EXTRACT command. You must supply a USERPROGRAM value.

CICS supplies three types of sample user program: DFHxCRFy, DFHxFORy, and DFH0CBDC. The letter x in the program name is $ for assembler or PL/I and 0 for COBOL. The letter y in the program name denotes the programming language, where y=A is the assembler version, y=C is the COBOL version, and y=P is the PL/I version. .

All other user programs are available in source form, in CICSTS31.SDFHSAMP, and the assembler versions are also available in pregenerated form in CICSTS31.SDFHLOAD.

Examples

The following command uses the CICS-supplied user program, DFH0CBDC, to extract the resource definitions in group DFHTYPE and create the DEFINE commands needed to create them. It stores these commands in the file specified by the CBDOUT DD statement.

```
EXTRACT GROUP(DFHTYPE) USERPROGRAM(DFH0CBDC) OBJECTS
```

The DFHCSDUP INITIALIZE command

Prepare a newly defined data set for use as a CSD file.

INITIALIZE syntax

```
►►──INITialize ──────────────────────────────────────────────────────────►◄
```

Description

You must initialize your CSD file before you can use any of the other DFHCSDUP commands, or the RDO transactions. After you have initialized your CSD file, you do not need to execute this function again.

The standard entries for the CICS-supplied resource definitions are created on the CSD file. The INITIALIZE command arranges these definitions into groups, and defines these groups in a group list named DFHLIST. This list contains only the CICS-supplied groups that are required by a CICS system.

CICS supports RDO for transient data. The DFHDCTG group contains sample definitions of all the CICS-supplied queues. You can add the names of other queues that you want to be installed at the same time to DFHDCTG. Place DFHDCTG at the top of DFHLIST so that the queues become available for use at the earliest possible point during CICS initialization.

If you use another group to install the CICS-supplied queues, make sure that this group is at the top of the first list to be installed using GRPLIST as part of an initial or cold start.

You can put other transient data resource definitions into different groups, from which they can be installed either during an initial or cold start, or at some point after initialization has completed.

INITIALIZE also creates a control record at the start of the CSD file. This record contains fields identifying the CICS release and the current level of service applied to the CSD. It also has fields containing the date and time of creation of the CSD file, and the date and time the file was last updated. Both these fields appear on the hard copy listing of the CSD file produced by the LIST command.

If you want to prepare a newly defined recoverable data set for use as a CSD file, you must INITIALIZE it using non-RLS mode, because a recoverable data set cannot be opened for output from batch in RLS mode, but the data set needs to be opened for output in order to initialize it.

The DFHCSDUP LIST command

Produce listings of the current status of the CSD file.

LIST syntax

```
         ┌─All──────────────────┐
►►──LIst─┼──────────────────────┼──┬─────────┬─────────────────────────────►◄
         ├─Group──(──groupname──)─┤  └─Objects─┘
         └─LIst──(──listname──)───┘
```

Description

The listings are output to the SYSOUT data set, along with the messages issued by the command processing. The result is to print the contents of all the qualifying groups or lists.

Options

Group*(groupname)*
  specifies only those resource definitions within the named group. You can specify a generic group name.

LIst*(listname)*
  specifies only those resource definitions within the groups contained in the named list. You can use a generic list name only if you are not using the OBJECTS option (the only command where a generic list name is not acceptable is LIST LIST(listname) OBJECTS).

Objects
  specifies the level of detail required for each resource definition. You can extract resource definition data at two levels of detail:
  - Without the OBJECTS option, the command extracts either the names of all the groups within a specified list, or the names of all the resource definitions within a specified group.
  - With the OBJECTS option, all the resource definition attributes are also extracted.

Examples

The listings produced by the various commands are as follows:

- LIST ALL
  - Names of defined lists and groups
  - Summary of lists
  - Summary of groups

  This prints summaries of all the definitions of lists and groups that exist on the CSD file.
- LIST ALL OBJECTS
  - Names of defined lists and groups
  - Summary of lists
  - Summary of groups
  - Objects in groups

This prints summaries of all the definitions of lists and groups that exist on the CSD file, together with the properties of the resources in all the groups.

- LIST GROUP(groupname) (group name may be generic)
  - Summary of groups

  This summarizes the names of all the resources in one or more groups. They are organized within each group into resource type categories (for example, map sets, programs, and so on).
- LIST GROUP(groupname) OBJECTS (group name may be generic)
  - Summary of groups (see above)
  - Objects in groups

  This enables you to tabulate the properties of the resources, again organized according to resource type. The creation time for each resource is given, together with all its attributes, as originally set up by using DEFINE and ALTER commands, or by migrating it from a CICS table. The properties of transactions and profiles are arranged in the same subcategories that appear on the CEDA DEFINE screen.
- LIST LIST(listname) (list name may be generic)
  - Summary of lists

  The contents of one or more group lists are tabulated. The groups appear in the same sequence as their position in the list. This order is set by the commands ADD and APPEND, which were used in the CEDA transaction to build the list.
- LIST LIST(listname) OBJECTS (generic list name not allowed)
  - Summary of lists (see above)
  - Objects of groups in list

  This enables you to tabulate the properties of all the resources to be defined in a CICS system at startup time. These are identified by the list name or names specified in the GRPLIST=(*list1,list2,list3,list4*) system initialization parameter. The names of all the groups in the list appear in the summary of lists. Then, for each group contained in the list, the properties of the individual resources in the group are tabulated.

  The 'Objects in Groups in Lists' tabulation arranges the groups in the same order as they were added to the group list. This order matters if duplication occurs, when definitions of the same resource may exist in more than one group. If a list of this type is used at system startup time, the resource definitions used when there is duplication are those belonging to the group that is latest in the list.

The DFHCSDUP MIGRATE command

Transfer the contents of a DCT, an RCT, a TCT, or a TST, from a CICS load library to the CSD file.

MIGRATE syntax

```
►►──MIgrate──TAble──(──tablename──)──┬──────────────────────────────────────┬──────────►
                                     └─TYpesgroup──(──typesgroupname──)─┘

►──┬─────────────────────────────┬─────────────────────────────────────────────────►◄
   └─TOGROUP──(──groupname──)─┘
```

Description

The contents of a table are transferred as one group, or as a set of several groups, containing definitions. When migrating large tables, make sure you allocate a sufficiently large region for the largest table to be loaded.

- **To transfer a DCT**, the format is:

  ```
  MIGRATE TABLE(tablename)  TOGROUP(groupname)
  ```

  where TABLE(*tablename*) identifies the name of the table in the load library (DFHDCTxx).

  The contents of a table are transferred as one group, or as a set of several groups, containing definitions. When migrating large tables, make sure you allocate a sufficiently large region for the largest table loaded. For migration purposes, DCTs must be link-edited with AMODE(24) RMODE(24). To ensure this, you must specify a DFHDCT TYPE=(INITAL,MIGRATE) statement in your DCT—failure to do so causes the DFHDCT macro to force AMODE(31), which results in errors when running DFHCSDUP.

  The result is a set of groups containing TDQUEUE resource definitions. You can specify each group using the macro:

  ```
  DFHDCT TYPE=GROUP,GROUP=xxxxxxxx
  ```

  which you insert in the DCT source instructions before you assemble them for migration. All definitions **after** such a TYPE=GROUP macro (up to the next TYPE=GROUP macro) go into the group named by GROUP=xxxxxxxx. Definitions that occur **before** the first such TYPE=GROUP macro are migrated to the default group. You can also specify that definitions are to be migrated to the default group by inserting the following macro in the DCT before the definition entries:

  ```
  DFHDCT TYPE=GROUP,GROUP=*DEFAULT
  ```

  You can use the TOGROUP parameter of the MIGRATE command to assign a specific name to the default group. If you do not specify TOGROUP, the name of the default group is taken from the table name. For example, if the migrated table name is DFHDCT24, the name of the group created is DCT24.

- **To transfer an RCT**, the format is:

  ```
  MIgrate TAble(tablename) [TOGROUP(groupname)]
  ```

  where TAble(*tablename*) identifies the name of the table in the load library, which must have the format DFHRCTxx, where xx is the suffix.

  The contents of a table are transferred as one group, or as a set of several groups, containing definitions. When migrating large tables, make sure you allocate a sufficiently large region for the largest table loaded. For migration purposes, RCTs must be link-edited with RMODE(24).

  The result is a set of groups containing DB2CONN, DB2ENTRY and DB2TRAN resource definitions. You can define each group using the macro:

  ```
  DSNCRCT TYPE=GROUP,GROUP=xxxxxxxx
  ```

  which you insert in the RCT source instructions before you assemble the RCT for migration. All definitions **after** such a TYPE=GROUP macro (up to the next TYPE=GROUP macro) go into the group named by GROUP=xxxxxxxx. Definitions that occur **before** the first such TYPE=GROUP macro are migrated to the default group. You can also specify that definitions are to be migrated to the default group by inserting the following macro in the RCT before the definition entries:

```
DSNCRCT TYPE=GROUP,GRROUP=*DEFAULT
```

You can use the TOGROUP parameter of the MIGRATE command to assign a specific name to the default group. If you do not specify TOGROUP, the name of the default group is taken from the table name. For example, if the table name is DFHRCT24, the name of the group created is RCT24.

Note that the CSD migration utility honors the defaults of the RCT macro.

- **To transfer a TCT**, the format is:

  MIgrate TAble(*tablename*) [TYpesgroup(*typesgroupname*)]

  where TYpesgroup(*typesgroupname*) specifies the name of the group to contain the TYPETERM definitions obtained from the TCT.

  If this parameter is not specified, the TYPETERM definitions are put in the GROUP currently being created, with the TERMINAL definitions.

  The result is:

  1. A set of groups containing terminal definitions. You can define each group using the macro:

     ```
     DFHTCT TYPE=GROUP,GROUP=xxxxxxxx
     ```

     which you insert in the TCT source instructions before you assemble the TCT for migration. Any terminal definitions that come before the first TYPE=GROUP macro are migrated into a group named after the table name. If the table name is DFHTCTxx, the group name is TCTxx.
  2. A group of TYPETERM definitions. These are derived from attributes of TYPE=TERMINAL macros which are often identical for many terminals. They are put into the CSD GROUP named in the TYPESGROUP parameter.

     The typeterm attributes of each TYPE=TERMINAL table macro are checked with existing TYPETERM definitions and if they don't match with any of these, a new TYPETERM is added to the CSD file.

     The existing TYPETERMs checked are:

     - TYPETERMs in the GROUP currently being created
     - TYPETERMs in the group specified in the TYPESGROUP parameter of the MIGRATE command.

     However, the scope of the checking is never extended to include any other TYPETERMs in other groups already on the CSD file. (Such groups may have been created using RDO or by a previous MIGRATE command.) For this reason, it is a good idea to use the TYPESGROUP parameter to avoid creating duplicate TYPETERMs in different groups. It is convenient to keep the TYPETERMs in a separate group anyway.

     TYPETERMs created on the CSD file during the migration are named systematically, in a way related to the TRMTYPE parameter of the original terminal definition. The name consists of a prefix (3–5 characters) with a 3-character suffix. For example, a TYPETERM defining attributes for a 3270 printer is named 3270P001. Variants with the same TRMTYPE are named 3270P002, and so on. The migration process ensures that this name is used as the TYPETERM parameter of every terminal definition that references it.

  Note: Migrating your TCT does not cause an error if the destination group already exists. Only definitions that already exist are flagged by an error message; any new or additional definitions are added to the existing group.

- **To transfer a TST**, the format is:

```
MIgrate TAble(tablename) [TOGROUP(groupname)]
```

where TABLE(*tablename* tablename identifies the name of the table in the load library (DFHTSTxx) and TOGROUP(*groupname*) specifies the name of the group to contain the definitions obtained from the TST.

The content of a table is transferred as a group containing TSMODEL definitions. When migrating large tables, make sure that you allocate a sufficiently large region for the largest table.

For migration purposes, TSTs must be link-edited with AMODE(24) RMODE(24). To ensure this, you must specify a DFHTST TYPE=(INITIAL,MIGRATE) statement in your TST. Failure to do so causes the DFHTST macro to force AMODE(31), which leads to errors when running DFHCSDUP.

You can use the TOGROUP parameter of the MIGRATE command to assign a specific name to the default group. If you do not specify TOGROUP, the name of the default group is taken from the TABLENAME. For example, if the tablename is DFHTSTJP, the name of the group created is TSTJP.

Note:

1. TSMODEL definitions have a location attribute, either MAIN or AUXILIARY. Migration sets this to auxiliary (although you can change it later by updating the TSMODEL definition).

   Before you define TSMODEL resource definitions to replace TST macros, you are able to specify MAIN or AUXILIARY on the WRITEQ TS API command, but this is ignored if a TSMODEL resource definition with a matching prefix is installed; the value supplied by the TSMODEL is used instead.
2. The TYPE=SHARED macro in the TST is different from the other TST macros in that it does not have a DATAID parameter on which you can specify a TS queue prefix. Thus, to map a TS request to a TS data sharing pool, CICS requires one of the following to be specified in addition to a TYPE=SHARED macro:
   - A TYPE=REMOTE macro that specifies a SYSIDNT that matches the SYSIDNT in a corresponding TYPE=SHARED macro.
   - A SYSID specified explicitly, either on the TS API command or set by an XTSEREQ global user exit program.

   If you use the second of these two methods, and do not specify a supporting TYPE=REMOTE entry in your TST, DFHCSDUP cannot migrate a TST TYPE=SHARED entry because it has no means of knowing the DATAID from which to create the corresponding PREFIX attribute in the TSMODEL. In this case DFHCSDUP issues message DFH5139 to indicate that a TYPE=SHARED entry has been ignored.

   DFHCSDUP also issues message DFH5139 if a TYPE=SHARED macro has a supporting TYPE=REMOTE entry and has been successfully migrated to a TSMODEL with the POOLNAME shared attribute. The reason for the message in this case is that application programs that explicitly specify a SYSID, or which rely on a SYSID being specified in a global user exit program, cannot use TSMODELs, and continue to require a TST to route the request to a data sharing pool. Check that your application programs work with migrated TSMODELs for shared queues in the same way as with the migrated TST.

Options

TAble_(tablename)_
specifies the name in the load library of the table you want to migrate (that is, DFHDCTxx, DFHFCTxx, or DFHTCTxx).

TOgroup_(groupname)_
specifies the name of the group to which the definitions are to be migrated. This is for use with DCT migration only.

TYpesgroup_(typesgroupname)_
specifies the name of the group to which the TYPETERM definitions are to be migrated. For use with TCT migration only.

The DFHCSDUP PROCESS command

Apply maintenance to the CSD file for a specific APAR.

PROCESS syntax

```
►►──PROCESS──Apar──(──aparnumber──)──────────────────────────────────────────────►◄
```

Description

The PROCESS APAR command is used to apply maintenance to your CSD file for a specific APAR. Only use this command in accordance with the instructions in the associated PTF cover letter.

Options

Apar_(aparnumber)_
The number of the APAR providing the maintenance; for example, PROCESS APAR(PQ12417) is used to apply maintenance for APAR PQ12417.

The DFHCSDUP REMOVE command

Remove a group name from a list.

REMOVE syntax

```
►►──Remove──Group──(──groupname──)──LIst──(──listname──)─────────────────────────►◄
```

Description

The group, and all its resource definitions, still exists on the CSD file.

Options

Group_(groupname)_
specifies the name of the group to be removed. Do not use a generic group name.

LIst*(listname)*
specifies the name of the list from which a group is to be removed. Do not use a generic list name. When the last group is removed from a list, the list no longer exists on the CSD file.

Examples

A list LL02 contains the following groups:

G001 G002 G003 G004

To remove group G003:

```
REMOVE GROUP(G003) LIST(LL02)
```

This leaves:

G001 G002 G004

The DFHCSDUP SCAN command

SCAN all the IBM-supplied groups and user-defined groups for a specified resource. The definition of the matched resource in an IBM supplied group is compared with the definition(s) of the corresponding matched resource in the user groups.

SCAN syntax

```
| ►►──SCAN──┬─CONnection(name)───┬──┬────────────────────────┬──────────────────────────────────────────►◄
            ├─CORbaserver(name)──┤  └─ALIAS──(──aliasname──)─┘
            ├─DB2Conn(name)──────┤
            ├─DB2Entry(name)─────┤
            ├─DB2Tran(name)──────┤
            ├─DJar(name)─────────┤
            ├─DOctemplate(name)──┤
            ├─Enqmodel(name)─────┤
            ├─File(name)─────────┤
            ├─Journalmodel(name)─┤
            ├─LSRpool(name)──────┤
            ├─Mapset(name)───────┤
            ├─PARTItionset(name)─┤
            ├─PARTNer(name)──────┤
            ├─PIpeline(name)─────┤
            ├─PROCesstype(name)──┤
            ├─PROFile(name)──────┤
            ├─PROGram(name)──────┤
            ├─Requestmodel(name)─┤
            ├─Sessions(name)─────┤
            ├─TCpipservice(name)─┤
            ├─TDqueue(name)──────┤
            ├─TErminal(name)─────┤
            ├─TRANClass(name)────┤
            ├─TRANSaction(name)──┤
            ├─TSmodel(name)──────┤
            ├─TYpeterm(name)─────┤
            ├─Urimap(name)───────┤
            └─Webservice(name)───┘
```

Description

The SCAN command searches all the IBM supplied groups in the CSD for a resource definition of a specified name and type. A message is issued with the results of the search. The user-defined groups are then searched for the same resource definition. The outcome of this can be one of the following:

- If an IBM-supplied group and one or more user-defined groups contain the resource definition, a comparison is made between the definition in the IBM-supplied group and the user group(s). A message is issued indicating whether the definition in the IBM supplied group matches the definition(s) in the user group(s).
- If the resource definition is not found in the user defined groups a message is issued.
- If the resource definition is not found in an IBM-supplied group but is found in one or more user defined groups a message is issued indicating the group(s) that contained it.

If *aliasname* is specified, the user groups are searched using *aliasname*.

Note:

1. The compatibility groups DFHCOMPx are not scanned as part of the IBM supplied groups but as user defined groups.
2. The DESCRIPTION attribute is not used in the comparison.

You can use the SCAN command to check for differences between IBM-supplied definitions that you have modified and the latest IBM-supplied versions after an upgrade.

Options

Alias(*aliasname*)
: specifies the alias name of the resource type to be searched for in the user-defined groups.

This operand is optional.

Resource(*name*)
: specifies the name of the resource type to be searched for in the IBM-supplied groups, and in the user-defined groups if *aliasname* is not specified. The resource option must always be the first operand of the SCAN command.

Examples

To search the CSD for transaction CEDA:

```
SCAN TRANSACTION(CEDA)
```

The result of this could look like:

```
 DFH5130 I PRIMARY CSD OPENED;  DDNAME: DFHCSD
 DFH5633 I TRANSACTION CEDA FOUND IN GROUP DFHSPI
 DFH5631 I TRANSACTION CEDA FOUND IN GROUP A1
           MATCHES THE IBM SUPPLIED DEFINITION IN GROUP DFHSPI
 DFH5631 I TRANSACTION CEDA FOUND IN GROUP A2
           MATCHES THE IBM SUPPLIED DEFINITION IN GROUP DFHSPI
 DFH5632 I TRANSACTION CEDA FOUND IN GROUP DFHCOMP1
           DOES NOT MATCH THE IBM SUPPLIED DEFINITION
           IN GROUP DFHSPI
 DFH5101 I SCAN COMMAND EXECUTED SUCCESSFULLY.
```

To search the CSD for transaction CEDA with an alias name of AEDA:

```
 SCAN TRANSACTION(CEDA) ALIAS(AEDA)
```

The result of this could look like:

```
 DFH5130 I PRIMARY CSD OPENED;  DDNAME: DFHCSD
 DFH5633 I TRANSACTION CEDA FOUND IN GROUP DFHSPI
 DFH5631 I TRANSACTION AEDA FOUND IN GROUP A3
           MATCHES THE IBM SUPPLIED DEFINITION IN GROUP DFHSPI
 DFH5101 I SCAN COMMAND EXECUTED SUCCESSFULLY.
```

The DFHCSDUP SERVICE command

Carry out maintenance to your CSD file.

SERVICE syntax

```
►►──Service──FRomcsd──(──ddname──)──LEvel──(──nnn──)──────────────────────────────────►◄
```

Description

You might occasionally (between CICS releases) have to apply a service routine to carry out preventive or corrective maintenance to your CSD file. You do this by loading and running a special service program (DFHCUS1), which is supplied with CICS as a separately loadable module.

You can use the SERVICE command to create a new copy of the CSD file, from the existing CSD file. All the definitions are preserved, with the corrections (if any) applied.

Options

FRomcsd_(ddname)_
specifies the ddname of the current CSD file, which for the purposes of the command is treated as the secondary CSD file.

LEvel_(nnn)_
Associated with your CSD file is a current service level, initially set to 000 when the file was initialized. Applying the service routine causes the service level to be incremented in steps of one, from a "current level" to a "target level".

This operand specifies the target service level to which the CSD file is to be upgraded, and must be 1 higher than the current level of FROMCSD. Specify it as a 3-character integer; for example, LEVEL(001).

The DFHCSDUP UPGRADE command

Change the CICS-supplied resource definitions in a primary CSD file.

UPGRADE syntax

```
►►──UPgrade──┬─────────────────────────┬──┬─────────┬──────────────────────────────►◄
             └─USing──(──filename──)───┘  └─Replace─┘
```

Description

Upgrades the IBM-supplied definitions in the CSD. Definitions are added to, modified in, or deleted from DFH-groups. Note that deleted definitions are added to compatibility groups with names of the form DFHCOMP*n*. This enables you to share the CSD with earlier releases of CICS after you have run the upgrade command.

The upgrade command can also be used to apply any package of IBM-supplied resource definitions to the CSD file. For example, the definitions for the CICS sample programs and transactions can be transferred to the CSD file with the UPGRADE statement.

Options

Replace
Specify the REPLACE option when you need to rerun the UPGRADE command (for example, because of a previous failure).

USing_(filename)_

To upgrade a CSD do, not specify the `USING` operand. All IBM-supplied definitions from **any** release are deleted and then the CSD file is initialized, so you do not need to say which release you came from.

To install IBM features onto CICS, specify `UPGRADE USING(`*`filename`*`)`. For example, `UPGRADE USING(DFHRDJPN)` is used to place the double-byte character set feature definitions onto the CSD file.

The DFHCSDUP USERDEFINE command

Create new resource definitions using your own default values instead of the default values supplied by CICS.

USERDEFINE syntax

```
►►──USERDEFINE──┬─CONnection(name)───┬──Group──(──groupname──)──────────────►
                ├─CORbaserver(name)──┤
                ├─DB2Conn(name)──────┤
                ├─DB2Entry(name)─────┤
                ├─DB2Tran(name)──────┤
                ├─DJar(name)─────────┤
                ├─DOctemplate(name)──┤
                ├─Enqmodel(name)─────┤
                ├─File(name)─────────┤
                ├─Journalmodel(name)─┤
                ├─LSRpool(name)──────┤
                ├─Mapset(name)───────┤
                ├─PARTItionset(name)─┤
                ├─PARTNer(name)──────┤
                ├─PIpeline(name)─────┤
                ├─PROCesstype(name)──┤
                ├─PROFile(name)──────┤
                ├─PROGram(name)──────┤
                ├─Requestmodel(name)─┤
                ├─Sessions(name)─────┤
                ├─TCpipservice(name)─┤
                ├─TDqueue(name)──────┤
                ├─TErminal(name)─────┤
                ├─TRANClass(name)────┤
                ├─TRANSaction(name)──┤
                ├─TSmodel(name)──────┤
                ├─TYpeterm(name)─────┤
                ├─Urimap(name)───────┤
                └─Webservice(name)───┘

►─Attribute list──(──value──)─────────────────────────────────────────────►◄
```

Description

The USERDEFINE command is an alternative to the DEFINE command. Instead of using the default values supplied by CICS, the USERDEFINE command uses your own default values to create a resource definition. Otherwise it operates in exactly the same way as the DEFINE command.

To set up your own default values for the USERDEFINE command, use the normal DEFINE command to create resource definitions named USER in a group named USERDEF:

- Create a resource definition named USER in the USERDEF group for each resource for which you want to provide default values. For example, if you want to provide default values for PROGRAM, TRANSACTION, and TCPIPSERVICE resource definitions, create the resource definitions PROGRAM(USER), TRANSACTION(USER), and TCPIPSERVICE(USER) in the USERDEF group. It does not matter that all the resource definitions in the USERDEF group are named USER; they are unique because they are different resource types. Any resource definitions in the USERDEF group that are not named USER are ignored by the USERDEFINE command.
- In each resource definition in the USERDEF group, specify the default values that are to be applied when you use the USERDEFINE command to create a resource of that type. For example, if you want Assembler to be the default language in PROGRAM resource definitions created with the USERDEFINE command, issue the following DEFINE command to create the resource definition:

  ```
  DEFINE PROGRAM(USER) GROUP(USERDEF) LANGUAGE(ASSEMBLER)
  ```
- Each resource definition in the USERDEF group must be a complete, valid resource definition. For example, a transaction definition must name a program definition, even if you always supply a program name when you use the USERDEFINE command to define a transaction.
- You do not have to install the resource definitions in the USERDEF group.

When you have created resource definitions in the USERDEF group, you can use the USERDEFINE command to define those types of resources, and the default values that you set up are used in the resource definitions. For example, if you have created a PROGRAM resource definition in the USERDEF group that specifies LANGUAGE(ASSEMBLER), the following command creates a resource definition for program P2 in group GRP and specifies Assembler as the language:

```
USERDEFINE PROGRAM(P2) GROUP(GRP)
```

Options

Attribute list*(value)*

The attribute list depends on the resource type that is being defined; some resources have attributes that must be included in the definition. For a description of the attributes and default values of each resource type, see Chapter 5, “RDO resource types and their attributes,” on page 29. Attributes that you do not specify are given default values.

Group*(groupname)*

Specifies the name of the group that will contain the resource definition to be created. Do not use a generic group name. If you specify the name of a group which does not already exist, the group is created.

Resource(name)

Specifies the name of the resource you want to define. Do not use a generic resource name. The resource option must always be the first operand of the USERDEFINE command.

The DFHCSDUP VERIFY command

Remove internal locks on groups and lists.

VERIFY syntax

```
►►──VERIFY──────────────────────────────────────────────────────────────►◄
```

Description

Use the VERIFY command only when the CSD file is not in use and no backout processing is pending on the CSD file; preferably use it only when no CICS systems that may use the CSD file are running. In particular, do not use the VERIFY command while CICS systems could be accessing the CSD file in RLS access mode.

VERIFY acts on the whole CSD file, and is for use in the extreme condition where internal lock records have been left behind. These records are normally removed when a function that changes the CSD file has been completed. However, this may not have happened if there was a system failure when the CEDA transaction was running, or if an offline utility failed to finish. The locks may prevent CEDA users from accessing certain groups and lists on the CSD file.

Note that VERIFY removes only the internal locks. It does not affect the normal user locks applied by the LOCK command in the CEDA transaction.

Part 5. Autoinstall

This part discusses the automatic installation of resources in CICS.

Chapter 39. Introduction to autoinstall

To use a resource without autoinstall, you must have a definition for that resource installed in your CICS system, created using CEDA, DFHCSDUP, or a macro table. This clearly uses up time (to define and install every resource) and storage, because every definition occupies storage whether the resource is being used or not.

With autoinstall, you do not need to define and install every resource that you intend to use. Instead, CICS dynamically creates and installs a definition for you when a resource is requested. CICS bases the new definition on a “model” definition provided by you.

Autoinstall can be used for the following resources:

- VTAM terminals (see Chapter 40, “Autoinstalling VTAM terminals,” on page 461).
- MVS consoles (see Chapter 41, “Autoinstalling MVS consoles,” on page 475).
- APPC (LU6.2) connections (see Chapter 42, “Autoinstalling APPC connections,” on page 479).
- Programs, map sets, and partitionsets (see Chapter 43, “Autoinstalling programs, map sets, and partition sets,” on page 483).
- Journals (see Chapter 45, “Autoinstalling journals,” on page 489). Journals can be used only after they have been autoinstalled with reference to a journal model.

Autoinstall models

You must provide at least one **model** resource definition for each type of resource to be autoinstalled. When a resource is requested that does not have an installed definition, CICS creates a definition based on what you have specified in the model. You can have more than one model, depending on what properties you want the autoinstalled resources to have; for example, if you had 500 terminals all with the same properties and another 500 with a different set of properties, you could have two model terminal definitions, one for each of the two sets of properties.

Autoinstall control program

You control autoinstall by means of an **autoinstall control program**, either user-written or supplied by CICS. This program is responsible for, among other things, providing the model name or names to CICS, providing VTAM information to CICS for autoinstall for terminals, and so on.

CICS provides three autoinstall control programs; one for terminals; one for both terminals and connections; and one for programs, map sets, and partition sets. You can use the CICS-supplied ones or you can customize them to suit your installation.

Chapter 40. Autoinstalling VTAM terminals

If you have not used autoinstall for any resources before, read Chapter 39, “Introduction to autoinstall,” on page 459.

For information on autoinstalling MVS consoles, see Chapter 41, “Autoinstalling MVS consoles,” on page 475.

For information on autoinstalling connections and parallel sessions, see Chapter 42, “Autoinstalling APPC connections,” on page 479.

Deciding which terminals to autoinstall

This section should help you to decide which terminal devices to autoinstall. It covers the following subjects:
- “Automatic transaction initiation”
- “The TCT user area (TCTUA)” on page 462
- “The terminal list table (TLT)” on page 462
- “Transaction routing” on page 463
- “Autoinstall and output-only devices” on page 463

Automatic transaction initiation

If a BMS ROUTE message is sent to a terminal that has a TCT entry but is not logged on, CICS saves the message for subsequent delivery. In addition, if the TCT entry so specifies, CICS attempts to acquire the terminal and log it on for that purpose. CICS attempts to satisfy other ATI requests (EXEC CICS START or a transient data trigger level) in the same way.

The use of autoinstall for printers is severely limited because almost all transactions for printers are initiated automatically. It is possible to autoinstall printers, however, if you arrange for them to be logged on. Entering VARY NET,...,LOGON as a console command does this.

For an autoinstalled terminal, a TCT entry **may** be available even when the terminal is logged off. This happens only if the terminal has been logged on earlier in the CICS run, and depends on the TYPETERM definition, the system initialization parameters, and the SNT entry for the last user of the terminal. For details, see “Automatic sign-off, logoff, and TCTTE deletion” on page 470. If a TCT entry exists, an autoinstalled terminal can accept an ATI request just like an individually defined terminal.

If you choose autoinstall for terminals that might receive ATI requests, make use of the AUTOCONNECT attribute on the TYPETERM definition for your models. AUTOCONNECT(YES) means that the terminal is logged on to CICS automatically at an emergency restart (see Figure 67 on page 472), by CICS requesting a VTAM SIMLOGON (simulated logon). (Because this requires a TCT entry, it does not happen at cold or warm start.)

You may find that setting up a printer-owning region is the best approach, especially if you have distributed printing with many small printers.

Whether or not you autoinstall your printers, you can associate a printer and an alternate printer with a display device. The association is made when the display device is autoinstalled. Definitions for these printers need not have been installed at the time the display device is autoinstalled, but they must exist at the time of use.

The TCT user area (TCTUA)

The TCT user area is an optional extension to the TCT entry. The TCTUA is available for application use (the rest of the TCT entry belongs to CICS). It has traditionally been used for two purposes:

- To pass data from one transaction of a pseudo-conversational sequence to the next.
- To maintain user profile information and statistics during a terminal session. (This is not necessarily a VTAM session, but a period of access to a particular application, as defined by the application.)

The first use has gradually been supplanted by COMMAREA and other CICS facilities, but the second is still fairly common. An application may store statistics, such as teller totals, in the TCTUA, which is initialized by a PLTPI program at the beginning of execution and retrieved by a PLTSD program at termination (shutdown). Autoinstall does not provide the ability to save this information between logoff and logon, because the TCTUA does not exist then. In addition, the TCTUA is not available to PLTPI and PLTSD programs at system initialization and termination. A new technique must be devised to allow the initialization of TCTUA and user data when the user logs on or logs off.

As noted earlier, the autoinstall process creates the TCT entry (including the TCTUA) before the first transaction is executed at the terminal, but after the autoinstall control program has done its initial execution. Thus you cannot access the TCTUA in the autoinstall control program and so any TCTUA initialization must be done later. You could write your own 'good morning' transaction to do this, or use the first transaction of the application in question.

Furthermore, the autoinstall control program does not have access to the TCTUA at logoff either, because CICS deletes the TCT entry (including the TCTUA) before invoking this program. Therefore, if an application needs to capture statistics or other information from such a TCTUA, it must get access before CICS does this. The place to do this is in the **node error program (NEP)**, the user-written component of the terminal error processing routines, because CICS drives the NEP exit before it deletes the TCT entry.

The terminal list table (TLT)

A terminal list table is a list of terminals, defined either by four-character CICS terminal names or by three-character CICS operator identifiers. It is used principally for routing messages to multiple destinations and for giving limited operational control of a group of terminals to a supervisor. Both of these uses must be rethought in an autoinstall environment. If a TLT lists terminals that do not have TCT entries, because they are not logged on at the time the TLT is used, supervisory operations against those terminals fails. For example, you cannot put a nonexistent TCT entry into or out of service.

Similarly, message routing works differently for individually defined terminals and for autoinstalled terminals. When a message is sent to an individually defined terminal that is not logged on, the message is saved in temporary storage, and delivered when the terminal logs on. When a message is sent to a terminal that is not defined because it is an autoinstalled terminal and is not logged on, CICS gives a route fail condition, indicating that it knows nothing of that terminal. Indeed, if terminal names are generated and assigned randomly, as they may be in an autoinstall environment, the whole TLT mechanism breaks down.

Transaction routing

An autoinstall request to a local system overrides an autoinstall request for the same definition shipped from a different system.

If transaction routing can occur between two CICS systems, any terminal that can log on to both should be installed in both in the same way. Such a terminal should be:
- Autoinstalled in both systems, or
- Defined to each system in its TCT setup at initialization

Autoinstall and output-only devices

Most of the benefits of autoinstall apply more to **display devices** than to printers. Displays initiate transactions in CICS; usually, any transaction output is returned to the input terminal, so that neither CICS nor the application needs to know any other NETNAME than that of the display, which identifies itself in the process of logging on.

On the other hand, when output is directed to output-only **printers**, either CICS or the application must know what NETNAME to use, and this implies that some knowledge of the network is maintained somewhere. The primary and alternate printer names in an individually-defined TCT entry constitute this kind of information, as maintained by CICS. In the case of autoinstalled terminals, corresponding information—if it is required—must be maintained in tables or files, embedded in the application, supplied by VTAM ASLTAB and ASLENT model terminal support (MTS), or supplied dynamically by the user.

Autoinstall and VTAM

This topic explains how autoinstall works with VTAM. It is intended to help you understand the processing that takes place when you use autoinstall. It consists of the following topics:
- “The process of logging on to CICS using autoinstall”
- “What happens when the user logs off” on page 466

The process of logging on to CICS using autoinstall

To help you understand the process, consider what takes place when you log on to CICS through VTAM. (The process is illustrated in Figure 64 on page 465 and Figure 65 on page 466.) CICS supports the model terminal support (MTS) function of VTAM 3.3 and above. Using MTS, you can define the model name, the printer (PRINTER), and the alternate printer (ALTPRINTER) for each terminal in a VTAM table. CICS captures this information as part of autoinstall processing at logon, and uses it to create a TCTTE for the terminal. If you are using MTS, you must use a version of DFHZATDX that is suitable for use on CICS Transaction Server for z/OS. See *CICS Customization Guide* for programming information about the user-replaceable autoinstall program.

1. VTAM receives your request, determines that you want to use CICS, and passes your request to CICS.
2. CICS extracts your terminal's NETNAME name from the logon data. CICS searches the TCT for an entry with the same NETNAME.

3. If it finds such an entry, CICS issues an OPNDST to VTAM to establish a session between CICS and the terminal. This is the normal CICS logon process.
4. If it fails to find a matching entry, CICS checks the system initialization parameters that were specified in the SIT, or reset using CEMT, to check whether it can allow an autoinstall.
5. If the system initialization parameters allow an autoinstall, CICS checks the terminal data passed by VTAM, to check whether the terminal is eligible for autoinstall.
6. If the terminal is eligible, CICS examines the bind image to see if it carries sufficient information.
7. If the VTAM bind image data proves sufficient, CICS searches the autoinstall model table (AMT) in sorted ascending order, and autoinstalls the terminal in one of the following ways:
   - If VTAM has supplied CICS with a valid model name, CICS passes this name to the **autoinstall control program**. (If the logon request has come to CICS through VTAM 3.3, and if you have supplied VTAM with names of model terminals, CICS can obtain the name of the model terminal from the logon data.)
   - If VTAM has not supplied CICS with a valid model name, CICS searches the AMT for suitable autoinstall models and passes these to an **autoinstall control program**, together with VTAM logon data. If VTAM has supplied CICS with an invalid model name, message DFHZC6936 results.
8. The autoinstall control program (either the CICS-supplied program or one written by you) selects one of the models and provides the rest of the information necessary to complete a TCT entry for the terminal.
9. When the autoinstall control program returns control, CICS builds a TCT entry using the autoinstall model, the data returned by the autoinstall control program, and the VTAM logon data for the terminal. CICS then adds the new entry to the TCT and issues an OPNDST to VTAM to establish a session between CICS and the terminal.
10. If the TYPETERM definition so specifies, CICS uses the QUERY function to find out about some of the features of the terminal. (These features are listed in Chapter 32, “TYPETERM resource definitions,” on page 305.)

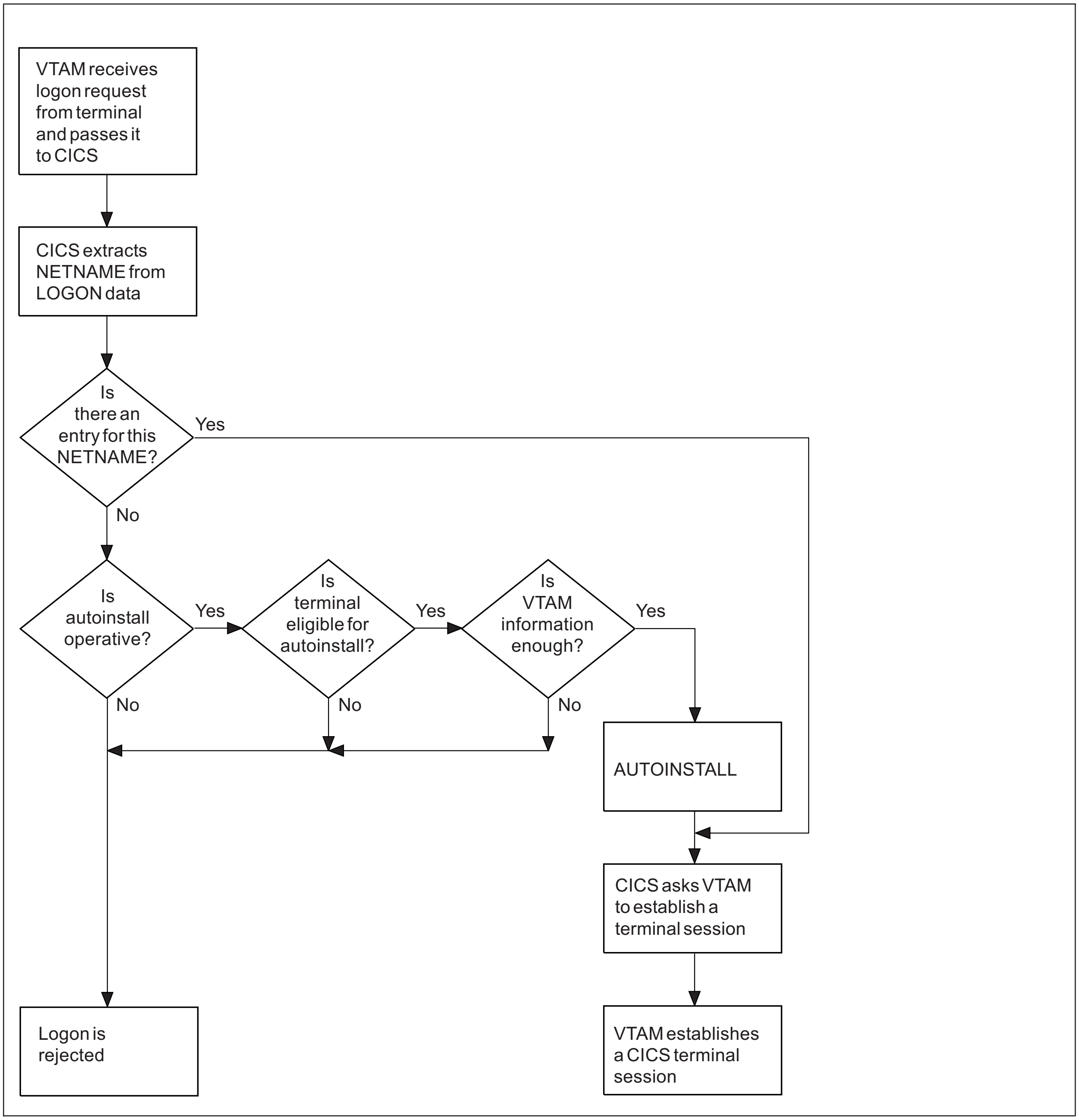

VTAM receives logon request from terminal and passes it to CICS
CICS extracts NETNAME from LOGON data
Is there an entry for this NETNAME?
Yes
No
Is autoinstall operative?
Yes
No
Is terminal eligible for autoinstall?
Yes
No
Is VTAM information enough?
Yes
No
AUTOINSTALL
CICS asks VTAM to establish a terminal session
VTAM establishes a CICS terminal session
Logon is rejected

Figure 64. The process of logging on to CICS using autoinstall.

Note that the autoinstall process itself is shown as a single box. What happens inside this box is depicted in Figure 65 on page 466

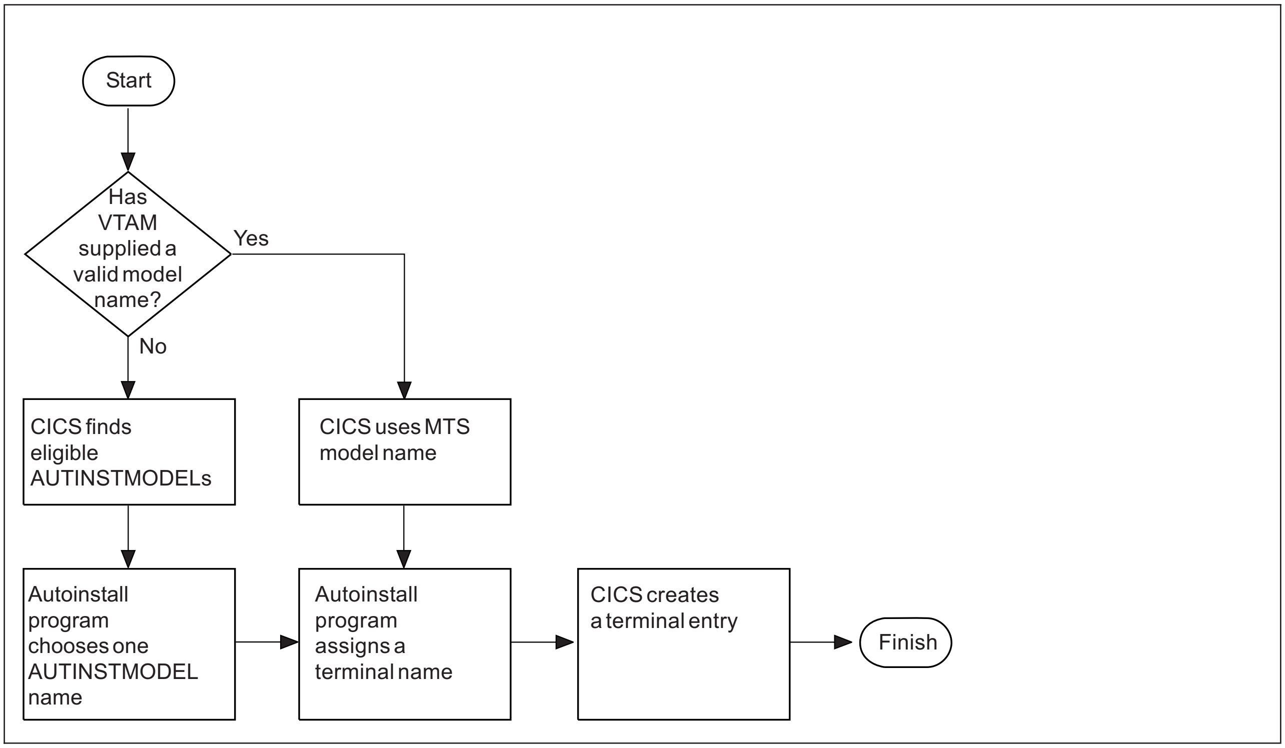

Start
Has VTAM supplied a valid model name?
Yes
No
CICS finds eligible AUTINSTMODELs
CICS uses MTS model name
Autoinstall program chooses one AUTINSTMODEL name
Autoinstall program assigns a terminal name
CICS creates a terminal entry
Finish

Figure 65. How CICS autoinstalls a terminal.

Note that the overall process in which this fits is shown in Figure 64 on page 465 .

What happens when the user logs off

When the terminal user finishes work and logs off:

1. CICS issues a CLSDST to ask VTAM to end the session.
2. CICS attempts to delete the TCT entry after a delay specified in the AILDELAY system initialization parameter.

   Note that the TCT entry cannot be deleted if there is a lock effective at the time. For instance, CEMT INQUIRE TERMINAL or an outstanding ATI request locks the TCT entry.
3. CICS gives control to the autoinstall control program in case it has any further processing to do; for example, to free the TERMINAL name it gave to the terminal.

If the terminal's TYPETERM definition specifies SIGNOFF(LOGOFF) **and** the RACF segment specifies timeout, expiry of the timeout period causes the terminal to be logged off and the user to be signed off. After this automatic logoff, the delay period commences, leading to deletion of the TCT entry unless the terminal logs on again before the period ends. For details, see “Automatic sign-off, logoff, and TCTTE deletion” on page 470.

Implementing VTAM autoinstall

This list explains how to set up autoinstall for your VTAM terminals.

1. **Are your terminals eligible for autoinstall?**

   The terminals that **can** be autoinstalled are:
   - VTAM locally attached 3270 terminals (non-SNA), both displays and printers
   - VTAM logical unit type 0 terminals
   - VTAM logical unit type 1 terminals, including SCS printers
   - VTAM logical unit type 2 terminals
   - VTAM logical unit type 3 terminals
   - VTAM logical unit type 4 terminals
   - VTAM logical unit type 6.2 single-session terminals
   - TLX or TWX terminals using NTO

   Terminals that **cannot** be autoinstalled are:
   - Pipeline terminals
   - Automatic teller machines (3614 and 3624)
   - Non-VTAM resources
   - VTAM logical unit type 6.1 ISC and MRO sessions

2. **Should you use autoinstall?**

   You are likely to benefit from autoinstall if your system has:
   - A significant number of VTAM terminals
   - Frequent changes to your network
   - Many VTAM terminals logged off much of the time
   - Many VTAM terminals using other applications much of the time
   - Many VTAM terminals that need access to multiple, but unconnected, CICS systems

   Autoinstall might be less beneficial if you have:
   - A small, static network
   - Many terminals more or less permanently logged on to one CICS system
   - Many terminals logging on and off frequently
   - Many terminals logging on and off at the same time

3. **Decide which devices to autoinstall**.

   This decision depends on how you use your VTAM terminals. For example, a terminal that is logged on all the time can be autoinstalled, but you might choose to define it individually.

   An autoinstall logon is slower than a logon to a terminal individually defined to CICS, so if you switch continually between applications and have to log on to CICS frequently, you may require individual definitions for some terminals.

   You should also consider your use of automatic transaction initiation (ATI), terminal list tables (TLTs), and the intercommunication methods in use in your installation. See "Deciding which terminals to autoinstall" on page 461.

4. **Create your TYPETERM and model TERMINAL definitions**.

   CICS supplies some TERMINAL and TYPETERM definitions; these are listed in "TYPETERM definitions in group DFHTYPE" on page 643 and "Model TERMINAL definitions in group DFHTERM" on page 648. You can use these definitions if they are suitable; if not, create your own using CEDA or DFHCSDUP.

   Define an autoinstall model for each different kind of terminal to be autoinstalled. Try to keep the number of definitions to a minimum, so that the autoinstall control program can be as simple as possible.

   When you create your definitions, consider whether you want to use the QUERY structured field (see "TYPETERM definition attributes" on page 321). It can help the autoinstall control program to choose which model on which to base a definition, and so speed up the autoinstall process.

5. **Redefine DFHZCQ**.

   For every region using autoinstall, redefine DFHZCQ to be RESIDENT(YES). (DFHZCQ is in the CICS-supplied group DFHSPI). See the *CICS Performance Guide* for guidance on why you should consider making programs resident.

6. **Ensure that your VTAM LOGMODE table entries are correct**.

   “Autoinstall and VTAM” on page 463 explains the relationship between CICS autoinstall and VTAM. For programming information, including a list of VTAM LOGMODE table entries, see the *CICS Customization Guide*.

7. **Design and write an autoinstall control program**.

   The terminal autoinstall control program is invoked by CICS every time there is a valid request for a TCT entry to be autoinstalled, and every time an autoinstalled TCT entry is deleted.

   For programming information about the autoinstall control program, see the *CICS Customization Guide*. “The autoinstall control program for VTAM terminals” on page 472 provides a summary of what the program is about.

   Before beginning your program, look at the CICS-supplied autoinstall control program DFHZATDX in group DFHSPI to see if it is suitable for what you want to do with autoinstall.

8. **Enable terminal autoinstall**.

   You can enable autoinstall for terminals either by using the system initialization table (SIT) or by using the EXEC CICS or CEMT INQUIRE∨SET SYSTEM command.

   Five system initialization parameters relate to terminal autoinstall:

   AIEXIT

   specifies the name of the autoinstall program to be used. It defaults to DFHZATDX, the name of the IBM-supplied autoinstall control program.

   AIQMAX

   specifies the maximum number of terminals that can be queued concurrently for autoinstall. When this limit is reached, CICS requests VTAM to stop passing LOGON and BIND requests to CICS until CICS has processed one more autoinstall request.

   The purpose of the limit is to protect the system from uncontrolled consumption of operating system storage by the autoinstall process, as a result of some other abnormal event. Normally, in the process of autoinstall, the principal consumer of CICS storage is the autoinstall task (CATA) itself. The amount of CICS storage consumed by the autoinstall process during normal operation can therefore be controlled by creating an appropriate TRANCLASS definition to limit the number of autoinstall tasks that can exist concurrently.

   AILDELAY

   specifies the time interval, expressed as hours, minutes, and seconds (hhmmss), which elapses after an autoinstall terminal logs off before its TCTTE is deleted. The default value is 0, indicating that TCTTEs are deleted at logoff time and at warm shutdown as CLSDST is issued for the autoinstall terminals still in session. Specifying an AILDELAY interval permits the TCTTE to be reused should the terminal log back on before the interval has expired.

   AIRDELAY

   specifies the time interval, expressed as hours, minutes, and seconds (hhmmss), which elapses after emergency restart before terminal entries are deleted if they are not in session. The default value is 700, indicating a restart delay of 7 minutes.

GRPLIST
specifies the list or lists containing the group or groups of autoinstall models created.

For information on how to specify these system initialization parameters, see *CICS System Definition Guide*.

Three options relate to terminal autoinstall on the INQUIRE∨SET AUTOINSTALL command:

CUR(*value*)
specifies the number of autoinstall logon requests that are currently being processed.

MAXREQS(*value*)
specifies the largest number of autoinstall requests that are allowed to queue at one time, in the range 0-999.

You can prevent more terminals from logging on through autoinstall by setting this value to 0. This allows autoinstalled entries for terminals currently logged on to be deleted by the autoinstall program when they log off.

PROGRAM(*pgrmid*)
specifies the name of the user program that is controlling the autoinstall process. The default is the CICS-supplied program DFHZATDX.

Recovery and restart of autoinstalled terminal definitions

This topic explains what happens to autoinstalled terminal definitions at logoff and system restart times. It consists of:
- “What happens at CICS restart”
- “Automatic sign-off, logoff, and TCTTE deletion” on page 470

What happens at CICS restart

At an **emergency restart**, autoinstalled TCT entries are recovered unless you specify a restart delay period of zero in the AIRDELAY system initialization parameter. This means that users can log on again after an emergency restart without going through the autoinstall process. Those terminals with AUTOCONNECT(YES) specified in their TYPETERM definition are automatically logged on during the restart process, without the need for operator intervention. The recovery of autoinstalled TCT entries avoids the performance impact of many concurrent autoinstall requests following a CICS restart. A terminal user logging on after restart uses the TCT entry created for that terminal's NETNAME during the previous CICS run. It is just as if that terminal had an individual TERMINAL definition installed in the TCT.

Because this could pose a threat to security, CICS checks for operator activity after recovery. After a delay, all autoinstalled TCT entries that were recovered but are not in session again are deleted. As well as improving security, this ensures that CICS storage is not wasted by unused TCT entries. You can specify the length of the delay using the system initialization parameters.

If **persistent sessions** is in use and AIRDELAY is not equal to zero, autoinstalled TCT entries are treated exactly like other TCT entries. See the *CICS Recovery and Restart Guide* for more information about persistent sessions.

If **XRF** is in use, autoinstalled TCT entries are treated exactly like other TCT entries. That is, any TCT entry installed in the active CICS can be tracked, and a corresponding TCT entry is then installed in the alternate CICS. At an XRF takeover, for a terminal that is tracked, a TCT entry is already present in the new active CICS and the terminal is logged on. Therefore, the user does not have to go through the autoinstall process again.

At a **warm start**, TCT entries that were previously autoinstalled are lost, unless you logoff and CICS is shut down before the AILDELAY time has expired.

If a TCTTE is recovered during emergency restart, a specification of AUTOCONNECT(YES) prevents deletion of the TCTTE by AIRDELAY. If you want the TCTTE storage to be deleted in this case, specify AUTOCONNECT(NO).

Automatic sign-off, logoff, and TCTTE deletion

If a session ends through expiry of the user's TIMEOUT period, the terminal entry is deleted as described in the preceding section only if SIGNOFF(LOGOFF) is specified in the TYPETERM definition of the model. Table 19 summarizes the automatic deletion and recovery of TCTTEs for autoinstalled terminals.

Figure 66 on page 471 shows how automatic sign-off, logoff, and TCTTE deletion occur if a session is timed out. Figure 67 on page 472 shows how logon and TCTTE deletion occur if, at a warm start or emergency restart, a TCTTE exists for an autoinstalled terminal. Table 20 on page 471 shows how automatic TCTTE deletion occurs if a session ends for any reason other than timeout.

Table 19. AUTOINSTALL—summary of TCTTE recovery and deletion

CICS RUNNING:	
Restart delay = 0	TCTTE entries are not cataloged and therefore cannot be recovered in a subsequent run.
Restart delay > 0	TCTTE entries are cataloged. If they are not deleted during this run or at shutdown, they can be recovered in a subsequent emergency restart.
SHUTDOWN:	
Warm	Terminals are logged off and their TCTTEs are deleted, except for those terminals which were logged off before shutdown but whose AILDELAY has not expired.
Immediate	No TCTTEs are deleted. All can be recovered in a subsequent emergency restart.
Abnormal termination	No TCTTEs are deleted. All can be recovered in a subsequent emergency restart.
STARTUP:	
Cold	No TCTTEs are recovered.
Warm	No TCTTEs are recovered.
Emergency restart when restart delay = 0	No TCTTEs are recovered (but see note in Figure 67 on page 472). This session is unbound if it persists.
Emergency restart when restart delay > 0	TCTTEs are recovered. For details see Figure 67 on page 472. This session is recovered if it persists.

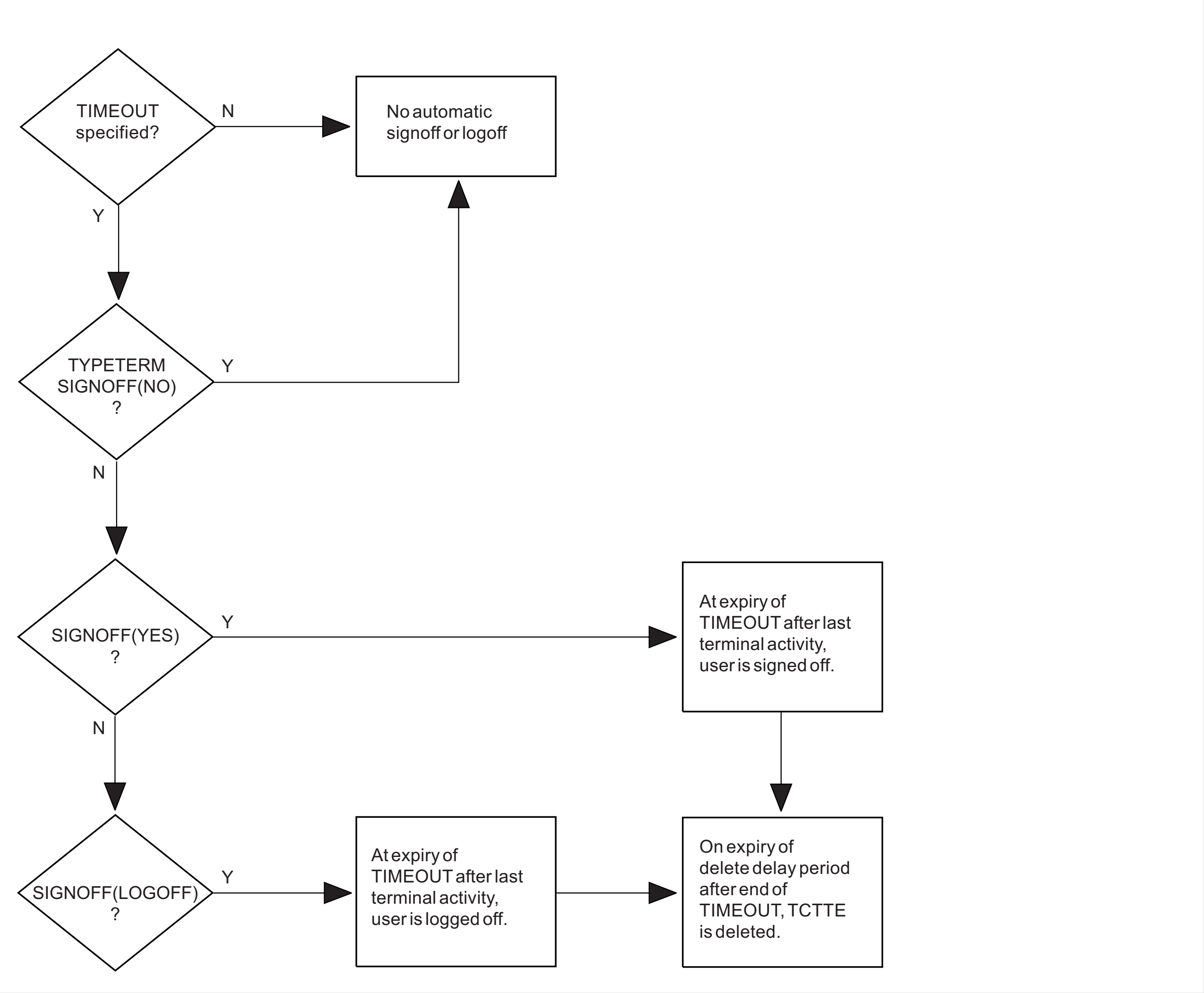

TIMEOUT specified?
N
No automatic signoff or logoff
Y
TYPETERM SIGNOFF(NO) ?
Y
N
SIGNOFF(YES) ?
Y
At expiry of TIMEOUT after last terminal activity, user is signed off.
N
SIGNOFF(LOGOFF) ?
Y
At expiry of TIMEOUT after last terminal activity, user is logged off.
On expiry of delete delay period after end of TIMEOUT, TCTTE is deleted.

Figure 66. Automatic sign-off, logoff and deletion of autoinstalled terminals.

When a session is timed out because there is no terminal activity, CICS uses these steps to determine whether to delete an autoinstalled terminal definition:

1. *If no timeout is specified in the RACF segment, the user is not automatically signed off or logged off.*
2. *If SIGNOFF(NO) is specified in the TYPETERM definition, the user is not automatically signed off or logged off.*
3. *If SIGNOFF(YES) is specified in the TYPETERM definition, and a timeout is specified in the RACF segment, the user is signed off when the timeout period has expired.*

   Before the timeout period has expired, the user can resume terminal activity.
4. *If SIGNOFF(LOGOFF) is specified in the TYPETERM definition, and a timeout is specified in the RACF segment, the user is signed off and the terminal is logged off. The terminal definition is deleted after a further interval, which is specified in the AILDELAY attribute of the TYPETERM definition.*

   Before the timeout period has expired, the user can resume terminal activity. After the timeout has expired, but before the terminal definition is deleted, the user can log on again without the overhead of the autoinstall process.

Table 20. AUTOINSTALL—automatic TCTTE deletion after non-automatic logoff

Non-automatic LOGOFF:	<---------**Delete delay period**--------->	TCTTE entry deleted.
VTAM informs CICS of a session outage, terminal logs off, or transaction disconnects terminal	The terminal can log on during this period without repeating the autoinstall process.	

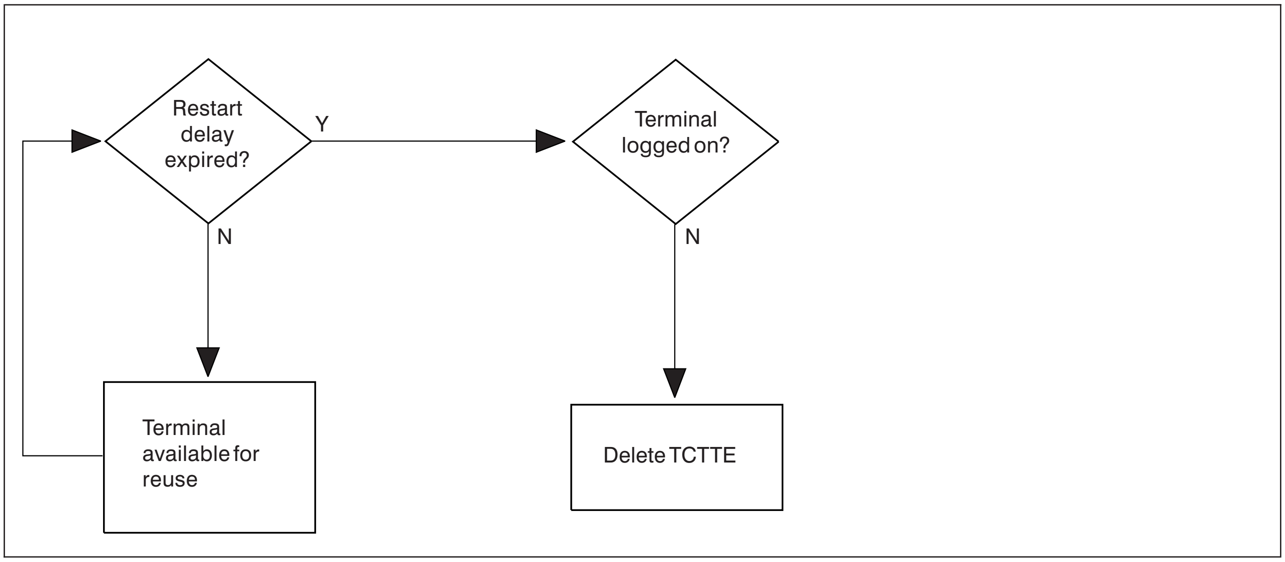


Figure 67. AUTOINSTALL—automatic logoff and TCTTE deletion after an emergency restart.

During a warm or emergency start, CICS uses these steps to determine whether an autoinstalled terminal definition that has been recovered should be deleted:

1. *Before the restart delay period, specified in the AIRDELAY attribute of the TYPETERM definition, expires, the terminal definition is available for use.*
2. *After the restart delay period expires, the terminal definition is deleted. If a user attempts to log on at the terminal, the definition is autoinstalled.*

Note:

1. Successive CICS runs are assumed to use the same restart delay period. If a run with restart delay > 0 is followed by an emergency restart with restart delay = 0, undeleted TCTTEs are recoverd. If the recovered TCTTE specifies AUTOCONNECT(YES), the associated terminal is logged on; otherwise the TCTTE is deleted after startup
2. Emergency restart: If the restart delay peiod = 0, there is no TCTTE recovery during emergeny restart.

The autoinstall control program for VTAM terminals

The autoinstall control program is invoked by CICS every time there is a valid request for a TCT entry to be autoinstalled, and every time an autoinstalled TCT entry is deleted. For programming information about the autoinstall control program, see *CICS Customization Guide*. This section is a summary of that information, and consists of:

- "Autoinstall with model terminal support"
- "Autoinstall program functions" on page 473.

Autoinstall with model terminal support

If you are using VTAM 3.3 or later, you can define, in a VTAM table, the model name as well as other information for each terminal. During logon, VTAM sends this information to CICS, which may use it to create a TCTTE for the terminal. Therefore you do not need to specify routines to select a model terminal, optional printer, and alternate printer, but your autoinstall control program still needs to provide a TERMINAL name. However, if you are already using an autoinstall control program that selects a model terminal, optional printer, and alternate printer, CICS can continue to use this program.

Autoinstall program functions

If you are using a level of VTAM earlier than VTAM 3.3, the NETNAME and other VTAM data about the terminal are not sufficient to build a TCT entry for the terminal. This program must create a CICS identifier for the TERMINAL, and must choose a suitable model from among those passed to it by CICS.

IBM supplies a program (DFHZATDX) that performs the basic functions, but it may not perform all the functions that you require. For example, you may have your own conventions for TERMINAL names and their relationship to NETNAMEs. (Note that TERMINAL names are up to four characters long, and NETNAMEs are up to eight characters long, so that it is often not possible to derive one from the other.)

In addition, you could code your program to perform other functions associated with terminal logon and logoff. For example:
- Security checking
- Providing associated printer names
- Monitoring the number of terminals currently logged on through autoinstall

The autoinstall control program runs in a transaction environment, rather than as a CICS exit. This means that you can read files and issue other CICS commands, to determine the TERMINAL name, or the associated PRINTER and ALTPRINTER names. The TCT entry, however, does not exist at either of the times that this program is invoked, because at logon it has not yet been created, and at logoff it has already been deleted. The program therefore runs in transaction-without-terminal mode.

You can write the autoinstall control program in the following languages: assembler, C, COBOL, or PL/I. The CICS-supplied autoinstall program is available in all these languages; the assembler version is used by default. If you decide to write your own program, you can use one of the CICS-supplied programs as a pattern. Note that for COBOL and C, you need extra program definitions in the CSD file. See the *CICS System Definition Guide* for information about defining the CSD file.

You specify the name of the program you want to use in the AIEXIT system initialization parameter.

When you test your autoinstall control program, the CADL transient data destination records each installation and each deletion of TCT entries. Message DFHZC6987 is useful for indicating which model came closest to being chosen, when a null list of models is passed to the autoinstall control program.

Note: You can have only one autoinstall control program active at one time for terminals and connections. The active program is specified on the AIEXIT system initialization parameter. The DFHZATDY program described in Chapter 42, “Autoinstalling APPC connections,” on page 479 provides the same function for terminal autoinstall as DFHZATDX, but also provides function to autoinstall APPC connections initiated by BIND requests. Therefore, if you want to autoinstall APPC connections as well as terminals, use a customized version of DFHZATDY rather than DFHZATDX.

For programming information on implementing the CICS-supplied autoinstall control program, or designing and writing your own program, see the *CICS Customization Guide*.

Chapter 41. Autoinstalling MVS consoles

Commands issued at an MVS console (or in a job stream) can be directed to a CICS region running as a started task, or job, using the MVS MODIFY command. Before CICS can accept the MVS command, it needs an entry in the terminal control table for the console issuing the command, which CICS terminal control can use to display a response. The following discussion describes how CICS handles commands (transaction invocations) it receives from an MVS operator console:

Pre-installed console definitions

When MVS receives your request, it identifies the CICS region from the task or job name, and passes your request to CICS.

CICS extracts the console's name from the MODIFY data, and searches the terminal control table (TCT) for a CONSNAME entry that matches the console name. If CICS finds a matching entry, it starts the transaction specified on the MODIFY command, and the transaction can send the results to the console using the termid of the console's entry in the terminal control table.

Autoinstalled console definitions

If CICS fails to find a matching entry, it checks the autoinstall status for consoles to determine whether it can perform an autoinstall for the console.

If autoinstall for consoles is active, CICS searches the autoinstall model table (AMT) and initiates the autoinstall process for the console. CICS either:

- Passes a list of autoinstall model definitions to the autoinstall control program, together with information about the console, or
- Automatically uses the first console model definition it finds, or a console model with the same name as the console, and autoinstalls the console using a CICS-generated termid, without calling your autoinstall control program.

Which of these options CICS takes is determined by the autoinstall status for consoles. The autoinstall status for consoles is either set at startup by the AICONS system initialization parameter, or dynamically by a CEMT (or EXEC CICS) SET AUTOINSTALL CONSOLES command.

The terminal autoinstall control program

You use the same autoinstall control program for console autoinstall as for VTAM terminals and APPC connections, specifying the name of the control program on the AIEXIT system initialization parameter.

If the autoinstall control program is invoked (either the CICS-supplied program or your own) it selects one of the models and provides the rest of the information necessary to complete a TCT terminal entry for the console. When the autoinstall control program returns control, CICS builds a terminal control table terminal entry (TCTTE) for the console using the autoinstall model, the termid, and other data returned by the autoinstall control program, and MVS console data. CICS then adds the new entry to the TCT and starts the transaction specified on the MODIFY command.

Preset security for autoinstalled consoles

If the model terminal specifies USERID(*FIRST) or USERID(*EVERY), CICS uses the user ID passed by MVS on the MODIFY command to sign on the console, in effect using the MVS-passed user ID as the preset userid for the new console.

Automatic deletion of autoinstalled consoles

CICS automatically deletes autoinstalled consoles if they are unused for a specified delay period (the default is 60 minutes). As part of the install function, the autoinstall control program can set a 'delete-delay' value for the console. The delete-delay period is the length of time (in minutes) that an autoinstalled console can remain installed without being used before CICS deletes it. Setting this value to 0 inhibits automatic deletion. Autoinstalled consoles are not recorded on the catalog and not recovered at restart. Note that a console is deleted even if there is a currently signed-on user.

Implementing autoinstall for MVS consoles

CICS autoinstall support for consoles is not provided automatically—there are some tasks to be completed to enable the support. Basically, you need to specify that you want the support, and ensure that the required model resource definitions are installed. This is because the autoinstall models supplied in DFHLIST do not contain models suitable for console autoinstall. The IBM-supplied group DFHTERMC contains an autoinstall model definition for a console, but this is not included in DFHLIST. Also, an optional requirement is the support of an autoinstall control program

The following steps describe how to enable autoinstall for consoles:

1. Define a console terminal definition that:
   - Specifies AUTINSTMODEL(YES), or AUTINSTMODEL(ONLY)
   - Specifies the CONSNAME(name)
   - References a TYPETERM that specifies DEVICE(CONSOLE)

   You can use the model console definition defined in the group DFHTERMC, which is added to your CSD by the INITIALIZE and UPGRADE commands.

   Note: When a model terminal definition is used by the console autoinstall function, CICS ignores the console name specified on the model definition.
2. Install the model console definition either by adding its group to a group list and perform a cold start, or use the CEDA INSTALL command.
3. If you decide that you want the autoinstall control program to be invoked for console autoinstall, modify your autoinstall control program to handle console install and delete requests. To reactivate your modified program, either restart CICS or use the CEMT, or EXEC CICS, SET PROGRAM(...) NEWCOPY command.

   To ensure CICS invokes your autoinstall control program, specify system initialization parameter AICONS=YES, or use the CEMT, or EXEC CICS, SET AUTOINSTALL CONSOLES(PROGAUTO) command to specify console autoinstall dynamically.
4. If you decide to let CICS autoinstall consoles without invoking your autoinstall control program, specify system initialization parameter AICONS=AUTO, or use the CEMT, or EXEC CICS, SET AUTOINSTALL CONSOLES(FULLAUTO) command to specify console autoinstall dynamically. With the AUTO option, CICS allocates the termid automatically.
5. As in the case of VTAM terminal autoinstall, ensure that the necessary autoinstall programs and transactions are installed. These are your autoinstall control program, the transactions CATA and CATD, and the programs DFHZATD and DFHZATA. The CICS-supplied autoinstall control program, DFHZATDX or DFHZATDY, accepts a request from any console, provided an autoinstall model

for a console is found in the AMT. Use the model definition supplied in group DFHTERMC, or alternatively create your own autoinstall console models (see "The autoinstall control program for MVS consoles")

If, when your CICS system is in production, you want to restrict the consoles that are allowed to be autoinstalled, control this in the autoinstall control program. There are other reasons why you might write your own autoinstall control program, such as security requirements or varying the default delete-delay period. See the *CICS Customization Guide* for information about including support for consoles in your autoinstall console program. You may have to change the way you use console names and terminal names, or you may have to make special arrangements in the autoinstall control program to allow you to continue to use the names in the way that you do.

Defining model TERMINAL definitions for consoles

Whenever CICS receives a command from an unknown console, and autoinstall for consoles is active, CICS searches the AMT for autoinstall models that describe a console. These models must specify a CONSNAME, and reference a TYPETERM definition that specifies DEVICE(CONSOLE). The console name in a model definition is a dummy value in the case of autoinstall, and is ignored by CICS, which passes a list of AUTINSTNAME attribute values to the autoinstall control program, so that it can choose one of them.

Specifying automatic preset security

One attribute that your autoinstall control program may require in a model definition is a USERID that provides the correct preset security. Selecting a model that has preset security defined ensures that the operator's security authority is predetermined. This avoids an operator having to logon to CICS, using the CESN signon transaction, in order to issue a MODIFY command. Two special operands of the USERID parameter provide for an automatic signon of consoles:

- USERID(*EVERY) means that CICS is to use the userid passed on the MVS MODIFY command every time a MODIFY command is received. The console is signed on using the MVS userid as the preset userid for the console being autoinstalled. The console remains signed on with this userid until the console is deleted or another MODIFY command is received with another userid. If a MODIFY command is received without a userid, CICS signs on the default CICS userid until a MODIFY command is received that has a valid userid. For non-console terminals, or if security is not enabled, this value is ignored.
- USERID(*FIRST) means that CICS is to use the userid passed on the first MVS MODIFY command that requires the console to be autoinstalled. The console is signed on with the MVS userid as the preset userid. The console remains signed on with this userid until the console is deleted. If a MODIFY command is received without a userid, CICS signs on the default CICS userid. For non-console terminals, or if security is not enabled, this value is ignored.

The autoinstall control program for MVS consoles

The console name and other MVS data about the console are not sufficient to build a terminal control table terminal entry (TCTTE) for the console. The autoinstall control program must create a CICS terminal identifier (termid) for the console, and choose a suitable model from the list of models passed by CICS in the communications area.

IBM supplies two assembler versions of an autoinstall control program (DFHZATDX and DFHZATDY in SDFHLOAD) that perform the basic functions, but it these may not perform all the functions that you require. For example, you may have your own conventions for terminal names and their relationship to console names. Terminal names are up to four characters long, and console names are up to eight characters long, hence it is often not possible to derive one from the other.

In addition to providing the termid, you can code your program to perform other functions associated with console definition. For example, your program could:
- Perform security checks
- Monitor the number of autoinstalled consoles currently logged on.

The autoinstall control program runs in a transaction environment as a user-replaceable program, rather than as a CICS exit. This means that you can read files, and issue other CICS commands, to help you determine the terminal name. The TCTTE entry for the console, however, does not exist at either of the times that the program is invoked, because (1) for the install function it has not yet been created, and (2) for the delete function it has already been deleted. The program therefore runs in transaction-without-terminal mode.

You can write an autoinstall control program in the following languages: assembler language, C, COBOL, or PL/I. The CICS-supplied autoinstall program source is available in all four languages. The assembler version, which is used by default, is also shipped in executable form in SDFHLOAD. If you decide to write your own program, you can use one of the IBM-supplied programs as a pattern.

You specify the name of your autoinstall control program on the AIEXIT system initialization parameter. CICS supports only one autoinstall control program at a time, and therefore your program must handle console and terminal autoinstall requests if support for both is required.

When you test your autoinstall control program, you will find that CICS writes install and delete messages to the transient data destination, CADL, each time CICS installs and deletes a TCT entry. If there are no autoinstall models installed for consoles, CICS does not call the autoinstall control program, and fails the autoinstall request.

For information on implementing the CICS-supplied autoinstall control program, or designing and writing your own program, see the *CICS Customization Guide*.

Chapter 42. Autoinstalling APPC connections

You should consider the following when deciding whether to use autoinstall for connections:

Security

Before using autoinstall for connections, consider whether the security considerations are suitable for your purposes.

The autoinstalled connection inherits the security attributes specified in the model. The security attributes from the CONNECTION definition are:
- SECURITYNAME
- ATTACHSEC
- BINDSECURITY

If you are using compatibility mode to share a CSD file with an earlier release of CICS, the BINDPASSWORD attribute is also inherited. See "CONNECTION definition attributes" on page 38 for information on these attributes.

From the SESSIONS definition, the autoinstalled connection inherits the preset security attribute USERID. See "SESSIONS definition attributes" on page 204 for a description of this attribute. If you are attempting to autoinstall an attachsec identify connection from a CICS system prior to CICS/ESA 4.1 or you are attempting to autoinstall an attachsec verify connection from a non-EBCDIC based system, then you should refer to the *CICS RACF Security Guide*.

Model terminal support (MTS)

MTS is not supported for connection autoinstall. This means that you must code the routines yourself to select the model definition name; you cannot get VTAM to do it for you. MTS is described "The process of logging on to CICS using autoinstall" on page 463.

Deletion of autoinstalled connections

Unlike autoinstalled terminal definitions, autoinstalled connection definitions are **not** deleted when they are no longer in use. This means that they continue to occupy storage.

The rules for cataloging and deletion of autoinstalled APPC connections have changed in CICS Transaction Server for z/OS. All autoinstalled connections are now cataloged, depending on the AIRDELAY system initialization parameter. If AIRDELAY=0, synclevel 1 connections are not cataloged.

The rules for deletion are:
- Autoinstalled synclevel 1 connections are deleted when they are released.
- If CICS is **not** registered as a generic resource, autoinstalled synclevel 2 connections are not deleted.
- If CICS **is** registered as a generic resource, autoinstalled synclevel 2 and limited resources connections are deleted when the affinity is ended.

If autoinstall is enabled, and an APPC BIND request is received for an APPC service manager (SNASVCMG) session that does not have a matching CICS CONNECTION definition, or a BIND is received for a single session, a new connection is created and installed automatically.

Implementing APPC connection autoinstall

1. Decide whether to use autoinstall for connections

   You are most likely to benefit from autoinstall for connections if you have large numbers of workstations all with the same characteristics. The main **benefits** of using autoinstall for connections are that cold, warm, and emergency restarts are faster, you have fewer CSD file definitions to manage, and less storage is taken up by unused definitions.

   However, some possible restrictions are discussed in Chapter 42, "Autoinstalling APPC connections," on page 479 and "Recovery and restart for connection autoinstall" on page 482.
2. Decide which sessions to autoinstall

   You can use autoinstall for CICS-to-CICS connections, but it is intended primarily for workstations.
3. Create your model connection definitions

   A model definition provides CICS with one definition that can be used for all connections with the same properties. See "Model definitions for connection autoinstall."
4. Design and write an autoinstall control program

   The autoinstall control program provides CICS with the extra information it needs to complete an autoinstall request, such as the autoinstall model name.

   For programming information about the autoinstall control program, see the *CICS Customization Guide* and "The autoinstall control program for connections" on page 481.
5. Enable autoinstall for connections

   Autoinstall for connections is enabled when you enable autoinstall for terminals; see "Implementing VTAM autoinstall" on page 467 for information about the system initialization parameters and the CEMT and EXEC CICS INQUIRE and SET options used.

   If terminal autoinstall has been enabled but you want to prevent autoinstall for connections, set the model connection out of service by using the CEMT or EXEC CICS SET CONNECTION(connection-name) OUTSERVICE command. (See *CICS Supplied Transactions* for information about the CEMT commands, and the *CICS System Programming Reference* for programming information about the EXEC CICS commands.) When the model connection is out of service, the autoinstall control program cannot access it and copy it, so the autoinstall function for connections is effectively disabled.

Model definitions for connection autoinstall

Model definitions for connection autoinstall are different from those for terminal autoinstall in that they do not have to be defined explicitly as models. Any installed connection definition can be used as a "template" for an autoinstalled connection.

For performance reasons, use an installed connection definition that is not otherwise in use. The definition is locked while CICS copies it and, if you have a very large number of sessions autoinstalling, the delay may be noticeable.

You can set the model connection definition out of service by using the CEMT or EXEC CICS SET CONNECTION OUTSERVICE command. This effectively disables autoinstall for connections, because the autoinstall control program cannot access and copy the model definition.

For CICS-to-CICS connection autoinstall, the MAXIMUM attribute in the SESSIONS definition of the model connection should be large enough to accommodate the largest device using the model.

When creating model connections, you must ensure that the usergroup modenames specified in the session's MODENAME field match the usergroup modenames in the connection to be autoinstalled.

The autoinstall control program for connections

The autoinstall control program is invoked at installation for:
- APPC parallel-session connections initiated by a BIND
- APPC single-session connections initiated by a BIND

The autoinstall control program provides CICS with any extra information it needs to complete an autoinstall request. For APPC parallel sessions, the control program provides a SYSID for the new definition.

When an APPC BIND request is received by CICS, CICS receives the partner's VTAM NETNAME and passes it to the autoinstall control program. The control program uses the information contained in the partner's NETNAME and in the VTAM BIND to select the most appropriate model on which to base a new connection. In order to return the name of the most suitable model to CICS, the control program must know the NETNAME or SYSID of every model.

CICS supplies a sample control program, DFHZATDY, for connection autoinstall. You can use DFHZATDY unchanged if both of the following conditions are met:
- Your model connections are called CCPS, CBPS, or CBSS
- You use the last four characters of the NETNAME as the SYSID or terminal name

If these conditions are not met, you have to change DFHZATDY to suit your installation. Its source is supplied in CICSTS31.SDFHSAMP.DFHZATDY is defined as follows:

```
DEFINE PROGRAM(DFHZATDY)  GROUP(DFHAI62)  LANGUAGE(ASSEMBLER)
       RELOAD(NO)  RESIDENT(NO)  STATUS(ENABLED)  CEDF(NO)
       DATALOCATION(ANY)  EXECKEY(CICS)
```

The definitions for the supplied model connections and sessions are:

```
DEFINE CONNECTION(CBPS)  GROUP(DFHAI62)  NETNAME(TMPLATE1)
       ACCESSMETHOD(VTAM)  PROTOCOL(APPC)  SINGLESESS(NO)
DEFINE SESSION(CBPS)  GROUP(DFHAI62)  CONNECTION(CBPS)
       MODENAME(LU62PS)  PROTOCOL(APPC)  MAXIMUM(10,5)

DEFINE CONNECTION(CBSS)  GROUP(DFHAI62)  NETNAME(TMPLATE2)
       ACCESSMETHOD(VTAM)  PROTOCOL(APPC)  SINGLESESS(YES)
DEFINE SESSION(CBSS)  GROUP(DFHAI62)  CONNECTION(CBSS)
       MODENAME(LU62SS)  PROTOCOL(APPC)  MAXIMUM(1,0)

DEFINE CONNECTION(CCPS)  GROUP(DFHAI62)  NETNAME(TMPLATE3)
       ACCESSMETHOD(VTAM)  PROTOCOL(APPC)  SINGLESESS(NO)
DEFINE SESSION(CCPS)  GROUP(DFHAI62)  CONNECTION(CCPS)
       MODENAME(LU62PS)  PROTOCOL(APPC)  MAXIMUM(10,5)
```

If you want to use these definitions, you must add group DFHAI62 to your group list.

Note: Do not try to use the terminal autoinstall exit DFHZATDX to autoinstall connections; any sessions installed by DFHZATDX are terminated and message DFHZC6921 is issued.

For programming information on customizing the autoinstall control program, see the *CICS Customization Guide*.

Recovery and restart for connection autoinstall

This topic explains how autoinstalled connections are handled in different restart situations.

Persistent sessions support: Because autoinstalled connections are not cataloged, they cannot benefit from persistent sessions support. This means that when a session does persist, any autoinstalled connections relating to it are unbound.

XRF support: Autoinstalled connections are tracked to XRF.

Autoinstalled connections are recovered only at a cold start of CICS; they are not recovered at warm and emergency restarts.

Unit-of-recovery descriptors (URDs) for autoinstalled connections are recovered after cold, warm, and emergency restarts, as long as the SYSIDs of the connections are consistent.

The SYSIDs of the autoinstalled connections must be consistent if you are using recoverable resources.

Chapter 43. Autoinstalling programs, map sets, and partition sets

This topic describes how to implement autoinstall for programs, map sets, and partition sets. It consists of the following:

- "Implementing program autoinstall"
- "Cataloging for program autoinstall" on page 484
- "Model definitions for program autoinstall" on page 485
- "The autoinstall control program for programs" on page 485
- "Program autoinstall and recovery and restart" on page 486

If autoinstall for programs is active, and an implicit or explicit load request is issued for a previously undefined program, mapset, or partitionset, CICS dynamically creates a definition, and installs it and catalogs it as appropriate. An implicit or explicit load occurs when:

- CICS starts a transaction
- An application program issues one of the following commands:
  EXEC CICS LINK
  EXEC CICS XCTL
  EXEC CICS LOAD
  EXEC CICS ENABLE (for global user exit, or task-related user exit, program)
- When, after an EXEC CICS HANDLE ABEND PROGRAM(...), a condition is raised and CICS transfers control to the named program.
- CICS calls a user-replaceable program for the first time
- An application program issues one of the following commands:
  EXEC CICS RECEIVE or SEND MAP
  EXEC CICS SEND PARTNSET
  EXEC CICS RECEIVE PARTN

Implementing program autoinstall

1. Decide whether your programs are eligible for autoinstall

   The only program that cannot be autoinstalled is the program autoinstall control program. All other programs can be autoinstalled, including:
   - All other user-replaceable programs
   - Global user exits (GLUEs) and task-related user exits (TRUEs)
   - PLT programs

   User-replaceable programs and PLT programs are autoinstalled on first reference. GLUEs and TRUEs are autoinstalled when enabled.
2. Decide whether to use autoinstall for programs

   Using autoinstall for programs can save time spent on defining individual programs, mapsets, and partitionsets. Savings can also be made on storage, because the definitions of autoinstalled resources do not occupy space until they are referenced.

   Use of autoinstall for programs can reduce the number of definitions to be installed on a COLD start, thereby reducing the time taken.
3. Decide which programs to autoinstall

   Depending on your programs, you can choose to use a mixture of RDO and autoinstall. A suggested way to manage program autoinstall is to continue to use RDO for existing program definitions and for installing groups containing related programs. Use autoinstall as you develop and install new applications, and in test environments, where you might otherwise install large numbers of programs at CICS startup.

4. Enable autoinstall for programs

   You can enable autoinstall for programs either by specifying system initialization parameters by using the EXEC CICS or CEMT SET SYSTEM command.

   Three system initialization parameters relate to program autoinstall:

   PGAICTLG
   specifies whether autoinstalled program definitions should be cataloged. See "Cataloging for program autoinstall."

   PGAIPGM
   specifies whether the program autoinstall function is active or inactive.

   PGAIEXIT
   specifies the name of the program autoinstall exit.

   For information on how to specify these system initialization parameters, see the *CICS System Definition Guide*.

   Three operands relate to program autoinstall on the SET SYSTEM command:

   PROGAUTOCTLG
   specifies whether autoinstalled program definitions are to be cataloged. See "Cataloging for program autoinstall."

   PROGAUTOEXIT
   specifies the name of the program autoinstall exit.

   PROGAUTOINST
   specifies whether the program autoinstall function is active or inactive.

   For programming information on how to specify EXEC CICS commands, see the *CICS System Programming Reference*, and for information on how to use CEMT, see *CICS Supplied Transactions*.

5. Create your model program definitions

   A model definition provides CICS with one definition that can be used for all programs with the same properties. See "Model definitions for program autoinstall" on page 485

6. Design and write an autoinstall control program

   The autoinstall control program provides CICS with the extra information it needs to complete an autoinstall request, such as the autoinstall model name. You can write your autoinstall program in any language supported by CICS, with full access to the CICS application programming interface. See "The autoinstall control program for programs" on page 485.

Cataloging for program autoinstall

You can specify whether an autoinstalled program definition is cataloged or not (that is, whether the definition is retained over a warm or emergency start) by using either the PGAICTLG system initialization parameter or the PROGAUTOCTLG option on the CEMT INQUIRE∨SET SYSTEM command. The values you can specify are:

ALL
Autoinstalled program definitions are written to the global catalog at the time of the autoinstall, and following any subsequent modification.

MODIFY
Autoinstalled program definitions are cataloged only if the program definition is modified by a SET PROGRAM command subsequent to the autoinstall.

NONE
Autoinstalled program definitions are not cataloged. This gives a faster CICS restart (warm and emergency) compared with the MODIFY or ALL options, because CICS does not reinstall definitions from the global catalog. Definitions are autoinstalled on first reference.

The effects of specifying cataloging for program autoinstall apply mainly to recovery and restart. See “Program autoinstall and recovery and restart” on page 486.

Model definitions for program autoinstall

Model definitions for program autoinstall are different from those for terminal autoinstall in that they do not have to be defined explicitly as models. Any installed program, mapset, or partitionset definition can be used as a “template” for program autoinstall.

If you do not want to use your own definitions, you can use the CICS-supplied model definitions. These are:
- DFHPGAPG for programs
- DFHPGAMP for mapsets
- DFHPGAPT for partitionsets

They are listed in Appendix B, “CICS-supplied resource definitions, groups, and lists,” on page 625.

Note: Although the DFHPGAPG definition does not specify a program language, the CICS autoinstall routine detects the program language from the program being loaded.

The autoinstall control program for programs

You specify the name of the control program you want to use in the PGAIEXIT system initialization parameter, or use the CEMT or EXEC CICS INQUIRE∨SET SYSTEM command.

For detailed programming information about the autoinstall control program for programs, see the *CICS Customization Guide*. This topic is a summary of that information.

When the autoinstall control program is invoked for program autoinstall

For **programs**, the autoinstall control program is invoked when:
- Any of these commands references a previously undefined program:
  - EXEC CICS LINK
  - EXEC CICS XCTL
  - EXEC CICS LOAD
- The program is the first program in a transaction.
- An EXEC CICS ENABLE is issued for a GLUE or a TRUE.
- An abend occurs after an EXEC CICS HANDLE ABEND PROGRAM command is issued and CICS invokes the named program.

- CICS calls a user-replaceable program.

For **mapsets**, the autoinstall control program is invoked when an EXEC CICS SEND MAP or EXEC CICS RECEIVE MAP refers to a previously undefined mapset.

For **partitionsets**, the autoinstall control program is invoked when an EXEC CICS SEND PARTNSET or EXEC CICS RECEIVE PARTN command refers to a previously undefined partitionset.

Sample programs

The following sample programs are supplied by CICS:
- DFHPGADX—assembler program for program autoinstall exit
- DFHPGAHX—C program for program autoinstall exit
- DFHPGALX—PL/I program for program autoinstall exit
- DFHPGAOX—COBOL definition for program autoinstall exit

The source for these programs is supplied in the CICSTS31.SDFHSAMP sample library, but only the assembler version is supplied in executable form, in the CICSTS31.SDFHLOAD load library.

Program autoinstall functions

The program autoinstall facility uses model definitions, together with a user-replaceable program, to create explicit definitions for programs, mapsets, and partitionsets that need to be autoinstalled. CICS calls the user-replaceable program with a parameter list that gives the name of the appropriate model definition. On return from the program (depending on the return code), CICS creates a resource definition from information in the model and from parameters which the program returns.

Note: CICS does not call the user-replaceable program for any CICS programs, mapsets, or partitionsets (that is, any objects beginning with the letters DFH).

For information about how to write the user-replaceable program, see *CICS Customization Guide*.

Program autoinstall and recovery and restart

There is a difference in performance between warm and emergency restarts using program autoinstall without cataloging, and warm and emergency restarts using autoinstall with cataloging. (See the *CICS Recovery and Restart Guide* for information on cataloging.)

If you are using autoinstall **with** cataloging, restart times are similar to those of restarting a CICS region that is not using program autoinstall. This is because, in both cases, resource definitions are reinstalled from the catalog during the restart. The definitions after the restart are those that existed before the system was terminated.

If you are using autoinstall **without** cataloging, CICS restart times are improved because CICS does not install definitions from the CICS global catalog. Instead, definitions are autoinstalled as required whenever programs, mapsets, and partitionsets are referenced following the restart.

Chapter 44. Autoinstalling model terminal definitions

If you define a model terminal for autoinstall, you install it just as you would an ordinary resource definition; that is, by installing the group containing it. However, terminal definitions specified as AUTINSTMODEL(ONLY) are stored only in the autoinstall model table (AMT) at this time; they do not result in a TCTTE on the active CICS system. These model terminal definitions are stored in the AMT until needed by CICS to create a definition for an actual terminal logging on through VTAM using autoinstall. The resulting terminal definition is “automatically installed” at this time.

This is what happens when you install a TERMINAL definition, either at system initialization or using INSTALL:

AUTINSTMODEL(NO)
A TCT entry is created for the terminal.

AUTINSTMODEL(YES)
A TCT entry is created for the terminal, and the model definition is stored for later use by the autoinstall process.

AUTINSTMODEL(ONLY)
The model definition is stored for later use by the autoinstall process.

If you install two model TERMINAL definitions with the same AUTINSTNAME, the second one replaces the first.

For further information about autoinstall and model TERMINAL definitions, see Chapter 40, “Autoinstalling VTAM terminals,” on page 461.

Chapter 45. Autoinstalling journals

CICS writes journal data to journals or logs on log streams managed by the MVS system logger, or to SMF. You must define JOURNALMODELs so that the connection between the journal name, or identifier, and the log stream, or SMF log, can be made. You can use RDO, DFHCSDUP, or an EXEC CICS CREATE JOURNALMODEL command to define a journalmodel.

CICS resolves the link between the log stream and the journal request by using user-defined JOURNALMODELs or, in the situation where an appropriate JOURNALMODEL does not exist, by using default names created by resolving symbolic names. See “JOURNALMODEL definition attributes” on page 128 for more information about this.

Journals are not user-definable resources.

Part 6. Macro resource definition

This part gives reference information for the macros needed for each table. Each section describes the function of the table and outlines the macros used to create it. The operands for each macro are given in a syntax box, which is followed by an explanation of each operand, in alphabetic order.

Chapter 46. Introduction to CICS control tables and macros

You use macros to define:
- Non-VTAM networks
- Non-VTAM terminals
- Non-VSAM files
- Databases
- Monitoring resources
- System recovery resources

CICS uses an external security manager for all its security management.

You must use **resource definition online (RDO)** for VSAM files, and to define programs, map sets, partition sets, queues, transactions, and profiles. You must also use RDO to define VTAM terminals, and links and sessions with MRO (multiregion operation) and ISC (intersystem communication) systems. RDO is described in Chapter 1, "What is resource definition?," on page 3.

CICS is configured under your control during system initialization. You select a system initialization table (SIT) and, through it, CICS selects other control tables. Each control table is created separately and may be recreated at any time before system initialization. You prepare the required control tables by coding the appropriate macros. For each table, the macros automatically generate the necessary linkage editor control statements.

You may need to read about the following areas related to control tables:
- The **system initialization table (SIT)**, required for the system to be operational. Other tables are needed only if you are using the corresponding CICS facilities. For details of the SIT, see the *CICS System Definition Guide*.
- The **job control language (JCL)** needed for the control tables, and how to link-edit and assemble the macro statements that you specify. See Chapter 47, "Defining resources in CICS control tables," on page 499.
- Whether CICS loads a table above or below the 16MB boundary. The CICS table macros contain linkage editor control statements that determines this. Table 21 shows whether specific tables are loaded above or below the boundary.

The control tables that can be defined by macros are shown in Table 21.

Table 21. Control tables definable by macros. The third column shows whether the table is loaded above or below the 16MB line.

Control table	Contents	Above the line?	Reference
Command list table (CLT)	Sets of commands and messages for an XRF takeover. The command list table (CLT) is used for XRF (extended recovery facility). If you are using XRF, you must have a CLT; it is used only by the alternate CICS system. The CLT contains a list of commands that are passed to JES or MVS for execution. It also provides the authorization for canceling the active CICS system.	Yes	Chapter 48, "CLT—command list table," on page 505

Table 21. Control tables definable by macros (continued). The third column shows whether the table is loaded above or below the 16MB line.

Control table	Contents	Above the line?	Reference
Data conversion table	A data conversion table may be needed if the CICS system is using ISC to communicate with a member of the CICS family that runs on a hardware platform that does not use EBCDIC (such as CICS OS/2 or CICS/6000 which use ASCII). The conversion table defines how data is to be changed from ASCII format at the workstation to EBCDIC format at the CICS/ESA host.		The DFHCNV macros used to create the table are described in *CICS Family: Communicating from CICS on System/390*.
Destination control table (DCT)	The Destination control table (DCT) is retained for migration purposes only.	Yes	“TDQUEUE definition attributes” on page 230
DL/I directories (PDIR)	Databases and program specification blocks. If you use CICS-IMS DBCTL (database control) exclusively to manage your CICS system's use of DL/I, you need not define the DL/I directory (PDIR) using CICS. The PDIR is a directory of all the remote program specification blocks (PSBs) that are accessed by the CICS system. If you function-ship requests to a remote database manager (remote DL/I), you need only one directory, the PDIR.	No	Chapter 50, “PDIR—DL/I directory,” on page 521
File control table (FCT)	BDAM file definitions. The file control table (FCT) is retained to allow you to define BDAM files.	No	Chapter 51, “FCT—file control table,” on page 523
Monitoring control table (MCT)	Monitoring actions (data collection) to be taken at each user event monitoring point (EMP). Different actions can be specified for each monitoring class at each EMP.	Yes	Chapter 52, “MCT—monitoring control table,” on page 533
Program list table (PLT)	A list of related programs. You may want to generate several PLTs to specify a list of programs that are to be executed in the initialization programs phase of CICS startup; executed during the first or second quiesce stages of controlled shutdown; or both, or enabled or disabled as a group by a CEMT ENABLE or DISABLE command.	Yes	Chapter 53, “PLT—program list table,” on page 549
Recoverable service table (RST)	Sets of recoverable service elements. The recoverable service table (RST) is used for IBM CICS IMS/ESA® DBCTL (database control) support. If you are using XRF and DBCTL, you must have an RST: it is used by the active CICS system. The RST contains a list of recoverable service elements that define the DBCTL configuration. It defines which DBCTL CICS connects to.	Yes	Chapter 55, “RST—recoverable service table,” on page 567

Table 21. Control tables definable by macros (continued). The third column shows whether the table is loaded above or below the 16MB line.

Control table	Contents	Above the line?	Reference
Resource control table (RCT)	A CICS-DB2 connection. The Resource control table (RCT) is retained for migration purposes only.		Chapter 54, "RCT—CICS DB2 resource control table," on page 553
System initialization table (SIT)	Parameters used by the system initialization process. In particular, the SIT identifies (by suffix characters) the versions of CICS system control programs and CICS tables that you have specified are to be loaded.		See the *CICS System Definition Guide*.
System recovery table (SRT)	A list of codes for abends that CICS intercepts.		Chapter 56, "SRT—system recovery table," on page 569.
Temporary storage table (TST)	Special processing for temporary storage. Application programs can store data in temporary storage for later retrieval. For the data to be recoverable by CICS if the system terminates abnormally, data identifiers have to be specified in the temporary storage table (TST). A generic data identifier can be coded so that any unique temporary storage identifier (generated dynamically in a program) that begins with the same characters as the generic identifier (in the TST) can automatically acquire the same properties as the TST entries. Resource security level checking can be done on the temporary storage queues.	Yes	Chapter 59, "TST—temporary storage table," on page 601
Terminal control table (TCT)	Retained to define non-VTAM terminal networks.	No	Chapter 57, "TCT—terminal control table," on page 573
Terminal list table (TLT)	Sets of related terminals. The terminal list table (TLT) allows terminal or operator identifications, or both, to be grouped logically. A TLT is required by the supervisory terminal operation (CEST), to define and limit the effective range of the operation. It can also be used by a supervisory or master terminal operation (CEMT) to apply a function to a predetermined group of terminals. A TLT can be used, singly or in combination with other TLTs, to provide predefined destinations for message switching.	No	Chapter 58, "TLT—terminal list table," on page 597
Transaction list table (XLT)	Sets of logically related transaction identifications. A list of identifications that can be initiated from terminals during the first quiesce stage of system termination, or a group of identifications that can be disabled or enabled through the master terminal.	Yes	Chapter 60, "XLT—transaction list table," on page 609

Using the CSD and control tables together

In the following cases, you can mix resources that are defined in the CSD with resources that are defined in control tables:

1. On an initial or cold start, you can mix file control resources that are defined in the CSD with those that were defined using DFHFCT macros. BDAM file definitions are loaded from the DFHFCT load module first, then the definitions for other types of files are loaded from the RDO groups specified in the GRPLIST system initialization parameter. When CICS is running, you can use CEDA commands to add more file resource definitions.
2. You can also mix terminal resource definitions for non-VTAM [3] terminals that are defined in a TCT with resource definitions for VTAM terminals that are defined using RDO.

   However, avoid duplicate terminal IDs, because a TCT entry using the same terminal ID (TRMIDNT in the TCT) as a VTAM terminal in the CSD (TERMINAL name in the CSD), prevents CICS installing the VTAM definition.

Format of macros

The CICS macros are written in assembler language and, like all assembler language instructions, are written in the following format:

Name	Operation	Operand	Comments
blank or symbol	DFHxxxxx	One or more operands separated by commas	

TYPE=INITIAL (control section)

Most of the tables must start with a TYPE=INITIAL macro. For some tables you can provide information that applies to the whole table, on the TYPE=INITIAL macro.

The TYPE=INITIAL macro establishes the control section (CSECT) for the CICS system table, and produces the necessary linkage editor control statements. CICS automatically generates the address of the entry point of each table through the DFHVM macro that is generated from each TYPE=INITIAL macro. The entry point label of the table is DFHxxxBA. Only the END statement need be specified.

Naming and suffixing the tables

The tables are named as follows:

Table 22. Names of the control tables

Table	Name
Command list table	DFHCLTxx
File control table	DFHFCTxx
Monitoring control table	DFHMCTxx
Program list table	DFHPLTxx
Recoverable service table	DFHRSTxx

---

[3] Non-VTAM terminals. TCT entries can be for BSAM sequential devices and logical device codes (LDCs).

Table 22. Names of the control tables (continued)

Table	Name
Resource control table	DFHRCTxx
System recovery table	DFHSRTxx
Terminal control table	DFHTCTxx
Terminal list table	DFHTLTxx
Temporary storage table	DFHTSTxx
Transaction list table	DFHXLTxx

The first six characters of the name of each table are fixed. You can specify the last two characters of the name, using the SUFFIX operand. The SUFFIX operand is specified on the TYPE=INITIAL macro for each table.

Suffixes allow you to have more than one version of a table. A suffix may consist of one or two characters. The acceptable characters are: A-Z 0-9 @. (Do not use **NO** or **DY**.) Select the version of the table to be loaded into the system during system initialization, by specifying the suffix in the appropriate system initialization parameter operand.

For example:

```
DFHSIT...,FCT=MY,...
```

Note: The TYPE=INITIAL macros have a STARTER operand that is not listed in the descriptions of the individual macros in the main body of this book. Coding STARTER=YES enables you to use the $ and # characters in your table suffixes. The default is STARTER=NO. This operand should be used only with starter system modules.

TYPE=FINAL (end of table)

Most of the tables, again with the single exception of the SIT, must end with a TYPE=FINAL macro. The TYPE=FINAL macro creates a dummy entry to signal the end of the table. It must be the last statement before the assembler END statement. The format is always like this:

	DFHxxT	TYPE=FINAL

Chapter 47. Defining resources in CICS control tables

Some CICS resource are defined in CICS control tables. The tables and their resource definitions are created by macros. You must use macros to define non-VTAM networks and terminals, non-VSAM files, databases, and resources for monitoring and system recovery. You must use RDO for VSAM files, programs, map sets, partition sets, queues, transactions, and profiles.

For each of the CICS tables listed in Table 21 on page 493, complete the following steps:

1. Code the resource definitions you require.
2. Assemble and link-edit these definitions, using the CICS-supplied procedure DFHAUPLE, to create a load module in the required CICS load library. The load library is either CICSTS31.SDFHLOAD or CICSTS31.SDFHAUTH, which you must specify by the NAME parameter of the DFHAUPLE procedure. The CICS-supplied macros used to create the CICS tables determine whether tables are loaded above the 16MB line. All tables, other than the TCT, are loaded above the 16MB line.
3. Name the suffix of the load module by a system initialization parameter. For most of the CICS tables, if you do not require the table you can code *tablename=NO*. The exceptions to this rule are as follows:
   - CLT: specifying CLT=NO causes CICS to try and load DFHCLTNO. The CLT is used only in the alternate CICS, when you are running CICS with XRF, and is always required in that case.
   - SIT: specifying SIT=NO causes CICS to try and load DFHSITNO. The SIT is always needed, and you can specify the suffix by coding the SIT system initialization parameter.
   - TCT: specifying TCT=NO causes CICS to load a dummy TCT, DFHTCTDY, as explained in “Dispensing with DFHTCT macros” on page 673.
   - TLT: terminal list tables are specified by program entries in the CSD, and do not have a system initialization parameter.
   - MCT: specifying MCT=NO causes the CICS monitoring domain to dynamically build a default monitoring control table. This ensures that default monitoring control table entries are always available for use when monitoring is on and a monitoring class (or classes) are active.
4. If you are running CICS with XRF, the active and the alternate CICS regions share the same versions of tables. However, to provide protection against DASD failure, you could run your active and alternate CICS regions from separate sets of load libraries—in which case, you should make the separate copies **after** generating your control tables.

Table 23 lists all the CICS tables that can be assembled, link-edited, and installed in your CICS libraries.

Table 23. CICS tables that you can assemble, link-edit, and install in CICS libraries

Table	Module Name	Abbreviation	Required load library
Command list table	DFHCLTxx	CLT	SDFHAUTH
Data conversion table	DFHCNV	CNV	SDFHLOAD
File control table	DFHFCTxx	FCT	SDFHLOAD
Monitor control table	DFHMCTxx	MCT	SDFHLOAD

Table 23. CICS tables that you can assemble, link-edit, and install in CICS libraries (continued)

Table	Module Name	Abbreviation	Required load library
Program list table	DFHPLTxx	PLT	SDFHLOAD
DL/I program specification block	DFHPSBxx	PSB	SDFHLOAD
Recoverable service element table	DFHRSTxx	RST	SDFHAUTH
System initialization table	DFHSITxx	SIT	SDFHAUTH
System recovery table	DFHSRTxx	SRT	SDFHLOAD
Terminal control table	DFHTCTxx	TCT	SDFHLOAD
Terminal list table	DFHTLTxx	TLT	SDFHLOAD
Temporary storage table	DFHTSTxx	TST	SDFHLOAD
Transaction list table	DFHXLTxx	XLT	SDFHLOAD

You can generate several versions of each CICS control table by specifying SUFFIX=xx in the macro that generates the table. This suffix is then appended to the default 6-character name of the load module.

To get you started, CICS provides the sample tables listed in Table 24 in the CICSTS31.SDFHSAMP library:

Table 24. Sample CICS system tables in the CICSTS31.SDFHSAMP library

Table	Suffix	Notes
Command list table (CLT)	1$	XRF regions only
Monitor control table (MCT)	A$	For a CICS AOR
Monitor control table (MCT)	F$	For a CICS FOR
Monitor control table (MCT)	T$	For a CICS TOR
Monitor control table (MCT)	2$	
System initialization table (SIT)	$$	Default system initialization parameters
System initialization table (SIT)	6$	
System recovery table (SRT)	1$	
Terminal control table (TCT)	5$	Non-VTAM terminals only

| Unless you are using sequential devices, you do not need a TCT and should specify TCT=NO. (For information about the effect of TCT=NO, see Chapter 57, “TCT—terminal control table,” on page 573.) You define VTAM terminals in the CSD only, either explicitly or by means of autoinstall model definitions; for non-VTAM terminals you must use DFHTCT macros.

Although you can modify and reassemble the tables while CICS is running, you must shut down and restart CICS to make the new tables available to CICS. (The command list table (CLT) is exceptional in that a new table can be brought into use without shutting down either the active CICS region or the alternate CICS region.)

Defining control tables to CICS

You can assemble and link-edit more than one version of a table, and (except for the CNV) use a suffix to distinguish them. To specify which version you want CICS to use, you code a system initialization parameter of the form *tablename=xx*. (For example, TCT=5$.) However, you can code the SIT=xx parameter only as a startup override; that is, not in the DFHSIT table. For details of all the CICS system initialization parameters, see *CICS System Definition Guide*.

Other tables that have special requirements are program list tables (PLTs), terminal list tables (TLTs), and transaction list tables (XLTs). For each TLT, autoinstall for programs must be active or you must specify a program resource definition in the CSD, using the table name (including the suffix) as the program name. PLTs or XLTs are autoinstalled if there is no program resource definition in the CSD. For example, to generate a TLT with a suffix of AA (DFHTLTAA), the CEDA command would be as follows:

```
CEDA DEFINE PROGRAM(DFHTLTAA) GROUP(grpname) LANGUAGE(ASSEMBLER)
```

See "Naming and suffixing the tables" on page 496 for information about single and two-character suffixes.

For information about program and terminal list tables, see Chapter 53, "PLT—program list table," on page 549 and Chapter 58, "TLT—terminal list table," on page 597.

The DFHCNV conversion table is required when communicating with CICS on a non-System 390 platform. For information about the Data Conversion Process, see the *CICS Family: Communicating from CICS on System/390*.

The command list table (CLT) is used only by the alternate CICS in a CICS system running with XRF=YES, and differs in many other respects from the other CICS tables. For more guidance information, including information on resource definition specific to the CICS extended recovery facility, see the *CICS/ESA 3.3 CICS XRF Guide*.

Assembling and link-editing control tables: the DFHAUPLE procedure

To assemble and link-edit your tables, write a job that calls the CICS-supplied sample procedure DFHAUPLE. The DFHAUPLE procedure needs the following libraries to be online:

Table 25. Library requirements for the DFHAUPLE procedure

Library name	Tables required for
SYS1.MACLIB	All
CICSTS31.SDFHMAC	All
CICSTS31.SDFHLOAD	All except the CLT, RST, and SIT
CICSTS31.SDFHAUTH	CLT, RST, and SIT
SMP/E global zone	All
SMP/E target zone	All

When you have assembled and link-edited your tables, define them to CICS by system initialization parameters.

Steps in the DFHAUPLE procedure

The DFHAUPLE procedure, shown in Figure 68 on page 503, is tailored to your CICS environment and stored in the CICSTS31.XDFHINST library when you run the DFHISTAR job. (For information about DFHISTAR, see the *CICS Transaction Server for z/OS Installation Guide*.) It consists of the following steps:

1. ASSEM: This step puts your table definition macros into a temporary partitioned data set (PDS) member that is used as input to the ASM and SMP steps. The BLDMBR step subsequently adds further members to this temporary PDS.

2. ASM: In this assembly step, SYSPUNCH output goes to a temporary sequential data set. This output consists of IEBUPDTE control statements, lin-edit control statements, SMP control statements, and the object deck.
3. BLDMBR: In this step, the IEBUPDTE utility adds further members to the temporary PDS created in the ASSEM step. These members contain link-edit control statements and SMP control statements, and the object deck from the assembly step.
4. LNKEDT: The link-edit step uses the contents of the PDS member LNKCTL as control statements. The object code produced in step 2 comes from the temporary PDS. The output goes to the load library that is specified by the NAME parameter on the procedure. You must specify NAME=SDFHAUTH for the CLT, RST, and SIT, and NAME=SDFHLOAD for all the others.
5. ZNAME: This step creates a temporary data set that passes to the SMP/E JCLIN job step; it contains a SET BDY command that defines a target zone name. This tells SMP/E which target zone to update.
6. SMP: The SMP step uses the temporary PDS members MACROS, SMPCNTL, SMPJCL1, SMPJCL2, LNKCTL, SMPEOF, and the object deck to update the control data set (CDS).
7. DELTEMP: This final step deletes the temporary partitioned data set, &&TEMPPDS.

   This step must run successfully if you want SMP to reassemble CICS tables automatically when applying later maintenance.

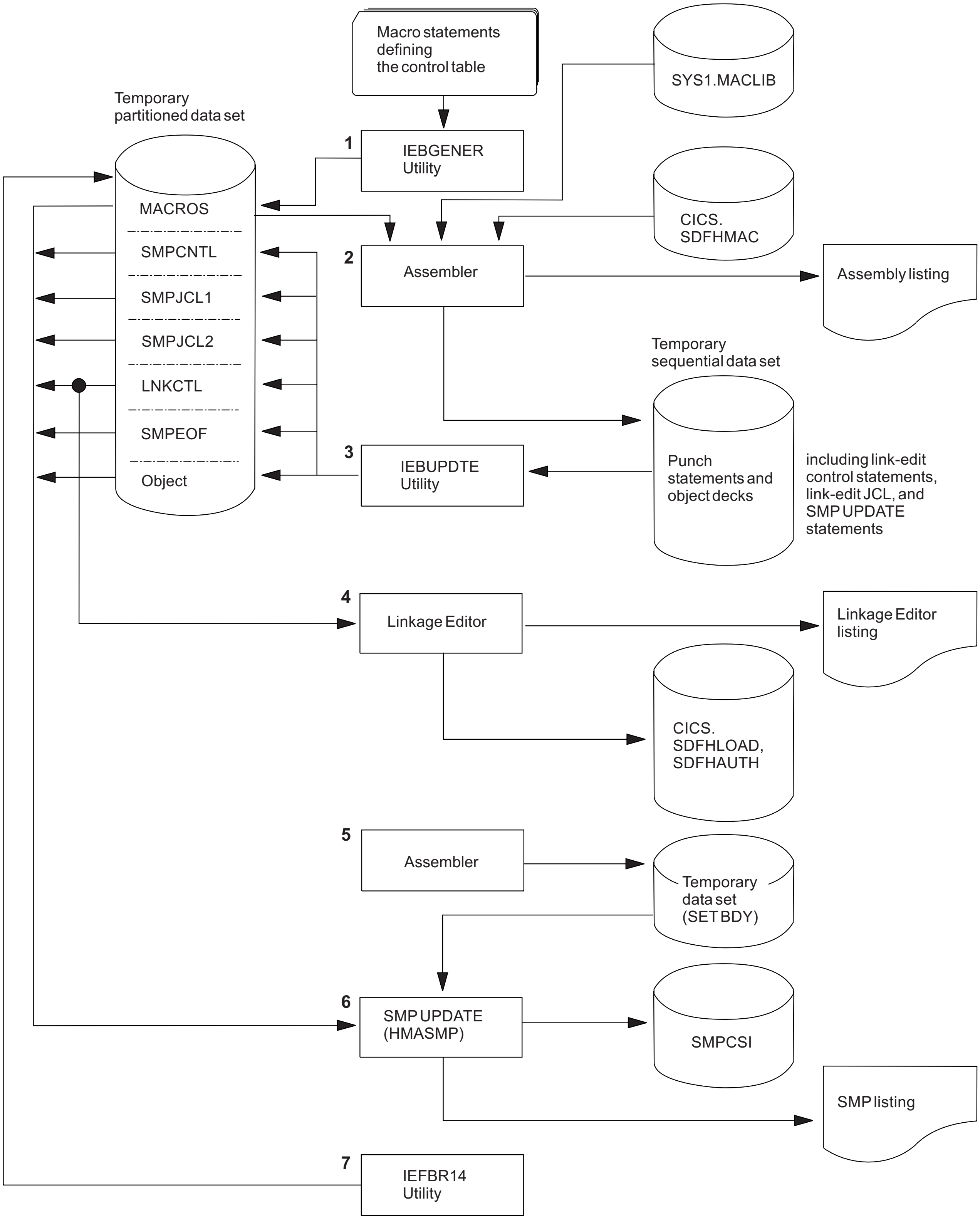


Figure 68. Assembling and link-editing the control tables using the DFHAUPLE procedure

Sample job stream for non-XRF tables

You can use the following job stream to assemble and link-edit all of the CICS control tables except for the CLT and the RST:

```
//jobname      JOB     (accounting information),
//             CLASS=A,MSGCLASS=A,MSGLEVEL=(1,1)
//ASMTAB       EXEC    PROC=DFHAUPLE[,NAME={SDFHLOAD|SDFHAUTH}]
//*
//ASSEM.SYSUT1 DD   *
          .
      Control table macro statements
          .
/*
```

Figure 69. Job stream for non-XRF tables

Note: Specify NAME=SDFHAUTH on this job for the system initialization table only; link-edit all other tables (except the CLT and RST) into SDFHLOAD.

Sample job stream for XRF-related tables

If you use CICS with XRF, there are two other tables that are assembled and link-edited using the DFHAUPLE procedure. These are:

CLT The command list table. This gives a list of MVS system commands and messages to the operator that CICS issues if a takeover occurs.

RST The recoverable service table. If you are running CICS with XRF=YES, and you are using DBCTL, you must specify an RST if you want XRF support for DBCTL.

Both these tables must be link-edited, with the reentrant attribute, into an APF-authorized library. You specify that the table is reentrant on the RENTATT parameter of the DFHAUPLE procedure. A sample job to call the DFHAUPLE procedure for the CLT and RST is as follows:

```
//jobname      JOB     (accounting information),
//             CLASS=A,MSGCLASS=A,MSGLEVEL=(1,1)
//             EXEC    PROC=DFHAUPLE,NAME=SDFHAUTH,RENTATT=RENT
//*
//ASSEM.SYSUT1 DD   *
          .
      Control table macro statements
          .
/*
```

Figure 70. Job stream for XRF-related tables

Chapter 48. CLT—command list table

The command list table (CLT) is used by the **extended recovery facility** (XRF). The CLT contains a list of MVS system commands and messages to the operator, to be issued during takeover. Typically, the function of these commands is to tell alternate systems to take over from their active systems in the same MRO-connected configuration.

It also contains the name of the alternate system, with the jobname of the active system that it is allowed to cancel. (See DFHCLT TYPE=LISTSTART FORALT operand.) This provides a security check against the wrong job being canceled, when the alternate system takes over.

In addition, the DFHCLT TYPE=INITIAL macro gives JES routing information, needed to send cancel commands to the appropriate MVS system. If you are using XRF, you **must** have a CLT: it is used only by the alternate CICS system.

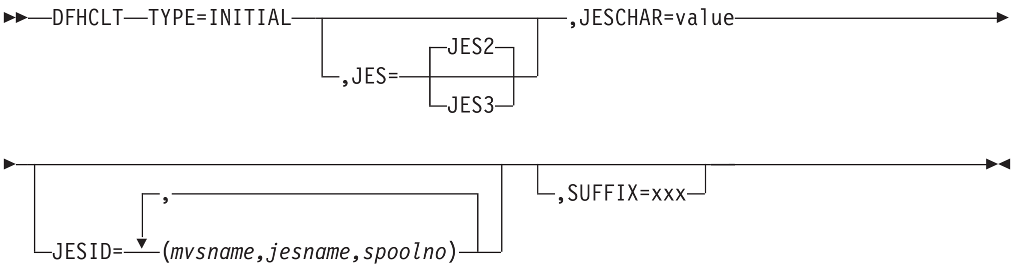
For security reasons, link-edit the CLT into a library authorized using APF. For virtual storage constraint relief considerations, link-edit using a MODE control statement specifying AMODE(31),RMODE(ANY). The table should be link-edited as reentrant. The CLT is not loaded into the CICS nucleus.

Your CLT can contain the following statements:
- DFHCLT TYPE=INITIAL
- DFHCLT TYPE=LISTSTART
- DFHCLT TYPE=COMMAND
- DFHCLT TYPE=WTO
- DFHCLT TYPE=LISTEND
- DFHCLT TYPE=FINAL (see “TYPE=FINAL (end of table)” on page 497)

Note: Although the CLT may be shared by a number of alternate systems, take care that MVS is not given too many redundant commands during takeover. For example, in multiregion operation and using one CLT with commands for several regions, region 1 would send valid commands to other regions, but they would in turn send redundant commands to region 1 and to each other.

Control section—DFHCLT TYPE=INITIAL

The DFHCLT TYPE=INITIAL macro establishes the entry point and the beginning address of the CLT being defined.



For general information about TYPE=INITIAL macros, including the use of the SUFFIX operand, see “TYPE=INITIAL (control section)” on page 496.

JES={JES2∨JES3}

Specifies the version of JES being used. If you have active and alternate CICS systems in different CPCs, you must use the same version of JES on both CPCs.

If you are using JES3, you need release 2.2.0 for full support of all CLT functions in a two-CPC environment. JES2 accepts commands issued by programs. For JES3, this feature was only introduced for release 2.2.0. With an earlier JES3 release, it is possible that a takeover in a two-CPC environment can only proceed after the operator has manually canceled the failing active CICS system. This should occur only when the active system does not realize that it is failing and continues to run.

JESCHAR=value

Specifies the one-character prefix to be used for commands to be passed to JES. If you omit this keyword:
- JESCHAR=$ is the default for JES=JES2
- JESCHAR=* is the default for JES=JES3

JESID=((mvsname,jesname,spoolno) [,(mvsname,jesname,spoolno),...])

Specifies the JES routing code that corresponds to the MVS name and JES name of an active CICS system. You must use this option if active and alternate CICS systems are in different CPCs.

You can specify several groups of *mvsname*, *jesname*, and *spoolno*, so that the CLT can be used to refer to more CPC/JES combinations.

mvsname

This is the SID, as specified in SYS1.PARMLIB member SMFPRM*xx*, for the CPC on which the active CICS system executes.

jesname

This is the JES2 or JES3 subsystem name for the JES under whose control the active system executes. It is defined in the MVS/ESA SCHEDULR sysgen macro and also in SYS1.PARMLIB member IEFSSN*xx*.

spoolno

For JES2, this is the multiaccess spool member number of the JES2 for the active CICS system. It is defined in the JES2 initialization parameter MASDEF SSID(*n*). For JES3, this is the processor name of the JES3 for the active CICS system. It is defined in the JES3 initialization parameter MAINPROC NAME=*name*. See *MVS/ESA JES2 Initialization and Tuning* or *MVS/ESA JES3 Initialization and Tuning*.

Specifying alternate systems—DFHCLT TYPE=LISTSTART

This macro defines the start of the set of commands and messages that the alternate CICS issues when it takes over from the active CICS. (There may be no commands or messages, but you still need a CLT, so that authorization checks can be made.)

```
►►──DFHLCT──TYPE=LISTSTART──────────────────────────────────────────────►

►─,FORALT=(applid1,jobname1)──┬──────────────────────────┬─────────────►◄
                              └─,(applid2,jobname2),...──┘
```

FORALT=((applid1,jobname1)[,(applid2,jobname2),...])

Specifies pairs of alternate and active CICS systems.

applid1
The name of the alternate CICS that issues the set of commands and messages when it takes over. This name must be the **specific APPLID**, defined in the APPLID system initialization parameter. It is used as an authorization check.

jobname1
The name of the active CICS system from which the alternate system is taking over. This name must be the **MVS JOBNAME** for the active CICS system. It is used as a security check, to ensure that the alternate system does not attempt to cancel any job other than one of that name.

You may extend this, using more pairs of *applid* and *jobname*, so that you can use one CLT for several alternate CICS systems.

Specifying takeover commands—DFHCLT TYPE=COMMAND

This macro allows you to specify the commands to be used by the alternate CICS system during takeover.

```
►►──DFHCLT──TYPE=COMMAND──,COMMAND=command-string──────────────────────────►◄
```

COMMAND=command-string
Defines a command that is passed to MVS for execution. CICS does not interpret this command.

The command that is issued in this way most frequently is `CEBT PERFORM TAKEOVER`.

In multiregion operation (MRO), where there is a simple hierarchy of **master** and **dependent** regions, a failing master region can issue this command to each of its dependent regions, if it is necessary that they also move to another CPC.

In a more complex multiregion operation, a failing master region can issue this to its **coordinator** region, and the coordinator can issue the same command to other master and dependent regions in the same hierarchy of regions. Hence, many MRO-connected regions can move together to another CPC, without operator intervention.

Here are some examples:

- A master region without a coordinator sends a command to a dependent region:

```
DFHCLT TYPE=COMMAND,
       COMMAND='MODIFY CICSDEP,CEBT PERFORM
       TAKEOVER'
```

- A master region sends a command to its coordinator region:

```
DFHCLT TYPE=COMMAND,
       COMMAND='MODIFY CICSCRD,CEBT PERFORM
       TAKEOVER'
```

- A coordinator region sends commands to master and dependent regions:

```
DFHCLT TYPE=COMMAND,
       COMMAND='MODIFY CICSMAS,CEBT PERFORM
       TAKEOVER'
DFHCLT TYPE=COMMAND,
       COMMAND='MODIFY CICSDEP,CEBT PERFORM
       TAKEOVER'
```

- You can also issue other commands to any other job running under MVS:

```
DFHCLT TYPE=COMMAND,
       COMMAND='MODIFY jobname,command
       string'
```

Messages to the operator—DFHCLT TYPE=WTO

These two instructions define a message that is written to the system operator.

```
►►──DFHCLT──TYPE=WTO──,WTOL=addr──addr──WTO──'message to operator'──────────────►

►──┬──────────────────────┬──┬──────────────────┬──,MF=L─────────────────────────►◄
   └─,ROUTCDE=(number)─┘  └─,DESC=(number)─┘
```

WTOL=addr
Specifies the address of a list format WTO macro that defines the message and any associated route codes and descriptor codes.

The MF (macro format), ROUTCDE (routing code), and DESC (descriptor) operands of the WTO macro are described in the *z/OS MVS Programming: Authorized Assembler Services Reference ALE-DYN* manual.

An example is to send a request to the operator:

```
         DFHCLT TYPE=WTO,
               WTOL=wtoad
wtoad    WTO   'switch local terminals, please',
                MF=L
```

Closing the command list—DFHCLT TYPE=LISTEND

This instruction defines the end of the set of commands and messages issued by an alternate system when it takes over from an active system.

```
►►──DFHCLT──TYPE=LISTEND─────────────────────────────────────────────────────────►◄
```

Chapter 49. DCT—destination control table

The DFHDCT macros are supported for migration purposes only. All DCTs must be migrated to CSD resource definitions using the DFHCSDUP MIGRATE facility.

The DFHDCT TYPE=(INITIAL,MIGRATE) and DFHDCT TYPE=GROUP macros, and extensions to the DFHCSDUP MIGRATE command help you convert your existing DCT macro definitions to RDO definitions. See “RDO GROUP for migration—DFHDCT TYPE=GROUP” for more information.

The destination control table (DCT) contains an entry for each **transient data destination**. A destination can be intrapartition, extrapartition, indirect, or remote. You code different DFHDCT macros for each type. The macros specify the symbolic name for each destination, and other information that CICS needs.

The DFHDCT TYPE=GROUP macro can be used for migrating DCTs to the CSD file. A TYPE=(INITIAL,MIGRATE) macro must be specified in this case, to obtain the correct AMODE and RMODE.

The following macros define transient data destinations:
- DFHDCT TYPE=INITIAL establishes the control section and necessary linkage editor control statements for the DCT.
- DFHDCT TYPE=SDSCI defines the data control block (DCB), for an extrapartition destination.
- DFHDCT TYPE=EXTRA defines an extrapartition destination: a destination that is outside the CICS region.
- DFHDCT TYPE=INDIRECT defines an indirect destination: a logical destination that points to another destination. (This allows several logical destinations to be merged into one physical destination.)
- DFHDCT TYPE=INTRA defines an intrapartition destination: a destination that is within the CICS region.
- DFHDCT TYPE=REMOTE defines a destination that is owned by another CICS system or region.
- DFHDCT TYPE=FINAL concludes the DCT (see “TYPE=FINAL (end of table)” on page 497).

RDO GROUP for migration—DFHDCT TYPE=GROUP

The DFHDCT TYPE=GROUP macro can be used to migrate a group of transient data resources defined using the DFHDCT macro to the CSD file.

```
►►──DFHDCT──TYPE=GROUP──┬───────────────┬──────────────────────────────►◄
                        └─,GROUP=name───┘
```

GROUP=name
The contents of a DCT is migrated in a group or several groups. Code the GROUP=*name* operand with a group name of up to eight characters in length. If you want your macro definitions to go into the default group, specify GROUP=*DEFAULT.

For migration purposes, DCTs must be link-edited at the current release level with AMODE(24) and RMODE(24). To ensure this, you must specify a DFHDCT

TYPE=(INITIAL,MIGRATE) statement in your DCT. Failure to do so causes the DFHDCT macro to force AMODE(31), which results in errors when running DFHCSDUP. For more information about migrating transient data macro definitions to RDO, see "PARTITIONSET definition attributes" on page 148.

Control section—DFHDCT TYPE=INITIAL

The DFHDCT TYPE=INITIAL macro establishes the entry point and beginning address for the DCT being defined.

```
►►──DFHDCT──TYPE=(INITIAL,MIGRATE)──┬───────────┬──┬───────────────┬──────────►◄
                                    └─,SUFFIX=xx─┘  └─,USERID=name─┘
```

For migration purposes, DCTs must be link-edited at the current release level with AMODE(24) and RMODE(24). To ensure this, you must specify DFHDCT TYPE=(INITIAL,MIGRATE). Failure to do so causes the DFHDCT macro to force AMODE(31), which results in errors when running DFHCSDUP.

For general information about TYPE=INITIAL macros, including the use of the SUFFIX operand, see "TYPE=INITIAL (control section)" on page 496.

Data set control information—DFHDCT TYPE=SDSCI

This macro defines the data control block (DCB) for an extrapartition transient data destination.

You must also code a DFHDCT TYPE=EXTRA macro, to define the destination.

Extrapartition data sets can be blocked or unblocked, of fixed or variable length.

```
►►──DFHDCT──TYPE=SDSCI──,DSCNAME=name──┬──────────────────┬────────────────────►
                                       └─,BLKSIZE=length─┘

►──┬─────────────────────────┬──┬──────────────────────────┬───────────────────►
   │          ┌─1──────┐     │  │           ┌─IGNORE─┐     │
   └─,BUFNO=──┴─number─┴─────┘  └─,ERROPT=──┴─SKIP───┴─────┘

►──┬──────────────────────────┬──┬─────────────────┬──┬────────────────────┬──►
   └─,RECFORM=──┬─FIXUNB───┬──┘  └─,RECSIZE=length─┘  └─,REWIND=──┬─LEAVE──┬─┘
                ├─FIXUNBA──┤                                      └─REREAD─┘
                ├─FIXUNBM──┤
                ├─FIXBLK───┤
                ├─FIXBLKA──┤
                ├─FIXBLKM──┤
                ├─VARBLK───┤
                ├─VARBLKA──┤
                ├─VARBLKM──┤
                ├─VARUNB───┤
                ├─VARUNBA──┤
                └─VARUNBM──┘
```

```
►─┬────────────────────────┬────────────────────────────────────────►◄
  │            ┌─INPUT──┐  │
  └─,TYPEFLE=──┼────────┼──┘
               ├─OUTPUT─┤
               └─RDBACK─┘
```

TYPE=SDSCI
Indicates that this DCT entry contains data set control information.

BLKSIZE=length
Code this with the length of the block, in bytes.

For V format data sets, each block consists of a block descriptor word followed by one or more logical records. The value coded for BLKSIZE must include 4 bytes for the block descriptor word, and also make allowance for the largest possible logical record (which itself includes 4 bytes of record descriptor word).

If the data set already exists, BLKSIZE can be omitted. However, if BLKSIZE is coded for an input data set it should match the data set BLKSIZE.

BUFNO={1∨number}
Code this with the number of buffers to be provided. Any number up to 255 may be coded.

DSCNAME=name
Code this with the 1-to 8-character data set control name. This name must be the same as that coded in the DSCNAME operand of any associated DFHDCT TYPE=EXTRA macro.

The name used for DSCNAME must be used as the ddname on the DD statement, and is also used as the name for the DCB that is created.

The name must not start with the letters “DFH”, which are reserved for use by CICS, unless it is describing one of the standard destinations. Use of the prefix “DFH” may cause assembly errors and future compatibility problems, because the DSCNAME parameter becomes an externally-specified name.

ERROPT={IGNORE∨SKIP}
Code this with the error option to be performed if an I/O error occurs.

IGNORE
The block that caused the error is accepted.

SKIP
The block that caused the error is skipped.

RECFORM={FIXUNB∨FIXUNBA∨FIXUNBM∨FIXBLK∨FIXBLKA∨ FIXBLKM∨VARBLK∨VARBLKA∨VARBLKM∨VARUNB∨VARUNBA∨ VARUNBM}
Code this with the record format of the data set.

FIXUNB
Fixed unblocked records

FIXBLK
Fixed blocked records

VARBLK
Variable blocked records

VARUNB
Variable unblocked records

FIXUNBA,FIXBLKA,VARBLKA,VARUNBA
Fixed unblocked, fixed blocked, variable blocked, or variable unblocked records respectively, **together with** ASA control characters

FIXUNBM,FIXBLKM,VARBLKM,VARUNBM
Fixed unblocked, fixed blocked, variable blocked, or variable unblocked records respectively, **together with** machine control characters.

RECSIZE=length
Code this with the length of the record, in bytes.

For V format data sets, each logical record consists of a record descriptor word followed by a data record. The value coded for RECSIZE must include 4 bytes for the record descriptor word (or LLBB), and also make allowance for the largest possible data record.

RECSIZE=*length* need be coded only for RECFM=FIXBLK.

REWIND={LEAVE∨REREAD}
Code this with the disposition of a tape data set.

LEAVE
The current tape is positioned to the logical end of the data set.

REREAD
The current tape is positioned to reprocess the data set.

TYPEFLE={INPUT∨OUTPUT∨RDBACK}
Code this with the type of data set.

INPUT
An input data set

OUTPUT
An output data set

RDBACK
An input data set that is to be read backward.

Note: This is appropriate only when the data set has been defined on magnetic tape.

An extrapartition SDSCI can be either input or output, but not both.

For more information on the above operands, see *MVS/ESA Data Administration: Macro Instruction Reference*.

Extrapartition destinations—DFHDCT TYPE=EXTRA

Destinations outside the CICS region (but which are allocated to CICS) are specified in the DFHDCT TYPE=EXTRA macro. This macro must be generated once for every extrapartition destination.

Extrapartition destinations are used for:

- Sending data outside the CICS region; for example, data created by a transaction, for processing by a batch program.
- Retrieving data from outside the region; for example, data received from terminals, as input to a transaction.

Extrapartition data is sequential and is managed by QSAM.

```
►►──DFHDCT──TYPE=EXTRA──,DESTID=name──,DSCNAME=name──┬─────────────────┬──────────►
                                                     └─,LENGTH=length──┘

►──┬──────────────────────────┬──┬────────────────┬──┬────────────────┬──────────►◄
   │          ┌─INITIAL──┐    │  └─,RMTNAME=name──┘  └─,SYSIDNT=name──┘
   └─,OPEN=───┤          ├────┘
              └─DEFERRED─┘
```

TYPE=EXTRA
Indicates an extrapartition destination.

DESTID=name
Code this with the symbolic name of the extrapartition destination. The symbolic name is used in the transient data operations to specify the destination.

Any DESTID of more than four characters is truncated on the right.

The DESTID should not start with the letter C, which is reserved for defining the destinations required by some CICS facilities. This applies to DFHDCT TYPE=EXTRA, TYPE=INDIRECT, and TYPE=INTRA.

Do not use special characters, lower case, or mixed case characters in a DESTID name.

DSCNAME=name
Code this with the same file name you used in DFHDCT TYPE=SDSCI.

If two or more extrapartition destinations refer to the same SDSCI, only one destination can be open at the same time.

If OPEN=INITIAL is specified for each of these destinations, the choice of destination to be opened is arbitrary. To avoid this, define one of the destinations as extrapartition and the others as indirect on the first.

LENGTH=length
Specifies, as a decimal value, the record length in bytes of fixed-length records in the queue. The length you specify must correspond to the RECSIZE length on the associated SDSCI entry in the DCT.

A CICS region that references a remote DCT entry requires the length of the record. If you do not specify it on the DCT entry, the application program must specify it on the WRITEQ and READQ requests

If you omit the SYSIDNT parameter, LENGTH is ignored.

OPEN={INITIAL∨DEFERRED}
Code this with the initial status of the data set.

INITIAL
The data set is to be opened by system initialization.

DEFERRED
The data set remains closed until you indicate that you want to open it by using the CEMT INQUIRE∨SET TDQUEUE command.

RMTNAME=name
code this with the 1- to 4-character name by which the destination is known in the CICS region in which the destination resides (the remote region).

If you omit this parameter, CICS uses the name specified on the DESTID parameter (that is, the local and remote names are the same).

This parameter is meaningful only when you specify the SYSIDNT parameter.

SYSIDNT=name
Identifies the CICS region in which the remote transient data queue resides. The 4-character alphanumeric name specified must match the SYSIDNT system initialization parameter specified on the region that "owns" the queue (the region in which the queue is a local resource).

If you omit SYSIDNT, the queue is treated as a local queue.

Indirect destinations—DFHDCT TYPE=INDIRECT

An indirect destination is specified by the DFHDCT TYPE=INDIRECT macro. The indirect destination does not point to an actual data set, but to another destination. This may be extrapartition, intrapartition, or remote. It may even be another indirect destination.

For example, you can give a different symbolic name (DESTID) to each of several different message types. You can then send all these message types either to the same physical destination (INDDEST), or to different physical destinations.

The DFH$TDWT sample program demonstrates how you can use indirect destinations to send different categories of message to the same terminal. For programming information about DFH$TDWT, see the *CICS Customization Guide*.

If you use EXEC CICS INQUIRE TDQUEUE, information is always returned about an indirect queue. (This does not, however, guarantee that the inquiry transaction is able to use EXEC CICS INQUIRE TDQUEUE for the ultimate target queue.)

If the QUEUE operand of an EXEC CICS WRITEQ TD (or READQ or DELETEQ) command specifies an indirect queue, access is determined by the security setting of the ultimate target queue.

```
►►──DFHDCT──TYPE=INDIRECT──,DESTID=name──,INDDEST=name──────────────────────────►◄
```

TYPE=INDIRECT
Indicates an indirect destination.

DESTID=name
Code this with the 1-through 4-character symbolic name of the indirect destination. The symbolic name is used when writing to the destination.

You must not use special characters, lower case, or mixed case characters in a DESTID name.

INDDEST=name
Code this with the name (DESTID) of a transient data destination. The destination can be intrapartition, extrapartition, remote, or indirect. If there is no DCT entry for the destination with this name, an assembly error results.

Intrapartition destinations—DFHDCT TYPE=INTRA

This macro specifies a destination for data that is to be stored temporarily.

An intrapartition destination may be a terminal, a file, or another system. A single data set, managed by VSAM, is used to hold the data for all intrapartition destinations. This macro must be coded once for every intrapartition destination.

You can specify a transaction to process the records and a **trigger level** for each intrapartition destination. The trigger level represents a number of records. When this number of records has been accumulated, the specified transaction is initiated.

The intrapartition destination may be defined as logically recoverable, physically recoverable, or not recoverable.

Logically recoverable destinations are restored (after individual transaction failures and after total system failures) to the status they had at the end of the last completed LUW. (A **logical unit of work (LUW)** begins at start of task or at a **synchronization (sync) point**, and ends at end of task or at a syncpoint.)

Physically recoverable destinations are restored (after a total system failure) to the status they had when the system failure occurred.

```
►►──DFHDCT──TYPE=INTRA──,DESTID=name────────────────────────────────────►

►──┬───────────────────────────────────────┬──┬──────────────────────┬──►
   │             ┌─TERMINAL──────────────┐ │  │             ┌─NO─┐   │
   └─,DESTFAC=───┼───────────────────────┼─┘  └─,DESTRCV=───┼────┼───┘
                 ├─TERMINAL──┬──────────┬┤                  ├─PH─┤
                 │           └─,trmidnt─┘│                  └─LG─┘
                 ├─FILE───┬─────────────┬┤
                 │        └─,USERID=name┘│
                 └─SYSTEM,sysidnt────────┘

►──┬───────────────┬──┬───────────────┬──┬───────────────┬──────────────►
   └─,RMTNAME=name─┘  └─,SYSIDNT=name─┘  └─,TRANSID=name─┘

►──┬──────────────────────────┬────────────────────────────────────────►◄
   │             ┌─1──────┐   │
   └─,TRIGLEV=───┴─number─┴───┘
```

TYPE=INTRA
Indicates an intrapartition destination.

DESTID=name
Code this with the symbolic name of the intrapartition destination. The symbolic name is used to identify the intrapartition queue for I/O operations. It must not be more than four characters in length.

You must not use special characters, lower case, or mixed case characters in a DESTID name.

DESTFAC={(TERMINAL[,trmidnt])∨ FILE[,USERID=name]∨(SYSTEM,sysidnt)}
Code this with the type of destination that the queue represents.

(TERMINAL[,trmidnt])
The transient data destination is to be associated with the terminal identified by *trmidnt*. The terminal must be defined to CICS using either an RDO TERMINAL definition, or a DFHTCT TYPE=TERMINAL macro.

If you do not specify *trmidnt*, it defaults to the value of DESTID. If ATI is used, as specified in the TRANSID and TRIGLEV operands, the transaction that is initiated is associated with the specified terminal, which must be available before the transaction can be initiated.

FILE

The transient data destination is to be used as a file of data records that are not associated with a particular terminal or system. ATI does not require a terminal to be available.

USERID=name

Code this with the userid that you want CICS to use for security checking for the trigger-level transaction specified on the TRANSID operand. USERID is valid only when the destination is defined as DESTFAC=FILE.

The trigger-level transaction runs under the authority of the specified userid, which must be authorized to all the resources used by the transaction.

If you omit the userid from a qualifying trigger-level entry, CICS uses the userid specified on the TYPE=INITIAL macro. If you omit the userid from the TYPE=INITIAL macro also, CICS uses the CICS default userid, specified on the DFLTUSER system initialization parameter. You must ensure that the CICS region userid of any CICS region in which this DCT is installed, is defined as a surrogate for all the userids specified in the DCT. This is because, during initialization, CICS performs a surrogate user security check against the CICS region userid. If this check fails, CICS deactivates automatic transaction initiation by trigger-level for the intrapartition queue for which the surrogate check failed.

For further information about surrogate user security, see the *CICS RACF Security Guide*.

(SYSTEM,sysidnt)

The transient data destination is to be associated with a system identified by sysidnt. The system must be defined to the local CICS system using an RDO CONNECTION definition.

The primary purpose of coding DESTFAC=SYSTEM,*sysidnt* is to initiate a distributed transaction processing (DTP) session. For details of DTP considerations in application programming, see the the *CICS Application Programming Guide*.

DESTRCV={NO∨PH∨LG}

Code this to indicate the recoverability attributes of the destination in the event of an abnormal termination of either CICS or the transaction processing the destination.

NO This destination is not recoverable, and automatic logging is not to be performed to keep track of accesses to this destination.

Queue records are held on one or more control intervals (CIs); each CI is released as soon as the last record on it has been read.

PH This destination is physically recoverable, and automatic logging is to be performed to keep track of accesses by application programs. If emergency restart occurs, this destination is to be recovered to its status at the time CICS terminated.

Queue records are held on one or more control intervals (CIs); each CI is released as soon as the last record on it has been read.

LG This destination is logically recoverable, and automatic logging is to be performed to keep track of accesses by application programs. If a transaction that accessed this destination was in-flight at the time of abnormal termination, in the subsequent emergency restart or dynamic transaction backout this destination is restored to the status it had before the in-flight unit of work modified it.

When this destination is accessed, the task that issued the WRITEQ TD or READQ TD command is enqueued upon the input or output end of the transient data queue, respectively. This enqueue is maintained until the task terminates or issues a syncpoint request to signal the end of a logical unit of work. This is necessary to ensure the integrity of the data being accessed.

Because the enqueues are thus maintained for a longer period of time, an enqueue lockout is possible if an application program that accesses this destination performs what is effectively more than one logical unit of work against it without defining each separate logical unit of work to CICS by issuing the syncpoint request. Furthermore, when a DELETEQ request is issued for a logically recoverable destination, **both** the input and output ends of the queue are enqueued upon. This increases the probability of an enqueue lockout.

Queue records are held on one or more control intervals (CIs); each CI is marked for release as soon as the last record on it has been read. However, the release does not occur until the end of task or until after the next user syncpoint.

RMTNAME=name

code this with the 1- to 4-character name by which the destination is known in the CICS region in which the destination resides (the remote region).

If you omit this parameter, CICS uses the name specified on the DESTID parameter (that is, the local and remote names are the same).

This parameter is meaningful only when you specify the SYSIDNT parameter.

SYSIDNT=name

Identifies the CICS region in which the remote transient data queue resides. The 4-character alphanumeric name specified must match the SYSIDNT system initialization parameter specified on the region that "owns" the queue (the region in which the queue is a local resource).

If you omit SYSIDNT, the queue is treated as a local queue.

TRANSID=name

Code this to identify the transaction that is to be automatically initiated when the trigger level is reached. The purpose of transactions that are initiated in such a way is to read records from the destination. If this operand is omitted, or if TRIGLEV=0 is coded, some other means must be used to schedule transactions to read records from the destinations.

This transaction must not reside in a remote CICS system, or be defined as dynamic. If it does, the transaction initiation fails and an attention message is issued to the console.

TRIGLEV={$\underline{1}$∨number}

Code this with the number of records to be accumulated before a task is automatically initiated to process them. (This number is known as the **trigger level**.) If you code the TRANSID operand, TRIGLEV defaults to 1. The maximum TRIGLEV value is 32767.

If you do not specify a transaction id, the trigger level is ignored.

If you have coded DESTFAC=TERMINAL, the task is not initiated until the terminal is available.

If you have coded DESTFAC=FILE, no terminal is necessary for the task to be initiated. For a non-terminal destination, if a **maximum task**, **short-on-storage** or **no-space** condition exists, the task is not initiated. This is also true during stages 1 and 2 of initialization, and during the final stage of shutdown. It is initiated when the stress condition no longer exists and a subsequent TD WRITE occurs.

If a VTAM terminal is defined, with TRIGLEV=1, as the destination for CSTL on two ISC CICS systems, a performance problem may arise when both systems repeatedly acquire and release the terminal in order to write out the session started and session ended messages.

During CICS operation, the trigger level can be changed using the CEMT transaction. If the trigger level is reduced to a number that is equal to or less than the number of records accumulated so far, the task is initiated when the next record is sent to the destination.

Remote destinations—DFHDCT TYPE=REMOTE

The DFHDCT TYPE=REMOTE macro defines a transient data destination that is owned by another CICS system or region. The destination must also have a complete definition in the system or region in which it resides.

Note: If a transient data request includes the SYSID operand, CICS does not refer to the DCT but identifies the specified destination as remote.

```
►►──DFHDCT──TYPE=REMOTE──,DESTID=name──,SYSIDENT=name──┬──────────────────┬──────────►
                                                       └─,LENGTH=length─┘

►──┬───────────────┬─────────────────────────────────────────────────────────────►◄
   └─,RMTNAME=name─┘
```

TYPE=REMOTE
Indicates that this DCT entry identifies a remote transient data destination.

DESTID=name
Code this with a 4-character name by which the destination is known to application programs in the local system or region. For further information, see the RMTNAME operand below.

Do not use special characters, lower case, or mixed case characters in a DESTID name. The DESTID name should not start with a 'C' unless the name is known to CICS.

SYSIDNT=name
Code this with the 4-character alphanumeric name of the system or region in which the remote transient data destination resides. The name specified must be the same as that given in the CONNECTION name of the RDO definition. (For more guidance information about the CONNECTION option, see “CONNECTION definition attributes” on page 38.)

LENGTH=length
Code this with the length in bytes of fixed records for a remote destination. The value specified must correspond to that specified for the DCT in the system or region in which the destination resides. If a value is not specified for the LENGTH operand, code the LENGTH parameter in READQ or WRITEQ requests in the application program.

RMTNAME=name
Code this with the 4-character name by which the destination is known in the

system or region in which that destination resides. If this operand is omitted (the normal case), the name specified in the DESTID operand is used.

If more than one system or region has a destination with the same name, the DESTID operand allows the definition of an alias that routes a transient data request to a specific system or region. RMTNAME defines the common name, SYSIDNT defines the system or region, and DESTID defines the unique alias. A transient data request using the alias identifies the remote name **and** the system or region to which the request is shipped.

Examples:

1. Destination **A001** is owned by system **A**.

SYSTEM	*DESTID*	*RMTNAME*
A	A001	A001
B	B001	A001
D	D001	A001
E	E001	A001

In system **A**, both RMTNAME and DESTID are **A001**. In systems **B**, **D**, and **E**, RMTNAME is **A001**, but DESTID must be different.

2. Four systems **A**, **B**, **D**, and **E** each own a different destination, but each destination has the same name **X001**.

Each system has a definition for its local destination and each of the three remote destinations.

SYSTEM	*DESTID*	*SYSIDNT*	*RMTNAME*
A	A002	A	X001
A	B002	B	X001
A	D002	D	X001
A	E002	E	X001

Each remote definition in system **A**:
- Has the RMTNAME **X001**
- Defines the remote system with the SYSIDNT parameter **B**, **D**, or **E**
- Uses the DESTID parameter to define a unique alias for use by application programs in the local region

DFHDCT example

Figure 71 on page 520 shows an example of the coding for a DCT. This DCT includes an extrapartition destination and three intrapartition destinations.

```
DFHDCT TYPE=(INITIAL,MIGRATE)
DFHDCT TYPE=GROUP,NAME=TDQUE001
DFHDCT TYPE=SDSCI,DSCNAME=AAAXTRA,  *
       RECFORM=FIXUNB               *
DFHDCT TYPE=EXTRA,DSCNAME=AAAXTRA,  *
       DESTID=BETA
DFHDCT TYPE=INTRA,DESTID=GAMA
DFHDCT TYPE=INTRA,DESTID=SAMA
DFHDCT TYPE=INTRA,DESTID=DAMA,      *
       TRIGLEV=5,DESTFAC=TERMINAL,  *
       TRANSID=AUTO
DFHDCT TYPE=FINAL
END
```

Figure 71. Extrapartition and intrapartition destinations

Chapter 50. PDIR—DL/I directory

The PDIR is a directory of all the remote program specification blocks (PSBs) that are accessed by the CICS system.

To use remote DL/I, you must define the PDIR to CICS. For DBCTL, you must define the DL/I directories to DBCTL using IMS-supplied macros.

To create a program specification block directory (PDIR), code DFHDLPSB TYPE=INITIAL, TYPE=ENTRY, and TYPE=FINAL macros. The TYPE=FINAL (see “TYPE=FINAL (end of table)” on page 497) must be followed by:

```
END DFSIDIR0
```

Control section—DFHDLPSB TYPE=INITIAL

The DFHDLPSB TYPE=INITIAL macro has the following format and operands:

```
►►──DFHDLPSB──TYPE=INITIAL───────────────────────────────────────────────►◄
```

For general information about TYPE=INITIAL macros, including the use of the SUFFIX operand, see “TYPE=INITIAL (control section)” on page 496.

Program specification blocks—DFHCLPSB TYPE=ENTRY

The DFHDLPSB TYPE=ENTRY macro has the following format and operands:

```
►►──DFHDLPSB──TYPE=ENTRY──,PSB=psbname──,MXSSASZ=value──┬────────────────┬──────►
                                                        └─,RMTNAME=name──┘

►─,SYSIDENT=name────────────────────────────────────────────────────────►◄
```

TYPE=ENTRY
Indicates that an entry is to be generated in the PDIR. The maximum number of entries that can be included in the PDIR is 32760.

PSB=psbname
Specifies the name of the program specification block (PSB) accessed through the remote DL/I. The entry must specify the SYSIDNT and MXSSASZ (and optionally, RMTNAME) operands.

MXSSASZ=value
Specifies the maximum size in bytes of a segment search argument to be used for this PSB.

Note: An excessively large value for MXSSASZ affects performance badly, and may lead to a data stream being shipped which is too large for the connected CICS system.

RMTNAME=name
Indicates the name by which the PSB is known in the remote system or region. The default is the *psbname* specified in the PSB operand.

SYSIDNT=name
Indicates the 4-character alphanumeric name of the remote system or region for

which the PSB is applicable. The name specified must be the name of the CONNECTION definition for the remote system.

If the SYSIDNT of the local system is specified, the request is routed to DBCTL and not function-shipped to a remote region. This allows the same PDIR to be used on both sides of the link if this is required. However, it is not necessary to have a PDIR when communicating with DBCTL.

Chapter 51. FCT—file control table

The file control table (FCT) describes to CICS the Basic Direct Access Method (BDAM) user files that are processed by file management. CICS user files correspond to physical data sets that must have been defined to MVS and allocated to the CICS system before they are used.

Note:

1. To define VSAM files, use CEDA or DFHCSDUP. See “FILE definition attributes” on page 107.
2. Because CICS file management processes only VSAM and BDAM data sets, you define any sequential data sets as extrapartition destinations by using the CEDA DEFINE TDQUEUE command. See “TDQUEUE definition attributes” on page 230.

The following macros specify file characteristics, and some of the characteristics of BDAM data sets referenced by the files:

- DFHFCT TYPE=INITIAL establishes the beginning of the FCT.
- DFHFCT TYPE=FILE defines the characteristics of a file, such as record characteristics and types of service allowed.
- DFHFCT TYPE=FINAL concludes the FCT. (See “TYPE=FINAL (end of table)” on page 497.)

Control section—DFHFCT TYPE=INITIAL

The DFHFCT TYPE=INITIAL macro establishes the control sections into which the FCT is assembled, and must be coded as the first statement in the source used to assemble the FCT.

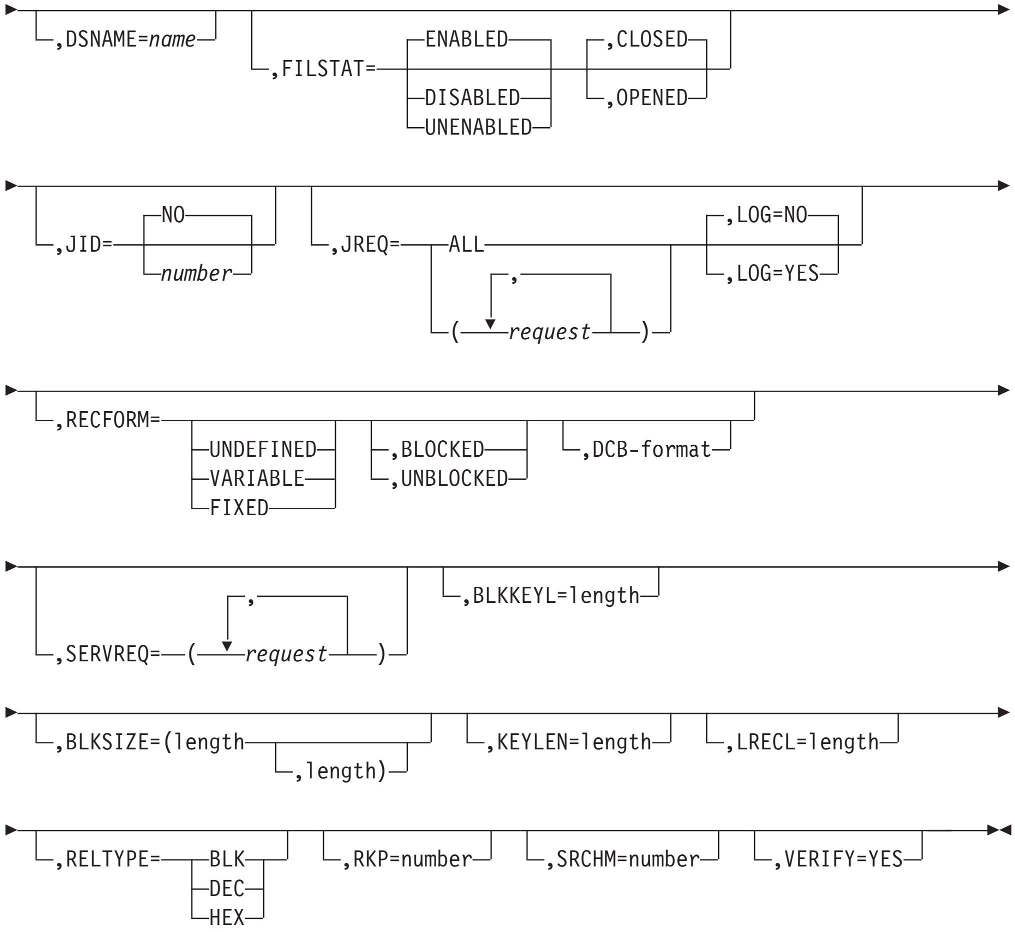
```
►►──DFHFCT──TYPE=INITIAL──┬─────────────┬──────────────────────────────►◄
                          └─,SUFFIX=xxx─┘
```

For general information about TYPE=INITIAL macros, including the use of the SUFFIX operand, see “TYPE=INITIAL (control section)” on page 496.

Local files—DFHFCT TYPE=FILE

The DFHFCT TYPE=FILE macro describes to CICS file control the physical and operational characteristics of a BDAM file. This macro includes operands that provide information about the access method, record characteristics, and types of service allowed for the file. This information is used to generate control information used by CICS as well as a DCB .

```
►►──DFHFCT──TYPE=FILE──,ACCMETH=BDAM──,FILE=name──┬─────────────────┬──────►
                                                  └─,DISP=──┬─OLD─┬─┘
                                                            └─SHR─┘
```



TYPE=FILE
Indicates that this macro describes the characteristics of a file.

ACCMETH=BDAM
specifies the basic direct access method of the data set is allocated to the file.

BLKKEYL=length
Code this with a decimal value from 1 through 255, which represents the length in bytes of the physical key in the BDAM physical record. You must code this operand only for files that reference data sets with physical keys (that is, those with SERVREQ=KEY specified). If a data set contains blocked records, and deblocking is to be performed by using a logical key (that is, a key embedded within each logical record), the logical key length must be specified by using the KEYLEN operand.

If necessary, CICS can place a record under exclusive control by building an ENQ argument by concatenating the data set name, the block reference, and the physical key. An ENQ is issued using a maximum of 255 bytes of this argument. If the argument exceeds 255 bytes in length, the ENQ places a range of keys under exclusive control.

BLKSIZE=(length[,length])
Code this with the length of the block, in bytes. The way you calculate the BLKSIZE depends on the RECFORM. For UNDEFINED or VARIABLE blocks, the length must be the maximum block length. For FIXED length blocks, you calculate the BLKSIZE as follows:

`BLKSIZE = LRECL` for unblocked records.

`BLKSIZE = (LRECL x blocking factor)` for blocked records.

If you wish to have a BLKSIZE value generated in the DCB, you must specify that value in the second parameter of the operand; for example, BLKSIZE=(250,250), where the first 250 relates to the FCT and the second 250 relates to the DCB. If the second parameter is not coded, the DCB is generated without a BLKSIZE value.

Note:

1. CICS assumes that the block size of the BDAM data set is the size you have specified on the first BLKSIZE parameter. If the value specified is smaller than the actual block size of the data set, you will probably get storage violations or other unpredictable results when using the file.
2. If you specify the second parameter (the DCB value) the value that you code must always be the actual block size. We recommend that you either omit the second parameter, or make it equal to the first parameter.

DISP={OLD∨SHR}

Code this to specify the disposition of the data set which will be allocated to this file. If no JCL statement exists for this file when it is opened, the open is preceded by a dynamic allocation of the file using this disposition. If a JCL statement does exist, it will take precedence over this disposition.

OLD The disposition of the data set is set to OLD if dynamic allocation is performed.

SHR The disposition of the data set is set to SHR if dynamic allocation is performed.

Note: You must specify the disposition of the data set, either with the DISP operand, or:
- In a JCL statement
- With CEMT SET
- With EXEC CICS SET

If you specify the disposition in a JCL statement, specify the data set name in the JCL statement as well.

DSNAME=name

Code from 1 to 44 characters to specify the JCL data set name (DSNAME) to be used for this file. If no JCL statement exists for this file when it is opened, the open will be preceded by a dynamic allocation of the file using this DSNAME. If a JCL statement does exist, it will take precedence over this DSNAME.

You must specify the data set name, either with the DSNAME operand, or:
- In a JCL statement
- With CEMT SET
- With EXEC CICS SET

If you specify the data set in a JCL statement, you **must** specify the disposition in the JCL statement as well.

Note: You define the CICS system definition (CSD) file by system initialization parameters, not in the FCT.

FILE=name

Code this with a 1-to 8-character symbolic name by which this FCT entry is to be identified. This name is known as the **file name** and is used by CICS or by CICS application programs to refer to the data set with which this FCT entry has been associated.

As well as identifying the FCT entry, this name is also used as the DDNAME when the associated data set is allocated to CICS. The allocation is achieved either by using JCL statements in the start-up job stream, or dynamically, by using the DSNAME and DISP values in the FCT.

Do not use file names that start with the character string DFH for your own files, because CICS reserves the right to use any file name beginning with DFH. In addition, using the character string FCT for a file name prefix can cause assembly errors.

FILSTAT=({ENABLED∨DISABLED∨UNENABLED},{OPENED∨CLOSED})

Code this to specify the initial status of the file.

The first operand determines the initial enablement state of the file. It is used only during an initial or a cold start. (On a warm or emergency start, the file state is determined by the state at the time of the previous shutdown.)

The second operand specifies whether an attempt is made to open the file at the end of CICS initialization. It applies to initial, cold, warm, and emergency starts.

ENABLED

Normal processing is to be allowed against this file.

DISABLED

Any request against this file from an application program causes the DISABLED condition to be passed to the program.

UNENABLED

This option is valid only with the CLOSED option. It may be used to prevent the file being opened on first reference. An attempt to access the file in this state raises the NOTOPEN condition.

OPENED

The file is opened by an automatically initiated CICS transaction (CSFU) after CICS initialization. (On a warm or emergency start, a file remains UNENABLED, if that was its state at the time of the previous shutdown. CSFU ignores an OPENED option on an UNENABLED file, and leaves the file closed.)

CLOSED

The file is to remain closed until a request is made to open it by the master terminal function, by an EXEC CICS SET command, or by an implicit open.

For each combination of initial states, files are opened as follows:

(ENABLED,CLOSED)

The file is opened on first reference. This is the default.

(ENABLED,OPENED)

The file is opened by the automatically-initiated transaction CSFU after CICS initialization, unless a user application or master terminal function has opened it first.

(DISABLED,CLOSED)
The file is opened only by an explicit OPEN request (for example, from the master terminal transaction).

(DISABLED,OPENED)
The file is opened by the automatically-initiated transaction CSFU after CICS initialization, unless a user application or master terminal function has explicitly opened it first.

(UNENABLED,CLOSED)
The file is opened only by an explicit OPEN request. The file state after it has been opened is (ENABLED,OPENED).

Note: For performance reasons, the default CSD file entry for transaction CSFU is defined with DTIMOUT=10 (seconds). This can cause a transaction timeout abend if there is a delay in opening a file during CICS startup. See "TRANSACTION definition attributes" on page 281 for an explanation of the DTIMOUT value on TRANSACTION definitions.

JID={NO∨number}
Code this if automatic journal activity is to take place for this FCT entry, and to identify the journal to be used to record the journaled data. The operations that cause data records to be journaled are specified in the JREQ parameter.

NO No automatic journaling activity for this file is to take place.

number
The journal identifier to be used for automatic journaling. This may be any number in the range 01 through 99. The number is appended to the letters DFHJ to give a journal name of the form DFHJ*nn*, which maps to an MVS system logger general log stream.

Note: Automatic journaling can be specified if you wish to record file activity for subsequent processing by yourself (for example, user-written data set I/O recovery). It must not be confused with automatic logging (specified with LOG=YES), which is required if CICS is to perform data set backout to remove in-flight task activity during emergency restart or dynamic transaction backout.

JREQ={ALL∨(request[,request,...])}
Code this with the file operations that are to be automatically journaled, and whether the journaling operation is to be **synchronous** or **asynchronous** with file activity.

When a synchronous journal operation is executed for a READ request, control is not returned to the program that issued the file control request until the data read is written in the journal data set. When a synchronous journal operation is executed for a WRITE request, the output operation to the data set is not initiated until the data is written in the journal data set.

When an asynchronous journal operation is executed for a READ request, control can be returned as soon as the data read is moved to the journal I/O buffer. When an asynchronous journal operation is executed for a WRITE request, the output operation to the data set can be initiated as soon as the data is moved to the journal I/O buffer.

Synchronization defaults provide asynchronous operation for READs and synchronous operation for WRITEs.

If you have requested automatic journaling, the contents of the journal may not accurately reflect the actual changes to a data set, because the request is journaled before the response from the I/O operation is tested.

If this operand is omitted and JID is coded, JREQ defaults to JREQ=(WU,WN).

Here are the possible values for *request*:

ALL Journal all file activity with READ asynchronous and WRITE synchronous.

ASY Asynchronous journal operation for WRITE operations.

RO Journal READ ONLY operations.

RU Journal READ UPDATE operations.

SYN Synchronous journal operation for READ operations.

WN Journal WRITE NEW operations.

WU Journal WRITE UPDATE operations.

KEYLEN=length
Code this with the length of the logical key for the deblocking of the BDAM data set to which this file refers.

The logical key for BDAM data sets is embedded and located through the use of the RKP operand. The length of the physical key is coded in the BLKKEYL operand, and can be different from the value specified for KEYLEN.

This operand must always be coded when logical keys are used in blocked BDAM data sets.

LOG={NO∨YES}
This operand specifies the recovery attributes of the file. Specify LOG=YES if you want automatic logging. This enables backout (recovery) of incomplete changes to the data set referenced by this file, in the event of an emergency restart or transaction abend. Whenever a change—update, deletion, or addition—is made to the data set, the “before” image is automatically recorded in the CICS system log. (Automatic logging should not be confused with automatic journaling.)

NO Automatic logging is not to be performed.

YES
Automatic logging is to be performed.

When a request is made to change the contents of the data set referenced by the file, the record being updated, added, or deleted is enqueued upon, using the record identification together with the address of the CICS control block representing the base data set. This enqueue is maintained until the task terminates or the application issues a syncpoint request to signal the end of a logical unit of work. This ensures the integrity of the altered data.

Because the enqueues are thus maintained for a longer period of time, an enqueue lockout can occur if an application program that accesses this data set performs what is effectively more than one logical unit of work against it, without defining each separate logical unit of work to CICS by issuing a syncpoint request. Also, long-running tasks could tie up storage resources.

LRECL=length
Code this with the maximum length (in bytes) of the logical record. The value

specified is also the length of records in a fixed length remote file. See the DFHFCT TYPE=REMOTE macro for further information on remote files.

RECFORM=([{UNDEFINED∨VARIABLE∨FIXED}], [{BLOCKED∨UNBLOCKED}],[DCB format])
Code this to describe the format of physical records in the data set.

For BDAM data sets, **blocking** refers to CICS blocking, and has no meaning for BDAM. You must specify BLOCKED or UNBLOCKED for all data sets of FIXED or VARIABLE format.

BLOCKED
Specify this option when each physical record is to be viewed by CICS as a block consisting of more than one logical record.

DCB
Code this with the record format to be inserted in the DCB; for example, RECFORM=(FIXED,BLOCKED,FBS).

The DCB format sub-parameter of the RECFORM operand is the only way you can put record format information into the DCB when the FCT is assembled. The first two sub-parameters of the RECFORM operand do not generate information in the DCB.

FIXED
Records are fixed length.

UNBLOCKED
Specify this option when no CICS block structure is to be used. That is, when there is one CICS logical record for each BDAM physical record.

UNDEFINED
Records are of undefined length. (If you specify a data set as UNDEFINED, allow for an additional 8 bytes for the count field, when calculating the BLKSIZE.)

VARIABLE
Records are variable length.

RELTYPE={BLK∨DEC∨HEX}
Code this if relative addressing is being used in the block reference portion of the record identification field of the BDAM data set referenced by this file. If the RELTYPE operand is omitted, absolute addressing is assumed (that is, MBBCCHHR).

BLK Relative block addressing is being used.

DEC The zoned decimal format is being used.

HEX The hexadecimal relative track and record format is being used.

RKP=number
Code this with the starting position of the key field in the record relative to the beginning of the record. With variable-length records, this operand must include space for the 4-byte LLbb field at the beginning of each logical record. This operand must always be coded for data sets that have keys within each logical record, or when browsing.

SERVREQ=(request[,request],...)
Code this to define the types of service request that can be processed against the file. The parameters that can be included are as follows:

ADD
Records can be added to the file.

BROWSE
Records may be sequentially retrieved from the file.

KEY
Records can be retrieved from or added to the file. This parameter is mandatory if the data set referenced by the file is a keyed BDAM data set. It must not be coded for other files.

NOEXCTL
Records are not to be placed under exclusive control when a read for update is requested.

If you do not specify NOEXCTL, BDAM exclusive control is provided by default. This provides integrity in the system. For BDAM, you may specify LOG=YES with SERVREQ=NOEXCTL. This requests only a CICS enqueue and suppress the BDAM exclusive control, thus providing CICS integrity for the update only until a syncpoint.

Note: The CICS enqueue is at the record level within the CICS region, and lasts until a syncpoint, whereas the BDAM exclusive control operates on a physical block, is system-wide, and lasts only until the update is complete.

READ
Records in this file can be read. READ is assumed, if you specify BROWSE or UPDATE.

UPDATE
Records in this file can be changed.

SRCHM=number
Code this if multiple track search for keyed records is to be provided. This operand is applicable only to BDAM keyed data sets.

number
The number of tracks or blocks to be searched. The default is 0.

VERIFY=YES
Code this if you want to check the parity of disk records after they are written. If this operand is omitted, records are not verified after a write request.

Summary table

This section is intended to help you use the DFHFCT TYPE=FILE macro to define your files. Each TYPE=FILE instruction describes the characteristics of the file, and of the data set referenced by the file.

Table 26. DFHFCT TYPE=FILE instructions for BDAM files

	Blocked with key	Blocked without key	Unblocked with key	Unblocked without key
BLKKEYL	R		R	
SRCHM	O		O	
VERIFY	O	O	O	O
RELTYPE	R[1]	R[1]	R[1]	R[1]
LRECL	R	R	R	R
BLKSIZE	R[3]	R	R[2]	R
KEYLEN	R[5]			
RKP	R[4]		R[4]	

Table 26. DFHFCT TYPE=FILE instructions for BDAM files (continued)

	Blocked with key	**Blocked without key**	**Unblocked with key**	**Unblocked without key**
RECFORM	O	O	O	O
FILSTAT	O	O	O	O
SERVREQ	R[6]	O	R[6]	O

Notes:

R Required

O Optional

1. Required if relative type addressing is to be used.
2. If SERVREQ=BROWSE or SERVREQ=ADD, this value must be BLKSIZE + BLKKEYL for unblocked records.
3. If SERVREQ=BROWSE or SERVREQ=ADD, this value must be (LRECL x blocking factor) + BLKKEYL for blocked records.
4. Required if key exists within logical records.
5. Required if deblocking by key for BDAM.
6. SERVREQ=KEY is required.

DFHFCT example

Figure 72 illustrates the coding required to create an FCT entry for a BDAM file.

```
DFHFCT TYPE=FILE,                                   *
       FILE=DAM83,                                  *
       ACCMETH=BDAM,                                *
       SERVREQ=(READ,BROWSE,KEY),                   *
       BLKSIZE=172,                                 *
       RECFORM=(FIXED,BLOCKED),                     *
       LRECL=86,                                    *
       RELTYPE=HEX,                                 *
       KEYLEN=6,                                    *
       BLKKEYL=6,                                   *
       RKP=0,                                       *
       FILSTAT=(ENABLED,OPENED)
```

Figure 72. File control table example—BDAM file

Chapter 52. MCT—monitoring control table

The monitoring control table (MCT) defines the user data fields in CICS monitoring performance class records, and describes how they are to be manipulated at event monitoring points (EMPs). It also controls which system-defined performance class data fields are recorded. See the *CICS Performance Guide* for details of the MCT and performance.

The MCT is required only if:
- You invoke EMPs in your application programs
- You need to exclude specific system-defined fields from being recorded
- You want to use monitoring resource classes.
- You want to collect additional monitoring performance data for the resource managers used by your transaction.

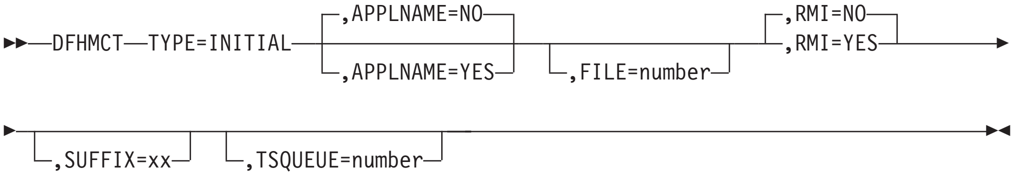
If no MCT is present in the CICS region, CICS assumes the following defaults:
- The performance, transaction resource, and exception monitoring classes are available.
- All CICS system-defined data fields are collected.

In your application programs, you can invoke EMPs using the EXEC CICS MONITOR command.

The MCT consists of the following macro instructions:
- Control section—DFHMCT TYPE=INITIAL
- User event monitoring points—DFHMCT TYPE=EMP
- Control data recording—DFHMCT TYPE=RECORD
- End of monitoring control table—DFHMCT TYPE=FINAL (described in "TYPE=FINAL (end of table)" on page 497)

Control section—DFHMCT TYPE=INITIAL

The control section name for the MCT is established by the DFHMCT TYPE=INITIAL macro. This macro also creates the necessary linkage editor control statements for subsequent link-editing.



For general information about TYPE=INITIAL macros, including the use of the SUFFIX operand, see "TYPE=INITIAL (control section)" on page 496.

APPLNAME={NO∨YES}
This option specifies that you want to use the application naming support provided by CICS monitoring.

Application naming is an enabling function that allows application programs to invoke special CICS event monitoring points. Data collected at these CICS-generated EMPs can be used by any CICS monitoring software package.

NO Application naming support is not enabled in the CICS region and the application naming event monitoring points, DFHAPPL.1 and DFHAPPL.2, are not generated.

YES Application naming support is enabled in the CICS region. When you assemble the MCT, CICS generates the application naming event monitoring points (DFHAPPL.1 and DFHAPPL.2). Note that the monitoring data moved at these EMPs by an EXEC CICS MONITOR command invoking these application naming EMPs is preserved until task termination, or until changed by another invocation of the EMPS by a subsquent EXEC CICS MONITOR command. See the MONITOR command in the *CICS Application Programming Reference* for more information.

The application naming (DFHAPPL) EMPs are created by CICS as if defined with the following TYPE=EMP macro parameters:

```
DFHMCT TYPE=EMP,CLASS=PERFORM,                                    X
               ID=(DFHAPPL.1),FIELD=(1,APPLNAME)                  X
               PERFORM=(MOVE(0,4))
DFHMCT TYPE=EMP,CLASS=PERFORM,                                    X
               ID=(DFHAPPL.2),                                    X
               PERFORM=(MOVE(4,8))
```

For more information about how to use the application naming event monitoring points in your applications, see the *CICS Customization Guide*.

FILE={8∨number}

This option specifies the maximum number of files for which you want CICS to perform transaction resource monitoring. This option is applicable only if transaction resource monitoring is enabled, either by specifying MNRES=ON as a system initialization parameter, or by enabling it dynamically using an EXEC CICS, or CEMT, SET MONITOR command.

CICS standard monitoring performance class data includes totals for *all* files accessed by a transaction. Transaction resource monitoring, on the other hand, collects information about individual files, up to the number specified. The data collected is:

File name
Number and total time of file **get** requests
Number and total time of file **put** requests
Number and total time of file **browse** requests
Number and total time of file **add** requests
Number and total time of file **delete** requests
Total number and total time of all requests against the file
File access method request count
File I/O wait time and number of waits
RLS-mode file I/O wait time
Coupling facility data table (CFDT) I/O wait time

8 This is the default, and means that CICS is to perform transaction resource monitoring for a maximum of 8 files.

number
Specifies the maximum number of files, in the range 0 through 64, for

which CICS is to perform transaction resource monitoring. CICS collects monitoring performance data at the resource level for each file accessed by a transaction, up to the maximum specified by *number*. If the transaction accesses more files than the number specified, any files over the maximum are ignored, but a flag is set to indicate that the transaction has exceeded the file limit.

If you specify FILE=0, specifying MNRES=YES either as a system initialization parameter or dynamically while CICS is running has no effect, and transaction resource monitoring data is not collected for files.

RMI={NO∨YES}

This option specifies whether you want additional monitoring performance class data to be collected for the resource managers used by your transactions.

NO This is the default and specifies that you do not want monitoring performance data for the resource managers used by your transactions.

YES Specifies that you do want additional monitoring performance data to be collected for the resource managers used by your transactions.

For information about the data that is collected see the *CICS Performance Guide*

TSQUEUE={4∨number}

This option specifies the maximum number of temporary storage queues for which you want CICS to perform transaction resource monitoring. This option is applicable only if transaction resource monitoring is enabled, either by specifying MNRES=ON as a system initialization parameter, or by enabling it dynamically using an EXEC CICS, or CEMT, SET MONITOR command.

CICS standard monitoring performance class data includes totals for *all* temporary storage queues accessed by a transaction. Transaction resource monitoring, on the other hand, collects information about individual temporary storage queues, up to the number specified.

4 This is the default, and means that CICS is to perform transaction resource monitoring for a maximum of 4 temporary storage queues.

number

Specifies the maximum number of temporary storage queues, in the range 0 through 32, for which CICS is to perform transaction resource monitoring. CICS collects monitoring performance data at the resource level for each temporary storage queue accessed by a transaction, up to the maximum specified by *number*. If the transaction accesses more temporary storage queues than the number specified, any temporary storage queues over the maximum are ignored, but a flag is set to indicate that the transaction has exceeded the temporary storage queue limit.

If you specify TSQUEUE=0, specifying MNRES=YES either as a system initialization parameter or dynamically while CICS is running has no effect, and transaction resource monitoring data is not collected for temporary storage queues. The data collected is:

Temporary storage queue name
Number and total time of temporary storage queue **get** requests
Number and total time of temporary storage queue **put** requests to auxiliary t
Number and total time of temporary storage queue **put** requests to main temp
Total number and total time of all requests against the temporary storage queu
Total length of all the items obtained from temporary storage

Total length of all the items written to auxiliary temporary storage
Total length of all the items written to main temporary storage
Temporary storage I/O wait time and number of waits
Shared temporary storage I/O wait time and number of waits

Note: The combined length of all the transaction resource monitoring data must not exceed 32244 bytes.

User event monitoring points—DFHMCT TYPE=EMP

The DFHMCT TYPE=EMP macro allows you to specify how the user data fields in performance class data records are to be added to or changed at each user event monitoring point. One TYPE=EMP macro must be coded for each user EMP at which user data is required.

The TYPE=EMP macro must be coded between the TYPE=INITIAL macro and the first TYPE=RECORD macro instruction.

```
►►──DFHMCT──TYPE=EMP──,CLASS=PERFORM──,ID=──┬─number──────────┬──────────────────►
                                            ├─PP,number───────┤
                                            └─entryname.number┘

►──┬────────────────────────────────────────┬────────────────────────────────────►
   └─,CLOCK=(number,name1─┬───────────┬─)─┘
                          └─,name2,...─┘

►──┬────────────────────────────────────────┬──┬────────────────┬────────────────►
   └─,COUNT=(number,name1─┬───────────┬─)─┘  └─,FIELD=(1,name)─┘
                          └─,name2,...─┘

►──┬──────────────────────────────┬──────────────────────────────────────────────►◄
   └─,PERFORM=(option─┬──────┬─)─┘
                      └─,...─┘
```

TYPE=EMP
Indicates that this macro defines the user data to be collected at a user event monitoring point.

CLASS=PERFORM
Code this with the monitoring classes for which you want user data to be collected at this user EMP. The value PERFORM must be coded. The corresponding PERFORM operand must also be coded.

ID={number∨(PP,number)∨entryname.number}
Code this with the identifier of the user event monitoring point at which the user data defined in this macro is to be collected. Note that if one of the forms *number* or (PP,*number*) is coded, a default entry name, “USER”, is provided.

number
A decimal integer in the range 1 through 255. Identification numbers between 1 and 199 are available for user EMPs. Numbers between 200 and 255 are reserved for IBM program product EMPs and should be coded if you want to collect user data at EMPs defined in the code of IBM program products.

(PP,number)

An IBM program product EMP identification number. It is equivalent to specifying an ID value of 199 + number. The value of *number* is a decimal integer in the range 1 through 56.

entryname.number

Allows multiple use of *number*, a decimal integer in the range 1 through 255. Thus 'UNIQUE.3', 'DSN.3', and '3' are three different EMPs. A maximum of 98 entrynames can be specified against any particular number. Furthermore, any count, clock, or byte-offset referred to by one of them is a different object from that referred to by any other.

In the following descriptions, any reference to a constant means a hexadecimal constant of up to eight hexadecimal digits; any shorter string is padded on the left with zeros. For example, to add or subtract decimal 14, the constant would be coded as 0000000E or just E (no quotation marks are required).

Any reference to the fields DATA1 and DATA2 means the two binary fullwords supplied by the user EMP coded in the application program. These are specified by the DATA1 and DATA2 operands of the EXEC CICS MONITOR command for defining user EMPs. Depending on the options coded, the DATA1 and DATA2 fields can be interpreted as numbers, masks for performing logical operations, or pointers to further information.

Any reference to a number means a decimal integer in the range defined in the description of the option.

CLOCK=(number,name1[,name2,...])

Assigns an informal name to one or more clocks. The informal name of any clock appears in its dictionary entry and is available to a postprocessor for use as, for example, a column heading.

The character string *name1* is assigned to the clock specified by *number* at MCT generation. If specified, *name2* is assigned to the clock *number*+1. Similarly, any subsequent names are assigned to subsequent clocks. Any clock not named by this option receives the entry name value from the ID operand (the default is USER).

Number must be in the range 1 through 256. The names specified must each be a character string up to eight characters long. If any string contains one or more blanks or commas, it must be enclosed in quotes.

COUNT=(number,name1[,name2,...])

Assigns an informal name to one or more count fields. The informal name of any count field appears in its dictionary entry and is available to a postprocessor for use as, for example, a column heading.

The character string *name1* is assigned to the count field specified by number at MCT generation. If specified, *name2* is assigned to the count field *number*+1. Similarly, any subsequent names are assigned to subsequent count fields. Any count fields not named by this option receive the entry name value from the ID operand (the default is USER).

Number must be in the range 1 through 256. The names specified must each be a character string up to eight characters long. If any string contains one or more blanks or commas, it must be enclosed in quotes.

FIELD=(1,name)

Assigns an informal name to the user byte-string field. This appears in its dictionary entry and is available to a postprocessor for use as, for example, a column heading.

Name must be a character string up to 8 characters long. If it contains one or more blanks or commas, it must be enclosed in quotes.

PERFORM=(option[,...])

Code this operand when CLASS=PERFORM is specified. It specifies that information is to be added to or changed in the user fields of the performance class data record at this EMP.

The user fields for each user distinguished by a separate entry name in the ID operand can comprise:
1. Up to 256 counters
2. Up to 256 clocks, each made up of a 4-byte accumulator and 4-byte count
3. A byte string of up to 8192 bytes.

Note: If the combined sizes of the objects (clocks, counts, and fields) implied in the specified options exceed 16384 bytes, assembly-time errors occur. You can avoid this by using fewer objects, either by collecting less data, or by clustering references to clocks and counts to avoid implied, but unused, objects.

Note: When you define user data to be collected at a user event monitoring point, this extends the size of all CICS performance class monitoring records. Each CICS monitoring record is the same size as the largest record; bear this in mind when specifying user data fields.

Actions are performed on the user fields according to the options specified.

PERFORM can be abbreviated to PER. Valid options for the PERFORM operand are:

ADDCNT(number,{constant∨DATA1∨DATA2})

The value of the user count field specified by *number* is to be incremented by *constant* or by the value of the field DATA1 or DATA2. *Number* is a decimal integer in the range 1 through 256.

EXCNT(number,{constant∨DATA1∨DATA2})

A logical exclusive OR operation is to be performed on the value of the user count field specified by *number*, using *constant* or the value of the field DATA1 or DATA2. *Number* is a decimal integer in the range 1 through 256.

MLTCNT(number1,number2)

A series of adjacent user count fields are to be updated by adding the values contained in adjacent fullwords in an area addressed by the DATA1 field. To use this option, both the DATA1 and DATA2 fields must be passed from the user EMP.

The user count fields that are to be updated start at the field specified by *number1*. The number of user count fields that are updated is the smaller of the values of *number2* and the DATA2 field. If the DATA2 field is zero, the value of *number2* is used. The series of adjacent fullwords used to add into the user count fields starts at the address specified in the DATA1 field. Successive fullwords are added into successive user count fields.

Number1 and *number2* are decimal integers in the range 1 through 256. The number of user counts generated is (*number1* + *number2* - 1). This value must also be in the range 1 through 256.

Note: Only one of the MLTCNT and MOVE options can be used in each DFHMCT TYPE=EMP macro.

MOVE(number3,number4)
A string of data is to be moved into the user byte-string field. To use this option, both the DATA1 and DATA2 fields must be passed from the user EMP.

The user byte-string field is updated starting at the offset specified by *number3*. The data to be moved starts at the address supplied in the DATA1 field. The maximum length of data that can be moved is given by *number4* (in bytes), and the actual length of data that is to be moved is given by the value of the DATA2 field. If the value of DATA2 is zero, the length of the data given by *number4* is moved.

Number3 is a decimal integer in the range 0 to 8191, and *number4* is a decimal integer in the range 1 to 8192. The maximum length of the user character field is (*number3* + *number4*), and must be in the range 1 to 8192.

Note: Only one of the MLTCNT and MOVE options can be used in each DFHMCT TYPE=EMP macro instruction.

NACNT(number,{constant∨DATA1∨DATA2})
A logical AND operation is to be performed on the value of the user count field specified by *number*, using *constant* or the value of the field DATA1 or DATA2. *Number* is a decimal integer in the range 1 through 256.

ORCNT(number,{constant∨DATA1∨DATA2})
A logical inclusive OR operation is to be performed on the value of the user count field specified by *number*, using *constant* or the value of the field DATA1 or DATA2. *Number* is a decimal integer in the range 1 through 256.

PCLOCK(number)
The clock specified by number is to be stopped. The 4-byte count in the user clock field is flagged to indicate that the clock is now stopped. The accumulator is set to the sum of its contents before the previous SCLOCK and the elapsed period between that SCLOCK and this PCLOCK. *Number* is a decimal integer in the range 1 through 256.

PCPUCLK(number)
This option performs the same function as PCLOCK, but uses the CPU-time of the CICS main task instead of elapsed time.

SCLOCK(number)
The clock specified by *number* is to be started. The value of the 4-byte count in the user clock field is incremented by 1 and flagged to show its running state. *Number* is a decimal integer in the range 1 through 256.

SCPUCLK(number)
This option performs the same function as SCLOCK, but uses the CPU-time of the CICS main task instead of elapsed time.

SUBCNT(number,{constant∨DATA1∨DATA2})
The value of the user count field specified by *number* is to be decremented by *constant* or by the value of the field DATA1 or DATA2. *Number* is a decimal integer in the range 1 through 256.

DELIVER
Performance class data accumulated for this task up to this point is delivered to the monitoring buffers. Any running clocks are stopped. The performance class section of the monitoring area for this task is reset to X'00', except for the key fields (transid, termid) and any data stored as a result of invoking the DFHAPPL special EMPs. Any clocks that were

stopped by this option are restarted from zero for the new measurement period. The “high-water-mark” fields are reset to their current values.

Control data recording—DFHMCT TYPE=RECORD

The DFHMCT TYPE=RECORD macro identifies the performance class data fields which have been selected for monitoring.

```
►►──DFHMCT──TYPE=RECORD──,CLASS=PERFORM──┬───────────────────────────────┬──►
                                          └─,EXCLUDE=──┬─ALL────────────┬─┘
                                                       └─(──n1─┬─────┬─)┘
                                                               └─,...┘

►──┬─────────────────────────┬──────────────────────────────────────────►◄
   └─,INCLUDE=(─m1─┬─────┬─)─┘
                   └─,...┘
```

TYPE=RECORD
Indicates that monitoring data for selected performance class data fields will be recorded.

CLASS=PERFORM
Code this if performance class data fields is to be recorded. You can abbreviate PERFORM to PER.

EXCLUDE={ALL∨(n1[,...])}
Code this to prevent one or more CICS fields from being reported by the monitoring facility. By default, all documented performance class fields are reported.

The EXCLUDE operand is always honored before the INCLUDE operand, regardless of the order in which they are coded. (The INCLUDE operand is only relevant when the EXCLUDE operand is coded.)

ALL
This prevents all fields that are eligible for exclusion from being reported. Note that the following fields cannot be excluded:

1, 2, 4, 5, 6, and 89.

You can use the INCLUDE operand at the same time as EXCLUDE=ALL if you want to include some fields but exclude the majority.

Table 27 on page 541 shows the fields that are eligible for exclusion. Each field has a group name associated with it, which identifies the group of fields to which it belongs. Each field also has its own numeric field identifier.

To exclude a group of fields you code the name of the group (a character string) as *n1*, for example, `EXCLUDE=(DFHTASK)`.

To exclude a single field you code the numeric identifier of the field as *n1*, for example, `EXCLUDE=(98,70)`.

Note: Do not code leading zeros on numeric identifiers. Do not code numeric identifiers of fields that are ineligible for exclusion.

You can code combinations of names and numeric identifiers, for example, `EXCLUDE=(DFHFILE,DFHTERM,112,64)`.

Table 27. This table shows the data groups and fields that can be excluded/included

Group Name	Field Id	Description
DFHCBTS	200	CICS BTS process name
DFHCBTS	201	CICS BTS process type
DFHCBTS	202	CICS BTS process id
DFHCBTS	203	CICS BTS activity id
DFHCBTS	204	CICS BTS activity name
DFHCBTS	205	CICS BTS run process/activity synchronous count
DFHCBTS	206	CICS BTS run process/activity asynchronous count
DFHCBTS	207	CICS BTS link process/activity count
DFHCBTS	208	CICS BTS define process count
DFHCBTS	209	CICS BTS define activity count
DFHCBTS	210	CICS BTS reset process/activity count
DFHCBTS	211	CICS BTS suspend process/activity count
DFHCBTS	212	CICS BTS resume process/activity count
DFHCBTS	213	CICS BTS delete activity or cancel process/activity request count
DFHCBTS	214	CICS BTS acquire process/activity request count
DFHCBTS	215	CICS BTS total process/activity request count
DFHCBTS	216	CICS BTS delete/get/put process container count
DFHCBTS	217	CICS BTS delete/get/put activity container count
DFHCBTS	218	CICS BTS total process/activity container request count
DFHCBTS	219	CICS BTS retrieve reattach request count
DFHCBTS	220	CICS BTS define input event request count
DFHCBTS	221	CICS BTS timer associated event requests count
DFHCBTS	222	CICS BTS total event related request count
DFHCHNL	321	Number of CICS requests for channel containers
DFHCHNL	322	Number of browse requests for channel containers
DFHCHNL	323	Number of GET CONTAINER requests for channel containers
DFHCHNL	324	Number of PUT CONTAINER requests for channel containers
DFHCHNL	325	Number of MOVE CONTAINER requests for channel containers
DFHCHNL	326	Length of data in the containers of all GET CONTAINER CHANNEL commands
DFHCHNL	327	Length of data in the containers of all PUT CONTAINER CHANNEL commands
DFHCICS	25	CICS OO foundation class request count
DFHCICS	103	Transaction exception wait time
DFHCICS	112	Performance record type
DFHCICS	130	Transaction routing sysid
DFHCICS	131	Performance record count
DFHCICS	167	MVS Workload Manager Service Class name
DFHCICS	168	MVS Workload Manager Report Class name
DFHDATA	179	IMS (DBCTL) request count
DFHDATA	180	DB2 request count
DFHDATA	186	IMS (DBCTL) wait time
DFHDATA	187	DB2 Readyq wait time
DFHDATA	188	DB2 Connection wait time
DFHDATA	189	DB2 wait time
DFHDEST	41	TD get count
DFHDEST	42	TD put count
DFHDEST	43	TD purge count

Table 27. This table shows the data groups and fields that can be excluded/ included (continued)

Group Name	Field Id	Description
DFHDEST	91	TD total count
DFHDEST	101	TD I/O wait time
DFHDOCH	226	Document handler Create count
DFHDOCH	227	Document handler Insert count
DFHDOCH	228	Document handler Set count
DFHDOCH	229	Document handler Retrieve count
DFHDOCH	230	Document handler Total count
DFHDOCH	240	Document handler total created document length
DFHEJBS	311	CorbaServer for which the request processor instance is handling requests
DFHEJBS	312	Number of enterprise bean activations that have occurred in this request processor
DFHEJBS	313	Number of enterprise bean passivations that have occurred in this request processor
DFHEJBS	314	Number of enterprise bean creation calls that have occurred in this request processor
DFHEJBS	315	Number of enterprise bean removal calls that have occurred in this request processor
DFHEJBS	316	Number of enterprise bean method calls executed in this request processor
DFHEJBS	317	Total for this request processor of fields 312–316
DFHFEPI	150	FEPI allocate count
DFHFEPI	151	FEPI receive count
DFHFEPI	152	FEPI send count
DFHFEPI	153	FEPI start count
DFHFEPI	154	FEPI CHARS sent
DFHFEPI	155	FEPI CHARS received
DFHFEPI	156	FEPI suspend time
DFHFEPI	157	FEPI allocate time-out count
DFHFEPI	158	FEPI receive time-out count
DFHFEPI	159	FEPI total count
DFHFILE	36	FC get count
DFHFILE	37	FC put count
DFHFILE	38	FC browse count
DFHFILE	39	FC add count
DFHFILE	40	FC delete count
DFHFILE	63	FC I/O wait time
DFHFILE	70	FC access-method count
DFHFILE	93	FC total count
DFHFILE	174	RLS FC I/O wait time
DFHFILE	175	RLS File request CPU (SRB) time
DFHFILE	176	CFDT I/O wait time
DFHJOUR	10	Journal I/O wait time
DFHJOUR	58	Journal write count
DFHJOUR	172	Log stream write count
DFHMAPP	50	BMS MAP count
DFHMAPP	51	BMS IN count
DFHMAPP	52	BMS OUT count
DFHMAPP	90	BMS total count
DFHPROG	55	Program LINK count
DFHPROG	56	Program XCTL count
DFHPROG	57	Program LOAD count

Table 27. This table shows the data groups and fields that can be excluded/ included (continued)

Group Name	Field Id	Description
DFHPROG	71	Program name
DFHPROG	72	Program LINK_URM count
DFHPROG	73	Program DPL count
DFHPROG	113	Original abend code
DFHPROG	114	Current abend code
DFHPROG	115	Program load time
DFHPROG	286	Length of data in the containers of all DPL requests with the CHANNEL option
DFHPROG	287	Length of data in the containers of all DPL RETURN CHANNEL commands
DFHPROG	306	Number of local LINK requests with CHANNEL option
DFHPROG	307	Number of XCTL requests with CHANNEL option
DFHPROG	308	Number of DPL requests with CHANNEL option
DFHPROG	309	Number of remote RETURN requests with CHANNEL option
DFHPROG	310	Length of data in the containers of all remote RETURN CHANNEL commands
DFHSOCK	241	Inbound socket I/O wait time
DFHSOCK	242	Bytes encrypted for secure socket
DFHSOCK	243	Bytes decrypted for secure socket
DFHSOCK	244	Client IP address
DFHSOCK	245	TCP/IP service name
DFHSOCK	246	TCP/IP service port number
DFHSOCK	289	Socket extract request count
DFHSOCK	290	Create non-persistent socket request count
DFHSOCK	291	Create persistent socket request count
DFHSOCK	292	Non-persistent socket high-water-mark
DFHSOCK	293	Persistent socket high-water-mark
DFHSOCK	294	Socket receive request count
DFHSOCK	295	Socket characters received
DFHSOCK	296	Socket send request count
DFHSOCK	297	Socket characters sent
DFHSOCK	298	Socket total request count
DFHSOCK	299	Outbound socket I/O wait time
DFHSOCK	301	Inbound socket receive request count
DFHSOCK	302	Inbound socket characters received
DFHSOCK	303	Inbound socket send request count
DFHSOCK	304	Inbound socket characters sent
DFHSTOR	33	User-storage high-water-mark (UDSA)
DFHSTOR	54	User-storage get-count (UDSA)
DFHSTOR	87	Program-storage high-water-mark - total
DFHSTOR	95	User-storage-occupancy (bytes-ms) (UDSA)
DFHSTOR	105	User-storage get-count–above 16MB line (EUDSA)
DFHSTOR	106	User-storage high-water-mark–above 16MB line (EUDSA)
DFHSTOR	107	User-storage-occupancy (bytes-ms)–above 16MB line (EUDSA)
DFHSTOR	108	Program-storage high-water-mark–below 16MB line
DFHSTOR	116	User-storage high-water-mark–below 16MB line (CDSA)
DFHSTOR	117	User-storage get-count–below 16MB line (CDSA)

Table 27. This table shows the data groups and fields that can be excluded/ included (continued)

Group Name	Field Id	Description
DFHSTOR	118	User-storage-occupancy (bytes-ms)–below 16MB line (CDSA)
DFHSTOR	119	User-storage high-water-mark–above 16MB line (ECDSA)
DFHSTOR	120	User-storage get-count–above 16MB line (ECDSA)
DFHSTOR	121	User-storage-occupancy (bytes-ms)–above 16MB line (ECDSA)
DFHSTOR	122	Program-storage high-water-mark (ERDSA)
DFHSTOR	139	Program-storage high-water-mark–above 16MB line
DFHSTOR	142	Program-storage high-water-mark (ECDSA)
DFHSTOR	143	Program-storage high-water-mark (CDSA)
DFHSTOR	144	Shared-storage getmain-count–below 16MB (CDSA and SDSA)
DFHSTOR	145	Shared-storage bytes getmained–below 16MB (CDSA and SDSA)
DFHSTOR	146	Shared-storage freemained–below 16MB (CDSA and SDSA)
DFHSTOR	147	Shared-storage getmain-count–above 16MB (ECDSA and ESDSA)
DFHSTOR	148	Shared-storage bytes getmained–above 16MB (ECDSA and ESDSA)
DFHSTOR	149	Shared-storage bytes freemained–above 16MB (ECDSA and ESDSA)
DFHSTOR	160	Program-storage high-water-mark (SDSA)
DFHSTOR	161	Program-storage high-water-mark (ESDSA)
DFHSTOR	162	Program-storage high-water-mark (RDSA)
DFHSYNC	60	Sync point count
DFHSYNC	173	Sync point elapsed time
DFHSYNC	177	CFDT server syncpoint wait time
DFHSYNC	196	Syncpoint delay time
DFHSYNC	199	OTS indoubt wait time
DFHTASK	7	User-task dispatch time
DFHTASK	8	User-task CPU time
DFHTASK	14	User-task suspend time
DFHTASK	31	Task number
DFHTASK	59	IC put/initiate count
DFHTASK	64	Error flag field
DFHTASK	65	Number of local START requests with CHANNEL option
DFHTASK	66	IC total count
DFHTASK	82	Transaction group id
DFHTASK	97	Network name of the originating terminal or system
DFHTASK	98	Unit-of-work id on the originating system
DFHTASK	102	User-task wait-for-dispatch time
DFHTASK	109	Transaction priority
DFHTASK	123	Task global ENQ delay time
DFHTASK	124	3270 Bridge transaction id
DFHTASK	125	First dispatch delay time
DFHTASK	126	First dispatch delay time due to TRANCLASS
DFHTASK	127	First dispatch delay due to MXT
DFHTASK	128	Lock manager delay time
DFHTASK	129	Task ENQ delay time

Table 27. This table shows the data groups and fields that can be excluded/ included (continued)

Group Name	Field Id	Description
DFHTASK	132	Recovery manager unit-of-work id
DFHTASK	163	Transaction facility name
DFHTASK	164	Transaction flags
DFHTASK	166	Transaction class name
DFHTASK	170	Resource Manager Interface–elapsed time
DFHTASK	171	Resource Manager Interface–suspend time
DFHTASK	181	EXEC CICS WAIT EXTERNAL wait time
DFHTASK	182	EXEC CICS WAITCICS and WAIT EVENT wait time
DFHTASK	183	Interval Control delay time
DFHTASK	184	“Dispatch Wait” wait time
DFHTASK	190	RRMS/MVS unit-of-recovery id (URID)
DFHTASK	191	RRMS/MVS wait time
DFHTASK	192	Request receiver wait time
DFHTASK	193	Request processor wait time
DFHTASK	194	OTS Transaction id (Tid)
DFHTASK	195	CICS BTS run process/activity synchronous wait time
DFHTASK	249	User-task QR TCB wait-for-dispatch time
DFHTASK	250	CICS MAXOPENTCBS delay time
DFHTASK	251	CICS TCB attach count
DFHTASK	252	User-task peak open TCB count
DFHTASK	253	CICS JVM elapsed time
DFHTASK	254	CICS JVM suspend time
DFHTASK	255	User-task QR TCB dispatch time
DFHTASK	256	User-task QR TCB CPU Time
DFHTASK	257	User-task MS TCB dispatch time
DFHTASK	258	User-task MS TCB CPU Time
DFHTASK	259	User-task L8 TCB CPU Time
DFHTASK	260	User-task J8 TCB CPU Time
DFHTASK	261	User-task S8 TCB CPU Time
DFHTASK	262	User-task key 8 TCB dispatch time
DFHTASK	263	User-task key 8 TCB CPU time
DFHTASK	264	User-task key 9 TCB dispatch time
DFHTASK	265	User-task key 9 TCB CPU time
DFHTASK	267	User-task J9 TCB CPU Time
DFHTASK	268	User-task TCB mismatch wait time
DFHTASK	269	User-task RO TCB dispatch time
DFHTASK	270	User-task RO TCB CPU Time
DFHTASK	273	CICS JVM initialize elapsed time
DFHTASK	275	CICS JVM reset elapsed time
DFHTASK	277	CICS MAXJVMTCBS delay time
DFHTASK	279	MVS storage constraint delay time
DFHTASK	285	3270 bridge partner wait time
DFHTASK	345	Length of data in the containers of all locally-executed START CHANNEL requests
DFHTASK	346	Number of interval control START CHANNEL requests to be executed on remote systems
DFHTASK	347	Length of data in the containers of all remotely-executed START CHANNEL requests
DFHTEMP	11	TS I/O wait time
DFHTEMP	44	TS get count
DFHTEMP	46	TS put auxiliary count
DFHTEMP	47	TS put main count

Table 27. This table shows the data groups and fields that can be excluded/ included (continued)

Group Name	Field Id	Description
DFHTEMP	92	TS total count
DFHTEMP	178	Shared TS I/O wait time
DFHTERM	9	TC I/O wait time
DFHTERM	34	TC principal facility input messages
DFHTERM	35	TC principal facility output messages
DFHTERM	67	TC alternate facility input messages
DFHTERM	68	TC alternate facility output messages
DFHTERM	69	TC allocate count
DFHTERM	83	TC principal facility CHARS input
DFHTERM	84	TC principal facility CHARS output
DFHTERM	85	TC alternate facility CHARS input
DFHTERM	86	TC alternate facility CHARS output
DFHTERM	100	IR I/O wait time
DFHTERM	111	VTAM terminal LU name
DFHTERM	133	TC I/O wait time - LU6.1
DFHTERM	134	TC I/O wait time - LU6.2
DFHTERM	135	TC alternate facility input messages - LU6.2
DFHTERM	136	TC alternate facility output messages - LU6.2
DFHTERM	137	TC alternate facility CHARS input - LU6.2
DFHTERM	138	TC alternate facility CHARS output - LU6.2
DFHTERM	165	Terminal information
DFHTERM	169	Terminal session connection name
DFHTERM	197	Network qualified name network ID
DFHTERM	198	Network qualified name network name
DFHWEBB	224	Web read request count
DFHWEBB	225	Web write request count
DFHWEBB	231	Web receive request count
DFHWEBB	232	Web characters received
DFHWEBB	233	Web send request count
DFHWEBB	234	Web characters sent
DFHWEBB	235	Web total request count
DFHWEBB	236	Web header or formfield read request count
DFHWEBB	237	Web header or formfield write request count
DFHWEBB	238	Web extract request count
DFHWEBB	239	Web browse request count
DFHWEBB	331	Web header read request count, client
DFHWEBB	332	Web header write request count, client
DFHWEBB	333	Web client receive or converse request count
DFHWEBB	334	Web characters received, client
DFHWEBB	335	Web client send or converse request count
DFHWEBB	336	Web characters sent, client
DFHWEBB	337	Web client parse URL request count
DFHWEBB	338	Web client browse request count

INCLUDE=(m1[,...])

Code this to enable one or more CICS fields to be reported by the monitoring facility. By default, all documented performance class fields are reported, so this operand is relevant only if you code the EXCLUDE operand in the same macro.

The fields that are eligible to be coded for inclusion on this operand are the same as those that are eligible for exclusion. (See the description of the

EXCLUDE operand.) Each field has a numeric field identifier associated with it. To include a field, you code *m1* as the numeric identifier of the field. You can code multiple numeric identifiers.

Note: Do not code leading zeros on numeric identifiers. Do not code numeric identifiers of fields that are ineligible for exclusion, and that are therefore included by default

.

The EXCLUDE operand is always honored first. The INCLUDE operand, if coded, then overrides some of its effects. For example, coding:

```
EXCLUDE=DFHFILE,
INCLUDE=(37,93)
```

would secure the collection and reporting of file control PUTs and the total number of file control requests, while file control browse count and other file control fields would be excluded.

If you want to exclude the majority of fields, but include a few, you can code, for example:

```
EXCLUDE=ALL,
INCLUDE=(DFHTERM,97,98)
```

This is more convenient than coding individually all the fields you want to exclude.

CICSTS31.SDFHSAMP provides the following sample monitoring control tables:

- For terminal-owning region (TOR)—DFHMCTT$
- For application-owning region (AOR)—DFHMCTA$
- For an application-owning region (AOR) with DBCTL—DFHMCTD$
- For file-owning region (FOR)—DFHMCTF$

These samples show how to use the EXCLUDE and INCLUDE operands to reduce the size of the performance class record in order to reduce the volume of data written by CICS to SMF.

DFHMCT example

Figure 73 illustrates the coding to create a monitoring control table (MCT) for two user event monitoring points (EMPs).

```
DFHMCT   TYPE=INITIAL
DFHMCT   TYPE=EMP,                         *
         ID=180,                           *
         CLASS=PERFORM,                    *
         PERFORM=(SCLOCK(1),ADDCNT(2,1)),  *
         ACCOUNT=ADDCNT(1,1)
DFHMCT   TYPE=EMP,                         *
         ID=181,                           *
         CLASS=PERFORM,                    *
         PERFORM=PCLOCK(1)
DFHMCT   TYPE=FINAL
         END
```

Figure 73. Monitoring control table—example

Chapter 53. PLT—program list table

A program list table (PLT) contains a list of related programs. You may wish to generate several PLTs for one or more of the following reasons:

- To specify a list of programs that you wish to be executed in the second and/or third initialization stages of CICS startup. For more detail about the initialization stages, see the *CICS Recovery and Restart Guide*. For programming information about restrictions on using programs in the initialization stages, see the *CICS Customization Guide*. The selected list should be specified at initialization time by the PLTPI=*xx* system initialization parameter, where *xx* is the suffix of the PLT that contains the required list of programs.

  For convenience, the list of programs selected for execution during initialization is referred to as the 'PLTPI' list.
- To specify a list of programs that you wish to be executed during the first and/or second quiesce stages of controlled shutdown. The selected list should be specified at initialization time by the PLTSD=*xx* system initialization parameter, where *xx* is the suffix of the PLT that contains the required list of programs.

  The PLT specified in the PLTSD system initialization parameter can be overridden at shutdown time by the PLT option in the CEMT PERFORM SHUTDOWN command.

  The shutdown PLT is normally loaded as CICS is being shutdown. However, it is possible to use the same PLT for both initialization and shutdown, and under these circumstances the PLT is loaded during initialization and CICS does not need to reload it during shutdown. If this is the case and the PLT is updated while CICS is operational, a CEMT SET PROGRAM NEWCOPY command must be issued for the PLT to ensure that the updated version is used when CICS is shutdown.

  For convenience, the list of programs selected for execution during shutdown is referred to as the 'PLTSD' list.
- To specify a list of programs that you wish to have enabled or disabled as a group by a master terminal ENABLE or DISABLE command. This use of PLTs means that a master terminal operator can enable or disable a set of programs with just one command, instead of using a separate command for each program.

Any number of PLTs can be generated for the above purposes, provided that:

1. Each PLT has a unique suffix
2. Each program named in a PLT either has a program resource definition entry in the CSD file, or is capable of being autoinstalled (that is, the appropriate system initialization parameters have been specified for program autoinstall).

   Note: PLTs should not be defined as programs in the CSD.

PLTs must be placed in the DFHRPL library. However, CICS scans the LPA for phase 1 PLTPI programs if they are not already installed.

The following macros are available to define the PLT entries:

- Control section—DFHPLT TYPE=INITIAL
- Entries in program list table—DFHPLT TYPE=ENTRY
- End of Program List Table—DFHPLT TYPE=FINAL (see "TYPE=FINAL (end of table)" on page 497)

Control section—DFHPLT TYPE=INITIAL

```
►►──DFHPLT──TYPE=INITIAL──┬─────────────┬──────────────────────►◄
                          └─,SUFFIX=xx──┘
```

For general information about TYPE=INITIAL macros, including the use of the SUFFIX operand, see "TYPE=INITIAL (control section)" on page 496.

TYPE=INITIAL
Generates the PLT control section.

Note that the CSD file must define a program entry for each PLT generated.

SUFFIX=xx
Code this with the suffix character(s) that uniquely identify this particular table.

Note: The PLT suffix is referenced by:

- CEMT {INQUIRE∨SET} PROGRAM CLASS(*suffix*)
- CEMT or EXEC CICS PERFORM SHUTDOWN PLT(*suffix*)
- System initialization parameters PLTPI and PLTSD keywords.

Entries in program list table—DFHPLT TYPE=ENTRY

Entries are specified in the PLT as follows:

```
►►──DFHPLT──TYPE=ENTRY──,PROGRAM=(program──┬───────────────┬─)───────►◄
                                           └─,program,...──┘
```

TYPE=ENTRY
Indicates that one or more program names are to be listed in this table.

Note: As shown below, a TYPE=ENTRY macro is also needed to specify the PROGRAM=DFHDELIM entry.

PROGRAM=program
Code this with a program name of up to eight characters. Each program must either have a definition in the CSD file or must be capable of being autoinstalled (that is, the appropriate system initialization parameters must be specified for program autoinstall). Undefined programs before the DFHDELIM statement are system autoinstalled.

For PLTPI and PLTSD lists, only **initial** programs should be named: other programs that are linked to by initial programs should not be listed (but must be defined or be capable of being autoinstalled). For programming information about restrictions on using PLT programs during initialization, see the *CICS Customization Guide*.

```
►►──DFHPLT──TYPE=ENTRY──,PROGRAM=DFHDELIM──────────────────────────►◄
```

PROGRAM=DFHDELIM
Code this to delimit the programs to run in the first or second passes of PLTPI or PLTSD. The DFHDELIM entry is not a program—it serves as a delimiter only.

Note that:

- Programs listed **before** the PROGRAM=DFHDELIM entry in a PLTPI are executed during the **second** stage of initialization. These are to enable user exit programs needed during recovery. Define the user exit programs in the CSD file, otherwise CICS may not be able to access them after CICS initialization is complete, for example in EXEC CICS DISABLE commands. However, note that the properties defined by RDO have no effect during the second stage of initialization.

- Programs listed after the PROGRAM=DFHDELIM entry in a PLTPI are executed during the third stage of initialization. If these programs are used to enable user exits, the user exit programs must also be defined in the CSD file or must be capable of being autoinstalled.
- Programs listed before the PROGRAM=DFHDELIM entry in a PLTSD are executed during the first quiesce stage of shutdown.
- Programs listed after the PROGRAM=DFHDELIM entry in a PLTSD are executed during the second quiesce stage of shutdown.

Second stage initialization and second stage quiesce PLT programs do not require program resource definitions. If they are not defined, they are system autoinstalled (irrespective of the program autoinstall system initialization parameters). This means that the autoinstall exit is not called to allow the definition to be modified. The programs are defined with the following attributes:

```
LANGUAGE(ASSEMBLER)   STATUS(ENABLED)   CEDF(NO)
DATALOCATION(BELOW)   EXECKEY(CICS)
EXECUTIONSET(FULLAPI)
```

As a result, system autoinstalled programs have a default CONCURRENCY setting of QUASIRENT, and a default API setting of CICSAPI.

- For those threadsafe PLT programs that
  - are defined with the OPENAPI value for the API attribute, or
  - are C or C++ programs compiled with the XPLINK compiler option

  provide an appropriate resource definition, or alternatively, for Language Environment conforming programs, use the CICSVAR runtime option to set the appropriate CONCURRENCY and API values. See the *CICS Application Programming Guide*.

Third stage initialization and first stage quiesce PLT programs can be defined using program autoinstall, depending upon the program autoinstall system initialization parameters. See Chapter 43, “Autoinstalling programs, map sets, and partition sets,” on page 483 for further information. If program autoinstall is not used, these programs must have program resource definitions in the CSD file.

DFHPLT example

Figure 74 on page 552 and Figure 75 on page 552 illustrate the coding required to generate a PLT.

```
*
* LIST OF PROGRAMS TO BE EXECUTED SEQUENTIALLY DURING SYSTEM
* INITIALIZATION.
* REQUIRED SYSTEM INITIALIZATION PARAMETER: PLTPI=I1
*
   DFHPLT TYPE=INITIAL,SUFFIX=I1
*
*  The following programs are run in the first pass of PLTPI
*
   DFHPLT TYPE=ENTRY,PROGRAM=TRAQA  EXECUTED DURING 2ND INIT. PHASE
   DFHPLT TYPE=ENTRY,PROGRAM=TRAQB  (PROGRAMS SHOULD ALSO BE DEFINED
   DFHPLT TYPE=ENTRY,PROGRAM=TRAQC  BY RDO)
*
   DFHPLT TYPE=ENTRY,PROGRAM=DFHDELIM
*
*
*  The following programs are run in the second pass of PLTPI
*
   DFHPLT TYPE=ENTRY,PROGRAM=TRASA  EXECUTED DURING 3RD INIT. PHASE
   DFHPLT TYPE=ENTRY,PROGRAM=TRASB  (PROGRAMS MUST ALSO BE DEFINED
   DFHPLT TYPE=ENTRY,PROGRAM=TRASC  BY RDO)
   DFHPLT TYPE=FINAL
*
   END
```

Figure 74. PLTPI program list table—example

```
*
*
* LIST OF PROGRAMS TO BE EXECUTED SEQUENTIALLY DURING SYSTEM
* TERMINATION
* REQUIRED SYSTEM INITIALIZATION PARAMETER: PLTSD=T1
*
   DFHPLT TYPE=INITIAL,SUFFIX=T1
*
*  The following programs are run in the 1st pass of PLTSD
*
*
   DFHPLT TYPE=ENTRY,PROGRAM=TRARA  EXECUTED DURING 1st QUIESCE PHASE
   DFHPLT TYPE=ENTRY,PROGRAM=TRARB  (PROGRAMS MUST ALSO BE DEFINED
   DFHPLT TYPE=ENTRY,PROGRAM=TRARC  BY RDO)
*
   DFHPLT TYPE=ENTRY,PROGRAM=DFHDELIM
*
*
*  The following programs are run in the 2nd pass of PLTSD
*
   DFHPLT TYPE=ENTRY,PROGRAM=TRAFA  EXECUTED DURING 2nd QUIESCE PHASE
   DFHPLT TYPE=ENTRY,PROGRAM=TRAFB  (PROGRAMS MUST ALSO BE DEFINED
*                                   BY RDO)
   DFHPLT TYPE=FINAL
*
   END
```

Figure 75. PLTSD program list table—example

Chapter 54. RCT—CICS DB2 resource control table

The resource control table (RCT) controls the CICS DB2 interface.

RCTs must be migrated to online resource definitions in CICS Transaction Server for OS/390, Version 1 Release 3. The macro is only supported for migration purposes.

The RCT can be defined using the DSNCRCT macro to produce a macro table. Your RCT must be assembled using the DSNCRCT macro shipped with this release, in the SDFHMAC library, and the load library must have the format DFHRCTxx, where xx is the suffix.

This topic describes the syntax of the DSNCRCT macro and guides you through its coding.

Code the RCT as follows before the assembly.
1. The TYPE=INIT macro must be specified first, (unless preceded by TYPE=GROUP).
2. If the TYPE=COMD macro is specified, it must be second.
3. If TYPE=POOL is specified, it must be after TYPE=INIT and TYPE=COMD (if there is a COMD) and before TYPE=ENTRY.
4. The TYPE=ENTRY macro can be specified an indefinite number of times to identify specific transactions.
5. The TYPE=FINAL macro is specified last, causing the RCT to be generated.

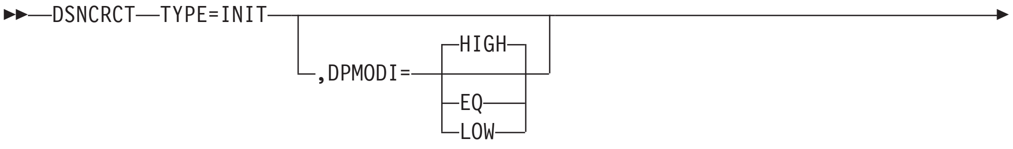
For example:

```
DSNCRCT TYPE=INIT,
DSNCRCT TYPE=COMD,[optional]
DSNCRCT TYPE=POOL,[optional]
DSNCRCT TYPE=ENTRY,[optional]
⋮
DSNCRCT TYPE=ENTRY,[optional]
DSNCRCT TYPE=FINAL
END     [assembler end statement required]
```

The RCT must be link-edited into a library that is in the DFHRPL concatenation. (In releases of CICS before CICS Transaction Server for OS/390, Version 1 Release 3, the RCT had to reside in a library in the STEPLIB concatenation).

Control section—DSNCRCT TYPE=INIT

The TYPE=INIT macro allows you to define the information required for CICS to establish its first connection to DB2 and to specify the default options for other types of the macro.



```
►──┬───────────────────────────────┬──┬──────────────────────────┬──────────►
   └─,ERRDEST=(dest1,dest2,dest3)──┘  │             ┌─AEY9───┐   │
                                      └─,PCTEROP=───┼────────┼───┘
                                                    ├─N906D──┤
                                                    └─N906───┘

►──┬────────────────────┬──┬─────────────────────────────────┬──────────────►
   └─,PLANI=plan-name───┘  └─,PLNPGMI=default-exit-name──────┘

►──┬──────────────────────────────┬──┬───────────────────────┬──┬───────────────────┬──►
   └─,PURGEC=minutes,seconds──────┘  └─,RDONAME=DB2CONN-name─┘  │          ┌─YES─┐  │
                                                                └─,ROLBI=──┼─────┼──┘
                                                                           └─NO──┘

►──┬──────────────────────────┬──┬─────────────────────────────┬────────────►
   └─,SHDDEST=destination─────┘  └─,SIGNID=authorization-id────┘

►──┬──────────────────────────────┬──┬─────────────────────┬──┬──────────────────┬──►
   │              ┌─ABEND────┐    │  │          ┌─YES──┐   │  └─,SUBID=db2-id────┘
   └─,STANDBY=────┼──────────┼────┘  └─,STRWT=──┼──────┼───┘
                  └─SQLCODE──┘                  ├─NO───┤
                                                └─AUTO─┘

►──┬──────────────┬──┬────────────────────┬──┬───────────────────┬──────────►
   └─,SUFFIX=xx───┘  └─,THRDMAX=integer───┘  │           ┌─NO──┐ │
                                             └─,TOKENI=──┼─────┼─┘
                                                         └─YES─┘

►──┬────────────────────┬──┬────────────────────────┬──────────────────────►◄
   │          ┌─YES─┐   │  │          ┌─YES──┐      │
   └─,TXIDSO=─┼─────┼───┘  └─,TWAITI=─┼──────┼──────┘
              └─NO──┘                 ├─NO───┤
                                      └─POOL─┘
```

DPMODI=HIGH|EQ|LOW
Specifies a default for the DPMODE parameter in other TYPEs of this macro.

HIGH
Specifies that subtasks can attain a higher priority than the CICS main task from which the subtask was generated. Use this option for high priority and high volume transactions.

EQ Specifies that CICS must allow for subtasks to attain equal priority.

LOW
Specifies that subtasks have a lower priority than the CICS main task priority.

ERRDEST=(dest1,dest2,dest3)
Specifies up to three CICS transient data destinations to receive unsolicited messages. For *dest1*,*dest2*,*dest3*, substitute up to three valid transient data destinations.

An asterisk can be specified as a destination. The asterisk acts as a place holder and allows later specification of a destination by the DSNC MODIFY DESTINATION command.

PCTEROP=AEY9|N906D|N906
Specifies the type of processing that is to occur following a create thread error. The error processing occurs after the SQLCA's SQLCODE field has been updated to reflect the reason for the create thread failure. The PCTEROP

parameter allows a user to specify whether a transaction dump is taken, and whether the DSNCSQL RMI associated with the transaction is disabled. This parameter can be used to allow a transaction to continue processing if a create thread error occurs. A transaction that continues after a create thread error must take corrective action to allow a new thread to be created. A SYNCPOINT ROLLBACK command must be part of the corrective action taken by the transaction before it can continue to issue SQL requests.

AEY9

When the first SQL error is detected, CICS takes a transaction dump for abend code AD2S, AD2T, or AD2U, depending on the type of error. For the first error, the transaction does not abend. For a second or subsequent SQL error, the transaction abends with abend code AD2S, AD2T, or AD2U. The transaction must be terminated and reinitialized before it is allowed to issue another SQL request.

N906D

Specifies that a transaction dump is to be taken and the DSNCSQL RMI associated with the transaction is *not* to be disabled. The transaction receives a -906 SQLCODE if another SQL is issued, unless the transaction issues SYNCPOINT ROLLBACK. SYNCPOINT without the ROLLBACK option results in an ASP7 abend.

N906

Specifies that a transaction dump is *not* to be taken and the DSNCSQL RMI associated with the transaction is *not* to be disabled. The transaction receives a -906 SQLCODE if another SQL request is issued, unless the transaction issues a SYNCPOINT ROLLBACK. SYNCPOINT without the ROLLBACK option results in an ASP7 abend.

PLANI=*plan-name*

Specifies the default plan name for any entry in the RCT that does not use dynamic plan selection. The ***plan-name*** can have 1-8 characters. Without the PLANI option, the plan name for an entry in the RCT is:

- The value for PLAN= in the TYPE=ENTRY macro
- The value for TXID= in the TYPE=ENTRY macro if PLAN= is not specified

With the PLANI option, the plan name for an entry in the RCT is:

- The value for PLAN= in the TYPE=ENTRY macro
- The value for PLANI= in the TYPE=INIT macro if PLAN= is not specified
- The value for TXID= in the TYPE=ENTRY macro if neither PLAN= nor PLANI= is specified

The PLANI option has no effect on entries that use dynamic plan selection.

PLNPGMI=*default-exit-name*

Specifies the name of the default dynamic plan exit. If one of the entries has PLNEXIT=YES, but does not supply a value for PLNPGME, this parameter is used as the exit program name for that entry.

Default: DSNCUEXT

PURGEC=*minutes,seconds*

specifies the length of the protected thread purge cycle. The maximum value for PURGEC is (59,59). The minimum is (0,30).

An unprotected thread is terminated as soon as the transaction ends (at SYNCPOINT or EOT). A protected thread is terminated after two purge cycles, which are 30 seconds by default. Normally, a protected thread remains connected for 30-60 seconds after the transaction ends.

You can use PURGEC to modify the 'normal purge cycle'. The purge cycle is 5 minutes long when the attachment starts and then PURGEC for the remaining time that the attachment facility operates. For example, if you specify PURGEC=(0,40), protected threads are normally purged 40-80 seconds after the transaction ends.

RDONAME=*DB2CONN-name*
specifies the name to be used for the DB2CONN when migrating the RCT to the CSD.

ROLBI=YES|NO
Specifies a default for the ROLBE parameter in other TYPEs of the DSNCRCT macro. The specification of this parameter determines the disposition of transaction entries in the event a transaction is selected by DB2 as victim in a deadlock resolution.

YES
Specifies that the attachment facility is to issue a syncpoint rollback before returning control to the application. A SQL return code of -911 is returned to the program. Specifying YES provides compatibility with SQL/DS.

NO Specifies that the attachment facility is not to initiate a rollback for this transaction. A SQL return code of -913 is returned to the application. It is the responsibility of the application to initiate the rollback.

SHDDEST=*destination*
Specifies a transient data destination to receive the statistical report (the same report that is displayed with the DSNC DISP STAT command) during shutdown of the attachment facility. For *destination*, substitute a valid transient data destination.

It might be useful to direct this transient output data to a destination in another partition that is specified as a JES SYSOUT file.

SIGNID=*authorization ID*
Specifies the authorization ID to be used by the CICS attachment facility when signing on to DB2. For *authorization ID*, substitute a character string of up to eight characters. The name can be up to eight characters in length.

The default is the APPLID of the CICS system. This name is used when indicated when AUTH=SIGNID is set on the TYPE=ENTRY or TYPE=POOL forms of the macro. For a description of the AUTH parameter, see “Entries in resource control table—DSNCRCT TYPE=ENTRY” on page 560. When it is used, the name specified here must be authorized to the resources being accessed.

STANDBY=SQLCODE|ABEND
Specifies the action to be taken by the attachment facility during the startup process if DB2 is not active.

SQLCODE
Only valid if STRTWT=AUTO or YES is specified. If an application issues a SQL statement while the attachment facility is standing by, SQLCODE -923 is issued instead of abend AEY9.

ABEND
Specifies CICS applications using DB2 fail with abend AEY9 issued by CICS when the attachment is not started.

STRTWT=AUTO|YES|NO
Specifies the action to be taken by the attachment facility during the startup process if DB2 is not active.

AUTO
Specifies automatic restart of the attachment facility if DB2 stops or abends, then restarts. The starting procedures are the same as for YES. If DB2 stops or abends while the attachment facility is up, a message is issued stating the subsystem is not active. The attachment facility goes to standby state and only terminates after the command DSNC STOP is issued or an unrecoverable error is encountered.

YES
Directs the attachment facility to wait for DB2 to start and complete the connection. A CICS task waits to be posted by DB2 when DB2 becomes available. At that time, the initialization of the CICS attach is complete. However, the attachment facility can be terminated by the DSNC STOP command while it is waiting for DB2.

The response messages from the attachment are sent to the transient data destination queue specified in the ERRDEST parameter of the RCT.

NO Directs the attachment facility to terminate the connection process immediately if DB2 is not already active.

SUBID=*DB2-ID*
Specifies the name of the DB2 subsystem that the attachment facility is to connect with CICS. For *DB2 ID*, substitute a character string of up to four characters.

SUFFIX=*XX*
Specifies the one or two characters that are concatenated with DFHRCT to create the name of the resource control table. Acceptable characters are A-Z 0-9 $ @ and #. Do not use NO, DY or BA. For more information about TYPE=INITIAL macros, including the use of the SUFFIX operand, see “TYPE=INITIAL (control section)” on page 496.

THRDMAX=*integer*
Specifies the maximum number of subtasks (TCBs) that can be identified to DB2. The default is 12, the minimum value is 4. The number controls the total number of threads for each region. For that reason, the recommended value for THRDMAX is the sum of all values on the THRDA parameters (COMD, ENTRY, and POOL threads) + 3. However, the value you specify for THRDMAX can be less than the sum of all values on the THRDA parameter.

TOKENI=NO|YES
Specifies the default TOKENE if TOKENE is not specified on the TYPE=ENTRY statement. For more information about TOKENE, see “Entries in resource control table—DSNCRCT TYPE=ENTRY” on page 560.

TXIDSO=YES|NO
Specifies whether you want to suppress some sign-ons during thread reuse, and thereby avoid extraneous accounting information. The TXIDSO option affects only pool threads and those RCT entry threads with multiple transaction IDs in one entry (for example, TXID=(XC05,XC07). The attach checks for thread reuse only within an entry. TXIDSO has no effect on transactions that specify TOKENE=YES. If the plan name changes, the thread is terminated and recreated.

YES
Specifies the following rules for thread reuse:
- A new transaction can reuse an existing thread without a sign-on when:
  - The authorization ID and transaction ID are the same as the last transaction that used the thread, and TOKENE is set to NO.

- A new transaction must sign-on before reusing an existing thread when any of these conditions exist:
  - The authorization ID is different from the authorization ID that last used the thread.
  - TOKENE is YES.
  - The transaction ID has changed.

NO Specifies the following rules for thread reuse:
- A new transaction can reuse an existing thread without a sign-on when:
  - The authorization ID is the same as the last transaction that used the thread and TOKENE is set to NO.
- A new transaction must sign-on before reusing an existing thread when either of these conditions exist:
  - The authorization ID is different from the authorization ID that last used the thread.
  - TOKENE is YES.

TWAITI=YES|NO|POOL
Specifies the default value (YES, NO, or POOL) that is to be created for the TWAIT parameter on other types of the macro.

DB2 commands—DSNCRCT TYPE=COMD

The TYPE=COMD form of the macro is used to describe DB2 command threads used for processing DB2 commands only. Requests for a DB2 command thread are diverted to the pool if a DB2 command thread is not available.

If you code the DSNCRCT TYPE=COMD macro, you must place it immediately following the TYPE=INIT macro and before the TYPE=POOL macro.

```
►►──DSNCRCT──TYPE=COMD──┬──────────────────────────┬──┬─────────────────────┬──►
                        │         ┌─USERID─────┐   │  │          ┌─0───────┐│
                        └─,AUTH=──┴─identifier─┴───┘  └─,THRDM=──┴─integer─┴┘

►──┬──────────────────────┬──────────────────────────────────────────────────►◄
   │          ┌─0───────┐ │
   └─,THRDA=──┴─integer─┴─┘
```

The TYPE=COMD form of DSNCRCT is optional; if you do not code it, the RCT automatically generates a TYPE=COMD entry with the following parameters:

```
DSNCRCT TYPE=COMD,
      AUTH=USERID,
      THRDM=1,
      THRDA=1,
```

For a description of the TYPE=COMD parameters, see the same parameters in the description of DSNCRCT TYPE=ENTRY in “Entries in resource control table—DSNCRCT TYPE=ENTRY” on page 560

One reason you might want to change this generated default setting is to change the AUTH parameter to reflect the need to give users different responsibilities in operating the DB2 subsystem.

Thread sharing—DSNCRCT TYPE=POOL

The TYPE=POOL form of the macro defines threads that can be shared by some or all of the CICS transactions. These threads are allocated to transactions only for a CICS unit of work. They can be considered short-term threads, and they can be used by any RCT entry that is specified to overflow to the pool.

The TYPE=POOL form of the macro must be coded before the TYPE=ENTRY form.

```
►►──DSNCRCT──TYPE=POOL──┬──────────────────────────┬──┬─────────────────────────┬──────►
                        │          ┌─USERID─────┐  │  │            ┌─HIGH─┐     │
                        └─,AUTH=───┴─identifier─┴──┘  └─,DPMODE=───┼─EQ───┼─────┘
                                                                   └─LOW──┘

►─┬────────────────────────────────────────────────────────┬──────────────────────────►
  └─,PLNEXIT=──┬─NO──PLAN=plan-name────────────────────────┤
               │                 ┌─DSNCUEXT──────────┐     │
               └─YES──PLNPGME=───┴─exit-program-name─┴─────┘

►─┬──────────────────────┬──┬──────────────────────┬──┬──────────────────────┬────────►
  │          ┌─YES─┐     │  │          ┌─3───────┐ │  │          ┌─3───────┐ │
  └─,ROLBE=──┴─NO──┴─────┘  └─,THRDA=──┴─integer─┴─┘  └─,THRDM=──┴─integer─┴─┘

►─┬──────────────────────┬──┬────────────────────┬────────────────────────────────────►◄
  └─,TOKENE=──┬─YES─┬────┘  │         ┌─YES─┐    │
              └─NO──┘       └─,TWAIT=─┴─NO──┴────┘
```

DSNCRCT TYPE=POOL

This is the name of the macro. It must be coded exactly as it appears here.

If the TYPE=POOL form of the macro is not coded, the following default values are assumed:

```
DSNCRCT TYPE=POOL,PLAN=DEFAULT,
      AUTH=USERID
      THRDM=3,
      THRDA=3,
      TWAIT=YES
```

This default assumes there is a plan named DEFAULT.

The rest of the parameters on the TYPE=POOL form of the macro are basically the same as those on the TYPE=ENTRY form of this macro. The only difference for the parameter specifications on TYPE=POOL is:

- The default for PLAN is DEFAULT.

For a description of the parameters, see “Entries in resource control table—DSNCRCT TYPE=ENTRY” on page 560.

Note:

1. The pool provides default processing parameters for transactions that do not have an associated RCT entry. Such transactions are processed according to the specifications of the TYPE=POOL macro; transactions

specified with the TYPE=ENTRY form of the macro are processed according to specifications of that macro, even if they overflow to the pool.

2. The THRDM and THRDA parameters must be specified as greater than or equal to 3 for the TYPE=POOL form of the macro.
3. All transactions that do not have an RCT entry must be bound with the plan specified for the pool, unless dynamic plan allocation is specified for the pool.

Entries in resource control table—DSNCRCT TYPE=ENTRY

The TYPE=ENTRY form of the macro defines overrides to values set in the TYPE=POOL definition and provides dedicated threads to a transaction or group of transactions.

The plan name identifies the DB2 resource being accessed by a CICS application. A dynamic plan exit program is a way of allocating plans to CICS dynamically at execution time. For more information about dynamic plan exit programs, see the *CICS DB2 Guide*. In entry threads, all the transactions assigned to the same RCT entry use the plan name or dynamic plan allocation exit program specified for that entry.

Allocation deadlocks might occur if more than one thread is allowed for an RCT entry that uses a plan containing exclusive locking (table space locks). (See the THRDA and TWAIT parameters explanations for more information.)

```
►►──DSNCRCT──TYPE=ENTRY──┬─────────────────────────┬──┬──────────────────────┬──────────►
                         │          ┌─USERID─────┐ │  │            ┌─HIGH─┐  │
                         └─,AUTH=───┴─identifier─┴─┘  └─,DPMODE=───┼─EQ───┼──┘
                                                                   └─LOW──┘

►──┬────────────────────────────────────────────────────────┬──────────────────────────►
   └─,PLNEXIT=──┬─NO──PLAN=plan-name─────────────────────────┤
                │                  ┌─DSNCUEXT──────────┐     │
                └─YES──PLNPGME=────┴─exit-program-name─┴─────┘

►──┬──────────────────────┬──┬─────────────────┬──┬─────────────────────┬──────────────►
   └─,RDONAME=entryname───┘  │         ┌─YES─┐ │  │          ┌─0───────┐│
                             └─,ROLBE=─┴─NO──┴─┘  └─,THRDA=──┴─integer─┴┘

►──┬─────────────────────┬──┬─────────────────────┬──┬──────────────────┬──────────────►
   │         ┌─0───────┐ │  │         ┌─0───────┐ │  └─,TOKENE=──┬─YES─┬─┘
   └─,THRDM=─┴─integer─┴─┘  └─,THRDS=─┴─integer─┴─┘              └─NO──┘

►──┬───────────────────┬──┬──────────────────────────────┬────────────────────────────►◄
   │         ┌─YES──┐  │  └─,TXID=(transaction-id,...)───┘
   └─,TWAIT=─┼─NO───┼──┘
             └─POOL─┘
```

AUTH=*identifier*

Specifies an explicit character string (authorization ID) or directs the attachment facility to use names associated with the CICS transaction. Permissible values for *identifier* are:

character-string

Specifies a character string that is used as a DB2 authorization ID. For *character-string*, substitute a character string of no more than eight characters, except for the reserved words USERID, USER, TERM, TXID, GROUP, and SIGNID.

GROUP

Specifies the RACF sign-on user ID (1 to 8-character USERID) and the connected group name as the authorization ID. The following table shows how these two values are interpreted by DB2.

IDs passed to DB2	How DB2 interprets values
CICS sign-on user ID (USERID)	Represents the primary DB2 authorization ID.
RACF connected group name	If the RACF list of group options is not active, then DB2 uses the connected group name supplied by the CICS attachment facility as the secondary DB2 authorization ID. If the RACF list of group options is active, DB2 ignores the connected group name supplied by the CICS attachment facility, but the value appears in the DB2 list of secondary DB2 authorization IDs.

To use the GROUP option, the CICS system must have SEC=YES specified in the CICS system initialization table (SIT).

If no RACF group ID is available for this USERID, then an 8-character field of blanks is passed to DB2 as the group ID.

SIGNID

Specifies that the value specified for SIGNID on the TYPE=INIT macro is to be used as the authorization ID.

TERM

Specifies the terminal identification (four characters padded to eight) as an authorization ID. An authorization ID cannot be obtained in this manner if a terminal is not connected with the transaction.

If a transaction is started (using a CICS command) and has no terminal associated with it, the AUTH=TERM parameter should not be used.

TXID

Specifies the transaction ID (four characters padded to eight) as the authorization ID.

USER

Specifies the operator identification associated with the userid that is associated with the CICS transaction as the authorization ID (three characters padded to eight).

USERID

Specifies the 8-character USERID associated with the CICS transaction as the authorization ID.

When the sample sign-on exit DSN3@SGN is used with AUTH=USERID, the exit sends the user ID to DB2 as the primary authorization ID and the

RACF group ID to DB2 as the secondary ID. When the sample sign-on exit is used, there is no difference between AUTH=USERID and AUTH=GROUP.

Default: USERID

DPMODE=HIGH|EQ|LOW

Specifies the priority of thread subtasks relative to CICS main task priority.

HIGH

Specifies that subtasks can attain a higher priority than the CICS main task from which the subtask was generated. Use this option for high priority and high volume transactions.

EQ Specifies that CICS must allow for subtasks to attain equal priority.

LOW

Specifies that subtasks have a lower priority than the CICS main task priority.

PLNEXIT=NO|YES

Specifies whether a dynamic plan allocation exit program is invoked. For more information on dynamic plan allocation, see the *CICS DB2 Guide*.

NO Specifies that this transaction ID entry does not use a plan exit. The CICS attachment facility obtains the plan name using the name specified on the option PLAN=. Specifying NO means you must code the option PLAN=***plan-name***.

YES

Specifies that this transaction ID can dynamically allocate the plan name when the first SQL statement is processed for the application program. This is accomplished by means of the dynamic plan exit specified on the option PLNPGME=. Specifying YES means you must NOT code the option PLAN=.

PLAN=*plan-name*

Specifies the plan ID to be associated with this transaction when it is different from the transaction ID. For *plan-name*, substitute a valid application plan name.

The PLAN ID specified with a TYPE=ENTRY macro is used even if the POOL provides the thread. The PLAN parameter is a required parameter when the TXID parameter is coded as a list of two or more transaction IDs.

If PLAN= is not specified and PLNEXIT=NO, TXID is the default plan if only one transaction is specified on the TXID keyword. See the description of the TXID parameter.

PLNPGME=*exit-program-name*

Specifies the name of the exit program this entry uses. The default is set by the PLNPGMI parameter on the TYPE=INIT statement. For information on how to write your own exit program, see the *CICS DB2 Guide*.

RDONAME=*entryname*

Specifies the name to be used for the DB2ENTRY (and DB2TRAN if one transid is present) when migrating this RCTE to the CSD.

ROLBE=YES|NO

Specifies a disposition for transactions defined by this entry if a transaction is selected by DB2 as the victim in a deadlock resolution. The specification of ROLBE overrides the specification of the ROLBI parameter on the TYPE=INIT macro.

YES
Specifies that the attachment facility is to issue a syncpoint rollback before returning control to the application. A SQL return code of -911 is returned to the program. Specifying YES provides compatibility with SQL/DS.

NO Specifies that the attachment facility is not to initiate a rollback for this transaction. A SQL return code of -913 is returned to the application.

THRDA=*integer*
Specifies the maximum number of threads that the attachment facility allows connected for this transaction, group, or pool before requests are either made to wait or are diverted to the pool. (See the description of the TWAIT parameter.)

For *integer*, substitute a value that does not exceed 99 or the THRDM value. The general restriction is (THRDS ≤ THRDA ≤ THRDM ≤ 99). When THRDA=0, TWAIT=YES or TWAIT=POOL causes all threads to be diverted to the pool. Forcing low-use transactions into the pool this way might save MVS ATTACH overhead if pool threads are available.

If a plan specified for an RCT entry has exclusive locking, set the value of the THRDA parameter to 1 and the value of the TWAIT parameter to YES to prevent allocation deadlock.

For information about using threads in conjunction with dynamic plan selection, see the *CICS DB2 Guide*.

Default: 0

THRDM=*integer*
Specifies the maximum number of threads the attachment facility is prepared to connect for this transaction group. For *integer*, substitute an integer value that does not exceed 99. The general restriction is (THRDS ≤ THRDA ≤ THRDM ≤ 99).

You can associate a CICS transaction with a plan name without allocating it to an entry thread by specifying no threads (THRDM=0) and overflow to the pool (TWAIT=POOL). The entry thread uses the plan name associated with its TYPE=ENTRY parameter when it overflows to the pool.

For information about using threads in conjunction with dynamic plan selection, see the *CICS DB2 Guide*.

Default: 0

THRDS=*integer*
specifies the maximum number of protected threads. For *integer*, substitute a value that does not exceed the THRDA value or 99. The general restriction is (THRDS ≤ THRDA ≤ THRDM ≤ 99).

A thread released by a transaction when no other work is queued can be protected. It will not be terminated immediately. A protected thread is terminated only after two complete purge cycles if it has not been reused in the meantime. The purge cycle is specified using the PURGEC parameter of the TYPE=INIT statement.

Threads are protected only while they are inactive. If a transaction reuses a protected thread, the thread becomes active and the current number of protected threads is decremented.

For information about using threads in conjunction with dynamic plan selection, see the *CICS DB2 Guide*.

Default: 0

TOKENE=NO|YES

Specifies whether the CICS attachment facility produces a DB2 accounting record for every CICS transaction, even those transactions that are reusing threads. It also specifies whether the CICS attachment facility passes the CICS LU6.2 (protected) token to DB2 for inclusion in the DB2 accounting trace records. You might receive more than one DB2 accounting record for a CICS transaction that has more than one DB2 unit of recovery, but you can correlate the CICS and DB2 records with the matching LU6.2 tokens.

Because CICS produces accounting records on a transaction basis, and DB2 produces accounting records on a thread basis, it can be difficult to correlate the two. This parameter gives you the option of producing a DB2 accounting record for each CICS transaction, even for transactions that are reusing threads.

If you do not specify YES or NO for TOKENE, then it assumes the value specified in TOKENI on the TYPE=INIT statement.

YES

Specifies that the CICS attachment facility requests that DB2 (using SIGNON) produce an accounting record after each transaction. It also indicates that the attachment facility passes the CICS LU6.2 token to DB2 for inclusion in the DB2 accounting trace records. Specifying YES makes it easier to correlate DB2 and CICS accounting and trace records.

Specifying YES slightly increases the overhead of a SQL request that reuses threads because of additional SIGNON activity. In a thread reuse situation, the transaction rate can degrade by no more than 5%. For additional information on the CICS task scope and DB2 thread scope, see Volume 2 of the *DB2 Administration Guide*.

NO Specifies that the CICS attachment facility does not produce a DB2 accounting record during thread reuse. When TOKENE=NO is specified, it is more difficult to correlate DB2 and CICS accounting and trace records.

TWAIT=YES|NO|POOL

Specifying TWAIT overrides the value of the TWAITI parameter on the TYPE=INIT macro.

YES

Specifies that, if all threads are busy, a transaction must wait until one becomes available. A transaction can wait as long as CICS allows it to wait, generally until a thread becomes available.

The number of transactions waiting can be limited by using a TRANCLASS.

If TWAIT=YES is specified with THRDA=0, the attachment facility routes the transaction to the pool. Otherwise, a DB2 transaction could wait indefinitely for a thread.

An alternative to using TRANCLASS is to use TWAIT=POOL. The task picks up a pool thread rather than waiting for an entry thread to become available.

NO Specifies that, if all threads are busy, a transaction is terminated with an abend. If NO is specified, or if TWAIT=NO has been specified on the TYPE=POOL macro, you should closely coordinate the number of threads specified with the MAXACTIVE number on the TRANCLASS being used. This helps to prevent abends when threads are unavailable.

POOL
Specifies that, if all threads are busy, a transaction must be diverted to use the pool of threads. If the pool is also busy, and NO has been specified for the TWAIT parameter on the TYPE=POOL form of the macro, a transaction is terminated with an abend. See the description of the TWAIT=NO parameter.

TXID=*(transaction-ID)*
Specify the transaction identification, or identifications for this entry. For *transaction ID*, substitute the transaction identifications found in the CSD transaction definition. The way you code this option depends on how many transactions you have and on whether:

- You have different plans for each transaction.
- You want to use dynamic plan allocation.
- You want separate statistics for each transaction.

For example:

1. If you have several transactions that use the same plan, you can code a list of transaction IDs, to be indexed to the same RCT entry. Code your entry as in this example:
   ```
   DSNCRCT TYPE=ENTRY,TXID=(TXI1,TXI2,TXIn),
           PLAN=(PLNA)
   ```
   You cannot code more than one plan per entry. To specify a different plan for each transaction, you must code a separate DSNCRCT entry for each plan, as follows:
   ```
   DSNCRCT TYPE=ENTRY,TXID=(TXI1),PLAN=(PLNA)
   DSNCRCT TYPE=ENTRY,TXID=(TXI2),PLAN=(PLNB)
   DSNCRCT TYPE=ENTRY,TXID=(TXIn),PLAN=(PLNC)
   ```
2. With dynamic plan selection, DB2 selects a plan based on the DBRM of the first SQL statement, or based on a user-defined exit routine for dynamic plan selection. You can use the PLNEXIT and PLNPGME parameters to specify a user-defined exit routine.

   To use dynamic plan selection for your transactions, code one or more transactions per entry, and optionally add pointers to the PLNEXIT and PLNPGME parameters, as follows:
   ```
   DSNCRCT TYPE=ENTRY,TXID=(TXI1,TXI2,TXIn),
           PLNEXIT=YES

   or

   DSNCRCT TYPE=ENTRY,TXID=(TXI1),PLNEXIT=YES
   DSNCRCT TYPE=ENTRY,TXID=(TXI2),PLNEXIT=YES
   DSNCRCT TYPE=ENTRY,TXID=(TXI3),PLNEXIT=YES
   ```
3. If you want separate CICS attachment facility statistics for each transaction, you must code a separate entry for each transaction, as in this example:
   ```
   DSNCRCT TYPE=ENTRY,TXID=(TXI1)
   DSNCRCT TYPE=ENTRY,TXID=(TXI2)
   DSNCRCT TYPE=ENTRY,TXID=(TXIn)
   ```

Migrating RCT definitions—DSNCRCT TYPE=GROUP

Use this macro to name the groups into which the RCT-equivalent DB2 resource definitions are put when you migrate the RCT to the CSD. This macro can appear as many times as required and at any point in the macro source. Each time it appears it defines the CSD group into which subsequent definitions will be put until the next DSNCRCT TYPE=GROUP macro occurs.

```
►►──DFHRCT──TYPE=GROUP──┬──────────────┬──────────────────────────────►◄
                        └─,GROUP=name──┘
```

GROUP=name
Specifies a name, of 1 to 8-characters, of a group to be used when migrating the RCT to the CSD. All RCT entries following the DSNCRCT TYPE=GROUP statement, until the next TYPE=GROUP statement, can be migrated to the CSD and placed in a group with the specified name. If no TYPE=GROUP statement is used, all RCT entries are migrated to a group called RCTxx, where xx is the one or two character RCT suffix, specified on the TYPE=INIT statement. GROUP=*DEFAULT will be supported, as for other tables, meaning you take the default group RCTxx.

Last code section—DSNCRCT TYPE=FINAL

The TYPE=FINAL form of the macro is coded last and results in the generation of the resource control table.

```
►►──DSNCRCT──TYPE=FINAL───────────────────────────────────────────────►◄
```

DSNCRCT TYPE=FINAL
This is the name of the macro. It must be coded exactly as it appears here. The TYPE=FINAL form of the macro has no other parameters.

Chapter 55. RST—recoverable service table

Note on terminology: DBCTL refers to the CICS—IMS/ESA DBCTL (database control) interface.

The recoverable service table (RST) is used for CICS DBCTL XRF (extended recovery facility) support. It contains a description of the DBCTL configuration. On detection of a DBCTL failure, the **active** CICS system uses the RST together with the MVS subsystem VERIFY to determine the existence of a suitable alternative DBCTL subsystem. The **alternate** CICS system uses the RST to check for the presence of a DBCTL subsystem. For security reasons, the RST should be link-edited into a library authorized using APF. The RST is not loaded as part of the CICS nucleus.

You can code the following macros in a recoverable service table:

- DFHRST TYPE=INITIAL establishes the control section.
- DFHRST TYPE=RSE specifies the start of a recoverable service element (RSE). An RSE consists of a (nonempty) set of identifiers of equivalent DBCTL subsystems, the CICS applids associated with these DBCTL subsystems, and the application identifiers of the CICS systems which use the DBCTL subsystems.
- DFHRST TYPE=SUBSYS specifies one of the DBCTL subsystems in an RSE.
- DFHRST TYPE=FINAL concludes the RST (see “TYPE=FINAL (end of table)” on page 497).

The RST to be used by the system must be defined in the system initialization table by the following system initialization parameter:

```
                          ┌─NO─┐
►►──DFHSIT──...──,RST=────┤    ├──────────────────────────────────►◄
                          └─xx─┘
```

Control section—DFHRST TYPE=INITIAL

The DFHRST TYPE=INITIAL macro establishes the recoverable service table control section.

```
►►──DFHRST──TYPE=INITIAL──┬──────────────┬────────────────────────►◄
                          └─,SUFFIX=xx───┘
```

For general information about TYPE=INITIAL macros, including the use of the SUFFIX operand, see “TYPE=INITIAL (control section)” on page 496.

Recoverable service elements—DFHRST TYPE=RSE

The DFHRST TYPE=RSE macro contains information about a recoverable service element and the CICS systems expected to connect to the DBCTL subsystems within the recoverable service element.

```
►►──DFHRST──TYPE=RSE──┬──────────────────────────────────┬────────►◄
                      └─,CTLAPPLS=(applid1,applid2,...)──┘
```

TYPE=RSE
Indicates the start of a set of identifiers of equivalent DBCTL systems. Equivalent DBCTL subsystems have the same database (DB) name.

CTLAPPLS=(applid1,applid2,....)
Specifies the application identifiers of the CICS systems that are authorized to restart the DBCTL subsystems in the RSE.

DBCTL subsystems—DFHRST TYPE=SUBSYS

The DFHRST TYPE=SUBSYS macro contains information about a specific DBCTL subsystem within an RSE. For each subsystem in an RSE there must be a DFHRST TYPE=SUBSYS macro.

```
►►──DFHRST──TYPE=SUBSYS──,SYBSYSID=subsystem-identifier──────────────────────►

►─┬───────────────────────────────────┬──────────────────────────────────►◄
  └─,JOBNAME=(jobname1,jobname2,...)─┘
```

TYPE=SUBSYS
Defines one of the DBCTL subsystems in an RSE.

SUBSYSID=subsystem-identifier
Code this with the 4-character name of the DBCTL subsystem-identifier. This identifier must be unique within the RST.

JOBNAME=(jobname1,jobname2,....)
Code this with the **MVS JOBNAME(S)** associated with the DBCTL subsystem identified in the SUBSYSID parameter statement. This is a form of security check. If CICS needs to cancel the DBCTL subsystem, it is authorized to do so only if the appropriate MVS jobname associated with the DBCTL subsystem is one of those specified by the **JOBNAME** parameter.

DFHRST example

Figure 76 illustrates the coding required to generate an RST.

```
DFHRST   TYPE=INITIAL
         ,SUFFIX=K1
DFHRST   TYPE=RSE
         ,CTLAPPLS=(applid1,applid2,applid3)
DFHRST   TYPE=SUBSYS
         ,SUBSYSID=CTL1
         ,JOBNAME=(job1,job2,job3,job4)
DFHRST   TYPE=SUBSYS
         ,SUBSYSID=CTL2
         ,JOBNAME=(job5,job6,job7,job8)
DFHRST   TYPE=FINAL
END
```

Figure 76. Recoverable service table—example

Chapter 56. SRT—system recovery table

The system recovery table (SRT) contains a list of codes for abends that CICS intercepts. After it intercepts one, CICS attempts to remain operational by causing the offending task to abend.

You can modify the default recovery action by writing your own recovery program. You do this by means of the XSRAB global user exit point within the System Recovery Program (SRP). (See the *CICS Customization Guide* for programming information about the XSRAB exit.)

Note that recovery is attempted only if a user task (**not** a system task) is in control at the time the abend occurs.

The following macros may be coded in a system recovery table:

- DFHSRT TYPE=INITIAL establishes the control section
- DFHSRT TYPE=SYSTEM∨USER specifies the abend codes that are to be handled
- DFHSRT TYPE=FINAL concludes the SRT (see “TYPE=FINAL (end of table)” on page 497)

Control section—DFHSRT TYPE=INITIAL

The DFHSRT TYPE=INITIAL macro generates the system recovery table control section.

```
►►──DFHSRT──TYPE=INITIAL──┬──────────────┬──────────────────────────►◄
                          └─,SUFFIX=xx───┘
```

For general information about TYPE=INITIAL macros, including the use of the SUFFIX operand, see “TYPE=INITIAL (control section)” on page 496.

Abend codes—DFHSRT TYPE=SYSTEM|USER

```
                     ┌─SYSTEM─┐
►►──DFHSRT──TYPE=────┤        ├──,ABCODE=(abend-code,...)──────────────►
                     └─USER───┘

►─┬───────────────────────┬────────────────────────────────────────────►◄
  │            ┌─NO──┐    │
  └─,RECOVER=──┤     ├────┘
               └─YES─┘
```

TYPE={SYSTEM|USER}
Indicates the type of abend code to be intercepted.

SYSTEM
The abend code is an operating system abend code corresponding to an MVS S*xxx* abend code.

USER
The abend code is a user (including CICS) abend code corresponding to an MVS U*nnnn* abend code.

ABCODE=(abend-code,...)
Code this with the abend code (or codes) to be intercepted. If you specify a single abend code, parentheses are not required.

If you code TYPE=SYSTEM, this abend code must be three hexadecimal digits (*xxx*) representing the MVS system abend code S*xxx*.

If you code TYPE=USER, this abend code must be a decimal number (*nnnn*) representing the user part of the MVS abend code U*nnnn*. This is usually the same number as the CICS message that is issued before CICS tries to terminate abnormally.

RECOVER={YES|NO}
specifies whether codes are to be added to or removed from the SRT.

YES
Code this to add the specified codes to the SRT.

NO Code this to remove the specified codes from the SRT.

Note:

1. CICS intercepts the following abend codes automatically and tries to recover:

   ```
   001,002,013,020,025,026,030,032,033,034,035,
   036,037,03A,03B,03D,052,053,067,0D3,0D4,0D5,
   0D6,0D7,0D8,0E0,0F3,100,113,137,202,213,214,
   237,283,285,313,314,337,400,413,437,513,514,
   613,614,637,713,714,737,813,837,913,A13,A14,
   B13,B14,B37,D23,D37,E37
   ```

   Abend code 0F3 covers various machine check conditions. It also covers the Alternate Processor Retry condition that can occur only when running on a multiprocessor. CICS-supplied recovery code attempts to recover from instruction-failure machine checks on the assumption that they are not permanent. It also attempts to recover from Alternate Processor Retry conditions.

   CICS will try to recover from the standard abend codes above if you code the system recovery table (SRT) simply as:

   ```
   DFHSRT  TYPE=INITIAL
   DFHSRT  TYPE=FINAL
   END
   ```

   There is no need to list the standard codes individually.

2. If you want CICS to handle other errors, you can code the SRT as follows:

   ```
   DFHSRT  TYPE=INITIAL
   DFHSRT  TYPE=SYSTEM,or USER,
           ABCODE=(user or system codes),
           RECOVER=YES
   DFHSRT  TYPE=FINAL
   END
   ```

3. If you do not want CICS to try to recover after one or more of the above standard abend codes occurs, specify the code(s) with **RECOVER=NO**, or without the **RECOVER** parameter.

4. CICS tries to recover only if a user task (**not** a system task) is in control at the time the abend occurs.

DFHSRT example

Figure 77 illustrates the coding required to generate a SRT.

```
DFHSRT TYPE=INITIAL,             *
       SUFFIX=K1
DFHSRT TYPE=SYSTEM,              *
       ABCODE=777,               *
       RECOVER=YES
DFHSRT TYPE=USER,
       ABCODE=(888,999),         *
       RECOVER=YES
DFHSRT TYPE=USER,                *
       ABCODE=020
DFHSRT TYPE=FINAL
END
```

Figure 77. System recovery table—example

Chapter 57. TCT—terminal control table

All VTAM connected terminals, intersystem communication links, and multiregion operation links must be defined using **resource definition online (RDO)**. See "Devices supported" on page 312 for details of VTAM terminals supported by RDO.

A CICS system can communicate with terminals, sequential devices, logical units, and other systems. The TCT defines each of the devices in the configuration. Each TCT entry defines the optional and variable features of the device to CICS, and specifies the optional and variable features of CICS to be used.

CICS uses a **telecommunication access method** to communicate with terminals. This may be **VTAM** or (for sequential devices) **BSAM**; you may use one or both of these in your system.

Attention: CICS TS for z/OS, Version 3.1 does not support:

- The Basic Telecommunications Access Method (BTAM), in any form.
- The Telecommunications Access Method (TCAM). That is, you cannot use TCAM to communicate with locally-attached terminals. However, you can define, as *remote terminals*, terminals attached by TCAM/DBC to a back-level CICS terminal-owning region (TOR). TCAM/ACB is not supported at all.

A **terminal** can be a telecommunication device; for example, an IBM 3279 Color Display Station, or a subsystem such as an IBM 4700 Finance Communication System. Terminals can be local (channel-attached) or remote (link-attached).

You can use a **sequential device** to simulate a CICS terminal. You can define a card reader or punch, line printer, direct access storage device (disk drive), or magnetic tape drive as a sequential device.

A **logical unit (LU)** is a port through which a user of an SNA network gains access to the network facilities.

A **system** can be, for example, another CICS system, an IBM 8815 Scanmaster, an IBM Displaywriter, or an APPC/PC. Intercommunication with CICS systems can be:

- Between different processors (**intersystem communication** or **ISC**), using the LUTYPE 6.1 or LUTYPE 6.2 protocols, or using an intermediate system as an **indirect link**. (Intercommunication with non-CICS systems also uses ISC.)
- Within the same processor (**multiregion operation** or **MRO**), using interregion communication (IRC). (You can also use LUTYPE 6.2 ISC within the same processor.)

There are three ways in which you can create TCT entries, and install them in the TCT.

1. By using **resource definition online (RDO)** to create resource definitions in the CICS system definition (CSD) file. You **must** use RDO for VTAM-connected terminals (local and remote) and for MRO and ISC links and sessions. See "Terminal definition attributes" on page 263 for more information on defining terminals using RDO.For information on migrating your temrinal definitions to the RDO equivalent, see Appendix D, "Migrating the TCT to the CSD file," on page 669.

2. By using RDO and **autoinstall** (for VTAM-connected terminals only). See Chapter 40, “Autoinstalling VTAM terminals,” on page 461 for information about autoinstall for terminals.
3. By coding **DFHTCT macros**, assembling them, and selecting the resulting TCT by using the TCT operand at system initialization. This way, TCT entries can be installed at system initialization only.

   You **must** use DFHTCT macros, which are described in this section, to define:
   - Logical units supporting logical device codes (even though they are VTAM devices).
   - Sequential devices attached by BSAM.
   - Remote TCAM terminals.

DFHTCT macro types

The DFHTCT macros you code depend on the device you are defining, and on the access method you are using. You always start with one of these:

`DFHTCT TYPE=INITIAL,...` (See “Control section—DFHTCT TYPE=INITIAL” on page 575.)

There is a special macro to use when you assemble the TCT to migrate RDO-eligible definitions to the CSD file:

`DFHTCT TYPE=GROUP,...` (See “Migrating TCT definitions—DFHTCT TYPE=GROUP” on page 577.)

You can define your devices in any order you want. Each device needs one or more macros, and these sometimes have to be in a particular order. You are told when this is the case. The macros you need for each type of device or system are as follows:

Table 28. DFHTCT macro types

VTAM terminals, MVS consoles.	For guidance, see Chapter 28, “TERMINAL resource definitions,” on page 247.

Logical device codes.	`DFHTCT TYPE=LDC,...`
	`DFHTCT TYPE=LDCLIST,...`

Sequential devices.	`DFHTCT TYPE=SDSCI,...`
	`DFHTCT TYPE=LINE,...`
	`DFHTCT TYPE=TERMINAL,...`

Remote non-VTAM terminals, for transaction routing.	`DFHTCT TYPE=REMOTE,...`
	or:
	`DFHTCT TYPE=REGION,...`
	`DFHTCT TYPE=TERMINAL,...`

At the very end of your macros you code:

```
DFHTCT TYPE=FINAL
END
```

This macro is described in “TYPE=FINAL (end of table)” on page 497.

Notes:

SYSIDNT and TRMIDNT operands

CICS accepts both uppercase and lowercase characters for SYSIDNT and TRMIDNT, but the lowercase characters are not checked for duplication. Assembling a TCT containing lowercase SYSIDNT or TRMIDNT results in an MNOTE. If you want duplicate checking, use only uppercase characters for SYSIDNT and TRMIDNT.

Assembling the TCT

The assembly and link-edit of a TCT leads to the creation of two separate load modules. Assembly of a suffixed TCT (source name DFHTCT*xx*) produces a single text file. However, when this is link-edited into a load library, two members are created:

1. DFHTCT*xx*, which contains the non-RDO-eligible definitions in control block format
2. DFHRDTxx, which contains the RDO-eligible (VTAM terminal and system) definitions in RDO command format

This happens, **whether or not you intend to use RDO**. You need to be aware of the existence of these two tables if you copy or move assembled TCT tables between load libraries.

If you reassemble the TCT after starting CICS, any changes are picked up at a warm or emergency start.

Control section—DFHTCT TYPE=INITIAL

You code one DFHTCT TYPE=INITIAL macro before all the macros that define your resources. The TYPE=INITIAL macro has two purposes:

1. To establish the area of storage into which the TCT is assembled.
2. To specify information that applies to the whole TCT, or to the individual non-VTAM entries (and any VTAM-LDC definitions).

```
                           ┌─,ACCMETH=VTAM────┐
►►──DFHTCT──TYPE=INITIAL───┼──────────────────┼──────────────────────────────────►
                           └─,ACCMETH=NONVTAM─┘

   ┌─,ERRAT=NO───────────────────────────────────────────────────────────────┐
►──┼─────────────────────────────────────────────────────────────────────────┼──►
   └─,ERRAT=LASTLINE──┬─────────────┬──┬──────────────┬──┬─────────────┬─────┘
                      └─,INTENSIFY──┘  ├─,BLUE────────┤  ├─,BLINK──────┤
                                       ├─,RED─────────┤  ├─,REVERSE────┤
                                       ├─,PINK────────┤  └─,UNDERLINE──┘
                                       ├─,GREEN───────┤
                                       ├─,TURQUOISE───┤
                                       ├─,YELLOW──────┤
                                       └─,NEUTRAL─────┘

   ┌─,MIGRATE=YES──────┐
►──┼───────────────────┼──┬─────────────┬──┬──────────────────┬──────────────►◄
   └─,MIGRATE=COMPLETE─┘  └─,SUFFIX=xx──┘  └─,SYSIDENT=name───┘
```

Note: SYSIDNT is Intercommunication only

Note: For general information about TYPE=INITIAL macros, see “TYPE=INITIAL (control section)” on page 496.

ACCMETH=([VTAM,]NONVTAM)
This specifies the access methods required in the running CICS system.

VTAM
Specify this if you are using VTAM as an access method. (You can define VTAM devices only with the CEDA transaction, however.)

NONVTAM
Specify this if you are using telecommunications access methods other than VTAM. These access methods include BSAM (for sequential devices) and TCAM (for remote TCAM terminals).

Note: The default is to assume **both** VTAM and NONVTAM.

ERRATT={NO∨([LASTLINE][, INTENSIFY] [,{BLUE∨RED∨PINK∨GREEN∨TURQUOISE∨YELLOW∨ NEUTRAL}][,{BLINK∨REVERSE∨ UNDERLINE}])}
Indicates the way error messages are displayed on all 3270 display screens. You can either let it default to NO, or specify any combination of LASTLINE, INTENSIFY, one of the colors, and one of the highlights. Specifying INTENSIFY, one of the colors, or one of the highlights forces LASTLINE.

Any attributes that are not valid for a particular device are ignored.

NO Any error message is displayed at the current cursor position and without any additional attributes.

LASTLINE
Any error message is displayed starting at the beginning of the line nearest the bottom of the screen, such that the message fits on the screen.

Attention: If messages are received in quick succession, they overlay one another. The earlier messages may disappear before the operator has read them.

INTENSIFY
Error messages are intensified, and placed on the last line of the screen.

BLUE∨RED∨PINK∨GREEN∨TURQUOISE∨YELLOW∨ NEUTRAL
Error messages are shown in the color specified, and placed on the last line of the screen.

BLINK∨REVERSE∨UNDERLINE
Error messages are highlighted, and placed on the last line of the screen.

MIGRATE={YES∨COMPLETE}
This operand controls the building of TCT entries for VTAM devices that are **eligible** for resource definition online (RDO). The only way RDO-eligible resources may be moved to the CSD file from the macro source is to use DFHCSDUP, as described under YES below.

YES
YES indicates that you want to generate the necessary data to migrate your RDO-eligible resources. The records generated from the macro source are designed to be used as input to the DFHCSDUP utility program. An MNOTE attention message is issued for each RDO-eligible resource. The DFHCSDUP MIGRATE command converts them into resource definitions on the CSD file. These can then be managed using RDO.

COMPLETE
Use of COMPLETE means that TCT entries are not generated from the macro source for any RDO-eligible devices. For each one, the assembly

produces an MNOTE. This means that you can keep your TCT macro source code after you have migrated your definitions.

If you continue to assemble a TCT for resources that are not eligible for RDO, continue to use MIGRATE=COMPLETE.

SYSIDNT={CICS∨name}

This 1- to 4-character name is a private name that the CICS system uses to identify itself. If you use DFHTCT TYPE=REGION macros to define remote terminals, you must code this operand. It is used to determine whether a remote or a local TCT terminal entry is generated from each TYPE=TERMINAL macro following the TYPE=REGION macro. If the SYSIDNT on the TYPE=REGION macro is the same as the SYSIDNT on the TYPE=INITIAL macro, a local definition is generated; otherwise a remote definition is generated.

The value you code for this operand is used to define the name of the local region during assembly of the TCT only. You must also define the name of the local region, for execution purposes, using the SYSIDNT system initialization parameter.

Migrating TCT definitions—DFHTCT TYPE=GROUP

Use this macro to name the groups into which TCT definitions are put when you migrate to resource definition online. This macro can appear as many times as required and at any point in the macro source. Each time it appears, it defines the CSD file group into which subsequent definitions are put until the next DFHTCT TYPE=GROUP macro occurs.

```
►►──DFHTCT──TYPE=GROUP──┬──────────────┬──────────────────────────────►◄
                        └─,GROUP=name──┘
```

GROUP=name

Code this with the name of the group to which subsequent definitions are migrated. The name can be up to eight alphanumeric characters, but must not begin with DFH. The default name is TCT*xx*, where *xx* is the value coded for SUFFIX in the DFHTCT TYPE=INITIAL macro. If an error is found, the existing group name continues.

If a group with the name you specify does not already exist, it will be created. If it does exist, subsequent definitions are added to it.

For details of how to migrate your TCT to the CSD file, see Appendix D, “Migrating the TCT to the CSD file,” on page 669.

DFHTCT logical device codes: VTAM non-3270

Certain types of logical unit may be used to gain access to more than one resource within a subsystem. For example, a card punch device may be attached to a 3770 logical unit: the CICS application program can direct punch output, through BMS, via the 3770 to the card punch device. The facility provided by CICS to permit communication to devices within logical units of this type is the **logical device code** (LDC).

Although these are VTAM units, they require macro definition, unlike other VTAM devices.

The logical units that support LDCs are:

3601 logical unit
3770 batch logical unit
3770 batch data interchange logical unit
3790 batch data interchange logical unit
LUTYPE 4 logical unit

To reference such a device in a CICS application program, or in the CMSG transaction for message switching, you specify an LDC mnemonic which CICS translates into a numeric LDC value. When CICS sends an output data stream to the logical unit, it includes the LDC value in the function management header (FMH). When the logical unit receives the data stream, it uses the LDC value to determine which component is to receive the output, or to perform some standard action.

Each LDC mnemonic to be referenced must be defined in the TCT, optionally with its associated LDC value and certain device characteristics for use by BMS functions. Such LDC information is contained in either the **system LDC table**, or in an **extended local LDC list**. You code the following DFHTCT macros to specify the system LDC table or an extended local LDC list:

- Code DFHTCT TYPE=LDC macro(s) to generate entries in the system LDC table. You may generate certain default LDC entries provided by CICS. For example,

  ```
  DFHTCT TYPE=LDC,LDC=SYSTEM
  ```

  generates the following entries in the system LDC table:

Table 29. System LDC table entries

LDC mnemonic	LDC value	Device	Pagesize (row,column)
DS	1	3604 Keyboard Display	6,40
JP	2	3610 Document Printer	1,80
PB	3	Passbook and Document Printer	1,40
LP	4	3618 Administrative Line Printer	50,80
MS	5	3604 Magnetic Stripe Encoder	1,40
CO	0	Console medium or default print data set group	
R1	32	Card input medium	1,80
H1	32	Card output medium	1,80
P1	48	Print medium or print data set group	50,80
W1	128	Word processing medium 1	50,80
W2	144	Word processing medium 2	50,80
W3	160	Word processing medium 3	50,80
W4	192	Word processing medium 4	50,80

  You may also define LDCs specifically to add LDC entries to the system LDC table. For example,

  ```
  DFHTCT TYPE=LDC,
         LDC=XX,
         DVC=BLUPRT,
         PGESIZE=(12,80),
         PGESTAT=PAGE
  DFHTCT TYPE=LDC,
         LDC=YY,
         DVC=BLUPCH,
         PGESIZE=(1,80),
         PGESTAT=AUTOPAGE
  ```

adds the following entries to the system LDC table:

Table 30. System LDC table entries defined by LDCs

LDC mnemonic	LDC value	Device	Pagesize (row,column)	PGESTAT
XX	48	Batch LU printer	12,80	PAGE
YY	32	Batch LU card output	1,80	AUTOPAGE

- Instead of the system LDC table, you may code the following series of DFHTCT TYPE=LDC macros to create an extended local LDC list. Default entries may also be generated. For example,

  ```
  LDC1  DFHTCT TYPE=LDC,LOCAL=INITIAL
  *  the next line generates default CO,R1,H1,P1 LDCs
     DFHTCT TYPE=LDC,LDC=BCHLU
     DFHTCT TYPE=LDC,DVC=BLUPRT,LDC=AA,
            PGESIZE=(6,30)
     DFHTCT TYPE=LDC,DVC=BLUPCH,LDC=BB,
            PGESIZE=(1,80)
     DFHTCT TYPE=LDC,DVC=BLUCON,LDC=CC,
            PGESIZE=(1,132)
     DFHTCT TYPE=LDC,LOCAL=FINAL
  ```

  generates an extended local LDC list named LDC1 containing the following entries:

Table 31. Extended local LDC list entries

LDC mnemonic	LDC value	Device	Pagesize (row,column)
CO	0	Console medium or default printer data set group	
R1	32	Card input medium	1,80
H1	32	Card output medium	1,80
P1	48	Print medium or print data set group	50,80
AA	48	BLUPRT batch LU printer	6,30
BB	32	BLUPCH batch LU card output	1,80
CC	0	BLUCON batch LU console printer	1,132

When you are defining a logical unit in the TCT, you can specify its LDCs in either of two ways:

1. Code a DFHTCT TYPE=LDCLIST macro to define a local list of LDC mnemonics (and optionally their LDC values); for example,

   ```
   LDC2 DFHTCT TYPE=LDCLIST,
               LDC=(DS,JP,PB=5,LP,MS)
   ```

   In the DFHTCT TYPE=TERMINAL macro defining the logical unit, you specify in the LDC operand the name of the local list as defined by the DFHTCT TYPE=LDCLIST macro. For example:

   ```
        DFHTCT TYPE=TERMINAL,
               TRMTYPE=3600,
               LDC=LDC2, ...
   ```

   has associated the LDCs DS, JP, PB, LP, and MS with the 3601 logical unit that you are defining. The LDC values either may be specified in the local list, or are obtained from the system LDC table. If BMS uses these LDC mnemonics, their page size and page status must also be available from the system LDC table.

Note: A local list defined by a DFHTCT TYPE=LDCLIST macro may be shared by a number of 3601, LUTYPE 4 and batch logical units.

2. In the DFHTCT TYPE=TERMINAL macro defining the logical unit, you specify in the LDC operand the name of an extended local LDC list. For example:

```
LDC1 DFHTCT TYPE=LDC,LOCAL=INITIAL
     DFHTCT TYPE=LDC,LDC=BCHLU
     DFHTCT TYPE=LDC,DVC=BLUPRT,LDC=AA,
            PGESIZE=(6,30)
     DFHTCT TYPE=LDC,DVC=BLUPCH,LDC=BB,
            PGESIZE=(1,80)
     DFHTCT TYPE=LDC,DVC=BLUCON,LDC=CC,
            PGESIZE=(1,132)
     DFHTCT TYPE=LDC,LOCAL=FINAL
     DFHTCT TYPE=TERMINAL,TRMTYPE=BCHLU,
            LDC=LDC1, ...
```

   has associated the LDCs CO, R1, H1, P1, AA, BB, and CC with the batch logical unit that you are defining. Their LDC values and device characteristics for BMS functions are described in the extended local LDC list, which is named LDC1.

When CICS requests an output or message switching operation using a particular LDC mnemonic for a logical unit, it tries to resolve the mnemonic from the list (whichever form) specified by the LDC operand of the DFHTCT TYPE=TERMINAL macro. If the LDC is not located in the local list or in the extended local list, the LDC specified is not valid for that terminal entry. In this case, X'00' is inserted in the logical device code portion of the FMH, and no destination name is inserted.

When a BMS function is requested for an LDC, and the LDC mnemonic is successfully resolved, the device characteristics (for example, device name and destination name) are accessed for the BMS function. If the LDC is in an extended local LDC list, these characteristics lie in the located extended local list entry. Otherwise, the system LDC table is searched for the LDC and the associated device characteristics.

Logical device codes—DFHTCT TYPE=LDC macro

The DFHTCT TYPE=LDC macro may only be used with 3600, LUTYPE4, 3770 batch logical unit, and 3770/3790 batch data interchange logical units.

You are responsible for setting up the LDC structure to be used with the terminal.

The expansion of this macro is the same, regardless of where it is specified in the TCT definition.

```
►►──DFHTCT──TYPE=LDC──┬──────────────────────────┬──────────────────────────────►
                      └─,DSN=destination-name─┘

►──┬────────────────────────────────────┬──┬──────────────────────────────┬─────►
   └─,DVC=(device-type,sub-address)─┘  │        ┌─SYSTEM──────────┐  │
                                        └─,LDC=─┼─────────────────┼──┘
                                                 ├─LUTYPE4─────────┤
                                                 ├─3600────────────┤
                                                 ├─BCHLU───────────┤
                                                 └─aa─┬─────────┬──┘
                                                      └─=number─┘
```

```
►─┬──────────────────────────┬──┬──────────────────────────┬──────────────►
  └─,LOCAL=──┬─INITIAL─┬─────┘  └─,PGESIZE=(row,column)──┘
             └─FINAL───┘

►─┬──────────────────────────┬──────────────────────────────────────────►◄
  │           ┌─AUTOPAGE─┐   │
  └─,PGESTAT=─┤          ├───┘
              └─PAGE─────┘
```

name

Code this with the name of the extended local LDC list. It should be the same as that specified in the LDC operand of the DFHTCT TYPE=TERMINAL macro, and is only required if LOCAL=INITIAL is coded.

TYPE=LDC

Code this if an LDC is being defined to the system LDC table or to the extended local LDC list.

DSN=destination-name

Code this with the name to be used by BMS for destination selection for the batch data interchange logical unit. See the relevant CICS subsystem guides for further information on destination selection.

DVC=(device-type,sub-address)

Code this with the device type associated with the LDC to be used for a BMS request. This operand can only be coded in conjunction with the LDC=*aa*[=*nnn*] operand.

device-type

May be coded as follows:

Table 32. DVC=device-type entries

Device type	Explanation
3604	Keyboard display
3610	Cut-forms document printer or journal printer (including the document/journal printer of a 3612)
3612	Passbook portion of a 3612
3618	Currently selected carriage
3618P	Primary carriage
3618S	Secondary carriage
3618B	Both carriages
BLUCON	Batch logical unit console printer
BLUPRT	Printer component of a batch logical unit
BLURDR	Card input component of a batch logical unit
BLUPCH	Card output component of a batch logical unit
WPMED1	Word processing medium 1
WPMED2	Word processing medium 2
WPMED3	Word processing medium 3
WPMED4	Word processing medium 4

The device types BLUPRT, BLURDR, BLUPCH, and BLUCON are devices attached to a batch, batch data interchange, or LUTYPE4 logical unit.

The WPMED1, 2, 3, and 4 options apply to LUTYPE4 logical units only. The component to which these options apply is defined by the particular type 4 logical unit implementation.

sub-address

Code this with the media sub-address. The range is 0 through 15, with a default of 0. A value of 15 indicates any sub-address. The sub-address differentiates between two units of the same device type (for example, (BLUPRT,0) and (BLUPRT,1)), which could be two print components attached to one logical unit.

LDC={SYSTEM∨LUTYPE4∨3600∨BCHLU∨(aa[=nnn])}

Code this with the LDC mnemonic and numeric value to be defined. Only the LDC=*aa*[=*nnn*] option can be used in conjunction with the DVC, PGESIZE, and PGESTAT operands.

SYSTEM

The following system-default LDCs for 3600, batch, and LUTYPE4 logical units are to be established:

Table 33. System default LDCs

LDC mnemonic	LDC value	Device	Pagesize (row, column)
DS	1	3604 Keyboard Display	6,40
JP	2	3610 Document Printer	1,80
PB	3	Passbook and Document Printer	1,40
LP	4	3618 Administrative Line Printer	50,80
MS	5	3604 Magnetic Stripe Encoder	1,40
CO	0	Console medium or default print data set group	
R1	32	Card input medium	1,80
H1	32	Card output medium	1,80
P1	48	Print medium or print data set group	50,80
W1	128	Word processing medium 1	50,80
W2	144	Word processing medium 2	50,80
W3	160	Word processing medium 3	50,80
W4	192	Word processing medium 4	50,80

LUTYPE4

System-default LDC mnemonics are to be established for an LUTYPE4 (word processing) logical unit. These consist of the CO, R1, P1, H1, W1, W2, W3, and W4 mnemonics, the corresponding LDC values, and the appropriate page sizes.

3600

System-default LDC mnemonics for the 3600 are to be established. These consist of the DS, JP, PB, LP, and MS mnemonics, the corresponding LDC values, and the appropriate page-sizes and page-status.

BCHLU

System-default LDC mnemonics for a batch logical unit are to be established. These consist of the CO, R1, P1, and H1 mnemonics, the corresponding LDC values, and the appropriate page-sizes and page-status.

aa The 2-character mnemonic to be used for this LDC.

nnn

The numeric value to be associated with the LDC in the system or extended local LDC list. The value in the system list is used as a default value for this LDC if a value is not found in a local LDC list (that is, not in the extended list) associated with a TCTTE. A value must be specified for a 3600 device. A value need not be specified for a batch, batch data interchange, or LUTYPE4 logical unit but, if one is specified, it must correspond to the LDC value for the device type.

LOCAL={INITIAL∨FINAL}
An extended local LDC list is to be generated.

INITIAL
This is the start of an extended local LDC list.

FINAL
This is the end of an extended local LDC list.

Note: LOCAL=INITIAL or FINAL may not be coded in the same DFHTCT TYPE=LDC macro as other operands. All DFHTCT TYPE=LDC entries coded after LOCAL=INITIAL and before LOCAL=FINAL form part of one extended local LDC list; the entries coded outside the structure of this group are added to the system LDC table.

The following is an example of an extended local LDC list:

```
       DFHTCT TYPE=TERMINAL,TRMIDNT=BTCH,      *
       TRMTYPE=BCHLU,ACCMETH=VTAM,LDC=LDCA     *
LDCA   DFHTCT TYPE=LDC,LOCAL=INITIAL
       DFHTCT TYPE=LDC,DVC=BLUPRT,LDC=AA,      *
       PGESIZE=(6,30)
       DFHTCT TYPE=LDC,DVC=BLUPCH,LDC=BB,      *
       PGESIZE=(1,80)
       DFHTCT TYPE=LDC,DVC=BLUCON,LDC=CC,      *
       PGESIZE=(1,132),PGESTAT=AUTOPAGE
       DFHTCT TYPE=LDC,LOCAL=FINAL
```

PGESIZE=(row,column)
Code this with the logical page size to be used with this LDC when BMS requests are processed.

The product of *row* and *column* must not exceed 32767.

PGESTAT={AUTOPAGE∨PAGE}
Indicates whether the device is to use autopaging or not. Autopaging means that BMS multiple page messages are printed continuously, without operator intervention. This is what is normally required for a printer. (Contrast the requirement for multiple page messages, displayed on a 3270-type display, when the operator wants to finish reading a page, before requesting the next page to be delivered.)

Only BMS SEND commands with the PAGING option use autopaging. BMS SEND with TERMINAL or SET, does not use autopaging.

AUTOPAGE
Specify this for printers.

PAGE
Specify this for displays.

If the default PGESIZE or PGESTAT values provided by the LDC operand are to be overridden, code a specific LDC with the mnemonic to be overridden. Code this overriding LDC in the LDC table before coding the LDC operand.

PGESTAT=AUTOPAGE may be used to override the PGESTAT specification in DFHTCT TYPE=TERMINAL.

Logical device codes—DFHTCT TYPE=LDCLIST

The DFHTCT TYPE=LDCLIST macro, which may be used with 3600, LUTYPE4, and batch logical units, allows you to build a common list of logical device codes (LDCs) to be shared by more than one TCTTE.

You are responsible for setting up the LDC structure to be used with the terminal.

The expansion of this macro is the same, regardless of where it is coded in the TCT definition.

```
►►──DFHTCT──TYPE=LDCLIST──────────────────────────────────────────────────────────►

►─,LDC=(aa─┬──────────┬─┬────────────────────┬─┬────────────────────┬─)──────────►◄
           └─=number──┘ └─,bb─┬──────────┬───┘ └─,cc─┬──────────┬───┘
                              └─=number──┘            └─=number──┘
```

listname
Is the required name of the LDC list. This name is referenced by TCTTEs through the LDC operand in DFHTCT TYPE=TERMINAL.

TYPE=LDCLIST
An LDC list is being defined.

LDC=(aa[=nnn][,bb[=nnn]][,cc[=nnn]][,...])
Code this with the LDCs (mnemonics and, optionally, the LDC numeric value) in this list.

(aa[=nnn][,bb[=nnn]] [,cc[=nnn]][,...])
Generates the LDCs in the list.

aa,bb,cc...
The 2-character mnemonics of the LDCs in this list.

nnn
A decimal value in the range 1 through 255 to be associated with an LDC. If a value is not specified, the system default value from the table defined by the DFHTCT TYPE=LDC macro, is used for this LDC. This value need not be coded for a batch or LUTYPE4 logical unit, but if it is, it must correspond to the LDC value for the device. LDCs for devices attached to a batch or LUTYPE4 logical unit are listed under the LDC parameter of the DFHTCT TYPE=LDC macro.

DFHTCT examples: LDC

The 3770 System and the 6670 Information Distributor

The *CICS/OS/VS IBM 3767/3770/6670 Guide* provides information for CICS users who intend to install a CICS system that communicates with an IBM 3767 Communication Terminal, a 3770 Communication System, or a 6670 Information Distributor.

LDCs for 3770 batch logical unit TCT example

```
DFHTCT TYPE=LDC,                           *
       LDC=XX,                             *
       DVC=BLUPRT,                         *
       PGESIZE=(12,80),                    *
       PGESTAT=PAGE
DFHTCT TYPE=LDC,                           *
       LDC=YY,                             *
       DVC=BLUPCH,                         *
       PGESIZE=(1,80),                     *
       PGESTAT=AUTOPAGE
DFHTCT TYPE=LDC,                           *
       LDC=SYSTEM
```

Figure 78. LDCs for 3770 batch logical unit TCT example

6670 LUTYPE 4 TCT example

You must use RDO to define the terminal. For guidance, refer to the LDCLIST keyword of the TYPETERM option in “TYPETERM definition attributes” on page 321.

```
LDCS   DFHTCT  TYPE=LDC,LDC=SYSTEM
LDC1   DFHTCT  TYPE=LDC,LOCAL=INITIAL
       DFHTCT  TYPE=LDC,DVC=(BLUCON,01),           *
               PROFILE=DEFAULT,LDC=PC,             *
               PGESIZE=(50,80),PGESTAT=AUTOPAGE
       DFHTCT  TYPE=LDC,DVC=(BLUPRT,02),           *
               PROFILE=BASE,LDC=PP,                *
               PGESIZE=(50,80),PGESTAT=AUTOPAGE
       DFHTCT  TYPE=LDC,DVC=(BLUPRT,08),           *
               PROFILE=BASE,LDC=P8,                *
               PGESIZE=(50,80),PGESTAT=AUTOPAGE
       DFHTCT  TYPE=LDC,DVC=(BLUPRT,08),           *
               PROFILE=DEFAULT,LDC=DP,             *
               PGESIZE=(50,80),PGESTAT=AUTOPAGE
       DFHTCT  TYPE=LDC,DVC=(BLUPCH,03),           *
               PROFILE=JOB,LDC=PM,                 *
               PGESIZE=(50,80),PGESTAT=AUTOPAGE
       DFHTCT  TYPE=LDC,DVC=(BLUPCH,03),           *
               PROFILE=DEFAULT,LDC=DM,             *
               PGESIZE=(50,80),PGESTAT=AUTOPAGE
       DFHTCT  TYPE=LDC,DVC=(WPMED1,04),           *
               PROFILE=WPRAW,LDC=P1,               *
               PGESIZE=(50,80),PGESTAT=AUTOPAGE
       DFHTCT  TYPE=LDC,DVC=(WPMED1,04),           *
               PROFILE=DEFAULT,LDC=D1,             *
               PGESIZE=(50,80),PGESTAT=AUTOPAGE
       DFHTCT  TYPE=LDC,DVC=(WPMED2,05),           *
               PROFILE=OII1,LDC=P2,                *
               PGESIZE=(50,80),PGESTAT=AUTOPAGE
       DFHTCT  TYPE=LDC,DVC=(WPMED2,05),           *
               PROFILE=DEFAULT,                    *
               LDC=D2,PGESIZE=(50,80),             *
               PGESTAT=AUTOPAGE
       DFHTCT  TYPE=LDC,DVC=(WPMED3,06),           *
               PROFILE=OII2,                       *
               LDC=P3,PGESIZE=(50,80),             *
               PGESTAT=AUTOPAGE
       DFHTCT  TYPE=LDC,DVC=(WPMED4,07),           *
               PROFILE=OII3,LDC=P4,                *
               PGESIZE=(50,80),PGESTAT=AUTOPAGE
       DFHTCT  TYPE=LDC,LOCAL=FINAL
```

Figure 79. 6670 Lutype 4 TCT example

Sequential devices

CICS uses BSAM to control sequential devices such as card readers, line printers, magnetic tape units, and DASD to simulate terminals. Only unblocked data sets can be used with BSAM.

These “sequential terminals” may be used before actual terminals are available, or during testing of new applications.

To define a sequential device, code the following macro instructions:

```
DFHTCT TYPE=INITIAL,
       ACCMETH=(NONVTAM)    defining the access
                            method
```

(Define the following macro instructions contiguously.)

```
DFHTCT TYPE=SDSCI,
       DSCNAME=isadscn,     defining the input
       DDNAME=indd, ...      data set
DFHTCT TYPE=SDSCI,
       DSCNAME=osadscn,     defining the output
       DDNAME=outdd, ...     data set
DFHTCT TYPE=LINE,
       ISADSCN=isadscn,
       OSADSCN=osadscn, ...
DFHTCT TYPE=TERMINAL,
       TRMIDNT=name, ...
```

The two data sets defined by the DFHTCT TYPE=SDSCI macros simulate a CICS terminal known by the name specified in the TRMIDNT operand of the DFHTCT TYPE=TERMINAL macro. The DSCNAMEs of the input and output data sets must be specified in the ISADSCN and OSADSCN operands of the DFHTCT TYPE=LINE macro respectively.

The end of data indicator (EODI) for sequential devices may be altered using the EODI system initialization parameter.

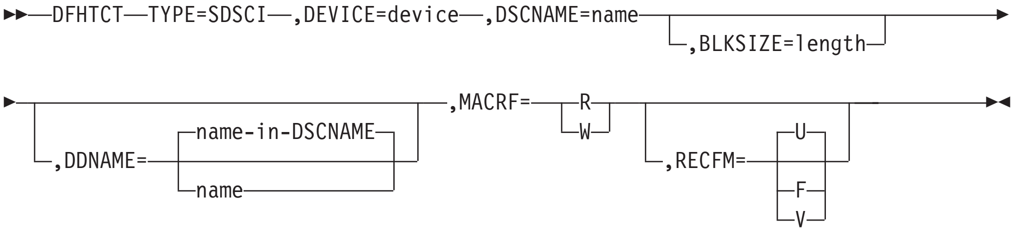
JCL for sequential devices

The DDNAME operands on the DFHTCT TYPE=SDSCI macros specify the ddname of the DD statements which you must provide in the CICS startup job stream:

```
//indd   DD  ...              input data set
//outdd  DD  ...              output data set
```

where *indd* is the data set containing input from the simulated terminal, and *outdd* is the data set to which output to the simulated terminal is sent.

Sequential devices—DFHTCT TYPE=SDSCI



BLKSIZE=length
Code this with the maximum length in bytes of a block.

The default is BLKSIZE=0. If this operand is omitted, the block size can be specified in the data definition (DD) statement associated with the data set. A more detailed explanation of this operand is given in the *MVS/ESA Data Administration: Macro Instruction Reference*.

DDNAME={name-in-DSCNAME∨name}
Supplies the name of the data definition (DD) statement associated with a particular data set (line group). If this operand is omitted, the DSCNAME becomes the DDNAME.

DEVICE=device
One of the following values may be coded:

- For card readers: **{1442**∨**2501**∨**2520**∨**2540**∨**2560**∨**2596**∨ **3505**∨**3525**∨**5425}**
- For line printers: **{1403**∨**1404**∨**1443**∨**1445**∨**3203**∨**3211**∨**5203}**

- For disk (DASD): **{2314∨3330∨3340∨3350∨DASD∨DISK}**
- For tapes: **TAPE**.

  The TAPE specification generates tape work files for both the input and the output data sets. Note that if an input tape with an expired label is used, the header may be rewritten, causing the first data records to be destroyed.

DSCNAME=name
The name of either the input or the output data set. If you are defining the input data set, ISADSCN on the DFHTCT TYPE=LINE macro must match the name that you specify: if you are defining the output data set, OSADSCN on the DFHTCT TYPE=LINE macro must match it.

MACRF=([R][,W])
Code this with the way in which access to the sequential device is to be gained.

R Indicates the READ macro.
W Indicates the WRITE macro.

The default is MACRF=R for a card reader and MACRF=W for a line printer. For other sequential devices, MACRF=R or MACRF=W must be coded.

RECFM={U∨F∨V}
Code this with the record format for the DCB.

U Indicates undefined records. Code this option for DEVICE=1403 or 3211, or if you are using DASD for sequential terminal output (that is, if DEVICE=DASD and MACRF=W).

F Indicates fixed-length records.

V Indicates variable-length records.

If you omit this operand, you can specify the record format in the data definition (DD) statement associated with the sequential data set.

Sequential devices—DFHTCT TYPE=LINE

```
►►──DFHFCT──TYPE=LINE──,ACCMETH=──┬─SAM────────┬──,INAREAL=length──────────────►
                                  ├─BSAM───────┤
                                  └─SEQUENTIAL─┘

►──,ISADSCN=input-name──,OSADSCN=outut-name──,TRMTYPE=──┬─U/R──┬──────────────►
                                                         ├─CRLP─┤
                                                         ├─DASD─┤
                                                         └─TAPE─┘

►──┬────────────────────────────┬──┬─────────────────────────┬──────────────►◄
   └─,LINSTAT='OUT OF SERVICE'──┘  │           ┌─0──────┐    │
                                   └─,TCTUAL=──┴─length─┴────┘
```

ACCMETH={SAM∨BSAM∨SEQUENTIAL}
Specify SAM, BSAM, or SEQUENTIAL — they are equivalent in CICS.

INAREAL=length
Code this with the message input area length. The value should be equal to the length of the longest initial logical record of a transaction that may include multiple physical records.

ISADSCN=name
The name of the input data set. The TYPE=SDSCI DSCNAME operand for the input data set must match this.

LINSTAT='OUT OF SERVICE'
The line is to be initiated with an 'out of service' status.

The default is 'in service'.

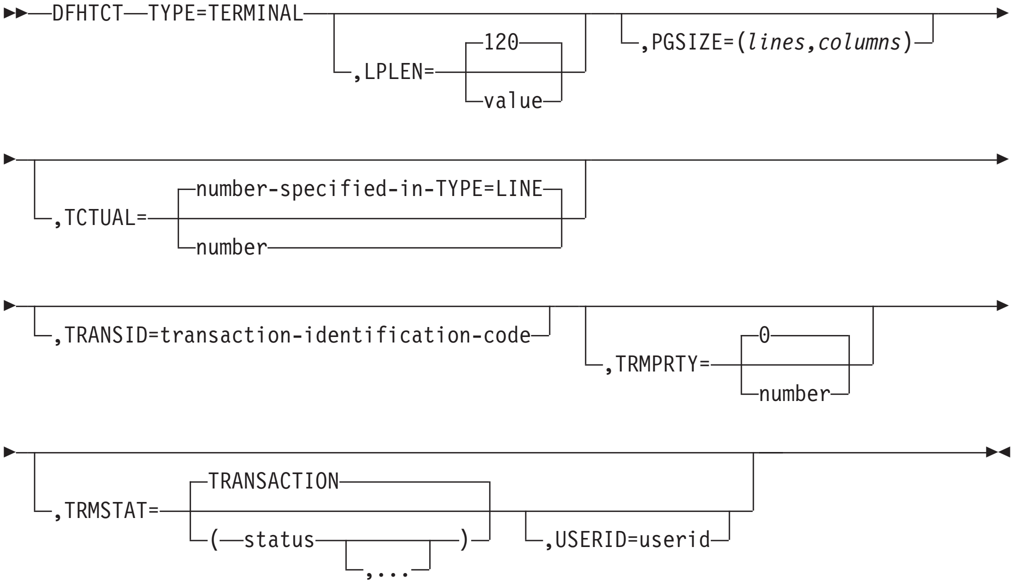
OSADSCN=name
The name of the output data set. The TYPE=SDSCI DSCNAME operand for the output data set must match this.

TCTUAL={0∨length}
Indicates the length in bytes (0 through 255) of the user area (the process control information field or PCI) for all terminal entries (TCTTEs) associated with this line. Make it as small as possible. The TCT user area is initialized to zeros at system initialization. If you want fields of different (variable) lengths, you can specify the TCTUAL value in one or more TYPE=TERMINAL macro instructions for terminals associated with this line.

TRMTYPE=(U/R∨CRLP∨DASD∨TAPE)
Indicates the sequential device type:

U/R	Any reader or printer
CRLP	A card reader and a line printer
DASD	A direct access storage device
TAPE	A magnetic tape device

Sequential devices—DFHTCT TYPE=TERMINAL



LPLEN={120∨value}
Controls the length of the print line for SAM output line printers. If no NL symbol is found in a segmented write, the print line length is the LPLEN value. The default is LPLEN=120.

PGESIZE=(lines,columns)
The default page size for a 1403 or CRLP terminal is (12,80). Code PGESIZE if BMS is required for a device that has TRMTYPE=DASD specified, and specify the number of lines and columns you wish to use. These two values multiplied together must equal the value specified for INAREAL. The product of *lines* and *columns* must not exceed 32767.

TCTUAL={number-specified-in-TYPE=LINE ∨number}

Indicates the length in bytes (0 through 255) of the user area (the process control information field or PCI) for the terminal entry (TCTTE) associated with this terminal. Make it as small as possible. The TCT user area is initialized to zeros at system initialization.

Use the TCTUAL operand of the DFHTCT TYPE=TERMINAL macro if you want fields of different (variable) lengths for terminals associated with this line. In any case, the PCI field is generated for each terminal after the last terminal entry of the last line. The address of the PCI field is located at TCTTECIA; the length is located at TCTTECIL.

TRANSID=transaction-identification-code

Code this with a 1- to 4-character transaction code. This code specifies a transaction that is to be initiated each time input is received from the terminal when there is no active task.

If a TRANSID is not specified in the TCTTE, the TRANSID in a RETURN command from the previous transaction is used. Otherwise, the first one to four characters of the data passed in the TIOA are used as the transaction code. A delimiter is required for transaction identifications of fewer than four characters.

TRMIDNT=name

Code this with a unique 4-character symbolic identification of each terminal. The identification supplied is left-justified and padded with blanks to four characters if less than four characters are supplied.

The value CERR is reserved, as this is the identification generated for the error console.

TRMPRTY={0∨number}

Establishes the terminal priority. This decimal value (0 through 255) is used in establishing the overall transaction processing priority. (Transaction processing priority is equal to the sum of the terminal priority, transaction priority, and operator priority, and must not exceed 255.)

TRMSTAT={TRANSACTION∨(status,...)}

Code this with the types of activity that may occur at a given terminal. This terminal status is initially set in the TCTTE and is a combination of the processing status and the service status.

TRANSACTION

A terminal with TRANSACTION status is used in the processing of transactions such as inquiries or order entries. A display station or a hard-copy terminal, to which no messages are sent without a terminal request, and through which transactions are entered, is a TRANSACTION terminal.

INPUT

Indicates a terminal that can send messages to, but cannot receive messages from, CICS.

Note: System messages may be routed to an input terminal under conditions such as invalid transaction identification and ATP batch count. This causes DFHTACP to be scheduled. To handle this situation, code a DFHTEP to perform any action that the user requires.

'OUT OF SERVICE'

Indicates a terminal that can neither receive messages nor transmit input.

Such terminals are not polled by CICS. The 'OUT OF SERVICE' parameter can be used in combination with any status setting.

Any terminal except the master terminal can be designated as 'OUT OF SERVICE'. When appropriate, the terminal can be placed in service by the master terminal and polling is resumed.

RECEIVE
Indicates a terminal to which messages are sent but from which no input is allowed. An example of this type of terminal is one that is located in a remote location, such as a warehouse, and is unattended, but may receive messages. Automatic transaction initiation is implemented as for TRANSCEIVE, below.

TRANSCEIVE
A terminal with TRANSCEIVE status is a TRANSACTION terminal to which messages are sent automatically. The automatic transaction initiation, either by transient data control or interval control, sets a condition in an appropriate terminal control table terminal entry. If the terminal status is TRANSCEIVE and if there is no transaction at the terminal, terminal control initiates the user-defined task. This task is expected to send messages to the terminal.

USERID=userid
Code this to specify a user identifier for devices such as printers that are unable to sign on using CESN. (You can also specify USERID for a display device, in which case the display is permanently signed on. Operators are unable to sign on.) You must code this operand if you want to use preset security with this device. All access to protected resources depends on USERID.

The userid is referred to in security error messages, security violation messages, and the audit trail. It must be defined to the security manager.

Userid must be a unique 1- to 8-character user identification. (A-Z 0-9 # $ and @ are acceptable characters.)

Remote terminals for transaction routing

CICS can communicate with other systems that have similar communication facilities. This kind of communication is known as **CICS intercommunication**. For more information, see the *CICS Intercommunication Guide*.

When you are concerned with resource definition, the system where the TCT is installed is the **local** system. The system that is being defined in the TCT is the **remote** system.

Transaction routing enables terminals in one CICS system to invoke transactions in another CICS system. You can use transaction routing between systems connected by MRO or by an LUTYPE 6.2 link.

Remote definitions for terminals for transaction routing

There are two possible methods of defining the terminals using macros. (There is another method, only possible using RDO, called 'shipping terminal definitions'. See “Terminals for transaction routing” on page 252.) The two macro methods are:

- **Method 1:**

```
DFHTCT TYPE=REGION, ...   (one for each region)
DFHTCT TYPE=SDSCI, ...    (for non-VTAM terminals only;
                           ignored for remote definitions)

DFHTCT TYPE=LINE, ...     (for non-VTAM terminals only)

DFHTCT TYPE=TERMINAL, ... (for non-VTAM: one for each terminal)
```

- **Method 2:**

```
DFHTCT TYPE=REMOTE, ...   (one for each terminal)
```

Both methods allow the same terminal definitions to be used to generate the required entries in both the local and the remote system.

Method 1:
You can use copybooks to include the same source code in the TCTs for local and remote systems. The information not needed (that is, the whole of the TYPE=SDSCI macro, and some of the TYPE=LINE and TYPE=TERMINAL macros) is discarded for remote entries.

CICS decides whether to create a remote or a local definition on the basis of the SYSIDNT operand on the TYPE=REGION macro. This is compared with the SYSIDNT operand in DFHTCT TYPE=INITIAL. If they are the same, the definition(s) are local. If they are different, the definition(s) are remote.

Note: CICS TS 3.1 does not support local TCAM terminals and therefore does not build local definitions of TCAM terminals.

Method 2:
Employs a single DFHTCT TYPE=REMOTE macro.

CICS decides whether to create a remote or a local definition on the basis of the SYSIDNT operand on the TYPE=REMOTE macro. This is compared with the SYSIDNT operand in DFHTCT TYPE=INITIAL. If they are the same, the definition(s) are local. If they are different, the definition(s) are remote.

Note: CICS TS for z/OS, Version 3.1 does not support local TCAM terminals and therefore does not build local definitions of TCAM terminals.

These terminals cannot use transaction routing and therefore cannot be defined as remote:
- IBM 7770 or 2260 terminals
- MVS system consoles
- Pooled TCAM terminals
- Pooled 3600 or 3650 Pipeline Logical Units

Remote terminals, method 1—DFHTCT TYPE=REGION

The DFHTCT TYPE=REGION macro introduces information about the named region. The information consists of DFHTCT TYPE=LINE and TYPE=TERMINAL macros. These must follow the DFHTCT TYPE=REGION macro. For a remote region, the DFHTCT TYPE=LINE macro does not generate a TCT line entry (TCTLE). Every terminal that participates in transaction routing must be defined. Only certain DFHTCT macro types and operands are relevant in remote region definitions; all others are ignored. The operands that are relevant are those listed in "Remote terminals, method 2—DFHTCT TYPE=REMOTE" on page 594.

```
►►──DFHTCT──TYPE=REGION──,SYSIDNT=──┬─name──┬──────────────────────────────►◄
                                    └─LOCAL─┘
```

SYSIDNT={name∨LOCAL}
Indicates the 4-character name of the system or region whose information starts or resumes here. SYSIDNT=LOCAL can be specified to indicate that the TYPE=TERMINAL definitions following it refer to the home region, as do all definitions preceding the first DFHTCT TYPE=REGION macro. The name of the home region (that is, the region in which this terminal control table is used) is the value of the SYSIDNT operand of the DFHTCT TYPE=INITIAL macro. The name can instead be that of a previously defined MRO link or ISC link.

Remote terminals, method 1—DFHTCT TYPE=TERMINAL

Note: The DFHTCT TYPE=LINE macro and the additional operands of the DFHTCT TYPE=TERMINAL macro are valid, but are ignored if the SYSIDNT operand on the preceding DFHTCT TYPE=REGION macro indicates a remote region. (For details of the DFHTCT TYPE=LINE and DFHTCT TYPE=TERMINAL macros, see "Sequential devices" on page 586 and TCAM—DFHTCT TYPE=SDSCI, LINE, TERMINAL.)

```
►►──DFHTCT──TYPE=TERMINAL──,ACCMETH=access-method──,SYSIDNT=name─────────────►

►─,TRMIDNT=name──,TRMTYPE=terminal-type──────────────────────────────────────►

►──┬──────────────────────────────────────────┬──────────────────────────────►◄
   │             ┌─name-specified-in-TRMIDNT─┐│
   └─,RMTNAME=───┼───────────────────────────┼┘
                 └─name──────────────────────┘
```

ACCMETH=access-method
Code this with the access method of the remote terminal.

RMTNAME={name-specified-in-TRMIDNT∨name}
Specifies the 1- to 4-character name by which the terminal is known in the system or region that owns the terminal (that is, in the TCT of the **other** system). If this operand is omitted, the name in the TRMIDNT operand is used.

SYSIDNT=name
Indicates the 4-character name of the system or region that owns this terminal. This may be the local system or region (that is, the name defined in the TYPE=INITIAL macro), in which case the TCT entry created is a local definition. It may be the name of a different system or region, in which case the TCT entry created is a remote definition. This SYSIDNT must be the same as the SYSIDNT on the TYPE=REGION macro that precedes this macro.

TRMIDNT=name
Specifies the 1- to 4-character name by which the terminal is known in **this** system (that is, in the local system that owns this TCT, and that owns the transactions).

TRMTYPE=terminal-type
Code this with the terminal type. For details, see "Sequential devices" on page 586 and TCAM—DFHTCT TYPE=SDSCI, LINE, TERMINAL.

Remote terminals, method 2—DFHTCT TYPE=REMOTE

Terminal entries for remote systems or regions can be defined to CICS using the DFHTCT TYPE=REMOTE macro as an alternative to defining them using DFHTCT TYPE=TERMINAL macro instructions in conjunction with a DFHTCT TYPE=REGION macro.

The expansion of the DFHTCT TYPE=REMOTE macro is independent of the region currently referenced.

Note: If the SYSIDNT operand indicates that the **home** region owns the terminal, all the operands of the DFHTCT TYPE=TERMINAL macro become valid on the DFHTCT TYPE=REMOTE macro and have the same meaning as for TYPE=TERMINAL. However, if (as is normally the case) the SYSIDNT operand indicates a remote region, the additional operands of DFHTCT TYPE=TERMINAL are valid on the DFHTCT TYPE=REMOTE macro, but are ignored. (For details of the DFHTCT TYPE=TERMINAL macro, see "Sequential devices" on page 586 and TCAM—DFHTCT TYPE=SDSCI, LINE, TERMINAL.)

```
►►──DFHTCT──TYPE=REMOTE──,ACCMETH=access-method──,SYSIDNT=name──,TRMIDNT=name──────►

►─,TRMTYPE=terminal-type──┬─────────────────────────────────────────────┬────────►◄
                          │             ┌─name-specified-in-TRMIDNT─┐   │
                          └─,RMTNAME=───┼───────────────────────────┼───┘
                                        └─name──────────────────────┘
```

ACCMETH=access-method
Code this with the access method of the remote terminal.

RMTNAME={name-specified-in-TRMIDNT∨name}
Specifies the 1- to 4-character name by which the terminal is known in the system or region that owns the terminal (that is, in the TCT of the **other** system). If this operand is omitted the name in the TRMIDNT operand is used.

SYSIDNT=name
Specifies the name of the system or region that owns this terminal. The name must be the same as that used in the SYSIDNT operand of a previous TYPE=SYSTEM macro, or the TYPE=INITIAL macro.

TRMIDNT=name
Specifies the 1- to 4-character name by which the terminal is known in **this** system (that is, in the local system that owns this TCT, and that owns the transactions).

TRMTYPE=terminal-type
Code this with the terminal type. For details, see "Sequential devices" on page 586 or TCAM—DFHTCT TYPE=SDSCI, LINE, TERMINAL.

DFHTCT: CICS terminals list

This release of CICS is able to communicate with almost all previously supported terminals, either **directly** or **indirectly**, as described below.

New or current terminals are directly supported by CICS Transaction Server for z/OS if they conform to the VTAM interface.

CICS TS for z/OS, Version 3.1:

- Supports the **DCB** interface of the Telecommunication Access Method (TCAM) only indirectly. That is, you cannot use TCAM/DCB to connect terminals directly to a current-level CICS terminal-owning region (TOR). You can, however, use transaction routing from a back-level TOR to which the terminals are attached by TCAM/DCB.

  For example, if you have a network of terminals connected by the DCB interface of TCAM to a CICS TS 2.3 TOR, you will not be able to migrate the TOR to CICS TS for z/OS, Version 3.1. To do so, you must migrate your connections to use ACF/VTAM. Alternatively, you could route transactions from the TOR to a CICS TS for z/OS, Version 3.1 AOR.
- Does not support the **ACB** interface of TCAM, even indirectly.

  If you have a network of terminals connected by the ACB interface of TCAM to a back-level CICS TOR, you will not be able to route transactions from them to a CICS TS for z/OS, Version 3.1 AOR. You must migrate your connections to use ACF/VTAM, or route to a previous version of CICS. (All terminals that support TCAM/ACB also support ACF/VTAM.)
- Does not support the Basic Telecommunication Access Method (BTAM), even indirectly.

Table 34 summarizes how terminals are supported in CICS.

Table 34. IBM terminals and system types supported by CICS Transaction Server for z/OS.

Directly supported by CICS Transaction Server for z/OS using VTAM
3101 Display Terminal
3230 Printer
3268 Printer
3270 Information Display System
3270 PC
3270 PC/G
3270 PC/GX
3287 Printer
3600 Finance Communication System
3630 Plant Communication System
3640 Plant Communication System
3650 Retail Store System
3680 Programmable Store System
3730 Distributed Office Communication System
3767 Communication Terminal
3770 Data Communication System
3790 Communication System
4300 Processors
4700 Finance Communication System
5280 Distributed Data System
5520 Administrative System
5550 Administrative System
5937 Rugged Terminal
6670 Information Distributor
8100 Information System
8775 Display Terminal
8815 Scanmaster
Displaywriter
Personal Computer, PS/2, PS/55
System/32
System/34
System/36

Table 34. IBM terminals and system types supported by CICS Transaction Server for z/OS. (continued)

Directly supported by CICS Transaction Server for z/OS using VTAM
System/38
AS/400
System/370 (inc 303x, 308x, and 3090 processors)
Teletypewriter Exchange Service (TWX 33/35)
World Trade Typewriter Terminal (WTTY)

VTAM terminals

For a detailed list of VTAM-supported terminals, and how to define them to CICS, see “Devices supported” on page 312.

Chapter 58. TLT—terminal list table

A terminal list table (TLT) generated by the DFHTLT macro instruction allows terminal and operator identifications to be grouped logically. A TLT:

- Is **mandatory** for use by CEST (the supervisor terminal transaction), to define and limit the effective range of the operation. For example:

  ```
  CEST SET TERMINAL(*) SUPRID(CG) OUTSERVICE
  ```

  sets all terminals defined in DFHTLTCG out of service.
- May be used by CEST or CEMT (the master terminal transaction) to apply an operation to a predetermined group of terminals. (For a CEST operation, this TLT must define a subset of the TLT specified by SUPRID.) For example, each of the following commands:

  ```
  CEST SET TERMINAL(*) SUPRID(CG) CLASS(EM) INSERVICE
  CEMT SET TERMINAL(*) CLASS(EM) INSERVICE
  ```

  sets all terminals defined in DFHTLTEM in service.
- May be used singly or in combination with other TLTs to provide predefined destinations for message switching. For example:

  ```
  CMSG ROUTE=PG,'PRODUCTION MEETING AT 11.00 IN
            ROOM 2124',SEND
  ```

  sends a message to all terminals or operators defined in DFHTLTPG.

The same TLT can be used for message switching and for supervisory or master terminal functions. For example, a TLT defining the terminals that are under control of a supervisory terminal could also be used as a destination list for sending messages to those terminals.

For some logical units, logical device code (LDC) mnemonics (that may be associated with each table entry), are used for message switching and are ignored for master and supervisory terminal operations.

In an intercommunication network, all the terminals in a terminal list table must be owned by the system on which the table is used.

The following macros define the TLT entries:

- Control section—DFHTLT TYPE=INITIAL
- Entries in terminal list table—DFHTLT TYPE=ENTRY
- End of terminal list table—DFHTLT TYPE=FINAL (see “TYPE=FINAL (end of table)” on page 497)

Control section—DFHTLT TYPE=INITIAL

The DFHTLT TYPE=INITIAL macro establishes the entry point and the address of the start of the terminal list table being defined.

```
►►──DFHTLT──TYPE=INITIAL──┬──────────┬──┬─────────────┬─────────────────────►◄
                          └─,LDC=aa──┘  └─,SUFFIX=xx──┘
```

Note: For general information about TYPE=INITIAL macros, see “TYPE=INITIAL (control section)” on page 496.

LDC=aa
Code this with a 2-character logical device code (LDC) mnemonic. This is associated with every logical unit identification, except for those for which an LDC mnemonic is specified on a DFHTLT TYPE=ENTRY macro.

SUFFIX=xx
The module name of the TLT is DFHTLT*xx*, where *xx* is a 1-or 2-character suffix. This provides unique identification for each TLT used. Because the names TLTBA, TLTBB, TLTBC, and TLTEA are used within the TLT, suffixes BA, BB, BC, and EA must not be used.

A TLT must have a suffix to be used by the message switching transaction, CMSG.

Entries in terminal list table—DFHTLT TYPE=ENTRY

Entries are coded in the TLT as follows:

```
                               ┌─,──────────────────────────────────────────────────┐
                               ▼                                                    │
►►─DFHTLT─TYPE=ENTRY─,TRMIDNT=(─┬──────────────────────────┬─┬────────────┬─┴─)───►◄
                                └─termid-1─┬─────────┬─────┘ └─/opid-1─┘
                                           └─*ldc-1──┘
```

TYPE=ENTRY
Code this if one or more entries are to be generated in this table, up to a maximum of 1000 entries.

TRMIDNT=([termid-1[*ldc-1]] [/opid-1][, termid-2[*ldc-2][/opid-2],...])
Code this with a list of start-stop and BSC terminal, logical unit, and operator identifications. A logical unit identification can be qualified by an LDC mnemonic.

termid
Indicates a 1- to 4-character start-stop or BSC terminal or logical unit identification.

Note: A 3614 attached to a communications controller may be used in master or supervisory terminal operations but should not be used in message switching operations. (A 3614 is not valid for a message destination.)

ldc
Indicates a 2-character LDC mnemonic, which must be preceded by an asterisk (*) and is only used following the 'termid' parameter to which it is appended.

opid
Indicates a 1- to 3-character operator identification that must be preceded by a slash (/).

Any terminal or operator identification specified should also be specified in the TRMIDNT operand of the DFHTCT macro and in your external security manager, respectively. (If you employ RACF, you use the OPIDENT operand of the ADDUSER command to record the identification for each operator.) Any LDC mnemonic specified should also be specified in the LDC operand of the DFHTCT TYPE=LDC and DFHTCT TYPE=TERMINAL macros.

Supervisory and master terminal functions use the terminal and logical unit identifications included in the TLT, but ignore all references to LDC mnemonics and operator identifications.

DFHTLT example

Figure 80 shows how to create a terminal list table.

```
Example 1

DFHTLT TYPE=INITIAL,                                *
       SUFFIX=AA
DFHTLT TYPE=ENTRY,                                  *
       TRMIDNT=(NYC,CHI,LA,WDC)
DFHTLT TYPE=ENTRY,                                  *
       TRMIDNT=SF
DFHTLT TYPE=ENTRY,                                  *
       TRMIDNT=(BSTN/OP1,ATL/OP5,/OP9,DNVR)
DFHTLT TYPE=ENTRY,                                  *
       TRMIDNT=/OP6
DFHTLT TYPE=FINAL
END

Example 2

DFHTLT TYPE=INITIAL,                                *
       SUFFIX=XX
DFHTLT TYPE=ENTRY,                                  *
       TRMIDNT=(NYC,T361*LP,T362*LP/OP1)
DFHTLT TYPE=ENTRY,                                  *
       TRMIDNT=(T363/OP2,T364/OP5,T365)
DFHTLT TYPE=FINAL
END
```

Figure 80. Terminal list table—example

Chapter 59. TST—temporary storage table

Note: Although the DFHTST macro is supported by CICS Transaction Server for z/OS, it is recommended that you use resource definition online (RDO) to define the equivalent TSMODEL definitions. The TSMODEL resource definition supports attributes that are not supported by the DFHTST macro; for example, the LOCATION(MAIN/AUXILIARY) attribute.

The temporary storage table (TST) is a list of generic names (or prefixes) used to identify sets of temporary storage queues. Generic names are formed from the leading characters of the appropriate queue names, and can be up to seven characters long.

- The generic names coded on a DFHTST TYPE=RECOVERY macro identify queues for which CICS provides backout of changes in the event of transaction failure or protection against system failure.
- The generic name coded on a DFHTST TYPE=REMOTE macro identifies queues for which CICS routes the temporary storage request to a remote CICS region or TS server, unless the remote system name (SYSIDNT) is the same as that of the local CICS. If SYSIDNT is the same name as the local CICS, the queues specified by the DATAID option are treated by CICS as local queues.
- The generic name coded on a DFHTST TYPE=LOCAL macro identifies queues as local queues that reside in the CICS region in which the TST is installed.
- The generic name coded on a DFHTST TYPE=SECURITY macro identifies queues for which resource security checking is required.

Note: DATAIDs using all eight characters define unique temporary storage queue names.

Choose a naming convention for queue names that enables you to define many queues with only a few generic names. This reduces considerably the task of TST definition.

Note: CICS searches the TST for the first prefix that satisfies the particular search criteria. For example, if CICS searches for temporary storage queue ABCDEFGH, and the TST contains prefix A followed by prefix AB, A is selected. To avoid this, define the less-generic entries to the TST before any more-generic entries, so that the first to be found is the least generic of all possible matches.

Note that when CICS is looking for DATAIDs to match against a TS queue name, it searches only the types of entry in which it is interested for that particular search. CICS searches:

- Local *and* remote entries when determining whether a queue is remote. Thus, local and remote entries are regarded as one search category when CICS is matching a queue name against generic names.
- Recovery and remote entries when determining whether a queue is recoverable. However, if the leading characters of a queue name match **both** TYPE=RECOVERY and TYPE=REMOTE generic names, TYPE=REMOTE takes precedence, and the recovery option must be redefined in the local region in which the queue resides. (Queues in a shared TS pool cannot be recoverable.)
- Security entries only when determining whether a queue is subject to security.

When a task modifies temporary storage data designated as recoverable, the data is protected from modification by a concurrent task by enqueuing on the queue name. The queue name is not dequeued until the task terminates or issues a task syncpoint request to designate the end of a logical unit of work. At this time a log record is written to the system log data set to provide external information sufficient to recover the data if the system subsequently terminates abnormally.

You can use these macros to define the TST entries:

- Control section—DFHTST TYPE=INITIAL
- Recoverable temporary storage—DFHTST TYPE=RECOVERY
- Local temporary storage—DFHTST TYPE=LOCAL
- Remote temporary storage—DFHTST TYPE=REMOTE
- Temporary storage security checking— DFHTST TYPE=SECURITY
- Temporary storage data sharing—DFHTST TYPE=SHARED
- End of temporary storage table—DFHTST TYPE=FINAL (see “TYPE=FINAL (end of table)” on page 497)

Control section—DFHTST TYPE=INITIAL

The entry point and the beginning address for the temporary storage table being defined are established by the DFHTST TYPE=INITIAL macro.

```
►►──DFHTST──TYPE=(─INITIAL─┬──────────┬─)─┬─────────────┬──────────────────────►
                           └─,MIGRATE─┘   └─,SUFFIX=xx─┘

►─┬─────────────────────┬───────────────────────────────────────────────────►◄
  │            ┌─0──────┐ │
  └─,TSAGE=─┴─number─┴─┘
```

```
►►──DFHTST──TYPE=REMOTE─────────────────────────────────────────────────────►

►─,DATAID=(─character-string─┬──────────────────────┬─)──,SYSIDNT=name──────►
                             └─,character-string,...─┘

►─┬───────────────────────────┬─────────────────────────────────────────────►◄
  └─,RMTNAME=character-string─┘
```

For general information about TYPE=INITIAL macros, including the use of the SUFFIX operand, see “TYPE=INITIAL (control section)” on page 496.

MIGRATE
Specify MIGRATE when assembling your TST for migration to the CSD file.

TSAGE={0∨number}
Defines the aging limit of temporary storage data used by the temporary storage domain during emergency restart of CICS. Data that has not been referenced for the specified interval is not recovered. The value is specified in days with a maximum value of 512. A value of zero indicates that no data is to be purged on this basis.

Recoverable temporary storage—DFHTST TYPE=RECOVERY

The DFHTST TYPE=RECOVERY macro specifies the generic names used for temporary storage queues for which recovery is applicable.

```
►►──DFHTST──TYPE=RECOVERY──────────────────────────────────────────────────►

►─,DATAID=(─character-string──┬────────────────────────┬─)─────────────────►◄
                              └─,character-string,...──┘
```

TYPE=RECOVERY

Code this to identify the temporary storage queue names that are recoverable. If a temporary storage queue name is such that it is defined by both a remote **and** a recovery DATAID, it is considered to be remote. Recoverability can only be specified in the CICS region in which the queue is local.

Note: TYPE=ENTRY is retained for compatibility with previous releases, and means exactly the same as TYPE=RECOVERY.

DATAID=(*character-string[,character-string,...]***)|()**

Code this with one or more alphanumeric TS queue names that you want to be recoverable, where each name can be up to 8-characters in length. (See Chapter 59, "TST—temporary storage table," on page 601 for information about generic names and matching criteria.)

character-string

Each character string can represent a generic queue name, or a unique TS queue name. Generic names are specified using 1 to 7 leading characters of TS queue names. DATAIDs that use all 8 characters define unique queues names.

Multiple names must be enclosed in parentheses, and separated by a comma. You can omit the parentheses if you specify only one name. Some CICS-generated TS queue names that you should consider for recovery are:

- **DF** refers to temporary storage queues used by CICS interval control for START commands with data, but which do not specify a REQID.
- ** refers to temporary storage queues used by the BMS ROUTE command, and to those commands that use the PAGING operand.
- **$$** refers to temporary storage queues used by the BMS CMSG transaction when the PROTECT=YES option is specified on a START TRANSID command.

() This special (null) operand, without any value between the parentheses, is interpreted by CICS as specifying any queue that is not more explicitly specified by other DATAIDs.

Note:

1. If a TST is generated with no TYPE=RECOVERY entries, no recovery processing is performed. If an EXEC CICS START command is issued with any of the FROM, RTRANSID, RTERMID, or QUEUE parameters specified, and a REQID is not specified, CICS generates request identifications starting with the prefix "DF". If recovery is required for these requests, the TST should be generated with the corresponding generic name.

2. All temporary storage queues used by restartable transactions (those defined with RESTART(YES) in the transaction resource definition) should be made recoverable (including those with the default DF prefix).
3. Only data on auxiliary storage can be made recoverable. Data written to main storage is not recoverable, regardless of any recovery options that you may specify.

Local temporary storage—DFHTST TYPE=LOCAL

The DFHTST TYPE=LOCAL macro defines temporary storage queue names that reside in the local CICS region in which the TST is installed. This macro enables you to define local queues without knowing the SYSIDNT (see the SYSIDNT option on the DFHTST TYPE=REMOTE macro for more information).

Used in conjunction with the all-generic DATAID specified on the TYPE=REMOTE macro for remote and shared queues, this macro can help you to simplify greatly the task of defining local and remote queues.

```
►►──DFHTST──TYPE=LOCAL──────────────────────────────────────────────────────►

►─,DATAID=(─character-string──┬─────────────────────────┬─)───────────────►◄
                              └─,character-string,...──┘
```

TYPE=LOCAL
Indicates that this TST entry defines a set of local temporary storage queues.

DATAID=(*character-string[,character-string,...]***)|()**
Code this with one or more alphanumeric TS queue names, where each name can be up to 8-characters in length.

character-string
Each character string can represent a generic queue name, or a unique TS queue name. Typically, generic names are specified using 1 to 7 leading characters of TS queue names. DATAIDs that use all 8 characters define unique queue names.

Multiple names must be enclosed in parentheses, and separated by a comma. You can omit the parentheses if you specify only one name.

() This special (null) operand, without any value between the parentheses, is interpreted by CICS as specifying any queue that is not more explicitly specified by other DATAIDs. You can use this as a catch-all in the following way:

- If certain queues, which reside either in another region or in a shared TS pool, are specified on a TYPE=REMOTE macro with suitable generic DATAIDs, you can define all other queues as local by specifying DATAID=() on the TYPE=LOCAL macro.

This null option on the TYPE=LOCAL macro is mutually exclusive with DATAID=() on the TYPE=REMOTE macro, and the TST macro returns an assembly error if it is specified on both local and remote entries. Thus, if you specify DATAID=() on local TS queue entries, the TYPE=LOCAL macros must follow all TYPE=REMOTE macros.

Remote temporary storage—DFHTST TYPE=REMOTE

The DFHTST TYPE=REMOTE macro defines temporary storage queue names that reside in remote CICS regions when CICS intercommunication facilities are being used.

Use this macro also to define queues residing in a shared queue pool, which is treated like a remote region except that the name of the remote system matches the system name on a DFHTST TYPE=SHARED macro.

```
►►──DFHTST──TYPE=REMOTE──────────────────────────────────────────────────────►

►─,DATAID=(─character-string──┬─────────────────────────┬─)──,SYSIDNT=name───►
                              └─,character-string,...───┘

►──┬─────────────────────────────┬──────────────────────────────────────────►◄
   └─,RMTNAME=character-string───┘
```

TYPE=REMOTE
Indicates that this TST entry defines a set of remote temporary storage queues, which can reside either in a remote CICS region or in a shared TS pool in a coupling facility.

DATAID=(*character-string[,character-string,...]***)|()**
Code this with one or more alphanumeric TS queue names, where each name can be up to 8-characters in length. Use 1 to 7 leading characters from the leading characters of queue names to form generic names of those queues for which requests are to be routed to a remote region or to a TS server. (See Chapter 59, "TST—temporary storage table," on page 601 for information about generic names and matching criteria.)

Note: You cannot use the list form of the DATAID operand when RMTNAME is specified. If you specify the RMTNAME parameter, the syntax for DATAID is DATAID=*character-string*.

character-string
Each character string can represent a generic queue name, or a unique TS queue name. Typically, generic names are specified using 1 to 7 leading characters of TS queue names. The generic names are those used by application programs in the region in which this TST is installed.

Multiple names must be enclosed in parentheses, and separated by a comma. You can omit the parentheses if you specify only one name.

() This special operand, without any value between the parentheses, is interpreted by CICS as specifying any queue that is not more explicitly specified by other DATAIDs. You can use this as a catch-all in the following way:

- If the queues with names beginning with letters L, M, and N are local, and these are specified on a TYPE=LOCAL macro with suitable generic DATAIDs, you can define all other queues as remote by specifying DATAID=() on the TYPE=REMOTE macro, as follows:

```
         DFHTST TYPE=LOCAL,       *
               DATAID=(L,M,N)
*
         DFHTST TYPE=REMOTE,      *
               DATAID=()
```

The DATAID=() option on the TYPE=REMOTE macro is mutually exclusive with DATAID=() on the TYPE=LOCAL macro, and the TST macro returns an assembly error if it is specified on both local and remote entries.

DATAID=() must be the last entry in a set of local and remote entries. Thus, if you use DATAID=() on remote TS queue entries, the TYPE=REMOTE macros must follow any TYPE=LOCAL macros.

SYSIDNT=name

Identifies the region or server in which the remote or shared temporary storage queues reside. For a remote queue owned by another CICS region, the 4-character alphanumeric name specified must be the same as a REMOTENAME specified in the CONNECTION definition, or the SYSIDNT name specified on a DFHTST TYPE=SHARED entry.

You can use this parameter to specify the name of the local region in which the TST is installed. When the SYSIDNT operand matches the SYSIDNT specified on the system initialization parameter, the TS queues that match the DATAIDs are treated as local queues.

RMTNAME=character-string

Code this with the 1- to 8-character prefix that is to be used by CICS to replace that specified in the DATAID operand when a reference to the temporary storage queue is transmitted to a remote system or region. This operand defaults to the character string specified in the DATAID operand. The length of the character string specified in this operand must be the same as that in the DATAID operand. This mechanism allows access to a temporary storage queue in the remote system with the same name as one in the local system.

Temporary storage security checking—DFHTST TYPE=SECURITY

The DFHTST TYPE=SECURITY macro indicates that security checking is required for the temporary storage queues specified in the TST.

```
►►──DFHTST──TYPE=SECURITY──────────────────────────────────────────────────►

►─,DATAID=(─character-string──┬─────────────────────────┬─)────────────────►◄
                              └─,character-string,...───┘
```

TYPE=SECURITY

Indicates that this TST entry defines a set of temporary storage queues that require security checking.

DATAID=(*character-string[,character-string,...]***)|()**

Code this with one or more alphanumeric TS queue names, where each name can be up to 8-characters in length. Use 1 to 7 leading characters from the leading characters of queue names to form generic names of those queues that are subject to security checking. (See Chapter 59, "TST—temporary storage table," on page 601 for information about generic names and matching criteria.)

Note:

1. When this macro is used, a suitable profile (see the *CICS RACF Security Guide* for information about profiles) must be defined to the external security manager to control access to the TSQ. Otherwise, the macro will not have the intended effect.
2. The full TSQ name, rather than the DATAID, is passed to the security manager. (CICS/ESA 3.3 and earlier releases passed the DATAID.)

character-string
Each character string can represent a generic queue name, or a unique TS queue name. Typically, generic names are specified using 1 to 7 leading characters of TS queue names. The generic names are those used by application programs in the region in which this TST is installed.

Multiple names must be enclosed in parentheses, and separated by a comma. You can omit the parentheses if you specify only one name.

() This null operand, without any value between the parentheses, is interpreted by CICS as specifying any queue that is not more explicitly specified by other DATAIDs.

Temporary storage data sharing—DFHTST TYPE=SHARED

The DFHTST TYPE=SHARED macro specifies the remote system name by which CICS identifies a temporary storage pool in the coupling facility.

```
►►──DFHTST──TYPE=SHARED──,SYSIDNT=system-name──,POOL=pool-name──────────────────►◄
```

TYPE=SHARED
indicates that this TST entry defines a mapping between a system identifier (SYSIDNT) specified on a TYPE=REMOTE entry and a pool of TS data sharing queues.

SYSIDNT=*system_name*
specifies the 1- to 4-character system name that corresponds to a TS pool name.

CICS uses this SYSIDNT to map remote queues (defined by a TYPE=REMOTE entry, or an explicit SYSID on an API command) to a TS server, as follows:

- If an API temporary storage command specifies a remote queue explicitly (by means of the SYSID option), CICS maps the SYSID to a matching SYSIDNT on a TYPE=SHARED entry:
  - If a matching SYSIDNT is found, CICS uses the corresponding POOL name to identify the TS server that manages the shared TS queue.
  - If the SYSID does not match any TYPE=SHARED entry, the request is function shipped to the remote queue-owning region (QOR) named by SYSID.
- If an API temporary storage command references a remote queue identified by a TYPE=REMOTE entry, CICS checks for a matching SYSIDNT in the TYPE=SHARED entries:
  - If a TYPE=SHARED entry with a matching SYSIDNT is found, CICS uses the corresponding POOL name to identify the TS server that manages the shared TS queue.
  - If a TYPE=SHARED entry is not found, the queue is a remote queue and the request is function shipped to the QOR.

You can create multiple TYPE=SHARED entries, with different SYSIDNT names, that refer to the same POOL name. In this case, references to the same queue name refer to the same queue name regardless of which SYSID is used (on the API).

POOL=*pool_name*
specifies the 1- to 8-character name of the pool of TS queues that is to be used for TS requests that specify, implicitly or explicitly, the corresponding system

name. The pool-name must match the name specified on the POOL parameter of the TS server that manages the TS pool.

DFHTST example

Figure 81 illustrates an example of the coding necessary to create a CICS TST.

```
     DFHTST TYPE=INITIAL,              LIST OF GENERIC NAMES OF QUEUES *
            SUFFIX=01                  THAT ARE RECOVERABLE, REMOTE,
*                                      SHARED, LOCAL, OR REQUIRE
*                                      SECURITY CHECKING.
*
*  The following macro specifies that all LOCAL queues with
*  names beginning with the letter 'R' are RECOVERABLE:
*
     DFHTST TYPE=RECOVERY,                                             *
            DATAID=R
*
*  The following macro specifies that queues with names
*  beginning with C,D,E, and X are local queues:
*
     DFHTST TYPE=LOCAL,                                                *
            DATAID=(C,D,E,X)
*
*  The following macro specifies that queues with names
*  beginning with AB,L,M,N are remote queues on system RSYS:
*
     DFHTST TYPE=REMOTE,                                               *
            DATAID=(AB,L,M,N),                                         *
            SYSIDNT=RSYS,              Queue names on remote system    *
            RMTNAME=LC                 begin with letters LC
*
*  The next macro specifies that all queues not local as defined
*  above, or remote in system RSYS as defined above, are remote
*  queues that reside in a shared TS pool TYPE=SHARE macro.
*
     DFHTST TYPE=REMOTE,                                               *
            DATAID=(),                                                 *
            SYSIDNT=SHR1
*
*  The next macro specifies that remote queues with SYSIDNT=SHR1
*  are mapped to shared TS pool named TSQSHR1.
*
     DFHTST TYPE=SHARED,                                               *
            SYSIDNT=SHR1,                                              *
            POOL=TSQSHR1

*
*  The following macro specifies that queues with names
*  beginning with SAQ require security checking.
*    Note that the full TS queue name is passed to the ESM.
*
     DFHTST TYPE=SECURITY,                                             *
            DATAID=SAQ
*
     DFHTST TYPE=FINAL
     END
```

Figure 81. Temporary storage table—example

Chapter 60. XLT—transaction list table

The transaction list table (XLT), generated by the DFHXLT macro instruction, is a list of logically related transaction identifications. The XLT can be used to define:

- A list of transaction identifications that can be initiated from terminals during the first quiesce stage of system termination. If there are no PLT programs to execute, the first quiesce time can be short, thus giving little time to enter any XLT program before going into the second quiesce stage. You specify the suffix of the table to be used by means of the XLT system initialization parameter. The master terminal operator can change the suffix at system termination, using the XLT option of the CEMT PERFORM SHUTDOWN command. In addition to the transactions listed in the XLT, the CEMT and CESF CICS-supplied transactions can be initiated from terminals during the first quiesce stage, as can any transactions defined with SHUTDOWN(ENABLED).

  Note: You can also define the XLT as a PROGRAM if you would rather use RDO than macros. See “PROGRAM definition attributes” on page 177 for information on defining programs. Defining it as a program also means that it can be autoinstalled; see Chapter 43, “Autoinstalling programs, map sets, and partition sets,” on page 483 for information on autoinstall for programs.
- A group of transaction identifications to be disabled or enabled through the master terminal. The master terminal operator specifies the suffix of the table to be used, using the CLASS option of the CEMT SET TRANSACTION command. For details of the CEMT commands, see *CICS Supplied Transactions*.

Figure 82 on page 611 illustrates the coding to create a XLT.

The following macros are available to define the XLT entries:

- Control section—DFHXLT TYPE=INITIAL
- Entries in transaction list table—DFHXLT TYPE=ENTRY
- End of transaction list table—DFHXLT TYPE=FINAL (see “TYPE=FINAL (end of table)” on page 497)

Control section—DFHXLT TYPE=INITIAL

The DFHXLT TYPE=INITIAL macro establishes the entry point and start address of the XLT being defined:

```
►►──DFHXLT──TYPE=INITIAL──┬─────────────┬──────────────────────────────────►◄
                          └─,SUFFIX=xx──┘
```

For general information about TYPE=INITIAL macros, including the use of the SUFFIX operand, see “TYPE=INITIAL (control section)” on page 496.

Entries in transaction list table—DFHXLT TYPE=ENTRY

```
►►──DFHXLT──TYPE=ENTRY──┬────────────────────────────────────┬──────────────►
                        └─,TASKREQ=(kkkk──┬─────────────┬─)──┘
                                          └─,kkkk,...───┘
```

```
►─,TRANSID=(xxxx─┬────────────┬─)──────────────────────────────────────────────►◄
                 └─,xxxx,...──┘
```

TYPE=ENTRY
Code this if one or more entries are to be generated in the XLT.

TASKREQ=(kkkk[,kkkk],...)
kkkk can be one of the following:

- PA1 through PA3, and PF1 through PF24 indicates one of the special 3270 keys that can be used to initiate a task.
- LPA (light pen attention) indicates that a transaction is to be initiated when a light pen detectable field is selected.
- OPID (operator identification card reader) indicates that a transaction is initiated when the appropriate operator's identity badge has been read in.
- MSRE indicates that transactions are initiated when the 10/63 character magnetic slot reader is used.

Define each TASKREQ on the CSD file, and install it in the running system. (For further information, see the description of the TASKREQ attribute in “TRANSACTION definition attributes” on page 281.)

TRANSID=(xxxx[,xxxx],...)
Represents a 1- to 4-character transaction code. Define each TRANSID on the CSD file, and install it in the running system. (For further information, see the description of the TRANSACTION attribute in “TRANSACTION definition attributes” on page 281.)

If the TRANSID contains a special character (for example, a comma), the TYPE=ENTRY instruction must contain only one TRANSID with quotation marks as delimiters.

Note: TASKREQ and TRANSID are mutually exclusive parameters.

DFHXLT example

```
   DFHXLT TYPE=INITIAL,                    LIST OF TRANSACTIONS     *
          SUFFIX=IN                        THAT ARE ACCEPTED
*                                          DURING THE FIRST QUIESCE
*                                          PHASE OF SYSTEM
*                                          TERMINATION.
   DFHXLT TYPE=ENTRY,TASKREQ=PF5           (TASKREQ MUST ALSO BE
*                                          DEFINED IN THE CSD AND
*                                          INSTALLED IN THE RUNNING
*                                          CICS SYSTEM. AN ENTRY FOR
*                                          THE XLT MUST BE MADE IN
   DFHXLT TYPE=ENTRY,TRANSID=(USR1,USR2)   THE CSD.)
   DFHXLT TYPE=ENTRY,TRANSID='AA,1'
   DFHXLT TYPE=ENTRY,TRANSID='AA,2'
   DFHXLT TYPE=FINAL
   END

   DFHXLT TYPE=INITIAL,                    LIST OF LOGICALLY RELATED*
          SUFFIX=G1                        TRANSIDS TO BE ENABLED OR
*                                          DISABLED BY MASTER
*                                          TERMINAL.
   DFHXLT TYPE=ENTRY,TRANSID=(TSSA,TSRA)   (TRANSIDS MUST ALSO BE
   DFHXLT TYPE=ENTRY,TRANSID=(TDSA,TDRA)   DEFINED IN THE CSD AND
   DFHXLT TYPE=ENTRY,TRANSID=ICSA          INSTALLED IN THE RUNNING
   DFHXLT TYPE=FINAL                       CICS SYSTEM.)
   END
```

Figure 82. Transaction list table—example

Part 7. Appendixes

Appendix A. Obsolete attributes

This topic covers the following topics:

- "Obsolete attributes retained for compatibility"
- "Obsolete attributes—when were they supported?" on page 622

Obsolete attributes retained for compatibility

The attributes described here are not valid in CICS Transaction Server for z/OS, but are supported to provide CSD compatibility for earlier releases of CICS where they are still valid. See "Compatibility mode (CSD file sharing)" on page 15 for more information on compatibility mode.

Table 35 on page 622 shows which resource or resources each attribute is associated with, and which release or releases it was supported in.

BINDPASSWORD(*password*) **(APPC only)**

A password of up to 16 hexadecimal digits (0-9, A-F). A password of fewer than 16 digits is padded on the right with hexadecimal zeros.

CICS masks the password you supply to avoid unauthorized access. You should therefore find a safe way of recording the password.

If you supply a password, an identical password must be supplied in the remote system to ensure bind-time security, allowing a connection to be established.

CONSOLE({**NO**|*number*})

For migration purposes, it is possible to define a console using CONSOLE(number). However, when several MVS images are united to form a sysplex, the assignment of console identification numbers depends on the order in which the MVS images are IPLed. The identification numbers are determined from the sequence in which they are encountered in the several CONSOL*nn* members for the MVS images. Therefore, you are recommended to identify console devices attached to the sysplex by CONSNAME instead of CONSOLE. The results of using CONSOLE may be unpredictable.

Code a number in the range 01 through 250, but not 128. However, before you can use the console, it must be either defined to MVS in the CONSOL*nn* member of SYS1.PARMLIB or dynamically allocated by a product such as NETVIEW.

If you specify this attribute, do not specify CONSNAME.

EXTSEC({**NO**|**YES**})

specifies whether an external security manager (for example, RACF) is to be used for transaction security or resource security checking.

NO Only the security facilities provided by CICS are used by this transaction.

YES An external security manager may be used by this transaction.

INDOUBT({**BACKOUT**|**COMMIT**|**WAIT**})

specifies the action required if the transaction is using intercommunication, and abends at a critical time during syncpoint or abend processing. For guidance on using the INDOUBT option, see the *CICS Intercommunication Guide*.

BACKOUT

The effects of the transaction are backed-out. This must be specified for recoverable files.

COMMIT
The effects of the transaction are committed. Use INDOUBT(COMMIT) if you do not want dynamic transaction backout.

WAIT
Changes to recoverable temporary storage are locked until the session is recovered. The resources are then committed or backed out in step with the remote system.

INSERVICE({**YES**|**NO**})
specifies whether the session(s) can be used for communication. This attribute applies only to LUTYPE 6.1 ISC sessions. It is invalid for LUTYPE 6.2, and is ignored for MRO sessions. For MRO the status (in service or out of service) is determined by the status of the corresponding MRO CONNECTION.

YES
Transactions may be initiated and messages may automatically be sent across the session(s).

NO
The session(s) can neither receive messages nor transmit input.

LOGMODECOM({**NO**|**YES**})
LOGMODECOM indicates LOGMODE compatibility. It shows whether CICS is to make LOGMODE work the way it does in releases earlier than CICS/ESA 4.1. This parameter is not available in releases later than CICS/ESA 4.1.

LOGMODECOM(NO)
is the default and causes LOGMODE(0|name) to work as described under LOGMODE.

LOGMODECOM(YES)
causes LOGMODE(0|name) to work as it did in releases before CICS/ESA 4.1 for non *XRF-capable terminals. LOGMODECOM(YES) is ignored for XRF-capable terminals. Use this parameter only in exceptional circumstances - see the *CICS/ESA 4.1 Migration Guide* and the *CICS/ESA 4.1 Resource Definition Guide* for a fuller explanation.

OMGINTERFACE(*text*)
Defines a pattern that may match the IDL interface name. The maximum length of this field is 31 characters. This field is obsolete and retained only for compatibility with previous releases of CICS Transaction Server.

OMGMODULE(*text*)
Defines a pattern that may match the qualified module name (coded in CORBA IDL), which defines the name scope of the interface and operation whose implementation is to be executed. This field is obsolete and retained only for compatibility with previous releases of CICS Transaction Server.

OMGOPERATION(*text*)
Defines a pattern matching the IDL operation name. The maximum length of this field is 31 characters. This field is obsolete and retained only for compatibility with previous releases of CICS Transaction Server.

OPERID(*code*)
specifies the 3-character operator identifier associated with the sessions. Use OPERID if you are not specifying SECURITYNAME on the CONNECTION definition. Specifying OPERID is the **only** way of having an operator identifier if you have preset security (by specifying OPERRSL and OPERSECURITY).

OPERPRIORITY({**0**|*number*})
specifies the operator priority code to be used to determine the task processing priority for each transaction attached to the sessions. The code may be any

value from 0 through 255. Use OPERPRIORITY if you are not specifying SECURITYNAME on the CONNECTION definition. Specifying OPERPRIORITY is the **only** way of having an operator priority code if you have preset security (by specifying OPERRSL and OPERSECURITY).

OPERRSL({**0**|*number*[,...]})
specifies the resource security key for these sessions.

number[,...]
Code the preset resource security keys for these sessions. The OPERRSL keys are checked to see that they include the resource RSL value, by transactions that request RSL checking (RSLC(YES)). They are referenced for function shipping and distributed transaction processing requests. The OPERRSL keys comprise one or more decimal values from 1 through 24. You can specify more than one value as an inclusive range, using a dash (for example: `5-12`), or as a series of numbers separated by commas, for example: `5,6,7,8,9,10,11,12`. These two examples are equivalent. You can use dashes and commas in the same specification if you need to.

Specify OPERRSL keys if you are not specifying SECURITYNAME on the CONNECTION definition. However, if you specify OPERRSL keys for the sessions, you cannot have a sign-on, using SECURITYNAME, when the link is established. Note that the OPERRSL keys give access only to resources with the RSL values actually specified in the OPERRSL keys, not to resources with lower RSL values.

0
The sessions have no OPERRSL keys specified and do not have access to any resources through transactions with RSLC(YES), except resources with RSL(PUBLIC).

OPERSECURITY({**1**|*number*[,...]})
specifies the preset transaction security keys for the device. The transaction security keys are checked to see that they include the security value (TRANSEC) for a transaction about to be attached. They are referenced for function shipping and distributed transaction processing requests.

The security keys comprise one or more decimal values from 1 through 64. You can specify these values in the same way as for OPERRSL, above. In addition to the values you specify, a value of 1 is also assumed. The default value of 1 gives access to all unsecured transactions, because the default TRANSEC value is 1. For example: `5-10,12` is translated into: `1,5,6,7,8,9,10,12`.

Use OPERSECURITY if you are not specifying SECURITYNAME on the CONNECTION definition. However, if you specify OPERSECURITY keys for the sessions, you cannot have a sign-on, using SECURITYNAME, when the link is established.

OUTPRIVACY(**SUPPORTED**|**NOTSUPPORTED**|**REQUIRED**)
reflects the level of SSL encryption required for inbound connections to this service that is specified by the CIPHERS attribute.

During the SSL handshake, the client and server advertise which cipher suites they support, and, from those they both support, select the suite that offers the most secure level of encryption. For more information about cipher suites, see the *CICS RACF Security Guide*.

NOTSUPPORTED
Encryption is not used. During the SSL handshake, CICS advertises only supported cipher suites that do not provide encryption.

REQUIRED
Encryption is used. During the SSL handshake, CICS advertises only supported cipher suites that provide encryption.

SUPPORTED
Encryption is used if both client and server support it. During the SSL handshake, CICS advertises all supported cipher suites.

PORT(*number*)
specifies the TCP/IP port number to be used for non-SSL communication to this logical EJB/CORBA server. The port number must be in the range 1–65535. The default is 00683.

You must not specify the same port number for PORT and SSLPORT.

If you install a TCP/IP service on this port, the TCPIPSERVICE definition must specify SSL(NO).

PRIMEDSIZE({0|*value*})
specifies the primed storage allocation size in bytes.

0 CICS takes care of the storage for the control blocks.

Note: Leave PRIMEDSIZE as 0 if this TRANSACTION definition has been migrated with ANTICPG=YES.

value This value must not exceed 65520 bytes and, if specified at all, must include an allowance of 2800 bytes for CICS control blocks, and an allowance for the size of the TWA.

Storage acquired by a GETMAIN within the primed storage area is never freed (that is, the corresponding FREEMAIN is ignored).

Note that storage accounting areas within the primed storage allocation are doubleword-aligned, instead of the normal double-doubleword-aligned.

PRIVACY(**REQUIRED**|**SUPPORTED**|**NOTSUPPORTED**)
reflects the level of SSL encryption required for inbound connections to this service that is specified by the CIPHERS attribute.

During the SSL handshake, the client and server advertise which cipher suites they support, and, from those they both support, select the suite that offers the most secure level of encryption. You can edit the list of ciphers to set a minimum as well as a maximum encryption level. For more information about cipher suites, see the *CICS RACF Security Guide*.

NOTSUPPORTED
Encryption is not used. During the SSL handshake, CICS advertises only supported cipher suites that do not provide encryption.

REQUIRED
Encryption is used. During the SSL handshake, CICS advertises only supported cipher suites that provide encryption.

SUPPORTED
Encryption is used if both client and server support it. During the SSL handshake, CICS advertises all supported cipher suites.

PROTECT({NO|YES}) **(SNA LUs only)**
specifies whether output messages can be recovered (see the MSGINTEG option), and whether message logging is to take place.

NO Neither message integrity nor message logging is to take place.

YES Provides recovery for output messages. CICS also records the contents of deferred write requests that are pending at a syncpoint, and records the receipt of the definite response (associated with the deferred write) on the system log for message recovery and resynchronization purposes. Journaling support is required during generation of the CICS system.

If you specify PROTECT(YES):

- Specify MSGINTEG(YES). This ensures that the integrity response is received.
- Ensure that definitions for the transaction CSLG and program DFHZRLG are available.

RECOVNOTIFY({**NONE**|**MESSAGE**|**TRANSACTION**})
specifies whether, and how, the terminal user is notified that an XRF takeover has occurred, in case the user needs to take some action such as signing on again.

NONE The user is not notified.

MESSAGE
The user receives a message on the screen that the system has recovered. There are two BMS maps, DFHXRC1 and DFHXRC2, in map set DFHXMSG for the message. MESSAGE, rather than TRANSACTION, minimizes the takeover time.

The terminal must be defined with the ATI(YES) option, and must be capable of displaying a BMS map.

TRANSACTION
CICS initiates a transaction at the terminal. The name of the transaction is specified by the RMTRAN system initialization parameter. (The default transaction for this is the one specified in the GMTRAN system initialization parameter: the good-morning transaction.) TRANSACTION is more versatile than MESSAGE.

The terminal must be defined with ATI(YES).

RESSECNUM({**0**|*value*|**PUBLIC**})
specifies the resource security value to be associated with this file. This attribute is used when an EXEC command is executed within a transaction that has been defined with RESSEC(YES), and the command is attempting to reference this file.

0 A transaction defined with RESSEC(YES) is not allowed access to the file.

value The resource security value, in the range 1 through 24. When a transaction defined with RESSEC(YES) attempts to reference this file, *value* is checked against the keys derived from RESSECKEYS either in the sign-on table, or from the TERMINAL definition. If one of these keys matches *value*, the transaction is allowed access to the file.

PUBLIC
Any transaction is allowed access to the file, regardless of whether security checking is specified or not.

RPG
RPG was a permitted value for the LANGUAGE option of a PROGRAM resource until CICS Transaction Server for OS/390.

RSL(0|*value*|PUBLIC)
specifies the resource security value to be associated with this resource. This operand is used when an EXEC command is executed within a transaction that has been defined with RSLC(YES), and the command is attempting to reference the partition set.

0 A transaction defined with RSLC(YES) is not allowed access to the partition set.

value The resource security value, in the range 1 through 24. When a transaction defined with RSLC(YES) attempts to reference this partition set, *value* is checked against the keys derived either from the RSLKEY in the sign-on table, or from the OPERRSL on the TERMINAL definition. If one of these keys matches *value*, the transaction is allowed access to the partition set.

PUBLIC
Any transaction is allowed access to the partition set, regardless of whether no security checking or RSL checking is specified. However, if an external security manager is in force, it checks access authorities no matter what RSL value (including PUBLIC) has been defined for the resource.

SSL({CLIENTCERT|NO|YES})
specifies the secure sockets layer (SSL) type for this logical EJB/CORBA server:

CLIENTCERT
SSL is used and authentication must be performed using a client certificate. You must specify a value for SSLPORT.

If you install a TCP/IP service on the SSL port, the TCPIPSERVICE definition must specify SSL(CLIENTAUTH) and AUTHENTICATE(CERTIFICATE). (This means that the client is required to send an SSL certificate which maps to an external security manager userid.)

NO SSL is not used. This CorbaServer does not have an SSL port.

YES
SSL is used. You must specify a value for SSLPORT.

If you install a TCP/IP service on the SSL port, the TCPIPSERVICE definition must be specified in one of the following ways:
1. SSL(CLIENTAUTH) and AUTHENTICATE(NO). The client is asked for an SSL certificate and, if it sends one, CICS uses any userid configured for it.
2. SSL(YES) and AUTHENTICATE(NO). SSL is used, but the client is not asked for an SSL certificate.

SSLPORT(NO|*number*)
specifies the TCP/IP port number to be used for SSL communication by this logical EJB/Corba server. The port number must be in the range 1–65535. The default is No.

If SSL is NO, the value of this option is ignored.

If SSL is YES, the default for SSLPORT is 00684.

You must not specify the same port number for PORT and SSLPORT.

TCLASS({**NO**|*value*})
specifies the class associated with the task.

NO No class is assigned to the task.

value The decimal value (from 1 to 10) of the class associated with a task.

Note: Do not specify a TCLASS for a CICS-supplied transaction, because it may not be able to start if the class threshold is reached.

TRANSACTION(*name*)
allows only the specified transaction to be initiated from this device.

The name can be up to four characters in length. The acceptable characters are: A-Z a-z 0-9 $ @ # . / - _ % & ¢ ? ! : | " = ¬ , ; < >.

If you code this operand for a 3270 display, the only CICS functions the operator is able to invoke—other than this transaction—are paging commands and print requests.

TRANSEC({**1**|*value*})
specifies the transaction security value, in the range 1 through 64. When a user attempts to initiate the transaction, or when it is automatically initiated (through transient data or interval control), *value* is matched against the user's security keys defined in the DFHSNT SCTYKEY operand or, if the user is not signed on, the security keys defined in OPERSECURITY on the TERMINAL definition. If *value* is present in the security keys, the transaction is initiated.

Because all users and terminals have a security key of 1, any transaction with the default TRANSEC value of 1 is an unsecured transaction, and as such, it can be initiated by any user on the CICS system, whether they are signed on or not.

XRFSIGNOFF({**NOFORCE**|**FORCE**})
specifies the sign-on characteristics of a group of terminals.

FORCE
CICS should force sign-off of these terminals after an extended recovery facility (XRF) takeover.

NOFORCE
CICS should not force sign-off of these terminals after an extended recovery facility (XRF) takeover.

If you have a collection of terminals in a security-sensitive area, for example, you might choose to force sign-off of those terminals after a takeover, to prevent the use of the terminal in the absence of the authorized user. (This could happen if the authorized user left the terminal during takeover, and the terminal became active again while it was unattended.) This option works in conjunction with the XRFSOFF system initialization parameter and the XRFSOFF entry in the CICS RACF segment (if you are running RACF 1.9).

Obsolete attributes—when were they supported?

Table 35 shows which resource or resources each attribute is associated with, and which release or releases it was supported in.

Table 35. Obsolete attributes and their valid releases of CICS

Attribute	Resource type	Supported in
BINDPASSWORD	CONNECTION TERMINAL	CICS/ESA 4.1 CICS/ESA 3.3 CICS/ESA 3.2.1 CICS/ESA 3.1.1 CICS/MVS 2.1
CONSOLE	TERMINAL	CICS Transaction Server 1.3 CICS Transaction Server 2.2 CICS Transaction Server 2.3
DEBUG (value of JVM attribute)	PROGRAM	CICS Transaction Server 1.3
EXTSEC	TRANSACTION	CICS/MVS 2.1
INDOUBT	TRANSACTION	CICS/ESA 4.1 CICS/ESA 3.3 CICS/ESA 3.1.1 CICS/MVS 2.1
INSERVICE	SESSION	CICS/ESA 3.2.1 CICS/ESA 3.1.1 CICS/MVS 2.1.2
LOGMODECOM	TYPETERM	CICS/ESA 4.1
OMGINTERFACE	REQUESTMODEL	CICS Transaction Server 1.3
OMGMODULE	REQUESTMODEL	CICS Transaction Server 1.3
OMGOPERATION	REQUESTMODEL	CICS Transaction Server 1.3
OPERID	SESSION TERMINAL	CICS/ESA 3.1.1 CICS/MVS 2.1.2
OPERPRIORITY	SESSION TERMINAL	CICS/ESA 3.1.1 CICS/MVS 2.1
OPERRSL	SESSION TERMINAL	CICS/MVS 2.1
OPERSECURITY	SESSION TERMINAL	CICS/MVS 2.1
OUTPRIVACY	CORBASERVER	CICS Transaction Server for z/OS, Version 2 Release 3
PORT	CORBASERVER	CICS Transaction Server for z/OS, Version 2 Release 1
PRIVACY	TCPIPSERVICE	CICS Transaction Server for z/OS, Version 2 Release 3

Table 35. Obsolete attributes and their valid releases of CICS (continued)

Attribute	Resource type	Supported in
PROTECT	PROFILE	CICS/ESA 4.1 CICS/ESA 3.3 CICS/ESA 3.1.1 CICS/MVS 2.1
PRIMEDSIZE	TRANSACTION	CICS/MVS 2.1
RECOVNOTIFY	SESSION	CICS/ESA 3.3 CICS/ESA 3.2.1 CICS/ESA 3.1.1 CICS/MVS 2.1
RESSECNUM	FILE	CICS/ESA 3.3 CICS/ESA 3.2.1 CICS/ESA 3.1.1
RPG (value of LANGUAGE attribute)	PROGRAM	CICS/ESA 4.1
RSL	MAPSET PARTITIONSET PROGRAM TRANSACTION	CICS/MVS 2.1
SSL	CORBASERVER	CICS Transaction Server for z/OS, Version 2 Release 1
SSLPORT	CORBASERVER	CICS Transaction Server for z/OS, Version 2 Release 1
TCLASS	TRANSACTION	CICS/ESA 3.3 CICS/ESA 3.2.1 CICS/ESA 3.1.1 CICS/MVS 2.1
TRANSACTION	SESSION	CICS/MVS 2.1
TRANSEC	TRANSACTION	CICS/ESA 3.1.1 CICS/MVS 2.1
XRFSIGNOFF	TERMINAL TYPETERM	CICS Transaction Server for z/OS, Version 2 Release 1

Appendix B. CICS-supplied resource definitions, groups, and lists

This topic lists the resource definitions, groups, and lists supplied by IBM. It contains:

- "DFHLIST definitions"
- "CICS-supplied groups not in DFHLIST" on page 632
- "CICS-supplied compatibility groups" on page 633
- "The sample application program groups" on page 635
- "CICS transactions supplied by IBM" on page 639
- "TYPETERM definitions in group DFHTYPE" on page 643
- "Model TERMINAL definitions in group DFHTERM" on page 648
- "PROFILE definitions in group DFHISC" on page 650
- "PROFILE definitions in group DFHSTAND" on page 651
- "Model definitions in group DFHPGAIP" on page 653
- "TCPIPSERVICE definition in group DFH$SOT" on page 654

You initialize the CSD file by using the DFHCSDUP INITIALIZE command. (This command has no operand.) Following initialization, the CSD file contains two categories of resource definition groups:

1. Groups named in DFHLIST, essential for using RDO and other CICS-supplied transactions
2. Groups of definitions for the sample application programs, which are described in the *CICS/ESA 4.1 Sample Applications Guide*.

This topic also lists the CICS transactions, the TYPETERM definitions, model TERMINAL definitions, and PROFILE definitions that are supplied by IBM. These definitions are in four groups:

- DFHTYPE—TYPETERM definitions
- DFHTERM—model TERMINAL definitions for automatic installation
- DFHISC—PROFILE definitions for intersystem communication sessions
- DFHSTAND—PROFILE definitions

DFHLIST definitions

Table 36. DFHLIST resource definitions

Group Name	Description	Programs	Transactions	Other resources
DFH$SOT	CICS-supplied TCPIPSERVICEs			**TCP/IP Services**: ECI HTTPNSSL HTPSSL
DFHADST	Request model creation transactions	DFHADDRM DFHADJR	CREA CREC	**Mapsets:** DFHADMS
DFHBMS	Basic mapping support	DFHTPQ DFHTPR DFHTPS	CSPG CSPQ CSPS	

Table 36. DFHLIST resource definitions (continued)

Group Name	Description	Programs	Transactions	Other resources
DFHBR	Bridge programs	DFHL3270 DFHBRMP DFHBRCV	CBRA	
DFHCBTS	Local Request Queue file for BTS **Note:** This group is not protected by a lock. The definitions it contains can be modified if required.			**File:** DFHLRQ
DFHCFC	Programs needed for CICS C++ foundation classes	ICCFCDLL		
DFHCLNT	CICS Client CTIN	DFHZCT1 DFHZCN1	CTIN CCIN	**Tranclass:** DFHCOMCL
DFHCONS	Write to CPU console	DFHCWTO	CWTO	
DFHDBCTL	DBCTL transactions	DFHDBAT DFHDBCON DFHDBCT DFHDBDI DFHDBDSC DFHDBIQ DFHDBME DFHDBUEX	CDBC CDBD CDBI CDBN CDBO CDBT	**Mapsets:** DFHDBIE DFHDBNE
DFHDB2	DB2 support	DFHD2CM0 DFHD2CM1 DFHD2CM2 DFHD2CM3 DFHD2EDF DFHD2EX1 DFHD2EX2 DFHD2INI DSNCUEXT DSNTIAC DSNTIA1	CDBF CDBQ CEX2 DSNC	
DFHDCTG	TD queues for basic CICS facilities **Note:** This group is not protected by a lock. The definitions it contains can be modified if required.		CADL CADO CAIL CCMI CCPI CCZM CDB2 CDBC CDUL CEJL CESE CESO CIEO CIIL CJRM CMIG COSI CPLI CRDI CRDL CRPO CSBA CSBR CSCC CSCS CSDE CSDH CSDL CSFL CSJE CSJO CSKL CSML CSMT CSNE CSOO CSPA CSPL CSPW CSQL CSRL CSSH CSSL CSTL CSZL CWBO CWBW	

Table 36. DFHLIST resource definitions (continued)

Group Name	Description	Programs	Transactions	Other resources
DFHDP	Application debugging profile manager 3270 interface	DFHDPLU DFHDPIN DFHSOLI DFHDPCP	CADP CIDP	**Mapset:** DFHDPMS
DFHDPWB	Application debugging profile manager web interface	DFHDPWB DFHDPWM0 DFHDPWM1 DFHDPWM2 DFHDPWM3 DFHDPWM4 DFHDPWM5 DFHDPWM6 DFHDPWT0 DFHDPWF0		
DFHEDF	Execution diagnostic facility	DFHDBMS DFHDBTI DFHEDFBR DFHEDFD DFHEDFP DFHEDFR DFHEDFX DFHEIGDS DFHEITAB	CEBR CEDF	**Mapset:** DFHEDFM
DFHEDP	EXEC DLI user exit	DFHEDP		
DFHEJBU	Enterprise bean event program	DFHEJEP		
DFHFE	FE terminal test facility	DFHFEP DFHTRAP	CSFE	
DFHFEPI	Front End Programming Interface	DFHEITSZ DFHSZRMP	CSZI	
DFHHARDC	3270 Printer - VTAM	DFHP3270	CSPP	
DFHIIOP	Programs for DFHIIOP/CORBA group	DFHIIRRS DFHXOPUS DFJIIRP DFJIIRQ	CIRP CIRR	**Profile:** DFHCICSI
DFHINDT	In-doubt test tool	DFHINDAP DFHINDT DFHINTRU	CIND	**Tranclass:** DFHTCIND
DFHINQUI	Command definition	DFHEITBS		
DFHINTER	Command interpreter	DFHECID DFHECIP DFHECSP	CECI CECS	
DFHIPECI	ECI over TCP/IP	DFHIEP	CIEP	

Table 36. DFHLIST resource definitions (continued)

Group Name	Description	Programs	Transactions	Other resources
DFHISC	Intersystem communication	DFHCCNV DFHCHS DFHCLS3 DFHCLS4 DFHCLS5 DFHCNV DFHCRNP DFHCRQ DFHCRR DFHCRS DFHCRSP DFHCRT DFHDFST DFHDSRP DFHDYP DFHLUP DFHMIRS DFHMXP DFHRTC DFHRTE DFHSHRRP DFHSHRSP DFHUCNV DFHZLS1	CDFS CEHP CEHS CLQ2 CLR2 CLS1 CLS2 CLS3 CLS4 CMPX CPMI CQPI CQPO CRSQ CRSR CRTE CRTX CSHR CSMI CSM1 CSM2 CSM3 CSM5 CSNC CSSF CVMI CXRT	**Profiles:** DFHCICSF DFHCICSR DFHCICSS
DFHJAVA	Programs needed for Java support	DFHDLLOD DFHJVCVT DFHEJDNX DFHSJJML	CJMJ	
DFHLGMOD	CICS log manager			**Journalmodels:** DFHLOG DFHSHUNT DFHLGLOG
DFHLGQC	CICS log manager quiesce	DFHLGQC	CSQC	
DFHMISC	Miscellaneous programs	DFHNEP DFHPEP DFHRTY		
DFHMSWIT	Message switching program	DFHMSP	CMSG	
DFHOPCLS	Dynamic open/close program	DFHFCU	CSFU	
DFHOPER	Operator programs	DFHCETRA DFHCETRB DFHCETRC DFHCETRD DFHEITMT DFHEITOT DFHEITST DFHEMTA DFHEMTD DFHEMTP DFHEOTP DFHESTP	CEMT CEOT CEST CETR	**Mapsets:** DFHCTRH DFHCTRM
DFHOTS	OTS resynchronization transaction	DFHOTR	CJTR	

Table 36. DFHLIST resource definitions (continued)

Group Name	Description	Programs	Transactions	Other resources
DFHPGAIP	Autoinstall for programs	DFHPGADX DFHPGAHX DFHPGALX DFHPGAOX DFHPGAPG		**Mapset:** DFHPGAMP **Partition set:** DFHPGAPT
Note: Group DFHPLI is withdrawn. For PL/I Version 2 or later, see the PL/I installation manual (for example, *OS PL/I Version 2 Installation and Customization under MVS Guide*) for a complete list of the required program entries.				
DFHPSSGN	Persistent sessions signon retention	DFHZSGN DFHZPCT DFHZRPT	CPSS CPCT CRTP	
DFHRMI	Resource manager interface	DFHRMSY	CRSY	
DFHRPC	Remote procedure call	DFHRPAL DFHRPAS DFHRPC00 DFHRPMS DFHRPRP DFHRPTRU	CRPA CRPC CRPM	**Mapset:** DFHRP0
DFHRQS	Request stream join program	DFHRZJN		
DFHRSEND	VTAM resend program	DFHZRSP	CSRS	
DFHSDAP	SHUTDOWN ASSIST	DFHCESD	CESD	
DFHSIGN	Sign-on/sign-off programs and table	DFHCSSC DFHSFP DFHSNP DFHSNT	CESF CESN CSSC	**Mapsets:** DFHSNLE DFHSNSE
DFHSPI	Resource definition online	DFHAMP DFHDMP DFHEDAD DFHEDAP DFHEITSP DFHPUP DFHTBS DFHTOR DFHZATA DFHZATD DFHZATDX DFHZATR DFHZATS DFHZCQ DFHZCTDX DFHZDTDX DFHZPTDX	CATA CATD CATR CATS CDTS CEDA CEDA CEDB CEDC CFTS CITS CMTS	

Table 36. DFHLIST resource definitions (continued)

Group Name	Description	Programs	Transactions	Other resources
DFHSTAND	Standard CICS application programs	DFHACP DFHCXCU DFHEJITL DFHPSIP DFHQRY DFHSTP DFHTACP DFHTEP DFHTEPT DFHTFP DFHZXCU DFHZXRE DFHZXST	CEJR CQRY CSAC CSTE CXCU CXRE	**Profiles:** DFHCICSA DFHCICSE DFHCICSP DFHCICST DFHCICSV DFHPPF01 DFHPPF02 **Mapset:** DFHXMSG
DFHTCL	Compatibility TRANCLASS definitions			**Tranclasses:** DHTCL00 DFHTCL01 DFHTCL03 DFHTCL04 DFHTCL05 DFHTCL06 DFHTCL07 DFHTCL08 DFHTCL09 DFHTCL10 DFHTCLQ2 DFHTCLSX
DFHTERM	Model TERMINAL definitions			**Terminals:** LU2 LU3 APPC SCSP 3270 3284 L0E2 L0M2 L0M3 L0M4 L0M5 L2E2 L2M2 L2E3 L2M3 L2E4 L2M4 L2M5
DFHTERMC	Model TERMINAL definition for Console Autoinstall.			**Terminals:** AUTC

Table 36. DFHLIST resource definitions (continued)

Group Name	Description	Programs	Transactions	Other resources
DFHTYPE	TYPETERM definitions			**Typeterms:** DFHCONS DFHLU2 DFHLU3 DFHLU62T DFHSCSP DFH3270 DFH3270P DFHLU0E2 DFHLU0M2 DFHLU0M3 DFHLU0M4 DFHLU0M5 DFHLU2E2 DFHLU2M2 DFHLU2E3 DFHLU2M3 DFHLU2E4 DFHLU2M4 DFHLU2M5
DFHVTAM	VTAM programs	DFHGMM DFHZNAC DFHZNEP	CSGM CSNE	
DFHVTAMP	VTAM terminal control print key function	DFHCPY DFHEXI DFHPRK DFHRKB	CSCY CSPK CSRK	
DFHWEB	WEB interface definitions	DFH$WB1A DFHWBA DFHWBADX DFHWBAHX DFHWBALX DFHWBAOX DFHWBA1 DFHWBC00 DFHWBENV DFHWBEP DFHWBGB DFHWBIMG DFHWBIP DFHWBLT DFHWBPA DFHWBRA DFHWBST DFHWBTC DFHWBTL DFHWBTRU DFHWBTTA DFHWBUN DFHWBXN	CWBA CWBC CWBG CWBM CWXN CWXU	**TSModels:** DFHWEB

Note: The DFHTYPE typeterm definitions match the VTAM-supplied LOGMODE definitions. If you are not using the supplied VTAM LOGMODES, you may need to modify the DFHTYPE TYPETERM definitions. For programming information on VTAM LOGMODE definitions, see the *CICS Customization Guide*.

CICS-supplied groups not in DFHLIST

Table 37. Resource definitions not in DFHLIST

Group Name	Description	Programs	Transactions	Other resources
DFHBRCF	Coupling facility data table sample for DFHBRNSF			**File:** DFHBRNSF
DFHBRUT	User maintained data table sample for DFHBRNSF			**File:** DFHBRNSF
DFHBRVR	VSAM RLS sample for DFHBRNSF			**File:** DFHBRNSF
DFHBRVSL	VSAM non-RLS local sample for DFHBRNSF			**File:** DFHBRNSF
DFHBRVSR	VSAM non-RLS remote sample for DFHBRNSF			**File:** DFHBRNSF
DFHCMAC	CICS online messages and codes	DFHCMAC	CMAC (alias CHLP)	**Mapset:** DFHCMCM **File:** DFHCMACD
Note: DFHCMAC is not included in DFHLIST for reasons of compatibility with earlier releases. If you want to use the online messages and codes transaction, you must add DFHCMAC to your start-up group list.				
DFHEJVS	File definitions required for enterprise beans	DFHEJDIR DFHEJOS		
DFHEJCF	Coupling facility definitions required for enterprise beans	DFHEJDIR DFHEJOS		
DFHEJVR	VSAM RLS definitions required for enterprise beans	DFHEJDIR DFHEJOS		
DFHMISC3	Miscellaneous group	DFHNET		
Note: DFHMISC3 is not included in DFHLIST for reasons of compatibility with earlier releases. If you require it in your system, add it to your start-up group list.				

CICS-supplied compatibility groups

Table 38. Group definitions supplied for compatibility with earlier releases

Group Name	Description	Programs	Transactions
DFHCOMP1	Required for compatibility with release 2.1.2	DFHCCMF DFHCMON DFHDMP DFHEMA DFHEMB DFHEMC DFHEMD DFHEME DFHEMF DFHEMG DFHEMH DFHEMI DFHFCS DFHMTPA DFHMTPB DFHMTPC DFHMTPD DFHMTPE DFHMTPF DFHMTPG DFHRTY DFHSTKC DFHSTLK DFHSTPD DFHSTSP DFHSTTD DFHSTTR DFHTAJP DFHTRNSM DFHTRNSN DFHVAP DFHZCQ DFSHLPI	CAUT CCMF CDTS CECI CECS CEDA CEDB CEDC CEOT CEST CFTS CITS CMSG CMTS CQRY CRSR CSCY CSFE CSIR CSMT CSNC CSOT CSPK CSPP CSRK CSSC CSSF CSSN CSST CSTA CSTT CVST CWTO CXCU 8888 9999
DFHCOMP2	Required for compatibility with release 2.1.2	DFHECID DFHECIP DFHECSP DFHEDCP DFHEIPRT DFHEIPSE DFHEIPSH DFHEIQDN DFHEIQDS DFHEIQDU DFHEIQIR DFHEIQMS DFHEIQMT DFHEIQSA DFHEIQSC DFHEIQSJ DFHEIQSK DFHEIQSM DFHEIQSP DFHEIQSQ DFHEIQST DFHEIQSV DFHEIQSX DFHEIQTR DFHEIQVT DFHEOP DFHESE DFHESN DFHEITAB DFHEITBS DFHETRX DFHMATOC DFHOCP DFHUAKP IBMBCCLA IBMBCCRA IBMBEOCA IBMBETAA IBMBETBA IBMBETCA IBMBETIA IBMBETOA IBMBETPA IBMBETQA IBMBETTA IBMFEFCA IBMFESMA IBMFESNA IBMFKCSA IBMFKMRA IBMFKPTA IBMFKTBA IBMFKTCA IBMFKTRA IBMFPGDA IBMFPMRA IBMFSTVA	CSNC

Table 38. Group definitions supplied for compatibility with earlier releases (continued)

Group Name	Description	Programs	Transactions
DFHCOMP3	Required for compatibility with releases 2.1.2 and 3.2.1	DFHAKP DFHBRCP DFHCHS DFHDBAT DFHDBP2$ DFHDLG DFHDLS DFHEBRCT DFHFCU DFHJCC DFHJCI DFHJCIOE DFHJCKOJ DFHJCO DFHMIR DFHMIRVM DFHNET DFHRTY DFHSTP DFHTACP	CATS CEMT CEOT CEST CPMI CRSR CSFE CSJC CSMI CSM1 CSM2 CSM3 CSM5 CSNE CSPP CSPQ CSPS CSRS CVMI
DFHCOMP4	Required for compatibility with releases 2.1.2, 3.2.1, and 3.3	DFHCRP DFHCSSC DFHNEP DFHRTY DFHSNT	CEDF CLS1 CLS3 CSPG CSSC
DFHCOMP5	Required for compatibility with releases 2.1.2, 3.2.1, 3.3, and 4.1	DFHAKP DFHBRCP DFHDBP1$ DFHDBP2$ DFHDLG DFHDLS DFHEBRCT DFHJCBSP DFHJCC DFHJCEOV DFHJCI DFHJCIOE DFHJCKOJ DFHJCO DFHJCSDJ DFHZRLG	CBRC CSGX CSKP CSLG CSSX CSZI
DFHCOMP6	Required for compatibility with releases 2.1.2, 3.2.1, 3.3, 4.1 and CICS TS Release 1.1	DSN2COM0 DSN2COM1 DSN2COM2 DSN2EDF1 DSN2EXT1 DSN2EXT2 DSN2MSG0 DSN2STOP DSN2STRT DSNCUEXT	DSNC
DFHCOMP7	Required for compatibility with releases 2.1.2, 3.2.1, 3.3, 4.1, CICS TS Release 1.1 and CICS TS Release 1.2	DFHWBM DFHWBWB DFHWBTRU	BRG1 BRG2 BRG3 BRG4 BRG5 BRG6 BRG7 BRG8 CWB1 CWB2 CWB3 CWB4 CWB5 CWB6 CWB7 CWB8 CWBM
DFHCOMP8	Required for compatibility with releases 2.1.2, 3.2.1, 3.3, 4.1, CICS TS 1.1, CICS TS 1.2, and CICS TS 1.3	DFHIIOPA DFHIIOP DFJ$GFAC **Request Model:** DFJ$GFAC DFJ$IIRH	BNKS CIOD CIOF CIOR IIHE
DFHCOMP9	Required for compatibility with release CICS TS 2.1	DFHADJAR DFHADINS DFHADSTR **File:** DFHADJM **DJAR:** DFHADJR **TCP/IP service:**DFHADTCP **Request Model:** DFHADRM	CINS
DFHCOMPA	Required for compatibility with release CICS TS 2.2	DFJIIRP	

Sharing the CSD between different releases of CICS

If, after upgrading a CSD, you plan to share the CSD file with earlier releases of CICS, you must include the appropriate DFHCOMP*x* compatibility groups in your startup group list.

The *CICS Transaction Server for z/OS Migration from CICS TS Version 2.2* has information about sharing the CSD between different releases of CICS. It shows you which DFHCOMP*x* groups you need to include for the earlier releases. Do not attempt to share a CSD file with a CICS region running at a higher level than the CSD file.

The sample application program groups

These resource definitions are needed to run the sample application programs supplied with CICS. The groups are not named in DFHLIST.

Table 39. CICS sample applications - resource definitions

Group Name	Language	Description	Resources Defined
DFH$AFLA	Assembler	FILEA sample applications	**Map sets**: DFH$AGA DFH$AGB DFH$AGC DFH$AGD DFH$AGK DFH$AGL **Programs**: DFH$AALL DFH$ABRW DFH$ACOM DFH$AMNU DFH$AREN DFH$AREP **Transactions**: AADD ABRW AINQ AMNU AORD AORQ AREP AUPD
DFH$BMSP	COBOL & PL/I	BMS partition support applications	**Partitionset**: DFH0PS **Map sets**: DFH0CGP DFH$PGP **Programs**: DFH0CPKO DFH0CPLA DFH$PPKO DFH$PPLA **Transactions**: PPKO PPLA XPKO XPLA
DFH$CFLA	COBOL	FILEA sample applications	**Map sets**: DFH0CGA DFH0CGB DFH0CGC DFH0CGD DFH0CGK DFH0CGL **Programs**: DFH0CALL DFH0CBRW DFH0CCOM DFH0CMNU DFH0CREN DFH0CREP **Transactions**: ADDS BRWS INQY MENU OREN OREQ REPT UPDT
DFH$CNSL		Sample console definitions	**Typeterms**: DFH$JCLC DFH$CONS **Terminals**: CJCL CNSL CN02

Table 39. CICS sample applications - resource definitions (continued)

Group Name	Language	Description	Resources Defined
DFH$CTXT	COBOL	CUA text model application	**Files**: DFH0FCAI DFH0FCUS DFH0FHLP **Map sets**: DFH0AB DFH0ABT DFH0BRW DFH0DEL DFH0FPD DFH0HLP DFH0HP DFH0HPD DFH0LST DFH0NEW DFH0OPN DFH0PRT DFH0SAS DFH0T1 DFH0UPD **Programs**: DFH0VAB DFH0VABT DFH0VBRW DFH0VDEL DFH0VDQ DFH0VHLP DFH0VHP DFH0VLIO DFH0VLST DFH0VNEW DFH0VOL DFH0VOPN DFH0PRT DFH0VRIO DFH0VSAS DFH0VTBL DFH0VT1 DFH0VUPD **Profile**: DFH$CUA2 **Transactions:** AC2A AC2C AC2D AC2E AC2F AC20 AC21 AC22 AC23 AC24 AC25 AC26 AC27 AC28 DELQ
DFH$DFLA	C	FILEA sample applications	**Map sets**: DFH$DGA DFH$DGB DFH$DGC DFH$DGD DFH$DGK DFH$DGL **Programs**: DFH$DALL DFH$DBRW DFH$DCOM DFH$DMNU DFH$DREN DFH$DREP **Transactions**: DADD DBRW DINQ DMNU DORD DORQ DREP DUPD
DFH$DLIV		IMS installation verification procedure	**Programs**: DFH$DLAC DFH$DLAE DFH$DLCC DFH$DLCE DFH$DLPC DFH$DLPE **Transactions:** ASMC ASME COBC COBE PLIC PLIE
DFH$EJB		EJB installation verification procedure and EJB “Hello World” sample application	**TCP/IP service**: EJBTCP1 **CorbaServer:** EJB1
DFH$EXCI		EXCI batch call interface samples	**Connections**: EXCG EXCS **Programs**: DFH$AXCS DFH$AXVS **Sessions**: EXCG EXCS **Transactions**: EXCI HPJC
DFH$FILA		FILEA samples	**File:** FILEA

Table 39. CICS sample applications - resource definitions (continued)

Group Name	Language	Description	Resources Defined
DFH$ICOM	Assembler	Intersystem communication (ISC)	**Map sets**: DFH$IGB DFH$IGC DFH$IGS DFH$IGX DFH$IG1 DFH$IG2 **Programs**: DFH$ICIC DFH$IFBL DFH$IFBR DFH$IMSN DFH$IMSO DFH$IQRD DFH$IQRL DFH$IQRR DFH$IQXL DFH$IQXR **Transactions**: ICIC IFBL IFBR IMSN IMSO IQRD IQRL IQRR IQXL IQXR
DFH$IIOP	LE370	IIOP sample application	**CorbaServer**: IIOP **File**: BANKACCT **Map set**: BANKINQ **Programs**: DFH$IIBI DFH$IIBQ DFH$IICC **Request Models**: DFJ$IIRB DFJ$IIRH **TCP/IP services**: IIOPNSSL IIOPSSL **Transactions**: BNKI BNKQ BNKS IIHE
DFH$JVM	LE370	Sample applications for Java support using a JVM	**Programs**: DFH$JSAM DFH$LCCA DFJ$JHE1 DFJ$JHE2 DFJ$JPC1 DFJ$JPC2 DFJ$JTD1 DFJ$JTS1 DFJ$JTSC **TDQueue**: JTD1 **Transactions**: JHE1 JHE2 JPC1 JPC2 JTD1 JTS1
DFH$PFLA	PL/I	FILEA sample applications	**Map sets**: DFH$PGA DFH$PGB DFH$PGC DFH$PGD DFH$PGK DFH$PGL **Programs**: DFH$PALL DFH$PBRW DFH$PCOM DFH$PMNU DFH$PREN DFH$PREP **Transactions**: PADD PBRW PINQ PMNU PORD PORQ PREP PUPD
DFH$SIGN		Sign-on and sign-off	**Map sets**: DFHSNLE DFHSNSE **Programs**: DFHCEGN DFHCESC DFHSFP DFHSNP **Transactions**: CEGN CESC CESF CESN

Table 39. CICS sample applications - resource definitions (continued)

Group Name	Language	Description	Resources Defined
DFH$STAT		Statistics	**Program**: DFH$STED
DFH$SXP		Message domain exits	**Programs**: DFH$SXP1 DFH$SXP2 DFH$SXP3 DFH$SXP4 DFH$SXP5 DFH$SXP6
DFH$UTIL	Assembler	Transient data utility dynamic allocation	**Programs**: DFH$TDWT DFH99 **Transactions**: ADYN TDWT
DFH$VTAM		Terminal definitions	**Typeterms**: DFH$L77 DFH$L78 DFH$L79 DFH$L86 **Terminals**: L77C L77D L78A L79A L86A
DFHAI62		Starter APPC connections	**Program**: DFHZATDY **Connections**: CBPS CBSS CCPS **Sessions**: CBPS CBSS CCPS
DFHMROAR		Starter MRO systems	**Connections**: CICD CICT **Sessions**: CICSRD CICSRT
DFHMRODR		Starter MRO systems	**Connection**: CICA **Session**: CICSRA
DFHMROFA		Starter MRO systems	**File**: FILEA **Map sets**: DFH$AGA DFH$AGB DFH$AGC DFH$AGD DFH$AGK DFH$AGL **Programs**: DFH$AALL DFH$ABRW DFH$ACOM DFH$AMNU DFH$AREN DFH$AREP **Transactions**: AADD ABRW AINQ AMNU AORD AORQ AREP AUPD
DFHMROFD		Starter MRO systems	**File**: FILEA
DFHMROFT		Starter MRO systems	**Transactions**: AADD ABRW AINQ AMNU AORD AORQ AREP AUPD
DFHMROTR		Starter MRO systems	**Connection**: CICA **Session**: CICSRA

CICS transactions supplied by IBM

Here is a list in alphabetic order of the CICS transactions supplied by IBM, together with the name of the program that the transaction invokes.

Table 40. CICS transactions supplied by IBM

Transaction	Group	Program
AADD	DFH$AFLA	DFH$AALL
AADD	DFHMROFA	DFH$AALL
AADD	DFHMROFT	
ABRW	DFH$AFLA	DFH$ABRW
ABRW	DFHMROFA	DFH$ABRW
ABRW	DFHMROFT	
ACCT	DFH$ACCT	ACCT00
ACEL	DFH$ACCT	ACCT03
ACLG	DFH$ACCT	ACCT03
AC01	DFH$ACCT	ACCT01
AC02	DFH$ACCT	ACCT02
AC03	DFH$ACCT	ACCT03
AC05	DFH$ACCT	ACCT03
AC06	DFH$ACCT	ACCT03
AC2A	DFH$CTXT	DFH0VSAS
AC2C	DFH$CTXT	DFH0VHLP
AC2D	DFH$CTXT	DFH0VAB
AC2E	DFH$CTXT	DFH0VHP
AC2F	DFH$CTXT	DFH0VABT
AC20	DFH$CTXT	DFH0VT1
AC21	DFH$CTXT	DFH0VOL
AC22	DFH$CTXT	DFH0VOPN
AC23	DFH$CTXT	DFH0VLST
AC24	DFH$CTXT	DFH0VNEW
AC25	DFH$CTXT	DFH0VBRW
AC26	DFH$CTXT	DFH0VUPD
AC27	DFH$CTXT	DFH0VDEL
AC28	DFH$CTXT	DFH0VPRT
ADDS	DFH$CFLA	DFH0CALL
ADYN	DFH$UTIL	DFH99
AINQ	DFH$AFLA	DFH$AALL
AINQ	DFHMROFA	DFH$AALL
AINQ	DFHMROFT	
AMNU	DFH$AFLA	DFH$AMNU
AMNU	DFHMROFA	DFH$AMNU
AMNU	DFHMROFT	
AORD	DFH$AFLA	DFH$AREN
AORD	DFHMROFA	DFH$AREN
AORD	DFHMROFT	
AORQ	DFH$AFLA	DFH$ACOM
AORQ	DFHMROFA	DFH$ACOM
AORQ	DFHMROFT	
AREP	DFH$AFLA	DFH$AREP
AREP	DFHMROFA	DFH$AREP
AREP	DFHMROFT	
ASMC	DFH$DLIV	DFH$DLAC
ASME	DFH$DLIV	DFH$DLAE
AUPD	DFH$AFLA	DFH$AALL

Table 40. CICS transactions supplied by IBM (continued)

Transaction	Group	Program
AUPD	DFHMROFA	DFH$AALL
AUPD	DFHMROFT	
BRWS	DFH$CFLA	DFH0CBRW
CADP	DFHDP	DFHDPLU
CATA	DFHSPI	DFHZATA
CATD	DFHSPI	DFHZATD
CATR	DFHSPI	DFHZATR
CATS	DFHCOMP3	DFHZATS
CAUT	DFHCOMP1	DFHSTSP
CBAM	DFHOPER	DFHECBAM
CBRC	DFHDLI	DFHBRCP
CCIN	DFHCLNT	DFHZCN1
CCMF	DFHCOMP1	DFHCCMF
CDBC	DFHDBCTL	DFHDBME
CDBD	DFHDBCTL	DFHDBDI
CDBF	DFHDB2	DFHD2CM3
CDBI	DFHDBCTL	DFHDBIQ
CDBN	DFHDBCTL	DFHDBCON
CDBO	DFHDBCTL	DFHDBCT
CDBQ	DFHDB2	DFHD2CM2
CDBT	DFHDBCTL	DFHDBDSC
CDFS	DFHISC	DFHDFST
CDTS	DFHSPI	DFHZATS
CEBR	DFHEDF	DFHEDFBR
CECI	DFHINTER	DFHECIP
CECS	DFHINTER	DFHECSP
CEDA	DFHSPI	DFHEDAP
CEDB	DFHSPI	DFHEDAP
CEDC	DFHSPI	DFHEDAP
CEDF	DFHEDF	DFHEDFP
CEGN	DFHSIGN	DFHCEGN
CEHP	DFHISC	DFHCHS
CEHS	DFHISC	DFHCHS
CEJR	DFHSTAND	DFHEJITL
CEMT	DFHOPER	DFHEMTP
CEOT	DFHOPER	DFHEOTP
CESC	DFHSIGN	DFHCESC
CESD	DFHSDAP	DFHCESD
CESF	DFHSIGN	DFHSFP
CESN	DFHSIGN	DFHSNP
CEST	DFHOPER	DFHESTP
CEST	DFHCOMP1	DFHESTP
CEST	DFHCOMP3	DFHESTP
CETR	DFHOPER	DFHCETRA
CEX2	DFHDB2	DFHD2EX2
CFSL	N/A	DFHDTLX
CFTS	DFHSPI	DFHZATS
CIEP	DFHIPECI	DFHIEP
CIND	DFHINDT	DFHINDT
CIRP	DFHIIOP	DFJIIRP
CIRR	DFHIIOP	DFHIIRRS
CJMJ	DFHJAVA	DFHSJJM

Table 40. CICS transactions supplied by IBM (continued)

Transaction	Group	Program
CLQ2	DFHISC	DFHLUP
CLR1	DFHISCT	DFHZLS1
CLR2	DFHISC	DFHLUP
CLS1	DFHISC	DFHZLS1
CLS2	DFHISC	DFHLUP
CLS3	DFHISC	DFHLUP
CLS4	DFHISC	DFHCLS4
CMAC	DFHCMAC	DFHCMAC
CMPX	DFHISC	DFHMXP
CMSG	DFHMSWIT	DFHMSP
CMTS	DFHSPI	DFHZATS
COBC	DFH$DLIV	DFH0DLCC
COBE	DFH$DLIV	DFH0DLCE
CPIA	DFHPIPE	DFHPITE
CPMI	DFHISC	DFHMIRS
CQPI	DFHISC	DFHCLS5
CQPO	DFHISC	DFHCLS5
CQRY	DFHSTAND	DFHQRY
CRPA	DFHRPC	DFHRPAS
CRPC	DFHRPC	DFHRPC00
CRPM	DFHRPC	DFHRPMS
CRSQ	DFHISC	DFHCRQ
CRSR	DFHISC	DFHCRS
CRSY	DFHRMI	DFHRMSY
CRTE	DFHISC	DFHRTE
CRTX	DFHISC	########
CSAC	DFHSTAND	DFHACP
CSCY	DFHVTAMP	DFHCPY
CSFE	DFHFE	DFHFEP
CSFU	DFHOPCLS	DFHFCU
CSGM	DFHVTAM	DFHGMM
CSGX	DFHDLI	DFHDLG
CSHR	DFHISC	DFHCICSA
CSIR	DFHCOMP1	DFHCRR
CSJC	DFHCOMP3	DFHJCBSP
CSLG	DFHRSPLG	DFHZRLG
CSMI	DFHISC	DFHMIRS
CSMT	DFHCOMP1	DFHMTPA
CSM1	DFHISC	DFHMIRS
CSM2	DFHISC	DFHMIRS
CSM3	DFHISC	DFHMIRS
CSM5	DFHISC	DFHMIRS
CSNC	DFHISC	DFHCRNP
CSNC	DFHCOMP1	DFHCRNP
CSNC	DFHCOMP2	DFHCRNP
CSNE	DFHVTAM	DFHZNAC
CSOT	DFHCOMP1	DFHMTPA
CSPG	DFHBMS	DFHTPR
CSPK	DFHVTAMP	DFHPRK
CSPP	DFHHARDC	DFHP3270
CSPQ	DFHBMS	DFHTPQ
CSPS	DFHBMS	DFHTPS

Table 40. CICS transactions supplied by IBM (continued)

Transaction	Group	Program
CSQC	DFHLGQC	DFHLGQC
CSRK	DFHVTAMP	DFHRKB
CSRS	DFHRSEND	DFHZRSP
CSSC	DFHSIGN	DFHCSSC
CSSF	DFHISC	DFHRTC
CSSN	DFHCOMP1	DFHSNP
CSST	DFHCOMP1	DFHMTPA
CSSX	DFHDLI	DFHDLS
CSTA	DFHCOMP1	DFHTAJP
CSTE	DFHSTAND	DFHTACP
CSTT	DFHCOMP1	DFHSTKC
CSZI	DFHFEPI	DFHSZRMP
CTIN	DFHCLNT	DFHZCT1
CVMI	DFHISC	DFHMIRS
CVST	DFHCOMP1	DFHVAP
CWBA	DFHWEB	DFHWBA
CWBC	DFHWEB	DFHWBC00
CWBG	DFHWEB	DFHWBGB
CWBM	DFHWEB	DFHWBM
CWTO	DFHCONS	DFHCWTO
CWXN	DFHWEB	DFHWBXN
CWXU	DFHWEB	DFHWBXN
CXCU	DFHSTAND	DFHCXCU
CXRE	DFHSTAND	DFHZXRE
CXRT	DFHISC	DFHCRT
DADD	DFH$DFLA	DFH$DALL
DBRW	DFH$DFLA	DFH$DBRW
DELQ	DFH$CTXT	DFH0VDQ
DINQ	DFH$DFLA	DFH$DALL
DMNU	DFH$DFLA	DFH$DMNU
DORD	DFH$DFLA	DFH$DREN
DORQ	DFH$DFLA	DFH$DCOM
DREP	DFH$DFLA	DFH$DREP
DSNC	DFHDB2	DFHD2CM1
DUPD	DFH$DFLA	DFH$DALL
EXCI	DFH$EXCI	DFH$MIRS
HPJC	DFH$EXCI	DFH$MIRS
ICIC	DFH$ICOM	DFH$ICIC
IFBL	DFH$ICOM	DFH$IFBL
IFBR	DFH$ICOM	DFH$IFBR
IMSN	DFH$ICOM	DFH$IMSN
IMSO	DFH$ICOM	DFH$IMSO
INQY	DFH$CFLA	DFH0CALL
IQRD	DFH$ICOM	DFH$IQRD
IQRL	DFH$ICOM	DFH$IQRL
IQRR	DFH$ICOM	DFH$IQRR
IQXL	DFH$ICOM	DFH$IQXL
IQXR	DFH$ICOM	DFH$IQXR
MENU	DFH$CFLA	DFH0CMNU
OREN	DFH$CFLA	DFH0CREN
OREQ	DFH$CFLA	DFH0CCOM
PADD	DFH$PFLA	DFH$PALL

Table 40. CICS transactions supplied by IBM (continued)

Transaction	Group	Program
PBRW	DFH$PFLA	DFH$PBRW
PINQ	DFH$PFLA	DFH$PALL
PLIC	DFH$DLIV	DFH$DLPC
PLIE	DFH$DLIV	DFH$DLPE
PMNU	DFH$PFLA	DFH$PMNU
PORD	DFH$PFLA	DFH$PREN
PORQ	DFH$PFLA	DFH$PCOM
PPKO	DFH$BMSP	DFH$PPKO
PPLA	DFH$BMSP	DFH$PPLA
PREP	DFH$PFLA	DFH$PREP
PUPD	DFH$PFLA	DFH$PALL
REPT	DFH$CFLA	DFH0CREP
TDWT	DFH$UTIL	DFH$TDWT
UPDT	DFH$CFLA	DFH0CALL
XPKO	DFH$BMSP	DFH0CPKO
XPLA	DFH$BMSP	DFH0CPLA

TYPETERM definitions in group DFHTYPE

The CICS-supplied CSD group DFHTYPE contains the following TYPETERM definitions:

DFHCONS

MVS console:

```
TYPETERM(DFHCONS)  GROUP(DFHTYPE)
DEVICE(CONSOLE)
PAGESIZE(1,124)    AUTOPAGE(NO)
BRACKET(YES)       BUILDCHAIN(YES)     ROUTEDMSGS(NONE)
UCTRAN(YES)
```

DFHLU2

SNA logical unit type 2 (3270 displays):

```
TYPETERM(DFHLU2)   GROUP(DFHTYPE)
DEVICE(LUTYPE2)    TERMMODEL(2)
DEFSCREEN(24,80)   PAGESIZE(24,80)     AUTOPAGE(NO)
BRACKET(YES)       BUILDCHAIN(YES)     ROUTEDMSGS(ALL)
AUDIBLEALARM(YES)  EXTENDEDDS(YES)     UCTRAN(YES)
SENDSIZE(1536)     RECEIVESIZE(256)    IOAREALEN(256,4000)
ERRLASTLINE(YES)   ERRINTENSIFY(YES)   ATI(YES)  TTI(YES)
DISCREQ(YES)       RELREQ(YES)         AUTOCONNECT(YES)
LOGONMSG(YES)      QUERY(ALL)          CREATESESS(NO)
```

This definition is for a 3278 Model 2 display. It is suitable for the following devices: 3178, 3179, 3277, 3278, 3279, 3290, 3270PC, 3270PC/G, 3270PC/GX, 8775, and 5550.

DFHLU3

SNA logical unit type 3 (3270 printers):

```
TYPETERM(DFHLU3)   GROUP(DFHTYPE)
DEVICE(LUTYPE3)    TERMMODEL(2)
DEFSCREEN(24,80)   PAGESIZE(24,80)     AUTOPAGE(YES)
BRACKET(YES)       BUILDCHAIN(NO)      ROUTEDMSGS(ALL)
SENDSIZE(256)      RECEIVESIZE(256)    IOAREALEN(512,0)
EXTENDEDDS(YES)    QUERY(ALL)          ATI(YES)  TTI(YES)
DISCREQ(YES)       RELREQ(YES)         AUTOCONNECT(YES)
LOGONMSG(NO)                           CREATESESS(NO)
```

This definition is for a 3287 printer. It is suitable for the following devices: 3262, 3268, 3284, 3286, 3287, 3288, 3289, and 5550.

DFHSCSP

SNA logical unit type 1 (3270 SCS printers):

```
TYPETERM(DFHSCSP)  GROUP(DFHTYPE)
DEVICE(SCSPRINT)
PAGESIZE(24,80)    AUTOPAGE(YES)
BRACKET(YES)       BUILDCHAIN(NO)      ROUTEDMSGS(ALL)
SENDSIZE(256)      RECEIVESIZE(256)    IOAREALEN(512,0)
EXTENDEDDS(YES)    QUERY(ALL)          ATI(YES)  TTI(YES)
DISCREQ(YES)       RELREQ(YES)         AUTOCONNECT(YES)
LOGONMSG(NO)                           CREATESESS(NO)
```

This definition is for a 3287 printer. It is suitable for the following devices: 3262, 3268, 3287, 3289, and 5550.

DFH3270

Locally attached (non-SNA) 3270 displays:

```
TYPETERM(DFH3270)  GROUP(DFHTYPE)
DEVICE(3270)       TERMMODEL(2)
DEFSCREEN(24,80)   PAGESIZE(24,80)     AUTOPAGE(NO)
BRACKET(YES)       BUILDCHAIN(NO)      ROUTEDMSGS(ALL)
AUDIBLEALARM(YES)  EXTENDEDDS(YES)     UCTRAN(YES)
SENDSIZE(0)        RECEIVESIZE(0)   IOAREALEN(512,0)
ERRLASTLINE(YES)   ERRINTENSIFY(YES)   ATI(YES)  TTI(YES)
DISCREQ(YES)       RELREQ(YES)         AUTOCONNECT(YES)
LOGONMSG(YES)      QUERY(ALL)          CREATESESS(NO)
```

This definition is for a 3278 Model 2 display. It is suitable for the following devices: 3178, 3179, 3277, 3278, 3279, and 3290.

DFH3270P

Locally attached (non-SNA) 3270 printers:

```
TYPETERM(DFH3270P) GROUP(DFHTYPE)
DEVICE(3270P)      TERMMODEL(2)
DEFSCREEN(24,80)   PAGESIZE(24,80)     AUTOPAGE(YES)
BRACKET(YES)       BUILDCHAIN(NO)      ROUTEDMSGS(ALL)
SENDSIZE(0)        RECEIVESIZE(0)      IOAREALEN(512,0)
EXTENDEDDS(YES)    QUERY(ALL)          ATI(YES)  TTI(YES)
DISCREQ(YES)       RELREQ(YES)         AUTOCONNECT(YES)
LOGONMSG(NO)                           CREATESESS(NO)
```

This definition is for a 3284 Model 2 printer. It is suitable for the following devices: 3262, 3268, 3284, 3287, 3288, 3289, and 5550.

DFHLU62T

SNA logical unit type 6.2 (APPC) single session terminal:

```
TYPETERM(DFHLU62T) GROUP(DFHTYPE)
DEVICE(APPC)
                   PAGESIZE(1,40)      AUTOPAGE(YES)
BRACKET(YES)       BUILDCHAIN(YES)     ROUTEDMSGS(NONE)
SENDSIZE(2048)     RECEIVESIZE(2048)   IOAREALEN(0,0)
                                       ATI(YES) TTI(YES)
LOGONMSG(NO)                           CREATESESS(NO)
```

This definition is for an APPC single session terminal and is also suitable for the following devices: DISPLAYWRITER, SCANMASTER, and SYSTEM/38.

DFHLU0E2

Non-SNA model 2 with extended data stream (Query):

```
TYPETERM(DFHLU0E2) GROUP(DFHTYPE)
DEVICE(3270)       TERMMODEL(2)        SHIPPABLE(YES)
DEFSCREEN(24,80)   PAGESIZE(24,80)     AUTOPAGE(NO)
ALTSCREEN(0,0)     ALTPAGE(0,0)
BRACKET(YES)       BUILDCHAIN(NO)      ROUTEDMSGS(ALL)
AUDIBLEALARM(YES)  EXTENDEDDS(YES)     UCTRAN(YES)
RECEIVESIZE(0)     SENDSIZE(0)         IOAREALEN(512,0)
ERRASTLINE(YES)    ERRINTENSIFY(YES)   QUERY(ALL)
DISCREQ(YES)       RELREQ(YES)         AUTOCONNECT(NO)
LOGONMSG(YES)      CREATESESS(NO)
ATI(YES)           TTI(YES)
```

Non-SNA model 2 with extended data stream (Query). This definition matches the VTAM-supplied LOGMODE NSX32702

DFHLU0M2

Non-SNA model 2:

```
TYPETERM(DFHLU0M2)  GROUP(DFHTYPE)
DEVICE(3270)        TERMMODEL(2)         SHIPPABLE(YES)
DEFSCREEN(24,80)    PAGESIZE(24,80)      AUTOPAGE(NO)
ALTSCREEN(0,0)      ALTPAGE(0,0)
BRACKET(YES)        BUILDCHAIN(NO)       ROUTEDMSGS(ALL)
AUDIBLEALARM(YES)   EXTENDEDDS(NO)       UCTRAN(YES)
RECEIVESIZE(0)      SENDSIZE(0)          IOAREALEN(512,0)
ERRLASTLINE(YES)    ERRINTENSIFY(YES)    QUERY(NO)
DISCREQ(YES)        RELREQ(YES)          AUTOCONNECT(NO)
LOGONMSG(YES)       CREATESESS(NO)
ATI(YES)            TTI(YES)
```

Non-SNA model 2 with extended data stream (Query). This definition matches the VTAM-supplied LOGMODE D4B32782

DFHLU0M3

Non-SNA model 3:

```
TYPETERM(DFHLU0M3)  GROUP(DFHTYPE)
DEVICE(3270)        TERMMODEL(2)         SHIPPABLE(YES)
DEFSCREEN(24,80)    PAGESIZE(24,80)      AUTOPAGE(NO)
ALTSCREEN(32,80)    ALTPAGE(32,80)
BRACKET(YES)        BUILDCHAIN(NO)       ROUTEDMSGS(ALL)
AUDIBLEALARM(YES)   EXTENDEDDS(NO)       UCTRAN(YES)
RECEIVESIZE(0)      SENDSIZE(0)          IOAREALEN(512,0)
ERRLASTLINE(YES)    ERRINTENSIFY(YES)    QUERY(NO)
DISCREQ(YES)        RELREQ(YES)          AUTOCONNECT(NO)
LOGONMSG(YES)       CREATESESS(NO)
ATI(YES)            TTI(YES)
```

This definition matches the VTAM-supplied LOGMODE D4B32783.

DFHLU0M4

Non-SNA model 4:

```
TYPETERM(DFHLU0M4)     GROUP(DFHTYPE)
DEVICE(3270)           TERMMODEL(2)           SHIPPABLE(YES)
DEFSCREEN(24,80)       PAGESIZE(24,80)        AUTOPAGE(NO)
ALTSCREEN(43,80)       ALTPAGE(43,80)
BRACKET(YES)           BUILDCHAIN(NO)         ROUTEDMSGS(ALL)
AUDIBLEALARM(YES)      EXTENDEDDS(NO)         UCTRAN(YES)
RECEIVESIZE(0)         SENDSIZE(0)            IOAREALEN(512,0)
ERRLASTLINE(YES)       ERRINTENSIFY(YES)      QUERY(NO)
DISCREQ(YES)           RELREQ(YES)            AUTOCONNECT(NO)
LOGONMSG(YES)          CREATESESS(NO)
ATI(YES)               TTI(YES)
```

This definition matches the VTAM-supplied LOGMODE D4B32784.

DFHLU0M5

Non-SNA model 5:

```
TYPETERM(DFHLU0M5)     GROUP(DFHTYPE)
DEVICE(3270)           TERMMODEL(2)           SHIPPABLE(YES)
DEFSCREEN(24,80)       PAGESIZE(24,80)        AUTOPAGE(NO)
ALTSCREEN(27,132)      ALTPAGE(27,132)
BRACKET(YES)           BUILDCHAIN(NO)         ROUTEDMSGS(ALL)
AUDIBLEALARM(YES)      EXTENDEDDS(NO)         UCTRAN(YES)
RECEIVESIZE(0)         SENDSIZE(0)            IOAREALEN(512,0)
ERRLASTLINE(YES)       ERRINTENSIFY(YES)      QUERY(NO)
DISCREQ(YES)           RELREQ(YES)            AUTOCONNECT(NO)
LOGONMSG(YES)          CREATESESS(NO)
ATI(YES)               TTI(YES)
```

This definition matches the VTAM-supplied LOGMODE D4B32785.

DFHLU2E2

SNA LU type 2 model 2 with extended data stream (Query):

```
TYPETERM(DFHLU2E2)     GROUP(DFHTYPE)
DEVICE(LUTYPE2)        TERMMODEL(2)           SHIPPABLE(YES)
DEFSCREEN(24,80)       PAGESIZE(24,80)        AUTOPAGE(NO)
ALTSCREEN(0,0)         ALTPAGE(0,0)
BRACKET(YES)           BUILDCHAIN(YES)        ROUTEDMSGS(ALL)
AUDIBLEALARM(YES)      EXTENDEDDS(YES)        UCTRAN(YES)
RECEIVESIZE(1024)      SENDSIZE(3840)         IOAREALEN(256,4000)
ERRLASTLINE(YES)       ERRINTENSIFY(YES)      QUERY(ALL)
DISCREQ(YES)           RELREQ(YES)            AUTOCONNECT(NO)
LOGONMSG(YES)          CREATESESS(NO)
ATI(YES)               TTI(YES)
```

SNA LU type 2 model 2 with extended data stream (Query). This definition matches the VTAM-supplied LOGMODE SNX32702.

DFHLU2M2

SNA LU type 2 model 2:

```
TYPETERM(DFHLU2M2)     GROUP(DFHTYPE)
DEVICE(LUTYPE2)        TERMMODEL(2)           SHIPPABLE(YES)
DEFSCREEN(24,80)       PAGESIZE(24,80)        AUTOPAGE(NO)
ALTSCREEN(0,0)         ALTPAGE(0,0)
BRACKET(YES)           BUILDCHAIN(YES)        ROUTEDMSGS(ALL)
AUDIBLEALARM(YES)      EXTENDEDDS(NO)         UCTRAN(YES)
RECEIVESIZE(1024)      SENDSIZE(1536)         IOAREALEN(256,4000)
ERRLASTLINE(YES)       ERRINTENSIFY(YES)      QUERY(NO)
DISCREQ(YES)           RELREQ(YES)            AUTOCONNECT(NO)
LOGONMSG(YES)          CREATESESS(NO)
ATI(YES)               TTI(YES)
```

This definition matches the VTAM-supplied LOGMODE D4A32782.

DFHLU2E3

SNA LU type 2 model 3 with extended data stream (Query):

```
TYPETERM(DFHLU2E3)     GROUP(DFHTYPE)
DEVICE(LUTYPE2)        TERMMODEL(2)           SHIPPABLE(YES)
DEFSCREEN(24,80)       PAGESIZE(24,80)        AUTOPAGE(NO)
ALTSCREEN(32,80)       ALTPAGE(32,80)
BRACKET(YES)           BUILDCHAIN(YES)        ROUTEDMSGS(ALL)
AUDIBLEALARM(YES)      EXTENDEDDS(YES)        UCTRAN(YES)
RECEIVESIZE(1024)      SENDSIZE(3840)         IOAREALEN(256,4000)
ERRLASTLINE(YES)       ERRINTENSIFY(YES)      QUERY(ALL)
DISCREQ(YES)           RELREQ(YES)            AUTOCONNECT(NO)
LOGONMSG(YES)          CREATESESS(NO)
ATI(YES)               TTI(YES)
```

SNA LU type 2 model 3 with extended data stream (Query). This definition matches the VTAM-supplied LOGMODE SNX32703.

DFHLU2M3

SNA LU type 2 model 3:

```
TYPETERM(DFHLU2M3)     GROUP(DFHTYPE)
DEVICE(LUTYPE2)        TERMMODEL(2)           SHIPPABLE(YES)
DEFSCREEN(24,80)       PAGESIZE(24,80)        AUTOPAGE(NO)
ALTSCREEN(32,80)       ALTPAGE(32,80)
BRACKET(YES)           BUILDCHAIN(YES)        ROUTEDMSGS(ALL)
AUDIBLEALARM(YES)      EXTENDEDDS(NO)         UCTRAN(YES)
RECEIVESIZE(1024)      SENDSIZE(1536)         IOAREALEN(256,4000)
ERRLASTLINE(YES)       ERRINTENSIFY(YES)      QUERY(NO)
DISCREQ(YES)           RELREQ(YES)            AUTOCONNECT(NO)
LOGONMSG(YES)          CREATESESS(NO)
ATI(YES)               TTI(YES)
```

This definition matches the VTAM-supplied LOGMODE D4A32783.

DFHLU2E4

SNA LU type 2 model 4 with extended data stream (Query):

```
TYPETERM(DFHLU2E4)     GROUP(DFHTYPE)
DEVICE(LUTYPE2)        TERMMODEL(2)           SHIPPABLE(YES)
DEFSCREEN(24,80)       PAGESIZE(24,80)        AUTOPAGE(NO)
ALTSCREEN(43,80)       ALTPAGE(43,80)
BRACKET(YES)           BUILDCHAIN(YES)        ROUTEDMSGS(ALL)
AUDIBLEALARM(YES)      EXTENDEDDS(YES)        UCTRAN(YES)
RECEIVESIZE(1024)      SENDSIZE(3840)         IOAREALEN(256,4000)
ERRLASTLINE(YES)       ERRINTENSIFY(YES)      QUERY(ALL)
DISCREQ(YES)           RELREQ(YES)            AUTOCONNECT(NO)
LOGONMSG(YES)          CREATESESS(NO)
ATI(YES)               TTI(YES)
```

SNA LU type 2 model 4 with extended data stream (Query). This definition matches the VTAM-supplied LOGMODE SNX32704.

DFHLU2M4

SNA LU type 2 model 4:

```
TYPETERM(DFHLU2M4)     GROUP(DFHTYPE)
DEVICE(LUTYPE2)        TERMMODEL(2)           SHIPPABLE(YES)
DEFSCREEN(24,80)       PAGESIZE(24,80)        AUTOPAGE(NO)
ALTSCREEN(43,80)       ALTPAGE(43,80)
BRACKET(YES)           BUILDCHAIN(YES)        ROUTEDMSGS(ALL)
AUDIBLEALARM(YES)      EXTENDEDDS(NO)         UCTRAN(YES)
RECEIVESIZE(1024)      SENDSIZE(1536)         IOAREALEN(256,4000)
ERRLASTLINE(YES)       ERRINTENSIFY(YES)      QUERY(NO)
DISCREQ(YES)           RELREQ(YES)            AUTOCONNECT(NO)
LOGONMSG(YES)          CREATESESS(NO)
ATI(YES)               TTI(YES)
```

This definition matches the VTAM-supplied LOGMODE D4A32784.

DFHLU2M5

SNA LU type 2 model 5:

```
TYPETERM(DFHLU2M5)     GROUP(DFHTYPE)
DEVICE(LUTYPE2)        TERMMODEL(2)           SHIPPABLE(YES)
DEFSCREEN(24,80)       PAGESIZE(24,80)        AUTOPAGE(NO)
ALTSCREEN(27,132)      ALTPAGE(27,132)
BRACKET(YES)           BUILDCHAIN(YES)        ROUTEDMSGS(ALL)
AUDIBLEALARM(YES)      EXTENDEDDS(NO)         UCTRAN(YES)
RECEIVESIZE(1024)      SENDSIZE(1536)         IOAREALEN(256,4000)
```

```
ERRLASTLINE(YES)       ERRINTENSIFY(YES)      QUERY(NO)
DISCREQ(YES)           RELREQ(YES)            AUTOCONNECT(NO)
LOGONMSG(YES)          CREATESESS(NO)
ATI(YES)               TTI(YES)
```

This definition matches the VTAM-supplied LOGMODE D4A32785.

DFHLU2E5

SNA LU type 2 model 5 with extended data stream (Query):

```
TYPETERM(DFHLU2E5)     GROUP(DFHTYPE)
DEVICE(LUTYPE2)        TERMMODEL(2)           SHIPPABLE(YES)
DEFSCREEN(24,80)       PAGESIZE(24,80)        AUTOPAGE(NO)
ALTSCREEN(27,132)      ALTPAGE(27,132)
BRACKET(YES)           BUILDCHAIN(YES)        ROUTEDMSGS(ALL)
AUDIBLEALARM(YES)      EXTENDEDDS(NO)         UCTRAN(YES)
RECEIVESIZE(1024)      SENDSIZE(3480)         IOAREALEN(256,4000)
ERRLASTLINE(YES)       ERRINTENSIFY(YES)      QUERY(ALL)
DISCREQ(YES)           RELREQ(YES)            AUTOCONNECT(NO)
LOGONMSG(YES)          CREATESESS(NO)
ATI(YES)               TTI(YES)
```

SNA LU type 2 model 5 with extended data stream (Query). This definition matches the VTAM-supplied LOGMODE LSX32705.

Model TERMINAL definitions in group DFHTERM

The CICS-supplied CSD group DFHTERM contains the following model TERMINAL definitions for automatic installation:

LU2 SNA 3270 Model 2 display using TYPETERM DFHLU2:

```
TERMINAL(LU2)       GROUP(DFHTERM)      TYPETERM(DFHLU2)
AUTINSTMODEL(ONLY)  AUTINSTNAME(DFHLU2)
```

This definition is for a 3278 Model 2 display. It is suitable for the following devices: 3178, 3179, 3277, 3278, 3279, 3290, 3270PC, 3270PC/G, 3270PC/GX, 8775, and 5550.

LU3 SNA 3270 Model 2 printer using TYPETERM DFHLU3:

```
TERMINAL(LU3)       GROUP(DFHTERM)      TYPETERM(DFHLU3)
AUTINSTMODEL(ONLY)  AUTINSTNAME(DFHLU3)
```

This definition is for a 3287 printer. It is suitable for the following devices: 3262, 3268, 3284, 3286, 3287, 3288, 3289, and 5550.

SCSP SNA 3278 Model 2 printer using TYPETERM DFHSCSP:

```
TERMINAL(SCSP)      GROUP(DFHTERM)      TYPETERM(DFHSCSP)
AUTINSTMODEL(ONLY)  AUTINSTNAME(DFHSCSP)
```

This definition is for a 3287 printer. It is suitable for the following devices: 3262, 3268, 3287, 3289, and 5550.

3270 Non-SNA 3270 Model 2 display using TYPETERM DFH3270:

```
TERMINAL(3270)      GROUP(DFHTERM)      TYPETERM(DFH3270)
AUTINSTMODEL(ONLY)  AUTINSTNAME(DFH3270)
```

This definition is for a 3278 Model 2 display. It is suitable for the following devices: 3178, 3179, 3277, 3278, 3279, and 3290.

3284 Non-SNA 3270 Model 2 printer using TYPETERM DFH3270P:

```
TERMINAL(3284)      GROUP(DFHTERM)      TYPETERM(DFH3270P)
AUTINSTMODEL(ONLY)  AUTINSTNAME(DFH3270P)
```

This definition is for a 3284 Model 2 printer. It is suitable for the following devices: 3262, 3268, 3284, 3287, 3288, 3289, and 5550.

LU62 APPC (LU6.2) single session terminal using TYPETERM DFHLU62T:

```
TERMINAL(LU62)      GROUP(DFHTERM)       TYPETERM(DFHLU62T)
AUTINSTMODEL(ONLY)  AUTINSTNAME(DFHLU62T)
```

This definition is for an APPC single session terminal and is also suitable for the following devices: DISPLAYWRITER, SCANMASTER, and SYSTEM/38.

L0E2 Non-SNA Model 2 display using TYPETERM DFHLU0E2:

```
TERMINAL(L0E2)      GROUP(DFHTERM)       TYPETERM(DFHLU0E2)
AUTINSTMODEL(ONLY)  AUTINSTNAME(DFHLU0E2)
```

Non-SNA model 2 with extended data stream (Query). This definition matches the VTAM-supplied LOGMODE NSX32702.

L0M2 Non-SNA Model 2 display using TYPETERM DFHLU0M2:

```
TERMINAL(L0M2)      GROUP(DFHTERM)       TYPETERM(DFHLU0M2)
AUTINSTMODEL(ONLY)  AUTINSTNAME(DFHLU0M2)
```

This definition matches the VTAM-supplied LOGMODE D4B32782.

L0M3 Non-SNA Model 3 display using TYPETERM DFHLU0M3:

```
TERMINAL(L0M3)      GROUP(DFHTERM)       TYPETERM(DFHLU0M3)
AUTINSTMODEL(ONLY)  AUTINSTNAME(DFHLU0M3)
```

This definition matches the VTAM-supplied LOGMODE D4B32783.

L0M4 Non-SNA Model 4 display using TYPETERM DFHLU0M4:

```
TERMINAL(L0M4)      GROUP(DFHTERM)        TYPETERM(DFHLU0M4)
AUTINSTMODEL(ONLY)  AUTINSTNAME(DFHLU0M4)
```

This definition matches the VTAM-supplied LOGMODE D4B32784.

L0M5 Non-SNA Model 5 display using TYPETERM DFHLU0M5:

```
TERMINAL(L0M5)      GROUP(DFHTERM)        TYPETERM(DFHLU0M5)
AUTINSTMODEL(ONLY)  AUTINSTNAME(DFHLU0M5)
```

This definition matches the VTAM-supplied LOGMODE D4B32785.

L2E2 SNA LU2 Model 2 display using TYPETERM DFHLU2E2:

```
TERMINAL(L2E2)      GROUP(DFHTERM)        TYPETERM(DFHLU2E2)
AUTINSTMODEL(ONLY)  AUTINSTNAME(DFHLU2E2)
```

SNA LU type 2 model 2 with extended data stream (Query). This definition matches the VTAM-supplied LOGMODE SNX32702.

L2M2 SNA LU2 Model 2 display using TYPETERM DFHLU2M2:

```
TERMINAL(L2M2)      GROUP(DFHTERM)        TYPETERM(DFHLU2M2)
AUTINSTMODEL(ONLY)  AUTINSTNAME(DFHLU2M2)
```

This definition matches the VTAM-supplied LOGMODE D4A32782.

L2E3 SNA LU2 Model 3 display using TYPETERM DFHLU2E3:

```
TERMINAL(L2E3)      GROUP(DFHTERM)        TYPETERM(DFHLU2E3)
AUTINSTMODEL(ONLY)  AUTINSTNAME(DFHLU2E3)
```

SNA LU type 2 model 3 with extended data stream (Query). This definition matches the VTAM-supplied LOGMODE SNX32703.

L2M3 SNA LU2 Model 3 display using TYPETERM DFHLU2M3:

```
TERMINAL(L2M3)      GROUP(DFHTERM)        TYPETERM(DFHLU2M3)
AUTINSTMODEL(ONLY)  AUTINSTNAME(DFHLU2M3)
```

This definition matches the VTAM-supplied LOGMODE D4A32783.

L2E4 SNA LU2 Model 4 display using TYPETERM DFHLU2E4:

```
TERMINAL(L2E4)      GROUP(DFHTERM)        TYPETERM(DFHLU2E4)
AUTINSTMODEL(ONLY)  AUTINSTNAME(DFHLU2E4)
```

SNA LU type 2 model 4 with extended data stream (Query). This definition matches the VTAM-supplied LOGMODE SNX32704.

L2M4 SNA LU2 Model 4 display using TYPETERM DFHLU2M4:

```
TERMINAL(L2M4)      GROUP(DFHTERM)        TYPETERM(DFHLU2M4)
AUTINSTMODEL(ONLY)  AUTINSTNAME(DFHLU2M4)
```

This definition matches the VTAM-supplied LOGMODE D4A32784.

L2E5 SNA LU2 Model 5 display using TYPETERM DFHLU2E5:

```
TERMINAL(L2E5)      GROUP(DFHTERM)        TYPETERM(DFHLU2E5)
AUTINSTMODEL(ONLY)  AUTINSTNAME(DFHLU2E5)
```

SNA LU type 2 model 5 with extended data stream (Query). This definition matches the VTAM-supplied LOGMODE LSX32705.

L2M5 SNA LU2 Model 5 display using TYPETERM DFHLU2M5:

```
TERMINAL(L2M5)      GROUP(DFHTERM)        TYPETERM(DFHLU2M5)
AUTINSTMODEL(ONLY)  AUTINSTNAME(DFHLU2M5)
```

This definition matches the VTAM-supplied LOGMODE D4A32785.

CBRF Default template terminal for use with the 3270 bridge

```
TERMINAL(CBRF)      GROUP(DFHTERM)        TYPETERM(DFHLU2)
NETNAME(CBRF)       REMOTESYSTEM(CBR)     REMOTENAME(CBRF)
```

PROFILE definitions in group DFHISC

The CICS-supplied CSD group DFHISC contains the following PROFILE definitions for intersystem communication sessions:

DFHCICSF
CICS uses this profile for the session to the remote system or region when a CICS application program issues a function shipping request.

The definition is:

```
PROFILE(DFHCICSF)
GROUP(DFHISC)
SCRNSIZE(DEFAULT)
MSGJRNL(NO)
MSGINTEG(NO)
ONEWTE(NO)
DVSUPRT(ALL)
INBFMH(ALL)
RAQ(NO)
LOGREC(NO)
NEPCLASS(000)
```

DFHCICSI

CICS uses this profile for the session to the remote system or region when a CICS application program issues an IIOP request.

The definition is:

```
PROFILE(DFHCICSI)
DESCRIPTION(CICS IIOP profile for outbound method requests)
RTIMOUT(NO)
```

DFHCICSR

CICS uses this profile in transaction routing for communication between the user transaction (running in the application-owning region) and the interregion link or APPC link.

The definition is:

```
PROFILE(DFHCICSR)
GROUP(DFHISC)
SCRNSIZE(DEFAULT)
MSGJRNL(NO)
MSGINTEG(NO)
ONEWTE(NO)
DVSUPRT(ALL)
INBFMH(ALL)
RAQ(NO)
LOGREC(NO)
NEPCLASS(000)
```

DFHCICSS

CICS uses this profile in transaction routing for communication between the relay transaction (running in the terminal-owning region) and the interregion link or APPC link. You can specify a different profile by means of the TRPROF option on the TRANSACTION definition.

The definition is:

```
PROFILE(DFHCICSS)
GROUP(DFHISC)
SCRNSIZE(DEFAULT)
MSGJRNL(NO)
MSGINTEG(NO)
ONEWTE(NO)
DVSUPRT(ALL)
INBFMH(ALL)
RAQ(NO)
LOGREC(NO)
NEPCLASS(000)
```

PROFILE definitions in group DFHSTAND

The CICS-supplied CSD group DFHSTAND contains the following PROFILE definitions:

DFHCICSA

This is the default profile for alternate facilities acquired by the application program ALLOCATE command. A different profile can be named explicitly on the ALLOCATE command.

The definition is:

```
PROFILE(DFHCICSA)
GROUP(DFHSTAND)
SCRNSIZE(DEFAULT)
MSGJRNL(NO)
MSGINTEG(NO)
ONEWTE(NO)
```

```
PROTECT(NO)
DVSUPRT(ALL)
INBFMH(ALL)
RAQ(NO)
LOGREC(NO)
NEPCLASS(000)
```

DFHCICSE

This is the error profile for principal facilities. CICS uses this profile to pass an error message to the principal facility when the required profile cannot be found.

The definition is:

```
PROFILE(DFHCICSE)
GROUP(DFHSTAND)
SCRNSIZE(DEFAULT)
MSGJRNL(NO)
MSGINTEG(NO)
ONEWTE(NO)
PROTECT(NO)
DVSUPRT(ALL)
INBFMH(NO)
RAQ(NO)
LOGREC(NO)
NEPCLASS(000)
```

DFHCICSP

This is the default profile for the page retrieval transaction CSPG. You can specify a different profile for a particular transaction by means of the PROFILE option on the TRANSACTION definition.

The definition is:

```
PROFILE(DFHCICSP)
GROUP(DFHSTAND)
SCRNSIZE(DEFAULT)
UCTRAN(YES)
MSGJRNL(NO)
MSGINTEG(NO)
ONEWTE(NO)
PROTECT(NO)
DVSUPRT(ALL)
INBFMH(NO)
RAQ(NO)
LOGREC(NO)
NEPCLASS(000)
```

DFHCICST

This is the default profile for principal facilities. You can specify a different profile for a particular transaction by means of the PROFILE option on the TRANSACTION definition.

The definition is:

```
PROFILE(DFHCICST)
GROUP(DFHSTAND)
SCRNSIZE(DEFAULT)
MSGJRNL(NO)
MSGINTEG(NO)
ONEWTE(NO)
PROTECT(NO)
DVSUPRT(ALL)
INBFMH(NO)
RAQ(NO)
LOGREC(NO)
NEPCLASS(000)
```

DFHCICSV

This is the profile for principal facilities, when the transaction supports only VTAM devices.

The definition is:

```
PROFILE(DFHCICSV)
GROUP(DFHSTAND)
SCRNSIZE(DEFAULT)
MSGJRNL(NO)
MSGINTEG(NO)
ONEWTE(NO)
PROTECT(NO)
DVSUPRT(VTAM)
INBFMH(NO)
RAQ(NO)
LOGREC(NO)
NEPCLASS(000)
```

DFHPPF01

Profile DFHPPF01 is used during CICS initialization, for tasks that are attached before the CSD file definitions have been installed.

The definitions are:

```
PROFILE(DFHPPF01)
GROUP(DFHSTAND)
DESCRIPTION(VTAM-ONLY PROFILE)
SCRNSIZE(DEFAULT)
MSGJRNL(NO)
MSGINTEG(NO)
ONEWTE(NO)
PROTECT(NO)
DVSUPRT(VTAM)
INBFMH(NO)
RAQ(NO)
LOGREC(NO)
NEPCLASS(000)
```

DFHPPF02

Profile DFHPPF02 is used during CICS initialization, for tasks that are attached before the CSD file definitions have been installed.

The definitions are:

```
PROFILE(DFHPPF02)
GROUP(DFHSTAND)
DESCRIPTION(ALL-NULLS PROFILE)
SCRNSIZE(DEFAULT)
MSGJRNL(NO)
MSGINTEG(NO)
ONEWTE(NO)
PROTECT(NO)
DVSUPRT(ALL)
INBFMH(NO)
RAQ(NO)
LOGREC(NO)
NEPCLASS(000)
```

Model definitions in group DFHPGAIP

The CICS-supplied CSD group DFHPGAIP contains the following model definitions for use with autoinstall for programs:

DFHPGAPG

This is the default PROGRAM definition for program autoinstall.

The definition is:

```
PROGRAM(DFHPGAPG)  GROUP(DFHPGAIP)
DESCRIPTION(default program for program autoinstall)
                   RELOAD(NO)           RESIDENT(NO)
USAGE(NORMAL)      USELPACOPY(NO)       STATUS(ENABLED)
RSL(00)            CEDF(YES)            DATALOCATION(BELOW)
EXECKEY(USER)      EXECUTIONSET(FULLAPI)
```

DFHPGAMP

This is the default MAPSET definition for program autoinstall.

The definition is:

```
MAPSET(DFHPGAMP)  GROUP(DFHPGAIP)
DESCRIPTION(default mapset for program autoinstall)
RESIDENT(NO)       USAGE(NORMAL)
USELPACOPY(NO)     STATUS(ENABLED)
RSL(00)
```

DFHPGAPT

This is the default PARTITION definition for program autoinstall.

The definition is:

```
PARTITIONSET(DFHPGAPT)  GROUP(DFHPGAIP)
DESCRIPTION(default partitionset for program autoinstall)
RESIDENT(NO)       USAGE(NORMAL)
USELPACOPY(NO)     STATUS(ENABLED)
RSL(00)
```

TCPIPSERVICE definition in group DFH$SOT

The CICS-supplied CSD group DFH$SOT contains the following TCPIPSERVICE definition:

ECI The definition is:

```
TCPIPSERVICE(ECI)  GROUP(DFH$SOT)
DESCRIPTION(ECI TCPIPSERVICE)
PROTOCOL(ECI)      ATTACHSEC(VERIFY)
BACKLOG(5)         PORTNUMBER(1435)
TRANSACTION(CIEP)  SSL(NO)
STATUS(OPEN)
```

Appendix C. Attribute cross-reference tables

This appendix contains two cross-reference tables relating macro operands (past and present) to RDO attributes:

- "Macro operand to RDO attribute"
- "RDO attribute to macro operand" on page 661.

Macro operand to RDO attribute

This list is in alphabetic order of macro operands, giving the equivalent RDO attribute. "RDO attribute to macro operand" on page 661 gives the same list in order of RDO attribute.

Macro operand	Resource type	RDO attribute
ACCMETH=INDIRECT	Connection	ACCESSMETHOD(INDIRECT)
ACCMETH=IRC	Connection	ACCESSMETHOD(IRC)
ACCMETH=VTAM	Connection	ACCESSMETHOD(VTAM)
ACCMETH=(IRC,XM)	Connection	ACCESSMETHOD(XM)
ALTPGE	Typeterm	ALTPAGE
ALTPRT(,COPY)	Terminal	ALTPRINTCOPY
ALTPRT(label,)	Terminal	ALTPRINTER
ALTSCRN	Typeterm	ALTSCREEN
ALTSFX	Typeterm	ALTSUFFIX
AUTH=(string)	See note 8	AUTHID(name)
AUTH=(GROUP)	See note 8	AUTHTYPE(GROUP)
AUTH=(SIGNID)	See note 8	AUTHTYPE(SIGN)
AUTH=(TERM)	See note 8	AUTHTYPE(TERM)
AUTH=(TXID)	See note 8	AUTHTYPE(TX)
AUTH=(USERID)	See note 8	AUTHTYPE(USERID)
AUTH=(USER)	See note 8	AUTHTYPE(OPID)
BASE	File	NSRGROUP
BLKSIZE	TD queue	BLOCKSIZE
BMSFEAT (see note 2)	Typeterm	ROUTEDMSGS(ALL)
BMSFEAT=FMHPARM	Typeterm	FMHPARM(YES)
BMSFEAT=NOROUTE	Typeterm	ROUTEDMSGS(NONE)
BMSFEAT=NOROUTEALL	Typeterm	ROUTEDMSGS(SPECIFIC)
BMSFEAT=OBFMT	Typeterm	OBFORMAT(YES)
BMSFEAT=OBOPID	Typeterm	OBOPERID(YES)
BRACKET	Typeterm	BRACKET
BUFFER	Typeterm	SENDSIZE
BUFFER	Sessions	SENDSIZE
BUFFERS=(1K(count))	Lsrpool	DATA1K
BUFFERS=(2K(count))	Lsrpool	DATA2K
BUFFERS=(4K(count))	Lsrpool	DATA4K
BUFFERS=(8K(count))	Lsrpool	DATA8K
BUFFERS=(12K(count))	Lsrpool	DATA12K
BUFFERS=(16K(count))	Lsrpool	DATA16K
BUFFERS=(20K(count))	Lsrpool	DATA20K
BUFFERS=(24K(count))	Lsrpool	DATA24K
BUFFERS=(28K(count))	Lsrpool	DATA28K
BUFFERS=(32K(count))	Lsrpool	DATA32K
BUFFERS=(512(count))	Lsrpool	DATA512
BUFFERS=(4K(,count))	Lsrpool	HSDATA4K
BUFFERS=(8K(,count))	Lsrpool	HSDATA8K

Macro operand	Resource type	RDO attribute
BUFFERS=(12K(,count))	Lsrpool	HSDATA12K
BUFFERS=(16K(,count))	Lsrpool	HSDATA16K
BUFFERS=(20K(,count))	Lsrpool	HSDATA20K
BUFFERS=(24K(,count))	Lsrpool	HSDATA24K
BUFFERS=(28K(,count))	Lsrpool	HSDATA28K
BUFFERS=(32K(,count))	Lsrpool	HSDATA32K
BUFND	File	DATABUFFERS
BUFNI	File	INDEXBUFFERS
BUFNO	TD queue	DATABUFFERS
CHNASSY	Sessions	BUILDCHAIN
CHNASSY	Typeterm	BUILDCHAIN
CONNECT	Typeterm	AUTOCONNECT
CONNECT	Connection	AUTOCONNECT
CONNECT	Sessions	AUTOCONNECT
CONSLID	Terminal	CONSOLE
DATAID	Tsmodel	PREFIX
DATASTR	Connection	DATASTREAM
DEFSCRN	Typeterm	DEFSCREEN
DESTFAC	TD queue	ATIFACILITY
DESTID	TD queue	TDQUEUE
DESTRCV	TD queue	RECOVSTATUS
DISP	File	DISPOSITION
DPMODE	DB2conn	PRIORITY (see note 9)
DPMODI	See note 10	
DSCNAME	TD queue	DDNAME
DSNAME	File	DSNAME
DSNSHR	File	DSNSHARING
ERRATT=BLINK	Typeterm	ERRHILIGHT(BLINK)
ERRATT=color	Typeterm	ERRCOLOR
ERRATT=INTENSIFY	Typeterm	ERRINTENSIFY
ERRATT=LASTLINE	Typeterm	ERRLASTLINE
ERRATT=REVERSE	Typeterm	ERRHILIGHT(REVERSE)
ERRATT=UNDERLINE	Typeterm	ERRHILIGHT(UNDERLINE)
ERRDEST=(dest1)	DB2conn	MSGQUEUE1(name)
ERRDEST=(dest2)	DB2conn	MSGQUEUE2(name)
ERRDEST=(dest3)	DB2conn	MSGQUEUE3(name)
ERROPT	TD queue	ERROROPTION
FEATURE=APLKYBD	Typeterm	APLKYBD
FEATURE=APLTEXT	Typeterm	APLTEXT
FEATURE=ASCII-7	Typeterm	ASCII(7)
FEATURE=ASCII-8	Typeterm	ASCII(8)
FEATURE=AUDALARM	Typeterm	AUDIBLEALARM
FEATURE=BTRANS	Typeterm	BACKTRANS
FEATURE=COLOR	Typeterm	COLOR
FEATURE=COPY	Typeterm	COPY
FEATURE=DCKYBD	Typeterm	DUALCASEKYBD
FEATURE=EXTDS	Typeterm	EXTENDEDDS
FEATURE=HILIGHT	Typeterm	HILIGHT
FEATURE=KATAKANA	Typeterm	KATAKANA
FEATURE=MSRCNTRL	Typeterm	MSRCONTROL
FEATURE=OUTLINE	Typeterm	OUTLINE
FEATURE=PARALLEL	Connection	SINGLESESS(NO)
FEATURE=PARTNS	Typeterm	PARTITIONS
FEATURE=PTRADAPT	Typeterm	PRINTADAPTER

Macro operand	Resource type	RDO attribute
FEATURE=PS	Typeterm	PROGSYMBOLS
FEATURE=QUERYALL	Typeterm	QUERY(ALL)
FEATURE=QUERYCOLD	Typeterm	QUERY(COLD)
FEATURE=SELCTPEN	Typeterm	LIGHTPEN
FEATURE=SINGLE	Connection	SINGLESESS(YES)
FEATURE=SOSI	Typeterm	SOSI
FEATURE=TEXTKYBD	Typeterm	TEXTKYBD
FEATURE=TEXTPRINT	Typeterm	TEXTPRINT
FEATURE=UCTRAN	Typeterm	UCTRAN
FEATURE=VALIDATION	Typeterm	VALIDATION
FF	Typeterm	FORMFEED
FILE	File	FILE
FILSTAT=ENABLED∨DISABLED	File	STATUS
FILSTAT=OPENED∨CLOSED	File	OPENTIME
GMMSG	Typeterm	LOGONMSG
HF	Typeterm	HORIZFORM
INDEST	TD queue	INDIRECTNAME
INDSYS	Connection	INDSYS
JID	File	FWDRECOVLOG
JID=SYSTEM	File	JOURNAL(1)
JREQ=WN	File	JNLADD
JREQ=RU	File	JNLREAD(UPDATEONLY)
JREQ=RO	File	JNLREAD(READONLY)
JREQ=SYN	File	JNLSYNCREAD
JREQ=ASY	File	JNLSYNCWRITE(NO)
JREQ=WU	File	JNLUPDATE
KEYLEN	File	KEYLENGTH
KEYLEN	Lsrpool	MAXKEYLENGTH
LDC	Typeterm	LDCLIST
LENGTH	TD queue	RECORDSIZE
LOG=YES	File	RECOVERY
LOGMODE	Typeterm	LOGMODE
LRECL	File	RECORDSIZE
LSRPOOL	File	See note 5
MAXSESS	Sessions	MAXIMUM
MODENAM	Sessions	MODENAME
MODENAM	Terminal	MODENAME
NATLANG	Terminal	NATLANG
NEPCLAS	Typeterm	NEPCLASS
NETNAME	Connection	NETNAME
NETNAME	Terminal	NETNAME
NETNAMQ	Sessions	NETNAMEQ
OPEN	TD queue	OPENTIME
PASSWD	File	PASSWORD
PCTEROP=AEY9	DB2conn	THREADERROR(ABEND)
PCTEROP=N906	DB2conn	THREADERROR(N906)
PCTEROP=N906D	DB2conn	THREADERROR(N906D)
PGESIZE	Typeterm	PAGESIZE
PGESTAT=AUTOPAGE	Typeterm	AUTOPAGE(YES)
PGESTAT=PAGE	Typeterm	AUTOPAGE(NO)
PIPELN	Terminal	POOL
PLAN	DB2conn	PLAN (see note 9)
PLANI	See note 10	
PLNEXIT	See note 1	

Macro operand	Resource type	RDO attribute
PLNPGME	DB2conn	PLANEXITNAME (see note 9)
PLNPGMI	See note 10	
PLNXTR1	See note 1	
PLNXTR2	See note 1	
POOL see note 12	Tsmodel	POOLNAME
PRINTTO(,COPY)	Terminal	PRINTERCOPY
PRINTTO(label,)	Terminal	PRINTER
PURGEC	DB2conn	PURGECYCLE
RECEIVE=(,n)	Sessions	RECEIVECOUNT
RECEIVE=(x,)	Sessions	RECEIVEPFX
RECFM	Connection	RECORDFORMAT
RECFORM=U∨V∨F)	File	RECORDFORMAT
RECFORM	TD queue	See note 7
RECSIZE	TD queue	RECORDSIZE
RELREQ=(,NO∨YES)	Sessions	DISCREQ
RELREQ=(NO∨YES,)	Sessions	RELREQ
RELREQ=(,NO∨YES)	Typeterm	DISCREQ
RELREQ=(NO∨YES,)	Typeterm	RELREQ
REWIND	TD queue	REWIND
RMTNAME	File	REMOTENAME
RMTNAME	TD queue	REMOTENAME
RMTNAME	Terminal	REMOTENAME
RMTNAME	Tsmodel	REMOTEPREFIX
RNOTIFY	Typeterm	RECOVNOTIFY
ROLBE	DB2conn	DROLLBACK (see note 9)
ROLBI	See note 10	
ROPTION	Typeterm	RECOVOPTION
RSCLMT	Lsrpool	SHARELIMIT
RUSIZE	Sessions	RECEIVESIZE
RUSIZE	Typeterm	RECEIVESIZE
SEND=(,n)	Sessions	SENDCOUNT
SEND=(x,)	Sessions	SENDPFX
SERVREQ=ADD	File	ADD
SERVREQ=BROWSE	File	BROWSE
SERVREQ=DELETE	File	DELETE
SERVREQ=READ	File	READ
SERVREQ=UPDATE	File	UPDATE
SESTYPE	Typeterm	SESSIONTYPE (see note 13)
SHDDEST	DB2CONN	STATSQUEUE
SIGNID	DB2conn	SIGNID
SIGNOFF	Typeterm	SIGNOFF
SIZE=number	File	MAXNUMRECS
SNAP	See note 1	
STANDBY=ABEND	DB2conn	CONNECTERROR(ABEND)
STANDBY=SQLCODE	DB2conn	CONNECTERROR(SQLCODE)
STRTWT=YES	DB2conn	STANDBYMODE(CONNECT)
STRTWT=NO	DB2conn	STANDBYMODE(NOCONNECT)
STRTWT=AUTO	DB2conn	STANDBYMODE(RECONNECT)
SUBID=name	DB2conn	DB2ID(name)
SUFFIX	See note 1	
STRNO	File	STRINGS
STRNO	Lsrpool	STRINGS
SYSIDNT	Connection	CONNECTION
SYSIDNT	File	REMOTESYSTEM

Macro operand	Resource type	RDO attribute
SYSIDNT	Sessions	CONNECTION
SYSIDNT	TD queue	REMOTESYSTEM
SYSIDNT	Terminal	REMOTESYSTEM
SYSIDNT	Tsmodel	REMOTESYSTEM
TASKNO	Terminal	TASKLIMIT
TASKREQ	(DSNCRCT macro)	See note 1
TCTUAL	Sessions	USERAREALEN
TCTUAL	Typeterm	USERAREALEN
THRDA	See note 8	THREADLIMIT
THRDM	See note 1	
THRDMAX	DB2conn	TCBLIMIT
THRDS	DB2entry	PROTECTNUM
TIOAL	Sessions	IOAREALEN
TIOAL	Typeterm	IOAREALEN
TOKENE	DB2conn	ACCOUNTREC (see note 9)
TOKENI	See note 10	
TRACEID	See note 1	
TRANSID	TD queue	TRANSID
TRANSID	Terminal	TRANSACTION
TRIGLEV	TD queue	TRIGGERLEVEL
TRMIDNT	Sessions	SESSNAME
TRMIDNT	Terminal	TERMINAL
TRMMODL	Typeterm	TERMMODEL
TRMPRTY	Sessions	SESSPRIORITY
TRMPRTY	Terminal	TERMPRIORITY
TRMSTAT (see note 3)	Typeterm	ATI(NO) and TTI(NO)
TRMSTAT (see note 4)	Typeterm	CREATESESS(YES)
TRMSTAT=INPUT	See note 1	
TRMSTAT=INTLOG	Typeterm	CREATESESS(YES)
TRMSTAT=NOINTLOG	Typeterm	CREATESESS(NO)
TRMSTAT='OUT OF SERVICE'	Connection	INSERVICE(No)
TRMSTAT='OUT OF SERVICE'	Sessions	INSERVICE(No)
TRMSTAT='OUT OF SERVICE'	Terminal	INSERVICE(No)
TRMSTAT=RECEIVE	Typeterm	ATI(YES) and TTI(NO)
TRMSTAT=TRANSACTION	Typeterm	ATI(NO) and TTI(YES)
TRMSTAT=TRANSCEIVE	Typeterm	ATI(YES) and TTI(YES)
TRMTYPE	Connection	PROTOCOL
TRMTYPE	Sessions	PROTOCOL
TRMTYPE	Typeterm	DEVICE
TWAIT	DB2conn	THREADWAIT (see note 9)
TWAITI	See note 10	
TXID	DB2entry	TRANSID (see note 11)
TXIDSO	DB2conn	ACCOUNTREC (see note 9)
TYPE=CICSTABLE∨USERTABLE	File	TABLE
TYPE=EXTRA	TD queue	TYPE(EXTRA)
TYPE=INDIRECT	TD queue	TYPE(INDIRECT)
TYPE=INTRA	TD queue	TYPE(INTRA)
TYPE=RECOVERY	Tsmodel	RECOVERY(Yes)
TYPE=REMOTE	TD queue	See note 6
TYPE=SDSCI	TD queue	See note 1
TYPE=SECURITY	Tsmodel	SECURITY(Yes)
TYPEFLE	TD queue	TYPEFILE
USERID	Sessions	USERID

Macro operand	Resource type	RDO attribute
USERID	TD queue	USERID
USERID	Terminal	USERID
USERSEC	Connection	ATTACHSEC
USERSEC	Terminal	ATTACHSEC
VF	Typeterm	VERTICALFORM
XSNAME	Connection	SECURITYNAME
XSNAME	Terminal	SECURITYNAME

Note:

1. No RDO equivalent is provided.
2. The RDO equivalent of not specifying either NOROUTE or NOROUTEALL for BMSFEAT is ROUTEDMSGS(ALL).
3. The RDO equivalent of not specifying any of TRANCEIVE, RECEIVE, or TRANSACTION is ATI(NO), TTI(NO).
4. The RDO equivalent of not specifying either INTLOG or NOINTLOG for TRMSTAT is CREATESESS(YES).
5. The RDO equivalent of the macro attribute LSRPOOL is LSRPOOLID on CEDA DEFINE LSRPOOL or on CEDA DEFINE FILE.
6. You can find out the RDO equivalent of this macro operand by omitting the queue type.
7. In the DFHDCT macro, this value of the RECFORM attribute contains several pieces of information. The RDO attributes RECORDFORMAT, BLOCKFORMAT, and PRINTCONTROL supply these pieces of information.
8. The AUTH macro parameters defined on the TYPE=POOL and TYPE=ENTRY macros correspond to the AUTHID or AUTHTYPE RDO parameters as shown, and can be specified on either a DB2CONN or a DB2ENTRY resource definition, as appropriate. The AUTH parameters on the TYPE=COMD macro, however, correspond to the COMAUTHID or COMAUTHTYPE on a DB2CONN resource definition.

   Similarly, the THRDA macro parameters defined on the TYPE=POOL and TYPE=ENTRY macros correspond to the THREADLIMIT RDO parameter as shown, and can be specified on either a DB2CONN or a DB2ENTRY resource definition, as appropriate. The THRDA parameter on the TYPE=COMD macro, however, corresponds to the COMTHREADLIM parameter on a DB2CONN resource definition.
9. These macro parameters can also be specified on a DB2ENTRY resource definition.
10. There is no equivalent for these RCT parameters, which allow you to define defaults for other parameters (for example, TOKENI in the TYPE=INIT macro specifies a default if TOKENE is not defined on the TYPE=ENTRY macro. To override RDO system defaults, use the USERDEFINE method described in “The CEDA USERDEFINE command” on page 415 and “The CEDA USERDEFINE command” on page 415
11. This parameter can also be defined as the RDO TRANSID parameter on the DB2TRAN resource definition.
12. The POOL parameter in a TYPE=SHARED macro instruction will map to the RDO POOLNAME attribute, ONLY if there is a TYPE=REMOTE macro instruction with the same SYSIDNT in the TST that is being migrated.

13. Not relevant for LU6.1

Note that there are no DFHDCT macro equivalents for the following attributes on the TDQUEUE RDO definition:
- BLOCKFORMAT
- DISPOSITION
- DSNAME
- PRINTCONTROL
- SYSOUT
- WAIT
- WAITACTION

To use these attributes, you must use RDO for transient data queues.

RDO attribute to macro operand

This list is in alphabetic order of RDO attribute, giving the equivalent macro operand. “Macro operand to RDO attribute” on page 655 gives the same list in order of macro operand.

RDO attribute	Resource type	Macro operand
ACCESSMETHOD	Connection	ACCMETH
ACCOUNTREC (see note 6)	DB2conn	TXIDSO
ACCOUNTREC (see note 6)	DB2conn	TOKENE
ADD	File	SERVREQ=ADD
ALTPAGE	Typeterm	ALTPGE
ALTPRINTCOPY	Terminal	ALTPRT(,COPY)
ALTPRINTER	Terminal	ALTPRT(label,)
ALTSCREEN	Typeterm	ALTSCRN
ALTSUFFIX	Typeterm	ALTSFX
APLKYBD	Typeterm	FEATURE=APLKYBD
APLTEXT	Typeterm	FEATURE=APLTEXT
ASCII(7)	Typeterm	FEATURE=ASCII-7
ASCII(8)	Typeterm	FEATURE=ASCII-8
ATIFACILITY	TD queue	DESTFAC
ATI(NO) and TTI(YES)	Typeterm	TRMSTAT=TRANSACTION
ATI(YES) and TTI(NO)	Typeterm	TRMSTAT=RECEIVE
ATI(YES) and TTI(YES)	Typeterm	TRMSTAT=TRANSCEIVE
ATTACHSEC	Connection	USERSEC=IDENTIFY
ATTACHSEC	Connection	USERSEC=LOCAL
ATTACHSEC	Connection	USERSEC=MIXIDPE
ATTACHSEC	Connection	USERSEC=PERSISTENT
ATTACHSEC	Connection	USERSEC=VERIFY
ATTACHSEC	Terminal	USERSEC=IDENTIFY
ATTACHSEC	Terminal	USERSEC=LOCAL
ATTACHSEC	Terminal	USERSEC=MIXIDPE
ATTACHSEC	Terminal	USERSEC=PERSISTENT
ATTACHSEC	Terminal	USERSEC=VERIFY
AUDIBLEALARM	Typeterm	FEATURE=AUDALARM
AUTHID(name)	See note 5	AUTH=(string)
AUTHTYPE(GROUP)	See note 5	AUTH=(GROUP)
AUTHTYPE(SIGN)	See note 5	AUTH=(SIGNID)
AUTHTYPE(TERM)	See note 5	AUTH=(TERM)
AUTHTYPE(TX)	See note 5	AUTH=(TXID)
AUTHTYPE(USERID)	See note 5	AUTH=(USERID)
AUTHTYPE(OPID)	See note 5	AUTH=(USER)

RDO attribute	Resource type	Macro operand
AUTINSTMODEL	Terminal	See note 1
AUTINSTNAME	Terminal	See note 1
AUTOCONNECT	Connection	CONNECT
AUTOCONNECT	Sessions	CONNECT
AUTOCONNECT	Typeterm	CONNECT
AUTOPAGE(NO)	Typeterm	PGESTAT=PAGE
AUTOPAGE(YES)	Typeterm	PGESTAT=AUTOPAGE
BACKTRANS	Typeterm	FEATURE=BTRANS
BACKUPTYPE	File	See note 1
BINDPASSWORD	Connection	BINDPWD
BINDPASSWORD	Terminal	BINDPWD
BLOCKFORMAT	TD queue	See note 1
BLOCKSIZE	TD queue	BLKSIZE
BRACKET	Typeterm	BRACKET
BROWSE	File	SERVREQ=BROWSE
BUILDCHAIN	Sessions	CHNASSY=YES
BUILDCHAIN	Typeterm	CHNASSY
CGCSGID	Typeterm	See note 1
COLOR	Typeterm	FEATURE=COLOR
CONNECTERROR(ABEND)	DB2conn	STANDBY=ABEND
CONNECTERROR(SQLCODE)	DB2conn	STANDBY=SQLCODE
CONNECTION	Connection	SYSIDNT
CONNECTION	Sessions	SYSIDNT
CONNTYPE	Connection	See note 1
CONSOLE	Terminal	CONSLID
COPY	Typeterm	FEATURE=COPY
CREATESESS(NO)	Typeterm	TRMSTAT=NOINTLOG
CREATESESS(YES)	Typeterm	See note 2
DATABUFFERS	File	BUFND
DATABUFFERS	TD queue	BUFNO
DATASTREAM	Connection	DATASTR
DATA1K	Lsrpool	BUFFERS=(1K(count))
DATA2K	Lsrpool	BUFFERS=(2K(count))
DATA4K	Lsrpool	BUFFERS=(4K(count))
DATA8K	Lsrpool	BUFFERS=(8K(count))
DATA12K	Lsrpool	BUFFERS=(12K(count))
DATA16K	Lsrpool	BUFFERS=(16K(count))
DATA20K	Lsrpool	BUFFERS=(20K(count))
DATA24K	Lsrpool	BUFFERS=(24K(count))
DATA28K	Lsrpool	BUFFERS=(28K(count))
DATA32K	Lsrpool	BUFFERS=(32K(count))
DATA512	Lsrpool	BUFFERS=(512(count))
DB2ID(name)	DB2conn	SUBID=name
DDNAME	TD queue	DSCNAME
DEFSCREEN	Typeterm	DEFSCRN
DELETE	File	SERVREQ=DELETE
DEVICE	Typeterm	TRMTYPE
DISCREQ	Sessions	RELREQ=(,NO∨YES)
DISCREQ	Typeterm	RELREQ=(,NO∨YES)
DISPOSITION	File	DISP
DISPOSITION	TD queue	See note 1
DROLLBACK (see note 6)	DB2conn	ROLBE
DSNAME	File	DSNAME
DSNAME	TD queue	See note 1

RDO attribute	Resource type	Macro operand
DSNSHARING	File	DSNSHR
DUALCASEKYBD	Typeterm	FEATURE=DCKYBD
ERRCOLOR	Typeterm	ERRATT=color
ERRHILIGHT(BLINK)	Typeterm	ERRATT=BLINK
ERRHILIGHT(REVERSE)	Typeterm	ERRATT=REVERSE
ERRHILIGHT(UNDERLINE)	Typeterm	ERRATT=UNDERLINE
ERRINTENSIFY	Typeterm	ERRATT=INTENSIFY
ERRLASTLINE	Typeterm	ERRATT=LASTLINE
ERROROPTION	TD queue	ERROPT
EXTENDEDDS	Typeterm	FEATURE=EXTDS
FILE	File	FILE
FMHPARM(YES)	Typeterm	BMSFEAT=FMHPARM
FORMFEED	Typeterm	FF
FWDRECOVLOG	File	JID
GROUP	Terminal	See note 1
GROUP	Tsmodel	See note 1
GROUP	Typeterm	See note 1
HILIGHT	Typeterm	FEATURE=HILIGHT
HORIZFORM	Typeterm	HF
HSDATA4K	Lsrpool	BUFFERS=(4K(,count))
HSDATA8K	Lsrpool	BUFFERS=(8K(,count))
HSDATA12K	Lsrpool	BUFFERS=(12K(,count))
HSDATA16K	Lsrpool	BUFFERS=(16K(,count))
HSDATA20K	Lsrpool	BUFFERS=(20K(,count))
HSDATA24K	Lsrpool	BUFFERS=(24K(,count))
HSDATA28K	Lsrpool	BUFFERS=(28K(,count))
HSDATA32K	Lsrpool	BUFFERS=(32K(,count))
HSINDEX4K	Lsrpool	See note 1
HSINDEX8K	Lsrpool	See note 1
HSINDEX12K	Lsrpool	See note 1
HSINDEX16K	Lsrpool	See note 1
HSINDEX20K	Lsrpool	See note 1
HSINDEX24K	Lsrpool	See note 1
HSINDEX28K	Lsrpool	See note 1
HSINDEX32K	Lsrpool	See note 1
INDEXBUFFERS	File	BUFNI
INDIRECTNAME	TD queue	INDEST
INDSYS	Connection	INDSYS
INSERVICE (No)	Connection	TRMSTAT='OUT OF SERVICE'
INSERVICE (No)	Sessions	TRMSTAT='OUT OF SERVICE'
INSERVICE (No)	Terminal	TRMSTAT='OUT OF SERVICE'
IOAREALEN	Sessions	TIOAL
IOAREALEN	Typeterm	TIOAL
JNLADD(BEFORE)	File	JREQ=WN
JNLREAD(UPDATEONLY)	File	JREQ=RU
JNLREAD(READONLY)	File	JREQ=RO
JNLSYNCREAD	File	JREQ=SYN
JNLSYNCWRITE(NO)	File	JREQ=ASY
JNLUPDATE	File	JREQ=WU
JOURNAL	File	JID
KATAKANA	Typeterm	FEATURE=KATAKANA
KEYLENGTH	File	KEYLEN
LDCLIST	Typeterm	LDC
LIGHTPEN	Typeterm	FEATURE=SELCTPEN

RDO attribute	Resource type	Macro operand
LOCATION(Auxiliary)	Tsmodel	See note 1
LOCATION(Main)	Tsmodel	See note 1
LOGMODE	Typeterm	LOGMODE
LOGONMSG	Typeterm	GMMSG
LSRPOOL	Lsrpool	See note 1
LSRPOOLID	File	LSRPOOL
LSRPOOLID	Lsrpool	See note 4
MAXIMUM	Sessions	MAXSESS
MAXKEYLENGTH	Lsrpool	KEYLEN
MAXNUMRECS	File	SIZE
MAXQTIME	Connection	See note 1
MODENAME	Sessions	MODENAM
MODENAME	Terminal	MODENAM
MSGQUEUE1(name)	DB2conn	ERRDEST=(dest1)
MSGQUEUE2(name)	DB2conn	ERRDEST=(dest2)
MSGQUEUE3(name)	DB2conn	ERRDEST=(dest3)
MSRCONTROL	Typeterm	FEATURE=MSRCNTRL
NATLANG	Terminal	NATLANG
NEPCLASS	Sessions	See note 1
NEPCLASS	Typeterm	NEPCLAS
NETNAME	Connection	NETNAME
NETNAME	Terminal	NETNAME
NETNAMEQ	Sessions	NETNAMQ
NSRGROUP	File	BASE
OBFORMAT(YES)	Typeterm	BMSFEAT=OBFMT
OBOPERID(YES)	Typeterm	BMSFEAT=OBOPID
OPENTIME	File	FILSTAT=OPEN∨CLOSED
OPENTIME	TD queue	OPEN
PASSWORD	File	PASSWD
PLAN (see note 6)	DB2conn	PLAN
PLANEXITNAME (see note 6)	DB2conn	PLNPGME
POOL	Terminal	PIPELN
POOLNAME	Tsmodel	POOL see note 8
PREFIX	Tsmodel	DATAID
PRINTADAPTER	Typeterm	FEATURE=PTRADAPT
PRINTCONTROL	TD queue	See note 1
PRINTER	Terminal	PRINTTO(label,)
PRINTERCOPY	Terminal	PRINTTO(,COPY)
PRIORITY (see note 6)	DB2conn	DPMODE
PROGSYMBOLS	Typeterm	FEATURE=PS
PROTECTNUM	DB2entry	THRDS
PROTOCOL	Connection	TRMTYPE
PROTOCOL	Sessions	TRMTYPE
PSRECOVERY	Connection	See note 1
PURGECYCLE	DB2conn	PURGEC
QUERY(ALL)	Typeterm	FEATURE=QUERYALL
QUERY(COLD)	Typeterm	FEATURE=QUERYCOLD
QUEUELIMIT	Connection	See note 1
READ	File	SERVREQ=READ
RECEIVECOUNT	Sessions	RECEIVE=(,n)
RECEIVEPFX	Sessions	RECEIVE=(x,)
RECEIVESIZE	Sessions	RUSIZE
RECEIVESIZE	Typeterm	RUSIZE
RECORDFORMAT	Connection	RECFM

RDO attribute	Resource type	Macro operand
RECORDFORMAT	File	RECFORM=(U∨V∨F)
RECORDSIZE	File	LRECL
RECORDSIZE	TD queue	LENGTH
RECORDSIZE	TD queue	RECSIZE
RECOVERY	File	LOG=YES
RECOVERY(No)	Tsmodel	See note 1
RECOVERY(Yes)	Tsmodel	TYPE=RECOVERY
RECOVNOTIFY	Typeterm	RNOTIFY
RECOVOPTION	Sessions	ROPTION
RECOVOPTION	Typeterm	ROPTION
RECOVSTATUS	TD queue	DESTRCV
RELREQ	Sessions	RELREQ=(NO∨YES,)
RELREQ	Typeterm	RELREQ=(NO∨YES,)
REMOTENAME	Connection	RMTNAME
REMOTENAME	File	RMTNAME
REMOTENAME	TD queue	RMTNAME
REMOTENAME	Terminal	RMTNAME
REMOTEPREFIX	Tsmodel	RMTNAME
REMOTESYSNET	Connection	See note 1
REMOTESYSTEM	Connection	SYSIDNT
REMOTESYSTEM	File	SYSIDNT
REMOTESYSTEM	TD queue	SYSIDNT
REMOTESYSTEM	Terminal	SYSIDNT
REMOTESYSTEM	Tsmodel	SYSIDNT
REWIND	TD queue	REWIND
ROUTEDMSGS(NONE)	Typeterm	BMSFEAT=NOROUTE
ROUTEDMSGS(SPECIFIC)	Typeterm	BMSFEAT=NOROUTEALL
ROUTEDMSGS(ALL)	Typeterm	See note 3
RSTSIGNOFF	Typeterm	See note 1
SECURITY(No)	Tsmodel	See note 1
SECURITY(Yes)	Tsmodel	TYPE=SECURITY
SECURITYNAME	Connection	XSNAME
SECURITYNAME	Terminal	XSNAME
SENDCOUNT	Sessions	SEND=(,n)
SENDPFX	Sessions	SEND=(x,)
SENDSIZE	Sessions	BUFFER
SENDSIZE	Typeterm	BUFFER
SESSIONS	Sessions	See note 1
SESSIONTYPE (see note 9)	Typeterm	SESTYPE
SESSNAME	Sessions	TRMIDNT
SESSPRIORITY	Sessions	TRMPRTY
SHARELIMIT	Lsrpool	RSCLMT
SHIPPABLE	Typeterm	See note 1
SIGNID	DB2conn	SIGNID
SIGNOFF	Typeterm	SIGNOFF
SINGLESESS	Connection	FEATURE=SINGLE
STANDBYMODE(CONNECT)	DB2conn	STRTWT=YES
STANDBYMODE(NOCONNECT)	DB2conn	STRTWT=NO
STANDBYMODE(RECONNECT)	DB2conn	STRTWT=AUTO
SOSI	Typeterm	FEATURE=SOSI
STATSQUEUE	DB2CONN	SHDDEST
STATUS	File	FILSTAT=ENABLED∨DISABLED
STRINGS	File	STRNO
STRINGS	Lsrpool	STRNO

RDO attribute	Resource type	Macro operand
SYSOUT	TD queue	See note 1
TABLE	File	TYPE=CICSTABLE∨USERTABLE
TASKDATAKEY	Connection	See note 1
TASKLIMIT	Terminal	TASKNO
TCBLIMIT	DB2conn	THRDMAX
TDQUEUE	TD queue	DESTID
TERMINAL	Terminal	TRMIDNT
TERMMODEL	Typeterm	TRMMODL
TERMPRIORITY	Terminal	TRMPRTY
TEXTKYBD	Typeterm	FEATURE=TEXTKYBD
TEXTPRINT	Typeterm	FEATURE=TEXTPRINT
THREADERROR(ABEND)	DB2conn	PCTEROP=AEY9
THREADERROR(N906)	DB2conn	PCTEROP=N906
THREADERROR(N906D)	DB2conn	PCTEROP=N906D
THREADLIMIT	THRDA	See note 5
THREADWAIT (see note 6)	DB2conn	TWAIT
TRANSACTION	Terminal	TRANSID
TRANSID	TD queue	TRANSID
TRANSID (see note 7)	DB2entry	TXID
TRIGGERLEVEL	TD queue	TRIGLEV
TTI(NO) and ATI(YES)	Typeterm	TRMSTAT=RECEIVE
TTI(YES) and ATI(NO)	Typeterm	TRMSTAT=TRANSACTION
TTI(YES) and ATI(YES)	Typeterm	TRMSTAT=TRANCEIVE
TYPEFILE	TD queue	TYPEFLE
TYPETERM	Terminal	See note 1
TYPETERM	Typeterm	See note 1
TYPE(EXTRA)	TD queue	TYPE=EXTRA
TYPE(INDIRECT)	TD queue	TYPE=INDIRECT
TYPE(INTRA)	TD queue	TYPE=INTRA
UCTRAN	Typeterm	FEATURE=UCTRAN
UPDATE	File	SERVREQ=UPDATE
USERAREALEN	Sessions	TCTUAL
USERAREALEN	Typeterm	TCTUAL
USERID	Sessions	USERID
USERID	TD queue	USERID
USERID	Terminal	USERID
WAIT	TD queue	See note 1
WAITACTION	TD queue	See note 1
VALIDATION	Typeterm	FEATURE=VALIDATION
VERTICALFORM	Typeterm	VF

Note:

1. There is no macro equivalent.
2. CREATESESS(YES) is equivalent to specifying neither INTLOG nor NOINTLOG for TRMSTAT.
3. ROUTEDMSGS(ALL) is equivalent to specifying neither NOROUTE nor NOROUTEALL for BMSFEAT.
4. The macro equivalent of the LSRPOOLID attribute on CEDA DEFINE LSRPOOL is LSRPOOL on the DFHFCT macro.
5. The AUTH macro parameters defined on the TYPE=POOL and TYPE=ENTRY macros correspond to the AUTHID or AUTHTYPE RDO parameters as shown, and can be specified on either a DB2CONN or a DB2ENTRY resource definition, as appropriate. The AUTH parameters

on the TYPE=COMD macro, however, correspond to the COMAUTHID or COMAUTHTYPE on a DB2CONN resource definition.

Similarly, the THRDA macro parameters defined on the TYPE=POOL and TYPE=ENTRY macros correspond to the THREADLIMIT RDO parameter as shown, and can be specified on either a DB2CONN or a DB2ENTRY resource definition, as appropriate. The THRDA parameter on the TYPE=COMD macro, however, corresponds to the COMTHREADLIM parameter on a DB2CONN resource definition.

6. These macro parameters can also be specified on a DB2ENTRY resource definition.
7. This parameter can also be defined as the RDO TRANSID parameter on the DB2TRAN resource definition.
8. The POOL parameter in a TYPE=SHARED macro instruction will map to the RDO POOLNAME attribute, ONLY if there is a TYPE=REMOTE macro instruction with the same SYSIDNT in the TST that is being migrated.
9. Not relevant for LU6.1

Note that the RDO equivalent of the DFHDCT TYPE=REMOTE macro can be found by leaving the TYPE attribute blank.

Appendix D. Migrating the TCT to the CSD file

This appendix describes the process of converting terminal and system definition macros for VTAM devices into their RDO equivalents. Before you read further, note that you **must** use RDO for the TCT if you use VTAM as your telecommunication access method for at least some of your resources, because VTAM TCTs are no longer supported online (other than LDCs).

Note also that there is a special facility, called **autoinstall**, that can remove the need for some migration. You may decide that you don't need to migrate all of your DFHTCT macros, because you are going to use autoinstall. It would be wise, nevertheless, to read the following section and maybe perform the migration process anyway. This allows you to study the RDO definitions that the utility produces, and could help you decide how many different **autoinstall models** you need. For more information, see Chapter 40, “Autoinstalling VTAM terminals,” on page 461.

This appendix is divided into three sections:

1. The steps involved in the migration process.
2. The steps involved in migrating remote terminal definitions, depending on the method of defining remote terminals you choose.
3. Some notes on migrating different types of macro, including links and sessions with other systems.

The needs of your installation may introduce various complications into the migration process:

- You may wish to introduce autoinstall in stages, or for some terminals but not all
- If you have remote terminals for transaction routing, there are three approaches you could adopt toward migrating your terminal definitions, as described in “Migrating remote terminal definitions” on page 674.

Whatever your choices, you finish up with a TCT built from one or more of the following:

- Entries built automatically through autoinstall, which are dynamic and are present in the TCT until autoinstalled
- Entries defined and installed using RDO and the GRPLIST system initialization parameter
- Entries for non-VTAM terminals defined using DFHTCT macros

Autoinstalled TCT entries never override any others. If a table entry already exists for a given terminal, CICS does not try to autoinstall it. (For more information see Chapter 40, “Autoinstalling VTAM terminals,” on page 461.)

Summary of implementation

This section discussed the steps in the process of migrating your TCT to the CSD:

1. “Editing your existing DFHTCT source” on page 670
2. “Assembling and link-editing” on page 670
3. “Using the MIGRATE command” on page 671
4. “Checking the output from MIGRATE” on page 672
5. “Using DFHCSDUP to add migrated groups to a list” on page 673

6. “Operations after migration” on page 673
7. “Final modification of the macro source” on page 673

Editing your existing DFHTCT source

The first step in migrating your DFHTCT macros to the CSD file is to assemble the source. If your TCT is large, you might find it most convenient to assemble small segments of the source individually.

Each resource definition on the CSD file must belong to a CSD group. DFHCSDUP MIGRATE places all definitions in groups as it processes them.

You probably already have good reasons for grouping resources. For example, you might like to group TERMINAL definitions according to the physical location of the terminals, or according to the department or function of the people using them.

You can specify the names to be given to groups of definitions generated from your DFHTCT macros. You do this by adding special macro instructions to the table source. The rules for group names are given in the description of the GROUP attribute isee “Terminal definition attributes” on page 263). The form of each macro instruction is:

```
DFHTCT TYPE=GROUP,GROUP=xxxxxxxx           (up to 8 characters)
```

All definitions following a particular TYPE=GROUP macro statement are migrated into the named group in the CSD file. A new TYPE=GROUP statement overrides all previous ones.

If you do not insert such macros into your deck, the whole table is migrated into the same group on the CSD file. That group is, by default, named TCT*xx*, a substring of your table's name, DFHTCT*xx*.

It is better to create many small groups for your TERMINALs than one vast group. Aim to have no more than 100 resource definitions in any one group. (See “How many resource definitions should a group contain?” on page 18.)

You must include ACCMETH=VTAM in your DFHTCT TYPE=INITIAL macro. This is to enable the necessary VTAM control blocks, for example the ACB, to be built as part of the TCT. Note that the default for the ACCMETH= operand is ACCMETH=NONVTAM.

Some information from the TYPE=INITIAL macro is not migrated, because it is now specified using the DFHSIT macro. For further guidance on this, see the *CICS System Definition Guide*.

Assembling and link-editing

When you have edited your terminal control table source, assemble it using the CICS Transaction Server for z/OS macro library, specifying MIGRATE=YES on the DFHTCT TYPE=INITIAL macro, and then link-edit the assembler output.

The assembly and link-edit of a TCT leads to the creation of two separate load modules. Assembly of a suffixed TCT (source name DFHTCT*xx*) produces a single text file. However, when this is link-edited into a load library, two members are created:

- DFHTCT*xx*, which contains the non-RDO-eligible definitions in control block format
- DFHRDTxx, which contains the RDO-eligible definitions in command format

You need to be aware of the existence of these two tables if you have to copy or move assembled TCT tables between load libraries.

If you get a return code greater than 4, remove the cause of the error and reassemble. (For example, internally duplicated entries are not acceptable.)

Assemble and link-edit your tables into your CICS load library, using procedure DFHAUPLE.

Using the MIGRATE command

After assembling it and link-editing it, you migrate the revised part of your table using the DFHCSDUP MIGRATE command. The form of the command is:

```
MIGRATE TABLE(DFHTCTxx) [TYPESGROUP(tgrpname)]
```

For guidance on the JCL for DFHCSDUP, see the *CICS Operations and Utilities Guide*.

The migration process triggered off by this MIGRATE command results in the creation of CSD file records for the following:
- TYPETERM definitions
- TERMINAL definitions
- SESSIONS definitions
- CONNECTION definitions

For the RDO equivalents of macro operands, see “Macro operand to RDO attribute” on page 655.

For the macro equivalents of RDO attribute keywords, see “RDO attribute to macro operand” on page 661.

The most important points about these definitions, for the purposes of migration, are described here.

TYPETERM definitions

These are derived from attributes of TYPE=TERMINAL macros, which are often identical for many terminals.

They are put into the CSD group named in the TYPESGROUP parameter. If no TYPESGROUP is specified, they are put in the group currently being created, with the TERMINAL definitions.

The “typeterm” attributes of each TYPE=TERMINAL table macro are checked with existing TYPETERM definitions and if they do not match any of these, a new TYPETERM is added to the CSD file.

The existing TYPETERMs checked are:
- TYPETERMs in the group currently being created
- TYPETERMs in the group specified in the TYPESGROUP parameter of the MIGRATE command

However, the scope of the checking is never extended to include any other TYPETERMs in other groups already on the CSD file. Such groups may have been created using RDO or by a previous MIGRATE.

For this reason, it is a good idea to use the TYPESGROUP parameter to avoid creating duplicate TYPETERMs in different groups. It is convenient to keep the TYPETERMs in a separate group anyway.

TYPETERMs created on the CSD file during the migration are named systematically, in a way related to the TRMTYPE parameter of the original terminal definition. The name consists of a prefix (of 3–5 characters) with a 3-character suffix.

For example, a TYPETERM defining attributes for a 3270 printer is named 3270P001. Variants with the same TRMTYPE are named 3270P002, and so on. The migration process ensures that this name is used as the TYPETERM parameter of every TERMINAL definition that references it.

Migration may produce some TYPETERM names that would be incomprehensible to those who have to use them when defining terminals. You can later rename such TYPETERMs using the RDO command RENAME, and ALTER the TERMINAL definitions that refer to them. The naming rules for TYPETERM identifiers are given in “TYPETERM definition attributes” on page 321.

TERMINAL definitions

Those operands of a TYPE=TERMINAL macro that are not accounted for by the TYPETERM named on the new TERMINAL definition become the other attributes of the TERMINAL definition. The TERMINAL name comes from the old TRMIDNT. The naming rules for TERMINAL identifiers in RDO are given in “Terminal definition attributes” on page 263.

This means that if the existing TRMIDNT contains characters not belonging to this set, the definition is not migrated from the TCT to the CSD file, and you must define these resources with CEDA, using new names acceptable to RDO.

All the TERMINAL definitions created by the migration process have AUTINSTMODEL(NO) and they all point to a TYPETERM definition with SHIPPABLE(NO).

SESSIONS definitions

SESSIONS definitions created by migration are different for different types of links and sessions. They are described in “Migrating different macro types” on page 676. SESSIONS identifiers in RDO are subject to the same character set restrictions as TERMINAL identifiers.

CONNECTION definitions

CONNECTION definitions created by migration are different for different types of links and sessions. They are described in “Migrating different macro types” on page 676. CONNECTION identifiers in RDO are subject to the same character set restrictions as TYPETERM identifiers. This restriction has always applied to the SYSIDNT name in the DFHTCT macro.

Checking the output from MIGRATE

When you have migrated some table entries, check that the process has worked satisfactorily.

The output listing from the MIGRATE utility tabulates all definitions successfully migrated to the CSD file. The listing contains diagnostic messages for resources that failed to migrate for some reason. For example, you may have terminals whose TRMIDNTs contain characters not acceptable to RDO.

You can use RDO to DEFINE resources that have failed to migrate. Make sure that you define these resources on the CSD file, and make any changes to application programs that depended on TERMINAL names that you have had to change, **before** you reassemble the TCT with MIGRATE=COMPLETE.

Using DFHCSDUP to add migrated groups to a list

You must install some migrated definitions in the system when you initialize it. You do this by means of a list named in the GRPLIST system initialization parameter. The MIGRATE command created groups of resource definitions. You must create a list by using the ADD command to add some of your groups to it. For more information about this, see "The CEDA ADD command" on page 391. You can choose a name for the list: you specify this name in the GRPLIST operand.

To start off with, include a group containing a definition of a terminal that you can use for RDO: to create other lists and groups, and to install other groups of definitions in the active CICS system. To enable you to use RDO, include in your list the CICS-supplied definitions for the resources RDO itself uses, and for the resources used by other CICS-supplied transactions, including CEMT, that you want to use. The easiest way to do this is to use the APPEND command to append the list called DFHLIST to your own list. For more information about this, see *CICS Operations and Utilities Guide*.

Operations after migration

When you are happy that you have no problems using RDO, how you continue depends on whether you can completely dispense with a TCT.

Continue to use a TCT containing resource definition macros if you have any of the following resources:
- Sequential devices
- Logical device codes (LDCs)

If you cannot dispense with your TCT, follow the advice in "Final modification of the macro source." If you can dispense with your TCT, follow the advice in "Dispensing with DFHTCT macros."

Final modification of the macro source

If you need to retain a TCT to manage resources that you cannot define using RDO, you should eventually remove from your TCT source all the definitions that have been successfully migrated to the CSD file, or that are now being created by autoinstall. This saves time on table assemblies.

After reducing the TCT source to a bare minimum, reassemble it to ensure that you have not made any mistakes.

You continue to suffix the TCT, and code TCT=*xx*, where *xx* is the table name suffix, as a system initialization parameter. If you have VTAM resources **and** DFHTCT macros, code ACCMETH=(VTAM,NONVTAM) in the TCT.

Dispensing with DFHTCT macros

If you are able to use RDO, with or without autoinstall, to manage **all** the resources formerly defined using the DFHTCT macroinstructions, you can now dispense with your DFHTCT macro source altogether. Proceed as follows:

3. If the CSD file now contains all the necessary definitions, code TCT=NO as a system initialization parameter. This ensures that a “dummy” TCT (DFHTCTDY) is used.

   DFHTCTDY is supplied by IBM. It contains predefined values for the DFHTCT TYPE=INITIAL parameters. If you wish to use different DFHTCT TYPE=INITIAL parameters, you may code and assemble your own version of DFHTCTDY. Note that some of the old DFHTCT TYPE=INITIAL options are now coded as system initialization parameters. For further guidance on this, see the *CICS System Definition Guide*.

Where next?

If you have only straightforward terminal definitions to migrate, you can go ahead and migrate them now.

If you have remote terminal definitions for transaction routing, you can find more guidance about migrating them in the next section.

This appendix ends with a summary of the different types of TCT macro, showing what the migration process does with each type. You may find this particularly helpful in planning your migration if you have intercommunication resources.

Migrating remote terminal definitions

“Terminals for transaction routing” on page 252 describes three methods of defining terminals so that they can be used for transaction routing. If you use transaction routing with MRO or APPC ISC, read that section before migrating your TCT:

- “Maintain local and remote definitions separately” on page 675
- “Share terminal definitions” on page 675
- “Make terminal definitions shippable” on page 676

When you have decided which method you want to use to define transaction routing terminals, follow the appropriate migration procedure described below. How you perform the migration depends on the type of macros you have used to define your remote terminals. If you have TYPE=REMOTE entries, you may have to migrate them to become remote definitions, just as you migrate the ordinary TYPE=TERMINAL entries to become local definitions. If you have TYPE=REGION macros, you probably use copy book definitions for both local and remote entries, as shown in this example. We refer to the migration procedure for this example in the procedures below.

Table DFHTCTLA used for local system (ACIC)

```
DFHTCT TYPE=INITIAL,SUFFIX=LA,SYSIDNT=ACIC
  .
  .
  .
COPY COMTERMS
  .
  .
  .
DFHTCT TYPE=FINAL
```

Table DFHTCTRB used for remote system (BCIC)

```
DFHTCT TYPE=INITIAL,SUFFIX=RB,SYSIDNT=BCIC
   .
   .
   .
DFHTCT TYPE=REGION,SYSIDNT=ACIC
COPY COMTERMS
   .
   .
   .
DFHTCT TYPE=FINAL
```

Maintain local and remote definitions separately

Maintaining local and remote definitions separately

To migrate your TCT definitions to one or more CSD files, do the following:

1. Assemble the TCT for the terminal-owning system.
2. Assemble the TCT for the application-owning system. If you have more than one application-owning system, they may be able to share remote definitions, so you may not need to assemble more than one application-owning TCT.
3. Allocate definitions for different systems to different groups, if sharing a CSD file between systems.

   In the copy book example, if you use TYPE=GROUP macros to delimit groups within COMTERMS, edit COMTERMS after assembling DFHTCTLA and before assembling DFHTCTRB to change the TYPE=GROUP macros to name a different set of groups. (This does not apply if the tables are to be migrated to different CSD files.)
4. Use DFHCSDUP to migrate all the TCTs. The commands look like this:

   ```
   MIGRATE TABLE(DFHTCTLA) TYPESGROUP(TTS)
   MIGRATE TABLE(DFHTCTRB) TYPESGROUP(TTS)
   ```

   Migration of the remote terminals normally creates definitions that use the same TYPETERMs created for the corresponding local definitions.
5. Include the groups containing the local definitions in the GRPLIST for the terminal-owning system.
6. Include the groups containing the remote definitions in the GRPLIST for each application-owning system.

If there are only a small number of terminals that need more than one definition, it is probably best to migrate all the definitions in the terminal-owning TCT and then to use RDO to create the corresponding remote definitions with the required REMOTESYSTEM attribute. You can use the COPY and ALTER commands to do this.

Share terminal definitions

Sharing terminal definitions

To migrate your TCT definitions to the shared CSD file:

1. Suppress the assembly of remote definitions in all the TCTs to be migrated, by removing (or commenting-out) the TCT source for:
   - TYPE=REMOTE entries
   - TYPE=REGION and subsequent TYPE=TERMINAL entries
2. Assemble the TCT for the terminal-owning system, suppressing any macros for remote definitions that you may have if there is more than one terminal-owning system.

3. Assemble the TCT for the application-owning system, if it contains any definitions for local terminals. Again, suppress any macros for remote definitions if you need to assemble this TCT.
4. Use DFHCSDUP to migrate all the TCTs. The commands look like this:

   ```
   MIGRATE TABLE(DFHTCTLA) TYPESGROUP(TTS)
   MIGRATE TABLE(DFHTCTRB) TYPESGROUP(TTS)
   ```

   Migrating the remote terminals normally creates definitions that use the same TYPETERMs created for the corresponding local definitions.
5. Initialize the CICS terminal-owning system, installing at least one TERMINAL definition and other resource definitions necessary for using RDO.
6. Use the ALTER command to name the REMOTESYSTEM as the SYSIDNT of the terminal-owning system, on all the TERMINAL definitions that might be shared. You can probably use a generic name to do this in one command. For example:

   ```
   CEDA ALTER TERMINAL(*) GROUP(TTS) REMOTESYSTEM(ACIC)
   ```
7. Include the groups containing the definitions in the GRPLIST for each system, terminal-owning and application-owning.

Make terminal definitions shippable

Making terminal definitions shippable

To migrate your TCT definitions to one or more CSD files:

1. Suppress the assembly of remote definitions in all the TCTs to be migrated, by removing (or commenting-out) the TCT source for:
   - TYPE=REMOTE entries
   - TYPE=REGION and subsequent TYPE=TERMINAL entries
2. Assemble the TCT for the terminal-owning system, suppressing any macros for remote definitions that you may have if there is more than one terminal-owning system.
3. Assemble the TCT for the application-owning system, if it contains any definitions for local terminals. Again, suppress any macros for remote definitions if you need to assemble this TCT.
4. Use DFHCSDUP to migrate the TCT. The command looks like this:

   ```
   MIGRATE TABLE(DFHTCTLA) TYPESGROUP(tgrpname)
   ```
5. Initialize the CICS terminal-owning system, installing at least one TERMINAL definition and other resource definitions necessary for using RDO.
6. Use the ALTER command to change the SHIPPABLE attribute to YES, on all the TYPETERM definitions that might be used for shipping. You can probably use a generic name to do this in one command. For example:

   ```
   CEDA ALTER TYPETERM(*) GROUP(grpname) SHIPPABLE(YES)
   ```
7. Include the groups containing the definitions in the GRPLIST for the terminal-owning system.

Migrating different macro types

The rest of this appendix summarizes the different types of TCT macro that you might have, and what the results of the RDO migration are. It tells you how to migrate macros for the following devices and systems:

- “Remote terminals for transaction routing” on page 677
- “MVS consoles” on page 677
- “Pipeline terminals for VTAM pooled sessions” on page 677
- “Devices with LDC lists” on page 678

- “Terminals referencing printers” on page 679
- “Links and sessions—method 1” on page 679
- “Links and sessions—method 2” on page 679
- “APPC (LUTYPE6.2) links and parallel sessions” on page 680
- “APPC (LUTYPE6.2) single session terminal” on page 681
- “INDIRECT connections” on page 681

Remote terminals for transaction routing

You may have coded your macros in one of two ways:

- Individual terminals naming remote system:

  ```
  DFHTCT TYPE=REMOTE,SYSIDNT=ssss,TRMIDNT=tttt,TRMTYPE=.....
  ```

- A series of TYPE=TERMINAL macros not naming the SYSIDNT, but following a TYPE=REGION that names the SYSIDNT:

  ```
  DFHTCT TYPE=REGION,SYSIDNT=ssss
  DFHTCT TYPE=TERMINAL,TRMIDNT=ttt1,TRMTYPE=yyyy...
  DFHTCT TYPE=TERMINAL,TRMIDNT=ttt2,TRMTYPE=yyyy...
         ... and so on.
  ```

DFHCSDUP MIGRATE always produces a TERMINAL-TYPETERM pair of definitions:

```
DEFINE TERMINAL(tttt) GROUP(g) TYPETERM(xxxxxxxx)
       REMOTESYSTEM(ssss)
DEFINE TYPETERM(xxxxxxxx) GROUP(g) DEVICE(dddddddd)
```

Matching TYPETERMs are eliminated by DFHCSDUP MIGRATE, as described for ordinary terminals.

MVS consoles

The definition of an MVS console is essentially a special case of a local terminal definition. The TYPETERM in RDO identifies the device as a console, with the CONSOLE value for the DEVICE attribute. The console identifier for a particular console is specified on the TERMINAL definition as the CONSOLE attribute, which is the equivalent of the CONSLID= value on the macro. It is also possible to use the CONSNAME attribute of the TERMINAL definition (see “Terminal definition attributes” on page 263).

Pipeline terminals for VTAM pooled sessions

These terminals represent a special case of the definition of VTAM terminals.

A sequence of TYPE=TERMINAL macros is coded, the last one being tagged with PIPELN=LAST to indicate that the pool is complete:

```
DFHTCT TYPE=GROUP,GROUP=poolg
DFHTCT TYPE=TERMINAL,TRMIDNT=ttt1,TRMTYPE=(3600v3650),
       NETNAME=nnnnnnn1,SESTYPE=PIPELN,PIPELN=POOL
DFHTCT TYPE=TERMINAL,TRMIDNT=ttt2,TRMTYPE=(3600v3650),
       NETNAME=nnnnnnn2,SESTYPE=PIPELN,PIPELN=POOL
DFHTCT TYPE=TERMINAL,TRMIDNT=ttt3,TRMTYPE=(3600v3650),
       NETNAME=nnnnnnn3,SESTYPE=PIPELN,PIPELN=POOL
DFHTCT TYPE=TERMINAL,TRMIDNT=ttt4,TRMTYPE=(3600v3650),
       NETNAME=nnnnnnn4,SESTYPE=PIPELN,PIPELN=LAST,TASKNO=nn
```

When migrated using:

```
MIGRATE TABLE(DFHTCTxx) TYPESGROUP(typeg)
```

these macros result in the following definitions:

```
DEFINE TERMINAL(ttt1) GROUP(poolg) POOL(nnnnnnn1) TYPETERM(xxxxxxx1)
       NETNAME(nnnnnnn1)
DEFINE TERMINAL(ttt2) GROUP(poolg) POOL(nnnnnnn1) TYPETERM(xxxxxxx1)
       NETNAME(nnnnnnn2)
DEFINE TERMINAL(ttt3) GROUP(poolg) POOL(nnnnnnn1) TYPETERM(xxxxxxx1)
       NETNAME(nnnnnnn3)
DEFINE TERMINAL(ttt4) GROUP(poolg) POOL(nnnnnnn1) TYPETERM(xxxxxxx1)
       NETNAME(nnnnnnn4) TASKLIMIT(nn)
DEFINE TYPETERM(xxxxxxx1) GROUP(typeg) DEVICE(3600v3650)
       SESSIONTYPE(PIPELINE)
```

The POOL name is automatically generated using the NETNAME of the first TERMINAL in the POOL.

When the pool is installed, the terminal IDs are sorted in ascending alphabetic order. The first terminal to be installed becomes the pool header.

Matching TYPETERMs are eliminated by DFHCSDUP MIGRATE, as described for ordinary terminals.

Devices with LDC lists

For 3600, 3770 batch, 3770 and 3790 batch data interchange, and LUTYPE4 logical units, you can specify the name of an LDC list (Logical Device Code list). In RDO this information is held on the TYPETERM definition.

You cannot define the LDC list itself using RDO. The LDC list and its contents must still be defined by the macro method. The TERMINAL and TYPETERM using the LDC list can be created in RDO, and the LDC list defined by using the macro is named by the LDCLIST attribute on the TYPETERM definition.

You cannot define a list of LDC codes explicitly on the TYPETERM definition.[4] This simplifies the interface to these facilities and allows tables to be migrated to the CSD file. If you have a DFHTCT TYPE=TERMINAL macro with an LDC= specification of the form:

```
LDC=(aa=nnn,bb=nnn,...)
```

the assembly produces a level 8 MNOTE. This tells you to recode the list either as a **local LDC list** or as an **extended local LDC list**. (See “TYPETERM definition attributes” on page 321.)

Then recode the terminal entry in this form:

```
DFHTCT TYPE=TERMINAL,TRMIDNT=tttt,TRMTYPE=uuuuu,
       ACCMETH=VTAM,LDC=nnnnnnnn
```

where nnnnnnnn is the name you gave your LDC list when you defined it.

DFHCSDUP MIGRATE always produces a TERMINAL-TYPETERM pair of definitions:

```
DEFINE TERMINAL(tttt) TYPETERM(xxxxxxxx)
DEFINE TYPETERM(xxxxxxxx) DEVICE(dddddddd) LDCLIST(nnnnnnnn)
```

---

[4] This also applies to the DFHTCT TYPE=TERMINAL macro, although in earlier CICS releases you could define of a list of LDC codes explicitly.

Terminals referencing printers

When a terminal references a printer, A pair of TCT entries could be related by using the PRINTTO or ALTPRT operands in the TCT macro, which referred to the printer TCTTE by means of the assembler label of the printer entry.

In RDO, the terminal refers to its associated printer by the 4-character TERMINAL name (old TRMIDNT) of the definition for the printer. The corresponding keywords in RDO are PRINTER and ALTPRINTER.

```
        DFHTCT TYPE=TERMINAL,TRMIDNT=tttt,
               TRMTYPE=3270,PRINTTO=label1
label1  DFHTCT TYPE=TERMINAL,TRMIDNT=pppp,TRMTYPE=3270P
```

When migrated, this becomes:

```
DEFINE TERMINAL(tttt) TYPETERM(xxxxxxxx) PRINTER(pppp)
DEFINE TERMINAL(pppp) TYPETERM(xxxxxxxx)
```

Links and sessions—method 1

This method applies both to MRO and to LUTYPE6.1 CICS-CICS ISC links and sessions.

MRO links and sessions

An MRO link and a set of parallel sessions are defined by:

```
DFHTCT TYPE=SYSTEM,SYSIDNT=ssss,ACCMETH=IRCv(IRC,XM)
```

DFHCSDUP MIGRATE always produces a CONNECTION-SESSIONS pair of definitions:

```
DEFINE CONNECTION(ssss) ACCESSMETHOD(IRCvXM)
DEFINE SESSIONS(sssssprp) CONNECTION(ssss) PROTOCOL(LU61)
       SENDPFX(sp)       SENDCOUNT(m)
       RECEIVEPFX(rp)    RECEIVECOUNT(n)
```

The SESSIONS name *ssssprp* is synthesized by concatenating the names of the SYSIDNT, SEND(*sp*) and RECEIVE(*rp*), for example:

```
SYSIDNT=BCIC,SEND=(SA,5),RECEIVE=(RA,3)
        =====>   SESSIONS(BCICSARA)
```

LUTYPE6.1 CICS-CICS ISC links and sessions

These are as for MRO, but with ACCESSMETHOD(VTAM).

LUTYPE6.1 CICS-CICS ISC links and sessions may also be defined and migrated as for method 2.

Links and sessions—method 2

This method applies to both LUTYPE6.1 CICS-CICS ISC and LUTYPE6.1 CICS-IMS links and sessions.

LUTYPE6.1 CICS-IMS links and sessions

The ISC link is defined by:

```
DFHTCT TYPE=SYSTEM,SYSIDNT=ssss,ACCMETH=VTAM
```

The parallel sessions for the link are defined individually by:

```
DFHTCT TYPE=TERMINAL,TRMIDNT=tttt,SYSIDNT=tttt,TRMTYPE=LUTYPE6,

       SESTYPE(SENDvRECEIVE),NETNAMQ=nnnnnnnn
```

DFHCSDUP MIGRATE produces a CONNECTION definition from the TYPE=SYSTEM macro:

```
DEFINE CONNECTION(ssss) ACCESSMETHOD(VTAM) PROTOCOL(LU61)
```

and a SESSIONS definition from each subsequent TYPE=TERMINAL macro.

For a SEND session:

```
DEFINE SESSIONS(sssstttt) CONNECTION(ssss) PROTOCOL(LU61)
       SESSNAME(tttt)     NETNAMEQ(nnnnnnnn)
       SENDCOUNT(1)
```

For a RECEIVE session:

```
DEFINE SESSIONS(sssstttt) CONNECTION(ssss) PROTOCOL(LU61)
       SESSNAME(tttt)     NETNAMEQ(nnnnnnnn)
       RECEIVECOUNT(1)
```

The SESSIONS name *sssstttt* is synthesized by concatenating the old SYSIDNT and TRMIDNT values.

The SESSNAME name *tttt* is the macro TRMIDNT value.

The NETNAMEQ name *nnnnnnnn* is the macro NETNAMQ value.

LUTYPE6.1 CICS-CICS ISC links and sessions

These are as for CICS-IMS but without NETNAMEQ.

LUTYPE6.1 CICS-CICS ISC links and sessions may also be defined and migrated as for method 1.

APPC (LUTYPE6.2) links and parallel sessions

For APPC, the sessions are grouped into modesets. Each modeset is defined in the macro method with a TYPE=MODESET macro, and the equivalent in RDO is one SESSIONS definition on the CSD file.

The ISC link is defined by:

```
DFHTCT TYPE=SYSTEM,SYSIDNT=ssss,ACCMETH=VTAM,TRMTYPE=LUTYPE62
```

The parallel sessions for the link are defined collectively by:

```
DFHTCT TYPE=MODESET,MODENAM=mmmmmmmm,SYSIDNT=ssss,
       MAXSESS=(m1,m2)
```

DFHCSDUP MIGRATE produces a CONNECTION definition from the TYPE=SYSTEM macro:

```
DEFINE CONNECTION(ssss) ACCESSMETHOD(VTAM) PROTOCOL(APPC)
```

and a SESSIONS definition from the TYPE=MODESET macro:

```
DEFINE SESSIONS(xxxxxxx)  CONNECTION(ssss) PROTOCOL(APPC)
       MAXIMUM(m1,m2)     MODENAME(mmmmmmmm)
```

The SESSIONS name *xxxxxxxx* is derived from the old SYSIDNT value concatenated with a 3-character identifier generated using the same algorithm as the old macro. For example, for SYSIDNT=SYS1:

```
MODESET1: MAXSESS=4  gives SESSIONS(SYS1AAC) (starting count)
MODESET2: MAXSESS=2  gives SESSIONS(SYS1AAG) (MODESET1 + 4)
MODESET3: MAXSESS=3  gives SESSIONS(SYS1AAI) (MODESET2 + 2)
```

The MODENAME name *mmmmmmmm* is the macro MODENAM value.

APPC (LUTYPE6.2) single session terminal

A single TYPE=SYSTEM macro is used:

```
DFHTCT TYPE=SYSTEM,SYSIDNT=ssss,ACCMETH=VTAM,TRMTYPE=LUTYPE62,
       FEATURE=SINGLE,MODENAM=mmmmmmmm
```

DFHCSDUP MIGRATE produces a CONNECTION definition and a SESSIONS definition:

```
DEFINE CONNECTION(ssss) ACCESSMETHOD(VTAM) PROTOCOL(APPC)
       SINGLESESS(YES)

DEFINE SESSIONS(xxxxxxx)  CONNECTION(ssss) PROTOCOL(APPC)
       MODENAME(mmmmmmmm) MAXIMUM(1,0)
```

The SESSIONS name *xxxxxxxx* is derived from the old SYSIDNT value concatenated with a 3-character identifier generated using a similar algorithm to the old macro. For example, for SYSIDNT=SYS1:

```
1st definition: gives SESSIONS(SYS1AAC) (starting count)
2nd definition: gives SESSIONS(SYS1AAF) ...
```

The MODENAME name *mmmmmmmm* is the macro MODENAM value.

You cannot autoinstall these CONNECTION and SESSIONS definitions. If you want to use autoinstall for your APPC single session terminals, you must redefine them as TERMINALs referencing a TYPETERM with DEVICE(APPC) (see “APPC (LUTYPE6.2) single session terminal” on page 251).

INDIRECT connections

The intermediate system is defined as:

```
DFHTCT TYPE=SYSTEM,SYSIDNT=yyyy,ACCMETH=IRCv(IRC,XM)vVTAM
```

This is migrated as any other TYPE=SYSTEM macro would be.

The indirect link is defined as:

```
DFHTCT TYPE=SYSTEM,SYSIDNT=xxxx,ACCMETH=INDIRECT,INDSYS=yyyy,
       NETNAME=nnnnnnnn
```

The migration of the macro for the indirect link produces an RDO definition of the form:

```
DEFINE CONNECTION(xxxx) INDSYS(yyyy) ACCESSMETHOD(INDIRECT)
       NETNAME(nnnnnnnn)
```

Bibliography

The CICS Transaction Server for z/OS library

The published information for CICS Transaction Server for z/OS is delivered in the following forms:

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The CICS Transaction Server for z/OS Information Center is the primary source of user information for CICS Transaction Server. The Information Center contains:

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The entitlement set comprises the following hardcopy books, which are provided automatically when you order CICS Transaction Server for z/OS, Version 3 Release 1:

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CICS Transaction Server for z/OS Migration from CICS TS Version 2.3, GC34-6425

CICS Transaction Server for z/OS Migration from CICS TS Version 1.3, GC34-6423
CICS Transaction Server for z/OS Migration from CICS TS Version 2.2, GC34-6424
CICS Transaction Server for z/OS Installation Guide, GC34-6426

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CICS System Definition Guide, SC34-6428
CICS Customization Guide, SC34-6429
CICS Resource Definition Guide, SC34-6430
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CICS Application Programming Reference, SC34-6434
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CICS C++ OO Class Libraries, SC34-6437
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CICS Problem Determination Guide, SC34-6441
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CICSPlex SM Operations Views Reference, SC34-6463
CICSPlex SM Monitor Views Reference, SC34-6464
CICSPlex SM Managing Workloads, SC34-6465
CICSPlex SM Managing Resource Usage, SC34-6466
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CICSPlex SM Application Programming Guide, SC34-6468
CICSPlex SM Application Programming Reference, SC34-6469

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CICSPlex SM Resource Tables Reference, SC34-6470
CICSPlex SM Messages and Codes, GC34-6471
CICSPlex SM Problem Determination, GC34-6472

CICS family books

Communication

CICS Family: Interproduct Communication, SC34-6473
CICS Family: Communicating from CICS on System/390, SC34-6474

Licensed publications

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CICS Diagnosis Reference, GC34-6899
CICS Data Areas, GC34-6902
CICS Supplementary Data Areas, GC34-6905
CICS Debugging Tools Interfaces Reference, GC34-6908

Other CICS books

The following publications contain further information about CICS, but are not provided as part of CICS Transaction Server for z/OS, Version 3 Release 1.

Designing and Programming CICS Applications	SR23-9692
CICS Application Migration Aid Guide	SC33-0768
CICS Family: API Structure	SC33-1007
CICS Family: Client/Server Programming	SC33-1435
CICS Transaction Gateway for z/OS Administration	SC34-5528
CICS Family: General Information	GC33-0155
CICS 4.1 Sample Applications Guide	SC33-1173
CICS/ESA 3.3 XRF Guide	SC33-0661

Books from related libraries

This section lists the non-CICS books that are referred to in this manual.

ACF/TCAM books

- *ACF/TCAM Version 3 Application Programming*, SC30-3233

Miscellaneous books

- *DATABASE 2 Version 2 Administration Guide*, SC26-4374
- *z/OS Language Environment Programming Guide*, SA22-7561
- *Resource Access Control Facility (RACF) Security Administrator's Guide*, SC28-1340.
- *DPPX/Distributed Presentation Services Version 2: System Programming Guide*, SC33-0117
- *z/OS Communications Server: IP Configuration Reference*,SC31-8776

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IBM regularly updates its publications with new and changed information. When first published, both hardcopy and BookManager® softcopy versions of a publication are usually in step. However, due to the time required to print and distribute hardcopy books, the BookManager version is more likely to have had last-minute changes made to it before publication.

Subsequent updates will probably be available in softcopy before they are available in hardcopy. This means that at any time from the availability of a release, softcopy versions should be regarded as the most up-to-date.

For CICS Transaction Server books, these softcopy updates appear regularly on the *Transaction Processing and Data Collection Kit* CD-ROM, SK2T-0730-xx. Each reissue of the collection kit is indicated by an updated order number suffix (the -xx part). For example, collection kit SK2T-0730-06 is more up-to-date than SK2T-0730-05. The collection kit is also clearly dated on the cover.

Updates to the softcopy are clearly marked by revision codes (usually a # character) to the left of the changes.

Accessibility

Accessibility features help a user who has a physical disability, such as restricted mobility or limited vision, to use software products successfully.

You can perform most tasks required to set up, run, and maintain your CICS system in one of these ways:

- using a 3270 emulator logged on to CICS
- using a 3270 emulator logged on to TSO
- using a 3270 emulator as an MVS system console

IBM Personal Communications provides 3270 emulation with accessibility features for people with disabilities. You can use this product to provide the accessibility features you need in your CICS system.

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