

SH24-5005-1  
File No. S370-30

**Program Product**

**IBM Virtual Machine Facility/370:  
Remote Spooling Communications  
Subsystem Networking  
Program Reference and  
Operations Manual**

**Program Number 5748-XP1**

**IBM**

Second Edition (July 1980)

This edition applies to Release 2 of Remote Spooling Communications Subsystem Networking program product (Program Number 5748-XP1) and to all subsequent versions and modifications until otherwise indicated in new editions or Technical Newsletters.

Information in this publication is subject to change. Any such changes will be published in new editions or technical newsletters. Before using this publication in connection with the operation of IBM systems, consult the latest IBM System/370 Bibliography of Industry Systems and Application Programs, GC20-0370, and the Technical Newsletters that amend that Bibliography, for the editions and Technical Newsletters that are applicable and current.

The Program Product described in this manual, and all licensed materials available for it, are provided by IBM under the terms of the License Agreement for IBM Program Products. Your local IBM office can advise you regarding the ordering procedures.

#### Summary of Amendments

See page iii for a detailed list of changes made in this edition.

Changes to the text and illustrations are indicated by a vertical line to the left of the change.

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This edition documents support included in RSCS Networking, Release 2. The support includes the following:

- A new networking line driver, DMTRPT, extends the VM/370 spooling capabilities to support the IBM 3270 Information Display System printers. These are the IBM 3284, 3286, 3287, 3288, 3289, and the IBM 3262, Models 3 and 13 Printers (when appropriately attached to the IBM 3271, 3272, 3274, and 3276 control units). Features supported include Data Analysis-APL, APL/Text, and Vertical Forms Control.
- Use of the IBM 3380 DASD as an RSCS system disk.
- Allowing FORM and 3800 printer spool file attributes, and LOAD FCB, FOLD, and UNFOLD CCWs for 3211 print files to be transmitted between a VM/370 node and either another VM/370 node or a non-VM/370 NJI/NJE node, and to allow querying and modifying the spool file attributes.
- A new keyword has been added to the workstation SIGNON card for the DMTNPT line driver to allow suppressing the header page.
- The maximum buffer size for the DMTNJI line driver has been increased to 3976 bytes.

In addition, in this publication:

- A new installation procedure is described, and
- A new appendix has been added that describes user exits in RSCS Networking.



This publication is for the VM/370 system programmer installing the Remote Spooling Communications Subsystem Networking program product (called RSCS in this manual), the RSCS operator, and the VM/370 virtual machine user using RSCS. It describes:

- The characteristics and components of RSCS
- How to install RSCS
- How to operate RSCS
- How a VM/370 virtual machine user uses RSCS.

Note:

In this manual the term "RSCS" refers to the Remote Spooling Communications Subsystem Networking program product. It does not refer to the Remote Spooling Communications Subsystem component of VM/370. Where these two different programs are discussed together, the difference is made clear.

The publication contains five major parts.

Part 1: Introduction contains three sections:

"RSCS Overview" describes the requirements of RSCS and operation of a VM/370 virtual machine using RSCS as the operating system.

"Components of RSCS" describes the functions and relationships of the major components of RSCS.

"Job Output Routing Overview" summarizes the job output routing capabilities of RSCS and the spooling interface programs with which RSCS can communicate.

Part 2: RSCS Installation contains two sections:

"Planning to Install RSCS" describes how to create the RSCS directory and gives guidelines for selecting line drivers.

"Installing RSCS" describes the RSCS data and control files on the distribution tape and illustrates the steps for actually installing RSCS on a VM/370 system.

Part 3: RSCS Operation contains two sections:

"Operation Description" discusses general operation, the operator commands, and the operator messages.

"Operation Procedures" describes how to start, stop, change, and control RSCS.

Part 4: VM/370 User Guide explains the commands and messages available to the VM/370 user who uses RSCS.

Part 5: Appendixes contains eight appendixes:

"Appendix A: RSCS Commands" describes in detail the commands available to the RSCS operator. The subset of those commands available to the remote station operator is also identified.

"Appendix B: RSCS Messages" describes all the RSCS messages and lists all the RSCS messages and responses tabulated by the command or function that initiated the message. A key to the distribution of each message or response is also included.

"Appendix C: RSCS Networking User Exits" describes several routines, which are specifically designed for user exits, and their use.

"Appendix D: Nonprogrammable Remote Terminals" contains a section on each nonprogrammable remote terminal supported by RSCS. Each section covers the configuration of the terminal, establishing the line connection, terminal operation, and error recovery procedures.

"Appendix E: Programmable (Spool MULTI-LEAVING) Remote Stations" contains a section on each programmable remote station supported by RSCS acting as a host, and a section on RSCS acting as a job entry station to a remote HASP/ASP batch system or its equivalent. Each section covers the supported configuration of the station, establishing the line connection, station operation, and error recovery procedures.

"Appendix F: VSE/POWER Remote System Connection" is an example of connecting a basic VSE/POWER system to RSCS Networking.

"Appendix G: Base Tape Contents" contains a list of the contents of the base tape.

"Appendix H: Abbreviations" defines the abbreviations used in this publication.

#### PREREQUISITE PUBLICATIONS

IBM Virtual Machine Facility/370: Remote Spooling Communications Subsystem Networking General Information, GH24-5004

IBM Virtual Machine Facility/370: Introduction, GC20-1800

COREQUISITE PUBLICATIONS

IBM Virtual Machine Facility/370:

Planning and System Generation Guide, GC20-1801

System Programmer's Guide, GC20-1807

System Messages, GC20-1808

Terminal User's Guide, GC20-1810

CP Command Reference for General Users, GC20-1820

CMS User's Guide, GC20-1819

CMS Command and Macro Reference, GC20-1818

| IBM Virtual Machine/System Product:

| Planning and System Generation Guide, SC19-6201

| System Programmer's Guide, SC19-6203

| System Messages, SC19-6204

| Terminal User's Guide, SC19-6206

| CP Command Reference for General Users, SC19-6211

| CMS User's Guide, SC19-6210

| CMS Command and Macro Reference, SC19-6209

RELATED PUBLICATIONS

FOR RSCS:

IBM Virtual Machine Facility/370: Remote Spooling Communications Subsystem Networking Logic LY24-5203.

Remote Spooling Communications Subsystem Networking Reference Summary Card, SX24-5119

FOR THE VM/370 NETWORKING (VNET) PRPQ:

Network Job Interface General Information Manual, GH20-1941

VM/370 Networking (Programming RPQ P09007) Program Reference and Operations Manual, SH20-1977.

IBM Virtual Machine Facility/370 Networking: Logic Manual LY20-2342.

FOR THE RSCS COMPONENT OF VM/370:

IBM Virtual Machine Facility/370: Remote Spooling Communications Subsystem (RSCS) User's Guide, GC20-1816.

FOR THE ASP NETWORKING PRPQ:

ASP Networking PRPQ: User's Guide, SH20-1978

ASP Networking PRPQ: Program Reference and Operations Guide, SH20-1979

ASP Networking PRPQ: Logic Manual, LY20-2341

FOR THE HASP NETWORKING PRPQ:

HASP Networking PRPQ: User's Guide, SH20-1980

HASP Networking PRPQ: System Programmer's Guide, SH20-1981

HASP Networking PRPQ: Operations Manual, SH20-1982

HASP Networking PRPQ: Logic Manual, LY20-2340

FOR THE NETWORK JOB ENTRY FACILITY FOR JES2:

System Programmer's Library: Network Job Entry Facility for JES2, SC23-0003.

Operator's Library: Network Job Entry Facility for JES2, Commands, SC23-0011.

Installation Reference Material: Network Job Entry Facility for JES2,



SC23-0012.

Logic: Network Job Entry Facility for JES2, LY24-6001.

MVS/System Product Release 2 Installation, Initialization, and Tuning: JES2 Component, SC23-0046

MVS/System Product Release 2 User Exits and Macros: JES2 Component, SC23-0047

MVS/System Product Release 2 Operator's Library: JES2 Component Commands, SC23-0048

MVS/System Product Release 2 Logic: JES2 Component, LY24-6006

FOR VSE/POWER:

VSE/POWER General Information Manual, GH12-5128

VSE/POWER Messages, SH12-5520

VSE/POWER Installation and Operations Guide, SH12-5329

VSE/POWER Reference Summary Local Processing, SH12-5435

VSE/POWER Remote Job Entry User's Guide, SH12-5328

VSE/POWER Reference Summary Remote Processing, SH12-5434

VSE/POWER Program Logic Manual, Part 1, LY12-5027; Part 2, LY12-5028; Part 3, LY12-5034

FOR TELECOMMUNICATIONS TERMINOLOGY:

IBM Data Processing Glossary, GC20-1699

FOR NONPROGRAMMABLE TERMINALS:

System Components: IBM 2770 Data Communication System, GA27-3013

IBM 2780 Data Transmission Terminal - Component Description, GA27-3005

Operating Procedures Guide: IBM 3774 and 3775 Communication Terminals, GA27-3094

Component Information for the IBM 3720 Data Communication Terminal,  
GA27-3063

FOR SPOOL MULTI-LEAVING STATIONS:

IBM System/360 and System/370 Attached Support Processor System (ASP)  
Version 2 Console Operator's Manual, GH20-0321

IBM System/360 and System/370 ASP Version 3 Asymmetric Multiprocessing  
System Operator's Manual, GH20-1289

OS/VS1 RES Workstation User's Guide, GC28-6879

OS/VS2 HASP II Version 4 System Programmer's Guide, GC27-6992

OS/VS2 HASP II Version 4 Operator's Guide, GC27-6993

IBM System/3 Card System Operator's Guide, GC21-7513

IBM System/32 Operator's Guide, GC21-7591

FOR 3270 INFORMATION DISPLAY SYSTEM PRINTERS:

IBM 3270 Information Display System Component Description, GA27-2749

IBM 3270 Information Display System Operator's Guide, GA27-2742

IBM 3287 Printer Operator's Guide, GA18-2002

IBM 3289 Line Printer Model 1 and 2 Operator's Guide, GA27-3147

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Part 1 introduces RSCS by presenting:

- Overview of RSCS
- Components of RSCS
- Overview of Job Output Routing

## RSCS Overview

RSCS provides Remote Job Entry into a VM/370 system and allows a VM/370 system to participate in a network of computer systems that support the Network Job Interface/Network Job Entry (NJI/NJE) protocol.

RSCS is the successor to both the RSCS component of VM/370 and the VM/370 Networking (VNET) PRPQ (Program Number 5799-ATA). It is a functional superset of both of these earlier programs.

RSCS is a complete virtual machine subsystem that operates independently of other virtual machines running under the VM/370 Control Program. Together with the Control Program, RSCS controls communication input/output devices and lines used to transfer files between:

- VM/370 users on different VM/370 systems
- VM/370 users and remote NJI/NJE type batch systems
- VM/370 users and remote VSE/POWER batch systems
- VM/370 users and remote stations
- Remote stations and other remote stations
- Remote stations and NJI/NJE type batch systems
- Remote stations and a CMS batch virtual machine
- One NJI/NJE system and another NJI/NJE system

RSCS employs the same system interfaces with which VM/370 users are familiar. RSCS does not take away any existing capabilities of VM/370, the RSCS component of VM/370, or VNET.

### REQUIREMENTS OF RSCS

RSCS's requirements for programming systems, storage, and hardware products are as follows:

#### PROGRAMMING SYSTEMS

RSCS is supported on VM/370 Release 6 and the releases of VM/370 Basic System Extensions, VM/370 System Extensions, and VM/System Product (VM/SP) program

products supported by VM/370 Release 6. RSCS relies on the VM/370 system spooling facility. Fixed Block Mode DASD support and CMS Extended Disk Format support require VM/370 Basic System Extensions, VM/370 System Extensions, or VM/SP program products. The new function in RSCS Release 2, with the exception of locally-attached 3270 Information Display System printers, requires VM/SP.

RSCS runs in a single virtual machine as a telecommunications subsystem for the VM/370 system. It requires a standard VM/370 virtual machine with telecommunications facilities attached to that virtual machine. Normal operation can be conducted without operator intervention and RSCS can be run disconnected.

#### AUXILIARY STORAGE

Adequate CMS formatted disk space must be provided to contain RSCS object modules and network EXEC files. Approximately 450 800-byte blocks of IBM CKD-type DASD space, or 650 512-byte blocks of IBM Fixed Block Mode type DASD space should be adequate, depending on how many network EXEC files are maintained by the installation. When a Fixed Block Mode device is used for RSCS DASD storage requirements, the VM/370 Basic System Extensions, VM/370 System Extensions, or VM/SP program products are required. When a 3380 is used for RSCS DASD storage, VM/SP is required.

#### VIRTUAL STORAGE

RSCS adapts to a virtual storage size of 384K or greater.

#### PROCESSORS AND REAL STORAGE

RSCS runs on any processor that is supported by VM/370 Release 6 or VM/SP and is equipped with real storage of at least 384K.

#### REMOTE NODES

RSCS's main function is to communicate with remote nodes across telecommunication facilities in binary synchronous mode, and across channel-to-channel adapters. All support for the communication is within the RSCS virtual machine. RSCS can communicate with the remote nodes listed in Figure 1.

ROLES PERFORMED BY RSCS

RSCS can perform four different roles:

- Host system for programmable terminals
- Host system for nonprogrammable terminals
- Peer system for NJI/NJE systems
- Remote job entry workstation for BSC host systems

These four roles are reflected in Figure 1.

Remote System Nodes	
RSCS is a Peer to NJI/NJE Systems:	RSCS is a Workstation to BSC Host Systems:
Any system capable of running:  RSCS Program Product VNET PRPQ JES2/NJE Program Product HASP Networking PRPQ ASP Networking PRPQ JES3/NJE PRPQ	Any system capable of running:  VSE/POWER Program Product of DOS/VSE RES component of OS/VS1 Release 2 and above JES2 component of OS/VS2 Release 2 and above JES3 component of OS/VS2 HASP II Versions 3.1 or 4 ASP Version 3.2

Remote Station Nodes	
RSCS is a Host to Programmable Terminals:	RSCS is a Host to Nonprogrammable Terminals:
Any system programmed to provide the MULTI-LEAVING line protocol:  System/360 Model 20 and above System/370 Model 115 and above 1130 System/3 Model 6 and above 2922 3777 as a System/360 Model 20 System/32 8100	2770 Data Communication System with the 2772 Multipurpose Control Unit 2780 Data Transmission Terminal Models 1 and 2 3770 Data Communication System in 2770 BSC Mode 3780 Data Communications Terminal 3270 Information Display System Printers

Figure 1. Remote Nodes with which RSCS Can Communicate

## HOW RSCS WORKS

Figure 2 is an overview of RSCS operations in a simple network. (Not all network nodes must be VM/370 RSCS nodes; this figure simply shows the types of operations that RSCS supports.)

User Archie on the CMS system at VM1 sends file PLANXYZ SCRIPT to user Bob on the CMS system at VM3 by issuing the commands:

```
SPOOL PUNCH TO RSCS1
TAG DEVICE PUNCH VM3 BOB
PUNCH PLANXYZ SCRIPT
```

VM1 CP spools Archie's virtual punch output to RSCS1. RSCS1 may have any number of links to the other network nodes, but it has locally-specified tables that indicate that files for VM3 are to go to VM2. RSCS1 sends the spool file, including its destination information, to VM2. RSCS2 on VM2 receives the file, stores it by spooling it to its own userid, and then forwards it to VM3. RSCS3 at VM3 recognizes that the file is for its own location and spools it to userid Bob.

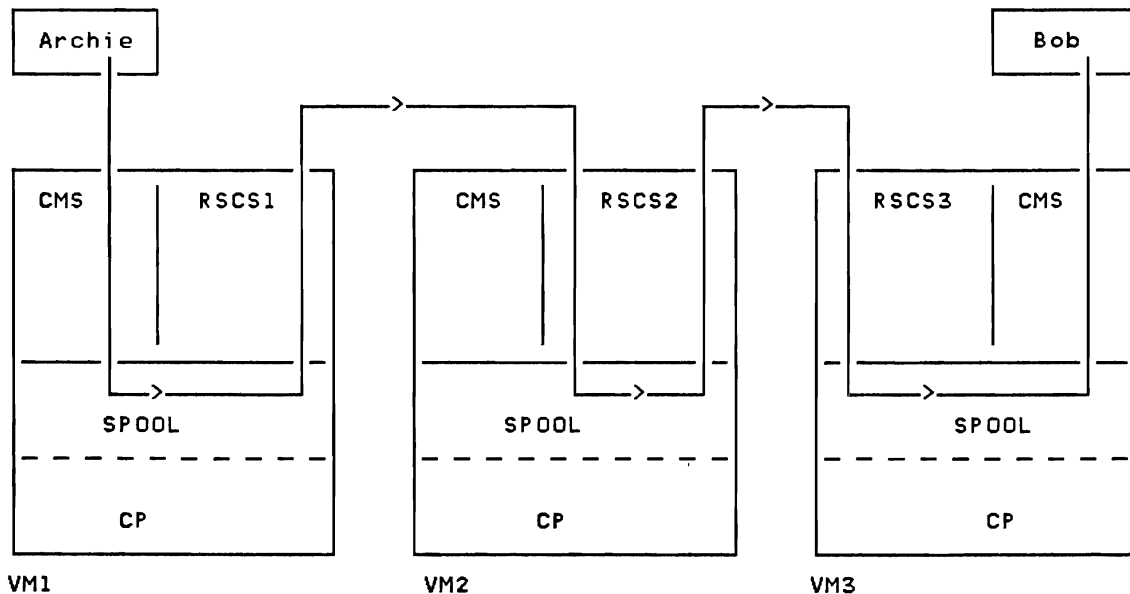


Figure 2. RSCS File Handling Example

## RSCS AS AN OPERATING SYSTEM

RSCS is a single-purpose operating system for a virtual machine, dedicated to:

- Accepting files spooled to it and transmitting these files to the destinations specified by the files' submitters.

- Accepting files transmitted to it and either spooling these files to the appropriate local VM/370 users or transmitting these files to the destinations specified by the files' submitters.

Transmission is via binary synchronous communication lines or channel-to-channel adapters. Telecommunications facilities must be attached to the RSCS virtual machine either permanently or temporarily.

Once RSCS has been initialized, the RSCS operator may disconnect his console and run RSCS in disconnected mode. RSCS operates normally without regular operator intervention.

Internally, RSCS consists of a multitasking supervisor, system control tasks, and line driver tasks. The system control tasks provide common services to the line driver tasks and provide communication with the RSCS operator. Each line driver task manages the transmission of files to and from a single remote node and provides a communication path for remote node operator commands.

#### RSCS DIRECTORY

RSCS's primary file is its directory, which defines the local RSCS subsystem and its view of the network in which it participates. The RSCS directory is a CMS file, maintained on disk, so that changes in network definition can be made easily by the RSCS operator or the RSCS system programmer.

#### SPOOL FILE TAGS

Each VM/370 output spool file contains an information field called the spool file tag. At the point of origin, the submitter (typically a VM/370 user operating a CMS virtual machine) specifies the file's destination location in the spool file tag. The submitter can also specify the file's transmission priority on a scale of 0 - 99, with 50 as the default.

To transmit a file, the submitter issues a command that causes the output from the originating device to be given to RSCS. Then, RSCS (not the submitter) determines how the file is to be routed to the specified destination. The submitter receives a message indicating every move of a file from one node to another on the way to its destination.

#### NETWORK NODES

A node is a remote station or a remote system connected to RSCS, either directly or indirectly. For example, in Figure 2 node VM3 is directly connected to node VM2 and indirectly connected to node VM1; nodes VM2 and VM3 are remote systems with respect to node VM1. Every node in the network is



assigned a unique name. (The name is a one- to eight-character alphanumeric location identification, such as HOUSTON, DEPT14, BLDG76, ACCNTNG, or FLOOR1.)

## COMMUNICATION LINKS

A link is the transmission path between the local RSCS virtual machine and any directly connected (adjacent) node in the network. A link definition consists of the remote node's name and other information about the transmission path, such as the type of line driver to be used and the class(es) of files that may be transmitted on the link. Link definitions are maintained in each RSCS machine's directory, and provide the basis for the tables that RSCS uses to route files.

RSCS uses two tables in routing files: the link table, which specifies the link to each adjacent node in the network, and the routing table, which specifies the next link that a file is to use to reach a destination node not adjacent to the local system.

When presented with a file from a remote node in the network, RSCS checks the node name in the file's tag to see if the file is for the local node. If the file is for the local node, RSCS transfers it accordingly within the local VM/370 system. If the file is destined for some other node, RSCS searches its link table (and routing table, if necessary) to find the node name that matches the node name specified in the file's tag. RSCS then uses the associated link definition to begin transmission.

Once transmission of a file from one system to another has been completed, the receiving system is responsible for the integrity and recovery of the file in the event of a network or system failure. This is done via the system's spool file facility, thus utilizing each system's provisions for integrity and recovery.

## REMOTE STATIONS

A remote station in RSCS context is any workstation on the other end of the link with the RSCS virtual machine. RSCS supports both programmable and nonprogrammable workstations, as indicated in Figure 1. Nonprogrammable workstations, such as the IBM 2780, are hard-wired to provide the line protocol for them to function as remote stations.

Programmable workstations, such as the IBM System/3 and System/370, are processing systems with attached binary synchronous communications (BSC) adapters. These systems must be programmed to provide the MULTI-LEAVING line protocol necessary for their I/O devices to act as remote stations. This programming support is provided by a Remote Terminal Processor (RTP) program generated according to HASP workstation protocol and tailored to the system's hardware configuration. Some programmable workstations, like the System/3, can only be programmed to function as remote terminals. Others, like the

System/360 and System/370, can function either as remote terminals or as host batch systems using RSCS as a remote job entry workstation.

## REMOTE SYSTEMS

A remote system in RSCS context is any NJI/NJE system or BSC host system, as listed in Figure 1. RSCS appears as a peer to an NJI/NJE system. RSCS appears as a remote job entry workstation to a BSC host system.

## LINE DRIVERS

Line drivers perform the actual data transmission functions for all communication links. The line drivers enable RSCS to manage different protocols concurrently. The seven types of line drivers and their roles are listed in Figure 3.

RSCS manages communication lines concurrently for a number of remote nodes of the various supported types; the maximum number depends on the virtual storage size of the RSCS virtual machine.

## OTHER CAPABILITIES OF RSCS

RSCS also provides store-and-forward facilities for data files, network commands, and messages without operator intervention.

An automatic command execution facility aids an RSCS operator in issuing repeated sequences of RSCS commands. Other commands allow an RSCS operator to reconfigure the network during normal operations. Automatic logon, IPL, and startup facilities simplify the operation of RSCS.

RSCS enables manual workload leveling. An RSCS operator can change the destination of a job from an overloaded processor to another with open time.

RSCS generates an accounting record for each file received or transmitted. These records contain information on the origin, destination, and record count of each file.

An RSCS system programmer uses the Conversational Monitor System (CMS) to maintain RSCS.

Line Driver Designation	Type of Communication
SML	VM/370 host to programmable remote stations via binary synchronous lines (using the spool MULTI-LEAVING communication technique)  VM/370 workstation to RES, JES2, JES3, HASP II, and ASP BSC host systems via binary synchronous lines
POW	VM/370 workstation to VSE/POWER host systems via binary synchronous lines
NPT	VM/370 host to nonprogrammable terminals via binary synchronous lines
RPT	Permits VM/370 to spool files to local or remote 3270 Information Display System printers (IBM 3284, 3286, 3287, 3288, 3289, or 3262 Models 3 and 13).
VMB	VM/370 to VM/370 via binary synchronous lines
VMC	VM/370 to VM/370 via channel-to-channel adapters
NJI	VM/370 to non VM/370 NJI/NJE systems via binary synchronous lines or channel-to-channel adapters

Figure 3. RSCS Line Drivers and their Roles

## Components of RSCS

RSCS consists of a multitasking supervisor, system control tasks, and line driver tasks. Figure 4 shows these major components.

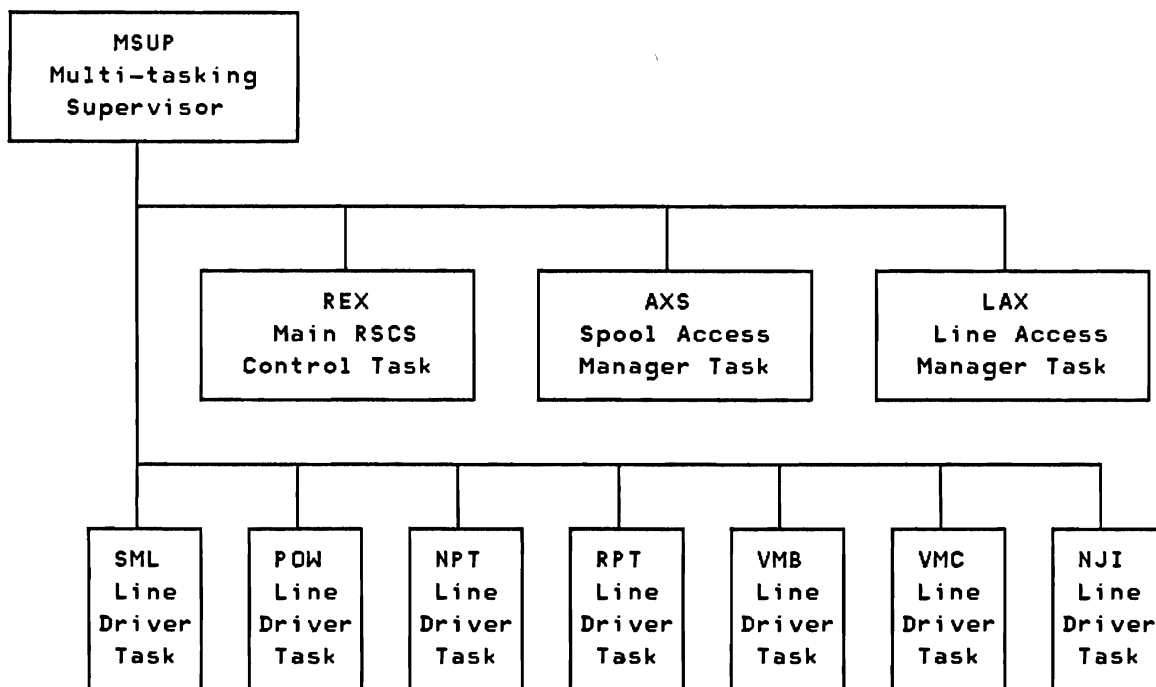


Figure 4. Components of RSCS

### RSCS SUPERVISOR

The RSCS supervisor supports multiple RSCS control tasks and line driver tasks that may be active at any one time. This supervision involves multitask dispatching, management of virtual I/O devices used by RSCS, and management of virtual storage for each task.

### RSCS CONTROL TASKS

The RSCS control tasks provide communication with the RSCS operator and common services to the line driver tasks. These services include command execution, message distribution, program check handling, VM/370 spool system interface, and communication line allocation.

## RSCS LINE DRIVERS

Each line driver task manages the transmission of files to and from a single remote node or workstation and provides a communication link for remote operator commands. Because of functional and hardware differences in remote system and terminal equipment, each line driver is written to support a specific class of remote node.

### SPOOL MULTI-LEAVING (SML) LINE DRIVER

MULTI-LEAVING is the name of the communication technique used by the SML line driver operating under RSCS. Basically, physical records input to MULTI-LEAVING are reduced to a series of character strings of two basic types: a variable length non-identical series of characters, and a variable number of identical characters. The segmentation of physical records into these character strings takes advantage of identical character compression. Multiple physical records (now in the form of character strings) are grouped into a single transmission block. MULTI-LEAVING enables a bidirectional interleaved exchange of transmission blocks, each containing multiple data streams. For a detailed description of MULTI-LEAVING see the IBM VM/370: RSCS Networking Logic manual.

The SML line driver, operating as a task under RSCS provides VM/370 with support of MULTI-LEAVING, binary synchronous communications (BSC) line protocol for programmable remote stations. This enables:

- VM/370 users to have remote job entry access to HASP/ASP-type batch processing systems.
- Remote stations to submit source decks, data, and jobs, on cards, into the VM/370 spool system.
- VM/370 to send spooled output of virtual machine sessions to remote card punches and printers.
- Transmission of card decks between two remote stations supported by RSCS.
- Remote stations to send job streams to a CMS Batch virtual machine (operating under the same VM/370 as RSCS) and have the output returned to the originating or another remote station.
- Remote stations to submit source decks, data, and jobs, on cards, to another remote location running a HASP/ASP-type batch processing system.
- Remote stations to submit data files or a job to any system in the network and receive job output at the remote station.

The following systems support MULTI-LEAVING RJE operation:

HASP II Version 4 (370H-TX-001)

ASP Version 3.2 (360A-CX-15X)  
JES2 Component of VS2 Release 2 and above  
JES3 Component of VS2  
RES Component of VS1 Release 2 and above

### Hardware Products Supported

The following systems are supported by the SML line driver as remote job entry stations into VM/370:

IBM System/360 Models 20, 22, 25, 30, 40, 50, 65, 75, 85, 195  
IBM System/370 Models 115, 125, 135, 135-3, 138, 145, 145-3, 148, 155,  
155 II, 158, 165, 165 II, and 168, plus the 3031, 3032, 3033, and  
4300 Processors  
IBM 1130 System  
IBM System 3 Models 6, 8, 10, 12, and 15  
IBM 2922 Programmable Terminal  
IBM 3777 Communication Terminal Model 2 (as a System/360 Model 20  
MULTI-LEAVING Workstation)  
IBM System/32  
IBM 8100

### Supported Functions

The SML line driver operates under the control of the RSCS supervisor in one of two modes, specified when the line driver task is initialized:

RJE Mode: The SML line driver functions as a job entry workstation to a remote HASP/ASP-type processor.

HOST Mode: The SML line driver functions as the host to a remote MULTI-LEAVING programmable station.

Each SML line driver task controls a single communication line, or link. The task is started by the RSCS operator, identified with a destination name, and provided with a leased or switched telephone line. The communication line is identified by the RSCS operator in the START command or derived from a table entry in RSCS. On a switched line, a dial-up procedure from either end of the line establishes the connection.

The SML line driver operates with a slightly modified protocol depending on its mode. In RJE mode, the type of remote host system, as designated in the START command or link parameter information in the RSCS directory, determines the protocol to be used. In HOST mode, the SML line driver follows a common protocol for all remote stations.

RSCS OPERATOR FUNCTIONS: The RSCS operator can:

- Start and stop the SML line driver task
- Control the spool files enqueued on the RSCS virtual reader in much the same way as the VM/370 system operator controls the spooling functions of VM/370
- Exchange messages with remote stations controlled by the SML line driver
- Use the TRACE command to monitor activity on the communications line and have that data logged on the operator's console
- Use the CMD command to send allowable workstation commands to the remote host system processing the data, if the SML line driver is in RJE mode.

REMOTE STATION OPERATOR FUNCTIONS: When the remote station is a HASP/ASP system (SML line driver in RJE mode), its functions with respect to the SML line driver are the same as they would be for any other HASP/ASP remote workstation. It accepts job streams for batch processing or commands affecting the processing from the SML line driver and directs job output, in punch or printer format, back to the SML line driver.

When SML is in HOST mode, the remote station operator can:

- Issue commands to the SML line driver to change the operation of that remote station
- Provide a batch service, transmitting jobs to and receiving output from a batch virtual machine (OS, CMS BATCH, VM/370)
- Transmit and receive card decks through the SML line driver to and from another remote station supported by RSCS and attached to the same VM/370 system
- Transmit jobs and commands to a remote batch system through RSCS using the Network Job Interface (NJI) and direct job output to any node or remote station in the network.

VIRTUAL MACHINE USER FUNCTIONS: When the SML line driver is in RJE mode, the VM/370 user can submit job streams to a remote HASP/ASP type batch system. Punch and/or printer output, returned to the SML line driver, is directed to the real printer and punch.

When the SML line driver is in HOST mode, the VM/370 user can route the output of his virtual unit-record devices to a remote MULTI-LEAVING programmable station. He can also have a card deck entered at a remote station and have it directed to his virtual machine reader.

I/O CONTROL: The SML line driver uses the RSCS supervisor I/O services to perform I/O operations on the BSC line to the remote terminal and to control the virtual reader and punch. The SML line driver uses the RSCS supervisor console support facility to write messages to and receive commands and

information from the RSCS operator.

SML line driver I/O communications comprises five separate operations:

- Control of the line when the task is idle
- Transmission procedure for sending files to the remote station
- The procedure for receiving files from the remote station
- Error analysis and recovery while transmitting to the remote station
- Error analysis and recovery while receiving from the remote station.

All I/O operations are executed following the 270x BSC protocol for the type, configuration, and features of the remote station as determined at task initialization time.

LINE ALLOCATION: The Line Allocator in the RSCS supervisor allocates an appropriate line to the SML line driver during execution of the RSCS START command. The line has either been designated by the operator in a START command, found in the RSCS link table that contains the valid link definitions, or selected by the Line Allocator from a pool of switched lines set up at RSCS system generation. When the SML line driver task requests termination, the RSCS supervisor automatically indicates that the line can be reassigned, effectively deallocating it.

#### POW LINE DRIVER

The POW line driver (DMTPOW), operating as a task under RSCS, provides VM/370 with binary synchronous communication (BSC) line protocol for remote VSE/POWER systems. This allows:

- VM/370 users to have remote job entry access to VSE/POWER systems.
- VM/370 user's to route spooled output to unit-record local devices at the DOS/VSE system, RJE devices attached to the VSE/POWER system, or unit-record local devices attached to the directly coupled VM/370 node.

#### Software Products Supported

The VSE/POWER software product is supported as a remote system.



## Supported Functions

The POW line driver functions as a job entry workstation to a remote VSE/POWER system. Each POW line driver task controls a single communication line, POW line driver (DMTPOW): task or link. The task is started by the RSCS operator, identified with a destination name, and provided with a leased or switched telephone line. The communication line is identified by the RSCS operator in the START command or derived from a table entry in RSCS. On a switched line, a dial-up procedure from either end of the line establishes the connection.

RSCS OPERATOR FUNCTIONS: The RSCS operator can:

- Start and stop the POW line driver task
- Exchange messages with the remote system connected to the POW line driver
- Use the TRACE command to monitor activity on the communications line
- Use the CMD command to send allowable VSE/POWER commands to the remote system

VIRTUAL MACHINE USER FUNCTIONS: The POW line driver enables the VM/370 user to route the output of his virtual unit-record devices (a job to be executed) to a remote VSE/POWER system. The JECL statements in that job determine the later routing of the job output. That is, output from the job is routed according to the control statements in the job itself. These statements cause the output to be routed to either:

- Unit record devices locally or remotely attached to the VSE/POWER system, or
- Unit record devices attached to the VM/370 system on which the submitting RSCS virtual machine resides.

I/O CONTROL: The POW line driver uses the RSCS supervisor I/O services to perform I/O operations on the BSC line to the remote terminal and to control the virtual reader and punch. The POW line driver uses the RSCS supervisor console support facility to write messages to and receive commands and information from the RSCS operator.

POW line driver I/O communications comprises five separate operations:

- Control of the line when the task is idle.
- Transmission procedure for sending files to the remote system
- The procedure for receiving files from the remote system
- Error analysis and recovery while transmitting to the remote system
- Error analysis and recovery while receiving from the remote system

All I/O operations are executed following the 270x BSC protocol for the type,

configuration, and features of the remote system as determined at task initialization time.

LINE ALLOCATION: The Line Allocator in the RSCS supervisor allocates an appropriate line to the POW line driver during execution of the RSCS START command. The line has either been designated by the operator in a START command, found in the RSCS link table that contains the valid link definitions, or selected by the Line Allocator from a pool of switched lines set up at RSCS system generation. When the POW line driver task requests termination, the RSCS supervisor automatically indicates that the line can be reassigned, effectively deallocating it.

#### NPT LINE DRIVER

The NPT line driver (DMTNPT), operating as a task under RSCS, provides VM/370 with support of binary synchronous communication (BSC) line protocol for nonprogrammable remote terminals. This allows:

- Remote users of VM/370 to enter source decks, data, and jobs, on cards, into the VM/370 spool system
- VM/370 to send spooled output of virtual machine sessions to remote card punches and printers
- Remote stations to transmit card decks to one another
- Remote stations to send job streams to a CMS Batch virtual machine operating under the same VM/370 and have the output returned to the remote station
- Remote stations to submit jobs or commands to any node in the network and direct the output to any node or remote station in the network. The default is return to origin.

#### Hardware Products Supported

The following devices are supported by the NPT line driver as remote nonprogrammable terminals:

- IBM 2770 Data Communication System with the 2772 Multipurpose Control Unit
- IBM 2780 Data Transmission Terminal, Models 1 and 2
- IBM 3770 Data Communication System (nonprogrammable models) operating in 2770 BSC mode

Note: The 3770 is supported only when its communication line terminates in an Integrated Communications Adapter (ICA) on the System/370 Model 135, an IBM 2701, or an IBM 3704/3705 Communications Controller. The 3770 keyboard is not supported.

- IBM 3780 Data Communications Terminal

### Supported Functions

NPT is a line driver task operating under the control of the RSCS supervisor. Each NPT task drives one remote nonprogrammable station. In other words, each NPT task controls a single point-to-point communications line. The task is started by the RSCS operator, identified with a destination name, and provided with a leased or switched telephone line. The communications line is either identified by the operator or derived from a table entry within RSCS. The line is then activated and the type of remote station and its configuration details are obtained from control cards entered at the remote station, or from a table entry within RSCS. After this initialization is done, the terminal may then be used to submit files via the card reader and receive files on the punch and printer.

The remote station operator can control I/O activity via control cards and standard station procedures. The RSCS operator controls the operation with commands from his console. The virtual machine user retrieves files sent to his virtual machine by using normal virtual card reader management programs and directs output to the appropriate station using the SPOOL and TAG commands of VM/370.

NPT operates with variations of the basic BSC protocol for each of the stations listed. The protocol is based upon the station identification information provided in a SIGNON card read at task initialization time.

RSCS OPERATOR FUNCTIONS: The RSCS operator can:

- Start and stop the NPT line driver task
- Control the spool files enqueued on the RSCS virtual reader in much the same way as the VM/370 system operator controls the spooling functions of VM/370
- Exchange messages with remote terminals controlled by the NPT line driver.

Activity on the communications line controlled by the NPT line driver is logged on the RSCS operator's console.

REMOTE TERMINAL OPERATOR FUNCTIONS: The remote terminal operator can:

- Issue commands to the NPT line driver to change the operation of his terminal
- Provide a batch service, transmitting jobs to and receiving output from a

batch virtual machine such as CMS BATCH

- Transmit and receive card decks, through the NPT line driver, to and from another terminal supported by RSCS and attached to the same VM/370 system
- Transmit jobs, data files, or commands to any node on the network and direct job output to any node or workstation on the NJI network.

VIRTUAL MACHINE USER FUNCTIONS: The virtual machine user can:

- Route the output of his virtual unit-record devices to a remote nonprogrammable terminal
- Have a card deck entered at a remote nonprogrammable terminal and have it queued on his virtual machine reader
- Submit a job through RSCS from his terminal and have the output directed back to a remote station.

I/O CONTROL: NPT uses the RSCS supervisor I/O services to perform I/O operations on the BSC line to the remote terminal and to control the virtual reader and punch. NPT uses the RSCS supervisor console support facility to write messages to and receive commands and information from the RSCS operator.

NPT communications I/O comprises five separate operations:

- Control of the line when the task is idle.
- Transmission procedure for sending files to the remote station
- The procedure for receiving files from the remote station
- Error analysis and recovery while transmitting to the remote station
- Error analysis and recovery while receiving from the remote station

All I/O operations are executed following the 270x BSC protocol for the type, configuration, and features of the remote terminal as determined at task initialization time. Separate send and receive buffers provide for the interruption of long output files to allow the input of cards or commands. When the input transmission is completed, output transmission is resumed from the point of interruption. If the transparency feature is available, transmission to a remote punch device is performed in transparency mode. Transmission to a remote printer is always performed in nontransparency mode with elimination of trailing blanks in each record. Print files are always translated in order to eliminate illegal characters that would force a transparent wait state on a teleprocessing control unit in nontransparency mode.

LINE ALLOCATION: The Line Allocator in the RSCS supervisor allocates an available line to NPT as part of the execution of the RSCS START command. The line has either been designated in the START command, found in the RSCS link table, or selected by the Line Allocator from a pool of switched lines set up at system generation of RSCS. When the NPT task requests termination, the

RSCS supervisor automatically indicates that the line can be reassigned, effectively deallocating it.

## RPT LINE DRIVER

The RPT line driver (DMTRPT) provides spooling support for the IBM 3270 Information Display System printers, which can be attached to a host CPU either locally or at a remote node. The printers are identified to RSCS as virtual devices either by the operator issuing a privileged command, or by means of the DEDICATE statement in the VM/370 directory entry for the RSCS virtual machine.

DMTRPT performs the general functions of a line driver task, such as managing I/O to the printer's virtual device address, managing spool file data transmissions, and executing command alert elements.

DMTRPT converts VM/370 spool files to 3270 data streams before transmitting them to the printer. This involves:

- Prefixing each buffer that is to be transmitted with a WCC (Write Control Characters) SBA (Set Buffer Address) sequence.
- Moving each data record from the spool file to the 3270 buffer, and following it with a sequence (depending on the CCW op-code) of New Line (X'15') characters.
- Translating unprintable characters to blanks, and removing blank strings and converting them to RA (Repeat to Address) orders.
- Locating and adjusting APL or Text compound characters to print correctly on the particular printer in use.

## Hardware Products Supported

DMTRPT supports the following devices as IBM 3270 Information Display System printers:

- IBM 3284 Printer, Models 1 and 2
- IBM 3286 Printer, Models 1 and 2
- IBM 3287 Printer, Models 1, 2, 1C, and 2C
- IBM 3288 Line Printer, Model 2
- IBM 3289 Line Printer, Models 1 and 2
- IBM 3262 Printer, Models 3 and 13

Note: For the 3287, models 1C and 2C, only the base color is supported.

### Features Supported

The following features are supported when installed on the applicable control unit and/or printer:

- 1066 Data Analysis-APL (3284 Model 2, 3286 Model 2, 3287)
- 1120 APL/Text (3287)
- 9550 Page Length Control
- 9850 Vertical Forms Control

Note: The 10 graphic plot characters available on the 3287 Models 1 and 2 with the APL/Text feature are not supported since there are no EBCDIC equivalents for these characters defined by VM/370.

### VMB LINE DRIVER

The VMB line driver (DMTVMB) is for transmitting VM/370 spool files between VM/370 systems over BSC lines. DMTVMB communicates with another copy of itself using the file address specified on the VM/370 TAG command (location and userid) to determine the recipient virtual machine. DMTVMB supports both print and punch file transmission between users operating on two different VM/370 machines or transmission from a VM/370 user to a real unit-record device on a remote VM/370 machine. DMTVMB requires no special operating instructions and supports the full RSCS command language except for BACKSPAC, HOLD IMMED, and FWDSPACE commands.

### VMC LINE DRIVER

The VMC line driver (DMTVMC) is for transmitting VM/370 spool files between VM/370 systems over channel-to-channel adapters (CTCAs). DMTVMC passes VM/370 4K spool page buffers to another copy of itself, using a specially designed protocol to optimize utilization of the CTCA without creating heavy I/O activity. The 4K block is read from the VM/370 spool system, transmitted across the CTCA, and then written into the receiving machine's spool system with minimal SIO execution. Like DMTVMB, DMTVMC requires no special operating instructions, and supports the full RSCS command language except for BACKSPAC, HOLD IMMED, and FWDSPACE commands.

## NJI LINE DRIVER

The DMTNJI line driver is for use between RSCS and NJI/NJE compatible subsystems using BSC lines or CTCAs. These subsystems include HASP II Version 4.0, ASP 3.2, JES2/NJE, and JES3/NJE. DMTNJI supports the same types of file transmissions as DMTVMB. It also requires no special operating instructions and supports the full RSCS command language except for BACKSPAC, HOLD IMMED, and FWDSPACE commands.

## VMB/VMC/NJI COMMON FACTORS

These line drivers, operating as RSCS tasks, provide for communication between RSCS and NJI/NJE compatible subsystems, as well as between RSCS and other VM/370 systems using RSCS, over BSC lines and CTCAs. This enables VM/370 users to:

- Submit jobs to a remote batch processor for execution
- Direct the output from a job to any remote system or back to the user's virtual machine reader
- Route output to a remote batch system for processing and use special forms and output processing routines available at that system.

## Software Products Supported

The following software products are supported as remote systems:

VM/370 RSCS Networking Program Product 5748-XP1  
VM/370 Networking (VNET) PRPQ 5799-ATA  
JES2 Network Job Entry Facility Program Product 5740-XR8  
JES3/NJE PRPQ  
ASP Networking PRPQ 5799-ATB  
HASP Networking PRPQ 5799-ATC

## Supported Functions

The NJI/VMB/VMC line driver tasks operate under the control of the RSCS supervisor. Each task can communicate with one remote system; that is, each task controls one communication adapter, either a BSC line or a CTCA.

RSCS OPERATOR FUNCTIONS: The RSCS operator can:

- Start and stop the line driver task

- Control the spool files enqueued on the RSCS virtual reader in much the same way as the VM/370 system operator controls the spooling functions of VM/370
- Send commands and/or messages to any other remote system connected via the line driver.

REMOTE SYSTEM OPERATOR FUNCTIONS: The remote system operator can issue commands to effect the operation of the file transfer to his location at the directly connected system.

VIRTUAL MACHINE USER FUNCTIONS: The virtual machine user can:

- Route the output of his virtual unit-record output devices to any remote system for processing
- Submit a file to execute as a job at a remote batch system
- Receive a file entered at a remote system's real card reader into his virtual machine reader
- Have output from a job executed at a remote batch system returned to his virtual machine reader, under user control, when this function is supported by the remote batch system.



## Job Output Routing Overview

IBM operating systems today have different capabilities for job output routing. Although they do not as a group provide full job output routing, they do provide considerable routing capability. These capabilities are illustrated in Figures 5 and 6.

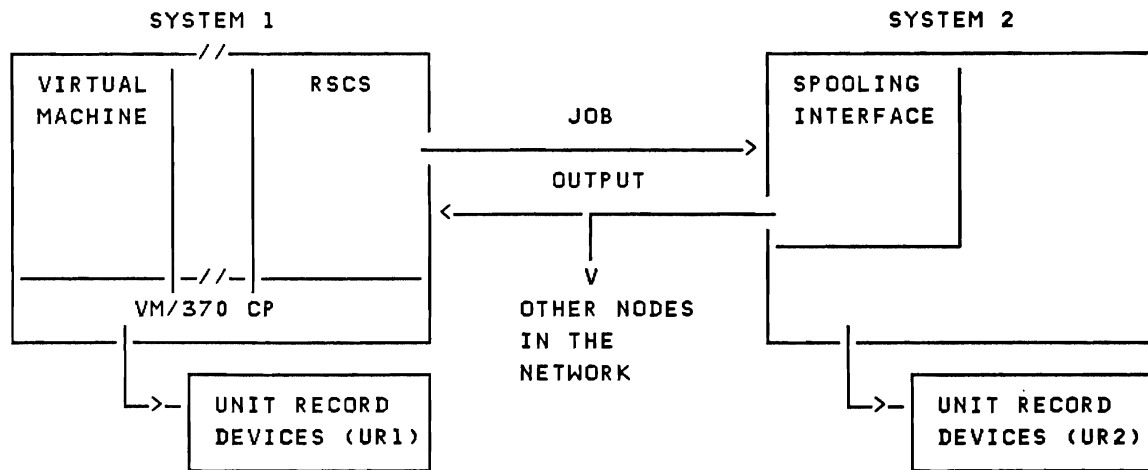


Figure 5. Job Output Routing Capabilities in a Network

Figure 6 defines output routing options available with the network configuration illustrated in Figure 5. A user in the System 1 environment sends a job to System 2 for execution. Upon completion of the job, the System 2 Spooling Interface can typically direct the output (print or punch) to one of the following:

- System 2 unit-record devices (UR2)
- System 1 unit-record devices (UR1)
- Any network-defined node and userid

The routing capabilities of the different spooling interfaces are briefly summarized in Figure 6.

SYSTEM 2 OPERATING SYSTEM	SYSTEM 2 SPOOLING INTERFACE	OUTPUT ROUTING OPTIONS	METHOD OF ROUTING
DOS/VSE	VSE/POWER	System 1 - UR1	Default. No action required by the user.
		System 2 - UR2	Place in JECL: * \$\$ LST REMOTE=0 or * \$\$ PUN REMOTE=0
MVS	JES2/NJE or JES3/NJE	Any nodeid and userid in network	Place in JCL: /*ROUTE nodeid.userid
SVS,MFT, or MVT	ASP/NJI or HASP/NJI	Any nodeid and userid in network	Place in JCL: /*ROUTE nodeid.userid
OS/VS1	RES	System 1 - UR1	Default. No action required by the user.
		System 2 - UR2	Place in JCL: DEST=CENTRAL
VM/370 (See Note)	RSCS	Any nodeid and userid in network when CMS batch receives job	SPOOL and TAG device or file
		System 2 - UR2 when any other batch machine receives job	Default. No action required of the user.
<p>Note: This final case applies whenever VM/370 is the executing system. That is, if the execution is done by a CMS batch machine, the output can be routed anywhere in the network. Otherwise the output must be directed to the real unit record devices of the executing system; it cannot be routed back to the originating system.</p>			

Figure 6. Job Output Routing Options in a Network

Part 2 describes the elements involved in installing an RSCS virtual machine. the two main areas discussed are:

- Planning to Install RSCS
- Installing RSCS

## Planning to Install RSCS

This section describes how to create the RSCS directory, which defines your local RSCS system and its view of the network in which it participates. This section also provides guidelines for selecting line drivers for a particular application.

### THE RSCS DIRECTORY

Each RSCS location must specify the local definitions and options for its operation. To do so, the RSCS system programmer builds a directory file with filename and filetype of RSCS DIRECT. This file must reside on the RSCS system disk when RSCS is IPLed. As part of its initialization, RSCS reads the RSCS DIRECT file and builds its system control blocks accordingly. Installation variable information need not be specified with an RSCS system load.

A location may need to make minor changes to its RSCS directory on a normal day to day basis. It might be convenient to allow multiple write access to the RSCS system disk to update the RSCS directory (and the PROFILE RSCS initial command file), taking precautions to avoid concurrent multiple access while writing the RSCS system disk. Because RSCS never writes its system disk, and RSCS reads its system disk only during execution of operator commands, the directory may be updated during production RSCS operation, and tested by simply IPLing the RSCS system disk in the virtual machine used for editing the updates. When this is done, the changes become effective on the next RSCS virtual machine IPL. (Link and route definitions may normally be made immediately effective by use of the RSCS operator DEFINE, DELETE, and ROUTE commands.)

RSCS maintains information about directly connected locations in its link table entries, and each indirectly connected location and its next direct link in routing table entries. RSCS builds link and routing tables during initialization, according to the directory specifications. RSCS also generates sixteen null link entries and sixteen null route entries, which may be used to dynamically define links and routes during RSCS operation by use of the DEFINE and ROUTE commands.

RSCS accepts and enqueues a file for transmission if an empty tag slot is available; otherwise, the file is left pending, and cannot be managed through the RSCS command language. Pending files increase operating overhead and are awkward to deal with in general. The provision for pending files is to manage an abnormal situation as gracefully as possible; a location should seek to avoid that operating circumstance.

RSCS builds its tag slots during its initialization. The number of tag slots built is at least as great as the sum of the tag slots reserved for exclusive use by links in the keep operands of the LINK directory control statements.

More extra tag slots may be generated, up to a limit which depends on the size of the RSCS virtual machine's virtual storage. This limit is computed as one tag slot per 1024 bytes of virtual storage. Extra tag slots may be requested by means of the TAGS directory control statement. The number of extra tag slots requested on the TAGS statement is added to the sum of the links' reserved tag slots, up to the virtual storage limit. If no TAGS statement is included in the directory, a default request of one extra tag slot per 2048 bytes of virtual storage is assumed.

#### RSCS DIRECTORY CONTROL STATEMENTS

RSCS directory control statements must be in the following formats, with one or more blanks as operand delimiters. All operands are positional from left to right. If any operand is omitted, all operands to the right of that operand in the statement must be omitted also. Operands may be entered in columns 1 through 71. All data entered to the right of column 71, and all data entered to the right of the last possible operand are ignored. No continuation of RSCS directory control statements is provided. Entirely blank records, and records having an asterisk (\*) in column 1 are ignored, allowing these lines to be used for comments and print formatting.

The directory control statements must be grouped sequentially by type as follows:

Statement Sequence	Number Required	Purpose
LOCAL	1	Defines the local installation's location identifier (locid).
LINK	0 or more	Defines the attributes of the links attached to the local installation.
PARM	0 or more	Defines the line driver initialization default parameters.
ROUTE	0 or more	Defines the (next) link to be used for indirect routing.
PORT	0 or more	Defines the allocatable switchable telecommunication ports attached to the local installation.
TAGS	0 or 1	Defines the number of extra tag slots to be reserved.

Example: A simple RSCS directory might appear as follows:

```
*          DEFINE RSCS INSTALLATION VARIABLES

LOCAL     RSCSSYS    7

LINK      CAMBRIDG  DMTVMB    084  5
LINK      TDCSYS1   DMTVMB    096  5    TDC1 *    8
LINK      WORKSTA1  DMTSML    *    7    WS1 *    4

PARM      WORKSTA1  M1

ROUTE    PALOALTO  CAMBRIDG
ROUTE    TDCSYS2   TDCSYS1
ROUTE    WCCSYS10  CAMBRIDG
ROUTE    WCCSYS11  CAMBRIDG

PORT     086
PORT     087

TAGS     512
```

If a directory control statement is found to be in error during RSCS initialization, RSCS displays the erroneous statement and a diagnostic error message on the RSCS operator's console, ignores the erroneous statement, and continues initialization.

#### LOCAL Control Statement

LOCAL defines the location identifier and time zone of the local RSCS system. LOCAL must appear before all other control statements in the RSCS directory, and it must appear exactly once.

LOCAL	locid [ zone * ]
-------	---------------------

**locid** is the one- to eight-character location identifier used to address the local RSCS installation. It should be unique among all potentially interconnected locations.

**zone** specifies the number of time zone boundaries between the local location and Greenwich to the east, the International Date Line being included as a time zone boundary. The zone number is used to convert local date and time to and from System/370 time of day format. Valid zone numbers range from decimal zero through 24. If zone is not specified, or is specified as \*, a default value of zero (Greenwich Mean Time) is assumed.

## LINK Control Statement

LINK defines the attributes of a single RSCS link. Link attributes thus defined apply to the link when it is activated, unless overridden by START command parameters.

The LINK statement must immediately follow a LOCAL statement or another LINK statement in the RSCS directory.

LINK	linkid	[	driverid	[	port	[	zone	[	task	[	class	[	keep	]]]]]]]]]]]
			*		*		*		*		*		*	

**linkid** is the one- to eight-character link identifier for the link being defined.

**driverid** specifies the name of the line driver to be used for communication on the link. **driverid** is the one- to eight-character CMS file name of the TEXT file to be loaded and executed as the link's line driver program (such as DMTNJI, DMTNPT, DMTPQW, DMTRPT, DMTSML, DMTVMB, or DMTVMC). The proper line driver to use with the link depends on the type of remote telecommunications system involved. If **driverid** is not specified, or is specified as \*, a default value of undefined is assumed, and the line driver type must be specified when the link is activated by a START command.

**port** specifies the virtual device address (hexadecimal cuu) of a permanent telecommunications port to be used for communication on the link being defined. Valid virtual device addresses are hexadecimal 2 through 5FF. If **port** is not specified, or is specified as \*, a default value of undefined is assumed, and the port address must be specified when the link is activated.

**zone** specifies the number of time zone boundaries between the link's remote location and Greenwich to the east, the International Date Line being included as a time zone boundary. The zone number is used to convert System/370 time of day to date and time for use in messages to the remote location. Valid zone numbers range from decimal zero through 24. If **zone** is not specified, or is specified as \*, a default value of zero (Greenwich Mean Time) is assumed.

**task** specifies a task name for use by the line driver program. Each RSCS task must have a unique task name while it is active. Attempts to activate a link using a task name identical to the task name of a concurrently active task will fail with an error diagnostic message. Valid task names are one- to four-character alphameric names. Task names reserved for RSCS system control tasks are REX, AXS, and LAX. If **task** is not specified, or is specified as \*, the task name defaults to the first four characters of the specified linkid.

**class** specifies the classes of files which may be transmitted by the link. A valid class specification is a one- to four-character word, each character of which is one of the VM/370 spool classes A through Z and 0 through 9. Files will be transmitted in class order, left to right. If class is not specified, or is specified as \*, a default class of \* is assumed, allowing files of all classes to be transmitted.

**keep** specifies the number of virtual storage file tag slots to be reserved for exclusive use by the link. Valid keep specifications are decimal numbers from zero to sixteen. If keep is not specified, or is specified as \*, a default keep specification of two is assumed.

PARM Control Statement

PARM defines a default parameter string of arbitrary text information to be made available to a line driver when a link is activated by a START command. The parameter string is generally used to specify processing modes or other options to a line driver; its format and content depend on the type of line driver. The parameter string specified in the PARM statement may be overridden by the PARM parameter on the START command.

The PARM statement must follow a LINK control statement or another PARM statement. The PARM statement must refer to a link which is defined by a previous LINK statement, and only one PARM statement may be included in the RSCS directory for a particular link.

PARM	linkid [parmtext]
------	-------------------

**linkid** is the one- to eight-character identifier of the previously defined link to which the parameter string is to apply.

**parmtext** is any arbitrary character string, bounded by the leftmost and rightmost nonblank characters, which provides initialization information to a line driver at link activation time.

ROUTE Control Statement

ROUTE defines a remote location with which the local RSCS installation may communicate indirectly through one or more interconnected locations. A ROUTE statement specifies the location ID for a single remote location, and the link ID of the link on which transmissions destined for that remote location are to be made.

A ROUTE statement must follow a LINK or PARM statement, or another ROUTE



statement. The link ID specified in the ROUTE statement must have been defined in a preceding LINK control statement.

ROUTE	locid linkid
-------	--------------

locid is the one- to eight-character location identifier of the remote location which is being defined for indirect communication.

linkid is the one- to eight-character link identifier of the link on which transmissions destined for the remote location are to be made. This link must have been defined by a preceding LINK statement.

#### PORT Control Statement

PORT specifies a single switched BSC port that may be dynamically allocated for communication with a remote location at link activation time. Telecommunication ports may be defined for use with a particular link in a LINK statement in the RSCS directory, or as the object of a LINE keyword in a START command. If the port is not defined by either means, RSCS searches for an available switched port that has been defined by the PORT control statement in the RSCS directory. If one is found RSCS assigns it to the newly activated link, and notifies the operator of the assignment.

A PORT statement must follow the LOCAL control statement, and any LINK, PARM, or ROUTE statement, or another PORT control statement.

PORT	vaddr
------	-------

vaddr specifies the virtual device address (hexadecimal cuu) of a switched (dialable) telecommunications port that may be dynamically allocated for communication to a remote location to which no leased line connection exists. Valid virtual device addresses are hexadecimal 002 through 5FF.

#### TAGS Control Statement

TAGS allows the RSCS installation to request extra tag slots to be used to enqueue files for transmission. When RSCS receives more files for transmission than can be enqueued in its available tag slots, the files are made pending. Pending files cannot be managed through the RSCS command language.

The maximum number of tag slots that can be generated is computed as the size

of the RSCS virtual machine's virtual storage divided by decimal 1024 (one tag slot per K of virtual storage). The sum of the tag slots specified to be kept in link definitions plus the number of extra tag slots requested in the TAGS control statement are generated at RSCS initialization, up to the maximum number of tag slots. If the number of extra tag slots requested in the TAGS statement exceeds the maximum, the maximum number of tag slots is generated and a diagnostic error message is issued. Otherwise, if the sum of the link keep specifications plus the request from the TAGS statement exceeds the allowable maximum, the maximum number of tag slots is generated and no diagnostic error message is issued.

The TAGS statement must follow the LOCAL control statement, or a LINK, PARM, ROUTE, or PORT statement. The TAGS statement may be specified only once or omitted.

TAGS	nnnnn
------	-------

nnnnn specifies the decimal number of extra tag slots requested to be generated at RSCS initialization time. This number represents the greatest number of files which may be concurrently enqueued in addition to those enqueued using tag slots specified to be kept in LINK control statements, assuming RSCS virtual storage is sufficiently large to avoid truncation of tag slot generation. Valid requests for extra tag slots range from decimal 1 through 16384. A fixed-length block of virtual storage must be reserved for each tag slot generated at RSCS initialization.

## RSCS DIRECTORY EXAMPLES

To aid in the definition of your RSCS system this section illustrates minimum RSCS directory examples for three simple networks. Each example presents the directory contents as viewed by each node in the network.

Figure 7 shows the simplest form of a job network consisting of two VM/370 systems connected via a teleprocessing line. This network contains two locations, CHICAGO and BUFFALO. The directory at location CHICAGO shows a LOCAL entry defining the location and the relative time zone of CHICAGO to Greenwich Mean Time (GMT). The LINK statement shows a direct communication path to location BUFFALO. This statement also defines the line driver type to be used for communication with BUFFALO. Note that this must match the line driver type shown on the LINK CHICAGO defined at location BUFFALO. The directory at location BUFFALO reflects a mirror image of the directory at CHICAGO, showing a LOCAL entry of BUFFALO and a direct communication path (LINK) to CHICAGO.

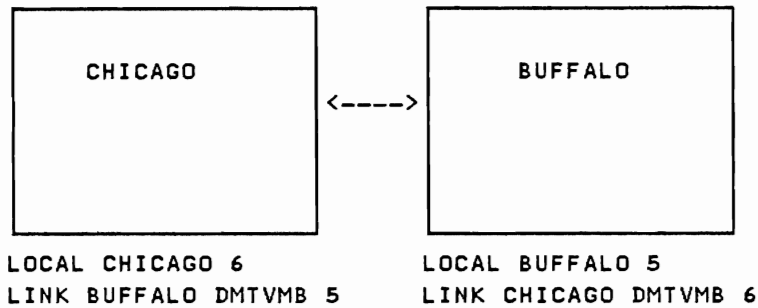


Figure 7. Two-Node Simple Network

Figure 8 shows a three-node network consisting of three VM/370 RSCS systems interconnected via two telecommunications lines. Files destined for location MIAMI originating at CHICAGO must be stored and forwarded through location ATLANTA. The view of the network at location CHICAGO shows one direct communications path (LINK) to ATLANTA and one indirect communication path (ROUTE) to MIAMI through ATLANTA. The view of the network from ATLANTA shows direct paths (LINKS) to both CHICAGO and MIAMI, so no ROUTE statements are necessary. Location MIAMI shows a direct path to ATLANTA and an indirect path to CHICAGO through ATLANTA.

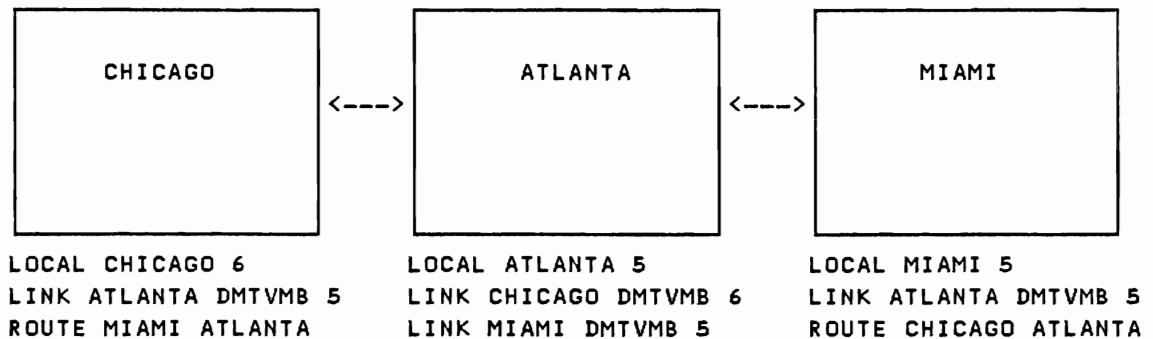


Figure 8. Three-Node Store and Forward Network

Figure 9 shows a four-node VM/370 network interconnected via three telecommunications lines and one channel-to-channel adapter. This illustrates alternate paths between two nodes in a network. RSCS provides for the definition of a direct path plus one indirect path to a given location. However, use caution in specifying the network definitions when multiple paths exist; specify the indirect path only on one end of the network connection.

For example, assume the CHICAGO directory contains an alternate path (ROUTE) to BOSTON via TORONTO and the TORONTO directory contains a route to BOSTON via CHICAGO. If the CHICAGO-BOSTON and TORONTO-BOSTON direct links become inactive, a file destined for BOSTON would begin to loop. It would be continually transmitted between CHICAGO and TORONTO until a link from either location to BOSTON became active. Therefore as shown in Figure 9, the indirect path (ROUTE) to BOSTON is specified only at CHICAGO.

Similar examples could be shown for other paths in the sample network. Close coordination is necessary among the individual installations when defining a multi-system network.

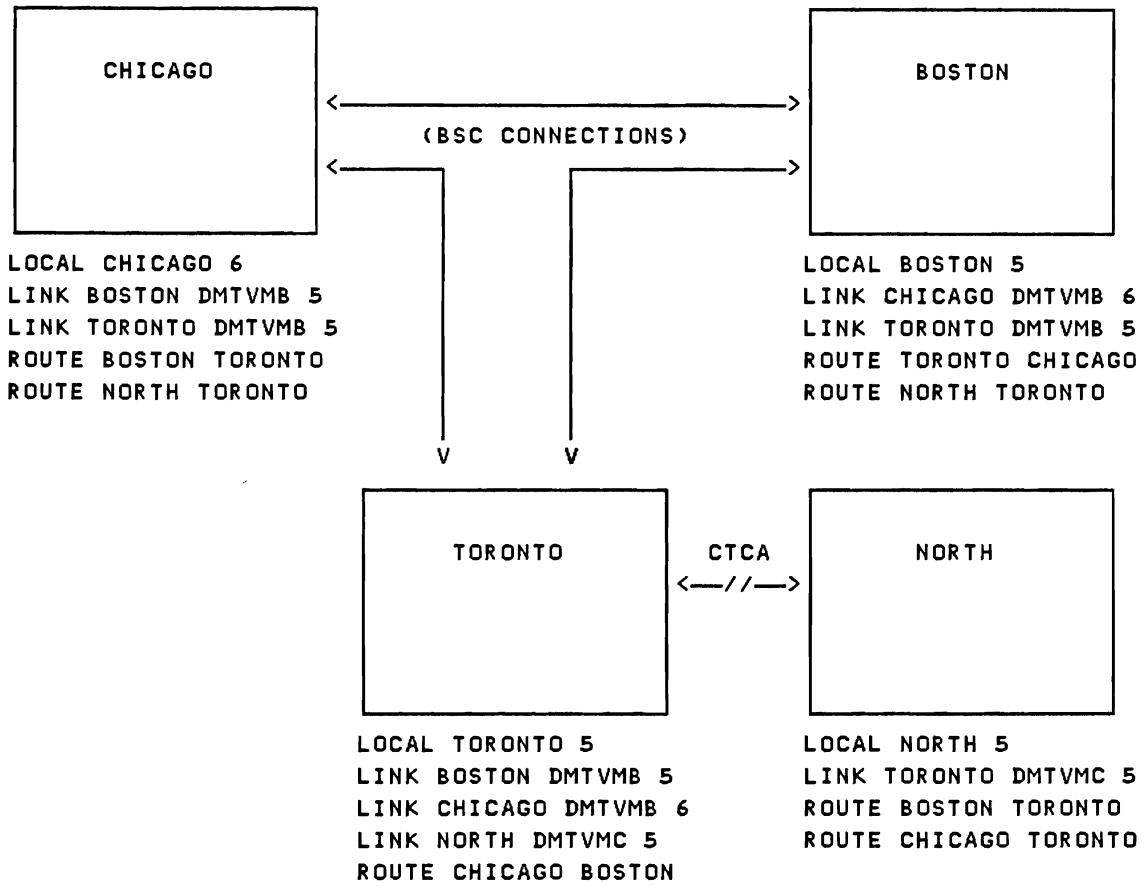


Figure 9. Multi-Node Mesh Connected Network

LINE DRIVER SELECTION

RSCS manages many differing protocols among different links. The line driver used on a particular link must be compatible with the protocol used by the remote node.

- DMTSML supports a MULTI-LEAVING remote workstation attached to RSCS; such workstations include 1130, System/3, System/360, System/370, and System 360/Model 20 systems used as workstations. DMTSML also supports the remote job entry of jobs into batch systems not supporting a job networking interface.
- DMTPDW supports VM/370 as a workstation to VSE/POWER host systems over BSC lines.
- DMTNPT supports a 2770, 2780, 3770, or 3780 as a remote workstation to RSCS.

- DMTRPT supports the IBM 3270 Information Display System printers (3284, 3286, 3287, 3288, 3289, and 3262 Models 3 and 13) at either the local or a remote node.
- DMTVMB supports VM/370 to VM/370 communications over BSC lines.
- DMTVMC supports VM/370 to VM/370 communications over a channel-to-channel adapter (CTCA).
- DMTNJI supports communications between RSCS and non-VM/370 Network Job Interface / Network Job Entry systems via BSC lines or a CTCA. Such systems include HASP II Version 4.0, ASP 3.2, JES2/NJE, and JES3/NJE systems.

### INSTALLATION CONSIDERATIONS

#### USE OF TWO-LEVEL REMOTE ADDRESSING

The destination address structure in RSCS allows for the use of a two-level network address. This feature allows for a locally defined link to be addressed from other locations without having to be defined throughout the network. When a file is received at a destination RSCS location, the userid parameter on the initial user TAG command is first checked against valid links defined at that location. If a matching link ID is found, the file is then routed to that locally defined link. If no link ID match is found, the file will be spooled to the specified virtual machine user ID.

Note: If a user ID is identical to a link ID at its RSCS location, any attempt to address a file to that user ID causes the file to be transmitted on the link and produced as real output at the directly connected remote station.

## Installing RSCS

### GENERAL INFORMATION

The RSCS Networking program product is distributed on one or two tapes that contain the data and control files needed to generate and install RSCS Networking. You will always receive a base tape; you may also receive a service tape, if one is available at the time you ordered the product.

The RSCS Networking base tape contains six files:

1. An installation EXEC to load the rest of the base tape, a sample directory, and a sample profile.
2. All data and tools required to generate and run RSCS. This includes a nucleus loadlist, a control file, and text decks.
3. The tools required for servicing and making local updates to RSCS.
4. All RSCS module source code.
5. RSCS macro library.
6. All RSCS macro and copy source code.

The RSCS Networking service tape contains ten files:

1. Memo to user.
2. Product information and a service EXEC to load the rest of the service tape.
3. Replacement text decks.
4. Auxilliary files for source code updates.
5. Source code updates.
6. Auxilliary files for macro/copy updates.
7. Macro/copy updates.
8. Source code for modules or macro/copy files that are not on the RSCS base tape.
9. Complete replacement of RSCS macro library if macro/copy file updates exist.
10. New or updated tools for servicing RSCS.

## DEFINING YOUR RSCS VIRTUAL MACHINE

You need the RSCS virtual machine defined when you generate RSCS. This machine must have at least:

- 384K of virtual storage
- An operator's console
- | • Recommended DASD storage for the RSCS system disk is one of the following:
  - | - 6 cylinders on a 2314
  - | - 3 cylinders on a 3330
  - | - 8 cylinders on a 3340
  - | - 2 cylinders on a 3350 or 3380
  - | - 1536 FBM blocks on a 3310 or 3370

If you did not include an entry in your VM/370 directory for the RSCS virtual machine, you must add one now. Refer to the VM/370 Planning and System Generation Guide for information on the directory program, including the control statements necessary to define a virtual machine. Add the newly coded directory entry to the existing CP directory file and load the new VM/370 directory.

A sample VM/370 directory entry for an RSCS virtual machine is:

```
USER RSCS password 512K
ACCOUNT NUMBER BIN17
OPTION ACCT
| IPL 191
  CONSOLE 009 3215
  SPOOL C 2540 READER A
  SPOOL D 2540 PUNCH A
  SPOOL E 1403 A
  LINK CMSSYS 190 190 R
| MDISK 191 3330 81 5 UDISK1 W rpassword wpassword
  DEDICATE 078 078
  DEDICATE 079 079
  DEDICATE 07A 07A
  DEDICATE 570 570
| DEDICATE NET 1001 390
```

If you specify the ACCT option, RSCS accounting records will be generated along with other CP accounting card records. If you don't want RSCS accounting information, exclude the OPTION and ACCOUNT cards from the RSCS directory entry when defining the RSCS virtual machine. If you don't want automatic IPL upon LOGON, remove the IPL directory control statement. If you want automatic IPL and the RSCS system disk is at an address other than 191, code the IPL statement to specify the virtual disk address to be used.

RSCS adapts to any virtual storage size of 384K or greater. The larger the specified virtual storage, the greater the number of line drivers that may be concurrently active, and the greater the number of default tag slots that will be generated at RSCS initialization.

The ECMODE option is not required and not recommended for the RSCS virtual machine. It is recommended that privilege class G be specified; others, except class D, may be specified.

### GENERATING RSCS

Before you generate RSCS, be sure you have:

- The RSCS distribution tapes
- A VM/370 directory entry for your RSCS virtual machine
- A 191 disk defined for your RSCS virtual machine
- A 194 disk defined for your MAINT virtual machine for staging RSCS text
- A 394 disk defined for your MAINT virtual machine for keeping RSCS source
- A 294 disk defined for your MAINT virtual machine for staging RSCS service, only if you have also received a service tape
- A VM/370 directory entry for the MAINT virtual machine as provided in the VM/370 starter system directory. RSCS uses the MAINT virtual machine and its 190 and 191 disks when building the RSCS system.

You can use a 2314, 3330, 3340, 3350, 3310, 3370, or 3380 disk as the RSCS system disk.

The following system generation procedure for RSCS assumes you have the MAINT virtual machine supplied with the VM/370 starter system in your VM/370 directory.

If you wish to generate and run the RSCS Networking program product and the RSCS component of VM/370 concurrently, take care to isolate the installation and maintenance files of the two subsystems on two separate user disks. Module names, libraries, and update procedures are similar for the two subsystems. If their data areas are not kept separate, the results are unpredictable.

#### STEP 1. LOGON AS MAINT AND IPL CMS

To build the RSCS nucleus, logon the software system support virtual machine (MAINT) and IPL the CMS system.



LOGON MAINT  
IPL 190 CLEAR

Files 1 and 2 of the RSCS base tape contain all the files necessary to construct a standard RSCS. No assemblies are required to install RSCS unless you want to make local modifications. The instructions on the following pages describe the simplified installation procedure for an unmodified RSCS. If you want to include local modifications in your RSCS system, use this description and the section "Updating RSCS".

| STEP 2. ATTACH THE RSCS TAPE

| Mount the RSCS base tape, and attach the real tape drive to your CMS virtual machine (MAINT) in the following manner:

CP ATTACH 280 TO MAINT AS 181 (RSCS base tape)  
CP REWIND 181

| With the MAINT 191 disk accessed read/write as MAINT's C-disk, rewind and load the first file on the base tape:

| ACC 191 C  
TAPE LOAD \* \* C

| This puts the EXEC (for loading the rest of the tape), the sample profile, and the sample directory on the MAINT 191 disk.

CMS responds with the following message:

| LOADING...  
RSCSBASE EXEC  
SAMPLE DIRECT  
PROFILE SAMPLE  
END-OF-FILE OR END-OF-TAPE

STEP 3. LINK TO THE RSCS MINI DISK

If you use the sample VM/370 directory entry for the RSCS virtual machine, your CP LINK command is:

LINK TO RSCS 191 AS 195 W PASS= wpassword

This makes the RSCS system disk (address 191 in the RSCS virtual machine) available at virtual address 195 in the MAINT virtual machine. Remember the address you specify for MAINT. You must use this same virtual address later in the RSCS generation procedure (when you build the RSCS nucleus in Step 7).

| If an RSCS system disk has already been defined and formatted, access it as

your A-disk (ACCESS 195 A) and then skip to step 4. Otherwise, format the RSCS system disk using the following command:

```
FORMAT 195 a
```

Note: The option (BLKSIZE nnnn) may be included in the FORMAT command if your VM/370 system includes the VM/Basic Systems Extensions program product, Release 2, VM/Systems Extensions program product, Release 2, or VM/System Product. (These program products include the CMS Enhanced Disk Format feature, which permits a blocksize of 1024, 2048, or 4096 bytes to be specified in the FORMAT command.)

The system then issues the message:

```
FORMAT WILL ERASE ALL FILES ON DISK 'A(195)'.  
DO YOU WISH TO CONTINUE? (YES|NO):
```

Reply yes. The system then issues the message:

```
ENTER DISK LABEL:
```

Reply with the label to be assigned to the RSCS system disk, such as RSCSA.

The system then issues the messages:

```
FORMATTING DISK 'A'.  
'n' {CYLINDERS|BLOCKS} FORMATTED ON 'A(195)'.
```

This signifies that the initial formatting of the RSCS system disk is finished.

Next, format the RSCS system disk again. You must use the recompute function of the FORMAT command to make the last cylinders of the RSCS system disk unavailable to the CMS file system. If the RSCS system disk is a 2314 or 3340, the last two cylinders are needed for the nucleus. For a 3330, 3350, or 3380, only the last cylinder is needed. For a 3310 or 3370, 512 blocks are needed for the nucleus.

The FORMAT command for a 2314 RSCS system disk is:

```
FORMAT 195 a 4 (recomp
```

The FORMAT command for a 3330 RSCS system disk is:

```
FORMAT 195 a 2 (recomp
```

The FORMAT command for a 3340 RSCS system disk is:

```
FORMAT 195 a 6 (recomp
```

The FORMAT command for a 3350 or 3380 system disk is:

```
FORMAT 195 a 1 (recomp
```

| The FORMAT command for a 3310 or 3370 system disk is:

|       FORMAT 195 a 1024 (recomp

#### STEP 4. MODIFY THE SUPPLIED RSCS DIRECTORY

You can use the CMS Editor to modify the supplied RSCS directory (SAMPLE DIRECT C1) to describe your local RSCS configuration. The format of the entries in the RSCS directory are described in the preceding section, "Planning to Install RSCS". The sample directory supplied on the distribution tape is shown in Figure 10.

#### STEP 5. MODIFY THE SUPPLIED SAMPLE RSCS PROFILE

You may use the CMS Editor to modify the supplied sample RSCS profile (PROFILE SAMPLE C1) initial startup command file to automatically issue any sequence of RSCS commands at RSCS IPL time.

Any valid RSCS command may be entered in the command sequence. A dash (-) as the first character of a command line in an RSCS automatic execution file suppresses the printing on the RSCS operator console of the DMTREX679I message, which includes the command line, as the command executes. This feature is to suppress printing of comment lines and password information supplied in the parameter fields of START commands included in automatic execution RSCS command sequences.

The default PROFILE SAMPLE supplied on the RSCS distribution tape is:

```
-*****  
-*                                   DEFAULT CP COMMAND SETTINGS                                   *  
-*****  
CP SET IMSG OFF  
| CP SET EMSG ON  
CP SPO CON START
```

---

| **Note:** Steps 4, 5, and 6 may be skipped if your RSCS system disk already has a directory and profile.

```

*****
*          RSCS LOCAL NODE-ID SPECIFICATION          *
*****
*          LOCAL      GMT          *
*          NODE-ID    OFFSET        *
*          -----    -----      *
LOCAL      HOME          5
*          NODE-ID NAME = HOME      *
*          GMT OFFSET   = 5 (EASTERN STANDARD TIME) *
*****
*          RSCS LINK-ID SPECIFICATIONS              *
*****
*          LINK-ID    LINE  VIRTUAL  TIME  TASK  SPOOL  KEEP  *
*          -----    -----  -----  -----  -----  -----  *
LINK      NPTTEST    DMTNPT   *       5   NPT1   *       2
LINK      SMLTEST    DMTSML   081    5   SYS1   A       2
LINK      NJITEST    DMTNJI   082    8   MVSA   *       2
LINK      VMBTEST    DMTVMB   083    6   SYS2   *       2
LINK      VMCTEST    DMTVMC   310    5   SYS3   *       2
LINK      POWTEST    DMTPOW   087    5   DOS1   D       2
LINK      RPTTEST    DMTRPT   210    5   RPTT   *       2
*****
*          RSCS PARM  SPECIFICATIONS                *
*****
*          LINK-ID    PARM TEXT                    *
*          -----    -----                    *
PARM      SMLTEST    M01 B400
PARM      POWTEST    C001
*****
*          RSCS ROUTE  SPECIFICATIONS              *
*****
*          LOC-ID    LINK-ID  COMMENTS            *
*          -----    -----  -----            *
ROUTE     ROUTTEST    VMBTEST  PASS FILES FOR ROUTTEST TO VMBTEST
*****
*          RSCS BISYNCH DIAL PORT DEFINITIONS      *
*****
*          VIRTUAL          *
*          ADDRESS          *
*          -----          *
PORT      080
*****
*          RSCS SUPERVISOR SPECIFICATIONS          *
*****
TAGS      384          NUMBER OF TAG SLOTS TO GENERATE
*****

```

Figure 10. Sample Supplied RSCS Directory

STEP 6. MOVE THE RSCS DIRECTORY AND PROFILE TO THE RSCS SYSTEM DISK

After the necessary local modifications have been made to the sample directory and profile, copy them to the RSCS System Disk using the following commands:

```
COPY SAMPLE DIRECT C RSCS = A
COPY PROFILE SAMPLE C = RSCS A
```

Note: This step also renames these files to the names required by RSCS.

STEP 7. MAKE SURE STAGING DISKS ARE DEFINED

Staging disks are minidisks used to keep the text and source code distributed by IBM. Separate staging disks are recommended for text, source code, and service updates. Typically the text of several IBM products are kept on a common text staging disk, the source of several IBM products are kept on a different common source staging disk, and the service updates for several IBM products are kept on still another service staging disk.

It is recommended that the common text staging disk for RSCS be defined with a virtual disk address of 194, the common source staging disk be defined as 394, and the common service staging area be defined as 294. If you choose other disk addresses, you must respond to the prompt from the RSCSBASE build EXEC with the appropriate disk address.

The amount of additional DASD space recommended for the RSCS staging areas are shown in the following table. Note that the service staging requirements may vary, depending on the amount of service activity.

DASD	Base Text Staging Area (default 194)	Base Source Staging Area (default 394)	Service Staging Area (default 294)
2314	6 Cylinders	61 Cylinders	3 Cylinders
3330	3 Cylinders	32 Cylinders	2 Cylinders
3340	9 Cylinders	89 Cylinders	4 Cylinders
3350/3380	2 Cylinders	16 Cylinders	1 Cylinder
3310/3370	1536 Blocks	13312 Blocks	1024 Blocks

Note: Steps 4, 5, and 6 may be skipped if your RSCS system disk already has a directory and profile.

STEP 8. LOAD AND BUILD THE RSCS SYSTEM

If everything has been set up as recommended, you may now issue the EXEC provided for loading the RSCS product, building the RSCS system disk, and creating an IPL-able RSCS nucleus by issuing the following:

```
RSCSBASE NORESP
```

Note: If you received a service tape, issue instead:

```
RSCSBASE NORESP SERVICE
```

See the description of the RSCSBASE EXEC on page 2-21 for the effect of adding the SERVICE option.

The RSCSBASE EXEC, as specified, will do the following:

- Access the source staging disk (394) as the A-disk.
- Access the text staging disk (194) as the B-disk.
- Load the Base RSCS text and source to their respective disks.
- Access the RSCS System Disk (195) as the A-disk.
- Copy the RSCS line drivers and supervisor tables to the RSCS System Disk.
- Build and IPL the RSCS nucleus.

The installation EXEC will type informational messages on the console to tell you how it is progressing. You will see the following messages (among others) on your console:

```
LOADING FILE 2 (RSCSNET TEXT) ...
```

```
.  
. .  
. .
```

```
LOADING FILE 6 (RSCSNET MACRO SOURCE) ...
```

```
COPYING RSCSNET DISK RESIDENT TEXT ...
```

```
DMSCPY721I COPY 'DMTAXS TEXT B1' TO 'DMTAXS TEXT A1' (NEW FILE).
```

```
.  
. .  
. .
```

```
DMSCPY721I COPY 'DMTRPT TEXT B1' TO 'DMTRPT TEXT A1' (NEW FILE).
```

```
PUNCHING RSCSNET NUCLEUS ...
```

```
SYSTEM LOAD DECK COMPLETE
```

```
PUN FILE 4904 TO MAINT COPY 001 NOHOLD
```

```
IPL'ING 00C ...
```

(WHEN THE NEW RSCSNET SYSTEM IS BUILT, ISSUE THE FOLLOWING COMMAND  
TO PRINT THE LOAD MAP)

'CLOSE PRT'

If your virtual console address is not X'009', you must generate an attention interrupt (for example, press ENTER on a 3277).

You will then receive (and must respond to) the following messages.  
(Responses are shown to the right of the messages.)

DMTINI411R SYSTEM DISK ADDRESS = 195

Note: 195 is the address of the RSCS system disk in this example;  
it is the same number that you specified in the FORMAT  
command in Step 3.

DMTINI412R REWRITE THE NUCLEUS ? yes

DMTINI413R NUCLEUS CYL/BLK ADDRESS = nnnn

Note: nnnn = 004 for a 2314  
002 for a 3330  
006 for a 3340  
001 for a 3350 or 3380  
1024 for a 3310 or 3370

After a brief pause, you will have written an IPL-able RSCS nucleus to the RSCS system disk, as indicated by the message:

DMTINI410I NUCLEUS WRITE COMPLETE  
CP ENTERED; DISABLED WAIT PSW '00020000 00000012'

You may now LOGON the RSCS virtual machine, IPL the RSCS system disk, and start your RSCS operations.

### THE RSCSBASE EXEC

The installation EXEC has options that will allow you to alter the installation procedure described above. The options of this EXEC are designed specifically to have the same name as and to perform the same function as the options defined in the VMSERV EXEC used in the VM/370 Program Update Tape (PUT) process. One new option, SERVICE, has been added which is not applicable to VMSERV.

The command format is:

RSCSBASE [NOIPL | EXIT | BUILD] [NORESP] [SERVICE]

where:

- NOIPL** causes the installation procedure to stop just before IPLing the RSCS nucleus. The nucleus has been built and has been punched to the reader (00C).
- EXIT** causes the installation procedure to stop after the tape has been loaded but before the new RSCSNET system disk has been built. The RSCSNET system disk is not required when this option is chosen.
- BUILD** causes the RSCSNET system disk to be built. This includes copying the line driver and supervisor tasks, and creating and IPLing the RSCS nucleus. No tapes are used when this option is chosen.
- NORESP** turns off the prompting of the user for the DASD device addresses of the RSCS staging areas and system disk. The following default staging area addresses will be used:  
195 for RSCSNET System Disk  
194 for RSCSNET Text Staging Area  
294 for RSCSNET Service Staging Area (if SERVICE specified)  
394 for RSCSNET Source Staging Area
- SERVICE** indicates that an RSCS service tape is to be installed along with the base tape. This EXEC will stop to allow the user to mount the service tape. The service EXEC on the service tape will be called to load the service. The other options entered on the RSCSBASE EXEC will be passed to the service EXEC. An RSCSNET service staging area is required when this option is specified.

Usage Notes:

1. The RSCSBASE EXEC and the service EXEC must run from the C-disk.
2. The following self-explanatory messages may be issued during the installation procedure:  
\*\*\* ERROR READING INSTALL TAPE OR WRITING TO DISK 'cuu' \*\*\*  
\*\*\* ERROR READING SERVICE TAPE OR WRITING TO DISK 'cuu' \*\*\*  
\*\*\* FILE NOT FOUND ON SERVICE TAPE - PLEASE INSURE THAT  
THE CORRECT TAPE IS MOUNTED \*\*\*  
\*\*\* ERROR CREATING THE RSCSNET NUCLEUS \*\*\*  
\*\*\* ERROR ACCESSING DISK 'cuu' \*\*\*  
\*\*\* ERROR COPYING RSCSNET DISK RESIDENT TEXT \*\*\*  
\*\*\* OPTION CONFLICT EXISTS, PLEASE RE-ENTER \*\*\*  
\*\*\* INVALID OPTION, PLEASE RE-ENTER \*\*\*
3. Return codes used by the RSCSBASE EXEC are:  
0 - Normal exit  
4 - Exit requested by user  
8 - Error: invalid or conflicting options  
16 - Error: unable to access required disk(s),  
unable to read tape, etc.
4. The following shows the effect of specifying [NOIPL|EXIT|BUILD] to the



RSCSBASE EXEC:

Parameter	NOIPL	EXIT	BUILD	none
Load All Files	YES	YES	NO	YES
Copy Text	YES	NO	YES	YES
Punch Nucleus	YES	NO	YES	YES
IPL the Nucleus	NO	NO	YES	YES

5. Since IPL-ing the RSCS nucleus takes your virtual machine out of the CMS environment, the NOIPL option is provided to bypass this IPL. The EXEC will spool your reader class I before punching the nucleus. When you are ready to IPL the RSCS machine, spool your reader class I and IPL 00C (your virtual reader). You will have to close your virtual printer (CLOSE 00E) to get the load map to print.

6. You can override the default DASD disk addresses used by not entering the NORESP option. You will then receive the following instructions and prompts:

YOU WILL BE REQUIRED TO REPLY TO QUESTIONS REGARDING THE INSTALLATION OF RSCS NETWORKING. THE ACCEPTABLE RESPONSES WILL BE SHOWN IN PARENTHESES. A RESPONSE SHOWN WITHIN DASHES, E.G. -195-, IS THE DEFAULT, AND MAY BE SELECTED WITH A NULL RESPONSE.

REMINDER: THE MINIDISKS USED FOR THE RSCS NETWORKING PROGRAM PRODUCT SHOULD BE DIFFERENT FROM THE MINIDISKS USED BY THE RSCS COMPONENT OF VM/370 IF YOU WISH TO KEEP BOTH PRODUCTS.

ENTER RSCSNET BASE TEXT STAGING AREA ADDR (-194- | CUU)  
ENTER RSCSNET BASE SOURCE STAGING AREA ADDR (-394- | CUU)  
ENTER RSCSNET SYSTEM DISK ADDRESS (-195- | CUU)  
ENTER RSCSNET SERVICE STAGING AREA ADDR (-294- | CUU)

7. Use the SERVICE option when you have a service tape to install at the same time as the base tape. The RSCSBASE EXEC will stop when it is ready to apply the service and give you the following prompt:

IT IS ASSUMED THAT THE SERVICE TAPE IS READY ON 181;  
REPLY (-GO- | EXIT)

When the tape is ready, reply GO (or null) and the installation will proceed. If you do not wish to continue, reply EXIT and the installation will stop. At this point, your system is in the same status as if you originally entered the EXIT option (without the SERVICE option).

If you continue, the first two files of the service tape will be loaded onto the C disk (MAINT's 191 disk) and you will see the following prompt:

DO YOU WISH TO HAVE THE MEMO TO USERS PRINTED? (-YES- | NO)

You will be told when the SERVICE EXEC is entered and exited by the

following:

```
NOW ENTERING SERVICE EXEC ...  
SERVICE EXEC ENDED WITH RC= n
```

While in the service EXEC you will receive the following information messages when the contents of the service tape is being loaded:

```
LOADING FILE 3 (RSCSNET REPLACEMENT TEXT) ...  
.  
.  
.  
LOADING FILE 10 (RSCSNET NEW OR UPDATED SERVICE TOOLS) ...
```

Note: Files 6 through 10 may be null files if there is no service activity in these areas.

#### UPDATING RSCS

Use standard VM/370 updating procedures to update RSCS. You can invoke VMFASM to assemble any RSCS source module using the supplied RSCS control file. Use loadlist DMTLOAD and the VMFLOAD program when regenerating the RSCS nucleus.

The DMTNJI line driver is a multi-module line driver distributed with RSCS. Use the RSCS preloader to construct DMTNJI TEXT from its component modules via the command:

```
PRELOAD DMTNJI RSCS
```

Where DMTNJI specifies an IBM-supplied EXEC file loadlist and RSCS specifies the IBM-supplied CNTRL control file to be used.

The spool access manager DMTAXS is also a multi-module task. Use the RSCS preloader to construct DMTAXS TEXT from its component modules via the command:

```
PRELOAD DMTAXS RSCS
```

Where DMTAXS specifies an IBM-supplied EXEC file loadlist and RSCS specifies the IBM-supplied CNTRL control file to be used.

Note: All PRELOAD input files must be located on the user's A-Disk or read-only extension.

#### THE RSCS PRELOADER

The preloader (part of RSCS Networking) is a utility program that runs under CMS. It collects text files and reformats them into a single text file that can be dynamically loaded by the RSCS loader. It resolves external references

and performs preliminary relocation of address constants. Its function is similar to that of a linkage editor, but its output is in standard text file format and does not include multiple CSECTs.

Line drivers and other programs to be loaded as RSCS tasks may be developed as multiple separate assembly modules which externally reference one another; the assembled text files may be merged into a single RSCS loadable text file by the preloader under CMS. The preloader is invoked as an ordinary CMS utility routine:

```
PRELOAD loadlist [control]
```

'loadlist' specifies the filename of an EXEC file which must reside on the caller's A-disk. Each record of this file contains the filename, and optional filetype, of a text (object) file to be used as preloader input. 'control' specifies the filename of a CNTRL file which must also reside on the caller's A-disk if it is specified. The format and interpretation of this file are the same as for the VM/370 VMFLOAD utility. If a load list entry includes a filetype, that filetype is used to identify the input file. Otherwise, if a control file is specified, input file identifiers are constructed using the filename from the load list entry and a filetype of the form 'TXT....' The highest control level identifier for which a file can be located on the caller's accessed disks is used. If no filetype is included in a load list entry and no control file is specified, a default filetype of TEXT is used. Input files are located by a scan of all the caller's disks in their access order.

Note: PRELOAD is not to be used to generate the RSCS nucleus.

The preloader output consists of two files, one with a filetype of TEXT, the other of filetype MAP, both with the same filename as that specified for the input load list. If either of these files already exists on the caller's A-disk, the old file is replaced by the new output file.

The output TEXT file is the merged and linked copy of the input files. The first CSECT or private code section in the input becomes the composite (single) output section; its length is the sum of all input section lengths (rounded up to doubleword multiples between sections for proper section alignment). For the output ESD, subsequent CSECTs are made into entries (RLDs), and subsequent private code sections are disregarded. External references are included in the output ESD only if they remain unresolved.

Input TXT records of non-zero length are relocated and written to the output file. The output RLD is a translated and relocated collection of all input RLD records. The output END card does not specify any entry point, section length, or other code. No sorting is done by the preloader. In general, each output ESD, TXT, and RLD entry appears in the same order as the input entry from which it was translated.

ADCON and VCON fields are relocated within their TXT records. ORG statements that cause relocatable constant fields to overlay or to be overlaid may cause results that differ from results obtained with a loader that completes TXT data loading prior to relocating ADCONs and VCONs.

The output MAP file is a printable record of the preloader processing, similar to a load map. The first line of the map specifies the output text file name, its residence volume label and virtual device address, and the date and time of file creation. The next section of the map is a listing of the control file used, if one was specified. The remainder of the map consists of a sequence of input file sections, one for each input file in processing order.

The first line of a map input section specifies the input file's filename, filetype, and filemode; residence volume label and virtual device address; and the file creation date and time. If the input file data contains invalid records, the preloader writes them in the map sequentially following the input file identification line. The VM/370 VMFASM utility enters such "invalid" records in text files to specify the updates and macro libraries used in assembly. Following these records, the input file's ESD is listed, including control sections and entries with their relocated addresses, duplicate external symbols, and unresolved external references, if any. The first control section in the input specifies the output control section name; the output section length is included on this ESD map entry.

The preloader does not actually load its input modules into storage before generating its output section, but rather interprets, translates, and relocates its input text files on a two-pass record by record basis. This approach requires that for each TXT record of a particular input control section, each RLD entry (one for each ADCON and VCON) which lies within that control section must be scanned to determine if it lies within the TXT record data. As a result, the preloader processing time has a component that is proportional to both the total number of TXT records and the total number of RLD entries for each input control section. Roughly stated, this means that when a particular input control section grows sufficiently large, the time required to process it becomes proportional, not to the input control section size, but to the square of that size. This effect is significant when a large text file previously generated by the preloader is used as preloader input. In this case, much more CPU time may be required to reprocess the preloader output than was required to generate it in the first place, because several smaller control sections have been merged into a single large control section. This kind of program behavior can be expected, and does not indicate a malfunction.

Part 3 describes the operation of RSCS.  
The main areas included are:

- A general description of the operation of RSCS.
- A description of the specific procedures to operate RSCS.

## Operation Description

### RSCS OPERATOR COMMANDS

The RSCS operator controls the local RSCS facility; the operator can:

- Alter the status, transmission priority, class, and order of files owned by the RSCS virtual machine.
- Start, suspend, or stop transmission of files to remote terminals and stations.
- Reposition or restart files being transmitted.
- Send messages to remote terminals, stations, and other nodes in the network.
- Send commands to remote batch processing systems.
- Query file, link, or system information.
- Monitor link activity for any directly connected remote location.

File attributes and the parameters describing them in the RSCS command language have maximum and default values identical to those of the VM/370 command language. Because many RSCS operator commands are available to remote station operators, only brief descriptions of the commands that apply to the RSCS virtual machine are included in this section. The commands are grouped in a general chronological sequence as an operator would use them. A complete description of all commands, with detailed format, is in "Appendix A: RSCS Commands".

Commands available to the RSCS operator fall into four general classifications: link and line control, file control, communication, and miscellaneous.

### LINK AND LINE CONTROL COMMANDS

The RSCS operator commands to manage the links and lines used for file transmission are:

DEFINE	FORCE	ROUTE
DELETE	FREE	SHUTDOWN
DRAIN	HOLD	START

## DEFINE

Use DEFINE to temporarily add a new link entry to the list of valid links (link table) for the local RSCS installation, or to temporarily redefine an existing link definition. (Permanent link definitions or redefinitions can only be made by modifying the RSCS Directory.) A link definition, with a link identifier equal to the location identifier of a remote station, must exist in the RSCS link table before any transmission of files, to or from that remote station, can occur.

## DELETE

Use DELETE to temporarily delete a link definition from the RSCS link table. (Permanent link deletions can only be made by deletion from the RSCS Directory.) The link to be deleted must be inactive (drained or not started), and must have no unprocessed files addressed to it. Files later addressed to a deleted or undefined link are purged from the system.

## DRAIN

Use DRAIN to deactivate an active link. If the link is currently processing a file, the link is deactivated when the current file has completed processing. If no file is being processed, the link is deactivated immediately.

## FORCE

Use FORCE if the DRAIN command fails to deactivate a link. FORCE immediately deactivates the specified link and terminates its line driver task regardless of the status of file processing.

## FREE

Use FREE to resume transmission on a link previously in HOLD status.

## HOLD

Use HOLD to temporarily suspend file transmission on an active link without deactivating it. Transmission is suspended at the end of the file currently

being processed unless a keyword is entered signifying that transmission is to be halted immediately. In either case, transmission is restarted at the interrupted point when FREE is issued.

### ROUTE

Use ROUTE to define, modify, or delete an entry in the RSCS routing table. Files are automatically reenqueued following execution of a ROUTE command, so that transmission of rerouted files can begin immediately.

### SHUTDOWN

Use SHUTDOWN to terminate RSCS operation normally. SHUTDOWN effectively issues a DRAIN command to each currently active link.

### START

Use START to activate an inactive link. Certain keyword options may also be entered to temporarily override the link definition in the link table. This command may be issued to an active link but solely for the purpose of altering the class of files to be processed on that link or to reset a DRAIN operation before it has completed.

### FILE CONTROL COMMANDS

Files sent to the RSCS virtual machine for transmission are put into the file queue assigned to the particular link to which the file is addressed. Files waiting in a queue to be transmitted are called inactive files; those being transmitted are called active files. The RSCS operator uses different commands for each kind of file:

For Inactive Files	For Active Files
CHANGE    ORDER PURGE    REORDER TRANSFER	BACKSPAC    CLOSE FLUSH        FWDSPACE



## CHANGE

Use **CHANGE** to alter one or more attributes of a file owned by the RSCS virtual machine, enqueued on some link's file queue, and not currently active.

## ORDER

Use **ORDER** to reorder the files enqueued on a link's file queue. This redefines the sequence in which particular files are processed. An active file cannot be reordered.

## REORDER

Use **REORDER** to cause all inactive files controlled by RSCS to be reaccepted and routed. **REORDER** is normally not used by the operator but by RSCS during internal operations. See command descriptions for details of **REORDER** usage.

## TRANSFER

Use **TRANSFER** to redirect specified inactive files enqueued on a link to a new destination. This causes RSCS to dequeue them from the specified link and enqueue them on the link associated with the new destination.

## PURGE

Use **PURGE** to remove all or specified files, enqueued on a link, from the system before being processed. An active file cannot be purged.

## FLUSH

Use **FLUSH** to discontinue processing the current file on a specified link. The discontinued file is either purged or held and link processing continues with the next file enqueued for transmission on that link. If the **COPY** attribute for the file specified multiple copies, only that current copy is discontinued unless the discontinuance of all copies for the file is also specified.

## CLOSE

Use CLOSE to clear the files if a link unexpectedly becomes inactive while processing active files. Active input files are reenqueued as inactive and later retransmission begins at the start of each input file. Active output files are purged.

## BACKSPAC

Use BACKSPAC to restart or reposition, in a backward direction, the file currently being processed on the specified link.

## FWDSPACE

Use FWDSPACE to reposition, in a forward direction, the file currently being processed on the specified link.

## COMMUNICATION COMMANDS

The RSCS operator can communicate with a remote station via the CMD or MSG commands. CMD is for sending a command to a remote system. MSG is for sending a message to a remote operator or user.

## CMD

Use CMD to control functions performed by a remote system such as a HASP or ASP type batch processor, a remote RSCS, a remote VSE/POWER system, or a remote NJI-compatible system.

RSCS does not process the command text; RSCS transmits the text to the remote system specified (except for VSE/POWER commands). The functional meaning of the command text depends on the nature of the remote system that receives the command. For example, if the remote system is a HASP or ASP type processor, the command text would be:

\$ Hasp command

- or -

\* Asp command

For information on the allowable commands, refer to the appropriate manuals listed in the Preface.

CMD is also available to the virtual machine user via the CP SMSG command; refer to "Part 4: VM/370 User's Guide" for details.

### MSG

Use MSG to send a message (as opposed to a command) to a remote station operator, remote RSCS operator, remote NJI system operator, remote VSE/POWER operator or remote virtual machine user. The text portion is made available to the line driver for the specified link. MSG is also available to the virtual machine user via the CP SMSG command; refer to "Part 4: VM/370 User's Guide" for details.

### MISCELLANEOUS COMMANDS

Other commands are available to the RSCS system programmer and operator to monitor and control the local network. They are:

* (comment)	EXEC
CP	HT
CPQUERY	QUERY
DISCONN	TRACE

### \* (comment)

Use the \* command to place comments or notations on the RSCS operator's console listing. It is accepted by the command processor but performs no function.

### CP

Use CP to pass any permitted commands to the VM/370 Control Program without leaving the RSCS environment.

## CPQUERY

Use CPQUERY only in a CMD command to request remote CP status information to be printed on the RSCS operator's console. The operator can request the following:

- Indications of processor usage and contention
- Indications of main storage usage and contention
- Log messages of the day
- Userid and real address of each user logged on
- The current real clock time:
  - Time of day
  - Time zone
  - Day of week
  - Calendar day
- Connect time of the RSCS virtual machine
- Number of users logged on
- Number of users logically connected to other virtual machines
- Userid and terminal address of a specified user

CPQUERY is also available to the virtual machine user via the CP SMSG command. Refer to "Part 4: VM/370 User's Guide" for details.

## DISCONN

Use DISCONN to disconnect the RSCS operator's console from the VM/370 system while RSCS continues to operate. An optional userid may be entered in the command line to specify the virtual machine to receive all RSCS operator console output lines. If no virtual machine is specified, the RSCS console output lines are discarded without being printed.

## EXEC

Use EXEC to execute frequently used sequences of RSCS commands. The commands are stored in a CMS file on the RSCS system disk with a file type of RSCS.

## HT

Use HT to suppress the printing of any unwanted messages stacked for output to the RSCS operator's console.

## QUERY

Use QUERY to request RSCS status information to be printed on the RSCS operator's console or remote station printer. The information requested can be for a particular link, a specific file, or for RSCS in general.

QUERY is also available to the virtual machine user via the CP SMSG command. Refer to Part 4: VM/370 User's Guide" for details.

LINK INFORMATION: For a particular link, the operator can request status, activity, default, file, or queue information.

Status information includes activity status, type of line driver, line address, classes of files to be processed, HOLD status, DRAIN status, TRACE status, number of files in queue and number of files waiting to be queued.

Activity information includes the VM/370 spool file ID, originating VM/370 spool file ID, destination location and user ID, spool file class, file transmission priority, number of file records left to transmit, and total records, of the file currently being transmitted.

Default information includes task name, type of line driver, line address, classes of files to be processed, time zone identifying digit, and number of virtual storage file tag slots reserved for the link.

File information includes the number of files being transmitted, the number of files being received, the number of files accepted and in the queue, and the number of files pending.

Queue information includes the number of files in the queue and the number waiting to be entered in queue. In addition, for each file currently in the queue, an additional response is issued containing the spool file identification number, origin location, destination location, destination user ID (if any), spool file class, current transmission priority, the number of records in the file, and the file hold status.

FILE INFORMATION: For a specific file, the operator can request status information, RSCS-related file attributes, or VM/370 spool-related attributes.

Status information includes activity status and the linkid of the link on which the file is queued or being transmitted.

RSCS-related attributes include originating location and user ID, originating VM/370 spool ID, date and time of creation, time zone reference for time of day, and the destination location and user ID.

VM/370 spool-related attributes include transmission priority, spool file class, number of copies requested, HOLD status, distribution code, filename and filetype, or data set name.

SYSTEM INFORMATION: The RSCS operator can request a brief description of each inactive link, active link, port, non-zero queue, or route currently defined in the system.

Inactive link information includes link identification, activity status, default line driver type, and default line address.

Active link information includes link identification, link status, line driver type, line address, and hold status, drain status, and trace status.

Port information includes port availability status and identification of ports in use by link ID and port address.

Queue information includes the number of files being transmitted and received, the files accepted and enqueued, and the files pending for each link ID with a non-zero queue.

Route descriptions show the link ID for each route definition in the RSCS routing table.

## TRACE

Use TRACE to monitor line activity on a specified link. The trace information message includes the total number of communication line transactions (write/read combinations), the number of communication line transactions ending with a line error indication, and the number of timeouts that occurred on the line.

The line activity indicators are constantly accumulated by an active line driver, but printing of the results on the RSCS operator's console is initiated only through the TRACE command. The TRACE command with the LOG operand results in the creation of a printer spool file containing a detailed log of every I/O transaction on a link.

## RSCS MESSAGES

RSCS issues messages in response to commands, and during execution. The response message is delivered to the associated command originator, generally the RSCS local or remote operator, or both, depending on the availability of the remote station printer to serve as an operator console output medium. When RSCS is operating in disconnected mode, it issues unsolicited messages to another virtual machine console or to the VM/370 operator's console by means of the VM/370 MESSAGE command, if specified in the DISCONN command. Console spooling can also be used to record messages issued to the RSCS operator's console when the RSCS virtual machine is operating in disconnected mode. If these options are not taken, these messages are discarded.

Certain unsolicited messages are issued to virtual machine users via the VM/370 MESSAGE command when the message pertains to a file originated by or destined for the user.

For a detailed listing and description of all RSCS messages, see "Appendix B:

## RSCS Messages".

RSCS message codes conform to VM/370 standards. The first three characters in all RSCS message codes are "DMT". The origin of each message is encoded as the fourth, fifth, and sixth characters of each message code; the possible codes are REX, CMX, CMY, AXM, INI, RGX, IRX, NPT, RPT, SML, POW, VMB, VMC, NCM, NHD, and NIT. The seventh, eighth, and ninth characters are the message number. The tenth character is the message severity code; the possible codes are R (response), I (information), E (error), S (severe error), and T (termination of RSCS processing). Printing of the ten-character message codes may be suppressed by the local and remote RSCS operator by use of the CP SET EMSG TEXT command.

RSCS uses the Diagnose function of CP to handle console functions such as DEFINE and DETACH. Use of these VM/370 commands by RSCS results in two confirming messages being printed on the operator's console for each file processed by RSCS. The RSCS operator can issue the CP command SET IMSG OFF to suppress these informational messages.

If an unrecoverable error occurs, RSCS enters a disabled wait state. If either the DMTREX090T or DMTREX091T message is displayed on the RSCS operator's console, an automatic virtual storage dump is also taken. Otherwise, the CP DUMP command should be issued.

## COMMUNICATING WITH JES2/NJE SYSTEMS

RSCS supports a subset of the full NJI protocol defined by the Network Job Entry Facility for JES2. For details of the full NJI protocol refer to Logic: Network Job Entry For JES2, LY24-6001. The following points must be considered when communicating with a JES2/NJE system:

- The DMTNJI line driver supports the predefined connection protocol used by JES2/NJE. Therefore, any connection between RSCS and JES2/NJE must be predefined by the JES2 system using a CONNECT statement in the JES2 initialization deck. Failing to include the CONNECT statement produces unpredictable results at link connection time. Additional CONNECT statements must be added to the JES2 initialization deck for any locations receiving files from JES2 through the predefined RSCS connection.
- The DMTNJI line driver uses a single transmission stream (either job or output) to a remote system. It supports the simultaneous reception of one job stream and one output stream.
- When a data set with multiple destinations is received by DMTNJI, the data set is stored and forwarded by RSCS as separate files. When a job output file containing data sets with different attributes is processed by RSCS (such as an output file containing both print and punch data sets), it is stored and forwarded as separate files.
- NJE global commands not destined for the local node are stored and forwarded to the final destination system in the normal manner. Global

commands directed to the local RSCS system by DMTNJI are translated into the appropriate RSCS commands. If the final transmission link to the local RSCS system is not through the DMTNJI line driver, Global commands are not processed by RSCS.

- When a data set containing ASA control characters is received by DMTNJI, the control characters are converted to machine control characters before being placed in the CP spool system. Upon any subsequent retransmission to another node, the characters are sent as machine control.

### ID CARD FORMAT FROM REMOTE STATIONS

The ID card is entered at the beginning of a deck of cards from a remote terminal to specify the network destination of the file being entered. The format of a single-parameter ID card is:

ID	userid
1	10

userid specifies the destination user at the directly connected RSCS location to which the file following the ID card is addressed.

The format of a two-parameter ID card is:

ID	locid	userid
1	10	

locid and userid specify the destination location and user address to which the file following the ID card is addressed. userid may be replaced by the keyword SYSTEM if the file is to be produced as real unit record output at the destination location, and by the keyword JOB if the file is to be entered as a job at the destination batch processing system via the Network Job Interface (NJI).

### HEADER CARD FORMATS FOR THE VM/370 REAL READER

Files or jobs may be submitted through the VM/370 real card reader to RSCS for transmission. The data deck to be transmitted must be preceded by an ID card to direct it to the RSCS virtual machine and a 'tagtext' card to specify destination. The formats of these cards are:



ID	userid	CLASS	n	<	[	filename	filetype	]	>
					[	dsname		]	

ID is a mandatory keyword.

userid specifies the name of the RSCS virtual machine.

CLASS is an optional keyword.

n specifies the file class. The options are A-Z and 0-9. The default is A.

filename specifies the label on the input data.  
dsname

filetype specifies the type of file if filename is used.

The punching must start in card column one and each field must be separated by a blank column.

The second card contains the tagtext portion of the TAG command used when submitting a file from a virtual machine user console.

tagtext
---------

Punching starts in card column one and all fields are separated by a blank column. A sample job file submitted through the real card reader to RSCS for transmission to the node HOUSTON is:

ID RSCS	First card (ID card)
HOUSTON JOB	Second card (tagtext card)
//xxxxxxxxxx	Job file to be transmitted
//xxxxxxxxxx	to HOUSTON by RSCS.
//xxxxxxxxxx	

## Operation Procedures

### SYSTEM START-UP

Normally starting RSCS requires no operator action after the RSCS virtual machine IPL. The route and link tables are created during the system initialization from the RSCS directory on the RSCS system disk. The line drivers are normally started by the automatic execution of the PROFILE RSCS file. (All required START commands for the line drivers are placed in the PROFILE RSCS file by the system programmer at system generation time.)

Additional line drivers may be started individually, if required, by using the START command formats shown in the following descriptions of starting the various line driver types.

Any temporary changes desired in the link and route definitions can be made using the commands described under "Dynamic Reconfiguration".

### SYSTEM SHUT-DOWN

Operation of the RSCS virtual machine is terminated when the RSCS operator issues the SHUTDOWN command. This effectively issues a DRAIN command to each active link. Any link that is currently processing a file will complete that file and then deactivate. A link that is not processing a file deactivates immediately. When all links have reported successful deactivation, the RSCS operator may logoff his RSCS virtual machine.

Any files waiting for transmission at the time of system shutdown will be retained by the VM/370 spooling facility. These files will be reaccepted and enqueued to the appropriate links when the RSCS virtual machine is started again.

### STARTING LINE DRIVERS

Line drivers manage the transmission of files between the RSCS virtual machine and a particular class of remote nodes, terminals, or stations. Seven line drivers are supplied with RSCS designated as DMTSML, DMTPOW, DMTNPT, DMTRPT, DMTVMB, DMTVMC, and DMTNJI. See the section on "Line Drivers" in "Part 1: Introduction" for a detailed description of the function of each line driver.

The RSCS operator initiates a line driver for a particular link by issuing the START command. If the previously defined link definition is still valid, only

## START linkid

need be specified. If any of the link attributes must be changed for this communication session, the START command with appropriate operands is used. For example, if the link to HOUSTON had been defined with a line address of 0B1 and a class of G, and the current session is to handle class S output on line address 0B3, the START command would be:

```
START HOUSTON CLASS S LINE 0B3
```

For this session only, the HOUSTON link processes only class S output and uses the line port with virtual address 0B3. Output other than class S remains queued on Houston's link and is not transmitted until the class attribute is changed.

Since more than one link can require the same line driver, multiple copies of a line driver can be active simultaneously. Each copy is assigned a task name when the link is defined; otherwise, a default task name is generated by RSCS when the link is activated.

After the line driver is activated during system start-up or by the RSCS operator, the link for a leased line is ready for a remote station to "sign on" with its identification and station characteristics. A link using a switched line must first complete a line connection by a dial-up procedure from either end of the link. The sign-on procedure varies by line driver and is covered in the following line driver discussions.

## STARTING AN SML LINE DRIVER (DMTSML)

Before a remote station can sign on to SML, the appropriate task for that link must have been started during system start-up or by the RSCS operator. The START command for SML and the variables to be specified are:

START	linkid [TYPE DMTSML] [LINE vaddr]  Parm < $\begin{bmatrix} \text{Hrn} \\ \text{Rrn} \\ \text{Arn} \\ \text{Mrn} \end{bmatrix}$ > [Bnnnn] $\begin{bmatrix} \text{password} \\ \text{user/pwd} \end{bmatrix}$
-------	---

**linkid** is the location identifier of the remote station.

**DMTSML** is the name of the line driver to be used. This specification overrides the driver name which may have been previously defined for the link. If no driver was previously defined for the link, this field must be specified.

**vaddr** is the virtual address of the communications line port. (vaddr is

used only if the line port is to be other than one previously specified in a link definition.)

**Parm** is a keyword signifying that one or more parameters follow.

**Hrn** sets SML mode, indicating that SML operates as a remote job entry system into a remote HASP or JES2 system as remote number rn.

**Rrn** sets SML mode, indicating that SML operates as a remote job entry station into the Remote Entry Subsystem (RES) of OS/VS1 as remote number rn.

**Arn** sets SML mode, indicating that SML operates as a remote job entry system into a remote ASP or JES3 system as remote name rn.

**Mrn** sets SML mode, indicating that SML operates as host to a remote programmable station signing on as remote number rn.

**Bnnnn** indicates the telecommunication buffer size. The maximum value of nnnn is 1017. If the operand is omitted, the buffer size defaults to 400. If the optional password operand is specified, the buffer size must be entered.

**password** is an optional operand, used by the DMTSML line driver to validate the start of a terminal session as follows:

- In RJE mode, the specified identification is passed along to the remote system as part of the SIGNON record.

If the remote system is HASP, ASP, or JES, the identification consists of a one- to eight-character line password.

If the remote system is RES, the identification consists of a one- to eight-character userid followed by a slash character followed by a one- to eight-character password for a maximum of 17 characters.

- In HOST mode, the identification consists of a one- to eight-character password that the remote station must supply on its SIGNON card in order to connect to RSCS. If no password is entered on the START command, none is required from the remote station.

For a general description of the START command, refer to "Appendix A: RSCS Commands".

If the operator has initialized the appropriate SML task, contact may be established by dialing the other location from either end of the link. If the line specified is a leased line, or if the above contact procedure has been successfully accomplished, the sign-on procedure is then executed.

### Signing On in RJE Mode

If SML is operating in RJE mode, the SML task signs on to the remote HASP/ASP system. Using information from the START command and standard HASP/ASP protocol, SML builds a SIGNON record and submits it to the remote system. When the remote system accepts the SIGNON record, SML is notified and communication on the link is initiated.

### Signing On in HOST Mode

If SML is operating in HOST mode, the remote station must submit the sign-on information. Because remote programmable stations are loaded with Remote Terminal Processor (RTP) programs to communicate with RSCS, the SML SIGNON card or its equivalent is included in the program deck. A password for system security may also be included. The format of the SIGNON card is:

1	16	25
/*SIGNON	REMOTErn	password

The value of rn following the keyword REMOTE must match the terminal number specified in the Mrn operand of the START command.

A password is required only if the START command specified a password operand, or if a password was part of the link definition in the RSCS link table. If the password option is in effect, the password entered must match that in the START command or link table for the sign-on procedure to be completed.

### File Processing in RJE Mode

SML, operating in RJE mode, transmits files consisting of job control records and data to remote MULTI-LEAVING batch systems such as HASP and ASP. These files can originate from:

- VM/370 users spooling files to RSCS
- Remote terminals submitting card decks, through an NPT line driver with valid destination information in the ID card
- Remote stations submitting card decks, through an SML line driver operating in HOST mode, with valid destination information in the ID card
- Remote NJI/NJE systems submitting card decks.

When the remote batch system has processed the data, printer and/or punch output is transmitted back to SML. This output is then printed or punched on the appropriate real I/O device at the directly connected location.

### Input File Processing in HOST Mode

The remote station submits input to the RSCS machine through the remote card reader. This input can be directed to the virtual reader of a VM/370 user or to another remote terminal or location. Output processing at the remote station can usually be interrupted at any point to allow the transmission of input data. The specific procedure for interrupting output processing varies according to the remote hardware being used; this is explained in the "Operating Procedures" for the specific remote station. When the input has been processed, output processing can be resumed from the point of interruption.

A control card is placed in front of the deck to be sent from the remote station to the virtual machine card reader of a user or to another node, remote terminal or station. The format of this card is described under "ID Card Format from Remote Stations" in the preceding "Operation Description" section. If the remote system console is used to enter the ID data, upper case letters must be used.

### Output File Processing in HOST Mode

When printer and punch files are transmitted to a remote terminal, a header line is created on the output to identify the originating userid, date, and time of transmission. Card decks punched at the remote terminal contain the source header information on the first card punched; the rest of the card is filled with asterisks. Printer files use a carriage control tape with channel 1 signifying the first print line.

In addition to header information, printer files are separated from one another by separator pages which may be seen by the operator, at the edge of the unburst paper, to allow the operator to separate printed output. The separator page format is:

- page eject
- skip 61 lines
- 5 lines of 130 asterisks per line
- 1 line of 130 underscores
- 5 lines of 130 asterisks per line
- 2 blank lines
- the source header line
- page eject
- the print file

The card and print file header information is:

<u>Col</u>	<u>Field</u>	<u>Meaning</u>
1	lllllllll	file origin location
13	vmvmvmvm	file origin virtual machine
25	xx/xx/xx	file origin date
37	yy:yy:yy	file origin time
47	x.x.t.	time zone
55	WAS THE ORIGIN	

#### Remote Station Operator Commands

The remote station operator, under control of SML in HOST mode, is allowed to use a subset of the RSCS commands. In general, the remote operator can issue commands that affect only his specific link. The RSCS commands are described in "RSCS Operator Commands". A complete description of all commands is in "Appendix A: RSCS Commands".

Note: With the exception of the MSG and CMD commands, the linkid operand is not to be entered by a remote station operator when submitting commands to RSCS.

#### SML Messages

A subset of RSCS operator messages are printed on the remote station console. Generally, they are responses to commands originating at the remote station. For a key to the distribution of messages, see "Appendix B: RSCS Messages".

#### STARTING A POW LINE DRIVER (DMTPOW)

Before a remote VSE/POWER system can sign on to POW, the appropriate task for that link must have been started during system start-up or by the RSCS operator. The START command for POW and the variables to be specified are:

START	linkid [TYPE DMTPOW] [LINE vaddr] [Parm [Cnnn][password]]
-------	--

linkid is the location identifier of the remote station.

DMTPOW is the name of the line driver to be used. This specification overrides the driver name which may have been previously defined for the link. If no driver was previously defined for the link, this field must be specified.

vaddr is the virtual address of the communications line port. (vaddr is used only if the line port is to be other than one previously specified in a link definition.)

Cnnn sets the remote CPUID number, indicating that POW will operate as a remote system to VSE/POWER with global remote ID of nnn. The valid range of nnn is 1-200 and corresponds to the REMOTE= definition on the PRMT macro specified in the VSE/POWER sysgen. If omitted, the default is 001.

password is an optional operand preceded by a "/". The connection to VSE/POWER is validated by comparing the 1 to 8 character password with the one supplied by the VSE/POWER operator during the signon procedure. The identification consists of a one- to eight-character password that the remote VSE/POWER system must supply in its PSTART RJE command in order to connect to RSCS.

For a general description of the START command, refer to "Appendix A: RSCS Commands".

#### Signing On

The remote node (the VSE/POWER system) must initiate the sign-on procedure. This requires that the VSE/POWER system has been generated with the POW2 parameter of the PLINE macro equal to YES, and the global remote ID specified on REMOTE of the PRMT macro equal to the Cnnn specification on the START command.

Password verification is performed by comparing the password specified on the START command to the password supplied by the VSE/POWER operator. If a password is not supplied, it is assumed to be blanks. The passwords must match for the signon procedure to be completed.

Upon completion of the sign-on procedure, POW and VSE/POWER begin hand-shaking with each other. POW issues the messages:

```
DMTPOW142I LINK 'linkid' LINE 'vaddr' CONNECTED
DMTPOW905I SIGNON OF LINK 'linkid' COMPLETE
```

#### File Processing

RSCS accepts files assumed to be VSE/POWER jobs and transmits them to the VSE/POWER system for execution. When the VSE/POWER system has completed its processing, it uses the routing information in the JECL records in the job to determine where to route the output.

Job type input from the VSE/POWER system is not supported and is ignored.



## STARTING AN NPT LINE DRIVER (DMTNPT)

Before a remote terminal can sign on to NPT, the appropriate task for that link must have been started during system start-up or by the RSCS operator. The START command for NPT and the variables to be specified are:

START	linkid [TYPE DMTNPT] [LINE vaddr] [Parm password]
-------	---

linkid is the location identifier of the remote terminal.

DMTNPT is the name of the line driver to be used. This specification overrides the driver name that may have been previously defined for the link. If no driver was previously defined for the link, this field must be specified.

vaddr is the virtual address of the communications line port. (vaddr is used only if the line port is to be other than one previously specified in the link definition.)

Parm is a keyword signifying that one or more parameters follow.

password is an optional operand of one to eight characters which designates a password that the remote station must supply to be allowed to connect to RSCS. If a password is not supplied in the START command or in the RSCS link table, the remote station is not required to supply a password at sign-on time.

For a general description of the START command, refer to "Appendix A: RSCS Commands".

### Signing On to NPT

After the operator has initialized the appropriate NPT task, contact may be established on a switched line by dialing the other location from either end of the link. If the line specified is a leased line, or if the above contact procedure has been successfully accomplished, a SIGNON card must then be entered via the card reader at the remote terminal. The SIGNON card must precede all other cards, and is used only once in each session. If the line drops, the SIGNON card must be re-entered via the card reader to restart the line. The SIGNON card designates the type of terminal, its features, and other information:

SIGNON	linkid type [Bnnn] [CMPR] [Pnnn] [TRSx] [PCHx] [LPRT] [PWD=password] [TEXT] [HDRx]
--------	---

linkid is the location identifier of the remote terminal. If this does not

match the NPT task linkid of the START command, the SIGNON card is not accepted.

type indicates the terminal type (2770, 2780, 3770, or 3780).

Bnnn specifies the line buffer extension in terms of the number of bytes (nnn) depending on the terminal type:

<u>Terminal</u>	<u>Acceptable Values</u>	<u>Default</u>
2770	128, 256, or 512	128
2780	170 or 400	170
3770	256	256
3780	512	512

CMPR specifies that the blank compression feature is present on the 2770, 3770, or 3780.

Pnnn specifies the number of print positions (nnn) available at the remote printer, depending on the terminal type:

<u>Terminal</u>	<u>Acceptable Values</u>	<u>Default</u>
2770	120, 132, or 144	120
2780	120, 132, or 144	120
3770	120, 132, or 144	120
3780	120, 132, or 144	132

TRSx is entered as TRSY if the remote terminal has the transparency feature and TRSN if it does not. The default is TRSN.

PCHx is entered as PCHY if a punch is available at the remote terminal and PCHN if it is not. The default is PCHN.

LPRT specifies that all print output, including messages, is to be directed to the line printer. This keyword is only valid when a terminal type of 3770 has been specified. If the keyword is omitted, the default print device is the console printer.

PWD= passwd

is a password that must match the password entered by the operator in the START command or contained in the RSCS link table. If no password was entered in the START command or contained in the RSCS link table, this operand is not needed.

TEXT specifies that all characters contained on a TN text printing chain are allowed to be transmitted to the remote printer.

HDRx is entered as HDRN if no header page is wanted on printed output; the default, HDRY, specifies that a header page is wanted.

### Input File Processing

The remote terminal submits input to the RSCS machine via its card reader. This input can be directed to the virtual reader of a VM/370 user or to another remote terminal or location. Output processing at the remote terminal can be interrupted at any point to allow the transmission of input data. When the input has been processed, the output processing can be resumed from the point of interruption.

A control card is placed in front of the deck to be sent from the remote terminal to the virtual machine card reader of a user or to another node or remote station. The card's format is described under "ID Card Format from Remote Stations" in the preceding "Operation Description" section.

If the userid on the ID card is invalid, RSCS spools the punch file to the real punch.

### Output File Processing

When print and punch files are transmitted to a remote terminal, a header line is created on the output to identify the originating userid, date, and time of transmission. Card decks punched at the remote terminal contain the source header information on the first card punched; the rest of the card is filled with asterisks. Printer files use a carriage control tape with channel 1 signifying the first print line.

In addition to header information, printer files are separated from one another by header pages which may be seen by the operator, at the edge of the unburst paper, to allow the operator to separate printed output. The format of the separator page is:

- page eject
- skip 61 lines
- 5 lines of 130 asterisks per line
- 1 line of 130 underscores
- 5 lines of 130 asterisks per line
- 2 blank lines
- the source header line
- page eject
- the print file.

The card and print file header information is:

<u>Col</u>	<u>Field</u>	<u>Meaning</u>
1	11111111	file origin location
13	vmvmvmvm	file origin virtual machine
25	xx/xx/xx	file origin date
37	yy:yy:yy	file origin time
47	x.x.t.	time zone
55	WAS THE ORIGIN	

Remote Terminal Operator Commands

The remote terminal operator may use a subset of the RSCS commands. The commands are punched on cards, beginning in column 1, one per card, and are read on the remote card reader. Command cards must precede the ID control card for an input file. In general, the remote operator can issue commands that affect only his specific link. The commands are described under "RSCS Operator Commands". A complete description of all commands is in "Appendix A: RSCS Commands".

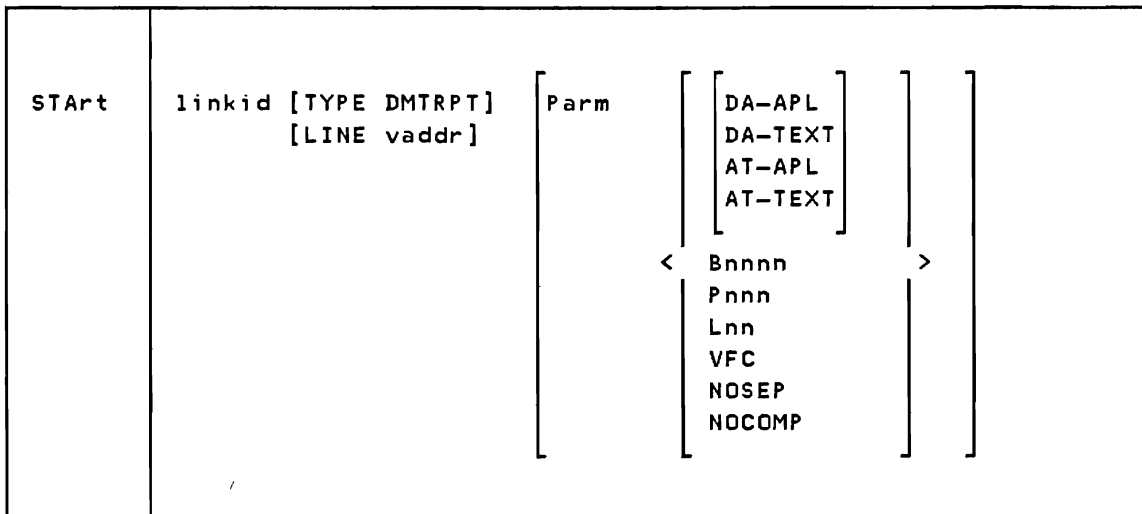
Note: With the exception of the MSG command, the linkid operand must not be entered by a remote terminal operator when submitting commands to RSCS.

NPT Messages

A subset of the RSCS operator messages is printed on the remote terminal printer. Due to the unavailability of a separate console printer for messages, and the resulting confusion which would ensue if messages were mixed with printer output, DMTRPT provides for a message queue. When the remote printer has completed processing an output file, the enqueued messages are transmitted and printed. Refer to "Appendix B: RSCS Messages" for a key to the distribution of messages.

| STARTING AN RPT LINE DRIVER (DMTRPT)

Before a VM/370 file can be spooled to an IBM 3270 Information Display System printer, an RPT line driver task must be started, either automatically during system start-up or by the RSCS operator. The START command for RPT, and the variables to be specified are:



where:

- linkid** is the one-to-eight-character name of the 3270 printer to be activated or modified.
- TYPE DMTRPT** indicates that the DMTRPT line driver is to be used.
- LINE vaddr** designates the virtual device address (vaddr) of the line port to be used by the link.
- Parm** indicates that START command parameters follow this keyword. A combination of parameters can be given in any order. Note that DA-APL, DA-TEXT, AT-APL, and AT-TEXT are mutually exclusive. Any parameters not specified will assume the default value indicated below.
- DA-APL** specifies that the printer is equipped with the Data Analysis-APL feature and that all files containing internally represented EBCDIC special APL characters are to be translated to the appropriate two-byte I/O interface codes. Specifying either PRT=TEXT or PRT=NOTR on a CP TAG command will override the DA-APL keyword specified on the START command for all files controlled by that TAG command. All other files will default to the APL translation.
- DA-TEXT** specifies that the printer is equipped with the Data Analysis-APL feature and that all files containing internally represented EBCDIC special Text characters are to be translated to the appropriate two-byte I/O interface codes. Specifying either PRT=APL or PRT=NOTR on a CP TAG command will override the DA-TEXT keyword specified on the START command for all files controlled by that TAG command. All other files will default to the Text translation.
- AT-APL** specifies that the printer is equipped with the APL/Text feature and that all files containing internally represented EBCDIC special APL characters are to be translated to the appropriate two-byte I/O interface codes. Specifying either PRT=TEXT or PRT=NOTR on a CP TAG command will override the AT-APL keyword specified on the START command for all files controlled by that TAG command. All other files will default to the APL translation.
- AT-TEXT** specifies that the printer is equipped with the APL/Text feature and that all files containing internally represented EBCDIC special Text characters are to be translated to the appropriate two-byte I/O interface codes. Specifying either PRT=APL or PRT=NOTR on a CP TAG command will override the AT-TEXT keyword specified on the START command for all files controlled by that TAG command. All other files will default to the Text translation.

Note: If neither DA-APL, DA-TEXT, AT-APL, or AT-TEXT is specified, the normal one-byte EBCDIC translation is performed.

- Bnnnn is the buffer size in the 3271, 3272, 3274, or 3276 control unit. The following buffer sizes are valid: 480, 960, 1920, 2560, 3440, and 3564. The correct buffer size has to be specified on the START command to match the buffer size on the control unit being used. If this operand is omitted, the buffer size defaults to 1920.
- Pnnn specifies the number of print positions available on the 3270 printer platen. The value may be either 120, 126, or 132. If this parameter is omitted, the number of print positions defaults to 132.
- Lnn specifies the number of lines per page on the type of form inserted in the 3270 printer. The value may be from 0 to 99. A value of 0 indicates that no page ejects will be done by the line driver. If this parameter is omitted, the length of a page defaults to 66.
- VFC specifies that the printer has the vertical forms control feature. When the VFC operand is specified, the page length must be set manually on the printer. If the VFC operand is omitted, the default is no vertical forms control, and vertical spacing is achieved through multiple New Line operations.
- NOSEP specifies that there will be no header and separation page between files. If this operand is omitted, the default is to print a header and separation page.
- NOCOMP specifies that the line driver will not perform blank compression. If this operand is omitted, the default is to compress occurrences of five or more blanks.

Note: For a general description of the START command, refer to "APPENDIX A: RSCS COMMANDS".

#### PRINTER OPERATIONAL CHARACTERISTICS

The paper in the printer should be positioned one line below the perforation in the continuous form paper to initially set the top of a page. The DMTRPT line driver assumes that the paper is in position to be printed on the very first line of the page. Alignment should be done with the Power ON/OFF switch in the OFF position or with the HOLD PRINT switch depressed to prevent the possibility that printing might begin while the paper is being moved.

When a file is ready to be printed, the following will take place:

1. The header will print, beginning on the top line.
2. Spacing will be performed to position the printer at the top of the next page.
3. The contents of the file will be printed.
4. At the end of the file, the printer will skip to the top of the next page.

The Vertical Forms Control feature (VFC) allows the user to manually set the forms length on printers started with the VFC parameter. DMTRPT will then issue a Forms Feed to skip to the top of the next page. It is the user's responsibility to align the vertical form control with the top of a page when changing forms or at initial setup, and to ensure the the Lnn PARM operand matches the VFC setting. Refer to the appropriate Operator's Guide (see "Related Publications" in the Preface) for instructions on how to set the VFC control for a particular printer.

If the Power ON/OFF switch on the printer is turned OFF while printing is taking place, no error condition is sent to VM/370, therefore its occurrence cannot be detected by the DMTRPT line driver. When the switch is put back on, only a normal device-end condition will be generated. DMTRPT will send the next buffer to be printed, and several lines of data and line position may be lost.

If for any reason the cover on the printer (Models 3284, 3286, and 3288 only) is raised with the switch turned ON, an intervention required condition will be generated. DMTRPT will detect this condition and wait for the cover to lowered. When the cover is back in proper position, DMTRPT will resend the entire buffer, but line position may be lost and some lines may be duplicated. If the cover is raised more than twice on the same buffer, the file will be flushed and line position may be lost. The end of one buffer and the start of the next can sometimes be detected by the slight pause between lines.

Based on these considerations, the following procedures can be used to flush a file on the 3270 printer.

#### FLUSHING FILES ON A 3270 PRINTER

1. While the printer switch is on, and the printer is printing, raise and lower the printer cover two times.
2. Raise and lower the cover once more, and observe the line that prints.
3. Either the header line from the next file will print, or if no more files are queued all printing will cease.
4. In either case raise the cover once more. While the cover is in the up

position, adjust the paper to a new page to recover printing synchronization for the next file.

5. Lower the cover and printing will resume at the beginning of the next file. If the header line has already printed, it will be reprinted and then the contents of the file will print.

Note: This procedure assumes that the cover was never raised on the present print buffer. The only difference if it was raised, will be fewer number of cover raises before the file is flushed. If printing is being done on a remote printer, wait a few seconds before lowering the print cover.

#### FLUSHING SHORT FILES ON A 3270 PRINTER

1. While printing is going on, turn the printer switch off and then on.
2. Observe the line that prints.
3. If it is not the beginning of a header line, the current file is not through flushing. Go to step 1.
4. If it is the beginning of a header line, flushing is complete and a new file is about to print. Go to step 6.
5. If no printing occurs, the flushing is complete and there are no other files waiting to be printed. Go to step 6.
6. In either case 4 or 5 raise the printer cover. While the cover is in the up position, adjust the paper to a new page to recover printing synchronization for the next file.
7. Lower the cover and printing will resume at the beginning of the next file. If the header line was already printed, it will be reprinted and then the contents of the file will print.

Note: If printing is being done on a remote printer, wait a few seconds between powering the printer off and on.

#### STARTING A VMB LINE DRIVER (DMTVMB)

Before communication with a remote VM/370 system can begin via BSC lines, the VMB line driver task for the associated link must be started. This may be done automatically during system start-up or manually by the RSCS operator. The START command for VMB and the variables to be specified are:



STArt	linkid [TYPE DMTVMB] [LINE vaddr] [Parm tpass [rpass]]
-------	--

linkid is the location identifier of the remote system.

DMTVMB is the name of the line driver to be used. This specification overrides the driver name that may have been previously defined for the link. If no driver was previously defined for the link, this field must be specified.

vaddr is the virtual address of the communications line port. (vaddr is used only if the line port is to be other than one previously specified in the link definition.)

Parm is a keyword signifying that one or more parameters follow.

tpass is an optional operand, one to eight characters long, that specifies a password to be transmitted during the sign-on sequence.

rpass is an optional operand, one to eight characters long, that specifies a password that must be received from the remote system before file transfer is initiated. If the transmit password (tpass) is specified and rpass is not, a default rpass value the same as tpass results.

For a general description of the START command, refer to "APPENDIX A: RSCS Commands".

STARTING A VMC LINE DRIVER (DMTVMC)

To establish communication with a remote VM/370 system linked through a channel-to-channel adapter, a VMC line driver task must be started. This may be done automatically during system start-up or manually by the RSCS operator. The START command for VMC and the variables to be specified are:

STArt	linkid [TYPE DMTVMC] [LINE vaddr]
-------	-----------------------------------

linkid is the location identifier of the remote node.

DMTVMC is the name of the line driver to be used. This specification overrides the driver name that may have been previously defined for the link. If no driver was previously defined for the link, this field must be specified.

vaddr is the virtual address of the communications line port. (vaddr is used only if the line port is to be other than one previously specified in the link definition.)

For a general description of the START command, refer to "Appendix A: RSCS

Commands".

## STARTING AN NJI LINE DRIVER (DMTNJI)

Communication with systems other than VM/370 is typically managed by the NJI line driver. The NJI line driver task for the desired link may be started automatically during system start-up or manually by the RSCS operator. The START command for NJI and the variables to be specified are:

START	linkid [TYPE DMTNJI] [LINE vaddr] [ Parm [ Buff=nnnn ] [ Rest=nnnn ] [ RLPass=password ] [ RNPass=password ] [ TLPass=password ] [ TNPass=password ] ]
Any combination of the parameters following the Parm keyword may be entered, separated from each other by blanks.	

**linkid** is the location identifier of the remote station.

**DMTNJI** is the name of the line driver to be used. This specification overrides the driver name which may have been previously defined for the link. If no driver was previously defined for the link, this field must be specified.

**vaddr** is the virtual address of the communications line port. (vaddr is used only if the line port is to be other than one previously specified in a link definition.)

**Parm** is a keyword signifying that one or more parameters follow.

### Buff=nnnn

specifies the maximum size record that this link can accept from the communications adapter. This may range from 300 to 3976 bytes, with a default of 400.

### Rest=nnnn

specifies the partial nodal resistance of this NJI connection. This number may range from 2 to 2000, with a default of 200. See System Programmer's Library: Network Job Entry Facility for JES2, SC23-0003.

### RLPass=password

specifies the line password required from the remote system before the transmission of data is initiated. The password may range from one to

eight characters.<sup>4</sup> If the correct password is not received at line connection time, RSCS deactivates the link and issues error message DMTNCM914E.

RNPass=password

specifies the node password required from the remote system before the transmission of data is initiated. The password may range from one to eight characters. If the correct password is not received at line connection time, RSCS deactivates the link and issues error message DMTNCM914E.

TLPass=password

specifies the line password to be transmitted to the remote system at line connection time. The password may range from one to eight characters.

TNPass=password

specifies the node password to be transmitted to the remote system at line connection time. The password may range from one to eight characters.

For a general description of the START command, refer to "Appendix A: RSCS Commands".

#### RESTARTING A LINE DRIVER

Normally a line driver will need to be restarted only if it has been deactivated by a DRAIN or FORCE command. Under these conditions issuing the START command for the line driver in question reactivates it.

If a problem occurs in a link's telecommunication facility, the procedure required depends on the line driver type.

The three RSCS line drivers using the MULTI-LEAVING protocol (DMTSML, DMTPOW, and DMTNJI) provide a restart facility in the event of 40 consecutive three-second timeouts on the telecommunications adapter. When this condition occurs, RSCS deactivates the link and causes the execution of an exec file with the filename identical to the linkid of the link being deactivated. This exec (user generated) would normally contain a START command for the link just deactivated, as well as any other valid RSCS commands. For example, an exec file to automatically restart the NEWYORK link could be this one-line file, NEWYORK RSCS:

```
START NEWYORK
```

Issuing a DRAIN or FORCE command to a MULTI-LEAVING link does not cause the link's automatic restart execution file to be executed.

The VMB and VMC line drivers do not deactivate when transmission line problems occur. If a line fails, RSCS issues a LINK DISCONNECTED or LINK DISABLED message, depending on the problem. The line driver then temporarily suspends

transmission and tries to reinitialize and reenable the line automatically.

If the problem is momentary, RSCS issues the READY FOR CONNECTION TO LINK and LINK DATASET READY messages as the line is reestablished. Transmission of files then resumes.

If the problem persists, the operator should check for any obvious problem in the data set or modem in the case of a leased line. For a dial-up line the operator should redial to reestablish the line connection. Transmission of files then resumes at the point of interruption.

The NPT and RPT line drivers deactivate when a severe line interruption occurs. In this case the line problem must be resolved. After reestablishing a functioning transmission line, the RSCS operator must issue a START command to the line drivers to reestablish the link.

### DYNAMIC RECONFIGURATION

Commands enable the RSCS operator to dynamically alter the RSCS configuration. Entries in the link and routing tables can be added, deleted, or modified while the system is running. This enables the RSCS operator to respond immediately to changes in the operating environment of his node. If the normal transmission path for a link becomes unavailable, the RSCS operator can alter the routing table to send files via another link that provides a path to the destination. If it becomes necessary to process a particular class of files first, the RSCS operator can redefine a link in the link table to access only the specified class of file for transmission.

### CHANGING THE ROUTING TABLE

To change an entry in the routing table, issue a ROUTE command from the RSCS operator's console. Specify the location ID for the remote location whose routing is to be modified or redefined. Also specify "TO linkid" defining the link to process the files directed to the remote location. RSCS issues a message in response to the ROUTE command, reporting the result. Files awaiting transmission are automatically reenqueued following execution of a ROUTE command. For a detailed description of the ROUTE command, see "Appendix A: RSCS Commands".

Changes to the routing table remain in effect until the next RSCS IPL. Permanent changes can only be made by altering the RSCS directory.

## CHANGING THE LINK TABLE

To change an entry in the link table, issue a DEFINE or DELETE command from the RSCS operator's console. Before altering or deleting an entry for an active link, first make the link inactive by issuing a DRAIN command to that link.

The DEFINE command creates temporary new link entries, redefines an entry that was deleted, or alters an existing entry in the link table. The DELETE command makes a link temporarily unavailable to RSCS.

RSCS issues messages in response to both the DEFINE and DELETE commands. For a detailed description of the DEFINE and DELETE commands, see "Appendix A: RSCS Commands".

Changes to the link table remain in effect until the next RSCS IPL. Permanent changes can only be made by altering the RSCS directory.

## OPERATING DIFFERENCES FROM EARLIER PROGRAMS

RSCS Networking can coexist on the same processor with the RSCS component of VM/370 provided that each has its own system disk.

Command improvements were made in the VNET PRPQ which have been carried forward in RSCS Networking. These create minor differences for the operator accustomed to running the RSCS component of VM/370:

- The LOG and NOLOG options on the CMD command in the RSCS component of VM/370 have been moved to the TRACE command in RSCS Networking, where they more logically belong.
- The operands ALL, ERROR, and END on the TRACE command have been replaced by the operands SUM and NOSUM. The ALL and END operands are equivalent to the SUM and NOSUM operands, respectively. The ERROR operand has been dropped because the information it provided is contained in that provided by the ALL operand.
- The STAT option on the QUERY "linkid" operand has been dropped. This information is provided by the QUERY "locid" operand. In the RSCS component of VM/370, the concept of "linkid" and "locid" are the same. In RSCS Networking, "locid" refers to the identifier of the final destination to which data is sent, while "linkid" refers to the identification of the next destination to which the data is sent.
- The syntax of the following command has been changed in RSCS Networking from that of the VNET PRPQ:

|        QUERY FILE spoolid VNET

|        has been changed to

|        QUERY FILE spoolid RSCS

Part 4 is a guide for the VM/370 user who needs to use the network. Part 4 covers:

- The commands needed to use RSCS for file transmission.
- Examples of transmitting files via RSCS.
- Messages a VM/370 user may expect from RSCS.
- The commands needed to use RSCS for special message transmission.

## User Commands

As a VM/370 user, you request file transmission services by using the VM/370 CP SPOOL and TAG commands and then passing one or more files to RSCS. You may also use the VM/370 CP SMSG command to send special messages via RSCS to remote virtual machines or to request status information about RSCS or about remote VM/370 systems.

### VM/370 SPOOL COMMAND

All files to be transmitted via RSCS must be spooled to the RSCS virtual machine. The basic form of the CP SPOOL command you use with RSCS is:

SPOOL	< <table border="0" style="display: inline-table; vertical-align: middle;"><tr><td style="text-align: center;">Printer PRT</td></tr><tr><td style="text-align: center;">PUnch PCH</td></tr><tr><td style="text-align: center;">CONsole vaddr</td></tr></table> >	Printer PRT	PUnch PCH	CONsole vaddr	[TO] rscsid [Class c] [COpy=[*]nnn] [FOrm=cccccccc] [CHars=name] [FLash=name nnn] [MOdify=name] [FCB=name]
Printer PRT					
PUnch PCH					
CONsole vaddr					

Printer denotes all printer class device output.  
PRT

PUnch denotes all punch class device output.  
PCH

CONsole denotes all console class device output.

vaddr denotes all output from the specified virtual device address.

rscsid is the identifier of the RSCS virtual machine.

Class c specifies the spool class of the device; c is a one-character alphanumeric field whose value can be A through Z, or 0 through 9.

COpy=[\*]nnn

specifies the number of copies to be made of the file. The maximum value of nnn (number of copies) is 255 when you are using a VM/SP host system, and 99 for all others (leading zeros are optional). The optional asterisk (\*) can be specified on print files to be spooled to a 3800 printer to perform the file duplication



internally one page at a time. This option prevents retransmission of the print file to the virtual output device every time a copy is desired.

FLash=name nnn

signifies that a forms overlay contained in the 3800 printer be superimposed onto certain pages of the output. The name, one to four characters, identifies the forms overlay to be used in the projection. The number (nnn) specifies that the first nnn pages of output are to be superimposed. Its maximum value is 255 when you are using a VM/SP host system, and 99 with any other. The default, 0, indicates that no superimposing is desired.

MOdify=name

assigns a copy modification module to be used when printing a file on the 3800. This function makes it possible to alter text either by preventing printing of certain information or by adding labels to output. The name must be one to four characters. If the name is omitted, the file prints normally without modification.

CHars=name specifies the character arrangement table used used when printing a file. The name must be from one to four characters. It determines which writable character generation module (WCGM) is used for printing on the 3800.

FCB=name controls the vertical spacing of output on a page. The name must be from one to four characters.

FORM=cccccccc

specifies the one- to eight-character form name or I.D. for the file.

You can nullify any previous or existing settings of the CHARS, MODIFY, or FCB options by specifying NULL in the name field of these operands. The FLASH setting can be nullified by specifying a flash count of zero. In this case, the FLash name is meaningless.

In each of these cases, CP changes the CHARS, MODIFY, FCB, or FLASH names to blanks.

In the case of FORM, there is always a default name present even if you do not explicitly specify one. When spooling a file to RSCS for transmission to a remote system (for subsequent printing), the FORM name can be nullified by specifying NULL in the name field. In this case, CP keeps the name as "NULL" rather than changing it to blanks, although RSCS recognizes this special form name and causes the default name at the remote system to be used for the actual printing of the file.

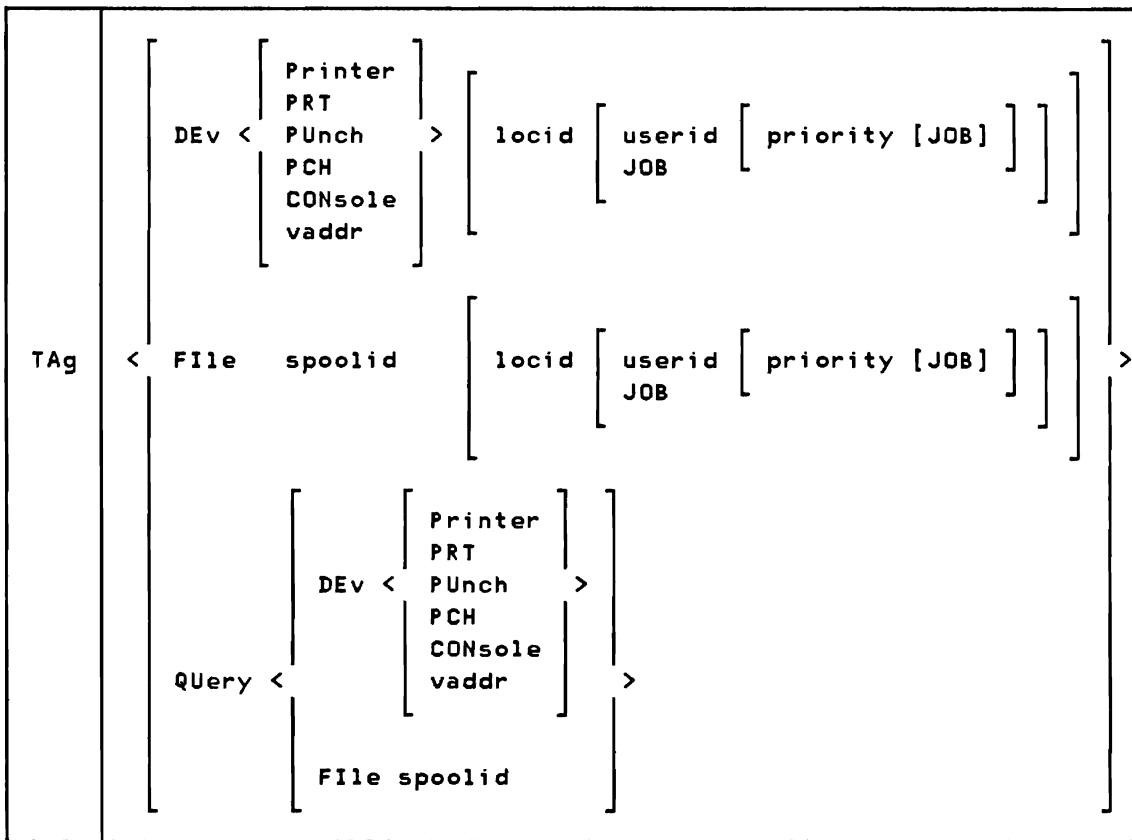
Note: You can specify additional options; see the VM/370: Command Language Guide for General Users for details.

VM/370 TAG COMMAND

You use the VM/370 CP TAG command to enter or query data in the file tag. The command has three functional formats; you can:

- Prespecify the tag for all output files from a particular category of output devices or from a single output device
- Replace the tag for an existing closed spool file
- Display the tag for a closed output file.

The TAG command syntax is:



The first operand specifies the function to be performed; the other operands provide additional details. The optional locid, userid, priority, and JOB operands for the TAG DEV and TAG FILE functions make up the tag data. The entire command line to the right of the second operand (beginning with the leftmost non-blank character to a maximum of 136 characters) becomes the new tag for the specified device, device class, or spool file. If no tag data is specified, the tag is set to blanks.

**DEv** allows you to initialize, replace, or delete the tag data associated with an output device. All spool files generated by the device specified in the second operand will contain the tag data

specified in the following operands. If there are no following operands, the tag is set to blanks.

- File** allows you to replace the entire tag of any spool file queued on your virtual reader. The spool file is identified by the second operand and the new tag is specified in the following operands. This allows you to correct the tag of a file returned to your reader by RSCS because of an invalid address in the tag. If there are no following operands, the tag is set to blanks.
- QQuery DEv** allows you to display the current setting of the tag associated with the output device or device class specified in the third operand.
- QQuery File** allows you to display the tag of any closed spool file. The particular file is specified by the third operand. Except for VM/SP, only files queued on your virtual reader can be displayed
- Printer** denotes all printer class devices.  
PRT
- Punch** denotes all punch class devices.  
PCH
- CONsole** denotes all console class devices.
- vaddr** is the virtual device address of a virtual unit record device or console.
- spoolid** is the identification number assigned to a spool file by the VM/370 spooling facility. The numbers range from 1 to 9900.
- locid** identifies the destination location for output generated by the virtual device.
- userid** identifies the remote virtual machine, work station, or 3270 printer at the specified location that is to receive the output generated by this device. If userid is not applicable (as in NPT, POW, RPT, and SML support), or if the output is destined for the system unit record device at the specified location and priority is to be specified, you must specify a dummy userid, such as "SYSTEM".
- priority** is the requested transmission priority (a decimal number 0-99, defaulting to 50); a lower numerical value signifies a higher priority.
- JOB** indicates that the output of this device is to be transmitted as a job.

TAG QUERY COMMAND RESPONSES

```
TAG QUERY DEV < [ PRINTER ]  
                  [ PRT ]  
                  [ PUNCH ] >  
                  [ PCH ]  
                  [ CONSOLE ]  
                  [ vaddr ]
```

Displays the tag associated with each device of the specified class as:

```
  [ PRT ]  
< [ PUN ] > vaddr TAG: repeated for  
  [ CONS ] each device in  
  [ vaddr ] the specified  
tagtext..... class
```

TAG QUERY DEV vaddr

Displays the tag associated with the specified device as:

```
  [ PRT ]  
< [ PUN ] > vaddr TAG:  
  [ CONS ]  
tagtext.....  
      if a tag exists
```

TAG NOT SET

if the TAG command was never issued to that device.

TAG QUERY FILE spoolid

Displays the tag of the specified file as:

```
tagtext.....  
      if a tag exists
```

(TAG BLANK)

if the tag is all blanks

(TAG MISSING)

if the file did not contain a tag because it was either an input file from the real card reader or was an output file generated before VM/370 Release 2 PLC 11.

TAG DEV COMMAND FOR 3270 PRINTER FILES

When a file is to be printed on an IBM 3270 Information Display System printer via RSCS, the syntax of the TAG command is:

TAg	DEv vaddr locid [userid [priority [PRT=option]]]
-----	--

The PRT keyword can be used to override any specification of DA-APL, DA-TEXT, AT-APL, or AT-TEXT on the RSCS START command for the DMTRPT line driver. If no APL- or Text-related PARM operands were specified when the line driver was started, the PRT keyword is ignored. If the PRT keyword is not specified, the default translation specified on the RSCS START command will be used.

The "option" operand of the PRT keyword can be one of the following:

- APL specifies that internally represented EBCDIC special APL characters will be translated to the appropriate two-byte I/O interface codes.
- TEXT specifies that internally represented EBCDIC special Text characters will be translated to the appropriate two-byte I/O interface codes.
- NOTR specifies that internally represented EBCDIC special APL or Text characters will not be translated to the two-byte I/O interface codes.

TAG DEV COMMAND FOR OUTPUT FILES GOING TO NON-VM/370 NJI/NJE SYSTEMS

Additional parameters may be placed on the VM/370 TAG command when interfacing to a non-VM/370 NJI/NJE system for the transmission of output (not jobs).

TAg	DEv vaddr locid
	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border-left: 1px solid black; border-right: 1px solid black; padding: 0 10px;"> <p style="text-align: center;">userid</p> </div> <div style="border-left: 1px solid black; border-right: 1px solid black; padding: 0 10px;"> <p style="text-align: center;">priority</p> </div> <div style="border-left: 1px solid black; border-right: 1px solid black; padding: 0 10px;"> <pre> FCB[C]=bufname FORMS[F]=formsname UCS[T]=charset INDEX[I]=offset EXTWTR[W]=writername SYSOUT=outclass DEST=remoteid BURST[B]={Y N} OPTCD=J CHARS[X]=tablename COPYG[G]=nnn FLASH[O]=overlay FLASHC[Q]=nnn MODIFY[Y]=modify MODTRC[M]=n                     </pre> </div> </div>

Note:

Before specifying any of the parameters in this last group be sure the subsystem at the output location supports these features. You may specify any combination of these parameters, separated by blanks, up to a total tag length of 136 characters. The accepted abbreviation for each keyword is shown enclosed in [ ].

The basic parameters are as defined in the preceding description; the additional parameters are:

- FCB= indicates the forms control buffer for printing the output of this device. This specification can be from 1 to 8 characters.
- FORMS= indicates the special forms for printing the output of this device. This specification can be from 1 to 8 characters.
- UCS= indicates the universal character set for printing the output of

this device. This specification can be from 1 to 8 characters.

INDEX= indicates the data set indexing position offset for a 3211 printer. This value may range from 1 to 31.

EXTWTR= indicates the external writer to process the output of this device when it is printed or punched at a remote location.

SYSOUT= indicates the output class at the receiving node. This specification is one character and represents a valid output class at the receiving node. If not specified, the default class for all output is A.

DEST= indicates the name of a remote workstation at the receiving node.

You can specify the following parameters if the receiving subsystem is to print the data on an IBM 3800 printer:

BURST= indicates whether the output from this device should be threaded into the Burster-Trimmed-Stacker on a 3800 printer. This parameter must be either Y or N.

OPTCD=J indicates that each line of data produced by this device contains a table reference character for a 3800 printer.

CHARS= indicates the names of character arrangement tables, which define the characters for printing on a 3800 printer. This specification can be from 1 to 8 characters; you may specify it up to four times (once for each table).

COPYG= indicates the copy grouping for the output of this device when printed on a 3800 printer. Each group can range from 1 to 255. You may specify it up to eight times, indicating eight copy groups.

FLASH= indicates the name of the forms overlay frame to be used when printing the output of this device on a 3800 printer. This specification can be from 1 to 8 characters.

FLASHC= indicates the number of the total copies of the output of this device on which the forms overlay is to be printed on a 3800 printer. This parameter can range from 1 to 255.

MODIFY= indicates the copy modification module to be used in modifying the data produced by this device when printed on a 3800 printer. This specification can be from 1 to 8 characters.

MODTRC= indicates the table reference character for selecting the character arrangement table to be used when printing the output of this device on a 3800 printer. This parameter can be 0, 1, 2, or 3.

RSCS ignores the remainder of the 136-byte tag.

Note: Certain of the above parameters are equivalent to options on the CP SPOOL command and can be specified on either the TAG or SPOOL commands for files that are destined for non-VM/370 NJI/NJE systems. These are:

TAG command	SPOOL command
CHARS=	CHARS
FLASH/FLASHC=	FLASH
MODIFY=	MODIFY
FCB=	FCB
COPYG=	COPY [*]nnn
FORMS=	FORM

If any of these parameters are specified on both the TAG and SPOOL commands, the TAG command operands will override the corresponding SPOOL command operands.

Also, it should be noted that the support provided in VM/370 for the specification of character arrangement table names (CHARS) and copy groups (COPY [\*]nnn) is different than that provided in an NJI/NJE system such as MVS. VM/370 provides for one CHARS name and one copy group specification, while MVS provides for four CHARS names and eight copy groups. If multiple specifications of either of these options are required, then they must be specified on the CP TAG rather than the CP SPOOL command.

#### VM/370 MSG COMMAND

A virtual machine user may use the CP MSG (special message) command to send messages via RSCS to remote virtual machines or to request status information about the local RSCS, a remote RSCS, or a remote VM/370 system. The text of a MSG command can be an RSCS MSG command, an RSCS CMD command, or command text for local RSCS status information; the text of that CMD command can be an RSCS QUERY command or an RSCS CPQUERY command.

The syntax of MSG used with RSCS is:

MSG	rscsid	<	[	[	< MSG >	locidm	userid	message text	>	]	]
					CMD	locidc	command text				
					command text						



**rscsid** is the identifier of the RSCS virtual machine.

**MSG** signifies that the following operands are RSCS MSG command  
**M** operands.

**locidm** is the one- to eight-character location identifier of the location to receive the specified message text line.

**userid** is the one- to eight-character identifier of a user at the specified location, or the identifier "RSCS" for a remote RSCS operator's console. If the message is to be sent to a remote batch terminal, the userid field is ignored, but a dummy entry must be included to avoid deletion of the first word of the message.

**message text** is a string of alphanumeric characters comprising the message to be presented to the specified location and user. The maximum length of this string is 120 characters.

**CMD** signifies that the following operands are RSCS CMD command operands.

**locidc** is the one- to eight- character location identifier of the remote system to receive and execute the command specified in the command text.

**command text** is any command up to 120 characters acceptable to the system which is to receive the command. Any text greater than 120 characters will be truncated. The RSCS commands QUERY and CPQUERY are acceptable as command text. For details on these commands, refer to "Appendix A: RSCS Commands".

## User Examples

Following are several examples of RSCS usage for file transmission. The examples presented here provide samples of the types of facilities available. However, they do not show complete examples of using RSCS. If you use a mixed environment of NJE/NJI subsystems, refer, for guidance, to the related publications listed in the Preface.

### SIMPLE SPOOLING AND TAGGING

To specify that all subsequent printer output is to be transmitted to Houston, you would enter the commands:

```
tag dev printer houston
spool printer to net
```

where HOUSTON is the location identifier of the receiving station and NET is the userid of the originating RSCS virtual machine. You may enter the commands in either order.

If a particular output device is to have its output transmitted to Palo Alto with a priority of 10 and no userid specified, you would enter:

```
tag dev 00d paloalto system 10
spool 00d to net
```

where 00D is the virtual output device address, PALOALTO is the location of the receiving station, SYSTEM is a dummy userid entry, 10 is the priority value, and NET is the userid of the originating RSCS virtual machine.

### SPECIFYING DESTINATION OF VM/370 VIRTUAL OUTPUT

Assume you are a CMS user on a VM/370 system known as CHICAGO and you want to print your PROFILE EXEC file on the BOSTON system printer. Assume the network configuration shown in Figure 9 in Part 2 of this manual.

Assume that NET is the userid of the RSCS virtual machine in the CHICAGO system and that the CHICAGO to BOSTON link is temporarily inactive. The following illustrates your console:

```
spool printer to net
R;
```

```
tag dev printer boston system
R;

pr profile exec
PRT FILE 0150 TO NET      COPY 001 NOHOLD
R;
```

```
12:59:26
MSG FROM NET : SENT FILE 0150 (0150) ON LINK
                TORONTO TO BOSTON SYSTEM
```

```
12:59:36
MSG FROM NET : FROM TORONTO: SENT FILE 0386 (0150)
                ON LINK BOSTON TO BOSTON SYSTEM
```

Note that the spool ID assigned at the originating system by VM/370 is returned in each network response message as the file proceeds through the network. Also, the path the file took to its final destination was determined by RSCS. You specified only the final destination.

#### USING AN EXEC FILE TO SIMPLIFY YOUR ENTRIES

EXEC files are a very powerful way to handle common tasks like sending files via RSCS to other users in a network. You can build EXECs that include operations such as:

- Interacting with the user to acquire needed parameters
- Validity checking of the parameters passed to it
- Inserting values for variables in commonly used code and then executing that code.

The primary advantage of EXECs is that they simplify the user's role; they tailor the user's input to just what is needed, and relieve the user from making lengthy entries at the terminal. They also free the novice user from needing to know details of a program's implementation. Writing EXEC routines is described in the VM/370 CMS User's Guide, GC20-1819.

The following three examples show EXEC routines that send files to VM/370 users on remote systems. The first EXEC is a primitive example that shows basic principles only. The second example is a more complete EXEC for sending a file to a remote VM/370 user whose nickname is kept in a distribution list file. The third example illustrates an EXEC for sending a file to all remote VM/370 users on a given distribution list.

The second and third examples use the CMS functions CONWAIT and DESBUF to clear the console stack before proceeding. The second and third examples also include their own documentation, which a user can call forth by entering the EXEC name and a single question mark as the only operand. These examples conclude with the punch spooled off and its tag set to null; you may wish to

note the spool and tag settings for the punch before you invoke the EXEC and then restore these settings after conclusion of the EXEC.

#### A Simple EXEC for Sending a File to a Remote VM/370 User

The following EXEC, called SEND, uses its operands to perform the basic SPOOL, TAG, and DISK DUMP operations to pass a file to the local RSCS virtual machine (named NET).

```
&LOCID = &1
&USERID = &2
&FNAME = &3
&FTYPE = &4
&FMODE = &5
CP SPOOL 00D TO NET
CP TAG DEV 00D &LOCID &USERID
DISK DUMP &FNAME &FTYPE &FMODE
CP SPOOL 00D OFF
CP TAG DEV 00D
```

To send the file PLANXYZ SCRIPT to VM/370 CMS user SMITH on the BOSTON system, you would invoke the SEND EXEC as:

```
SEND BOSTON SMITH PLANXYZ SCRIPT
```

The EXEC would execute as:

```
SPOOL 00D TO NET
TAG   DEV 00D BOSTON SMITH
DISK  DUMP PLANXYZ SCRIPT
SPOOL 00D OFF
TAG   DEV 00D
```

The messages received from RSCS would be similar to those in the preceding example. In BOSTON, user SMITH would use the DISK LOAD command to move the file from his virtual reader to his A-disk.

#### An EXEC for Sending a File to a Remote VM/370 User by Using a Nickname

The SENDUSER EXEC uses the CMS editor to search through the distribution list file DISTRIB LIST for the nickname specified as the first operand. (If the DISTRIB LIST file is not found or the nickname is not found on that file, the EXEC issues an appropriate error message.)

The distribution list matches the nickname with the formal location ID and user ID needed for RSCS to perform the transmission. This EXEC thus relieves you from remembering this data for each person to whom you are likely to send a file. You can identify each person by a nickname meaningful to you; each

nickname must be unique because the EXEC finds the first occurrence of that name in the DISTRIB LIST file and initiates transmission.

If you use a nickname that is an initial subset of another nickname, be sure to place the shorter name earlier in the DISTRIB LIST file. For example, place the nickname JOE ahead of the nickname JOEY; if the nickname JOE followed the nickname JOEY, the search for JOE would be satisfied when the EDIT FIND command found the first three characters in the nickname JOEY, and the file would be sent to JOEY, not JOE.

An example invocation of this EXEC is:

```
SENDUSER DICK PLANXYZ SCRIPT
```

The SENDUSER EXEC code is:

```
&CONTROL OFF
&IF &INDEX EQ 1 &IF &1 EQ ? &GOTO -TELL
&IF &INDEX LT 3 &GOTO -TELL
&IF &INDEX GT 4 &GOTO -TELL
&ERROR &GOTO -NOLIST
STATE DISTRIB LIST
&ERROR &GOTO -NOFILE
STATE &2 &3 &4
&ERROR &EXIT 9
CONWAIT
&IF &READFLAG EQ STACK DESBUF
&STACK HT
&STACK FIND &1
&STACK STACK 1
&STACK QUIT
EDIT DISTRIB LIST
-READ &IF &READFLAG EQ CONSOLE &GOTO -NOFIND
&READ VARS &NAME &LOCID &USERID
&STACK RT
&ERROR &GOTO -RESET
CP SPOOL PUNCH TO NET
CP TAG DEV PUNCH &LOCID &USERID
DISK DUMP &2 &3 &4
-RESET CP SPOOL PUNCH OFF
CP TAG DEV PUNCH
&EXIT
-NOFIND &STACK RT
&TYPE NAME &1 NOT FOUND IN FILE 'DISTRIB LIST'
&EXIT 99
-NOLIST &TYPE FILE 'DISTRIB LIST' NOT FOUND
&EXIT 999
-NOFILE &TYPE FILE &2 &3 &4 NOT FOUND
&EXIT 9999
-TELL &TYPE CORRECT FORM IS: &0 NAME FILENAME FILETYPE FILEMODE
&SPACE
&BEGTYPE
WHERE: NAME IS A NICKNAME (UP TO 8 CHARACTERS) USED TO QUICKLY
IDENTIFY THE USER TO WHOM YOU WISH TO SEND THE FILE
```

SENDUSER EXEC code (continued)

DESCRIBED BY THE OTHER OPERANDS. FILEMODE IS OPTIONAL.  
NAME IS USED TO FIND THE LOCATION IDENTIFIER AND USERID  
FROM THE USER FILE 'DISTRIB LIST', WHICH IS A LIST OF  
NICKNAMES AND THEIR CORRESPONDING FORMAL LOCATION AND  
USER IDENTIFIERS, SUCH AS:

```
JOHN      BOSTON    BJSMTIH
DICK      NEWYORK  DEPT24RW
ETC.
```

&END

### An EXEC for Sending a File to a List of Remote VM/370 Users

The SENDLIST EXEC sends a file to all the remote VM/370 users listed in a distribution list formatted like the one used by the preceding EXEC. You could maintain various distribution lists for different purposes. For example, if you send a report to a common set of recipients on a weekly basis, you could maintain a file called WEEKLY LIST and use it to send your report by invoking this EXEC, for example:

```
SENDLIST WEEKLY MYREPORT SCRIPT
```

An example invocation of this EXEC is:

The SENDLIST EXEC code is:

```
&CONTROL OFF
&IF &INDEX EQ 1 &IF &1 EQ ? &GOTO -TELL
&IF &INDEX LT 3 &GOTO -TELL
&IF &INDEX GT 4 &GOTO -TELL
&ERROR &GOTO -NOLIST
STATE &1 LIST
&ERROR &GOTO -NOFILE
STATE &2 &3 &4
&ERROR &EXIT 9
CONWAIT
&IF &READFLAG EQ STACK DESBUF
&STACK HT
&STACK I &LITERAL &BEGSTACK
&STACK BOTTOM
&STACK I &LITERAL &END
&STACK FILE SBX EXEC A3
EDIT &1 LIST
&STACK RT
EXEC SBX
CP SPOOL PUNCH TO NET
-READ &IF &READFLAG EQ CONSOLE &GOTO -END
&READ VARS &NAME &LOCID &USERID
CP TAG DEV PUNCH &LOCID &USERID
```

SENDLIST EXEC code (continued)

```
DISK DUMP &2 &3 &4
&GOTO -READ
-END CP SPOOL PUNCH OFF
CP TAG DEV PUNCH
&EXIT
-NOLIST &TYPE DISTRIB. LIST FILE &1 LIST NOT FOUND
&EXIT 999
-NOFILE &TYPE FILE &2 &3 &4 NOT FOUND
&EXIT 9999
-TELL &TYPE CORRECT FORM IS: &0 LISTNAME FILENAME FILETYPE FILEMODE
&SPACE
&BEGTYPE
```

WHERE: LISTNAME IDENTIFIES THE DISTRIBUTION LIST YOU WISH TO USE TO TRANSMIT THE FILE DESCRIBED BY THE OTHER OPERANDS. FILEMODE IS OPTIONAL. THE FILE IDENTIFIED BY LISTNAME MUST HAVE THE FILETYPE OF 'LIST'. THE REQUIRED FORMAT OF THE DISTRIBUTION LIST FILE IS THE SAME AS THAT USED BY THE SENDUSER EXEC, WHICH IS NICKNAME, LOCATION, AND USER ID; FOR EXAMPLE:

```
JOHN      BOSTON      BJSMITH
DICK      NEWYORK    DEPT24RW
ETC.
```

&END

RSCS JOB SUBMISSION TO AN MVS JES2/NJE BATCH PROCESSOR

This example illustrates a CMS user (JONES) at location NEWYORK submitting a job to an MVS system running JES2/NJE in BUFFALO. Output returning from a batch job submitted through RSCS will be processed by the real unit record devices (printers and punches) attached to VM/370 unless overridden by the user's JCL.

User JONES wants a source deck assembled, link edited, and executed at BUFFALO and the resultant listing, object deck, and message data set returned to his virtual machine reader. The output from his program execution will be printed on the IBM 3800 Printing Subsystem at NEWYORK.

He could use the following JCL:

```
//EXAMPLE JOB 1,'JONES/926',CLASS=A
/*JOBPARM LINES=1,CARDS=100,TIME=1
/*NOTIFY NEWYORK.JONES
/*ROUTE PRINT NEWYORK.JONES
/*OUTPUT PRTA DEST=NEWYORK,COPIES=2,COPYG=2,CHARS=GT12
/*OUTPUT * FLASH=MEMO,FLASHC=1,MODIFY=INTU,FCB=FRM1
/*OUTPUT PUNB DEST=(NEWYORK.JONES)
//S EXEC PROC=ASMFCLG
//ASM.SYSPRINT DD SYSOUT=A
//ASM.SYSPUNCH DD SYSOUT=(B,,PUNB)
//ASM.SYSIN DD *
```

Batch Processor JCL (continued)

```
START    CSECT
        END
/*
//GO.SYSPRINT DD SYSOUT=(A,,PRTA)
//
```

The NOTIFY control statement causes any JES2 messages produced by the batch system to be returned by the network to JONES' terminal. The ROUTE control statement causes all printed output that is not specifically routed via the OUTPUT statement to be directed to JONES' virtual reader. The OUTPUT control statements provide specific routing for the object deck (SYSPUNCH) and program execution output (SYSPPRINT) data sets. In the case of SYSPPRINT, two copies are specified, with the copies being made internally in the 3800. The character arrangement table name specified is GT12. The first copy will be printed with a forms overlay name of MEMO. Modifications to the printed output will be made by copy modification module INTU. Finally, vertical spacing will be determined by forms control buffer FRM1. For details, the user should refer to OS/VS2 MVS JCL (GC28-0692).

The following illustrates the terminal session for the job:

```
tag dev pun buffalo job
R;
```

```
sp pun to net
R;
```

```
punch compile job (noh)
PUN FILE 8921 TO NET      COPY 001 NOHOLD
R;
```

```
16:56:47
MSG FROM NET : SENT FILE 8921 (8921) ON LINK BUFFALO
                TO BUFFALO JOB
```

```
16:58:00
MSG FROM NET : FROM BUFFALO: 16.57.55 JOB 8921 $HASP165
                EXAMPLE ENDED AT BUFFALO
```

```
PRT FILE 8923 FROM NET      COPY 001 NOHOLD
```

```
16:58:02
MSG FROM NET : FILE (8921) SPOOLED TO JONES -- ORG
                BUFFALO (SYSTEM) 04/01/80 16:57:59 E.D.T.
```

```
PUN FILE 8925 FROM NET      COPY 001 NOHOLD
```

```
16:58:05
MSG FROM NET : FILE (8921) SPOOLED TO JONES -- ORG
                BUFFALO (SYSTEM) 04/01/80 16:58:01 E.D.T.
```



## RSCS JOB SUBMISSION TO A VSE/POWER BATCH PROCESSOR

This example illustrates a CMS user at location NEWYORK submitting a job to a VSE/POWER system in BOSTON. Output returning from a batch job submitted through RSCS will be processed by the real unit record devices (printers and punches) attached to VM/370 unless overridden by the user's JCL.

The user wants a source deck assembled at Boston and the resultant listing data sets returned to New York. He wants the object deck to be punched at the local unit record device in Boston. In this example, the RSCS system at New York is labeled REMOTE 1 and the VSE/POWER system at Boston is global remote ID 2. He could use the following jobstream:

```
* $$ JOB RUNXYZ
* $$ LST REMOTE=1
* $$ PUN REMOTE=0
// JOB RUNXYZ
// EXEC XYZ
/*
/&
* $$ EOJ
```

VSE/POWER permits only numeric values of 1 to 200 (decimal) to be used to identify work stations connected to it. These numeric identifiers are set when the VSE/POWER system is generated. The job submitter must know the numeric identifiers and include them in the LST and PUN statements as appropriate. The LST statement indicates that the job's printed output is to be routed to system 1 (the VM/370 system). The PUN statement indicates that the job's punched output is to be processed in Boston.

The following illustrates the terminal session for the job:

```
tag dev pu boston
R;

| sp pu to net
R;

| pun runxyz job (noh
PUN FILE 6645 TO NET      COPY 001 NOHOLD
R;

16:57:47
MSG FROM NET : SENT FILE 6645 (6645) ON LINK
                BOSTON TO BOSTON SYSTEM
```

Thus, as a CMS user on a VM/370 system, you have the ability to do the following to the output created by the execution of a job in a VSE/POWER system:

Receive output back and have it printed or punched on the VM/370 system printer or punch. This is the default option. You are not required to

include LST and PUN statements.

- Route output to a remote station linked to the VSE/POWER system. To do this, you must use either a LST card or a PUN card with REMOTE=(x,y), where x is the CPUID specified on the POWER macro for the VSE/POWER system and y is the ID of the remote station.
- Route output to be printed on the VSE/POWER system printer or punch. To do this, you may use an LST card or a PUN card with REMOTE=0, where 0 specifies VSE/POWER system local unit record processing.

In transmitting a job, RSCS does not alter your file in any respect. The job must be in the form required for execution in a VSE/POWER system. (For details, refer to the VSE/POWER Remote Job Entry User's Guide, SH12-5328.)

Note: RSCS will not accept jobs from a remote VSE/POWER system for execution in a VM/370 virtual machine.

#### RSCS OUTPUT TRANSMISSION USING SPECIAL FORMS

This example illustrates sending spool output from a VM/370 system to a remote batch system that has special forms capability. This CMS user wants the output from his virtual printer directed to BUFFALO to be printed on white paper using a text (TN5) print train. The device address of his virtual printer is the customary 00E. NET is the userid of the local RSCS virtual machine. The following illustrates the user's console:

```
|  sp e to net
|  R;

|  tag dev e buffalo system 50 f=white t=text
|  R;

|  print planxyz script
|  PRINT FILE 0118 TO NET      COPY 001 NOHOLD
|  R;

|  12:55:49
|  MSG FROM NET : SENT FILE 0118 (0118) ON LINK
|                   BUFFALO TO BUFFALO SYSTEM
```

#### RSCS JOB SUBMISSION TO A REMOTE NJE/NJI SYSTEM WITH SPECIAL OUTPUT PROCESSING

This example illustrates a job running on an MVS JES2/NJE batch processor with the output to be printed at a VM/370 node using a specified output class. A one-character batch system forms specification determines the output class.

```

//EXAMPLE JOB 1,MSGLEVEL=1
/*OUTPUT 1234 DEST=MIAMI,F=R
//STEP EXEC ASMFC
//ASM.SYSPRINT DD SYSOUT=(A,,1234)
//ASM.SYSIN DD *
TEST CSECT
END
/*

```

When the job executes, the SYSPRINT data set is printed at node MIAMI via VM/370 output class R.

#### RSCS OUTPUT TRANSMISSION TO AN IBM 3270 INFORMATION DISPLAY SYSTEM PRINTER

This example illustrates sending spool output from a VM/370 system to a remote 3270 Information Display System printer. This CMS user wants the output from his virtual printer directed to APL3286 at node NEWYORK. It is assumed that this printer has the Data Analysis-APL feature and that link APL3286 was started with either DA-TEXT or DA-APL specified in the PARM keyword of the START command. NET is the userid of the local RSCS virtual machine. The following illustrates the user's console:

```

sp prt to net
R;

tag dev prt newyork apl3286 50 prt=apl
R;

print console listing
PRINT FILE 0026 TO NET COPY 001 NOHOLD
R;

12:21:02
MSG FROM NET : SENT FILE 0026 (0026) ON LINK NEWYORK
TO NEWYORK APL3286

```

#### MANAGING A FILE REJECTED BY RSCS DUE TO AN INCORRECT ADDRESS

RSCS rejects any file whose tag does not contain a destination address that matches an entry in the local RSCS route or link tables. RSCS returns the file to the virtual reader queue of the originating local virtual machine user, who must correct the file tag and resubmit it to RSCS. The following example with the RSCS virtual machine ID of "NET" shows how this is done:

1. Suppose you direct a print file to RSCS for transmission by issuing the TAG and SPOOL commands:

```
TAG DEV 00E HOYSTON
```

SPOOL 00E TO NET

But the destination address "HOYSTON" is incorrect.

2. You issue a PRINT command for a file.
3. VM/370 responds with the message "PRT FILE 6783 TO NET". The spoolid of the file is 6783.
4. RSCS examines the file tag and finds no match for "HOYSTON" in its route and link tables. RSCS returns the file to your virtual machine reader.
5. VM/370 issues a message to you "RDR FILE 6783 TRANSFERRED FROM NET". RSCS issues a message to you "MSG FROM NET: FILE 6783 REJECTED -- INVALID DESTINATION ADDRESS".
6. You must then correct the tag and resubmit the file. Correct the tag by issuing a TAG FILE command "TAG FILE 6783 HOUSTON". Resubmit the file by issuing a TRANSFER command "TRANSFER 6783 TO NET".
7. RSCS accepts the file and enqueues it on the link required to reach the destination "HOUSTON".

Before sending other files, correct the tag for your virtual printer by reissuing the TAG DEV command with the correct location identifier "HOUSTON".

#### EXAMPLES OF MSG USE

The following examples assume that the local RSCS virtual machine is identified as "NET" and that "BOSTON" is the location identifier of the remote system of interest. Responses from the remote VM/370 system are the same type as you would get from the local VM/370 system, except that each line of the response is displayed as a message prefaced with "MSG FROM NET: FROM BOSTON:".

#### Sending a Message to a VM/370 User on a Remote System

```
smsg net msg boston tcsmith i will send the required file soon
```

#### Displaying (via CPQUERY) the Log of a Remote VM/370 System

```
smsg net cmd boston cpq log
```

Displaying (via CPQUERY) the Names of Users Logged On a Remote VM/370 System

```
smsg net cmd boston cpq names
```

Displaying (via CPQUERY) the Status of a Particular User on a Remote VM/370 System

```
smsg net cmd boston cpq u tcsmith
```

Displaying (via QUERY) the Route Definitions in the Local RSCS

```
smsg net q sys routes
```

Displaying (via QUERY) the Link Definitions in the Local RSCS

```
smsg net q sys links
```

## User Messages

Here is a short description of the messages sent by RSCS to the virtual machine user's console. For a detailed description of each message see "Appendix B: RSCS Messages".

DMTAXM101I FILE 'spoolid' ('orgid') ENQUEUED ON LINK 'linkid'

The user file specified is accepted by RSCS and is ready for transmission.

DMTAXM102I FILE 'spoolid' ('orgid') PENDING FOR LINK 'linkid'

The link specified has no tag slot available for the file. The file is held by RSCS and enqueued when space becomes available.

DMTAXM103E FILE 'spoolid' ('orgid') REJECTED -- INVALID DESTINATION ADDRESS

The destination address in the tag did not match any entry in the local RSCS's route table or link table. The file specified is returned to the user if the origin is local, otherwise it is purged.

DMTAXM104I FILE ('orgid') SPOOLED TO 'userid' -- ORG 'locid'(userid2) mm/dd/yy  
hh:mm:ss

A file has arrived from a remote location and is awaiting user disposition. The file originator is identified.

DMTAXM110E FILE 'spoolid' REJECTED -- INVALID DEVICE TYPE

The file identified by 'spoolid' has arrived at the RSCS virtual machine for transmission, but the file was produced on a virtual spool device that is not supported by RSCS.

DMTAXM111I USER 'userid' NOT IN CP DIRECTORY -- FILE ('orgid') SPOOLED TO SYSTEM

The specified file was received by RSCS at the destination location, but it was addressed to a userid not in that VM/370 system's directory.

DMTAXM112E FILE 'spoolid' ('orgid') REJECTED BY RSCS ACCOUNTING EXIT

The file identified by 'spoolid' and origin 'orgid' has arrived at the RSCS virtual machine for transmission. The installation accounting exit has determined that the file should not be transmitted.

DMTxxx147I SENT FILE 'spoolid' ('orgid') ON LINK 'linkid' TO 'locid' 'userid'

The specified file has been passed to the next node in the network.

DMTxxx170I FROM 'locid': (message text)

DMTxxx171I FROM 'locid' ('userid'): (message text)

These messages identify the source of the accompanying text on the user console.

DMTxxx531I INVALID LINE DRIVER COMMAND FOR LINK 'linkid' -- NO ACTION TAKEN

A line driver-type RSCS command has been recognized for the link specified by 'linkid'. The command is invalid for the particular line driver that is controlling this link.

DMTRPT921I PRINTER ON LINK 'linkid' LINE 'vaddr' DISABLED -- INTERVENTION OR MAINTENANCE REQUIRED

A printer described by 'linkid' and 'vaddr' detected an I/O error condition while a file was printing.

DMTRPT922I INTERVENTION REQUIRED ON PRINTER LINK 'linkid' LINE 'vaddr'

A printer described by 'linkid' and 'vaddr' needs operator intervention.

DMTRPT925I FILE PURGED BY USER ON PRINTER 'linkid' LINE 'vaddr'

On the printer described by 'linkid' and 'vaddr', the user raised the cover three times (with the same print buffer), which caused the line driver to purge the file.

DMTSML935E LINK 'linkid' IN RJE MODE -- PRINT FILE 'spoolid' PURGED

The specified link is working as a submitting RJE workstation and cannot accept print files.

DMTNPT936E NO REMOTE PUNCH AVAILABLE ON LINK 'linkid' -- FILE 'spoolid' PURGED

The terminal specified cannot produce the user-specified punched output.

DMTPOW940E link 'linkid' IN POWER MODE - PRINT FILE 'spoolid' PURGED

When operating in this mode, print files cannot be transmitted.





Appendixes contain detailed descriptions of all commands and messages, plus reference information on communicating with remote stations and terminals. The appendixes are:

- A RSCS Commands
- B RSCS Messages
- C RSCS Networking User Exits
- D Nonprogrammable Remote Terminals
- E Programmable (Spool MULTI-LEAVING) Remote Stations
- F VSE/POWER Remote System Connection
- G Base Tape Contents
- H Abbreviations



Here is a detailed description of the RSCS commands, including the messages resulting from the use of each command.

### NOTATIONAL CONVENTIONS

The notation used to define the command syntax in this manual is:

#### 1. Truncations and Abbreviations of Commands

Where truncation of a command name is permitted, the shortest acceptable version of the command is represented by uppercase letters. (Remember, however, that RSCS commands may be entered with any combination of upper and lowercase letters.) For example, the format specification for the BACKSPAC command is:

Backspac

This representation means that BA, BAC, BACK, BACKS, BACKSP, BACKSPA, and BACKSPAC are all valid specifications for this command name, as are any of those combinations in which lower case characters are substituted for their upper case equivalents.

Operands and options are specified in the same manner. Where truncation is permitted, the shortest acceptable version of the operand or option is represented by uppercase letters in the command format box. If no minimum truncation is noted, the entire word (represented by all capital letters) must be entered.

#### 2. The following symbols define the command format and should never be typed when the actual command is entered.

underscore	_
braces	{ }
brackets	[ ]
ellipsis	...

#### 3. Uppercase letters and words, and the following symbols, should be entered as specified in the format box.

asterisk	*
comma	,
hyphen	-

equal sign        =  
parentheses     ( )  
period            .  
colon             :

4. Lowercase letters, words, and symbols in the command format box represent variables for which specific information should be substituted. For example, in the BACKSPAC command, linkid represents a variable link identifier, such as NEWYORK.

5. Choices are represented in the command format boxes by stacking:

A  
B  
C

6. An underscore indicates an assumed (default) option. If an underscored choice is selected, it need not be specified when the command is entered. For example,

A  
B  
C

indicates that A, B, or C may be selected. If B is selected, it need not be specified. B is assumed if nothing is specified.

7. The use of brackets denotes choices, one or more of which may be selected. For example,

A  
[ B ]  
[ C ]

indicates that you must specify A, and that you may specify either, both, or neither B or C.

8. The use of braces with stacked options denotes choices, one of which must be selected. For example,

[ A ]  
< [ B ] >  
[ C ]

indicates that you must specify either A, or B, or C.

- | 9. The use of brackets with stacked options denotes choices, one of which may be selected. For example,

$$\left[ \begin{array}{c} A \\ B \\ C \end{array} \right]$$

indicates that you may enter A, B, or C, or you may omit the field.

- | 10. An ellipsis indicates that the preceding item or group of items may be repeated more than once in succession. For example,

(options ...)

indicates that more than one option may be coded within the parentheses.

#### OPERATOR COMMAND USAGE

The commands described in this appendix can be issued by either the RSCS operator or the remote station operator, with the following exceptions:

- CLOSE, CP, DEFINE, DELETE, DISCONN, EXEC, FORCE, REORDER, ROUTE, SHUTDOWN, TRACE, and TRANSFER commands may be executed only by the RSCS operator.
- START has limited functional capabilities when issued by a remote station operator. (See the START command description.)
- Commands issued by a remote station operator affect only the status of that station's link. With the exception of the MSG and the QUERY commands, the linkid operand must not be specified in a remote station command line.

File attributes which are those of the VM/370 spool system, and the operands describing them in the RSCS command language, have maximum values and default values identical to those of the VM/370 command language and system. Command names and keywords may be specified by typing any part of the command name or keyword from the minimum truncation to the full name. The minimum truncation in each situation is indicated by upper case letters.

## RSCS COMMANDS

### \* (COMMENT)

The \* command enables the RSCS operator to annotate console listings. It performs no function, but is accepted by the RSCS command processor. It may be entered directly from the RSCS operator's console or from a command EXEC procedure.

*	[any comment text]
---	--------------------

### Responses:

None.

### BACKSPAC

BACKSPAC causes the current file being transmitted to be restarted or repositioned backward. This command is not supported by the DMTVMB, DMTVMC, DMTPOW, or DMTNJI line drivers.

Backspac	[linkid] [ <u>File</u> nnn ]
----------	---------------------------------

**linkid** is the one- to eight-character link identifier for the link on which the current file being transmitted is to be repositioned. If the command is issued by the RSCS operator, this operand must be specified; if issued from a remote station, it must be omitted.

**File** specifies that the file being transmitted is to be restarted from the beginning.

**nnn** is the number of data units to be backspaced. For a print file, data unit refers to printer pages, which are counted in the same way as for the analogous VM/370 spooling command. For a punch file, data unit refers to file records which include any write type command code.

### Responses:

DMTxxx510I FILE 'spoolid' BACKSPACED

DMTxxx511E NO FILE ACTIVE ON LINK 'linkid'

DMTxxx531I INVALID LINE DRIVER COMMAND FOR LINK 'linkid' -- NO ACTION TAKEN

## CHANGE

CHANGE alters one or more attributes of an inactive spool file owned by the command originator. No link may be actively processing this file.

Change	<pre>[linkid] spoolid (options...)*</pre> <div style="text-align: right; margin-right: 20px;"><pre>[ Name &lt; [fn [ft]] [dsname] &gt; ]</pre></div> <p style="text-align: center;">* At least one of the following options must be selected:</p> <ul style="list-style-type: none"><li>[ PRIority nn ]</li><li>[ CLass c ]</li><li>[ COpy [*]nnn ]</li><li>[ DIst distcode ]</li><li>[ HOld NOHold ]</li><li>[ FLash name nnn ]</li><li>[ MOdify name ]</li><li>[ CHars name ]</li><li>[ FCB name ]</li><li>[ FOrm ccccccc ]</li></ul>
--------	---

**linkid** is the one- to eight-character link identifier for the link on which the file to be changed is enqueued. If the command is issued by the RSCS operator, this operand must be specified; if issued from a remote station, it must be omitted.

**spoolid** is the numeric spool file identifier for the file to be changed.

**PRIority nn** designates the new transmission priority for the file. nn is a decimal number from 0-99 with 0 signifying the highest priority.

**Class c** designates the new class for the file. c is a one-character alphameric field from A to Z or from 0-9.

**COpy [\*]nnn** alters the number of copies to be made of the file. The value of nnn (number of copies) must be a number from 1 through 255 (leading zeros are optional). The optional asterisk (\*) can be specified on print files to be spooled to a 3800 printer to perform the file duplication internally one page at a time. This option prevents retransmission of the print file to the virtual output device every time a copy is desired. If RSCS is not running on the VM/System Product, the maximum value for nnn is 99.

**DIst distcode** changes the distribution code of the specified file. distcode is a

one- to eight-character identification to be associated with the file.

**HOLD** prevents the processing of the file until it is released by a **CHANGE** command specifying **NOHOLD**.

**NOHOLD** releases the specified file if was in **HOLD** status.

**Flash name nnn**

signifies that a forms overlay contained in the 3800 printer be superimposed onto certain pages of the output. The name, one to four characters, identifies the forms overlay to be used in the projection. The maximum value of **nnn** (specifying that the first **nnn** pages of output are to be superimposed) is 255 when you are using a VM/SP host system, and 99 for all others (leading zeros are optional). The default, 0, indicates that no superimposing is desired.

**MODify name**

assigns a copy modification module to be used when printing a file on the 3800. This function makes it possible to alter text either by preventing printing of certain information or by adding labels to output. The name must be one to four characters. If the name is omitted, the file prints normally without modification.

**CHars name**

specifies the character arrangement table used when printing a file. The name must be from one to four characters. It determines which writable character generation module (WCGM) is used for printing on the 3800.

**FCB name** controls the vertical spacing of output on a page. The name must be from one to four characters.

**FOrm cccccccc**

specifies the one- to eight-character form name or I.D. for the file. This parameter is valid only when RSCS is running on the VM/System Product.

**NAme fn [ft]**

**NAme dsname**

changes the name of the specified file. If specified, this operand must be the last entry in the command line.

**Note:** The RSCS operator can nullify any previous or existing settings of the **CHars**, **MODify**, **FCB**, or **FOrm** options by specifying 'NULL' in the name field of these operands. The **FLash** option can be nullified by specifying a count of zero, in which case the **FLash** name is meaningless.

#### Responses:

```
DMTAXM520I FILE 'spoolid' CHANGED
DMTAXM521I FILE 'spoolid' HELD FOR LINK 'linkid'
DMTAXM522I FILE 'spoolid' RELEASED FOR LINK 'linkid'
```



```
DMTAXM523I LINK 'linkid' QUEUE REORDERED
DMTAXM524E FILE 'spoolid' ACTIVE -- NO ACTION TAKEN
DMTAXM525E FILE 'spoolid' IS FOR LINK 'linkid' -- NO ACTION TAKEN
DMTAXM526E FILE 'spoolid' NOT FOUND -- NO ACTION TAKEN
```

CLOSE (FOR RSCS OPERATOR ONLY)

CLOSE deactivates one or more active files on an inactive link. Active input files are reenqueued as inactive files, and later retransmission begins at the start of each input file. Active output files (which are normally incomplete) are discarded.

Close	linkid	[ <u>ALL</u> INput OUTput spoolid ... ... ]
Only one option may be entered. If no option is entered, a default of ALL is assumed.		

linkid is the one- to eight-character link identifier for the link on which the files to be closed are enqueued. The specified link must be inactive when CLOSE is issued.

ALL specifies that all active input and output files are to be deactivated. Active input files are deactivated and reenqueued. Active output files are deactivated and purged.

INput specifies that all active input files for the specified link are to be deactivated and reenqueued.

OUTput specifies that all active output files for the specified link are to be deactivated and purged.

spoolid ... specifies particular input file(s) to be deactivated and reenqueued.

Responses:

```
DMTAXM500I nn FILE(S) CLOSED ON LINK 'linkid'
DMTAXM501E LINK 'linkid' ACTIVE -- NO FILE(S) CLOSED
DMTAXM502E FILE 'spoolid' INACTIVE -- NO ACTION TAKEN
```

## CMD

CMD passes a command to a remote system. The local RSCS system does not check the command for validity (except as noted below); it simply sends the command to the remote system specified.

CMD thus enables operators and users to execute query and control functions at remote systems.

CMD is available to the virtual machine user via the CP SMSG command. Refer to "Part 4: VM/370 User's Guide" for details.

CMD	locid	command text
-----	-------	--------------

**locid** is the one- to eight-character location identifier of the remote system to receive and execute the command text.

**command text** is a string of up to 120 alphameric characters to be presented to the remote location as a system command. Format requirements for this string depend on the type of remote system implied by locid.

The CMD command interface is extended for the VSE/POWER link to allow only the RSCS operator to forward the following VSE/POWER commands to the DOS/VSE node for execution:

[	START	
	S	LST [,class(es)]
	STOP	PUN
	P	
]		

where:

**START or S** initiate a writer task in the VSE/POWER system for list or punch output.

**STOP or P** terminates an active writer task in the VSE/POWER system.

**LST** specifies a writer task for punched output.

**class(es)** is an optional parameter for specifying up to four output classes for list or punch output. Classes may be specified as A-Z. If omitted, the default is class A.

VSE/POWER commands may only be issued by the RSCS operator. For example:

```
CMD POWER START LST,ABC
```

All VSE/POWER commands will be checked for validity by DMTPOW before they are forwarded to the DOS/VS system.

Responses:

DMTxxx302E LINK 'linkid' IS NOT DEFINED  
DMTxxx303E LINK 'linkid' IS NOT ACTIVE  
DMTCMX310E LOCATION 'locid' IS NOT DEFINED  
DMTxxx320E LINK 'linkid' NOT CONNECTED  
DMTxxx531I INVALID LINE DRIVER COMMAND FOR LINK 'linkid' -- NO ACTION  
TAKEN  
DMTPOW941E LINK 'linkid' INVALID 'CMD' SPECIFICATION  
DMTPOW942E LINK 'linkid' POWER COMMAND SPECIFIED INVALID OR NOT  
SUPPORTED  
DMTPOW943E LINK 'linkid' POWER COMMAND OPERAND SPECIFIED INVALID OR  
NOT SUPPORTED

CP (FOR RSCS OPERATOR ONLY)

The CP command transmits commands to the VM/370 Control Program without leaving the RSCS command environment.

CP	command text
----	--------------

command text is any CP command permitted for the command privilege of the RSCS virtual machine. The omission of this field will produce error message DMTCMX204E.

Responses:

None. (Response from CP may result.)

CPQUERY

When used within an RSCS CMD command, CPQUERY allows the RSCS operator to inquire about the status of a remote VM/370 system.

CPQUERY is also available to any other virtual machine user via the CP SMSG command. Refer to "Part 4: VM/370 User's Guide" for details.

CPQuery	$\left[ \begin{array}{l} \text{INDicate} \\ \text{LOGmsg} \\ \text{Names} \\ \text{Time} \\ \text{Users [userid]} \end{array} \right]$
---------	--

**INDicate** displays the processor use, processor contention, main storage use, and main storage contention.

**LOGmsg** displays the log messages of the day.

**Names** lists all the users logged on and the terminal device address to which each is connected. If a user is disconnected, DSC is printed instead of the line address.

**Time** displays the current real clock time in hours:minutes:seconds format, the time zone (for example, EST), the day of the week, the calendar date in month/day/year format, and the connect and processor time for the RSCS virtual machine.

**Users** displays the number of users logged on and the number of users logically connected to other virtual machines.

**Users userid**

displays the user identification and the terminal device address of the specified user if that user is logged on. If that user is not logged on, a message to this effect is issued by CP. The response from this command is returned to the issuer via the CP message command.

The CPQUERY command can be used in the command text operand of the CMD command in the following manner to obtain remote VM/370 system status information.

Some examples are:

```
SMSG rscsid CMD locid CPQ LOG
SMSG rscsid CMD locid CPQUERY NAMES
SMSG rscsid CMD locid CPQ USERS
SMSG rscsid CMD locid CPQUERY USER userid
SMSG rscsid CMD locid CPQUERY INDICATE
SMSG rscsid CMD locid CPQ TIME
```

#### Responses:

DMTCMX172I CPQ: (command response)

DEFINE (FOR RSCS OPERATOR ONLY)

DEFINE causes a new link to be temporarily added to the set of valid links for the local RSCS, or causes an existing inactive link definition to be temporarily redefined. Permanent link definitions and changes can only be made by modifying the RSCS directory. Files addressed to the remote station whose location ID is identical to the link ID may be processed after the link has been defined. Up to sixteen new links may be temporarily defined.

DEFine	<pre> linkid  [ Class  c          ]         [ KEEP   holdslot  ]         [ LINE   vaddr     ]         [ TASK   name      ]         [ TYPE   driverid  ]         [ ZONE   zoneid    ] </pre>
--------	---

**linkid** is the one- to eight-character link identifier for the new link to be defined, or for the existing link to be redefined.

**Class c** specifies the classes of files which may be processed by the active link. *c* can be either \*, meaning all file classes may be processed, or from one to four classes (single characters with no intervening blanks). If no classes are specified, the default is \*.

**KEEP holdslot** specifies the number of virtual storage file tag slots to be reserved for exclusive use by the link being defined. "holdslot" is a decimal number from zero to sixteen. If the KEEP parameter is omitted, a default value of two is assumed.

**LINE vaddr** designates the virtual device address (vaddr) of a permanent telecommunications port to be used for processing files for the affected link. If this parameter is omitted, the LINE definition defaults to undefined.

**TASK name** designates a task name for the line driver for the link. *name* is a one- to four-character alphanumeric identifier. If this parameter is omitted, the task definition defaults to undefined.

**TYPE driverid** designates the kind of line driver for the link. *driverid* is a one- to eight-character name of the line driver to be used (DMTSML, DMTPOW, DMTNPT, DMTRPT, DMTNJI, DMTVMB, or DMTVMC). The type of line driver for a link depends on the type of remote telecommunications system involved. (See "Line Driver Selection" in Part 2 of this manual.) If a new link is being defined and this operand is not specified, the type definition defaults to undefined.

**ZONE zoneid** specifies the number of time zone boundaries between the remote location and Greenwich to the east, the International Date Line being included as a time zone boundary. If the ZONE parameter is

omitted, a default of 0 (Greenwich Mean Time) is assumed.

Responses:

```
DMTCMX540I NEW LINK 'linkid' DEFINED
DMTCMX541I LINK 'linkid' REDEFINED
DMTCMX542E LINK 'linkid' ACTIVE -- NOT REDEFINED
DMTCMX543E LINK 'linkid' NOT DEFINED -- LINK LIMIT REACHED
DMTCMX653I LINK 'linkid' DEFAULT 'task' 'type' 'vaddr' c Z=z R=r
DMTCMX206E INVALID OPTION 'keyword' 'option'
```

DELETE (FOR RSCS OPERATOR ONLY)

DELETE causes a previously defined link to become temporarily undefined. Permanent deletion of a link can only be made by deleting the entry from the RSCS directory. The link to be deleted must be inactive and must have no files, enqueued or pending when the DELETE command is issued. Files addressed to an undefined link are rejected as invalidly addressed.

DELeTe	linkid
--------	--------

linkid is the one- to eight-character link identifier for the link to be undefined.

Responses:

```
DMTCMX550I LINK 'linkid' NOW DELETED
DMTCMX551E LINK 'linkid' ACTIVE -- NOT DELETED
DMTCMX552E LINK 'linkid' HAS A FILE QUEUE -- NOT DELETED
```

DISCONN (FOR RSCS OPERATOR ONLY)

DISCONN disconnects the RSCS operator console from the VM/370 system while RSCS continues to operate. The RSCS DISCONN command operates like the VM/370 DISCONN command, except that another userid may be specified to receive all RSCS operator's console output lines. If no userid is specified, the RSCS console output lines are discarded without being printed. For the RSCS operator to reconnect his console, he must log on to the system again.

DISConn	[userid]
---------	----------

userid is the one- to eight-character ID for the virtual machine to receive subsequent RSCS operator console output lines.

Responses:

DMTCMX560I RSCS NETWORKING DISCONNECTING  
DMTCMX561E USERID 'userid' NOT RECEIVING

DRAIN

DRAIN deactivates the specified link after the file currently being processed is completed. The link is deactivated immediately if no file is being processed when the DRAIN command is issued. An inactive link is activated by a START command. If a START command is issued for the link before final file processing is complete, the link is not deactivated and normal processing is continued.

DRain	[linkid]
-------	----------

linkid is the one- to eight-character link identifier for the link to be deactivated. If the command is issued by the RSCS operator, this operand must be specified; if issued from a remote station, it must be omitted.

Responses:

DMTxxx570I LINK 'linkid' NOW SET TO DEACTIVATE  
DMTxxx571E LINK 'linkid' ALREADY SET TO DEACTIVATE

EXEC (FOR RSCS OPERATOR ONLY)

EXEC executes a sequence of RSCS commands contained in a CMS file on the RSCS system disk.

EXec	filename
------	----------

filename is the filename of a file containing one or more RSCS commands to be executed. The filetype of the file must be 'RSCS', and the file must contain fixed-length 80-character records.

RSCS exec files may contain any valid RSCS command except another EXEC command. Each line of the exec file is interpreted as a single RSCS command line; no conditionals or substitution variables are permitted.

At Initial Program Load, RSCS normally searches its system disk for a file named 'PROFILE RSCS', and executes the file as an exec file if it is found. This function may be suppressed by IPLing RSCS using the 'NOPROF' parameter as

follows:

```
Ipl vaddr PARM NOPROF
```

Responses:

```
DMTCMX675E EXEC 'filename' NOT FOUND ON DISK 'vaddr' -- COMMAND FILE NOT
EXECUTED
DMTCMX676E FATAL ERROR READING FROM 'vaddr' -- EXEC 'filename' PROCESSING
TERMINATED
DMTCMX677E EXEC 'filename' FILE FORMAT INVALID -- EXEC NOT EXECUTED
DMTCMX678E EXEC 'filename' IN EXECUTION -- NEW EXEC COMMAND IGNORED
DMTREX679I EXECUTING 'filename' COMMAND: (command line)
```

FLUSH

FLUSH halts processing of a file currently being transmitted on a link. The file is either purged or held, and link processing continues with the next file enqueued for transmission on the link.

Note: This command is not supported by the DMTPOW line driver.

Flush	[linkid]	[spoolid *]	[ALL HOLD]
-------	----------	----------------	---------------

**linkid** is the one- to eight-character link identifier for the link on which the file to be flushed is being transmitted. If the command is issued by the RSCS operator, this operand must be specified; if issued from a remote station, it must be omitted.

**spoolid** is the numeric spool file identifier for the file to be flushed. This field is provided to assure that an operator does not inadvertently destroy the wrong file through a timing error.

**\*** specifies that the file currently being transmitted is to be flushed.

Note: This option is only available to the remote operator.

**ALL** specifies that all copies of the file being transmitted are to be deleted. If this option is not specified, only the current copy is deleted and the next copy, if any, is processed.

**HOLD** specifies that the file being transmitted is not to be purged, but rather is to be saved and placed in system hold status. Processing of the file may be restarted after the file has been taken out of hold status by a CHANGE command.



Responses:

```
DMTxxx531I INVALID LINE DRIVER COMMAND FOR LINK 'linkid' -- NO ACTION  
TAKEN  
DMTxxx580I FILE 'spoolid' PROCESSING TERMINATED  
DMTxxx581E FILE 'spoolid' NOT ACTIVE
```

**FORCE (FOR RSCS OPERATOR ONLY)**

FORCE immediately deactivates the specified link and terminates its line driver task.

FORCE	linkid
-------	--------

linkid is the one- to eight-character link identifier of the link to be deactivated.

FORCE should be used only when the DRAIN command fails to deactivate the link. Note that the DRAIN command allows files in active transmission to complete before deactivation of the link.

Responses:

```
DMTrex002I LINK 'linkid' DEACTIVATED
```

**FREE**

FREE resumes file transmission for a particular link. The hold status for each of the files enqueued on the link is not affected. FREE has no effect on a link for which file transmission was not suspended by a HOLD command.

FRee	[linkid]
------	----------

linkid is the one- to eight-character link identifier for the link on which file transmission is to be resumed. If the command is issued by the RSCS operator, this operand must be specified; if issued from a remote station, it must be omitted.

Responses:

```
DMTxxx590I LINK 'linkid' RESUMING FILE TRANSFER  
DMTxxx591E LINK 'linkid' NOT IN HOLD STATUS
```

## FWDSpace

FWDSpace causes the file currently being transmitted to be repositioned forward.

Note: This command is not supported by the DMTVMB, DMTVMC, DMTNJI, or DMTPow line drivers.

FWdspace	[linkid] [nnn]
----------	----------------

**linkid** is the one- to eight-character link identifier of the link on which the file currently being transmitted is to be repositioned. If the command is issued by the RSCS operator, this operand must be specified; if issued from a remote station, it must be omitted.

**nnn** is the number of data units to be forward spaced (if none is specified, a default of 1 is assumed). For a print file, data unit refers to printer pages, which are counted in the same way as for the VM/370 BACKSPAC command. For a punch file, data unit refers to file records which include any write type command code. If nnn is greater than the number of data units remaining to be processed, FWDSpace acts as a FLUSH command.

### Responses:

```
DMTxxx511E NO FILE ACTIVE ON LINK 'linkid'  
DMTxxx531I INVALID LINE DRIVER COMMAND FOR LINK 'linkid' -- NO ACTION  
TAKEN  
DMTxxx600I FILE 'spoolid' FORWARD SPACED
```

## HOLD

HOLD temporarily suspends file transmission for a particular link, without deactivating the link. Transmission is suspended when the currently active file is completed, or, optionally, it may be suspended immediately, and later resumed from that point by a FREE command. The HOLD command does not affect the hold status of any file enqueued for transmission on the link.

HOld	[linkid] [IMMED]
------	------------------

**linkid** is the one- to eight-character link identifier of the link for which file transmission is to be suspended. If the command is issued by the RSCS operator, this operand must be specified; if issued from a remote station, it must be omitted.

**IMMED** specifies that active file transmission, if any, is to be suspended

immediately.

Note: The IMMED operand is not supported by the DMTVMB, DMTVMC, DMTPOW, or DMTNJI line drivers.

Responses:

```
DMTxxx531I INVALID LINE DRIVER COMMAND FOR LINK 'linkid' -- NO ACTION  
          TAKEN  
DMTxxx610I LINK 'linkid' TO SUSPEND FILE TRANSMISSION  
DMTxxx611I LINK 'linkid' FILE TRANSMISSION SUSPENDED  
DMTxxx612E LINK 'linkid' ALREADY IN HOLD STATUS
```

HT

HT suppresses the printing of any messages stacked for output to the RSCS operator console. HT has no effect on the execution of any other commands in progress or pending. If entered from a remote station console, HT purges any messages pending in that link's message stack.

HT	
----	--

Responses:

None.

MSG

MSG causes a line of arbitrary text to be forwarded to a remote station and presented to a user or operator as a message. When sending messages to a VSE/POWER system, use of MSG is restricted to the RSCS operator.

MSG is available to the virtual machine user via the CP SMSG command. Refer to "Part 4: VM/370 User's Guide" for details.

Msg	locid < [ userid ] > [msgtext] [ RSCS ]
-----	--

locid is the one- to eight-character location identifier of the location to receive the specified text line. If the message is for a local VM/370 user, this operand is specified as the local RSCS location ID.

**userid** is a one- to eight-character identifier of a user at that location. If the message is to be sent to a remote batch terminal, the **userid** field is ignored, but a dummy entry must be included to avoid deletion of the first word of the message text.

**RSCS** specifies the remote RSCS operator's console.

**msgtext** is an arbitrary string of up to 120 alphanumeric characters comprising the message to be sent.

Responses:

```
DMTxxx302E LINK 'linkid' IS NOT DEFINED
DMTxxx303E LINK 'linkid' IS NOT ACTIVE
DMTCMX310E LOCATION 'locid' IS NOT DEFINED
DMTxxx320E LINK 'linkid' NOT CONNECTED
DMTRGX330E USERID MISSING OR INVALID
DMTRGX331E 'userid' NOT LOGGED ON
DMTRGX332E 'userid' NOT RECEIVING
DMTxxx531I INVALID LINE DRIVER COMMAND FOR LINK 'linkid' -- NO ACTION
TAKEN
```

**ORDER**

**ORDER** causes the file queue for a particular link to be reordered as specified. The effect of the command is to redefine the order in which particular files are to be processed on the link. The specified files are placed at the start of the link queue in the specified order, and the file priority attribute is automatically set to zero (top priority) for each specified file.

<b>Order</b>	[linkid] spoolid1 [ spoolid2 ... ]
--------------	------------------------------------

**linkid** is the one- to eight-character link identifier for the link on which the file queue is to be reordered. If the command is issued by the RSCS operator, this operand must be specified; if issued from a remote station, it must be omitted.

**spoolid1** specifies the affected file(s), and defines the new order ... in which they are to be enqueued.

Responses:

```
DMTAXM523I LINK 'linkid' QUEUE REORDERED
DMTAXM524E FILE 'spoolid' ACTIVE -- NO ACTION TAKEN
DMTAXM525E FILE 'spoolid' IS FOR LINK 'linkid' -- NO ACTION TAKEN
DMTAXM526E FILE 'spoolid' NOT FOUND -- NO ACTION TAKEN
```

## PURGE

PURGE causes specified inactive files for a particular link to be removed from the system before they are processed on the link. Any file may be purged, regardless of its status, as long as it has not been selected for transmission.

PURge	[linkid] < $\left[ \begin{array}{l} \text{ALL} \\ \text{spoolid1 spoolid2 ...} \end{array} \right]$ >
-------	---

**linkid** is the one- to eight-character link identifier for the link on which the files to be removed are enqueued. If the command is issued by the RSCS operator, this operand must be specified; if issued from a remote station, it must be omitted.

**ALL** specifies that the entire queue of files for the link is to be removed from the system.

**spoolid1** specifies the particular file(s) to be removed from the  
... system.

### Responses:

```
DMTAXM524E FILE 'spoolid' ACTIVE -- NO ACTION TAKEN
DMTAXM525E FILE 'spoolid' IS FOR 'linkid' -- NO ACTION TAKEN
DMTAXM526E FILE 'spoolid' NOT FOUND -- NO ACTION TAKEN
DMTAXM640I 'nn' FILE(S) PURGED ON LINK 'linkid'
```

## QUERY

QUERY displays linkid, file, or RSCS status information. If the command is issued by the RSCS operator, the response is sent to the RSCS operator's console. If the command is issued by a remote operator, the response is printed on the remote station printer. For the information returned by each option of the QUERY command, refer to the appropriate message text in "Appendix B: RSCS Messages".

QUERY is also available to any other virtual machine user via the CP SMSG command. Refer to "Part 4: VM/370 User's Guide" for details.

Query	<pre> locid linkid &lt; [ Active            Def            Files            Queue            Sum ] &gt; &lt; [ File spoolid [ STAT                   RSCS                   VM ] ] &gt; System [ Active          Links          Ports          Queue          Routes ] </pre>
<p>Only one item: a linkid, a file, or the system, may be queried at any one time, and only one keyword may be specified.</p>	

**locid** requests information pertaining to the active attributes and status of the link specified by the one- to eight-character locid. Status information includes activity status, type of line driver, line address, classes of files to be processed, HOLD status, DRAIN status, TRACE status, number of files in queue, and number of files waiting to be queued. (See the descriptions of messages DMTCMX636I, DMTCMX637I, DMTCMX651I, and DMTCMX652I.)

**linkid Active** requests information pertaining to the active file descriptors for the link specified by the one- to eight-character linkid. Activity information includes the VM/370 spool file ID, originating VM/370 spool file ID, destination location and user ID, spool file class, file transmission priority, number of file records left to transmit, and total records, of the file currently being transmitted. (See the descriptions of messages DMTCMX656I and DMTCMX665I.)

**linkid Def** requests information pertaining to the defined default attributes of the link specified by the one- to eight-character linkid. Default information includes task name, type of line driver, line address, classes of files to be processed, time zone identifying digit, and number of virtual storage file tag slots reserved for the link. (See the description of message DMTCMX653I.)

**linkid Files** requests information pertaining to the file status of the link

specified by the one- to eight-character linkid. File information includes the number of files being transmitted, the number of files being received, the number of files accepted and in the queue, and the number of files pending. (See the description of message DMTCMX654I.)

#### linkid Queue

requests a list of brief descriptions of each inactive file enqueued for transmission, in the current queue order, on the link specified by the one- to eight-character linkid. Queue information includes the number of files in the queue and the number waiting to be entered in queue. In addition, for each file currently in the queue, an additional response is issued containing the spool file identification number, origin location, destination location, destination user ID (if any), spool file class, current transmission priority, the number of records in the file, and the file hold status. (See the descriptions of messages DMTCMX654I and DMTCMX655I.)

#### linkid Sum

requests summary information about the transaction and error counters maintained by the line driver concerning activity on the communications adapter. (See the description of message DMTxxx149I.)

#### File spoolid STAT

requests certain information pertaining to the particular file specified by the numeric spoolid. Status information includes activity status and the linkid of the link on which the file is queued or being transmitted. (See the descriptions of messages DMTCMX660I, DMTCMX661I, and DMTCMX664E.)

#### File spool RSCS

requests a description of the RSCS control related attributes and status of the file specified by spoolid. RSCS-related attributes include originating location and user ID, originating VM/370 spool ID, date and time of creation, time zone reference for time of day, and the destination location and user ID. (See the descriptions of messages DMTCMX662I and DMTCMX664E.)

#### File spool VM

requests a description of the VM/370 spool system related attributes of the file specified by spoolid. VM/370 spool-related attributes include transmission priority, spool file class, number of copies requested, HOLD status, distribution code, filename and type, and data set name. (See the descriptions of messages DMTCMX663I, DMTCMX664E, and DMTCMX666I.)

#### SYstem Active

requests information pertaining only to active links. Active link information includes link identification, link status, line driver type, line address, and hold status, drain status, and trace status. (See the descriptions of messages DMTCMX670I, DMTCMX672I, and

DMTCMX673I.)

#### SYstem Links

requests brief descriptions of each link currently defined in the system. Inactive link information includes link identification, activity status, default line driver type, and default line address. Active link information includes link identification, link status, line driver type, line address, and hold status, drain status, and trace status. (See the descriptions of messages DMTCMX670I, DMTCMX671I, and DMTCMX673I.)

#### SYstem Ports

requests a brief description of entries in the switchable port table. Port information includes port availability status and identification of ports in use by link ID and port address. (See the descriptions of messages DMTCMX625I, DMTCMX626I, and DMTCMX627I.)

#### SYstem Queue

requests that message DMTCMX654I be issued for each link with a non-zero queued or pending file count. Queue information includes the number of files being transmitted and received, the files accepted and enqueued, and the files pending for each link ID with a non-zero queue. (See the descriptions of messages DMTCMX654I and DMTCMX674I.)

#### SYstem Routes

requests a brief description of entries in the routing table. Route descriptions show the link ID for each route definition in the RSCS routing table. (See the descriptions of messages DMTCMX634I and DMTCMX636I.)

#### Responses:

QUERY 'locid':

```
DMTCMX636I 'locid' ROUTED THROUGH LINK 'linkid'  
DMTCMX637I 'locid' NOT ROUTED  
DMTCMX651I LINK 'linkid' INACTIVE  
DMTCMX652I LINK 'linkid' {CONNECT|ACTIVE} 'task' 'type' 'vaddr' c  
           {HO|NOH}{DR|NOD} {NOT|TRS|TRL|TSL}
```

QUERY 'linkid' ACTIVE:

```
DMTCMX656I FILE 'spoolid' ('orgid') 'locid' 'userid' CL a PR pp  
           LEFT mmmmmmmm OF nnnnnnnn  
DMTCMX665I NO FILE ACTIVE
```

QUERY 'linkid' DEF:

```
DMTCMX653I LINK 'linkid' DEFAULT 'task' 'type' 'vaddr' c Z=z R=r
```



QUERY 'linkid' FILES:

DMTCMX654I LINK 'linkid' S=s R=r Q=q P=p

QUERY 'linkid' QUEUE:

DMTCMX654I LINK 'linkid' S=s R=r Q=q P=p

DMTCMX655I FILE 'spoolid' ('orgid') 'locid' 'userid' CL a PR pp  
REC nnnnnnnn {HO|NOH}

QUERY 'linkid' SUM:

DMTCMX149I LINK 'linkid' LINE ACTIVITY; TOT=mmmmmmmm;  
ERRS=nnnnnnnn; TMOU=pppppppp

QUERY FILE 'spoolid' STAT:

DMTCMX660I FILE 'spoolid' INACTIVE ON LINK 'linkid'

DMTCMX661I FILE 'spoolid' ACTIVE ON LINK 'linkid'

DMTCMX664E FILE 'spoolid' NOT FOUND

QUERY FILE 'spoolid' RSCS:

DMTCMX662I FILE 'spoolid' ORG 'locid1' 'userid1' ORGID 'orgid'  
mm/dd/yy hh:mm:ss z.z.z. TO 'locid2' 'userid2'

DMTCMX664E FILE 'spoolid' NOT FOUND

QUERY FILE 'spoolid' VM:

DMTCMX663I FILE 'spoolid' PR pp CL a FO ffffffff CO [\*]nnn {HO|NOH}  
DI 'distcode', NA {'fn ft'|'dsname'}

DMTCMX664E FILE 'spoolid' NOT FOUND

DMTCMX666I FILE 'spoolid' FL ffff FLC nn MO mmmm CH cccc FCB bbbb

QUERY SYSTEM ACTIVE:

DMTCMX670I LINK 'linkid' {CONNECT|ACTIVE} -- LINE 'vaddr' {HO|NOH}  
{DR|NOD} {NOT|TRS|TRL|TSL}

DMTCMX672I NO LINK ACTIVE

DMTCMX673I NO LINK DEFINED

QUERY SYSTEM LINKS:

DMTCMX670I LINK 'linkid' {CONNECT|ACTIVE} -- LINE 'vaddr' {HO|NOH}  
<DR|NOD> <NOT|TRS|TRL|TSL>

DMTCMX671I LINK 'linkid' INACTIVE

DMTCMX673I NO LINK DEFINED

QUERY SYSTEM PORTS:

DMTCMX625I NO PORTS AVAILABLE  
DMTCMX626I PORT 'vaddr' AVAILABLE  
DMTCMX627I PORT 'vaddr' IN USE BY LINK 'linkid'

QUERY SYSTEM QUEUE:

DMTCMX654I LINK 'linkid' S=s R=r Q=q P=p  
DMTCMX674I NO FILES QUEUED

QUERY SYSTEM ROUTES:

DMTCMX634I NO LOCATIONS ROUTED  
DMTCMX636I 'locid' ROUTED THROUGH LINK 'linkid'

REORDER (FOR RSCS OPERATOR ONLY)

REORDER causes all inactive files currently owned by the RSCS virtual machine to be reaccepted and routed. REORDER is not normally issued by the RSCS operator, but is issued internally by RSCS during processing of CLOSE, DEFINE, DELETE, ROUTE, or START commands, and following any link deactivation.

REORDer	
---------	--

Execution of this command will never adversely affect RSCS operations. However, in case of abnormal occurrences, files presented to RSCS might not be immediately accepted and transmitted automatically. REORDER forces RSCS to inspect its input files, and can initiate transmission of a "hung" file.

Responses:

DMTAXM109I FILE QUEUE REORDERED

ROUTE (FOR RSCS OPERATOR ONLY)

ROUTE defines, modifies, or deletes an entry in the RSCS routing table. RSCS uses its routing table to determine which link is to receive files, commands, and messages that cannot be transmitted to their destination location on a direct link. A direct link and an indirect route may be concurrently defined for the same remote location, using a single locid. In this case, indirect routing is used only when the indirect link is active and the direct link is not. Files are reenqueued following execution of a ROUTE command, so that transmission of rerouted files can begin immediately.

ROUte	$\text{locid} \left\langle \begin{array}{c} \text{TO linkid} \\ \text{OFF} \end{array} \right\rangle$
-------	---

**locid** is the one- to eight-character identifier for the remote location whose routing is to be modified.

**TO linkid** specifies the link through which files, commands, and messages addressed to the specified remote location are to be routed.

**OFF** cancels indirect routing for the specified **locid**.

Responses:

```
DMTCMX630I 'locid' NOW ROUTED THROUGH LINK 'linkid'
DMTCMX631I INDIRECT ROUTING FOR 'locid' DEACTIVATED
DMTCMX632E 'locid' INVALID ROUTE SPECIFIED
DMTCMX633E 'locid' NOT ROUTED -- ROUTE LIMIT REACHED
DMTCMX638E LOCATION 'locid' HAS A FILE QUEUE --
INDIRECT ROUTING NOT DEACTIVATED
```

**SHUTDOWN (FOR RSCS OPERATOR ONLY)**

**SHUTDOWN** effectively issues a **DRAIN** command to each currently active link. **SHUTDOWN** is the means for gracefully terminating RSCS operations.

SHUTDOWN	
----------	--

Responses:

```
DMTxxx570I LINK 'linkid' NOW SET TO DEACTIVATE
DMTxxx571E LINK 'linkid' ALREADY SET TO DEACTIVATE
```

**START**

**START**, issued by the RSCS operator, can activate a specified inactive link. It can also be used by either the RSCS or remote operator to cause an active link to begin processing files of a specified set of classes or to reset a pending deactivation due to a **DRAIN** command.

STArt	linkid [ CLASS c ] [Parm ...] [ LINE vaddr ] [ TASK name ] [ TYPE driverid ]
Any combination of keywords with associated options may be entered in any order, except that Parm keyword must be the rightmost keyword, if it is entered.	

**linkid** is the one- to eight-character link identifier for the inactive link to be activated, or for the active link on which file processing is to be altered. If START is issued by the RSCS operator, this operand must be specified; if issued from a remote station, it must be omitted.

**Class c** specifies classes of files which may be processed after execution of the command. c can be either \*, meaning all file classes may be processed, or from one to four classes (single characters with no intervening blanks). If \* is specified, no other classes may be specified. If multiple classes are specified for a link, files are processed in the order that the classes are specified, and in priority order within each particular class. If \* is specified, files are processed in priority sequence only. If no classes are specified, the definition of class in the link's link table entry is used.

**LINE vaddr** designates the virtual device address (vaddr) of the line port to be used by the newly activated link. The value specified overrides a device address which may have been previously defined for the link. If no line port address is specified, the previously defined address is used. If no address was previously defined and no address is specified, an available switched port is selected for use, and the operator is informed of that selection. This keyword option is valid only when activating an inactive link.

**TASK name** designates a task name for use by the line driver to be initialized, which overrides the name which may have been previously defined for the link. name is a one- to four-character alphanumeric identifier. If this field is not specified, the name previously defined for the link is used. If no name was previously defined for the link, an appropriate descriptive default task name is generated and used. This keyword option is valid only when activating an inactive link.

**TYPE driverid** designates the name of the line driver to be used for the link to be activated. driverid is a one- to eight-character name and must have been defined during RSCS generation. This keyword option is valid only when activating an inactive link. (See the topic "Line Driver

Selection" in Part 2 of this manual for determining which line driver to use for a given application.) This specification overrides the driver name which may have been previously defined for the link.

Note: If no line driver type was previously defined for the link, this field must be specified.

**Parm** causes the remainder of the command line to the right of the **Parm** keyword to be made available to the newly activated line driver. No further interpretation is performed on the command line after a **Parm** keyword is encountered, so it must always be the rightmost keyword specified. For a description of the **Parm** operands for each line driver, see the sections on starting line drivers in Part 3 of this manual.

Responses:

```
DMTCMX700I ACTIVATING LINK 'linkid' 'task' 'type' 'vaddr' c
DMTCMX701E NO SWITCHED LINE AVAILABLE -- LINK 'linkid' NOT ACTIVATED
DMTCMX702E LINE 'vaddr' IS IN USE BY LINK 'linkid1' -- LINK 'linkid2'
          NOT ACTIVATED
DMTCMX703E DEV 'cuu' IS NOT A LINE PORT -- LINK 'linkid' NOT ACTIVATED
DMTCMX704E LINE 'vaddr' CC=3 NOT OPERATIONAL -- LINK 'linkid'
          NOT ACTIVATED
DMTCMX705E DRIVER 'type' NOT FOUND ON DISK 'vaddr' -- LINK 'linkid'
          NOT ACTIVATED
DMTCMX706E FATAL ERROR LOADING FROM 'vaddr' -- LINK 'linkid'
          NOT ACTIVATED
DMTCMX707E DRIVER 'type' FILE FORMAT INVALID -- LINK 'linkid'
          NOT ACTIVATED
DMTCMX708E VIRTUAL STORAGE CAPACITY EXCEEDED -- LINK 'linkid'
          NOT ACTIVATED
DMTCMX709E TASK NAME 'task' ALREADY IN USE -- LINK 'linkid'
          NOT ACTIVATED
DMTCMX710E MAX ('nn') ACTIVE -- LINK 'linkid' NOT ACTIVATED
DMTxxx750E LINK 'linkid' ALREADY ACTIVE -- NO ACTION TAKEN
DMTCMX751I LINK 'linkid' ALREADY ACTIVE -- NEW CLASS(ES) SET AS REQUESTED
DMTxxx752I LINK 'linkid' STILL ACTIVE -- DRAIN STATUS RESET
DMTSML901E INVALID SML MODE SPECIFIED -- LINK 'linkid' NOT ACTIVATED
DMTPOW903E PASSWORD SUPPLIED ON LINK 'linkid' IS INVALID
DMTxxx906E INVALID BUFFER PARAMETER -- LINK 'linkid' NOT ACTIVATED
DMTPOW908E INVALID 'PARM' PARAMETER 'parmvalue' SPECIFIED
DMTNIT911E INVALID NJI BUFFER SIZE SPECIFIED -- LINK 'linkid'
          NOT ACTIVATED
DMTNIT912E INVALID NJI NODAL RESISTANCE SPECIFIED -- LINK 'linkid'
          NOT ACTIVATED
DMTNIT913E INVALID PASSWORD PARAMETER SPECIFIED -- LINK 'linkid'
          NOT ACTIVATED
DMTPOW946E INVALID POWER CPUID SPECIFIED -- LINK 'linkid' NOT
          ACTIVATED
```

## TRACE (FOR RSCS OPERATOR ONLY)

TRACE enables the operator to verify that the line service is working properly or to generate documentation useful in problem determination.

TRACE causes the specified active link to start or stop reporting (on the operator's console) line activity summary information consisting of the number of successful transactions, unsuccessful transactions, and time-outs since the last similar message or since the link was activated. (See the description of message DMTxxx149I.)

TRACE can also be used to start or stop logging of each line I/O transaction on a link. While log trace is active for a link, a record of each line I/O transaction is written to a spool print file. Each record contains the channel program executed, the composite CSW, the ending sense data if any, and the beginning and ending data string from each buffer used. The spool file is queued for real printer output when the log trace is deactivated for the link.

TRace	linkid	[ SUM NOSum ]	[ LOG NOLog ]
If keywords are not entered, a default of SUM is assumed.			

**linkid** is the one- to eight-character link identifier of the link for which tracing is to be started or stopped.

**SUM** specifies that the link's line driver is to report all line activity in a standard format.

**NOSum** specifies that the link's line driver is to cease reporting line activity. This is the initial state at RSCS start-up.

**LOG** starts the logging of I/O activity on the link.

**NOLog** stops the logging of I/O activity and initiates the automatic printout of the log data. This is the initial state at RSCS start-up.

### Responses:

```
DMTxxx149I LINK 'linkid' LINE ACTIVITY: TOT=mmmmmmmm;  
ERRS=nnnnnnnn; TMOUTS=pppppppp  
DMTxxx801I LINK 'linkid' LOG ACTIVATED  
DMTxxx802I LINK 'linkid' LOG DEACTIVATED  
DMTxxx803I LINK 'linkid' SUM REPORTING DEACTIVATED  
DMTxxx810E LINK 'linkid' LOG ALREADY ACTIVE  
DMTxxx811E LINK 'linkid' LOG NOT ACTIVE  
DMTxxx812E LINK 'linkid' SUM REPORTING ALREADY ACTIVE  
DMTxxx813E LINK 'linkid' SUM REPORTING NOT ACTIVE
```

## TRANSFER (FOR RSCS OPERATOR ONLY)

TRANSFER redirects inactive files specified by 'spoolid' to a new destination. RSCS removes the files from 'linkid' and enqueues them on the link for the path to the new 'locid'.

TRANSfer	linkid spoolid1 [spoolid2 ...] TO locid [userid]
----------	--

**linkid** is the one- to eight-character link identifier of the link from which files are to be transferred.

**spoolid1** specifies the particular file(s) to be transferred from  
... the specified link.

**locid** is the one- to eight-character location identifier of the new destination for the files.

**userid** is a one- to eight-character identifier specifying the new destination userid for the files. This userid defaults to 'system' if it is not specified.

### Responses:

DMTAXM524E FILE 'spoolid' ACTIVE -- NO ACTION TAKEN  
DMTAXM525E FILE 'spoolid' IS FOR LINK 'linkid' -- NO ACTION TAKEN  
DMTAXM526E FILE 'spoolid' NOT FOUND -- NO ACTION TAKEN  
DMTAXM645I 'nn' FILE(S) TRANSFERRED ON LINK 'linkid'





Here is a detailed description of the RSCS messages and wait state codes. A message summary is included that groups the messages according to the type of operation in progress at the time of message generation.

RSCS messages are issued in response to commands and spontaneously during system execution. Messages in response to commands are issued to the command originator and, in certain cases, to the RSCS local operator. Spontaneous messages are issued to the RSCS local operator whenever error or informational conditions arise during system operation. Certain spontaneous messages are issued to virtual machine users when they apply to files originated by or destined for the users.

#### MESSAGE FORMAT

The message identifiers conform to VM/370 standards. The first three characters (DMT) denote RSCS. The next three characters denote the module origin of each message; the possible codes are REX, RGX, CMX, CMY, AXM, INI, IRX, NPT, RPT, SML, VMB, VMC, NCM, NHD, and NIT. Some messages can be issued by more than one module. These messages appear in this appendix with the fourth, fifth, and sixth characters encoded as xxx. However, when the message is issued, xxx is replaced with the appropriate module code. The next three characters contain the message number. The last character is a message severity code:

E	Error message
I	Informational message
R	Response message
S	Severe error message
T	Termination of RSCS due to error

The message code (DMTAXM101I for example) is included in the message line if the ON option of the CP EMSG command is chosen. The time the message was generated (in the form hh:mm:ss) appears at the start of the message line.

#### MESSAGE DESCRIPTIONS IN ORDER BY MESSAGE NUMBER

DMTIRX000I RSCS NETWORKING VERSION vv, RELEASE nn, mm/dd/yy READY

Explanation: This message signals the completion of RSCS initialization, including the activation of the AXS and LAX tasks. VERSION vv and RELEASE nn specify the Version and Release of RSCS in use. mm/yy/dd specifies the date on which the RSCS nucleus in

use was generated.

System Action: The system begins normal processing by accepting files and commands.

Operator Action: Normally, activate one or more links.

DMTCMX001I FREE STORAGE = 'nn' PAGES

Explanation: This message is issued automatically when the number of pages of unallocated virtual storage available to RSCS increases or decreases by a certain increment. The new number of available free pages is denoted by 'nn'.

System Action: Normal processing continues.

Operator Action: This information helps the operator understand the state of RSCS processing. Knowledge of virtual storage utilization helps the operator decide whether to activate or deactivate links, and helps the system programmer decide an appropriate virtual storage size for the RSCS virtual machine.

DMTREX002I LINK 'linkid' DEACTIVATED

Explanation: The link identified by 'linkid' was deactivated as a result of the execution of a previous DRAIN or FORCE command, or as the result of a line driver terminal error.

System Action: The link's line driver task is deleted, all storage allocated to the task is made free, and the link table entry is updated. The link remains inactive until it is reactivated by a START command.

Operator Action: If the link deactivation was spontaneous (that is, not as the result of a DRAIN command) restart the link using a START command. If spontaneous deactivations recur, notify local RSCS support personnel.

DMTCMX003I LINK 'linkid' EXECUTING: (command line text)

Explanation: The RSCS command described by (command line text) was forwarded by a directly connected remote station for local execution. The link identifier of the originating remote station is specified by 'linkid'.

System Action: The command is executed, and the resulting response is automatically returned to the originating remote station.

Operator Action: None.

DMTCMX004I LOCATION 'locid' EXECUTING: (command line text)

Explanation: The RSCS command described by (command line text) has been forwarded by the operator at a remote location for local execution. The location identifier for the originating remote location is identified by 'locid'.

System Action: The command is executed, and the resulting response is automatically returned to the originating remote operator.

Operator Action: None.

DMTCMX005I LOCATION 'locid'('userid') EXECUTING: (command line text)

Explanation: The RSCS command described by (command line text) has been forwarded by an interactive user at a remote location for local execution. The command originator's location and user identifiers are specified by 'locid' and 'userid'.

System Action: The command is executed if it is a valid command for user execution, and the resulting response is automatically returned to the originating remote interactive user.

Operator Action: None.

DMTxxx070E I/O ERROR cuu SIOCC cc CSW csw SENSE sense CCW ccw

Explanation: A message of this format is issued by any task in RSCS that detects an uncorrectable hardware or system error during an I/O operation. The causes of such an error vary, depending on the particular device type and command code.

cuu - the virtual device address of the I/O device on which the error occurred.

cc - the condition code resulting from the issuing of the SIO command on the device for the operation which was in error.

csw - the composite CSW associated with the operation in error. The composite CSW is a logical ORing of the CSW information associated with the SIO or the interrupts from the device while the I/O operation was active.

sense - the sense information associated with the I/O operation in error if the I/O operation ends with unit check set on.

ccw - the first CCW of the I/O operation in error if it failed to start, or the last CCW fetched by the channel before the I/O operation terminated with an error indication.

System Action: The error is logged, and appropriate recovery procedures are taken. The exact effect of the I/O error condition depends on the conditions existing when it occurs. The system may continue processing normally, the link may be automatically deactivated, or RSCS may shut down.

Operator Action: This message may indicate a serious system or hardware error, or it may indicate common conditions such as intervention required. If the message is issued unexpectedly, notify local RSCS support personnel.

DMTrex080E PROGRAM CHECK -- LINK 'linkid' DEACTIVATED

Explanation: A program check interrupt occurred while the line driver for the link identified by 'linkid' was executing. There are no normal cases in which this situation arises, and it probably reflects either a software or system generation error in either RSCS or CP.

System Action: A dump of RSCS virtual storage is automatically taken and queued for real spool print output. The affected link is automatically deactivated. Normal RSCS operation for other links is not affected.

Operator Action: Retrieve hard copy RSCS console output leading up to the program check, if possible, and attach it to the RSCS virtual dump when it has printed. Submit the dump and the console output to local RSCS support personnel.

DMTrex090T PROGRAM CHECK IN SUPERVISOR -- RSCS NETWORKING SHUTDOWN

Explanation: A program check interrupt has occurred during the execution of MSUP, the RSCS supervisor, or during execution of one of the RSCS system control tasks, REX, AXS, or LAX. There are no normal cases in which this situation arises, and it probably reflects either a software or system generation error in either RSCS or CP.

System Action: A dump of RSCS virtual storage is automatically taken and queued for real spool print output. Messages queued for operator output are written to the operator console, and RSCS terminates by loading a masked off wait state PSW with wait state code X'001'.

Operator Action: When this situation arises immediately following RSCS IPL, retrieve hard copy RSCS console output leading up to the program check, if possible, and attach it to the RSCS virtual dump when it has printed. Submit the dump and the console output to local RSCS support personnel. Re-IPL RSCS and restart and reconnect the dialable links.

DMTrex091T INITIALIZATION FAILURE -- RSCS NETWORKING SHUTDOWN

Explanation: An unrecoverable error occurred during the initial loading of the supervisor components, MSUP, REX, AXS, and LAX.

System Action: A virtual storage dump is automatically taken, and a masked off wait state PSW is loaded, terminating system operation.

Operator Action: Retrieve hard copy RSCS operator console output, if possible, attach it to the RSCS storage dump after it has been printed, and submit it to local RSCS support personnel. Retry the RSCS IPL.

DMTAXM101I FILE 'spoolid' ('orgid') ENQUEUED ON LINK 'linkid'

Explanation: This message is issued when the file identified by 'spoolid', origin spoolid 'orgid', has arrived at the RSCS virtual machine, and has been successfully accepted and enqueued on the link identified by 'linkid'. This message is also issued when a previously pending file is accepted after a tag slot has become available.

System Action: The newly accepted file is made available to the link's line driver for future transmission. If the line driver is waiting for a file to transmit, it is notified that the new file is available.

Operator Action: None.

DMTAXM102I FILE 'spoolid' ('orgid') PENDING FOR LINK 'linkid'

Explanation: The file identified by 'spoolid', origin spoolid 'orgid', has arrived at the RSCS virtual machine, but has not been enqueued on the link 'linkid' to which it is addressed, because no tag slot is available.

System Action: The link's pending count is incremented, and the file will be automatically accepted when a tag slot becomes available.

Operator Action: If RSCS repeatedly exhausts its available tag slots in normal operation, generate more extra tag slots by using the 'TAGS' directory control statement, or by increasing the RSCS virtual machine's virtual storage size.

DMTAXM103E FILE 'spoolid' ('orgid') REJECTED -- INVALID DESTINATION ADDRESS

Explanation: The file identified by 'spoolid' origin spoolid 'orgid' has arrived at the RSCS virtual machine bearing a destination address which is invalid, or which specifies a location ID that is not defined in the local RSCS as either a link or an indirect route.

System Action: If the file originated from a local VM/370 user, it is transferred back to the originator along with this message. If the file originated at a remote location, it is purged and this message is sent to the originator.

User Action: If the file is transferred back from RSCS, correct the tag on the file to be transmitted by using the VM/370 TAG FILE 'spoolid' command to reflect a correct destination; then transfer the file back to the RSCS virtual machine by using the TRANSFER 'spoolid' TO 'vmid' command. If the file is purged because it arrives at a location which does not have the destination location ID defined, report the situation to local RSCS support personnel.

DMTAXM104I FILE ('orgid') SPOOLED TO 'userid1' -- ORG 'locid' ('userid2')  
mm/dd/yy hh:mm:ss

Explanation: A file has been received from a remote location, acknowledged, written to the VM/370 spool system, closed, and spooled to the local virtual machine to which the file was addressed.

orgid - the originating VM/370 spool ID, or the origin job number, of the file.

userid1 - the ID of the local virtual machine to which the file has been spooled.

locid - the location identifier of the file's originator.

userid2 - the name of the file originator's system or device at the remote location.

mm/dd/yy - the date of the file's origination at the remote location.

hh:mm:ss - the time of day of the file's origination at the remote location.

System Action: The virtual output device used to process the file is detached and normal processing continues.

Operator Action: None.

DMTAXM105I FILE 'spoolid' PURGED

Explanation: The file identified by 'spoolid' has been purged from the system as a result of normal processing.

System Action: The file's virtual storage tag is dequeued and its slot is freed. If another file is pending, it is accepted. All system tables are updated, and normal processing continues.

Operator Action: None.

DMTAXM106I FILE 'spoolid' MISSING -- DEQUEUED FROM LINK 'linkid'

Explanation: The file identified by 'spoolid' could not be located in the RSCS virtual machine spool input file queue during an attempt to open the file for the link identified by 'linkid'. This situation can arise when a user retrieves a file from the the RSCS spool queue using the VM/370 "TRANSFER 'spoolid' FROM 'vmid'" command.

System Action: The file's virtual storage tag is dequeued and its slot is freed. If another file is pending, it is accepted. The link table entry is updated, and normal processing continues.

Operator Action: No action is necessary. This message does not indicate an error condition.

DMTAXM107I 'nn' PENDING FILES FOR LINK 'linkid' MISSING

Explanation: A number ('nn') of pending files for the link identified by 'linkid' have been found to be missing from the RSCS virtual machine spool input queue during an attempt to accept a pending file. This situation can arise when a user retrieves a file from the RSCS spool queue using the VM/370 "TRANSFER 'spoolid' FROM 'vmid'" command.

System Action: The link table entry is updated to reflect the proper pending file status, and normal processing continues.

Operator Action: No action is necessary. This message does not indicate an error condition.

DMTxxx108E SYSTEM ERROR READING SPOOL FILE 'spoolid'

Explanation: A return code reflecting a VM/370 system error has been received in response to a read to the file identified by 'spoolid'.

System Action: The error is logged, the identified file is purged or placed in a HOLD status (depending on the affected line driver), and link processing continues.

Operator Action: This message indicates a VM/370 system error. Notify local system support personnel.

DMTAXM109I FILE QUEUE REORDERED

Explanation: As the result of an RSCS CLOSE, DEFINE, DELETE, REORDER, ROUTE, or START command, or as the result of a link deactivation, the inactive file queue has been reordered to reflect the updated status of RSCS.

System Action: Each file enqueued by RSCS is reexamined and, if appropriate, rerouted in light of changed system status.

Operator Action: None

DMTAXM110E FILE 'spoolid' REJECTED -- INVALID DEVICE TYPE

Explanation: The file identified by 'spoolid' has arrived at the RSCS virtual machine for transmission. The AXS task has determined that the file was produced on a virtual spool device that is not supported by RSCS. Valid spool device types are PRT, 1403, 3211, 3203, 3289E, 3262, 1443, PUN, 2540P, and 3525.

System Action: The file is transferred back to the originator along with this message.

User Action: If possible, redefine the spool device that produced the file and resend the file to RSCS.

DMTAXM111I USER 'userid' NOT IN CP DIRECTORY -- FILE ('orgid') SPOOLED TO SYSTEM

Explanation: A file received by RSCS was addressed to a local user 'userid' which is not in the local VM/370 system directory. The file had an origin spool ID of 'orgid'.

System Action: The received file is spooled to a real unit record device at the receiving location.

Operator Action: None.

DMTAXM112E FILE 'spoolid' ('orgid') REJECTED BY RSCS ACCOUNTING EXIT

Explanation: The file identified by 'spoolid' origin spoolid 'orgid' has arrived at the RSCS virtual machine for transmission. The installation accounting exit has determined that the file should not be transmitted.

System Action: If the file originated from a local VM/370 user, it is transferred back to the originator along with this message. If the file originated at a remote location, it is purged and this message is sent to the originator.

User Action: Check your local installation operating procedures to determine what factors are considered for rejecting a file and alter the file if possible. For example, the local installation may restrict file transmission from certain classes of users or files which are larger than some predetermined size.



DMTxxx141I LINE 'vaddr' READY FOR CONNECTION TO LINK 'linkid'

Explanation: This message is issued by a line driver to inform the operator that the line identified by 'vaddr' is being enabled for communications processing to the link identified by 'linkid'. Normally, this is the first message issued by a line driver after link activation, and it may be issued during active processing after a line becomes disconnected.

System Action: The line driver begins an enable operation on the line and waits for completion, signalling a completed connection. If the line identified by 'vaddr' is a non-switchable line, the connection completes automatically when the telecommunications hardware is properly configured and functional. Normal RSCS processing continues.

Operator Action: No response is needed if the line identified by 'vaddr' is a non-switchable line, or if it is a switchable line with auto-answer and the remote station is to complete the connection. If the line is a switchable line, complete the connection to the location identified by 'linkid' (typically, dial and establish the connection).

DMTxxx142I LINK 'linkid' LINE 'vaddr' DATASET READY

Explanation: This message signals completion of the line connection for the link identified by 'linkid' on the line port address identified by 'vaddr'. This message is issued automatically when a non-switchable line is enabled, and it is issued when a connection is completed for a switchable line. This message does not necessarily indicate that any successful interaction with the remote station has taken place on the connected line.

System Action: Normal exchange of files, commands, and messages automatically begins if the telecommunication hardware and remote system are properly initialized and functioning correctly.

Operator Action: None.

| DMTxxx143I LINK 'linkid' LINE 'vaddr' DISABLED

Explanation: The virtual line port address identified by 'vaddr' and associated with the active link identified by 'linkid' is now disconnected, having been connected prior to the message. This may be the result either of an apparent line disconnection due to line errors, or of a remote station disconnection, or of the execution of a disabling sequence by the local line driver during link deactivation.

System Action: If the link is not in the process of deactivating, the line driver will automatically attempt to reestablish the line connection. Exchange of files, commands, and messages is suspended until the line reconnection is completed.

Operator Action: If the link is not being deactivated, perform installation procedures for reconnecting the line.

DMTxxx144I RECEIVING FILE ('orgid') ON LINK 'linkid' FROM 'locid' 'userid',  
REC nnnnnnnn

Explanation: This message indicates that reception of a new file from the remote location identified by 'locid' and user at that location identified by 'userid' (if any) has begun. The file being received has an origin spoolid indicated by 'orgid' and contains the number of records indicated by 'nnnnnnnn'.

System Action: File processing continues, and the new file is written to the VM/370 spool system as it is received.

Operator Action: None.

DMTxxx145I RECEIVED FILE ('orgid') ON LINK 'linkid' TO 'locid' 'userid'

Explanation: A new file has been completely received and acknowledged on the link identified by 'linkid'. The originating spoolid or job number of the new file is identified by 'orgid'. The file received is addressed to the location identified by 'locid' and the to the user at that location identified by 'userid'.

System Action: If the file is addressed to the local location, it is spooled to the receiving user or queued for real output. If the file is addressed to another location, it is enqueued for transmission on the next link of its path. Normal link processing continues.

Operator Action: None.

DMTxxx146I SENDING FILE 'spoolid' ('orgid') ON LINK 'linkid' FROM 'locid'  
'userid', REC nnnnnnnn

Explanation: This message indicates that transmission of a file from the remote location identified by 'locid' and user at that location identified by 'userid' (if any) has begun. The file being transmitted has an origin spoolid indicated by 'orgid' and contains the number of records indicated by 'nnnnnnnn'. The identified file has become active.

System Action: Transmission of the file will normally continue to completion. If the file transmission is interrupted by a system failure or telecommunication hardware failure, the file will be retained and retransmitted, either from the point of interruption or from the beginning, depending on variable system characteristics and error conditions.

Operator Action: None.

DMTxxx147I SENT FILE 'spoolid' ('orgid') ON LINK 'linkid' TO 'locid' 'userid'

Explanation: Transmission of the active file identified by 'spoolid' on the link identified by 'linkid' has been successfully completed and acknowledged by the remote station. The file is addressed to the location identified by 'locid', and to the user identified by 'userid' at that location. The file's originating spoolid or job number is identified by 'orgid'.

System Action: Disposition of the identified file follows, according to the status of the file. Normally the file would be purged, unless multiple copies of the file are being sent to a remote terminal. Normal link processing continues.

Operator Action: None.

DMTxxx148I ACTIVE FILE 'spoolid' SENDING RESUMED ON LINK 'linkid'

Explanation: Transmission of the file identified by 'spoolid' on the link identified by 'linkid' has been resumed from the point at which transmission had previously been interrupted. File transmission may have been interrupted as the result of a telecommunication hardware failure, an unexpected terminal error in the link's line driver, a remote system failure, or entry of the link into immediate hold status.

System Action: Normal link processing continues.

Operator Action: None.

DMTxxx149I LINK 'linkid' LINE ACTIVITY: TOT= mmmmmmmm; ERRS= nnnnnnnn; TMOUTS= pppppppp

Explanation: This message is issued in response to a QUERY 'linkid' SUM command or a TRACE 'linkid' SUM command, and occasionally thereafter while trace sum mode is in effect for the specified link. The message is reissued when any one of the trace values reaches its incremental threshold, normally 20.

mmmmmmm - the total number of successful transactions that have

taken place on the identified link since the last similar message was issued, or since the link was initially activated.

nnnnnnnn - the total number of transactions that have ended in error since the last similar message was issued, or since the link was initially activated.

pppppppp - the total number of time-outs that have occurred while waiting for response from the remote station since the last similar message was issued, or since the link was initially activated.

System Action: Normal RSCS processing continues.

Operator Action: The trace function provides information concerning communications on the link, for use in diagnosing and correcting problems with communication hardware. If the trace information seems to indicate serious malfunctioning, take corrective action such as dropping and redialing a switchable telecommunication port, deactivating and restarting a link using a different port, or reporting the difficulty to support and maintenance personnel.

DMTxxx160I LINE 'vaddr' DISABLED FOR LINK 'linkid'

Explanation: Communication on the link identified by 'linkid' via the line identified by 'vaddr' has been terminated, and the line has been disabled. If the line is a switchable line, then the line has been disconnected.

This message may be issued during normal processing as a result of a spontaneous line disconnection. It is always issued during link deactivation.

System Action: If link deactivation is in process, it continues normally. Otherwise, the line driver will reinitialize and reenable the line, allowing a switchable line to be redialed. File processing for the link is suspended.

Operator Action: None.

DMTxxx170I FROM 'locid': (message text)

Explanation: The character string included in the message as (message text) has been received from the remote location identified by 'locid', and is addressed to the recipient. The message originated either from automatic remote system processing, or from the remote RSCS operator.

System Action: Normal RSCS processing continues.

Operator Action: If the message originated from a remote RSCS operator and you wish to respond, address the response message as: MSG 'locid' RSCS (response message text).

DMTxxx171I FROM 'locid'('userid'): (message text)

Explanation: The character string included in the message as (message text) has been received from a user identified by 'userid' at the location identified by 'locid', and is addressed to the message recipient. The special keyword RSCS appears as the 'userid' field when the message origin is RSCS operator console.

System Action: Normal RSCS processing continues.

Operator Action: None.

| DMTCMX172I CPQ: (command response)

| Explanation: The character string included in the message as (command response) has been received from a remote location and is addressed to the recipient. The message was generated as the result of a CPQUERY command execution.

| System Action: Normal RSCS processing continues.

| Operator Action: None.

DMTxxx190E INVALID SPOOL BLOCK FORMAT ON FILE 'spoolid'

Explanation: VM/370 spool control or data information contained in the file identified by 'spoolid' has been found to be in error at the local installation.

| System Action: The error is logged, the identified file is purged or placed in a HOLD status (depending on the affected line driver), and link processing continues.

Operator Action: Notify local VM/370 system support personnel of this error.

| DMTCMX200I RSCS NETWORKING

Explanation: This message is issued in response to a null line entered as an RSCS command. A null line contains no characters.

System Action: If a command entered from an RSCS operator's console contains no characters as the result of console input line editing, this message is not issued and another console read is started. Normal RSCS processing continues.

Operator Action: None.

DMTCMX201E INVALID COMMAND 'command'

Explanation: The character string identified by 'command' was entered as an RSCS command. The command either is prohibited for use by the command originator, or is not a defined RSCS command.

System Action: The command is ignored, and normal processing continues.

Operator Action: Retry the command if it was incorrect.

DMTxxx202E INVALID LINK 'linkid'

Explanation: The character string identified by 'linkid' was entered as an RSCS link ID in a console command input string, and it does not conform to syntactical requirements for RSCS link IDs. (It is not one to eight alphanumeric characters.)

System Action: The command is ignored, and normal processing continues.

Operator Action: Retry the command if it was incorrect.

DMTxxx203E INVALID SPOOL ID 'spoolid'

Explanation: The character string identified by 'spoolid' was entered as a spool file ID in a console command input string, and it does not conform to syntactical requirements for VM/370 spool file IDs (one to four decimal digits, 1-9900).

System Action: The command is ignored, and normal processing continues.

Operator Action: Retry the command if it was incorrect.

DMTxxx204E INVALID KEYWORD 'keyword'

Explanation: The character string identified by 'keyword' was entered as a keyword in a console command input string, and it is not a valid keyword for the command issued.

System Action: The command is ignored, and normal processing continues.

Operator Action: Consult RSCS command documentation to determine command syntax and restrictions. Retry the command if it was incorrect.

| DMTxxx205E CONFLICTING KEYWORD 'keyword'

Explanation: The keyword identified by 'keyword' was used in the preceding command in an invalid way. The keyword may have been entered more than once in the same command line, or the keyword may be invalid because another mutually exclusive keyword was entered in the same command.

System Action: The command is ignored, and normal processing continues.

Operator Action: Consult RSCS command documentation to determine command syntax and restrictions. Retry the command if it was incorrect.

| DMTxxx206E INVALID OPTION 'keyword' 'option'

Explanation: The combination of a keyword and its option identified by 'keyword' 'option' was entered in a console command line, and it is not a valid combination for the command issued.

System Action: The command is ignored, and normal processing continues.

Operator Action: Consult RSCS command documentation to determine command syntax and restrictions. Retry the command if it was incorrect.

DMTCMX207E CONFLICTING OPTION 'keyword' 'option'

Explanation: The combination of a keyword and its option identified by 'keyword' 'option' was used in the preceding command in an invalid way. The presence of another keyword or keyword-and-option combination in the same command may preclude specification of the identified keyword-and-option combination.

System Action: The command is ignored, and normal processing continues.

Operator Action: Consult RSCS command documentation to determine command syntax and restrictions. Retry the command if it was incorrect.

DMTCMX208E INVALID USER ID 'userid'

Explanation: The operand identified by 'userid' was entered in an RSCS command as an interactive user ID, and is invalid as such. Valid interactive user IDs contain one to eight nonblank valid EBCDIC characters.

System Action: The command is ignored, and normal processing continues.

Operator Action: Retry the command if it was incorrect.

DMTCMX209E RESTRICTED COMMAND 'command'

Explanation: An attempt was made to execute the command identified by 'command' which is not authorized for execution by the originating remote operator or user.

System Action: The command has no effect, and normal processing continues.

Operator Action: Retry the command if it was incorrect. Direct questions concerning authorization for command execution to local RSCS support personnel. Contact the RSCS operator for any special line, file, or routing requests.

DMTCMX210E INVALID LOCATION 'locid'

Explanation: A previously entered command specified as its object a location ID identified by 'locid' which was not valid. The invalid location ID may have contained more than eight characters, or may have contained no characters at all.

System Action: The command is ignored, and normal processing continues.

Operator Action: Retry the command if it was incorrect.

DMTxxx300I ACCEPTED BY TASK 'task'

Explanation: The preceding console command has been processed by the RSCS syntax scanner and first level semantic processor, and a command element has been built. That command element has been made available to the task named 'task', and that task has accepted the command element for second level semantic processing.

System Action: Command semantic processing continues at the task named 'task'. Further response to the command will be issued from that task.

Operator Action: None.

DMTxxx301E REJECTED BY TASK 'task' -- PREVIOUS COMMAND ACTIVE

Explanation: The preceding console command has been processed by the RSCS syntax scanner and first level semantic processor. A command element has been built and made available to the task named



'task', but that task was unable to accept the command element for further processing because a previously issued command was still being actively processed.

System Action: The command execution is terminated, the command has no effect, and normal processing continues.

Operator Action: Retry the command. Command execution will be successful when previous command processing is complete.

DMTxxx302E LINK 'linkid' IS NOT DEFINED

Explanation: The syntactically valid link ID identified by 'linkid' was entered in the preceding console command, but no such link is defined with that ID and the command issued requires a defined link ID.

System Action: The command execution is terminated, the command has no effect, and normal processing continues.

Operator Action: Check to see if the link ID was specified as intended. If it was incorrectly typed, retry the command with a correct link ID. If it was correctly typed, you must define the specified link in an RSCS DEFINE command or in a LINK statement in the RSCS directory before the command can be executed.

DMTxxx303E LINK 'linkid' IS NOT ACTIVE

Explanation: The link identified by 'linkid' was specified in the preceding command, but the link is inactive and the command requires specification of an active link.

System Action: The command execution is terminated, the command has no effect, and normal processing continues.

Operator Action: Verify that the command was entered as intended. Retry the command if it was incorrectly entered, or activate the specified link prior to retrying the command.

DMTxxx304E REJECTED BY TASK 'task' -- NOT RECEIVING

Explanation: Processing of the preceding command could not be completed because the second level processing task named 'task' refused to accept the command service request from the REX task.

System Action: The command is ignored, and normal processing continues.

Operator Action: Repeated occurrences of this message indicate a system error; notify local RSCS support personnel in this case.

DMTCMX310E LOCATION 'locid' IS NOT DEFINED

Explanation: A previously entered command specified as its object a location ID identified by 'locid' which was valid, but which was not defined as a direct link or an indirect route at the time of command processing.

System Action: The command is ignored, and normal processing continues.

Operator Action: Retry the command if it was incorrect. A DEFINE command may be executed to temporarily define a new link, or a ROUTE command may be executed to temporarily define a new indirectly routed location. Corresponding LINK and ROUTE entries should be made to the RSCS DIRECT file for permanent directory definitions.

DMTxxx320E LINK 'linkid' NOT CONNECTED

Explanation: A previous MSG or CMD command was addressed by its originator such that it would have been transmitted on the link identified by 'linkid'. This means either that the command's destination location address was the link's location (identified by 'linkid'), or that the destination location was routed by the local RSCS via that link. When the command was presented to the link's line driver for transmission, the line driver was unable to successfully communicate with the remote station due to a malfunction in the telecommunications hardware or the remote station.

System Action: The message or command is discarded, and normal processing continues.

Operator Action: Inspect the link's telecommunications hardware for indications of line disconnection or malfunction. When the problem has been corrected, normal processing will begin, and the response message to a QUERY 'locid' command will say 'CONNECT' rather than 'ACTIVE'. Retry the CMD or MSG command when the link has been reconnected.

DMTRGX330E USERID MISSING OR INVALID

Explanation: In a preceding RSCS MSG command the userid was not supplied or was invalid at its destination location.

System Action: The message is discarded undelivered.

User Action: Retry the MSG command if it was entered in error.

DMTRGX331E 'userid' NOT LOGGED ON

Explanation: The user identified by 'userid' which was specified in an RSCS MSG command could not receive the message because the user was not logged on.

System Action: The message is discarded undelivered.

User Action: Retry the MSG command later.

DMTRGX332E 'userid' NOT RECEIVING

Explanation: The user identified by 'userid' which was specified in an RSCS MSG command could not receive the message either because the user's console is disconnected or because the user has set messages or warnings off by using the CP SET command.

System Action: The message is discarded undelivered.

User Action: Retry the MSG command later.

DMTIRX400I RSCS DIRECT mm/dd/yy hh:mm, nn MAX ACTIVE LINKS, tt TAGS

Explanation: This message is generated at system initialization immediately after the initial RSCS message DMTIRX000I. The directory file (RSCS.DIRECT) used to initialize RSCS was last modified at the date and time specified by mm/dd/yy hh:mm.

nn is the maximum number of links that may be active at one time. This number is calculated based on the virtual storage size of the RSCS virtual machine.

tt indicates the total number of available tag slots. This number also depends on available virtual storage size.

System Action: Initialization proceeds with the execution of the PROFILE RSCS command file, if any, and normal RSCS processing begins.

Operator Action: Verify the version of the RSCS directory used for initialization.

DMTINI410I NUCLEUS WRITE COMPLETE

Explanation: The RSCS nucleus has been successfully written to the RSCS system disk.

System Action: A masked off wait state PSW is loaded with a wait state code of X'12'.

Operator Action: Test the newly loaded RSCS by IPLing the RSCS system disk onto which the nucleus was written.

DMTINI411R SYSTEM DISK ADDRESS = {cuu}

Explanation: The RSCS loader is prompting the operator for the virtual device address of the disk onto which the RSCS nucleus is to be written. This disk becomes the RSCS system disk.

System Action: If an invalid device address is entered, message DMTINI481E INVALID DEVICE ADDRESS - REENTER is issued. Message DMTINI408R is then reissued, and a valid RSCS system disk virtual device address may be entered.

If the IPL device designated is not currently defined, is not in read/write status, or is an unsupported device type, message DMTINI484E IPL DEVICE ERROR - REENTER is issued. Message DMTINI411R is then reissued.

Operator Action: Normally, enter the virtual device address of the disk to become the RSCS system disk. If your initial entry was rejected, enter CP console function mode by signalling attention, and determine the status of the designated device by entering the CP command:

QUERY VIRTUAL cuu

Take corrective action to define the device for the RSCS virtual machine, or to access it in read/write status. Reenter RSCS by issuing the CP command:

BEGIN

Enter the RSCS system device address in response to this message.

After the IPL device address is accepted, message DMTINI412R is issued.

DMTINI412R REWRITE THE NUCLEUS ? {YES|NO}

Explanation: The RSCS loader is prompting the operator for a decision as to whether or not the RSCS nucleus is to be rewritten to the system disk.

System Action: If a response other than "yes" or "no" is given, message DMTINI483E INVALID REPLY - ANSWER "YES" OR "NO" is issued. Message DMTINI412R is reissued and a valid response may be entered.

If "no" is entered, the remaining questions pertaining to the

writing of the RSCS nucleus are skipped, and initialization is immediately begun by the RSCS system which has been loaded into virtual storage.

If "yes" is entered, message DMTINI413R is issued.

Operator Action: Enter "yes" or "no", as described above.

DMTINI413R NUCLEUS CYL/BLK ADDRESS = {nnn}

Explanation: The RSCS loader is prompting the operator for the cylinder or block address on the designated RSCS system disk to which the RSCS nucleus is to be written. 'nnn' is to be entered in decimal, and normally is the number of the first cylinder or block beyond the area of the disk in use for CMS files. (The block number must be a multiple of 256.) This number will normally be the same as the number of cylinders or blocks previously specified in the CMS command:

|           FORMAT   cuu   mode   nnn  (RECOMP

System Action: If a valid decimal cylinder or block number is not entered, message DMTINI482E INVALID CYL/BLK NUMBER - REENTER is issued, followed by reissue of message DMTINI413R.

If the cylinder or block specified is not greater than the number of cylinders or blocks already in use on the device for CMS files (as specified in a preceding CMS FORMAT command), the message DMTINI485E NUCLEUS CYL/BLK SPECIFICATION UNACCEPTABLE, ERROR 'x' is issued. Message DMTINI413R is then immediately reissued.

When the nucleus cylinder address is correctly entered, message DMTINI410R is issued.

Operator Action: Normally, enter the cylinder or block number as described above. If your initial entry was rejected, proceed as follows: Reenter the cylinder or block number correctly if it was entered in error. If the cylinder or block number was entered correctly, the cylinder or block number is not valid and you must determine a valid number. Use the CMS command:

|           QUERY DISK  mode

to determine the number of cylinders or blocks formatted for use by the CMS file system. Use the CP command:

|           QUERY VIRTUAL  vaddr

to determine the total number of cylinders or blocks on the virtual disk. If the number of cylinders or blocks in use for CMS is less than the total number available on the disk, use the number of cylinders or blocks in use for CMS files as the RSCS nucleus cylinder or block address when you retry the RSCS load. If the

number of cylinders or blocks in use for CMS files equals the total number available on the disk, use the CMS command:

```
FORMAT vaddr mode nnn (RECOMP
```

to reduce the number of cylinders or blocks in use by CMS, as described in the RSCS installation procedures in Part 2 of this manual.

Typical values for 'nnn' are as follows, depending on the type of disk to be used for the RSCS system disk:

```
For a 2314: 006
For a 3330: 003
For a 3340: 008
For a 3350: 002
For a 3380: 002
For a 3310 or 3370: 1536
```

DMTIRX449I MAX TAGS REQUEST OF 1 PER VIRTUAL STORAGE K ASSUMED

Explanation: The RSCS directory contained a valid TAGS entry requesting more than the maximum number of tag slots allowed for the virtual storage size in use. The referenced TAGS statement is typed immediately preceding this statement. The maximum number of extra tag slots is one for each 1024 bytes of virtual storage.

System Action: The maximum number of extra tag slots is generated, and normal initialization proceeds.

Operator Action: Verify that the correct RSCS directory is in use and that the RSCS virtual machine has the intended virtual storage size. If both are the case, modify the TAGS entry in the RSCS directory to request a number of extra tag slots no greater than the allowed maximum for the virtual storage size in use.

DMTIRX450E INVALID DIRECTORY ENTRY

Explanation: During initialization, the RSCS directory was found to contain a record which was neither a comment nor a valid directory entry. The referenced record is typed immediately preceding this message.

System Action: The record is ignored and normal initialization processing continues.

Operator Action: Update the directory to correct the desired entry or to eliminate the invalid record.

DMTIRX451E DIRECTORY ENTRY OUT OF ORDER

Explanation: During initialization, an RSCS directory entry was recognized in a position which either precedes a prerequisite entry or follows a valid entry which it is required to precede. The referenced entry is typed immediately preceding this message.

System Action: The entry is ignored, and normal initialization processing continues.

Operator Action: Update the RSCS directory to correct the erroneous order of entries.

DMTIRX452E LOCAL PREVIOUSLY SPECIFIED

Explanation: During initialization, an RSCS directory entry describing the local location ('LOCAL') was recognized after the acceptance of a previous valid LOCAL entry. The referenced entry is typed immediately preceding this entry.

System Action: The first LOCAL entry remains in effect, the subsequent LOCAL entry is ignored, and normal initialization processing continues.

Operator Action: Update the RSCS directory to include only one LOCAL entry.

DMTIRX453E PARM PREVIOUSLY SPECIFIED FOR LINK

Explanation: During initialization, the RSCS directory was found to contain an entry specifying a default START parm ('PARM') on a link for which a previous valid PARM entry had been encountered. The referenced entry is typed immediately preceding this message.

System Action: The subsequent PARM entry is ignored, the first PARM entry encountered for the link remains in effect, and normal initialization processing continues.

Operator Action: Update the RSCS directory to remove multiple PARM entries which specify the same link.

DMTIRX454E TAGS PREVIOUSLY SPECIFIED

Explanation: During initialization, the RSCS directory was found to contain more than one request for extra tag slots ('TAGS'). This message is produced each time a TAGS entry is encountered after a valid previous TAGS record was processed. The subsequent TAGS entry is typed immediately preceding the message.

System Action: The first valid TAGS entry encountered in the RSCS directory remains in effect. The subsequent TAGS entry is ignored, and normal initialization processing continues.

Operator Action: Update the RSCS directory to contain a single valid TAGS entry.

#### DMTIRX455E DUPLICATE LOCATION ID

Explanation: During initialization, the RSCS directory was found to contain a routing entry ('ROUTE') which specified a destination location ID which had been specified in a valid previous ROUTE entry. The subsequent ROUTE entry is typed immediately preceding this message.

System Action: The original ROUTE entry remains in effect, the subsequent ROUTE entry is ignored, and normal initialization processing continues.

Operator Action: Update the RSCS directory to contain no more than one ROUTE entry for a single, unique destination location ID.

#### DMTIRX456E DUPLICATE LINK ID

Explanation: During initialization, the RSCS directory was found to contain a link definition entry ('LINK') specifying a link ID which had been specified in a valid previous LINK entry. The subsequent LINK entry is typed immediately preceding this message.

System Action: The preceding LINK entry remains in effect, the subsequent LINK entry is ignored, and normal initialization processing continues.

Operator Action: Update the RSCS directory to include no more than one LINK entry which specifies a single, unique link ID.

#### DMTIRX457E DUPLICATE PORT ADDRESS

Explanation: During initialization, the RSCS directory was found to contain more than one switchable port entry ('PORT') which specified the same port address. The subsequent PORT entry is typed immediately preceding this message.

System Action: The preceding PORT entry remains in effect, the subsequent PORT entry is ignored, and normal initialization processing continues.

Operator Action: Update the RSCS directory to contain no more than one PORT entry for a single, unique port address.



DMTIRX458E UNDEFINED LINK ID

Explanation: During initialization, the RSCS directory was found to contain a default parameter entry ('PARM') or a routing entry ('ROUTE') specifying a link ID for which no link had been defined. The referenced entry is typed immediately preceding this message.

System Action: The PARM or ROUTE entry is ignored, and normal initialization processing continues.

Operator Action: Update the RSCS directory so that all link IDs specified in PARM and ROUTE entries have been defined by previous LINK entries.

DMTIRX461E LOCATION ID MISSING OR INVALID

Explanation: During initialization, the RSCS directory was found to contain a local definition entry ('LOCAL') or routing entry ('ROUTE') specifying a local or destination location ID which was too long or contained invalid characters, or the location ID was not specified at all. The referenced LOCAL or ROUTE entry is typed immediately preceding this message.

System Action: The LOCAL or ROUTE entry is ignored, and normal initialization processing continues.

Operator Action: Update the RSCS directory to contain the valid location IDs desired by the installation.

DMTIRX462E LINK ID MISSING OR INVALID

Explanation: During initialization, the RSCS directory was found to contain a link definition entry ('LINK'), a default parm entry ('PARM'), or a routing entry ('ROUTE') specifying a link ID which was too long, contained invalid characters, or was identical to the previously defined local location ID, or which did not specify a link ID at all. The referenced LINK, PARM, or ROUTE entry is typed immediately preceding this message.

System Action: The entry in error is ignored, and normal initialization processing continues.

Operator Action: Update the RSCS directory to contain the valid link IDs desired by the installation.

DMTIRX463E INVALID DRIVER SPECIFICATION

Explanation: During initialization, the RSCS directory was found to contain a link definition entry ('LINK') specifying a driver type (CMS filename) which was too long, or which contained invalid characters. The referenced LINK entry is typed immediately

preceding this message.

System Action: The entry in error is ignored, and normal initialization processing continues.

Operator Action: Update the RSCS directory to contain the valid line driver type desired by the installation.

#### DMTIRX464E PORT ADDRESS MISSING OR INVALID

Explanation: During initialization, the RSCS directory was found to contain a link definition entry ('LINK') or switchable port entry ('PORT') specifying a port address which contained invalid characters or which was out of the valid port address range (X'002'-X'5FF'); or the port address was not specified at all on a PORT entry. The referenced LINK or PORT entry is typed immediately preceding this message.

System Action: The LINK or PORT entry in error is ignored, and normal initialization processing continues.

Operator Action: Update the RSCS directory to contain the valid port address desired by the installation.

#### DMTIRX465E INVALID ZONE SPECIFICATION

Explanation: During initialization, the RSCS directory was found to contain a local location definition entry ('LOCAL') or a link definition entry ('LINK') specifying a time zone number which contained invalid characters, or which was not within the range of valid time zone numbers. The time zone number is defined as the number of time zone boundaries between the location and Greenwich to the east, the International Date Line being included as a time zone boundary; and the valid range of time zone numbers is 0 to 24 decimal. The referenced LOCAL or LINK entry is typed immediately preceding this message.

System Action: The LOCAL or LINK entry in error is ignored, and normal initialization processing continues.

Operator Action: Update the RSCS directory to contain the valid time zone number desired by the installation.

#### DMTIRX466E INVALID TASK SPECIFICATION

Explanation: During initialization, the RSCS directory was found to contain a link definition entry ('LINK') specifying a default task name which contained more than four characters, or invalid characters. The referenced LINK entry is typed immediately preceding this message.

System Action: The LINK entry in error is ignored, and normal initialization processing continues.

Operator Action: Update the RSCS directory to contain the valid task name desired by the installation.

#### DMTIRX467E INVALID CLASS SPECIFICATION

Explanation: During initialization, the RSCS directory was found to contain a link definition entry ('LINK') specifying a default class which contained more than four characters, or invalid characters. The referenced LINK entry is typed immediately preceding this message.

System Action: The LINK entry in error is ignored, and normal initialization processing continues.

Operator Action: Update the RSCS directory to contain the valid class specification desired by the installation.

#### DMTIRX468E INVALID KEEP SPECIFICATION

Explanation: During initialization, the RSCS directory was found to contain a link definition entry ('LINK') specifying a keep number which contained invalid characters, or which was not within the range of valid keep numbers (0 to 16 decimal). The keep number specifies the minimum number of tag slots which are to be kept available for exclusive enqueueing of files on the link being defined. The referenced LINK entry is typed immediately preceding this message.

System Action: The LINK entry in error is ignored, and normal initialization processing continues.

Operator Action: Update the RSCS directory to contain the valid number of tag slots desired by the installation to be reserved for the link to be defined.

#### DMTIRX469E TAGS COUNT MISSING OR INVALID

Explanation: During initialization, the RSCS directory was found to contain a tag slot request entry ('TAGS') which specified an extra tag slot count containing invalid characters, or which was not within the valid range for extra tag slot requests (1 to 16384 decimal). The referenced TAGS entry is typed immediately preceding this message.

System Action: The TAGS entry in error is ignored, and normal initialization processing continues.

Operator Action: Update the RSCS directory to specify the valid keep number of extra tag slots desired by the installation.

DMTINI481E INVALID DEVICE ADDRESS - REENTER

Explanation: The device address entered was not correct. It either included at least one character which is not a valid hexadecimal digit (0-9, A-F) or it was not within the range of valid device addresses (X'001'-X'5FF').

System Action: Message DMTINI411R is reissued.

Operator Action: See the description of message DMTINI411R.

DMTINI482E INVALID CYL/BLK NUMBER - REENTER

Explanation: Either zero or an invalid decimal number was entered.

System Action: Message DMTINI413R is reissued.

Operator Action: See the description of message DMTINI413R.

DMTINI483E INVALID REPLY - ANSWER "YES" OR "NO"

Explanation: The only valid responses to the query are 'yes' or 'no'. Neither was entered.

System Action: Message DMTINI412R is reissued.

Operator Action: See the description of message DMTINI412R.

DMTINI484E IPL DEVICE ERROR - REENTER

Explanation: The virtual device address entered as the address of the RSCS system disk was not defined (attached) for the RSCS virtual machine, or the disk was not in write/read status, or the device at the entered address is not supported.

System Action: Message DMTINI411R is reissued.

Operator Action: See the description of message DMTINI411R.

DMTINI485E NUCLEUS CYL/BLK SPECIFICATION UNACCEPTABLE, ERROR 'x'.

Explanation: The specified nucleus cylinder or block number was not acceptable for the reason indicated by error code 'x':

<u>x</u>	<u>Error Explanation</u>
1	Would cause over-write of CMS files

- 2 Not enough blocks formatted
- 3 Block number not a multiple of 256
- 4 Not enough blocks on device

System Action: Message DMTINI413R is reissued.

Operator Action: See the description of message DMTINI413R.

#### DMTIRX490T UNSUPPORTED SYSTEM RESIDENCE DEVICE TYPE

Explanation: The VM/370 device type code for the I/O device from which RSCS was IPLed was not recognized as a DASD device type supported by RSCS as a system residence device.

System Action: RSCS initialization is terminated, and a masked off wait state PSW is loaded.

Operator Action: Reload RSCS to a DASD supported by RSCS as a system residence device.

#### DMTIRX491T FATAL ERROR READING RSCS DIRECT

Explanation: An unrecoverable I/O error occurred during initialization on the RSCS system residence device. The most likely cause of this error is the absence of the RSCS directory file (RSCS DIRECT) from the system residence device. Other possible causes include VM/370 sysgen or directory errors involving the RSCS system residence device, CMS or editor system errors in writing the RSCS DIRECT file, incompatible CMS file system update levels, or machine malfunctions on the associated real I/O device.

System Action: RSCS initialization is terminated, and a masked off wait state PSW is loaded.

Operator Action: Retry the RSCS IPL. If the error condition persists, investigate the possible causes listed in the explanation above, and correct any specification errors found. If the error condition continues to persist, or if it arises intermittently, dump RSCS using the CP command:

DUMP 0-

Submit the resulting dump to local RSCS support personnel.

#### DMTIRX492T FATAL ERROR LOADING DMTAXS

Explanation: An unrecoverable I/O error occurred during the initial loading of the RSCS DMTAXS module. The most likely causes of this error are the absence of the DMTAXS TEXT file from the RSCS system residence device, or the incorrect naming of the file as DMTAXS TXTxxxx. Other possible causes include CMS or assembler

system errors in writing the DMTAXS TEXT file, incompatible CMS file system update levels, or machine malfunctions on the associated real I/O device.

System Action: RSCS initialization is terminated, and a masked off wait state PSW is loaded.

Operator Action: Retry the RSCS IPL. If the error condition persists, investigate the possible causes listed in the explanation above and correct any specification errors found. If the error condition continues to persist, or if it arises intermittently, dump RSCS using the CP command:

DUMP 0-

Submit the resulting dump to local RSCS support personnel.

#### DMTIRX493T FATAL ERROR LOADING DMTLAX

Explanation: An unrecoverable I/O error occurred during the initial loading of the RSCS DMTLAX module. The most likely causes of this error are the absence of the DMTLAX TEXT file from the RSCS system residence device, or the incorrect naming of the file as DMTLAX TXTxxxx. Other possible causes include CMS or assembler system errors in writing the DMTLAX TEXT file, incompatible CMS file system update levels, or machine malfunctions on the associated real I/O device.

System Action: RSCS initialization is terminated, and a masked off wait state PSW is loaded.

Operator Action: Retry the RSCS IPL. If the error condition persists, investigate the possible causes listed in the explanation above and correct any specification errors found. If the error condition continues to persist, or if it arises intermittently, dump RSCS using the CP command:

DUMP 0-

Submit the resulting dump to local RSCS support personnel.

#### DMTIRX494T LOCAL LOCATION DEFINITION MISSING

Explanation: During initialization, no valid local location definition entry ('LOCAL') was encountered in the RSCS directory. The local location definition must be included as the first non-comment entry in the RSCS directory. No directory entry is accepted until a valid LOCAL entry has been processed.

System Action: RSCS initialization processing is terminated, and a masked off wait state PSW is loaded.

Operator Action: Update the RSCS directory to contain a valid LOCAL entry as the first non-comment directory entry.

DMTIRX495T VIRTUAL STORAGE SIZE INSUFFICIENT FOR INITIALIZATION

Explanation: During initialization, it was determined that the RSCS virtual machine size was less than 384K.

System Action: RSCS initialization processing is terminated, and a masked off wait state PSW is loaded.

Operator Action: Redefine the RSCS virtual machine size to 384K (or greater) by using the CP DEFINE command:

DEFINE STORAGE 384K

and re-IPL RSCS.

DMTINI498S IPL DEVICE WRITE I/O ERROR

Explanation: An uncorrectable I/O error occurred while writing the RSCS nucleus.

System Action: RSCS load processing is halted, and a masked off wait state PSW of code X'12' is loaded.

Operator Action: See the description of message DMTINI413R. Verify that the nucleus cylinder or block number entered in response to message DMTINI413R is not larger than the total number of cylinders or blocks on the specified RSCS system disk, and verify that the RSCS system disk is in write/read mode. If no error can be determined, notify local RSCS support personnel.

DMTINI499T IPL DEVICE READ I/O ERROR

Explanation: An uncorrectable I/O error occurred while reading the RSCS nucleus from the RSCS system disk during RSCS initialization.

System Action: RSCS loads the WAIT PSW. Since RSCS runs disabled for all interrupts during initialization, the loading of this PSW causes RSCS to enter a hard wait state.

Operator Action: Check the device, recreate the RSCS system disk if necessary, and re-issue the IPL command.

DMTAXM500I 'nn' FILE(S) CLOSED ON LINK 'linkid'

Explanation: A number of files denoted by 'nn' that were active on the inactive link identified by 'linkid' have been deactivated either in response to an RSCS CLOSE command, or as an automatic result of link deactivation.

System Action: Previously active input files are reenqueued for complete retransmission. Previously active output files are normally incomplete, and are therefore purged.

Operator Action: None.

DMTAXM501E LINK 'linkid' ACTIVE -- NO FILE(S) CLOSED

Explanation: The RSCS operator attempted to issue a CLOSE command to an active link specified by 'linkid'.

System Action: CLOSE command processing is suppressed and file status remains unchanged.

Operator Action: Reissue the command after the link has been deactivated.

DMTAXM502E FILE 'spoolid' INACTIVE -- NO ACTION TAKEN

Explanation: The file identified by 'spoolid' is already inactive. The action requested by the preceding command could not be performed.

System Action: The preceding command has no effect, and normal processing continues.

Operator Action: Verify the spool file ID used in the preceding command. If it was incorrect, retry the command with a corrected spool file ID. If it was correct, and the file is inactive, the preceding command was not valid for inactive files.

DMTxxx510I FILE 'spoolid' BACKSPACED

Explanation: The file identified by 'spoolid' has been backspaced according to the request in the previous BACKSPAC command.

System Action: File transmission continues, beginning from the new file position.

Operator Action: None.



DMTxxx511E NO FILE ACTIVE ON LINK 'linkid'

Explanation: A valid command for active files was issued to the link identified by 'linkid', but no file was being actively transmitted on the link at the time of command execution.

System Action: Normal link processing continues, and the command has no effect.

Operator Action: Retry the command if it was entered in error.

DMTAXM520I FILE 'spoolid' CHANGED

Explanation: The file identified by 'spoolid' has been altered as requested in the processing of the preceding command. The new file status remains in effect until it is changed again through operator command processing.

System Action: All appropriate action implied by the change of status is performed. This might include reordering a link queue if a file priority was changed, notifying a waiting line driver if a file class was changed, and so on. Normal RSCS processing continues.

Operator Action: None.

DMTAXM521I FILE 'spoolid' HELD FOR LINK 'linkid'

Explanation: The file identified by 'spoolid' has been placed in hold status as the result of processing of the preceding command. The file will be kept in hold status and will not be transmitted until it is removed from hold status by command processing.

Operator Action: None.

DMTAXM522I FILE 'spoolid' RELEASED FOR LINK 'linkid'

Explanation: The file identified by 'spoolid' and enqueued on the link identified by 'linkid' has been released from hold status as a result of the processing of the preceding command. The file is now eligible for transmission on the link.

System Action: The released file will be selected for transmission according to the normal rules of file priority. The link's line driver is asynchronously notified of the file's availability for transmission if the line driver had been waiting for a file to transmit. Normal RSCS processing continues.

Operator Action: None.

DMTAXM523I LINK 'linkid' QUEUE REORDERED

Explanation: The file tag queue in RSCS virtual storage for the link identified by 'linkid' has been reordered in response to execution of a command. The new order of the queue represents the order of file transmission for the link.

System Action: The files reordered to the beginning of the queue are given a priority of zero (highest), and normal processing continues

Operator Action: None.

DMTAXM524E FILE 'spoolid' ACTIVE -- NO ACTION TAKEN

Explanation: The file identified by 'spoolid' is actively being read and transmitted on a link, and the action requested in the preceding command cannot be performed on active files.

System Action: The preceding command has no effect, and normal processing continues.

Operator Action: If desired, deactivate the file by means of a FLUSH 'linkid' 'spoolid' HOLD command, and retry the preceding command.

DMTAXM525E FILE 'spoolid' IS FOR LINK 'linkid' -- NO ACTION TAKEN

Explanation: The file identified by 'spoolid' is enqueued on the link identified by 'linkid', which is different from the linkid specified in the preceding command.

System Action: The action requested in the preceding command is not performed, and normal processing continues.

Operator Action: Verify that the specified spool file ID and link ID are correct. If an error is found, retry the preceding command.

DMTAXM526E FILE 'spoolid' NOT FOUND -- NO ACTION TAKEN

Explanation: The file identified by 'spoolid' which was specified in the preceding command is not owned by RSCS, or is pending.

System Action: The preceding command has no effect, and normal processing continues.

Operator Action: Verify the spool file ID used in the preceding command. If it was incorrect, retry the command with a corrected spool file ID. If it was correct, and the file is pending at the RSCS virtual machine, you may manipulate the file through the use of VM/370 CP spooling commands.

DMTxxx531I INVALID LINE DRIVER COMMAND FOR LINK 'linkid' -- NO ACTION TAKEN

Explanation: A line driver-type RSCS command has been recognized for the link specified by 'linkid'. The command is invalid for the particular line driver that is controlling this link.

System Action: Normal RSCS processing continues.

Operator Action: None.

DMTCMY540I NEW LINK 'linkid' DEFINED

Explanation: The link identified by 'linkid' is now defined as the result of RSCS DEFINE command processing. Attributes of the newly defined link are determined by the specified and default DEFINE command options. Users may begin addressing files, commands, and messages to the newly defined link.

System Action: The RSCS file queue is reordered. Files may be enqueued on the newly defined link. The new link definition will remain in effect until RSCS is restarted, or until it is removed by an RSCS DELETE command.

Operator Action: Add a LINK statement defining the new link to the RSCS directory to cause the link to be defined after an RSCS restart.

DMTCMY541I LINK 'linkid' REDEFINED

Explanation: The previously defined link, identified by 'linkid', has had its definition changed as the result of command processing, according to the specified keyword options.

System Action: The changes in the link definition become effective immediately.

Operator Action: None.

DMTCMY542E LINK 'linkid' ACTIVE -- NOT REDEFINED

Explanation: The previously defined link, identified by 'linkid', has not been redefined because the link was active at the time of command processing.

System Action: Command execution is terminated, the command has no effect, and normal processing continues.

Operator Action: Retry the command after the link has been deactivated.

DMTCMY543E LINK 'linkid' NOT DEFINED -- LINK LIMIT REACHED

Explanation: An attempt was made to define a new link, but the maximum allowable number of defined links had already been reached.

System Action: Command execution is terminated, the command has no effect, and normal processing continues.

Operator Action: Check the command line to see if it was accurately typed. If an existing link definition was to have been altered, retry the command with a corrected command line. If a new link was to be defined, temporarily remove another link from RSCS by means of the RSCS DELETE command before retrying the command.

DMTCMY550I LINK 'linkid' NOW DELETED

Explanation: The previously defined link, identified by 'linkid', is now temporarily deleted as a result of RSCS DELETE command processing. Files, commands, and messages can no longer be handled through the previously defined link.

System Action: Spool files addressed to the deleted link's location ID are no longer accepted, and are rejected as invalidly addressed. Such files may be returned to local originating users, or are purged if they are not of local origin. The deleted link can no longer be activated.

Operator Action: None.

DMTCMY551E LINK 'linkid' ACTIVE -- NOT DELETED

Explanation: An attempt was made to temporarily delete the link identified by 'linkid' from RSCS by the RSCS DELETE command. The attempt was unsuccessful because the specified link was active at the time of command processing.

System Action: The link remains defined and active, the command has no effect, and normal processing continues.

Operator Action: Retry the command after the link has been deactivated.

DMTCMY552E LINK 'linkid' HAS A FILE QUEUE -- NOT DELETED

Explanation: An attempt was made to temporarily delete the link identified by 'linkid' by an RSCS DELETE command. The attempt was unsuccessful because the specified link had at least one file enqueued on it at the time of command processing.

System Action: The link remains defined, the command has no effect, and normal processing continues.

Operator Action: Before the link can be deleted, all files enqueued on it and pending for it must be purged, either by console command execution or through normal file transmission.

| DMTCMX560I RSCS NETWORKING DISCONNECTING

Explanation: The RSCS virtual machine console is disconnected as a result of command execution. If an alternate virtual machine was specified to receive RSCS output messages, that virtual machine will begin receiving the console messages through the VM/370 MSG function.

System Action: RSCS continues processing normally without a main operator console.

Operator Action: Reconnect the RSCS main virtual machine console through the normal VM/370 LOGON procedure.

DMTCMX561E USERID 'userid' NOT RECEIVING

Explanation: An attempt was made to disconnect the main RSCS virtual operator console with a secondary virtual machine ID identified by 'userid' specified to receive RSCS console output messages. The specified virtual machine either was not receiving messages or was not logged on at the time of command processing.

System Action: The command processing is terminated, the command has no effect, and normal processing continues.

Operator Action: Retry the command with a different virtual machine ID specified, or with no virtual machine ID specified. The same virtual machine ID can be specified after it has been logged on and set to receive messages.

DMTxxx570I LINK 'linkid' NOW SET TO DEACTIVATE

Explanation: In response to the DRAIN command, the link identified by 'linkid' has set drain status and will be deactivated. If the RSCS operator issues the START command before the link is deactivated, drain status will be reset and processing will continue on the link.

System Action: If the line driver is not in active communication with the remote station at the time of DRAIN command execution, the link is deactivated immediately. Otherwise, action is taken to quiesce line activity. This includes the finishing of transmission for an active file if one exists, and it may include the signaling to the remote station of an impending termination. File reception is completed for a file which is being actively received. No new files are activated for transmission or accepted for reception while the link is in drain status. When line activity is quiesced,

the link deactivates.

Operator Action: If the DRAIN command fails to deactivate the link within a reasonable period of time, issue a FORCE command to deactivate the link unconditionally, regardless of actual line activity.

DMTxxx571E LINK 'linkid' ALREADY SET TO DEACTIVATE

Explanation: A DRAIN command was executed specifying the link identified by 'linkid', which was already in drain status as the result of a previous DRAIN command.

System Action: The line driver continues its attempts to quiesce the line, and the command has no effect.

Operator Action: If the DRAIN command fails to deactivate the link within a reasonable period of time, issue a FORCE command to immediately deactivate the link, regardless of line activity.

DMTxxx580I FILE 'spoolid' PROCESSING TERMINATED

Explanation: Transmission of the active file identified by 'spoolid' has been terminated before the completion of file processing. This message is issued either in response to a FLUSH command, or when a remote system is restarted.

System Action: Disposition of the identified file is made according to the status of the file. The file may be purged from the system, or the file may be held for future retransmission. If a FLUSH command was entered, the next copy of the file may begin transmission if multiple copies remain and 'ALL' was not specified. Normal link processing continues.

Operator Action: None.

DMTxxx581E FILE 'spoolid' NOT ACTIVE

Explanation: This message is in response to an RSCS command which requires specification of an active file as the command's object. At the time of command processing, the spoolid specified in the command ('spoolid') was not active.

System Action: The command has no effect, and normal link processing continues.

Operator Action: You may determine the status of a file by issuing a QUERY FILE 'spoolid' command. Retry the command if it was entered in error.

DMTxxx590I LINK 'linkid' RESUMING FILE TRANSFER

Explanation: The active link identified by 'linkid' was in hold status, and has been removed from hold status in response to FREE command processing.

System Action: File transmission on the identified link resumes when a file eligible for transmission is available.

Operator Action: None.

DMTxxx591E LINK 'linkid' NOT IN HOLD STATUS

Explanation: The link identified by 'linkid' was not in hold status when a FREE command was processed requesting that the link leave hold status.

System Action: The command is ignored, and normal link processing continues.

Operator Action: None.

DMTxxx600I FILE 'spoolid' FORWARD SPACED

Explanation: The file identified by 'spoolid' has been forward spaced as requested by a preceding FWDSpace command.

System Action: File transmission continues, beginning from the new file position.

Operator Action: None.

| DMTxxx610I LINK 'linkid' TO SUSPEND FILE TRANSMISSION

Explanation: The link identified by 'linkid' has entered hold status. File transmission has not been suspended because at the time of command processing a file was being actively transmitted, and the 'IMMED' option was not specified.

System Action: The link remains in hold status. File transmission will be suspended when the processing of currently active output files has been completed.

Operator Action: None.

DMTxxx611I LINK 'linkid' FILE TRANSMISSION SUSPENDED

Explanation: This message is in response to HOLD command processing. The link identified by 'linkid' has entered hold status, and file transmission has been halted. Either no file was

being actively transmitted at the time of command processing, or the link had been in hold status and its active file transmission has completed, or an active file was being transmitted and the 'IMMED' operand was specified.

System Action: The link remains in hold status, and file transmission remains suspended until the link is explicitly freed from hold status. If active file transmission was interrupted, the transmission of the active file resumes from the point at which transmission was interrupted, when the link is removed from hold status. The link continues to process files received from the remote station normally while in hold status.

Operator Action: None.

DMTxxx612E LINK 'linkid' ALREADY IN HOLD STATUS

Explanation: This message is issued in response to HOLD command processing. The command requested that the link specified by 'linkid' be placed in hold status. The link was already in hold status at the time of command processing.

System Action: The link remains in hold status, and the command has no effect.

Operator Action: None.

DMTCMX625I NO PORTS AVAILABLE

Explanation: This message is issued in response to a QUERY SYSTEM PORTS command. At the time of command execution, no switchable ports had been defined to RSCS. Switchable ports are defined to RSCS by the PORT entry in the RSCS directory (RSCS DIRECT).

System Action: None.

Operator Action: None.

DMTCMX626I PORT 'vaddr' AVAILABLE

Explanation: This message is issued in response to a QUERY SYSTEM PORTS command. Either this message or message DMTCMX627I is issued once for each switchable port defined by a PORT entry in the RSCS directory (RSCS DIRECT). The switchable port identified by its virtual device address 'vaddr' was not in use by an active link at the time of command processing.

System Action: None.



Operator Action: None.

DMTCMX627I PORT 'vaddr' IN USE BY LINK 'linkid'

Explanation: This message is issued in response to a QUERY SYSTEM PORTS command. Either this message or message DMTCMX626I is issued once for each switchable port defined by a PORT entry in the RSCS directory (RSCS DIRECT). The switchable port identified by its virtual device address 'vaddr' was in use by the active link identified by 'linkid' at the time of command execution.

System Action: None.

Operator Action: None.

| DMTCMY630I 'locid' NOW ROUTED THROUGH LINK 'linkid'

Explanation: In response to an RSCS ROUTE command, file, command, and message transmission to the location identified by 'locid' may be indirectly routed through the link identified by 'linkid'.

System Action: The RSCS routing table has been updated to reflect the new indirect route. A direct link and an indirect route may be concurrently defined for the same remote location, using a single locid. In this case, files, commands, and messages may be transmitted directly or indirectly, depending upon dynamic system status.

Operator Action: None.

| DMTCMY631I INDIRECT ROUTING FOR 'locid' DEACTIVATED

Explanation: In response to a ROUTE command, files, commands, and messages addressed to the location identified by 'locid' will no longer be indirectly routed.

System Action: The RSCS routing table has been updated to reflect the routing change. Files addressed to the identified location are rerouted for direct transmission (if a link is defined), or are returned to local originating users, or are purged.

Operator Action: None.

| DMTCMY632E 'locid' INVALID ROUTE SPECIFIED

Explanation: An invalid indirect route for the location identified by 'locid' was specified on a preceding ROUTE command.

System Action: The command is ignored and normal processing continues.

Operator Action: Retry the ROUTE command with a valid route specification.

DMTCMY633E 'locid' NOT ROUTED -- ROUTE LIMIT REACHED

Explanation: An attempt was made to define a new route by means of the ROUTE command, but the maximum allowable number of indirect route definitions had already been reached.

System Action: The command processing is suppressed, the command has no effect, and normal processing continues.

Operator Action: Delete an existing route definition before retrying the command.

DMTCMX634I NO LOCATIONS ROUTED

Explanation: This message is in response to a QUERY SYSTEM ROUTES command. No indirect routing was defined to RSCS.

System Action: None.

Operator Action: None.

DMTCMX636I 'locid' ROUTED THROUGH LINK 'linkid'

Explanation: This message is in response to a QUERY 'locid' command. Files, commands, and messages addressed to the location identified by 'locid' may be enqueued for indirect transmission on the link identified by 'linkid'.

System Action: None.

Operator Action: None.

DMTCMY637I 'locid' NOT ROUTED

Explanation: This message is in response to a ROUTE 'locid' OFF command. The specified 'locid' was not defined for indirect routing at the time of command processing.

System Action: No action is taken, and normal processing continues.

Operator Action: Retry the command if it was entered in error.

DMTCMY638E LOCATION 'locid' HAS A FILE QUEUE -- INDIRECT ROUTING NOT DEACTIVATED

Explanation: This message is in response to a query 'locid' OFF command. The specified location identified by 'locid' has files queued for it on the link it is routed through.

System Action: No action is taken, and normal processing continues.

Operator Action: Retry the command if it was entered in error. If correct, use the transfer, purge or define commands to remove the queued files from the link the 'locid' is routed through, and retry the command.

DMTAXM640I 'nn' FILE(S) PURGED ON LINK 'linkid'

Explanation: The number of files denoted by 'nn' which were enqueued on the link specified by 'linkid' have been purged from the system in response to a PURGE command.

System Action: The files' virtual storage tags are dequeued and the tag slots are released. Pending files for the link are accepted if a sufficiently large number of free tag slots results.

Operator Action: None.

DMTAXM645I 'nn' FILE(S) TRANSFERRED ON LINK 'linkid'

Explanation: The number of files denoted by 'nn' which were enqueued on the link specified by 'linkid' have been re-addressed to a new destination in response to a TRANSFER command.

System Action: The destination address for the file or files is permanently changed, and the files are requeued to their new destination by a file queue reorder performed by TRANSFER command processing.

Operator Action: None.

DMTCMX651I LINK 'linkid' INACTIVE

Explanation: This message is issued in response to a QUERY 'locid' command. The location specified in the command was defined for direct connection, and its link identified by 'linkid' was not active at the time of command processing.

System Action: None.

Operator Action: None.

DMTCMX652I LINK 'linkid' {CONNECT|ACTIVE} 'task' 'type' 'vaddr' c {HO|NOH}  
{DR|NOD} {NOT|TRS|TRL|TSL}

Explanation: This message is issued in response to a QUERY 'locid' command. The location specified in the command was defined for direct connection, and its link identified by 'linkid' was active at the time of command processing. The CONNECT keyword indicates that the line driver successfully received a satisfactory response from the remote station on the last attempted exchange. The ACTIVE keyword implies that the line driver's last attempted exchange failed due to line or remote system failure, or that local telecommunications equipment has not been dialed or is not properly set.

task - is the task name of the line driver task.  
type - is the name of the line driver in use for the active link.  
vaddr - is the virtual device address of the line port in use by the active link.  
c - is the class or classes of files that may be processed by the active link.  
HO - indicates that the active link is in hold status.  
NOH - indicates that the active link is not in hold status.  
DR - indicates that the active link is in the process of draining, and will terminate when line activity is quiesced.  
NOD - indicates that the active link is not in the process of draining.  
NOT - indicates that no trace option is active for the link.  
TRS - indicates that the trace sum option is active for the link, and that the trace log option is inactive.  
TRL - indicates that the trace log option is active for the link, and that the trace sum option is inactive.  
TSL - indicates that both the trace sum and trace log options are active for the link.

System Action: None.

Operator Action: None.

DMTCMX653I LINK 'linkid' DEFAULT 'task' 'type' 'vaddr' c Z=z R=r

Explanation: This message is in response to a QUERY 'linkid' DEF command, and is issued when a new link is defined or when an existing link definition is modified by means of the DEFINE command. The link identified by 'linkid' was defined at the time of command processing, and the default attributes listed in the message pertain to that definition. The message does not indicate whether the link was active or inactive at the time of command processing, and the default attributes listed may be different from those actually in use with the link if it was active.

- task - the default task name to be associated with the defined link's line driver task when the link is activated.
- type - the name of the default line driver defined for the link.
- vaddr - the default virtual device address of a line port to be used by the link when it is activated.
- c - the default class or classes of files which may be processed by the link when it is active.
- z - the number designating the terrestrial time zone number in which the remote location is defined to reside. This is the number of time zone boundaries between the remote location and Greenwich to the east, the International Date Line being included as a time zone boundary.
- r - the number of virtual storage file tag slots reserved for exclusive use by this link.

System Action: None.

Operator Action: None.

DMTCMX654I LINK 'linkid' S=s R=r Q=q P=p

Explanation: This message is issued in response to a QUERY 'linkid' QUEUE command, and is issued in response to a QUERY SYSTEM QUEUE once for each link on which at least one file is either enqueued or active. The status of the file queue for the link identified by 'linkid' is described.

- s - the number of files being actively transmitted (sent) on the link.
- r - the number of files being actively received on the link.
- q - the number of files accepted and enqueued for transmission on the link.
- p - the number of files pending but not yet accepted for the active link.

System Action: In response to a QUERY 'linkid' QUEUE command, an additional message (DMTCMX655I) is issued for each file accepted and enqueued on the link, describing the status of each such file.

Operator Action: None.

DMTCMX655I FILE 'spoolid' ('orgid') 'locid' 'userid' CL a PR pp REC nnnnnnnn {HO|NOH}

Explanation: A message of this form is issued for each file accepted and enqueued for transmission on the link specified by 'linkid' in the preceding QUERY 'linkid' QUEUE command.

- spoolid - the VM/370 spool file ID for the file.
- orgid - the originating VM/370 spool file ID, or the origin job number, of the file.

locid - the destination location ID to which the file is addressed.  
 userid - the destination user ID (if any) to which the file is addressed.  
 a - the spool file class.  
 pp - the file's current transmission priority.  
 nnnnnnnn - the total number of records in the file.  
 HO - indicates that the file is in hold status.  
 NOH - indicates that the file is not in hold status.

System Action: This message is issued once for each inactive file which is enqueued and waiting to be transmitted on the specified link.

Operator Action: You may issue the QUERY 'linkid' ACTIVE command to determine the status of files being actively transmitted on the link.

DMTCMX656I FILE 'spoolid' ('orgid') 'locid' 'userid' CL a PR pp LEFT mmmmmmmm  
 OF nnnnnnnn

Explanation: This message is issued in response to a QUERY 'linkid' ACTIVE command. The response describes the state of the file which was being actively transmitted on the link specified by 'linkid' when the QUERY command was executed.

spoolid - the VM/370 spool file ID for the active file.  
 orgid - the originating VM/370 spool file ID, or the origin job number, of the file.  
 locid - the destination location ID to which the file is addressed.  
 userid - the destination user ID (if any) to which the file is addressed.  
 a - the spool file class.  
 pp - the file's current transmission priority.  
 mmmmmmmm - the number of records in the file which remain to be transmitted.  
 nnnnnnnn - the total number of records in the file.

System Action: None.

Operator Action: You may issue the QUERY 'linkid' QUEUE command to determine the status of inactive files enqueued for transmission on the link.

DMTCMX660I FILE 'spoolid' INACTIVE ON LINK 'linkid'

Explanation: This message is issued in response to a QUERY FILE 'spoolid' STAT command. At the time of command processing, the file identified by 'spoolid' was inactive, and was enqueued for transmission on the link identified by 'linkid'.

System Action: None.

Operator Action: None.

DMTCMX661I FILE 'spoolid' ACTIVE ON LINK 'linkid'

Explanation: This message is issued in response to a QUERY FILE 'spoolid' STAT command. At the time of command processing, the file identified by 'spoolid' was active, and was being transmitted on the link identified by 'linkid'.

System Action: None.

Operator Action: None.

DMTCMX662I FILE 'spoolid' ORG 'locid1' 'userid1' ORGID 'orgid' mm/dd/yy  
hh:mm:ss z.z.z. TO 'locid2' 'userid2'

Explanation: This message is in response to the RSCS command QUERY FILE 'spoolid' RSCS. The RSCS control related attributes of the file identified by 'spoolid' are described.

locid1 - the location ID of the location at which the file originated.  
userid1 - the user ID of the originator of the file.  
orgid - the originating VM/370 spool ID, or the origin job number, of the file.  
mm/dd/yy - the file creation date.  
hh:mm:ss - the file creation time of day.  
z.z.z. - the time zone with reference to which the time of day is expressed.  
locid2 - the destination location ID to which the file is addressed.  
userid2 - the destination user ID (if any) to which the file is addressed.

System Action: None.

Operator Action: None.

DMTCMX663I FILE 'spoolid' PR pp CL a F0 ffffffff CO [\*]nnn {HO|NOH} DI  
'distcode', NA {'fn ft' | 'dsname'}

Explanation: This message is issued in response to the RSCS command, QUERY FILE 'spoolid' VM. The VM/370 spool system related attributes of the file identified by 'spoolid' are described.

pp - the file's priority.  
a - the file's spool file class.  
fffffff - the file's form number  
[\*]nnn - The file's copy count; the \* indicates copies will be

made internally in the 3800 printer.  
HO - indicates that the file is in hold status.  
NOH - indicates that the file is not in hold status.  
distcode - the file's distribution code.  
fn ft - the file's filename filetype.  
dsname - the file's data set name.

System Action: None.

Operator Action: None.

DMTCMX664E FILE 'spoolid' NOT FOUND

Explanation: This message is issued in response to a QUERY FILE 'spoolid' command. The file identified by 'spoolid' could not be found by RSCS, meaning either that the file is not owned by the RSCS virtual machine, or that the file is pending and has not yet been accepted by RSCS.

System Action: None.

Operator Action: Verify that the spool file ID was correctly typed. If it was not, retry the command with the correct spool file ID. If it was correctly typed, retry the command after some time has elapsed to allow the file to move from pending to enqueued status.

DMTCMX665I NO FILE ACTIVE

Explanation: This message is issued in response to a QUERY 'linkid' ACTIVE command. At the time of QUERY command processing, no file was being actively transmitted on the specified link.

System Action: None.

Operator Action: None.

DMTCMX666I FILE 'spoolid' FL ffff FLC nn MO mmmm CH cccc FCB bbbb

Explanation: This message, in addition to message DMTCMX663I, is issued in response to the RSCS command 'QUERY FILE spoolid VM' if the file contains any 3800 attributes. The 3800-related attributes of the file identified by 'spoolid' are described.

ffff - The file's 3800 forms overlay name  
nn - The file's 3800 forms overlay count  
mmmm - The file's 3800 copy modification module name  
cccc - The file's 3800 character arrangement table name  
bbbb - The file's 3800 FCB name



| System Action: None.

| Operator Action: None.

DMTCMX670I LINK 'linkid' {CONNECT|ACTIVE} -- 'type' LINE 'vaddr' {HO|NOH}  
{DR|NOD} {NOT|TRS|TRL|TSL}

Explanation: This message is issued in response to a QUERY SYSTEM command, or to a QUERY SYSTEM ACTIVE command. One such message is produced for each active link in the RSCS facility at the time of command processing. The active link described by the message is identified by 'linkid'. The CONNECT keyword indicates that the line driver successfully received a satisfactory response from the remote station on the last attempted exchange. The ACTIVE keyword implies that the line driver's last attempted exchange failed due to line or remote system failure, or that local telecommunications equipment has not been dialed or is not properly set.

type - the name of the line driver in use by the active link.  
vaddr - the virtual device address of the line port in use by the active link.  
HO - indicates that the active link is in hold status.  
NOH - indicates that the active link is not in hold status.  
DR - indicates that the active link is in the process of draining, and will terminate when line activity is quiesced.  
NOD - indicates that the active link is not in the process of draining.  
NOT - indicates that no trace option is active for the link.  
TRS - indicates that the trace sum option is active for the link, and that the trace log option is inactive.  
TRL - indicates that the trace log option is active for the link, and that the trace sum option is inactive.  
TSL - indicates that both the trace sum and trace log options are active for the link.

System Action: This message is issued for each active link in the system.

Operator Action: None.

DMTCMX671I LINK 'linkid' INACTIVE -- DEFAULT 'type' LINE 'vaddr'

Explanation: This message is issued in response to a QUERY SYSTEM command. One such message is produced for each inactive link in the RSCS facility at the time of command processing. The inactive link is identified by 'linkid', its default line driver type is identified by 'type', and its default line port virtual address is identified by 'vaddr'.

System Action: This message is issued for each inactive link in the system.

Operator Action: None.

DMTCMX672I NO LINK ACTIVE

Explanation: This message is issued in response to a QUERY SYSTEM ACTIVE command. RSCS had no active link at the time of command processing.

System Action: None.

Operator Action: None.

DMTCMX673I NO LINK DEFINED

Explanation: This message is issued in response to a QUERY SYSTEM command. RSCS had no link defined at the time of command processing.

System Action: None.

Operator Action: None.

DMTCMX674I NO FILES QUEUED

Explanation: This message is in response to a QUERY SYSTEM QUEUE command. No files were active, and no files were queued or pending in the RSCS input file queue at the time of the command processing.

System Action: None.

Operator Action: None.

DMTCMX675E EXEC 'filename' NOT FOUND ON DISK 'vaddr' -- COMMAND FILE NOT EXECUTED

Explanation: An attempt was made to execute the RSCS operator command exec file identified by 'filename'. The exec file was not found on the RSCS system disk identified by 'vaddr'.

System Action: EXEC command processing is suppressed, the EXEC command has no effect, and normal processing continues.

Operator Action: Verify that the filename was correctly entered on the EXEC command line, and that the specified exec file has a filetype of 'RSCS'. If an error is found, retry the EXEC command. If no error is found and the condition persists, notify local RSCS support personnel.

DMTCMX676E FATAL ERROR READING FROM 'vaddr' -- EXEC 'filename' PROCESSING TERMINATED

Explanation: In the process of executing the RSCS exec file identified by 'filename', an uncorrectable I/O error was encountered in reading the file from the RSCS system disk identified by 'vaddr'.

System Action: EXEC command processing is terminated at the point of error.

Operator Action: Retry the command if appropriate. If the error condition persists, notify local RSCS support personnel.

DMTCMX677E EXEC 'filename' FILE FORMAT INVALID -- EXEC NOT EXECUTED

Explanation: An attempt was made to execute the RSCS operator command exec file identified by 'filename'. In the process of reading the file from the RSCS system disk, an invalid file format was encountered.

System Action: EXEC command processing is terminated at the point of error.

Operator Action: Verify that the EXEC command filename was correctly specified. If appropriate, retry the command. If the error condition persists, notify local RSCS support personnel.

DMTCMX678E EXEC 'filename' IN EXECUTION -- NEW EXEC COMMAND IGNORED

Explanation: While executing commands from the RSCS exec file identified by 'filename', another EXEC command was encountered.

System Action: The subsequent EXEC command processing is suppressed, and the original EXEC command processing continues.

Operator Action: Notify local RSCS support personnel.

DMTREM679I EXECUTING 'filename' COMMAND: (command line)

Explanation: The RSCS command included in the message as (command line) has been read from the RSCS exec file identified by 'filename', and will be executed.

System Action: The specified command is executed, and EXEC command processing continues.

Operator Action: None.

DMTCMY700I ACTIVATING LINK 'linkid' 'task' 'type' 'vaddr' 'c'

Explanation: The link identified by 'linkid' was inactive and has become active as a result of command processing. The message describes the variable attributes in effect for this active link.

task - the task name associated with the activated link's line driver.  
type - the name of the line driver in use by the activated link.  
vaddr - the virtual device address of the line port in use by the activated link.  
c - the class or classes of files that can be processed by the activated link.

System Action: The activated link remains active, and the listed attributes remain in effect, until the link is deactivated or the attributes are explicitly modified. The link is activated whether or not a line connection is complete to the remote location. Active exchange of files, commands, and messages will begin as soon as the remote station has been appropriately initialized and the data line has been established.

Operator Action: None.

DMTCMY701E NO SWITCHED LINE AVAILABLE -- LINK 'linkid' NOT ACTIVATED

Explanation: An attempt was made to activate the link identified by 'linkid' with no specified line port virtual device address. The link had no defined default line port address, and no common switched line ports were available at the time of command processing.

System Action: The command processing is terminated, the link remains inactive, and normal processing continues.

Operator Action: Retry the command with a specified line port address, or retry it when a common switched line port becomes available.

DMTCMY702E LINE 'vaddr' IS IN USE BY LINK 'linkid1' -- LINK 'linkid2' NOT ACTIVATED

Explanation: An attempt was made to activate the link identified by 'linkid2'. The line port virtual device address specified in the request to activate the link, identified by 'vaddr', was found to be in use by another active link, identified by 'linkid1', at the time of command processing.

System Action: Command processing is terminated, the command has no effect, and normal processing continues.

Operator Action: Retry the command with a specified line port address not in use by another active link; or retry it with no line port address specified, in which case RSCS will try to reserve and utilize a valid line port.

| DMTCMY703E DEV 'cuu' IS NOT A LINE PORT -- LINK 'linkid' NOT ACTIVATED

Explanation: An attempt was made to activate the link identified by 'linkid' with a line port address identified by 'cuu'. A virtual device at address 'cuu' exists, but it is not a usable line port type device.

System Action: Command processing is terminated, the link remains inactive, and normal processing continues.

Operator Action: Retry the command with a specified line port address that is valid and available; or retry it with no line port address at all, in which case RSCS will try to select and reserve a common switchable line port.

| DMTCMY704E LINE 'vaddr' CC=3 NOT OPERATIONAL -- LINK 'linkid' NOT ACTIVATED

Explanation: An attempt was made to activate the link identified by 'linkid' with a line port address identified by 'vaddr'. Either no device was defined for the RSCS virtual machine at virtual address 'vaddr', or the device at that address was logically disconnected from the I/O system.

System Action: Command processing is terminated, the link remains inactive, and normal processing continues.

Operator Action: Retry the command with a specified line port address that is valid and operational; or retry it with no line port address at all, in which case the system will try to select and reserve a common switchable line port.

| DMTCMX705E DRIVER 'type' NOT FOUND ON DISK 'vaddr' -- LINK 'linkid' NOT ACTIVATED

Explanation: An attempt was made to activate the link identified by 'linkid' using a line driver name of 'type'. The specified line driver was not found on the RSCS system disk.

System Action: Command processing is terminated, the link remains inactive, and normal processing continues.

Operator Action: Verify that the driver name used was correctly typed. If it was not, retry the command with a corrected line driver type specification. If the command was correctly typed, notify local RSCS support personnel. Verify that the intended line driver resides on the RSCS system disk with a filename of 'type'

and a filetype of 'TEXT'.

DMTCMY706E FATAL ERROR LOADING FROM 'vaddr' -- LINK 'linkid' NOT ACTIVATED

Explanation: An attempt was made to activate the link identified by 'linkid'. In the process of loading the link's line driver from the disk identified by 'vaddr', an uncorrectable I/O error was encountered.

System Action: Loading is abandoned, the error is logged, the command processing is terminated, and the link remains inactive.

Operator Action: Retry the command. If the error condition persists, notify local RSCS support personnel.

DMTCMX707E DRIVER 'type' FILE FORMAT INVALID -- LINK 'linkid' NOT ACTIVATED

Explanation: An attempt was made to activate the link identified by 'linkid', with a line driver type specification of 'type'. In the process of reading the driver file and loading the driver into virtual storage, the loader detected an invalid data format in the driver file.

System Action: Loading is abandoned, the command processing is terminated, and normal processing continues.

Operator Action: Verify that a correct line driver type specification has been used. If an improper driver type was used, retry the command with a correct driver type specification. If the proper driver type was used, notify local RSCS support personnel.

DMTCMY708E VIRTUAL STORAGE CAPACITY EXCEEDED -- LINK 'linkid' NOT ACTIVATED

Explanation: An attempt was made to activate the link identified by 'linkid'. During the activation process, a virtual free storage requirement could not be met because there was insufficient virtual storage available for allocation by RSCS.

System Action: Command processing is terminated, the link remains inactive, and normal processing continues.

Operator Action: Retry a START command later, when more virtual storage may be available. Deactivating another link will increase available virtual storage. If this situation occurs regularly, it might be corrected by increasing the size of the RSCS virtual machine's virtual storage prior to RSCS IPL.

| DMTCMX709E TASK NAME 'task' ALREADY IN USE -- LINK 'linkid' NOT ACTIVATED

Explanation: An attempt to activate the link 'linkid', in response to a START command, failed because the task name 'task' specified for use was in use by another task in the system.

System Action: The START command is suppressed, and normal processing continues.

Operator Action: Retry the START command specifying a different task name by use of the 'TASK' keyword, or retry the START command after the line driver with the conflicting task name has been deactivated.

| DMTCMX710E MAX ('nn') ACTIVE -- LINK 'linkid' NOT ACTIVATED

Explanation: An attempt to activate the link 'linkid', in response to a START command, failed because the maximum allowable number 'nn' of concurrent active links had already been reached.

System Action: The START command is ignored, and normal processing continues.

Operator Action: Retry the START command after one or more links have been deactivated.

DMTxxx750E LINK 'linkid' ALREADY ACTIVE -- NO ACTION TAKEN

Explanation: A START command was issued specifying the link identified by 'linkid'. The link was already active at the time of command processing, and no modifiable attributes were changed from their previous settings.

System Action: The START command is ignored, and normal processing continues.

Operator Action: None.

| DMTCMY751I LINK 'linkid' ALREADY ACTIVE -- NEW CLASS(ES) SET AS REQUESTED

Explanation: A START command was issued specifying the link identified by 'linkid'. The link was already active at the time of command processing, and the new class specification for the link has been accepted.

System Action: The link begins processing files bearing the newly specified class(es) if any are enqueued on the link.

Operator Action: None.

DMTxxx752I LINK 'linkid' STILL ACTIVE -- DRAIN STATUS RESET

Explanation: A START command was issued specifying the link identified by 'linkid'. The link was active at the time of command processing, but it was in the process of terminating as the result of a previous DRAIN command.

System Action: The link remains active with the same attributes that had previously been in effect, except that the link's drain status is reset. Normal RSCS processing continues.

Operator Action: None.

DMTxxx801I LINK 'linkid' LOG ACTIVATED

Explanation: This message is issued in response to a TRACE 'linkid' LOG command. The specified link's log trace had been inactive prior to command processing, and now has been activated.

System Action: While log trace is active for a link, a record of each line I/O transaction is written to a spool print file. Each record contains the channel program executed, the composite CSW, the ending sense data if any, and the beginning and ending data string from each buffer used. The spool file is queued for real printer output when the log trace is deactivated for the link.

Operator Action: None.

DMTxxx802I LINK 'linkid' LOG DEACTIVATED

Explanation: This message is issued in response to a TRACE 'linkid' NOLOG command. The specified link's log trace had been active prior to command processing, and now has been deactivated.

System Action: Logging of each line I/O transaction is terminated, and the spool print file log of prior transactions is closed and enqueued for real printer processing.

Operator Action: This function provides system support personnel with diagnostic information concerning telecommunication system behavior. When communication on a particular link appears to be malfunctioning, prepare a log trace and submit it to the local support personnel.

DMTxxx803I LINK 'linkid' SUM REPORTING DEACTIVATED

Explanation: This message is issued in response to a TRACE 'linkid' NOSUM command. The specified link had been in sum trace mode prior to command processing, and has now left sum trace mode.



System Action: No further sum trace messages will be issued, and normal link processing continues.

Operator Action: None.

DMTxxx&10E LINK 'linkid' LOG ALREADY ACTIVE

Explanation: This message is issued in response to a TRACE 'linkid' LOG command. The command requested that the specified link enter log trace mode, and the link had already been in log trace mode at the time of command processing.

System Action: The link remains in log trace mode, the command has no effect, and normal link processing continues.

Operator Action: None.

DMTxxx&11E LINK 'linkid' LOG NOT ACTIVE

Explanation: This message is issued in response to a TRACE 'linkid' NOLOG command. The command requested that the specified link leave log trace mode, and the link had not been in log trace mode at the time of command processing.

System Action: Log trace remains inactive for the link, the command has no effect, and normal link processing continues.

Operator Action: None.

DMTxxx&12E LINK 'linkid' SUM REPORTING ALREADY ACTIVE

Explanation: This message is issued in response to a TRACE 'linkid' SUM command. The command requested that the specified link enter sum trace mode, and the link had already been in sum trace mode at the time of command processing.

System Action: The link remains in sum trace mode, the command has no effect, and normal link processing continues.

Operator Action: None.

DMTxxx&13E LINK 'linkid' SUM REPORTING NOT ACTIVE

Explanation: This message is issued in response to a TRACE 'linkid' NOSUM command. The command requested that the specified link leave sum trace mode, and the link had not been in sum trace mode at the time of command processing.

System Action: Sum trace remains inactive for the link, the command has no effect, and normal link processing continues.

Operator Action: None.

DMTSML901E INVALID SML MODE SPECIFIED -- LINK 'linkid' NOT ACTIVATED

Explanation: During initial processing immediately following link activation, the line driver encountered an invalid mode specification.

System Action: The specified link is deactivated.

Operator Action: Retry the START command, specifying a valid mode. If the problem persists, notify local RSCS support personnel.

DMTxxx902E NON-SIGNON CARD READ ON LINK 'linkid'

Explanation: The link identified by 'linkid' had not been signed on, and a record received from the remote station was not a SIGNON record contrary to line driver operational requirements.

System Action: The link remains active but not signed on, and file, command, and message exchange for the link remains suspended pending successful sign-on.

Operator Action: Correct any errors present on the sign-on card, and retry the sign-on procedure.

DMTxxx903E PASSWORD SUPPLIED ON LINK 'linkid' IS INVALID

Explanation: An attempt to sign-on a remote station has failed because the password entered on the SIGNON record does not match the password specified by the operator when the remote station's link, identified by 'linkid', was started.

System Action: The link remains active but not signed on, and file, command, and message exchange for the link remains suspended pending successful sign-on.

Operator Action: Correct any errors present on the SIGNON record and retry the sign-on procedure. If the problem persists, the operations personnel at both ends of the link should establish an agreed upon password.

DMTxxx904E SIGNON PARAMETER='parm' ON LINK 'linkid' INVALID

Explanation: A sign-on record for the link identified by 'linkid' contained the invalid parameter identified by 'parm'.

System Action: The link remains active but not signed on, and file, command, and message exchange for the link remains suspended pending successful sign-on.

Operator Action: Correct any errors present on the sign-on card and retry the sign-on procedure.

| DMTxxx905I SIGNON OF LINK 'linkid' COMPLETE [ ,BUFSIZE='nnnn']

| Explanation: A valid SIGNON record has been received on the link identified by 'linkid', and the link sign-on procedure has been successfully completed. When issued by the DMTNJI line driver task, nnnn specifies the TP buffer size selected.

System Action: Exchange of files, commands, and messages is begun on the identified link.

Operator Action: If the remote station is a bulk terminal, follow normal operational procedures for sending input files and receiving output files.

DMTxxx906E INVALID BUFFER PARAMETER -- LINK 'linkid' NOT ACTIVATED

Explanation: During initial processing immediately following link activation, the line driver encountered an invalid buffer specification.

System Action: The specified link is deactivated.

Operator Action: Retry the START command, specifying a valid buffer request. If the problem persists, notify local RSCS support personnel.

DMTNPT907E SIGNON TYPE PARAMETER MISSING

Explanation: The sign-on record previously entered did not include a TYPE parameter specifying the type of remote terminal in use.

System Action: The link remains active but not signed on, and file, command, and message exchange for the link remains suspended pending successful sign-on.

Operator Action: Correct any errors present on the sign-on card, include the TYPE parameter on the sign-on card, and retry the sign-on procedure.

| DMTxxx908E INVALID 'PARM' PARAMETER 'parmvalue' SPECIFIED

Explanation: During initial processing immediately following link activation, the line driver encountered an invalid parameter specification.

System Action: The specified link is deactivated.

Operator Action: Retry the START command, specifying a valid PARM parameter request. If the problem persists, notify local RSCS support personnel.

DMTNHD910E INVALID NJI PARAMETER 'parm' ON TAG -- PARAMETER IGNORED

Explanation: In the scanning of file tag specified by the local originating user, an invalid parameter identified by 'parm' was encountered.

System Action: The invalid parameter is ignored, its applicable default applies, and file processing continues.

Operator Action: None.

DMTNIT911E INVALID NJI BUFFER SIZE SPECIFIED -- LINK 'linkid' NOT ACTIVATED

Explanation: During initial processing immediately following link activation, the line driver encountered an invalid buffer size request.

System Action: The specified link is deactivated.

Operator Action: Retry the START command, specifying a valid buffer size. If the problem persists, notify local RSCS support personnel.

DMTNIT912E INVALID NJI NODAL RESISTANCE SPECIFIED -- LINK 'linkid' NOT ACTIVATED

Explanation: During initial processing immediately following link activation, the line driver encountered an invalid nodal resistance specification.

System Action: The specified link is deactivated.

Operator Action: Retry the START command, specifying a valid nodal resistance. If the problem persists, notify local RSCS support personnel.

DMTxxx913E INVALID PASSWORD PARAMETER SPECIFIED -- LINK 'linkid' NOT ACTIVATED

Explanation: During initial processing immediately following link activation, the line driver encountered an invalid password specification.

System Action: The specified link is deactivated.

Operator Action: Retry the START command, specifying a valid password. If the problem persists, notify local RSCS support personnel.

DMTxxx914E INCORRECT PASSWORD RECEIVED ON LINK 'linkid'

Explanation: A valid password parameter received in a SIGNON record from the remote system did not match the local link password in effect at the time.

System Action: The line driver executes its disconnect sequence. Depending on the line driver in use, the line may be re-enabled or the link may be deactivated.

Operator Action: Notify system support personnel at the remote location. If the problem persists, notify local RSCS support personnel.

DMTNM916E INVALID NJI SIGNON CONNECTION RECORD RECEIVED -- LINK 'linkid' IS BEING DEACTIVATED

Explanation: An invalid sign-on record has been received from the remote station.

System Action: The affected line driver executes its disconnect procedure, and the link is deactivated.

Operator Action: Notify local RSCS support personnel.

DMTNHD917I NJI LINK 'linkid': {JOB|OUTPUT} ('orgid'), JOBNAME 'job', PGMR 'user'

Explanation: This message is issued each time the NJI line driver for the active link identified by 'linkid' encounters a job header record in the data stream being received from the remote system. The job header defines the beginning of a job or job output in the data stream being received. The substitution parameters in the message specify the following:

JOB	- denotes the beginning of reception of a job file.
OUTPUT	- denotes the beginning of reception of a job output file.
orgid	- identifies the job file's origin spool ID or job number.
job	- identifies the job name of the job or output file being received.
user	- identifies the originating user's programmer name or user ID.

System Action: The job or output file is written to the VM/370 spool system as it is received, and it is forwarded to the next link on its path, delivered to a local user, or processed on a local real spool output device, depending on its destination

address.

Operator Action: None.

DMTxxx918E LINK 'linkid' DOES NOT MATCH REMOTE LOCATION 'locid'

Explanation: A SIGNON record received from the remote system specified a location ID 'locid' which was not the same as the link ID 'linkid' for the line driver in use at the local location. The link ID is defined as the location ID of the directly connected remote location.

System Action: The line driver executes its disconnect sequence. Depending on the line driver in use, the line may be re-enabled or the link may be deactivated.

Operator Action: Notify local RSCS support personnel.

DMTxxx919E SIGNON SEQUENCE ON LINK 'linkid' FAILED

Explanation:

- Data was received from the remote system before a SIGNON record was successfully received and accepted,
- An unrecoverable line error occurred during sign-on sequence,
- An incorrect password or location ID was detected at the remote system, or
- The remote system is incompatible with the line driver in use.

System Action: The line driver executes its disconnect sequence. Depending on the line driver in use, the line may be re-enabled or the link may be deactivated.

Operator Action: Notify local RSCS support personnel.

DMTRPT921I PRINTER ON LINK 'linkid' LINE 'vaddr' DISABLED -- INTERVENTION OR MAINTENANCE REQUIRED

Explanation: A printer described by 'linkid' and 'vaddr' detected an I/O error condition while a file was printing. Any further action has to be initiated by the operator

System Action: The line driver tries to resend the print buffer three times. On the third try, the message is printed and the line driver waits for operator intervention.

Operator Action: HOLD the link, then FLUSH the file with any option desired. When the file is purged or re-enqueued, the link can be DRAINed and restarted. If I/O errors persist, call your local customer engineer.

DMTRPT922I INTERVENTION REQUIRED ON PRINTER LINK 'linkid' LINE 'vaddr'

Explanation: A printer described by 'linkid' and 'vaddr' needs operator intervention.

System Action: The line driver tried to make the initial connection or send a print buffer to a non-working printer. The line buffer waits for operator intervention on the device or console command execution.

Operator Action: Turn the printer on, fix printer paper, or enter the console commands to DRAIN the link or FLUSH the file.

DMTRPT923E LINE OR CHANNEL I/O ERROR -- MAINTENANCE REQUIRED ON LINK 'linkid' LINE 'vaddr'

Explanation: A printer described by 'linkid' and 'vaddr' detected an I/O error condition while a file was printing. Any further action has to be initiated by the operator.

System Action: The line driver tries to resend the print buffer ten times. On the tenth try, the message is printed and the line driver terminates.

Operator Action: HOLD the link, then FLUSH the file with any option desired. When the file is purged or re-enqueued, the link can be DRAINed and/or restarted. If I/O errors persist, call your local customer engineer.

DMTRPT924E NONRECOVERABLE PROGRAM ERROR ON LINK 'linkid' LINE 'vaddr'

Explanation: A printer described by 'linkid' and 'vaddr' detected an I/O error condition while a file was printing.

System Action: The line driver tried to send the print buffer but, because of a non-recoverable hardware programming error, an I/O error message is produced and the line driver ends.

Operator Action: If I/O errors persist, call your local customer engineer.

DMTRPT925I FILE PURGED BY USER ON PRINTER 'linkid' LINE 'vaddr'

Explanation: On the printer described by 'linkid' and 'vaddr', the user raised the cover three times (with the same print buffer), which caused the line driver to purge the file.

System Action: Every time the printer cover is lowered, the line driver tries to resend the print buffer. On the third try the file is purged and the message is sent to the user who sent the file. The line driver then prints the next file in the queue or waits for one to be enqueued.

Operator Action: None.

DMTxxx934E ID CARD MISSING ON LINK 'linkid' -- INPUT FILE PURGED

Explanation: A file has been entered at a remote station without an ID card specifying the destination.

System Action: The input file is flushed, and normal processing continues.

Operator Action: Place an ID card at the beginning of the input file deck, or correct errors in an existing ID card, and retry the file input operation. Consult operational procedures for the remote terminal and line driver in use to determine format requirements for the input file ID card.

DMTSML935E LINK 'linkid' IN RJE MODE -- PRINT FILE 'spoolid' PURGED

Explanation: An attempt was made to transmit a print file on a link which was operating as a workstation submitting jobs to a remote batch system. When operating in this mode, print file cannot be transmitted.

System Action: The specified file is purged.

Operator Action: None.

DMTNPT936E NO REMOTE PUNCH AVAILABLE ON LINK 'linkid' -- FILE 'spoolid' PURGED

Explanation: An attempt was made to transmit a punch file to a remote terminal which was not equipped to produce punched output.

System Action: The specified file is purged.

Operator Action: None.



DMTxxx937E DECOMPRESSION ERROR ON LINK 'linkid'

Explanation: In a multi-leaving line driver, DMTSML or DMTNJI, an SCB has been encountered in a record that, when expanded, causes the record to overflow the length of a 'tank' (an intermediate processing buffer). This error has occurred because of invalid input sent by the remote system, or because of errors on the transmission line.

System Action: The affected line driver is deactivated.

Operator Action: Retry. If the error recurs, notify local RSCS support personnel.

DMTPOW940E LINK 'linkid' IN POWER MODE - PRINT FILE 'spoolid' PURGED

Explanation: An attempt was made to transmit a print file on a link which was operating as a workstation submitting jobs to a remote VSE/POWER batch system. When operating in this mode, print files cannot be transmitted.

System Action: The specified file is purged.

Operator Action: None.

DMTPOW941E LINK 'linkid' INVALID 'CMD' SPECIFICATION

Explanation: No command text was entered for the CMD command.

System Action: The command is ignored, and normal processing continues.

Operator Action: Retry the command.

DMTPOW942E LINK 'linkid' POWER COMMAND SPECIFIED INVALID OR NOT SUPPORTED

Explanation: The VSE/POWER command specified is invalid or not supported.

System Action: The command is ignored, and normal processing continues.

Operator Action: Retry the command if it was incorrect.

DMTPOW943E LINK 'linkid' POWER COMMAND OPERAND SPECIFIED INVALID OR NOT SUPPORTED

Explanation: A supported VSE/POWER command was recognized, but the subsequent operands specified were found invalid or not supported.

System Action: The command is ignored, and normal processing continues.

Operator Action: Retry the command.

DMTPOW944I POWER COMMAND FROM 'linkid' IGNORED: (command text)

Explanation: The character string included in the message as command text has been received from the remote VSE/POWER location identified by 'linkid'.

System Action: Normal RSCS processing continues.

Operator Action: None.

DMTPOW945I LINK 'linkid' DEACTIVATION INITIATED BY POWER

Explanation: The link identified by 'linkid' was deactivated as a result of the execution of a PSTOP or PEND command in the VSE/POWER system.

System Action: The link's line driver task is deleted, all storage allocated to the task is made free, and the link table entry is updated. The link remains inactive until it is reactivated by a START command.

Operator Action: To reestablish connection, restart the link using the START command.

DMTPOW946E INVALID POWER CPUID SPECIFIED -- LINK 'linkid' NOT ACTIVATED

Explanation: The global remote CPU ID entered was not a value between 1 and 200.

System Action: The specified link is deactivated.

Operator Action: Reissue the START command specifying a valid CPUID parameter.

#### RSCS MESSAGE SUMMARY

The key to the left of the message identifiers indicates the possible destinations of each message; the keys are:

- R - RSCS local operator's console
- O - Command originator
- V - Virtual machine user
- C - VM/370 CP operator

SPONTANEOUS MESSAGES

```

R DMTIRX000I RSCS NETWORKING VERSION vv, RELEASE nn, mm/dd/yy
  READY
R DMTCMX001I FREE STORAGE = 'nn' PAGES
R DMTREX002I LINK 'linkid' DEACTIVATED
R DMTCMX003I LINK 'linkid' EXECUTING: (command line text)
R DMTCMX004I LOCATION 'locid' EXECUTING: (command line text)
R DMTCMX005I LOCATION 'locid'('userid') EXECUTING:
  (command line text)
R DMTxxx070E I/O ERROR cuu SIOCC cc CSW csw SENSE sense
  CCW ccw
R DMTREX080E PROGRAM CHECK -- LINK 'linkid' DEACTIVATED
R,C DMTREX090T PROGRAM CHECK IN SUPERVISOR -- RSCS NETWORKING
  SHUT DOWN
R,C DMTREX091T INITIALIZATION FAILURE -- RSCS NETWORKING
  SHUTDOWN
O DMTAXM101I FILE 'spoolid' ('orgid') ENQUEUED ON LINK 'linkid'
O DMTAXM102I FILE 'spoolid' ('orgid') PENDING FOR LINK 'linkid'
O DMTAXM103E FILE 'spoolid' ('orgid') REJECTED -- INVALID
  DESTINATION ADDRESS
R,V DMTAXM104I FILE ('orgid') SPOOLED TO 'userid1' -- ORG 'locid'
  (userid2) mm/dd/yy hh:mm:ss
R DMTAXM105I FILE 'spoolid' PURGED
R DMTAXM106I FILE 'spoolid' MISSING -- DEQUEUED FROM LINK
  'linkid'
R DMTAXM107I 'nn' PENDING FILES FOR LINK 'linkid' MISSING
R,C DMTxxx108E SYSTEM ERROR READING SPOOL FILE 'spoolid'
R DMTAXM109I FILE QUEUE REORDERED
O DMTAXM111E USER 'userid' NOT IN CP DIRECTORY -- FILE ('orgid')
  SPOOLED TO SYSTEM
R DMTxxx141I LINE 'vaddr' READY FOR CONNECTION TO LINK 'linkid'
R DMTxxx142I LINK 'linkid' LINE 'vaddr' DATASET READY
R DMTxxx143I LINK 'linkid' LINE 'vaddr' DISCONNECTED
R DMTxxx144I RECEIVING FILE ('orgid') ON LINK 'linkid' FROM
  'locid' ('userid'), REC nnnnnnnn
R DMTxxx145I RECEIVED FILE ('orgid') ON LINK 'linkid' TO
  'locid' 'userid'
R DMTxxx146I SENDING FILE 'spoolid' ('orgid') ON LINK FROM
  'locid' 'userid'
R,O DMTxxx147I SENT FILE 'spoolid' ('orgid') ON LINK 'linkid' TO
  'locid' 'userid'
R DMTxxx148I ACTIVE FILE 'spoolid' SENDING RESUMED ON LINK
  'linkid'
R DMTxxx149I LINK 'linkid' LINE ACTIVITY: TOT= mmmmmmmm;
  ERRS= nnnnnnnn; TMOUTS= pppppppp
R DMTxxx160I LINE 'vaddr' DISABLED FOR 'linkid'
R,V DMTxxx170I FROM 'linkid': (message text)
R,V DMTxxx171I FROM 'linkid'('userid'): (message text)
DMTCMX172I CPQ: (command response)
R DMTxxx190E INVALID SPOOL BLOCK FORMAT ON FILE 'spoolid'
R DMTIRX400I RSCS DIRECT mm/dd/yy hh:mm,'nn' MAX
  ACTIVE LINKS, 'tt' TAGS

```

R - RSCS local operator's console  
O - Command originator  
V - Virtual machine user  
C - VM/370 CP operator

Spontaneous Messages (Continued)

R DMTxxx580I FILE 'spoolid' PROCESSING TERMINATED  
O DMTNHD910E INVALID NJI PARAMETER 'parm' ON TAG --  
PARAMETER IGNORED  
R DMTNHD917I NJI LINK 'linkid': {JOB|OUTPUT} ('orgid'),  
JOBNAME 'job', PGMR 'user'  
R,O DMTRPT921I PRINTER ON LINK 'linkid' LINE 'vaddr' DISABLED --  
INTERVENTION OR MAINTENANCE REQUIRED  
R,O DMTRPT922I INTERVENTION REQUIRED ON PRINTER LINK 'linkid'  
LINE 'vaddr'  
R DMTRPT923E LINE OR CHANNEL I/O ERROR -- MAINTENANCE  
REQUIRED ON LINK 'linkid' LINE 'vaddr'  
R DMTRPT924E NONRECOVERABLE PROGRAM ERROR ON LINK 'linkid'  
LINE 'vaddr'  
R,O DMTRPT925I FILE PURGED BY USER ON PRINTER 'linkid'  
LINE 'vaddr'  
O DMTxxx934E ID CARD MISSING ON LINK 'linkid' -- INPUT  
FILE PURGED  
R,V DMTSML935E LINK 'linkid' IN RJE MODE -- PRINT FILE  
'spoolid' PURGED  
R,V DMTNPT936E NO REMOTE PUNCH AVAILABLE ON LINK 'linkid' --  
FILE 'spoolid' PURGED  
R,V DMTPOW940E LINK 'linkid' IN POWER MODE -- PRINT FILE 'spoolid'  
PURGED  
R,O DMTPOW944I POWER COMMAND FROM LINK 'linkid' IGNORED:  
(command text)  
R DMTPOW945I LINK 'linkid' DEACTIVATION INITIATED BY POWER

COMMAND RESPONSES

General Command Responses

O DMTCMX200I RSCS  
O DMTCMX201E INVALID COMMAND 'command'  
O DMTCMX202E INVALID LINK 'linkid'  
O DMTCMX203E INVALID SPOOL ID 'spoolid'  
O DMTCMX204E INVALID KEYWORD 'keyword'  
O DMTCMX205E CONFLICTING KEYWORD 'keyword'  
O DMTCMX206E INVALID OPTION 'keyword' 'option'  
O DMTCMX207E CONFLICTING OPTION 'keyword' 'option'  
O DMTCMX208E INVALID USER ID 'userid'  
O DMTCMX209E RESTRICTED COMMAND 'command'  
O DMTCMX210E INVALID LOCATION 'locid'  
O DMTxxx300I ACCEPTED BY TASK 'task'  
O DMTxxx301E REJECTED BY TASK 'task' -- PREVIOUS COMMAND ACTIVE

R - RSCS local operator's console  
O - Command originator  
V - Virtual machine user  
C - VM/370 CP operator

General Command Responses (Continued)

O DMTxxx302E LINK 'linkid' IS NOT DEFINED  
O DMTxxx303E LINK 'linkid' IS NOT ACTIVE  
O DMTxxx304E REJECTED BY TASK 'task' -- NOT RECEIVING  
O DMTCMX310E LOCATION 'locid' IS NOT DEFINED  
O DMTxxx320E LINK 'linkid' NOT CONNECTED  
O DMTRGX330E USERID MISSING OR INVALID  
O DMTRGX331E 'userid' NOT LOGGED ON  
O DMTRGX332E 'userid' NOT RECEIVING  
R,O DMTxxx531I INVALID LINE DRIVER COMMAND FOR LINK 'linkid' --  
NO ACTION TAKEN

Specific Command Responses

BACKSPAC:

O DMTxxx510I FILE 'spoolid' BACKSPACED  
O DMTxxx511E NO FILE ACTIVE ON LINK 'linkid'  
R,O DMTxxx531I INVALID LINE DRIVER COMMAND FOR LINK 'linkid' --  
NO ACTION TAKEN

CHANGE:

O DMTAXM520I FILE 'spoolid' CHANGED  
O DMTAXM521I FILE 'spoolid' HELD FOR LINK 'linkid'  
O DMTAXM522I FILE 'spoolid' RELEASED FOR LINK 'linkid'  
O DMTAXM523I LINK 'linkid' QUEUE REORDERED  
O DMTAXM524E FILE 'spoolid' ACTIVE -- NO ACTION TAKEN  
O DMTAXM525E FILE 'spoolid' IS FOR LINK 'linkid' --  
NO ACTION TAKEN  
O DMTAXM526E FILE 'spoolid' NOT FOUND -- NO ACTION TAKEN

CLOSE:

R DMTAXM500I nn FILE(S) CLOSED ON LINK 'linkid'  
R DMTAXM501E LINK 'linkid' ACTIVE -- NO FILE(S) CLOSED  
R DMTAXM502E FILE 'spoolid' INACTIVE -- NO ACTION TAKEN

CMD:

O DMTxxx302E LINK 'linkid' IS NOT DEFINED  
O DMTxxx303E LINK 'linkid' IS NOT ACTIVE  
O DMTCMX310E LOCATION 'locid' IS NOT DEFINED  
O DMTxxx320E LINK 'linkid' NOT CONNECTED

R - RSCS local operator's console  
O - Command originator  
V - Virtual machine user  
C - VM/370 CP operator

Specific Command Responses (Continued)

R,V DMTPOW941E LINK 'linkid' INVALID 'CMD' SPECIFICATION  
R,V DMTPOW942E LINK 'linkid' POWER COMMAND SPECIFIED INVALID OR  
NOT SUPPORTED  
R,V DMTPOW943E LINK 'linkid' POWER COMMAND OPERAND SPECIFIED  
INVALID OR NOT SUPPORTED

DEFINE:

R DMTCMX540I NEW LINK 'linkid' DEFINED  
R DMTCMX541I LINK 'linkid' REDEFINED  
R DMTCMX542E LINK 'linkid' ACTIVE -- NOT REDEFINED  
R DMTCMX543E LINK 'linkid' NOT DEFINED -- LINK LIMIT REACHED  
R DMTCMX653I LINK 'linkid' DEFAULT 'task' 'type' 'vaddr'  
c Z=z R=r

DELETE:

R DMTCMX550I LINK 'linkid' NOW DELETED  
R DMTCMX551E LINK 'linkid' ACTIVE -- NOT DELETED  
R DMTCMX552E LINK 'linkid' HAS A FILE QUEUE -- NOT DELETED

DISCONN:

R DMTCMX560I RSCS NETWORKING DISCONNECTING  
R DMTCMX561E USERID 'userid' NOT RECEIVING

DRAIN:

R,O DMTxxx570I LINK 'linkid' NOW SET TO DEACTIVATE  
R,O DMTxxx571E LINK 'linkid' ALREADY SET TO DEACTIVATE

EXEC:

R DMTCMX675E EXEC 'filename' NOT FOUND ON DISK 'vaddr' --  
COMMAND FILE NOT EXECUTED  
R DMTCMX676E FATAL ERROR READING FROM 'vaddr' -- EXEC  
'filename' PROCESSING TERMINATED  
R DMTCMX677E EXEC 'filename' FILE FORMAT INVALID --  
EXEC NOT EXECUTED  
R DMTCMX678E EXEC 'filename' IN EXECUTION -- NEW EXEC  
COMMAND IGNORED  
R DMPTREX679I EXECUTING 'filename' COMMAND: (command line)

R - RSCS local operator's console  
O - Command originator  
V - Virtual machine user  
C - VM/370 CP operator

Specific Command Responses (Continued)

FLUSH:

R,O DMTxxx531I INVALID LINE DRIVER COMMAND FOR LINK 'linkid' --  
NO ACTION TAKEN  
R,O DMTxxx580I FILE 'spoolid' PROCESSING TERMINATED  
O DMTxxx581E FILE 'spoolid' NOT ACTIVE

FORCE:

R DMTREX002I LINK 'linkid' DEACTIVATED

FREE:

R,O DMTxxx590I LINK 'linkid' RESUMING FILE TRANSFER  
R,O DMTxxx591E LINK 'linkid' NOT IN HOLD STATUS

FWDSPACE:

O DMTxxx511E NO FILE ACTIVE ON LINK 'linkid'  
R,O DMTxxx531I INVALID LINE DRIVER COMMAND FOR LINK 'linkid' --  
NO ACTION TAKEN  
O DMTxxx600I FILE 'spoolid' FORWARD SPACED

HOLD:

R,O DMTxxx531I INVALID LINE DRIVER COMMAND FOR LINK 'linkid' --  
NO ACTION TAKEN  
R,O DMTxxx610I LINK 'linkid' TO SUSPEND FILE TRANSMISSION  
R,O DMTxxx611I LINK 'linkid' FILE TRANSMISSION SUSPENDED  
R,O DMTxxx612E LINK 'linkid' ALREADY IN HOLD STATUS

MSG:

O DMTxxx302E LINK 'linkid' IS NOT DEFINED  
O DMTxxx303E LINK 'linkid' IS NOT ACTIVE  
O DMTCMX310E LOCATION 'locid' IS NOT DEFINED  
O DMTxxx320E LINK 'linkid' NOT CONNECTED  
O DMTRGX330E USERID MISSING OR INVALID  
O DMTRGX331E 'userid' NOT LOGGED ON  
O DMTRGX332E 'userid' NOT RECEIVING  
R,O DMTxxx531I INVALID LINE DRIVER COMMAND FOR LINK 'linkid' --  
NO ACTION TAKEN

R - RSCS local operator's console  
O - Command originator  
V - Virtual machine user  
C - VM/370 CP operator

Specific Command Responses (Continued)

ORDER:

R,O DMTAXM523I LINK 'linkid' QUEUE REORDERED  
R,O DMTAXM524E FILE 'spoolid' ACTIVE -- NO ACTION TAKEN  
R,O DMTAXM525E FILE 'spoolid' IS FOR LINK 'linkid' --  
NO ACTION TAKEN  
R,O DMTAXM526E FILE 'spoolid' NOT FOUND -- NO ACTION TAKEN

PURGE:

R,O DMTAXM524E FILE 'spoolid' ACTIVE -- NO ACTION TAKEN  
R,O DMTAXM525E FILE 'spoolid' IS FOR 'linkid' --  
NO ACTION TAKEN  
R,O DMTAXM526E FILE 'spoolid' NOT FOUND -- NO ACTION TAKEN  
R,O DMTAXM640I 'nn' FILE(S) PURGED ON LINK 'linkid'

QUERY 'locid':

O DMTCMX636I 'locid' ROUTED THROUGH LINK 'linkid'  
O DMTCMX637I 'locid' NOT ROUTED  
O DMTCMX651I LINK 'linkid' INACTIVE  
O DMTCMX652I LINK 'linkid' {CONNECT|ACTIVE} 'task' 'type'  
'vaddr' c {HO|NOH}{DR|NOD} {NOT|TRS|TRL|TSL}

QUERY 'linkid' ACTIVE:

O DMTCMX656I FILE 'spoolid' ('orgid') 'locid' 'userid'  
CL a PR pp LEFT mmmmmmm OF nnnnnnn  
O DMTCMX665I NO FILE ACTIVE

QUERY 'linkid' DEF:

O DMTCMX653I LINK 'linkid' DEFAULT 'task' 'type' 'vaddr'  
c Z=z R=r

QUERY 'linkid' FILES:

O DMTCMX654I LINK 'linkid' S=s R=r Q=q P=p

QUERY 'linkid' QUEUE:



- R - RSCS local operator's console
- O - Command originator
- V - Virtual machine user
- C - VM/370 CP operator

Specific Command Responses (Continued)

```

O DMTCMX654I LINK 'linkid' S=s R=r Q=q P=p
O DMTCMX655I FILE 'spoolid' ('orgid') 'locid' 'userid'
          CL a PR pp REC nnnnnnnn {HO|NOH}

```

QUERY 'linkid' SUM:

```

O DMTCMX149I LINKID 'linkid' LINE ACTIVITY; TOT=mmmmmmmm;
          ERRS=nnnnnnnn; TMOUTS=pppppppp

```

QUERY FILE 'spoolid' STAT:

```

O DMTCMX660I FILE 'spoolid' INACTIVE ON LINK 'linkid'
O DMTCMX661I FILE 'spoolid' ACTIVE ON LINK 'linkid'
O DMTCMX664E FILE 'spoolid' NOT FOUND

```

QUERY FILE 'spoolid' VM:

```

O DMTCMX663I FILE 'spoolid' PR pp CL a FO ffffffff CO [*]nnn
          (HO|NOH) DI 'distcode', NA {'fn ft'|'dsname'}
O DMTCMX664E FILE 'spoolid' NOT FOUND
O DMTCMX666I FILE 'spoolid' FL ffff FLC nn MO mmmm CH cccc
          FCB bbbb

```

QUERY FILE 'spoolid' RSCS:

```

O DMTCMX662I FILE 'spoolid' ORG 'locid1' 'userid1'
          ORGID 'orgid' mm/dd/yy hh:mm:ss z.z.z.
          TO 'locid2' 'userid2'
O DMTCMX664E FILE 'spoolid' NOT FOUND

```

QUERY SYSTEM ACTIVE:

```

O DMTCMX670I LINK 'linkid' {CONNECT|ACTIVE} -- LINE
          'vaddr' {HO|NOH} {DR|NDR} {NOT|TRS|TRL|TSL}
O DMTCMX672I NO LINK ACTIVE

```

QUERY SYSTEM LINKS:

```

O DMTCMX670I LINK 'linkid' {CONNECT|ACTIVE} -- LINE
          'vaddr' {HO|NOH}
O DMTCMX671I LINK 'linkid' INACTIVE

```

R - RSCS local operator's console  
O - Command originator  
V - Virtual machine user  
C - VM/370 CP operator

Specific Command Responses (Continued)

O DMTCMX673I NO LINK DEFINED

QUERY SYSTEM PORTS:

O DMTCMX625I NO PORTS AVAILABLE  
O DMTCMX626I PORT 'vaddr' AVAILABLE  
O DMTCMX627I PORT 'vaddr' IN USE BY LINK 'linkid'

QUERY SYSTEM ROUTES:

O DMTCMX634I NO LOCATIONS ROUTED  
O DMTCMX636I 'locid' ROUTED THROUGH LINK 'linkid'

QUERY SYSTEM QUEUE:

O DMTCMX654I LINK 'linkid' S=s R=r Q=q P=p  
O DMTCMX674I NO FILES QUEUED

REORDER:

R DMTAXM109I FILE QUEUE REORDERED

ROUTE:

R DMTCMX630I 'locid' NOW ROUTED THORUGH LINK 'linkid'  
R DMTCMX631I INDIRECT ROUTING FOR 'locid' DEACTIVATED  
R DMTCMX632E 'locid' INVALID ROUTE SPECIFIED  
R DMTCMX633E 'locid' NOT ROUTED -- ROUTE LIMIT REACHED  
DMTCMX638E LOCATION 'locid' HAS A FILE QUEUE --  
INDIRECT ROUTING NOT DEACTIVATED

SIGNON:

O DMTxxx902E NON-SIGNON CARD READ ON LINK 'linkid'  
R,O DMTxxx903E PASSWORD SUPPLIED ON LINK 'linkid' IS INVALID  
O DMTNPT904E SIGNON PARAMETER='parm' INVALID  
R,O DMTxxx905I SIGNON of LINK 'linkid' COMPLETE  
O DMTNPT907E SIGNON TYPE PARAMETER MISSING  
R DMTxxx913E INVALID PASSWORD PARAMETER SPECIFIED --  
LINK 'linkid' NOT ACTIVATED  
R DMTxxx914E INCORRECT PASSWORD RECEIVED ON LINK 'linkid'

R - RSCS local operator's console  
 O - Command originator  
 V - Virtual machine user  
 C - VM/370 CP operator

Specific Command Responses (Continued)

R DMTNCM915E INCOMPATIBLE NJI BUFFER SIZES -- LINK 'linkid'  
 IS BEING DEACTIVATED

R DMTNCM916E INVALID NJI SIGNON CONNECTION RECORD RECEIVED --  
 LINK 'linkid' IS BEING DEACTIVATED

R DMTxxx918E LINK 'linkid' DOES NOT MATCH REMOTE LOCATION  
 'locid'

R DMTxxx919E SIGNON SEQUENCE ON LINK 'linkid' FAILED

START:

R DMTCMX700I ACTIVATING LINK 'linkid' 'task' 'type'  
 'vaddr' c

R DMTCMX701E NO SWITCHED LINE AVAILABLE -- LINK 'linkid'  
 NOT ACTIVATED

R DMTCMX702E LINE 'vaddr' IS IN USE BY LINK 'linkid1' --  
 LINK 'linkid2' NOT ACTIVATED

R DMTCMX703E DEV 'cuu' IS NOT A LINE PORT -- LINK 'linkid'  
 NOT ACTIVATED

R DMTCMX704E LINE 'vaddr' CC=3 NOT OPERATIONAL --  
 LINK 'linkid' NOT ACTIVATED

R DMTCMX705E DRIVER 'type' NOT FOUND ON DISK 'vaddr' --  
 LINK 'linkid' NOT ACTIVATED

R DMTCMX706E FATAL ERROR LOADING FROM 'vaddr' -- LINK 'linkid'  
 NOT ACTIVATED

R DMTCMX707E DRIVER 'type' FILE FORMAT INVALID -- LINK 'linkid'  
 NOT ACTIVATED

R DMTCMX708E VIRTUAL STORAGE CAPACITY EXCEEDED -- LINK 'linkid'  
 NOT ACTIVATED

R DMTCMX709E TASK NAME 'task' ALREADY IN USE -- LINK 'linkid'  
 NOT ACTIVATED

R DMTCMX710E MAX ('nn') ACTIVE -- LINK 'linkid' NOT ACTIVATED

R,O DMTxxx750E LINK 'linkid' ALREADY ACTIVE -- NO ACTION TAKEN

R,O DMTCMX751I LINK 'linkid' ALREADY ACTIVE -- NEW CLASS(ES)  
 SET AS REQUESTED

R,O DMTxxx752I LINK 'linkid' STILL ACTIVE -- DRAIN STATUS RESET

R DMTSML901E INVALID SML MODE SPECIFIED -- LINK 'linkid'  
 NOT ACTIVATED

R DMTxxx906E INVALID BUFFER PARAMETER -- LINK 'linkid'  
 NOT ACTIVATED

R DMTPOW908E INVALID 'PARM' PARAMETER 'parmvalue' SPECIFIED

R DMTNIT911E INVALID NJI BUFFER SIZE SPECIFIED --  
 LINK 'linkid' NOT ACTIVATED

R DMTNIT912E INVALID NJI NODAL RESISTANCE SPECIFIED --  
 LINK 'linkid' NOT ACTIVATED

R DMTxxx913E INVALID PASSWORD PARAMETER SPECIFIED --  
 LINK 'linkid' NOT ACTIVATED

- R - RSCS local operator's console
- O - Command originator
- V - Virtual machine user
- C - VM/370 CP operator

Specific Command Responses (Continued)

R DMTPOW946E INVALID POWER CPUID SPECIFIED -- LINK  
'linkid' NOT ACTIVATED

TRACE:

R DMTxxx801I LINK 'linkid' LOG ACTIVATED  
 R DMTxxx802I LINK 'linkid' LOG DEACTIVATED  
 R DMTxxx803I LINK 'linkid' SUM REPORTING DEACTIVATED  
 R DMTxxx810E LINK 'linkid' LOG ALREADY ACTIVE  
 R DMTxxx811E LINK 'linkid' LOG NOT ACTIVE  
 R DMTxxx812E LINK 'linkid' SUM REPORTING ALREADY ACTIVE  
 R DMTxxx813E LINK 'linkid' SUM REPORTING NOT ACTIVE

TRANSFER:

R DMTAXM524E FILE 'spoolid' ACTIVE -- NO ACTION TAKEN  
 R DMTAXM525E FILE 'spoolid' IS FOR LINK 'linkid' --  
 NO ACTION TAKEN  
 R DMTAXM526E FILE 'spoolid' NOT FOUND -- NO ACTION TAKEN  
 R DMTAXM645I 'nn' FILE(S) TRANSFERRED ON LINK 'linkid'

INITIALIZATION MESSAGES

R DMTINI410I NUCLEUS WRITE COMPLETE  
 R DMTINI411R SYSTEM DISK ADDRESS = {ccu}  
 R DMTINI412R REWRITE THE NUCLEUS ? {YES|NO}  
 R DMTINI413R NUCLEUS CYL/BLK ADDRESS = {nnn}  
 R DMTINI481E INVALID DEVICE ADDRESS -- REENTER  
 R DMTINI482E INVALID CYL/BLK NUMBER -- REENTER  
 R DMTINI483E INVALID REPLY -- ANSWER "YES" OR "NO"  
 R DMTINI484E IPL DEVICE ERROR -- REENTER  
 R DMTINI485E NUCLEUS CYL/BLK SPECIFICATION UNACCEPTABLE, ERROR 'x'  
 R DMTINI498S IPL DEVICE WRITE I/O ERROR  
 R DMTINI499T IPL DEVICE READ I/O ERROR  
 R DMTIRX449I MAX TAGS REQUEST OF 1 PER VIRTUAL STORAGE K ASSUMED  
 R DMTIRX450E INVALID DIRECTORY ENTRY  
 R DMTIRX451E DIRECTORY ENTRY OUT OF ORDER  
 R DMTIRX452E LOCAL PREVIOUSLY SPECIFIED

R - RSCS local operator's console  
O - Command originator  
V - Virtual machine user  
C - VM/370 CP operator

Initialization Messages (Continued)

R DMTIRX453E PARM PREVIOUSLY SPECIFIED FOR LINK  
R DMTIRX454E TAGS PREVIOUSLY SPECIFIED  
R DMTIRX455E DUPLICATE LOCATION ID  
R DMTIRX456E DUPLICATE LINK ID  
R DMTIRX457E DUPLICATE PORT ADDRESS  
R DMTIRX458E UNDEFINED LINK ID  
R DMTIRX461E LOCATION ID MISSING OR INVALID  
R DMTIRX462E LINK ID MISSING OR INVALID  
R DMTIRX463E INVALID DRIVER SPECIFICATION  
R DMTIRX464E PORT ADDRESS MISSING OR INVALID  
R DMTIRX465E INVALID ZONE SPECIFICATION  
R DMTIRX466E INVALID TASK SPECIFICATION  
R DMTIRX467E INVALID CLASS SPECIFICATION  
R DMTIRX468E INVALID KEEP SPECIFICATION  
R DMTIRX469E TAGS COUNT MISSING OR INVALID  
R DMTIRX490T UNSUPPORTED SYSTEM RESIDENCE DEVICE  
R DMTIRX491T FATAL ERROR READING RSCS DIRECT  
R DMTIRX492T FATAL ERROR LOADING DMTAXS  
R DMTIRX493T FATAL ERROR LOADING DMTLAX  
R DMTIRX494T LOCAL LOCATION DEFINITION MISSING  
R DMTIRX495T VIRTUAL STORAGE SIZE INSUFFICIENT FOR INITIALIZATION

RSCS WAIT STATE CODES

When RSCS enters a wait state, the RSCS operator is notified via the CP message:

DMKDSP450W CP ENTERED; DISABLED WAIT PSW

issued to the RSCS operator's console. Using CP commands, the operator can display the virtual machine's PSW. The three rightmost hexadecimal characters indicate the error condition.

001 Explanation: If no RSCS message was issued, a program check interrupt occurred during the execution of the program check handler. The probable cause is a programming error. If the RSCS message:

DMTrex091T INITIALIZATION FAILURE -- RSCS NETWORKING SHUTDOWN

was issued, RSCS operation was terminated because of an error in loading DMTAXS or DMTLAX. A dump of virtual storage is automatically taken. Verify that CMS files DMTAXS TEXT and DMTLAX TEXT are correctly written and resident on the RSCS system residence device. If the RSCS message:

DTMREX090T PROGRAM CHECK IN SUPERVISOR -- RSCS NETWORKING SHUTDOWN

was issued, the program check handler terminated RSCS due to a program check interrupt in other than a dispatched line driver. The probable cause is a programming error. The wait state code is loaded by DMTREX at RSCS termination or automatically during program check handling.

Operator Action: If neither of the above two messages was issued, use the CP DUMP command to dump the contents of virtual storage. IPL to re-start. If the problem persists, notify local RSCS system support personnel.

- 007 Explanation: A program check interrupt occurred during initial processing, before the program check handler could be activated. This may be caused by a programming error or by an attempt to load RSCS into an incompatible virtual machine. The latter case can occur if the virtual machine has an incomplete instruction set, or does not have the required VM/370 Diagnose interface support. The wait state code is loaded automatically during the initial loading and execution of the RSCS supervisor, DMTINI, DMTREX, DMTAXS, and DMTLAX.

Operator Action: Verify that the RSCS virtual machine configuration was correctly specified and that the "retrieve subsequent file description" function of DIAGNOSE code X'14' is supported. Dump the contents of virtual storage via the CP DUMP command. If the problem persists, notify local RSCS system support personnel.

- 011 Explanation: An unrecoverable error occurred while reading the RSCS nucleus from DASD storage. This may be caused by a DASD hardware malfunction. It may result from (1) an incorrect virtual DASD device definition, (2) an attempt to use a system residence device unsupported by RSCS, (3) incorrect RSCS system generation procedures, or (4) the subsequent overwriting of the RSCS nucleus on the system residence device. The wait state code is loaded by DMTINI after an attempt, successful or not, to issue the message:

DMTINI402I IPL DEVICE READ I/O ERROR

Operator Action: Verify that the RSCS system residence device was properly defined as a virtual DASD device and that the real DASD device is mounted and operable. If the problem persists, dump virtual storage via the CP DUMP command and notify local RSCS system support personnel. The RSCS system residence device may have to be restarted or RSCS may have to be regenerated.

- 012 Explanation: The RSCS nucleus was successfully written to the RSCS system disk. This wait state code occurs at the end of RSCS system generation following the message:

DMTINI410I NUCLEUS WRITE COMPLETE

Operator Action: Test the newly loaded RSCS system by IPLing from the disk that contains the new nucleus.

The CP spool interface routine, the AXS task, consists of two CSECTs, DMTAXM and DMTAXA. DMTAXA contains entry points to several routines, specifically designed for user exits, that are all called from DMTAXM. DMTAXA also contains code that creates VM/370 account records.

The routines contained in DMTAXA are:

DMTAXAAC entered when a file is accepted and enqueued for transmission.

DMTAXASE entered when all copies of a file have been successfully sent.

DMTAXAPU entered when a file is deleted as a result of the PURGE command.

DMTAXARE entered when a file has been received and written to the VM/370 spool system for real unit record processing, for delivery to a local virtual machine userid, or for forwarding on the network (as determined by the file's destination address).

DMTAXATA entered when a file is ready to be enqueued with the priority value (TAGPRIOR) in the TAG.

When entering the above routines, the register contents are as follows:

Register 2 = address of TAG slot for file  
 Register 14 = return address  
 Register 15 = entry point address

The TAG dsect contains the following information (the fields that can be altered are marked "\*"):

TAGINLOC	*	originating location
TAGLINK		next location for transmission
TAGINTOD	*	time of file origin
TAGINVM	*	originating virtual machine
TAGRECNM		number of records in file
TAGRECLN		maximum file data record length
TAGINDEV		device type of originating device
TAGCLASS	*	file output class
TAGID		VM/370 current spool file id
TAGCOPY	*	number of copies requested
TAGFLAG		VM/370 SFBLK control flags
TAGFLAG2		VM/370 SFBLK control flags
TAGORGID	*	VM/370 spool id at origin locid
TAGNAME	*	file name

TAGTYPE	*	file type
TAGDIST	*	file distribution code
TAGTOLOC	*	destination location id
TAGTOVM	*	destination virtual machine id
TAGPRIOR	*	transmission priority
TAGDEV		active file's virtual device address
TAGCNTRL		network control record format
TAGRECLT		number of records left in file
TAGSPARE		spare fullword
TAGFORMN	*	form name
TAGFLSHN	*	3800 flash name
TAGMODN	*	3800 copy modification module name
TAGCHARN	*	3800 character arrangement table name
TAGFCBN	*	3800 fcb name
TAGFLC	*	3800 flash count
TAGFLAG3	*	3800 flag byte
TAGRESV		reserved

For a detailed layout of the TAG DSECT, refer to RSCS Networking Logic (LY24-5203).

The following example shows the code at a typical user exit in DMTAXA:

```
DMTAXATA EQU      *
                USING DMTAXATA,R15          GET TEMP ADDRESSABILITY
                STM   R0,R15,AXASAVE        SAVE REGISTERS
                DROP  R15
                USING DMTAXATA,R12          GET RIGHT ADDRESSABILITY
                LR    R12,R15               AND UPDATE R12
                ...
                ... (insert user code here)
                ...
                LM    R0,R15,AXASAVE        RESTORE REGISTERS
                BR    R14                   RETURN TO CALLER
```

Below is a fuller description of the current function (if any) of each of the entry points and of the sort of additional use to which they may be put.

DMTAXAAC: This routine is entered whenever a file has been received from the CP spool system for transmission (which includes all files being store-and-forwarded). On return to DMTAXM, the file is accepted only if a zero value is returned in register 15; otherwise, it is rejected. The current code clears register 15 and returns immediately. If the file is selected to be rejected (a non-zero value in register 15), message DMTAXM112E FILE 'spoolid' ('orgid') REJECTED BY RSCS ACCOUNTING EXIT is sent to the originator. If the originator is a local VM/370 user, the file is transferred to that user's virtual reader. Files that do not originate on the local VM/370 system are purged. Additional code could be added here to determine whether a file should be transmitted based upon any suitable criteria (e.g. maximum record count, unauthorized or authorized users, etc.).

DMTAXASE: This routine is entered when all copies of a file have been



successfully transmitted on a link. Only if the file originated on the local VM/370 system is an account record produced (via Diagnose X'4C'). The standard account record contains the following information:

- The local RSCS userid
- The originating userid
- The date and time of accounting record creation
- The origin spool file id
- The local spool file id
- The originating location id
- The destination location id
- The spool file class
- The originating device type
- The record count for the file
- The local system id
- An account code (X'01' for SEND)

The routine can be modified to record different information if required by adding the necessary code and changing the account record layout which is defined at label ACNTBUFF.

For a detailed layout of the accounting record, refer to RSCS Networking Logic (LY24-5203).

DMTAXAPU: This routine is entered after a file has been deleted by the PURGE command. Currently it performs an immediate return, but code can be added to create an account record containing information about the deleted file or perform any other suitable function.

DMTAXARE: This routine is entered whenever a file has been received over the network and written to the VM/370 spool system. It currently creates an account record of identical format to that created on file receipt (except that the account code is X'02'). The routine can be modified to record different information or perform any suitable function at file arrival time.

DMTAXATA: This routine is entered when a file TAG is ready to be enqueued with the priority value contained in TAGPRIOR. Currently no function is performed in this routine, but code could be added to ensure that the priority option is not misused (e.g. priority 1 for a 20,000 record file), or an automatic priority scheme can be implemented by having this exit set a priority value based on some information in the

| tag, such as the record count, the originating userid, location ID, etc.

| Refer to subsection "UPDATING RSCS" in section "Installing RSCS" in this manual for information on rebuilding the AXS task after making any modifications to DMTAXA.

## Appendix D: Nonprogrammable Remote Terminals

This appendix contains operational information for each of the following remote nonprogrammable terminals supported by the NPT line driver:

- IBM 2770 Data Communication System
- IBM 2780 Data Transmission Terminal, Models 1 and 2
- IBM 3770 Data Communication System, nonprogrammable models
- IBM 3780 Data Communications Terminal

The following topics are discussed for each terminal:

- Supported configuration
- Operational notes
- Entering commands
- Error recovery procedures

Note: The operating and error recovery procedures for the RSCS-supported nonprogrammable remote terminals were obtained from the publications listed in the Preface. If conflicts occur, refer to the latest editions of those publications.

### IBM 2770 AS A REMOTE TERMINAL

#### SUPPORTED CONFIGURATION

The IBM 2770 Data Communication System with the 2772 Multipurpose Control Unit (from now on called 2770) can be used as an NPT remote terminal. It can be connected to RSCS via a switched or leased point-to-point communication line.

The following devices are required for operating a 2770 as an NPT remote terminal:

- One IBM 2213 Printer, Model 2, or one IBM 2203 Printer, or one IBM 1053 Printer
- One IBM 2502 Card Reader, Model A1 or A2

- EBCDIC Transmission Code

Other supported equipment and features are:

- One IBM 5425 Card Punch, Model 3 or 4, with or without 3950 attachment.
- EBCDIC Transparency (Feature 3650)
- Buffer Expansion (Feature 1490)
- Additional Buffer Expansion (Feature 1491)
- Space Compression/Expansion (Feature 6555)
- Synchronous Clock (Feature 7705)

#### 2770 OPERATIONAL NOTES

Establishing the connection with RSCS is the same for all nonprogrammable terminals and is covered in "Part 3: RSCS Operation" under "Starting NPT" and "Signing on to NPT".

For all 2770 terminal sessions with NPT, set the 2770 console switches as follows:

<u>Switch</u>	<u>Setting</u>
JOB SELECT VARIABLE SELECT	SELECT
INPUT KEYBOARD, 2 (card reader)	both up
OUTPUT PRINTER, 2 (card punch)	both up
DIRECT DATA OUTPUT PRINTER	up
TERM MODE	LINE
SELECTION REQD	down
ANSWER	MANUAL
MONITOR PRINT	as desired by installation, normally down
Any of above that refer to device not on your 2770	down
All other VARIABLE SELECT switches	down

During installation, your 2770 may have been provided with the equivalent of all the above switch settings at one of the five JOB positions on the JOB SELECT switch. If so, simply set to that position and ignore all VARIABLE SELECT switches. When power is on, console lights show the settings that are in effect.

Set the TRANSPCY switch down except when transmitting EBCDIC card decks that use all 256 possible punch combinations.

## ENTERING COMMANDS

The remote terminal operator submits commands to RSCS through the remote card reader in the same manner as he enters card files. The commands are punched, one per card, starting in column 1. One or more commands may be submitted at any one time. Commands are only accepted before the ID card of an input card deck or after an input card deck has been completely processed (end-of-file generated).

## TERMINATING A SESSION

To terminate a session, the remote terminal operator issues the DRAIN command. The link is deactivated after the file currently being processed is completed.

## ERROR RECOVERY PROCEDURES

Most problems you encounter result in lights appearing on the 2770 console or the I/O devices themselves. Some lights are not error lights; these are DATA SET READY, CARRIER OFF, DATA IN BUFFER, LINE MODE, PROCEED, BID, SELN REQD, TRANSPCY, MANUAL ANSWER, and any of the I/O device lights that are not blinking. Any blinking I/O device light indicates that the device is not ready. Other lights provide clues to problems and are discussed in the following sections.

### Error Recovery for a Line Drop

If for any reason a line drop occurs, all activity at the remote terminal halts. If the terminal was receiving, the printer or punch stops. If the terminal was transmitting, the reader stops and RSCS closes the partially transmitted file.

To restart, you must redial the line and reenter your SIGNON card. When the SIGNON card is accepted by RSCS, normal line activity resumes. If receiving, activity restarts from the point of interruption. If transmitting, you can either restart from the file that was interrupted or you can send the rest of the data as a separate file.

If some other user dials in on the disconnected line before you do and submits his own SIGNON card, RSCS recognizes the new linkid as being different from the one in effect when the line dropped. The new user is terminated and the link is deactivated. If your terminal was receiving, the printer or punch file is placed at the end of the queue for your link and is put into HOLD status.

To restart under these circumstances, you must first have the RSCS operator reactivate your link via the START command. You can then redial the line and resubmit your SIGNON card. When the SIGNON card is accepted, line activity resumes. Transmission can be either continued or restarted. Printer or punch output resumes with the file following the one that was active when the line dropped. To process the interrupted file, you must change its status from HOLD to NOHOLD via the CHANGE command.

### Error Recovery When Transmitting

When transmitting, any card reader trouble is indicated by a blinking INPUT 2 or 3 light, whichever your card reader is attached to. The following lights on the card reader may further indicate the type of trouble:

#### FEED CHECK

The bottom card in the hopper failed to feed. Remove the cards from the hopper. Press the Non-Process Runout (NPRO) button. Repair the bottom hopper card, if necessary, and make sure the feed throat is clear. Reload the cards and press reader START and console START.

#### ATTENTION

Full stacker or empty hopper with EOF off. Correct the problem, then press reader START and console START.

#### READ CHECK

#### VALIDITY CHECK

Last card in the stacker (if no jam) and the following card (run out by NPRO after hopper cards are removed) must be re-read. After appropriate correction, place these two cards at the front of the card stack in the hopper, and press reader START and console START.

#### TERMINAL ADDRESS

The NPT program is trying to send output while you are trying to start an input function. Continue the input procedure until you have turned on the BID light. Then press CHECK RESET and wait for input to begin. Press CHECK RESET again if TERMINAL ADDRESS comes on again.

#### BID RETRY

The NPT program has failed to give permission to transmit. Press CHECK RESET to cause the 2770 to try again. If this fails, ask the local RSCS operator to check the task.

#### INPUT CHECK

#### BUFFER CHECK

#### TRANSPCY CHECK

With any one of these serious errors, you must always restart the job. Make sure you have turned on the TRANSPCY switch if the input

card deck contains object decks or other cards requiring transparent transmission.

#### RECORD CHECK

##### LINE CHECK

These lights may come on while NPT is trying retransmissions for line errors; they will go out if recovery is successful. If they stay on and the transmission does not proceed, you must do a CHECK RESET and restart the output device for output to continue.

Note: It is possible in this case to lose a record, or to have a record duplicated.

#### Error Recovery When Receiving

Output device trouble is indicated by blinking OUTPUT PRINTER or OUTPUT 2 lights on the devices as follows:

##### CARRIAGE CHECK

The printer carriage, forms, or carriage tape are not ready or jammed. Correct the condition and press console CHECK RESET and START.

##### PRINT CHECK

The printer had a parity error. Press console CHECK RESET and START. Failure to recover indicates hardware trouble.

##### CHECK light or any card punch not ready condition

Hopper empty, stacker full, or jams are the possible causes. Set the keyboard switch to KEYPCH. Remove any cards from the stacker or the eject station just below the stacker and discard all cards after the last one with a column 80 punch. Clear the entire card feed path. With blank cards in the hopper, press the FEED key twice and the RELEASE key once and then set the switch to AUTO PCH. Press console CHECK RESET and START. The first card through the feed after recovery is blank and should be discarded.

When receiving, the following console lights may require your attention:

##### TERMINAL ADDRESS

The NPT program is trying to send output but your 2770 is not ready. Make sure your switch setup is correct, ready all output devices, and press console CHECK RESET.

##### OVERRUN

This usually indicates that features on your 2770 were not specified correctly when you signed on to the RSCS virtual machine. Ask the RSCS operator either to restart the task in order to send the correct SIGNON card or to change the recorded configuration.

##### BUFFER CHECK

This hardware error always requires you to reset and restart the operation. Failure to recover indicates hardware trouble.

#### LINE CHECK

The NPT program is trying retransmissions. If they are successful, the light goes out. If the light stays on and printing or punching does not continue soon, you must restart the line.

For other combinations of error lights consult the publication System Components: IBM 2770 Data Communications System, GA27-3013.

#### IBM 2780 AS A REMOTE TERMINAL

##### SUPPORTED CONFIGURATION

The IBM 2780 Data Transmission Terminal, Models 1 and 2, used as NPT remote terminals, can be connected to RSCS via a switched or leased point-to-point line. EBCDIC Transmission (Feature 9762) is required.

The following supported features are optional:

- EBCDIC Transparency (Feature 8030)
- 120/144-Character Print Line (Feature 5820 or 5821)
- Multiple Record Transmission (Feature 5010)
- Synchronous clock (Feature 7705)

##### 2780 OPERATIONAL NOTES

Establishing the connection with RSCS is the same for all nonprogram-mable terminals and is covered in "Part 3: RSCS Operation" under "Starting NPT" and "Signing on to NPT".

After establishing the connection with RSCS, perform the following steps:

1. Make sure that the mode-selection knob is at one of the positions TSM-TRSP, TSM, or REC. Do not put the knob in the PRINT or PUNCH position. (To receive a punch file, put the knob in the REC position.)
2. Press START on the printer.



## ENTERING COMMANDS

The remote terminal operator submits commands to RSCS through the remote card reader in the same manner as he enters card files. The commands are punched, one per card, starting in column 1. One or more commands may be submitted at any one time. Commands are only accepted before the ID card of an input card deck or after an input card deck has been completely processed (end-of-file generated).

## TERMINATING A SESSION

To terminate a session, the remote terminal operator issues the DRAIN command. The link is deactivated after the file currently being processed is completed.

## ERROR RECOVERY PROCEDURES

Most problems you encounter result in lights appearing on the reader-punch or printer control panels. Some lights are not error lights; these are DATA SET READY, the two READY lights, END OF FILE, I/O BFR FULL, CTR1, CTR2, CTR4 and usually LINE.

### POWER-ON reset

The POWER-ON reset operation is referred to frequently throughout this manual. Contrary to its name, a POWER-ON reset does not involve the 2780 POWER ON/OFF switch (on the right side of the 2780); this switch needs to be turned on only once during 2780 operations. You can perform a POWER-ON reset by turning the mode selection switch knob from its current position to any other position. This resets the 2780. If the knob is already where you want it, then turn it to some other position and back to the desired one.

**CAUTION:** Do not do a POWER-ON reset when the printer is printing, or while cards are being read or punched.

### Error Recovery for a Line Drop

If for any reason a line drop occurs, all activity at the remote terminal halts. If the terminal was receiving, the printer or punch stops. If the terminal was transmitting, the reader stops and RSCS closes the partially transmitted file.

To restart, you must redial the line and reenter your SIGNON card. When

the SIGNON card is accepted by RSCS, normal line activity resumes. If receiving, activity restarts from the point of interruption. If transmitting, you can either restart from the file that was interrupted or you can send the rest of the data as a separate file.

If some other user dials in on the disconnected line before you do and submits his own SIGNON card, RSCS recognizes the new linkid as being different from the one in effect when the line dropped. The new user is terminated and the link is deactivated. If your terminal was receiving, the printer or punch file is placed at the end of the queue for your link and is put into HOLD status.

To restart under these circumstances, you must first have the RSCS operator reactivate your link via the START command. You can then redial the line and resubmit your SIGNON card. When the SIGNON card is accepted, line activity resumes. Transmission can be either continued or restarted. Printer or punch output resumes with the file following the one that was active when the line dropped. To process the interrupted file, you must change its status from HOLD to NOHOLD via the CHANGE command.

#### Error Recovery When Transmitting

##### TERM ADDR

This light comes on when you are reading cards. If the cards stop reading and the READY and TERM ADDR lights are on, perform the following steps:

1. Remove the cards from the hopper and press NPRO to run out the two cards in the feed.
2. Put these two cards in front of the deck previously removed in Step 1, and place the cards back in the hopper.
3. Do a POWER-ON reset.
4. Wait for the TERM ADDR light to come on again. This may take as long as 10 seconds.
5. Do another POWER-ON reset, press the END OF FILE and START, so that the END OF FILE and READY lights come on.
6. Cards should start reading within 15 seconds. If they do not, and the TERM ADDR light comes on again, repeat the above steps.

If the above steps continue to fail, you may have interrupted printing or punching to read in cards before the printing or punching had completed. Try to ready the printer and punch.

##### DATA CHECK

#### DATA CHECK and EQUIP CHECK

#### DATA CHECK, EQUIP CHECK, and PARITY CHECK

The reader could not read a card correctly. Perform the following steps:

1. Remove cards from the hopper (not the stacker).
2. Press NPRD. Two cards will run out into the stacker. The first of these cards is the bad one.
3. Correct the bad card.
4. Put both cards back in the hopper, followed by the cards you removed from the hopper.
5. Press END OF FILE and START so that the END OF FILE and READY lights come on.

#### OVER RUN

#### PARITY CHECK

#### PARITY CHECK and EQUIP CHECK

#### RECORD and LINE

To correct errors when these lights are on, you must first find out how many cards have been read but not yet transmitted. Add up the CTR lights to do this. For example, if CTR1 and CTR2 are on, three cards have been read, but not yet transmitted. Without removing all cards from the stacker:

1. Remove the cards from the hopper.
2. Press NPRD to run out the two cards in the feed mechanism.
3. Remove the last  $N+2$  cards from the stacker, where  $N$  is the number of cards read but not yet transmitted.
4. Put these cards back into the hopper, followed by the cards you removed from the hopper in Step 1. Do a POWER-ON reset.
5. Press END OF FILE and START so that the END OF FILE and READY lights come on.

#### EQUIP CHECK

A mechanical error has occurred. Use the procedure for DATA CHECK, but you should not need to correct a card.

#### LINE

Wait a few moments to see whether or not the reader starts reading cards by itself. If it does not:

1. Press STOP.
2. Press END OF FILE and START so that the END OF FILE and READY lights come on.

## HOPR

No card was fed. Check the bottom card in the hopper for damaged edges. Repair or remake the card and replace it and the rest of the cards back in the hopper. Press END OF FILE and START so that the END OF FILE and READY lights come on.

## Error Recovery When Receiving

Some of the errors you may encounter are self-explanatory, such as END OF FORM (another box of paper is needed) or FORM CHECK (the paper is jammed).

One error deserves particular attention. It is indicated by OVER RUN and INCP. If you get this error, you may have specified the wrong remote configuration on the SIGNON card and NPT is trying to use features your 2780 Data Transmission Terminal does not have. Ask the RSCS operator either to restart the task, in order to send the correct SIGNON card, or to change the recorded configuration in the RSCS link table via the DEFINE command.

You may also see the following error indicators:

### TERM ADDR

The device (printer or punch) is not ready.

1. Press STOP and CHECK RESET on the reader-punch.
2. Make the output device ready.

### EQUIP CHECK

The punch has mechanically malfunctioned. Press NPRO to run out the cards in the feed mechanism and discard them. Make the punch ready again.

### SYNCH CHECK

The printer has printed a line containing errors.

1. Press STOP.
2. Press RESET (on printer).
3. Press the START button on the printer; the line is reprinted.

### PARITY CHECK

If the printer was printing, do a POWER-ON reset and press START on the printer. (You may get some duplicate print lines.)

If the punch was punching:

1. Remove cards from the hopper (not the stacker)

2. Press NPRD to run out the two cards in the feed mechanism
3. Throw away the last N+K cards that were stacked, where:  
  
N is the number represented by the CTR lights. For example, if CTR1 and CTR2 are lit, N is 3; if all CTR lights are off, N is 0.  
  
K = 2 if all CTR lights are off or if the I/O BFR FULL light is off.  
  
= 1 if any of the CTR lights and the I/O BFR FULL light are on.
4. Reload blank cards in the hopper and make the punch ready

For other combinations of error lights, consult the publication IBM 2780 Data Transmission Terminal -- Component Description, GA27-3005.

#### IBM 3770 AS A REMOTE TERMINAL

##### SUPPORTED CONFIGURATION

The IBM 3770 Data Communication System can be used as an NPT remote station only when operating in 2770 or 3780 BSC mode. It can be connected to RSCS via a switched or leased point-to-point communication line. The IBM 3770 is only supported on a communication line terminating in an Integrated Communications Adapter (ICA) on the System/370 Model 135, an IBM 2701, or an IBM 3704/3705 Communications Controller. The 3770 keyboard is not supported.

The following devices are required for operating the 3770 as an NPT remote station:

- One of the following communication terminals:  
  
IBM 3771 Models 1, 2, and 3 (in 2770 mode)  
IBM 3773 Models 1, 2, and 3 (in 2770 mode)  
IBM 3774 Models 1 and 2 (in 2770 mode)  
IBM 3775 Model 1 (in 2770 mode)  
IBM 3776 Models 1 and 2 (in 2770 or 3780 mode)  
IBM 3777 Model 1 (in 2770 or 3780 mode)
- One IBM 2502 Card Reader, Model A1, A2, or A3 IBM 3501 Card Reader or IBM 3521 Card Punch with the read feature installed

The valid terminal/reader combinations are shown on the following table.

Note The applicable attachment features must also be ordered.

<u>Communication Terminal</u>	<u>Reader Supported</u>
IBM 3771	3501, 3521
IBM 3773	NONE
IBM 3774	NONE
IBM 3775	NONE
IBM 3776	3501, 3521
IBM 3777	2502

The 3773, 3774, and 3775 communication terminals are supported only for console printer output and for input (in card image format) from the diskette. For further information on these terminals, refer to the following publications:

IBM 3773, 3774, and 3775 Programmable Communication Terminals:

Programmer's Guide, GC30-3028

Operator's Guide, GA27-3114

The following features/functions are included with 2770/3780 BSC compatibility:

- EBCDIC transmission code
- EBCDIC transparency
- 256/256 byte alternating buffers (2770 mode)
- 512/512 byte alternating buffers (3780 mode)
- Extended retry
- External clock (up to 4800 BPS)
- WACK response
- Printer form controls
- Device selection
- Expanded print line (132 positions)
- Transmit/receive monitor print (The 2770 prints only after positive acknowledgement from the line. The 3770 always prints.)

Other supported equipment and functions are:

- One IBM 3521 Card Punch (not supported on 3773 or 3777)
- One IBM 3784 Line Printer (standalone, with 3774 only)

- Space compression/expansion
- Diskette storage

If installed, the diskette can give expanded input/output capability with 2770/3780 BSC operations.

When the 3770 is in 2770/3780 BSC mode, it has two operator-selected modes for remote component selection:

1. Data to Selected Device with Default to Printer: In this mode of operation, the data from the line is directed to the output device specified by the component selection (DC) character received. Component selection characters used are as follows:

DC1 - Selects Console Printer  
 DC2 - Selects Card Punch  
 DC3 - Selects Disk  
 DC4 - Selects Line Printer

If no component selection (DC) character is received, an automatic default occurs to output the data to the printer.

2. Data to Magnetic Disk with Transparent Data to Punch: In this mode of operation, the data from the line is directed to the magnetic disk unless it is transparent data. If transparent data is received, it is directed to the punch. If component selection (DC) characters are received, they are stripped off and ignored.

#### 3770 OPERATIONAL NOTES

Establishing the connection with RSCS is the same for all nonprogrammable terminals and is discussed in "Part 3: RSCS Operation" under "Starting NPT" and "Signing on to NPT".

Operation of the 3770 system is discussed in the following publications:

#### Operating Procedures Guide:

IBM 3771 and 3773 Communications Terminals, GA27-3100

IBM 3774 and 3775 Communications Terminals, GA27-3094

IBM 3776 Communication Terminal, GA27-3107

IBM 3777 Communication Terminal, GA27-3124.

## ENTERING COMMANDS

The remote terminal operator submits commands to RSCS through the remote card reader in the same manner as he enters card files. The commands are punched, one per card, starting in column 1. One or more commands may be submitted at any one time. Commands are only accepted before the ID card of an input card deck or after an input card deck has been completely processed (end-of-file generated).

## TERMINATING A SESSION

To terminate a session, the remote terminal operator issues the DRAIN command. The link is deactivated after the file currently being processed is completed.

## ERROR RECOVERY PROCEDURES

The OPRN CHECK (Operational Check) indicator turns on when an operating procedure error occurs, or an input or output device needs some operator attention (such as a printer out-of-forms condition). An error code displays in the numeric position readout (NPR) indicators.

The SYSTEM CHECK indicator turns on when a controller, or an input or output device error occurs. An error code displays in the numeric position readout (NPR) indicators.

The operator panel speaker sounds when an operational check or a system check occurs; if installed, the audible alarm sounds for jobs other than keyboard jobs when the EXTEND/ALARM switch is on.

When the 3770 stops due to an error or an attention condition:

- Either the SYSTEM CHECK or the OPRN CHECK indicator is on.
- If an input or output device error occurred, the operator panel indicator for the device in error turns on.
- The number displayed in the readout (NPR) indicates the error type.

If the audible alarm sounds, press the RESET key to turn it off. For the error recovery procedure that applies to the error code number displayed, see the section "Numeric Position Readout (NPR) Error Codes" in the Operating Procedures Guides for 3770 terminals.



### Error Recovery for a Line Drop

If for any reason a line drop occurs, all activity at the remote terminal halts. If the terminal was receiving, the printer or punch stops. If the terminal was transmitting, the reader stops and RSCS closes the partially transmitted file.

To restart, you must redial the line and reenter your SIGNON card. When the SIGNON card is accepted by RSCS, normal line activity resumes. If receiving, activity restarts from the point of interruption. If transmitting, you can either restart from the file that was interrupted or you can send the rest of the data as a separate file.

If some other user dials in on the disconnected line before you do and submits his own SIGNON card, RSCS recognizes the new linkid as being different from the one in effect when the line dropped. The new user is terminated and the link is deactivated. If your terminal was receiving, the printer or punch file is placed at the end of the queue for your link and is put into HOLD status.

To restart under these circumstances, you must first have the RSCS operator reactivate your link via the START command. You can then redial the line and resubmit your SIGNON card. When the SIGNON card is accepted, line activity resumes. Transmission can be either continued or restarted. Printer or punch output resumes with the file following the one that was active when the line dropped. To process the interrupted file, you must change its status from HOLD to NOHOLD via the CHANGE command.

### IBM 3780 AS A REMOTE TERMINAL

#### SUPPORTED CONFIGURATION

The IBM 3780 Data Communications Terminal, used as an NPT remote station, can be connected to RSCS via a switched or leased point-to-point communications line. EBCDIC transmission code is required.

The following devices and features are optional:

- One IBM 3781 Card Punch
- Component Selection (Feature 1601, required for the 3781)
- EBCDIC Transparency (Feature 3601)
- Additional Print Positions (Feature 5701)
- Synchronous Clock (Feature 7705).

## 3780 OPERATIONAL NOTES

Establishing the connection with RSCS is the same for all nonprogrammable terminals and is covered in "Part 3: RSCS Operation" under "Starting NPT" and "Signing on to NPT".

For 3780 operations with NPT, set the following 3780 console switches:

<u>Switch</u>	<u>Setting</u>
TERM MODE LINE/HOME	LINE
TRNSPCY	ON or OFF as desired
SPACE COMPRESS/EXPAND	ON or OFF as desired
OFF LINE TEST	OFF
AUTO RESTART	ON
INQUIRY MODE	OFF
ANSWER AUTO/MAN	OFF
TELE (WORLD TRADE ONLY)	OFF
SPEED (WORLD TRADE ONLY)	At desired transmission speed

## ENTERING COMMANDS

The remote terminal operator submits commands to RSCS through the remote card reader in the same manner as he enters card files. The commands are punched, one per card, starting in column 1. One or more commands may be submitted at any one time. Commands are only accepted before the ID card of an input card deck or after an input card deck has been completely processed (end-of-file generated).

### Interrupting Output Processing

If it becomes necessary to enter a command or input card file while the terminal is busy with lengthy output processing, the output may be interrupted as follows:

1. Ready the card reader with the input cards (commands and/or data).
2. Press TERM RESET.
3. Press START on the console.

Note: Due to the nature of the 3780 hardware, print or punch records that were in the 3780 buffer when TERM RESET was pressed are lost by this procedure. The alternative is to wait until the output processing has completed.

## TERMINATING A SESSION

To terminate a session, the remote terminal operator issues the DRAIN command. The link is deactivated after the file currently being processed is completed.

## ERROR RECOVERY PROCEDURES

Most problems you encounter result in lights appearing on the 3780 console and on the I/O devices themselves. Some lights are not error lights; these are DATA SET READY, CARRIER OFF, DATA IN BUFFER, LINE MODE, BID, TRANSPCY, MANUAL ANSWER, and any of the I/O device lights when on steady. Any blinking I/O device light indicates that the device is not ready. Other lights provide clues to problems and are discussed in the following sections.

### Error Recovery for a Line Drop

If for any reason a line drop occurs, all activity at the remote terminal halts. If the terminal was receiving, the printer or punch stops. If the terminal was transmitting, the reader stops and RSCS closes the partially transmitted file.

To restart, you must redial the line and reenter your SIGNON card. When the SIGNON card is accepted by RSCS, normal line activity resumes. If receiving, activity restarts from the point of interruption. If transmitting, you can either restart from the file that was interrupted or you can send the rest of the data as a separate file.

If some other user dials in on the disconnected line before you do and submits his own SIGNON card, RSCS recognizes the new linkid as being different from the one in effect when the line dropped. The new user is terminated and the link is deactivated. If your terminal was receiving, the printer or punch file is placed at the end of the queue for your link and is put into HOLD status.

To restart under these circumstances, you must first have the RSCS operator reactivate your link via the START command. You can then redial the line and resubmit your SIGNON card. When the SIGNON card is accepted, line activity resumes. Transmission can be either continued or restarted. Printer or punch output resumes with the file following the one that was active when the line dropped. To process the interrupted file, you must change its status from HOLD to NOHOLD via the CHANGE command.

### Error Recovery When Transmitting

When transmitting, any card reader trouble is indicated by a blinking reader light. The following lights on the card reader may further indicate the type of trouble:

#### FEED CHECK

The bottom card in the hopper failed to feed. Remove hopper cards. Press NPRO. Repair the bottom hopper card, if necessary, and make sure the feed throat is clear. Reload the cards. Press reader START and console START.

#### ATTENTION

Full stacker or empty hopper with EOF OFF. Correct the problem, press reader START and console START.

#### READ CHECK

##### VALIDITY CHECK

Last card in stacker (if no jam) and following card (run out by NPRO after hopper cards are removed) must be re-read. After appropriate correction, place these two cards at the front of the unprocessed cards in the hopper, press reader START and console START.

#### TERMINAL ADDRESS

The NPT program is trying to send output while you are trying to start an input function. Continue input procedure until you have turned on the BID light. Then press CHECK RESET and wait for input to begin. Press CHECK RESET if TERMINAL ADDRESS comes on again.

#### INPUT CHECK

##### BUFFER CHECK

##### TRANSPCY CHECK

With these errors you must always restart the job. Make sure that you have turned on the TRANSPCY switch if the input card deck contains object decks or other cards requiring transparent transmission.

#### RECORD CHECK

##### LINE CHECK

These lights may come on while NPT is trying retransmissions for line errors; they will go out if recovery is successful. If they stay on and the transmission does not proceed, you must do a CHECK RESET and restart the input device. The input is continued; however, it is possible in this case to have a record duplicated.

### Error Recovery When Receiving

Output device trouble is indicated by a blinking printer light on the console panel or EQUIP CHECK on the 3781 Card Punch panel.

FORM CHECK  
CARRIAGE INTERLOCK  
END-OF-FORM

The printer carriage, forms, or carriage tape are either not ready or jammed. Correct the condition; press CHECK RESET and START on the console panel.

BUFFER CHK

The printer had a parity error. Press CHECK RESET and START on the console panel. Failure to recover indicates hardware trouble.

EQUIP CHECK

The punch has mechanically malfunctioned. Make the punch ready again.

When receiving, the following console lights may require your attention:

TERMINAL ADDRESS

The NPT program is trying to send output but your 3780 is not ready. Make sure your switch setup is correct, ready all output devices, and press console CHECK RESET.

BUFFER CHECK

This serious hardware error always requires you to reset and restart the operation. Failure to recover indicates hardware trouble.

LINE CHECK

The NPT program is attempting retransmissions. If NPT is successful, the light goes out. If the light stays on and printing or punching does not continue soon, you must restart the line.

For other combinations of error lights, consult the publication Component Information for the IBM 3780 Data Communication Terminal, GA27-3063.



## Appendix E: Programmable (Spool MULTI-LEAVING) Remote Stations

This portion contains operational information for each of the following remote programmable MULTI-LEAVING stations supported by the SML line driver operating in HOST mode under RSCS:

- IBM System/360
- IBM System/370
- IBM System/360 Model 20
- IBM 2922 Programmable Terminal
- IBM System/3 Model 10 Card System
- IBM 1130 System

The following topics are described as they relate to each station:

- Supported configuration
- Remote station processor program functions
- Operating procedures
- Error recovery procedures.

Note: The operating and error recovery procedures for the RSCS-supported programmable remote stations were obtained from the publications listed in the Preface. If conflicts occur, refer to the latest editions of those publications.

Another section provides information on the use of the RSCS virtual machine as a Remote Job Entry workstation communicating with a HASP/ASP-type batch processor.

In addition, MULTI-LEAVING Remote Job Entry Workstation (MRJE/WS) support is briefly described for the following remote stations:

- IBM System/3 Models 6, 8, 10, 12, and 15
- IBM System/32

The MRJE/WS support for these systems is described in publications listed in the section "IBM System/3 and System/32 as Remote Stations".

### IBM SYSTEM/360 AND SYSTEM/370 AS REMOTE STATIONS

The following sections contain instructions for operating any model of System/360 or System/370 equipped for EBCDIC transmission and binary synchronous communications, as a HASP MULTI-LEAVING remote station. The term System/360 is used to refer to both the System/360 and the

System/370.

## CONFIGURATION SPECIFICATIONS

Any System/360 with 8K or more bytes of main storage, a supported transmission control unit, and a supported card reader may be used as an RSCS remote station.

The following transmission control units are supported:

- Integrated Communications Adapter (ICA) on the System/370 Model 135
- IBM 2701 Data Adapter Unit with Synchronous Data Adapter Type II
- IBM 2703 Transmission Control Unit with Synchronous Terminal Control
- IBM 3704 Communications Controller in emulation mode only
- IBM 3705 Communications Controller in emulation mode only.

The following unit record devices are supported:

- IBM 2540 Card Read Punch
- IBM 2501 Card Reader
- IBM 2520 Card Read Punch
- IBM 1442 Card Read Punch
- IBM 1403 Printer
- IBM 1443 Printer
- IBM 3203 Printer Model 4
- IBM 3211 Printer
- IBM 3203 Printer Model 4 (for System/370 Models 138 and 148 only)
- IBM 1052 Printer-Keyboard.

Communications lines (switched or nonswitched) whose speed is compatible with the hardware are supported. Only one console (the standard operator's console) is supported on each remote station.



## HASP/RTP360 REMOTE TERMINAL PROCESSOR PROGRAM

A special program for the IBM System/360 allows it to operate as a remote workstation for MULTI-LEAVING operating systems such as HASP and ASP. For details on generating the appropriate workstation program, see the publication OS/VS2 HASP II Version 4 System Programmer's Guide, GC27-6992. An IBM System/360 under control of this program and communicating with RSCS can be viewed as a logical extension of the VM/370 spool system. This program (HASP/RTP360) performs input, output, and communication functions.

HASP/RTP360 can read, print, and punch data concurrently, depending on the options selected by the installation and the capabilities of the unit record devices.

Due to the use of blocking and character compression to minimize line transmission time, the speed at which the System/360 unit record devices operate is dependent on the data being transmitted and the number of concurrent functions. Certain job mixes, because of their data characteristics, enable HASP/RTP360 to operate the unit record devices at near maximum speed. Other job mixes may cause the devices to operate in short bursts because of contention on the communications line.

### Input Functions

HASP/RTP360 provides the following input functions at the remote station:

- Reads from the attached card reader(s)
- Recognizes operator requests, and reads from the attached console
- Identifies, compresses, and blocks card images and commands for transmission to RSCS
- Queues blocked records for transmission to RSCS.

### Output Functions

HASP/RTP360 provides the following output functions at the remote station:

- Dequeues blocked records received from RSCS
- Identifies the device required for output of the records
- Deblocks and decompresses output records, queueing the images for

printing, punching, or typing

- Prints, punches, and types the output records, as required
- Sets status flags, indicating backlog conditions on the output devices.

### Communication Functions

HASP/RTP360 provides the following communication functions at the remote station:

- Establishes and maintains synchronization with RSCS
- Dequeues blocked input requests and transmits them to RSCS (upon request from RSCS)
- Provides backlog status flags, indicating the station's ability to receive the various output streams from RSCS
- Receives output from RSCS and queues the blocked records for processing.

### OPERATING PROCEDURES

The following sections provide information for initiating and operating the HASP/RTP360 program during the remote job stream processing session. The initiation of a remote job stream processing session involves initial program loading of the HASP/RTP360 program deck, establishment of the communication lines, and exchange of initial control information between RSCS and the HASP/RTP360 program. The initial control sequence ends with the passing of the sign-on information from the remote station.

#### Initial Program Load (IPL)

To perform the initial program loading of the HASP/RTP360 program deck:

1. If the power for the System/360 is off, press POWER ON.
2. Ready the HASP/RTP360 deck in reader 1 (designated by central system personnel) and press START and EOF on the reader. (The last card of the deck should be blank or a /\*SIGNON card, as directed by the installation.)

3. Ready printers, punches, and the console.
4. Set the LOAD UNIT rotary switches to the device address of reader 1.
5. Disable the interval timer, if present.
6. Set the MODE (RATE) and DIAGNOSTIC (FLT) switches to PROCESS.
7. Set CHECK CONTROL to STOP.
8. Press SYSTEM RESET and LOAD.
9. All cards of the HASP/RTP360 deck are read by the reader.
10. HASP/RTP360 prints the /\*SIGNON card, if present, followed by an RSCS environment recording error printout (if the contents of core remain unchanged since the last run of the program).
11. The remote station is now ready to communicate with RSCS.  
HASP/RTP360 waits while communications are established with RSCS.

#### Establishing a Communication Line

To establish communications with RSCS:

1. Ready the data set. This involves different actions, based on the type of data set. Ready nonswitched lines only requires that the data set DATA button be pressed (if present). To ready a dial line data set:
  - a. Press the TALK button, and lift the receiver off the data set.
  - b. Dial the assigned number for the remote station.
  - c. If the RSCS line is available, the central system answers with a high pitched tone. Press DATA and hang up immediately; the data set is now ready.
  - d. If the RSCS line is in use, a busy signal is received. Hang up and try again later, or dial an alternative number.
  - e. If the call is not answered, the RSCS operator has not given the necessary command to authorize use of that communication line. Contact the RSCS operator and request that he issue the START command for your link.
2. When requested by RSCS, HASP/RTP360 begins the initial control sequence.
3. When the initial sequence is complete, the sign-on information is

transmitted to RSCS. HASP/RTP360 "handshakes" with RSCS until the processing of job streams actually begins.

### Output Processing

Printing and punching of remote output is handled automatically by the RSCS - HASP/RTP360 system, except as controlled by the remote station operator or RSCS operator, via commands to RSCS.

### Input Processing

With the exception of 2520 and 1442 combination reader/punch devices, input submission can be initiated at any time from any card reader supported by the HASP/RTP360 program. Multiple readers may be used concurrently. Place the cards in the input hopper, and press reader START. When all of an input stream has been loaded into the hopper, press reader EOF to allow the reading of the last cards to signal the program that the end of stream has been read.

HASP/RTP360 input readers are considered always "hot"; that is, the program is continually testing each reader and attempting to read cards. When any card reader is loaded, HASP/RTP360 immediately reads and transmits the cards to RSCS.

### Operating a Combination Card Read Punch

Devices with single card paths for both read and punch functions are termed combination reader/punches if they are supported for both functions. The following are supported combination devices:

- 1442 Card Read Punch
- 2520 Card Read Punch

Dual devices have four basic status conditions that affect the operator:

1. Neutral -- reader empty during normal program execution.
2. Input -- reading normal input stream.
3. Output -- punching normal output from RSCS.
4. Output error recovery -- attempting to recover from punch errors.

At IPL time, the combination device is in neutral status and may be

treated as any reader device, because the operator may submit multiple input streams at any time. Any blank cards mixed in the input stream are submitted to RSCS as input. When HASP/RTP360 recognizes the end-of-file (EOF), the combination device reverts to the neutral status.

When the combination device is in neutral status, the operator may choose to ready the device with blank cards, placing the device in output status. If RSCS has output waiting, HASP/RTP360 responds immediately by punching the blank cards. However, after all punching is finished, or if there is a pause due to low line speeds, the operator may not run the remaining cards out of the device and ready it with job stream cards. The procedure for interrupting the output mode is:

1. Press STOP on the device.
2. Remove the cards from the hopper. (Do not run the cards out of the card path.)
3. Place the input stream cards in the hopper, and press reader START.
4. If the punch is busy, the device continues punching until the input stream is encountered; then, the device enters input status. (It is not necessary that all blank cards be removed from the hopper.)
5. If the punch is momentarily idle, you can cause the device to pass one card through by pressing reader STOP and then START. If several blank cards are in the hopper in front of the job stream, the operation must be repeated for each blank card.

The combination device is in error recovery status when a punch error occurs. HASP/RTP360 attempts to repunch the record in error into the following card. If HASP/RTP360 encounters a punched card, a read error occurs (see unit record error procedures). The operator should run out the input stream cards using the NPRO key, place one or more blank cards in front of the input stream, and ready the device.

### Entering Commands

All messages entered into the 1052 operator's console via the keyboard are transmitted to RSCS for action. Although all commands transmitted to RSCS are listed on the RSCS operator's console, only those available to the remote user are read and acted upon.

The operator should perform the following steps when entering commands:

1. Press the REQUEST button on the right side of the keyboard. The ATTN indicator (indicator above the keyboard on the 1052) glows momentarily.
2. When the PROCD indicator comes on, type in the command and press EOB (numerical 5 key pressed while ALTN CODING key is pressed).

3. If you notice a typing error prior to pressing EOB, press CANCEL (numerical 0 key pressed while ALTN CODING is pressed) and repeat step 2.
4. If, after receiving a PROCD indicator, no command is to be entered, press EOB.

### Terminating a Session

To terminate remote processing, the remote station operator should enter a DRAIN command or a /\*SIGNOFF card which prevents RSCS from initiating any more remote output and releases the communication line (if switched) when the current print and punch streams are finished. The DATA light on the data set goes out and BSCA enters a check condition. For nonswitched lines, RSCS makes the line available and waits for an initial sequence request from the HASP/RTP360 program. HASP/RTP360 logs UNIT CHECK on the console message device. The operator should determine whether printing and punching of output streams have successfully terminated and should press STOP on the CPU. To start a new session, the operator must perform the steps described previously, starting with the Initial Program Load of HASP/RTP360.

### ERROR RECOVERY PROCEDURES

The following sections indicate some common error conditions and the necessary steps for recovery from the errors.

### Communication Adapter Errors

Due to the design of the synchronization technique for RSCS remote stations, no errors are expected during a processing session. The unusual occurrence, therefore, of any error condition results from either system or communication facility malfunction or from operational conditions. In general, the display of error messages is only informational, because the station processor automatically initiates the appropriate recovery action. A statistical summary of all errors is maintained in the RSCS Environmental Recording Table, and a historical report is produced each time HASP/RTP360 is loaded, unless storage has been cleared. Additionally, the occurrence of any error causes a descriptive message to be displayed immediately on the console typewriter. Figure 11 indicates each possible communication error, its meaning, and the recovery action taken.

### Unit Record Errors

Many of the unit record device errors that can occur during processing allow HASP/RTP360 to continue processing without operator intervention. Some errors (such as DATA check or END OF FORM) require operator assistance before use of the device can be continued. In any event all errors occurring on unit record devices are logged in the RSCS Environmental Recording Error Printout Table and are displayed immediately on the 1052 operator's console.

When the error message is printed, you should:

1. Determine which device is in error (see Figure 12).
2. Note the device status; if HASP/RTP360 continues to use the device, the error message is informative in nature.
3. Correct the error in accordance with procedures prescribed for the device.
4. Ready the device to resume operation.

Error	Description	Recovery Action
01rree00	Block sequence check. A transmission block was duplicated or lost. rr = received block number ee = expected block number	If a duplicate, the received block is ignored. If a lost block, RSCS is signaled to restart the job.
02000000	Negative reply received. A transmission block was not correctly received by RSCS.	The bad record is retransmitted.
03rrrr00	Unknown response received. An unrecognizable control character was received from RSCS. rrrr = first two characters received (If rrrr is correct sequence, ending sequence was bad.)	RSCS is requested to retransmit the record.
04000000	Unit exception. Indicates receipt of an EOT character from RSCS. (EOT is not used in MULTI-LEAVING.)	RSCS is requested to retransmit the record.
05ss0000	Unit check. A check condition has occurred in the communication adapter. ss = sense byte indicating type of check: 80 = Command reject 40 = Intervention required 20 = Bus out check 10 = Equipment check 08 = Data check 04 = Overrun 02 = Lost data 01 = Time out	The failing operation is retried. If a write operation was in process at the time of error, the write is reissued; otherwise, RSCS is requested to retransmit.
06cc0000	Unusual end. An unusual end condition has occurred in the channel or control unit interface. cc = CSW byte 5	The failing operation is retried.
07000000	SIO failure. A start I/O instruction was rejected by the Synchronous Data Adapter.	The Start I/O is retried.

Figure 11. HASP/RTP360 Communication Adapter Error Messages



### Remote Station Restart

In the event of an untimely interruption of the remote station operation (such as a machine, program, communications, or environmental failure), the remote station operator should notify appropriate maintenance personnel of the malfunction and save material that can be used to determine the source of the failure. With the aid of the RSCS operator, the remote operator should also prepare to restart the station as follows:

1. Notify the central operator of the failure and, if necessary, request his assistance in preparing for restart.
2. Determine, from the RSCS operator's record, which deck was currently being transmitted to RSCS. The input stream, starting with that current deck, must be submitted to RSCS after restart.
3. Determine the loss of data on the output devices and inform the RSCS operator to backspace or restart the printer or punch, as necessary. (The RSCS link should be made available for a subsequent session with the remote station or other stations within the system.)
4. When the remote station is available, restart the session beginning with the Initial Program Load of HASP/RTP360.

Message	Description	Program Action
05ss0aaa	<p>Unit check. Device with address "aaa" has unit check error described by sense byte "ss" and/or indicator lights on the device console.</p> <p>Sample sense byte settings:</p> <p>40 = Intervention required  10 = Equipment check  08 = Data check - card read, card punched, or line printed incorrectly.  01 = Carriage control tape channel 9 encountered on printer</p>	<p>Wait for operator.  Treat as data check.  Depending on device: ignore, retry, or wait for operator.  Ignore.</p>
06cc0aaa	<p>Unusual end. Previous I/O came to an unusual end. IBM customer engineer should be consulted.</p> <p>cc = CSW byte 5  aaa = device address</p>	<p>Treat as data check.</p>
<p><u>Note:</u> Printing on a line that has a carriage control tape channel 9 or 12 punch appears as an error and is logged as an error. The installation should place these punches in line positions that do not contain print information. Do not eliminate the punches from the carriage tape.</p>		

Figure 12. HASP/RTP360 Unit Record Error Messages

IBM SYSTEM/360 MODEL 20 AND IBM 2922 AS REMOTE STATIONS

The following section contains instructions for operating the IBM System/360 Model 20, equipped with a Binary Synchronous Communications Adapter, or the IBM 2922 Programmable Terminal as an RSCS MULTI-LEAVING, remote station. All information on the Model 20 also applies to the IBM 2922 unless a variation is noted.

CONFIGURATION SPECIFICATIONS

Any submodel of the Model 20 with at least 8K bytes of main storage, a Binary Synchronous Communications Adapter, EBCDIC transmission, Full Transparency, and a supported card reader may be used as an RSCS remote

station.

The following unit record devices are supported in any combination:

- IBM 2501 Card Reader
- IBM 2520 Card Read Punch
- IBM 2560 Multi-Function Card Machine
- IBM 1442 Card Punch
- IBM 1403 Printer
- IBM 2203 Printer
- IBM 2152 Printer-Keyboard.

Any speed communication line supported by the hardware (switched or nonswitched) is supported. It is recommended (but not required) that a submodel 5 be used with high-speed communications lines (19,200 bps and greater) for best performance. Other features of the Model 20 that are supported but not required include the 2152 Printer-Keyboard; it cannot be used on other than a submodel 5 if a high-speed communications line (19,200 bps or greater) is used.

The IBM 2922 is supported as an RSCS remote station with the same package as the Model 20. The standard 2501 Card Reader and 1403 Printer available with the 2922 are the supported input and output devices.

#### HASP/RTPM20 REMOTE TERMINAL PROCESSOR PROGRAM

A special program exists for the IBM System/360 Model 20 and the IBM 2922 Programmable Terminal which allows them to operate as remote workstations for MULTI-LEAVING operating systems such as HASP and ASP. For details on generating the appropriate workstation program, see the publication OS/VS HASP II Version 4 System Programmer's Guide, GC27-6992. A Model 20 or IBM 2922 under control of this program and communicating with RSCS can be viewed as a logical extension of the VM/370 spool system. This program (HASP/RTPM20) performs input, output, and communications functions.

HASP/RTPM20 can read, print, and punch data concurrently, depending on the options selected by the installation and the capabilities of the unit record devices.

Due to the use of blocking and character compression to minimize line transmission time, the speed at which the Model 20 unit record devices operate depends on the data being transmitted and the number of concurrent functions. Certain job mixes, because of their data characteristics, enable HASP/RTPM20 to operate the unit record devices

at near full speed. Other job mixes may cause the devices to operate in short bursts because of contention on the communications line.

### Input Functions

HASP/RTPM20 provides the following input functions at the remote station:

- Reads from the attached card reader(s)
- Recognizes operator requests, and reads from the attached console
- Identifies, compresses, and blocks card images and commands for transmission to RSCS
- Queues blocked records for transmission to RSCS.

### Output Functions

HASP/RTPM20 provides the following output functions at the remote station:

- Dequeues blocked records received from RSCS
- Identifies the device required for output of the records
- Deblocks and decompresses output records, queueing the images for printing, punching, or typing
- Prints, punches, and types the output records, as required
- Sets status flags, indicating backlog conditions on the output devices.

### Communication Functions

HASP/RTPM20 provides the following communication functions at the remote station:

- Establishes and maintains synchronization with RSCS
- Dequeues blocked input requests and transmits them to RSCS (upon request from RSCS)
- Provides backlog status flags, indicating the station's ability to

receive the various output streams from RSCS

Receives output from RSCS and queues the blocked records for processing.

## OPERATING PROCEDURES

This section provides information for starting and operating the Model 20 or IBM 2922 during the remote job stream processing session.

Starting a remote job stream processing session involves initial program loading of the HASP/RTPM20 program deck, establishing the communication lines, and exchanging initial control information between RSCS and the HASP/RTPM20 program. The initial control sequence ends with the passing of the sign-on information from the remote station.

### Initial Program Load (IPL)

To perform initial program loading of the HASP/RTPM20 program deck:

1. If the power is off, press POWER ON.
2. Ready the HASP/RTPM20 deck in the supported card reader. (The last card of the deck should be blank or a /\*SIGNON card, as directed by the installation).
3. Ready the printer, punch, and console (as required).
4. Set time sharing key down.
5. Set the address/register data switches to one of the following:
  - 1F00 - 8K storage
  - 2F00 - 12K storage
  - 3F00 - 16K storage
6. Set the mode switch to PROCESS.
7. Press LOAD.
8. All the cards in the HASP/RTPM20 deck are read, except the last card. Press reader START to read the last card.
9. The IPL is complete when the last card is read. HASP/RTPM20 prints the /\*SIGNON card, if present, followed by an RSCS environmental recording error printout (if the contents of main storage remain unchanged since the last time the program was run).

10. The BSCA indicator lights should show periodic transmit and receive activity.
11. The remote station is now ready to communicate with RSCS.

### Establishing a Communication Line

To establish communications with RSCS:

1. Ready the data set. This involves different actions, based on the type of data set. Readying nonswitched lines only requires that the data set DATA button be pressed, if present. To ready a dial line data set, perform the following:
  - a. Press the TALK button, and lift the receiver off the data set.
  - b. Dial the assigned number for the remote station.
  - c. If the RSCS line is available, the central system answers with a high pitched tone. Press DATA and hang up immediately; the data set is now ready.
  - d. If the RSCS line is in use, a busy signal is received. Hang up, and try again later, or dial an alternate number.
  - e. If the call is not answered, the RSCS operator has not given the necessary command to authorize use of that communication line. Contact the RSCS operator and request that he issue the START command for your link.
2. When requested by RSCS, HASP/RTPM20 begins the initial control sequence.
3. When the initial sequence is complete, the sign-on function is transmitted to RSCS. HASP/RTPM20 "handshakes" with RSCS until the processing of job streams actually begins.

### Output Processing

The printing and punching of remote output is handled automatically by the RSCS - HASP/RTPM20 system, except as controlled by the remote station operator or RSCS operator, via commands to RSCS.

## Input Processing

A deck can be submitted at any time, depending on the capabilities of the card reader/punch combination attached to the Model 20. There is no restriction on when the operator can submit a deck stream with the following reader/punch combinations:

1. 2501 Card Reader - 2560 Multi-function Card Machine (secondary feed)
2. 2501 Card Reader - 1442 Card Punch
3. 2501 Card Read - 2520 Card Punch
4. 2560 Multi-Function Card Machine (primary feed) - 1442 Card Punch
5. 2520 Card Read Punch - 1442 Card Punch

The operator places the cards in the hopper. The reader stops just before reading the last card of each job stream. The operator should put more cards in the reader or press START on the reader, allowing the last card to indicate the end of the input stream.

The input reader to HASP/RTPM20 is always considered "hot"; that is, the program is continually testing the reader and attempting to read cards. During this time the appropriate CARD I/O indicator on the CPU console is on (see Unit Record Error Procedures). This condition is not an error but indicates that HASP/RTPM20 is ready to send the next input.

## Operating a Combination Card Read Punch

Devices with single card paths for both read and punch functions are considered combination reader/punch devices. When using these devices as combination devices, the operator must be concerned with the status of the device. The following are supported combination devices:

- 2520 Card Read Punch
- 2560 MFCM (read - primary feed)  
(punch - secondary feed).

Note: These devices are not considered combination devices when used in combinations listed previously under "Input Processing".

OPERATING THE 2520 CARD READ PUNCH: The 2520 has four basic status conditions that affect the operator:

1. Neutral -- reader empty during normal program execution.
2. Input -- reading normal input stream.

3. Output -- punching normal from RSCS.
4. Output Error recovery -- attempting to recover from punch errors.

At IPL time the 2520 is in neutral status and may be treated as any reader device; the operator may submit multiple input streams at any time. Any blank cards mixed in the input stream are submitted to RSCS as input. When HASP/RTPM20 recognizes an end-of-file (EOF), the 2520 reverts to the neutral status.

When the 2520 is in neutral status, the operator may choose to ready the device with blank cards, thereby placing it in output status. If RSCS has output waiting, HASP/RTPM20 responds immediately by punching the blank cards. However, after all punching is finished or if there is a pause due to low line speeds, the operator may not run the remaining cards out of the 2520 and ready it with input stream cards. The procedure for interrupting the output mode is:

1. Press STOP on the 2520.
2. Remove the cards from the hopper. (Do not run the cards out of the card path.)
3. Place the input stream cards in the hopper and press reader START.
4. If the punch is busy, the device continues punching until the input stream is encountered; then, the 2520 enters the input status. (It is not necessary to remove all blank cards from the hopper.)
5. If the punch is momentarily idle, it is waiting for local commands from the console (if installed). You can cause the 2520 to pass one card through by typing on the console ".SR1" (start reader 1). If several blank cards are in the hopper prior to the input stream, you must enter this command for each blank card. For configurations without consoles, you can simulate the .SR1 command by setting data dial 2 to numerical value 2 and moving data dial 1 one position in either direction. Do not move dial 1 twice. Upon completion of the skip function, set data dial 2 out of position 2.

The 2520 is in error recovery status when a punch error occurs. HASP/RTPM20 attempts to repunch the record in error. If HASP/RTPM20 encounters a nonblank card, a read error occurs (see Unit Record Error Procedures). You should then run out the input stream cards using the NPRO key, place one or more blank cards in front of the input stream, and ready the 2520.

OPERATING THE COMBINATION 2560 MFCM: The 2560 has two basic status conditions:

1. Input -- submitting decks using primary feed and hopper.
2. Output -- punching data from RSCS using secondary feed.

Blank cards, for punching, should always be in the 2560 secondary feed



hopper during normal processing. HASP/RTPM20 periodically tests the primary feed for input stream cards. If input stream cards are encountered, the HASP/RTPM20 suspends the output status and submits the input stream to RSCS. You should always press STOP on the combination 2560 prior to loading the input stream in the primary feed hopper since HASP/RMTM20 cycles the feed mechanism when it tests for input stream cards.

### Entering Commands

RSCS commands, as well as local commands, may be entered at the 2152 operator's console. Any message entered at the 2152 keyboard and not recognized as a local command is transmitted to RSCS for action. Although all commands transmitted to RSCS are listed on the RSCS operator's console, only those designated as available to the remote user are acted upon. Local commands available to the HASP/RTPM20 operator signal the status of the unit record devices. Figure 13 lists all available local commands.

Command	Meaning/Comments
.SR1	Start reader 1. This command tells HASP/RTPM20 that the operator has corrected a data check condition and has made the card reader ready to continue reading the input stream (the first card is a corrected version of the card in error). This command is also used to terminate the output status of a combination 2520 card reader/punch.
.SU1	Start punch 1. This command tells HASP/RTPM20 that the operator has removed the incorrectly punched card from the punch stacker (1442) and the punch is ready.

Figure 13. HASP/RTPM20 Local Commands

Perform the following steps when entering commands:

1. Press the REQ button located to the right of the console typewriter keyboard. The request indicator (indicator marked "R" at the right of the REQ button) glows momentarily.
2. When the proceed indicator comes on (indicator marked "P" below the request indicator), type in the command and press EOT.
3. If you notice a typing error prior to pressing EOT, press CAN (cancel) and repeat step 2.
4. If, after receiving a proceed indicator, no command is to be entered, type "." and press EOT. This is recognized as an invalid

local command and is ignored.

Commands are identified by a period (.) in the first position. Except for the use of upper and lower case alphabetic characters, the commands must appear exactly as listed. No blanks are allowed.

### Terminating a Session

To terminate remote processing, the remote station operator should enter a DRAIN command or /\*SIGNOFF card indicating that RSCS should not start any additional remote output and should release the communication line (if switched) when the current print and punch streams are finished. The DATA light on the data set goes out, and BSCA enters a check condition. For nonswitched lines, RSCS makes the line available and waits for an initial sequence request from the HASP/RTPM20 program. Versions of HASP/RTPM20 that support console messages log UNIT CHECK on the console. The operator should check to see if printing and punching of output streams have successfully terminated and should press STOP on the CPU. To start a new session, the operator must perform the steps described previously, starting with the Initial Program Load of HASP/RTPM20.

### ERROR RECOVERY PROCEDURES

The following sections indicate some common error conditions and the necessary steps for recovery from the errors.

#### Communication Adapter Errors

Due to the design of the synchronization technique for RSCS remote stations, no errors are expected during a processing session. The unusual occurrence, therefore, of any error condition results from either a system or a communication facility malfunction or from operational conditions. In general, the display of error messages is only informational, because the station processor automatically initiates the appropriate recovery action.

A statistical summary of all errors is maintained in the RSCS Environmental Recording Table, and a historical report is produced each time HASP/RTPM20 is loaded, unless storage has been cleared. Additionally, the occurrence of any error causes a descriptive message to be displayed immediately on the console typewriter.

Figure 14 indicates each possible communication error, its meaning, and the recovery action taken.

Error	Description	Recovery Action
01rree00	Block sequence check. A transmission block was duplicated or lost. rr = received block number ee = expected block number	If a duplicate, the received block is ignored. If a lost block, RSCS is signaled to restart the job.
02000000	Negative reply received. A transmission block was not correctly received by RSCS.	The bad record is retransmitted.
03rrrr00	Unknown response received. An unrecognizable control character was received from RSCS. rrrr = first two characters received (If rrrr is correct sequence, ending sequence was bad.)	RSCS is requested to retransmit the record.
05ss0000	Unit check. A check condition has occurred in the communication adapter. ss = sense byte indicating type of check: 01 = Overrun on write 02 = Parity check on write 81 = Overrun on read 88 = Lost data on read 90 = Time out (no response from RSCS in three seconds) A0 = Transmission error C0 = EOT received	The failing operation is retried. If a write operation was in process at the time of error, the write is reissued; otherwise, RSCS is requested to retransmit.

Figure 14. HASP/RTPM20 Communication Adapter Error Messages

#### Unit Record Errors

As a result of unit record device errors that inhibit I/O, HASP/RTPM20 continuously tests the device, while performing other functions that can continue. Device errors are indicated on the CPU indicator panel as follows:

1. Card I/O 1 -- 2501 Card Reader
2. Card I/O 2 -- 2520 Card Read Punch or 2560 Multi-Function Card Machine
3. Card I/O 3 -- 1442 Card Punch

#### 4. Printer -- 1403 Printer or 2203 Printer

Indicators on the device control panel indicate the nature of the problem. You should correct the error, according to procedures prescribed for the device, and then ready the device. HASP/RTPM20 automatically resumes use of the device.

Unit record errors that occur during I/O result in various program actions, as shown in Figure 15.

Device - Function	Action with Console	Action without Console
2501, 2520, 2560 - read	<ol style="list-style-type: none"> <li>1. Type error message<sup>1</sup>.</li> <li>2. Wait for .SR1 command.</li> <li>3. Read.</li> </ol>	<ol style="list-style-type: none"> <li>1. STOP with device address in ESTR register<sup>2</sup>.</li> <li>2. Reread when CPU started.</li> </ol>
1442 - punch	<ol style="list-style-type: none"> <li>1. Type error message<sup>1</sup>.</li> <li>2. Wait for .SU1 command.</li> <li>3. Repunch record in error.</li> </ol>	<ol style="list-style-type: none"> <li>1. STOP with device address in ESTR register<sup>2</sup>.</li> <li>2. When CPU started, repunch record in error.</li> </ol>
2520, 2560 - punch	<ol style="list-style-type: none"> <li>1. Select out card in error.</li> <li>2. Repunch record in error.</li> </ol>	<ol style="list-style-type: none"> <li>1. Select out card in error.</li> <li>2. Repunch record in error.</li> </ol>
2203, 1403 - print	Ignore error.	Ignore error.
2152 - write	<ol style="list-style-type: none"> <li>1. Ignore first error.</li> <li>2. Wait on next attempt to use device<sup>3</sup>.</li> </ol>	Not applicable.
2152 - read	<ol style="list-style-type: none"> <li>1. Initiate reread.</li> <li>2. Wait on next attempt to use device<sup>3</sup>.</li> </ol>	Not applicable.
<p><sup>1</sup>Error messages are of the form: 0500000a UNIT CHECK, where a is the device address of the unit in error.</p> <p><sup>2</sup>Device addresses correspond to the CPU panel CARD I/O indicator numbers.</p> <p><sup>3</sup>Console error indicator is cleared by pressing OFF LINE, then ON LINE.</p>		

Figure 15. HASP/RTPM20 Action on Unit Record I/O Execution Errors

When notified of the error via the 2152 console, you should:

1. Note the address code in the error message (see Figure 15).
2. Correct the error for "data check".
3. Ready the device for program retry of I/O.
4. Type the appropriate command (.SR1, .SU1) to signal HASP/RTPM20 that the device is ready.

Without the 2152 console, the program stops the CPU with the address of the device in the ESTR register. You should (without delay):

1. Note the address of the device in the ESTR register.
2. Press STOP on the indicated device.
3. Press START on the CPU to allow continuation of other functions.
4. Correct the error for "data check".
5. Ready the device for program retry of I/O.

#### Remote Station Restart

In the event of an untimely interruption of the remote station operation (such as a machine, program, communications, or environmental failure), the remote station operator should notify appropriate maintenance personnel of the malfunction, save material that may be of use in determining the source of the failure, and (with the aid of the RSCS operator) prepare for restarting the station, as follows:

1. Notify the RSCS operator of the failure and, if necessary, request his assistance in preparing for restart.
2. Determine the current job that was being transmitted to RSCS. (The RSCS operator has a record of the deck currently being submitted to RSCS.) The input stream, starting with that current deck, must be resubmitted to RSCS after restart.
3. Determine the loss of data on the output devices and request the RSCS operator to backspace or restart the printer or punch, as necessary. (The RSCS link should be made available for a subsequent session with the remote station or with other stations on the network.)
4. When the remote station is available, restart the session beginning with the Initial Program Load of HASP/RTPM20.

## IBM SYSTEM/3 AND SYSTEM/32 AS REMOTE STATIONS

The IBM System/3 Models 6, 8, 10, 12, and 15, and the IBM System/32 are supported as remote work stations by RSCS.

There are two types of MULTI-LEAVING Remote Job Entry Work Station (MRJE/WS) support for the System/3 and System/32. The first, which is for the System/3 Model 10 card system only, applies to a program produced by VM/370 generation. This program is in the form of a card deck, which is punched out at the System/3 and must be loaded to enable communication with the host system. This is described in the section "IBM System/3 Model 10 Card System as a Remote Station".

The second type of MRJE/WS support runs on System/3 Models 6, 8, 10, 12, and 15, and on the System/32. This support consists of a group of programs that support all System/3 or System/32 input and output devices, including disks and tape. This support requires the System/3 or System/32 System Control Program (SCP) and related MRJE/WS programs.

Information describing MRJE/WS support for the System/3 is contained in the following manuals, which reference other System/3 SCP manuals.

For System/3 Models 6, 8, 10, and 12:

### IBM System/3 MULTI-LEAVING Remote Job Entry Work Station

Support Reference Manual, GC21-7621

Program Logic Manual, SY21-0544

For System/3 Model 15:

### IBM System/3 MULTI-LEAVING Remote Job Entry Work Station

Support Reference Manual, GC21-5115

Program Logic Manual, SY21-0521

The System/32 is supported with the following features:

- 5320 System Unit (Any Model A12 through B33)
- Binary Synchronous Communications Adapter (#2073)
- System Control Program (5725-SC1)

Information describing support for the System/32 is contained in the following publications:

IBM System/32 System Control Programming Reference Manual,  
GC21-7593

IBM System/32 Operator's Guide, GC21-7591

IBM SYSTEM/3 MODEL 10 CARD SYSTEM AS A REMOTE STATION

The following section contains instructions for operating the IBM System/3 Model 10 card system equipped with a Binary Synchronous Communications Adapter, as an RSCS MULTI-LEAVING remote station.

CONFIGURATION SPECIFICATIONS

The System/3 Model 10, with the following features, is supported as a RSCS remote MULTI-LEAVING work station.

The minimum System/3 requirements are:

- 5410 Central Processing Unit (any model)
- Binary Synchronous Communications Adapter
- EBCDIC Transmission code
- Text Transparency
- 5424 Multi-function Card Unit (any model)
- 5203 Printer (any model).

Supported features are:

- 1442 Card Read Punch (RPQ 843175 on System/3 5410 CPU and RPQ 841205 on 1442 Card Read Punch)
- 5471 Printer Keyboard or 5475 Data Entry Keyboard
- Universal Character Set on the 5203 Printer
- Additional Print positions for 5203 Printer
- Any type or speed transmission line available for System/3.

Recommended features are:

- 24 or 36 extra print positions on 5203 Printer (to provide standard VM/370 print line)
- Universal Character Set and PN train on the 5203 Printer (to provide for standard VM/370 character set)



- 5471 Printer-Keyboard (as a remote operator's console).

The following features are incompatible with VM/370 support and should not be specified:

- Multi-Point Network Attachment (#9482)
- USASCII Transmission Code (#9061)
- Station Selection (#7477).

All features not specifically prohibited may be attached to the System/3 but are not supported by the HASP System/3 station processor program.

#### HASP/RTPSYS3 REMOTE TERMINAL PROCESSOR PROGRAM

A special program exists for the IBM System/3 Model 10 card system which allows it to operate as a remote work station for MULTI-LEAVING operating systems such as HASP and ASP. For details on generating the appropriate work station program, see the publication OS/VS2 HASP II Version 4 System Programmer's Guide, GC27-6992. A System/3 under control of this program and communicating with RSCS can be viewed as a logical extension of the VM/370 spooling system. This program (HASP/RTPSYS3) performs input, output, and communications functions.

HASP/RTPSYS3 can read, print, and punch data concurrently, depending on the options selected by the installation and the capabilities of the unit record devices.

Due to the use of blocking and character compression to minimize line transmission time, the speed at which the System/3 unit record devices operate is dependent on the data being transmitted and the number of concurrent functions. Certain job mixes, because of their data characteristics, enable HASP/RTPSYS3 to operate the unit record devices at near full speed. Other job mixes cause the devices to operate in short bursts because of contention on the communications line.

#### Input Functions

HASP/RTPSYS3 provides the following input functions at the remote station:

- Reads from the attached card reader(s)
- Recognizes operator requests, and reads from the attached console
- Identifies, compresses, and blocks card images and commands for transmission to RSCS

- Queues blocked records for transmission to RSCS.

### Output Functions

HASP/RTPSYS3 provides the following output functions at the remote station:

- Dequeues blocked records received from RSCS.
- Identifies the device required for output of the records.
- Deblocks and decompresses output records, queueing the images for printing, punching, or typing.
- Prints, punches, and types the output records, as required.
- Sets status flags, indicating backlog conditions on the output devices.

### Communication Functions

HASP/RTPSYS3 provides the following communications functions at the remote station:

- Establishes and maintains synchronization with RSCS
- Dequeues blocked input requests and transmits them to RSCS (upon request from RSCS)
- Provides backlog status flags, indicating the terminal's ability to receive the various output streams from RSCS
- Receives output from RSCS and queues the blocked records for processing.

### OPERATING PROCEDURES

This section describes normal operation procedures for the System/3 as a Remote Job Entry station. To start a Remote Job Entry session, the operator should load the Remote Station Processor (HASP/RTPSYS3) program deck, establish a connection between System/3 and the central computer, and sign on.

### Initial Program Load (IPL)

The HASP/RTPSYS3 program deck is either a deck of 96-column cards or a deck of 80-column cards.

To load the 96-column load deck:

1. Put the deck in the rightmost card hopper of the MFCU.
2. Press START on the MFCU.
3. Press PROGRAM LOAD on the System/3. (For disk systems, the program load selection now must point to MFCU.)
4. Press START on the printer.

To load the 80-column load deck:

1. Raise the CE controls cover on the System/3.
2. With the CE Mode Selector at PROCESS, press SYSTEM RESET.
3. Turn the CE Mode Selector to ALTER STOR.
4. Set the data knobs to C2, and press START once.
5. Set the data knobs to 01, and press START once.
6. Set the data knobs to 00, and press START once.
7. Set the data knobs to 00, and press START once.
8. Set the data knobs to 31, and press START once.
9. Set the data knobs to 54, and press START once.
10. Set the data knobs to 00, and press START once.
11. Set the data knobs to 03, and press START once.
12. Set the data knobs to F3, and press START once.
13. Set the data knobs to 51, and press START once.
14. Set the data knobs to 01, and press START once.
15. Set the data knobs to F1, and press START once.
16. Set the data knobs to 52, and press START once.
17. Turn the CE Mode Selector to PROCESS.
18. Press SYSTEM RESET.

19. Close the CE Controls cover.
20. Put the 80-column load deck in the 1442.
21. Press START on the reader, the printer, and the System/3. Cards begin reading.
22. When the reader ready light goes out, press START on the reader.

Midway through the program deck, the reader stops reading and the printer starts printing the HASP Environmental Recording and Editing Program (HEREP), a standard feature of HASP/RTPSYS3. The information printed is the content of certain error counters; these counters contain a record of the unit checks that occurred during the last remote station session. If the counters have been destroyed, one line is printed:

HEREP COUNTERS HAVE BEEN ALTERED.

In any case, program loading automatically resumes after printing is complete.

Program loading has completed satisfactorily if, when the cards stop reading, the console indicator DT TERM READY is ON and either the hopper is empty or the first card in the hopper is not an EOR or /\*SIGNON card. Decks or blank cards may be stacked behind the program deck. If DDT TERM READY is not ON, the last card of the program deck was not an EOR or /\*SIGNON card, or a card read error occurred. To correct a card read error, follow the procedure under halt code F3 in the IBM System/3 Card System Operator's Guide. Ready the hopper, and press the START key (on dual programming systems, the PROGRAM LEVEL ONE RESET key) if halt code F3 is displayed.

If the DT TERM READY light is ON and the hopper contains an EOR or /\*SIGNON card, the operator should remove the cards from the primary hopper, press STOP and then NPRO on the reader. The card that was stacked when NPRO was pressed is either an EOR or a /\*SIGNON card. Reload the program deck, making sure that it ends with either the correct /\*SIGNON card or a single EOR card.

#### Establishing a Communication Line

The next step in initiating a remote session is establishing a line connection between the System/3 and RSCS. The RSCS operator should already have issued the RSCS command START linkid, where linkid is the location identifier associated with the System/3.

If the communication line is nonswitched, make sure that any controls on the line's data set are in the DATA position. The System/3 automatically establishes communication with RSCS.

If the communication line is switched, pick up the data set's telephone

handset and press the data set's TALK button. Dial the proper telephone number and listen for the ring. When the ring is answered (automatically by RSCS) you will hear a high-pitched tone, followed by silence. Depress the data set's DATA key and hang up the handset. The System/3 initiates communications with RSCS and automatically sends it the /\*SIGNON card. As the /\*SIGNON card is being sent, the message:

COMMUNICATIONS ESTABLISHED

prints on the 5471 Printer-Keyboard and on the 5203 Printer (if the 5203 is ready).

If the System/3 has the Auto-Call feature and the /\*SIGNON card (or the default /\*SIGNON card, if not overridden) specifies a telephone number, leave the data set in AUTO. The System/3 automatically dials the required telephone number. When the number answers, the System/3 automatically signs on.

If the call is not answered, or if the System/3 halts with halt code CA (call aborted) while trying to auto-call, the trouble is most likely that an incorrect telephone number was dialed or specified on the /\*SIGNON card. It could also be that the RSCS operator did not start the correct line. In the latter case, contact the RSCS operator and request that he issue the correct START command for your link.

An auto-call halt CA can occur if the called number is busy. In that case, press the console START (or PROGRAM LEVEL ONE HALT RESET) key to repeat the auto-call or redial manually.

### Output Processing

The remote operator need only press START on the printer to allow printing to occur. After a file has reached RSCS, printing starts automatically. When a user's printed output is complete, RSCS queues that user's punched output (if any) for processing.

### Notes on the 5203 Printer:

1. At initial program load time, the system checks indicators of the 5203 to determine which print chain is mounted. If the indicators show a 48 character-set chain, the system assumes character arrangement LC; otherwise, it assumes character arrangement PN.
2. At initial program load time, the system sets the number of print lines per page to 66 (may be different for each installation). For dual-carriage printers, the system uses only the left carriage; do not press the RIGHT CARRIAGE RESTORE key.
3. At initial program load time, the system sets line numbers for programmed page skipping. These line numbers are provided to simulate the carriage tape control normally encountered in VM/370.

A skip to carriage channel 1 results in a page eject; a skip to channel 12 stops 5 lines from the bottom of the page; and a skip to any other channel results in no page movement. Carriage tape channels may, however, be defined differently for each installation.

### Input Processing

The remote operator places into a card hopper (either 5424 or 1442 card reader) a stack of one or more decks and makes the card hopper ready. The system reads the first card, finds it punched, and requests permission from RSCS to start sending a job stream. When the system receives permission from RSCS, it continues reading cards and sending them to RSCS.

If the remote operator is reading cards on the 5424, he may use either card hopper. The last card of his stack of decks must be a /\*EOF card (the characters /\*EOF punched into columns 1-5); this card instructs the system to send an end-of-job-stream indicator to RSCS and to make the card hopper dormant.

If the remote operator is reading from the 1442, he ends the job stream by pressing START when the hopper is empty. No special considerations apply to preparing or reading 80-column cards.

### Operating a Combination Card Read Punch

Devices with single card paths for both read and punch functions are considered combination reader/punches, if they are supported for both functions. The following are supported combination devices on the System/3:

- 5424 Multi-function Card Unit
- 1442 Card Read Punch.

### Operating the 5424 Multi-Function Card Unit:

1. Either hopper of the 5424 can be used as a reader or a punch. When a previously dormant 5424 hopper reads a punched card, it becomes a reader. It remains a reader until it reads a /\*EOF card; it then goes dormant with the /\*EOF card in the wait station.
2. When a previously dormant 5424 hopper reads a blank card, it becomes a punch. It remains a punch until it has completed punching all decks queued for it. If no decks are queued for it, the operator can make the hopper dormant by removing the blank cards from it.

3. The 5424 can read cards much faster than it can punch cards; therefore, to increase card throughput, the system performs card reading preferentially over card punching. When using both hoppers, one as a reader and one as a punch, punching tends to proceed intermittently.
4. Though the 5424 has two hoppers, it has only one card path. For error recovery purposes, the system ensures the card path is empty before switching hoppers. Therefore, if the operator is using both hoppers as readers, or both as punches, the system tends to process cards from one or the other of the hoppers, rather than dividing its time evenly between them.
5. Each blank card to be punched is read before it is punched, to make sure it is blank. A card that is not blank is stacked in the read stacker for the hopper from which it came.
6. Stacker selection is as follows:

<u>Condition</u>	<u>Stacker</u>
Reading from primary	1
Punching from primary	2
Punching from secondary	3
Reading from secondary	4

7. When preparing 96-column cards for the input deck, the operator should avoid punching column 81, because the system makes special use of this column. In any case, the system only transmits the contents of columns 1-80; columns 82-96 are completely ignored. If the RMTGEN parameter &S30BJDK was set to 1 when HASP/RTPSYS3 was generated, the system inspects column 81. If that column contains the character "1", the system assumes that the card contains a hexadecimal image of the first 40 bytes of an 80-column card. It reads the next card, checks for a "2" in column 81, combines the cards into an 80-column card image, and transmits the card image. No checks are made for validity of hexadecimal characters. If a "2" card does not follow a "1" card, the "1" card is ignored.
8. Certain punching restrictions are placed on the 5424. For all systems, if column 1 is X'6A' (12-11 punch on an 80-column card) the system recognizes an RSCS job separator card, extracts the spool file number to punch a System/3 job separator card, and ignores the rest of the card. If the RMTGEN parameter &S30BJDK was specified as 1 when HASP/RTPSYS3 was generated, then the system recognizes a card image of an object deck and punches two 96-column cards with a hexadecimal representation of the card; see Item 7 above. If the RMTGEN parameter &S396COL was specified as 1, the system recognizes the left 48 columns (if column 80 is odd) or the right 48 columns (if column 80 is even) of a 96-column card; in this way all 96 columns of a System/3 card can be punched. This feature is used to create the System/3 Remote Station Processor program deck, which is punched in System/3 load mode.

For a detailed description of the RMTGEN macros used in generating the

Remote Station Processor program, see the OS/VS2 HASP II Version 4 System Programmer's Guide.

#### Operating the 1442 Card Read Punch:

1. When a previously dormant 1442 reads a punched card, it becomes a reader. It remains a reader until the operator presses the START button after the hopper becomes empty (or until it reads a /\*EOF card); it then becomes dormant. If it became dormant because the operator pressed the START button with no cards in the hopper, it also runs out the cards in its feed path.
2. When a previously dormant 1442 reads a blank card, it becomes a punch. It remains a punch until it has completed punching all files queued for it. Only after all queued decks have been punched can the operator safely remove cards from the 1442 hopper; with the hopper empty and no more punching to do, the 1442 becomes dormant. Press the NPRD button to stack the two blank cards remaining in the card feed path into the right stacker.
3. All cards processed by the system are stacked into the left stacker.

#### Entering Commands

If the System/3 includes a 5475 Data Entry Keyboard or a 5471 Printer-Keyboard, the keyboard can be used to enter commands. Otherwise, punch the commands on cards and enter them through a reader, exactly as if they were jobs.

The only valid commands from a remote station are a subset of the RSCS commands described previously under "Remote Station Operator Commands".

ENTERING COMMANDS FROM THE 5471 PRINTER-KEYBOARD: To type a command to RSCS, press the REQ key. If the system can immediately allow you to type a command, the PROCEED light goes on; otherwise the REQUEST PENDING light goes on. You can press the REQ key while you are typing a command, while the system is typing a message to you, or while the console is dormant.

When the PROCEED light comes on, start typing the command. If you make a mistake, press the CANCEL key and start typing again.

When you have finished typing, press either the END key or the RETURN key; their functions are identical. The command is transmitted to RSCS, where it is executed (if valid) and printed along with the remote station number on the RSCS operator's console.

If the command contains 120 characters, the remote station automatically performs the END key function when the 120th character is typed.



The 5471 does not type messages if the end-of-forms switch is on. When the 5471 runs out of forms, reload forms, press the REQ key, and then press the END key. The 5471 resumes typing if there are messages to be typed.

ENTERING COMMANDS FROM THE 5475 DATA ENTRY KEYBOARD: To type a command to RSCS, merely start typing on the 5475 Data Entry Keyboard. The keyboard is always "alive." After the first character is typed, the column indicator becomes active and displays "02", the position of the character to be typed next. If you make a mistake, press the FLD ERASE key; the column indicator displays "01" and you can start typing again.

When you have finished typing, press the REL key to transmit the command to RSCS. When the column indicators go dark, begin typing another command. If you type a command of 120 characters, the system automatically performs the REL key function when you have typed the 120th character.

ENTERING COMMANDS FROM CARDS: To send commands to RSCS from a card reader, punch the commands, one per card, starting in column 1. Put one or more commands cards, followed by a /\*EOF card, into an available card hopper and press START. The commands are transmitted along with the remote station number and reader number to the RSCS operator's console.

The /\*EOF control card consists of the characters "/\*EOF" punched in columns 1-5. This control card must be the last card read by an MFCU hopper when the hopper is reading, whether decks, commands, or just a /\*SIGNOFF card is being read. This card may optionally be used on the 1442 Card Read Punch, but the recommended 1442 procedure is as stated previously.

The EOR control card consists of the characters "EOR" in card columns 2-4. It is used instead of the /\*SIGNON card when the default /\*SIGNON card, assembled into the HASP/RTPSYS3 deck, is not to be overridden.

SYSTEM/3 LOCAL COMMAND PROCESSING: If the System/3 Remote Station Processor programs include the local command facility, you can issue commands to be executed locally by the System/3. Place a card containing the command into any dormant card hopper and press START. Do not use a /\*EOF card.

For each command, the command name starts in column 1 and is followed by the operand field.

Command completion is indicated by one of the following messages, printed in the same place as error messages:

CODE0000    Command completed satisfactorily  
CODE0001    Syntax error in command  
CODE0002    Operand value error in command

A /\*CARRIAGE command defines printer carriage information. The operand field has the format:

L=forms-length,chan=line-no[,chan=line-no...]

forms-length is the number of print lines on a page of forms (not greater than 112).

chan is the carriage-channel number (from 1 to 12).

line-no is the line number at which forms skipping stops for the indicated carriage channel (not greater than forms-length).

Notes:

1. The /\*CARRIAGE command is effective as soon as it is read in.
2. Specification of the L= operand destroys all previous carriage channel settings.

Terminating a Session

When you are finished using the System/3 as a Remote Job Entry station, put into an available hopper the two cards:

```
/*SIGNOFF  
/*EOF
```

and press START on the card reader.

The /\*SIGNOFF card tells RSCS to disconnect the communication line after it has finished sending the current print and punch streams to the System/3 and after it has finished receiving the current deck from the System/3. That is, RSCS disconnects when all currently operating functions are complete. If you sign off before RSCS has started printing or punching some (or all) of your files, RSCS saves the output for transmission to your station the next time you sign on with the same remote station identification. The DRAIN command can alternatively be used to perform the same function.

When RSCS disconnects the communication line, the System/3 communication adapter gets a time-out error every three seconds for about 20 seconds; then the DATA light on the data set telephone goes out. When the System/3 is dormant, press the STOP button on the console to stop the customer meter from running. The current RJE session is now ended.

## ERROR RECOVERY PROCEDURES

Two general classes of errors are defined in the System/3 Remote Station Processor: communication errors and unit record errors. For either type of error, the system generates an 8-character error message. If the system has a 5471 console, error messages are typed on it as they occur. If the system does not have a 5471 console, error messages may or may not be printed on the 5203 printer, depending on how the Remote Terminal Processor program was generated. The format of all error messages is:

ttxxxxuu

where tt is the message type, xxxx is additional error information, and uu is the device on which the error occurred. The correspondence between uu and device is:

<u>Device</u>	<u>uu</u>
BSCA	00
1442	05
5203	0E
5424	0F

### Communication Adapter Errors

The communication technique used by RSCS prevents BSCA errors during a processing session. Therefore, any BSCA error that occurs while the operator is signed on is an unusual condition, resulting from system or communication facility malfunction or operational conditions. For all BSCA errors shown in Figure 16, the BSCA processor within the System/3 Remote Terminal Processor automatically takes corrective action. The operator should regard all BSCA error messages only as informational messages.

Message	Meaning	Action Taken
01rree00	A block sequence check occurred. A transmission block was duplicated or lost. rr is the received block number and ee is the expected block number. Both rr and ee range from X'80' to X'8F'.	Duplicate transmission blocks are lost. Lost transmission blocks cause automatic job restart.
02000000	The System/3 received a negative acknowledgment (NAK) from RSCS.	The transmission block that was negatively acknowledged is retransmitted.
03rrrr00	The transmission block received by the System/3 had an unrecognizable starting or ending sequence. The starting sequence is rrrr; if it is correct, the ending sequence is in error.	The System/3 sends a NAK to RSCS, which then retransmits the block.
05ssss00	The System/3 BSCA has a unit check. The BSCA status indicators are ssss.  For example:  8000 denotes a timeout error 8400 denotes a timeout error with abortive disconnect	The appropriate action is taken to continue or restore communication.

Figure 16. HASP/RTPSYS3 Communication Adapter Error Messages

### Unit Record Errors

Unit record error messages are provided for errors on the 1442 Card Read Punch (an RPQ device), the 5424 Multi-function Card Unit, and the 5203 Printer.

5424 MULTI-FUNCTION CARD UNIT (MFCU): The only MFCU error message is 05ssss0F, where ssss represents the MFCU status indicators. In all cases, operator intervention is required. Check the MFCU control panel to determine the card hopper to which the error message applies:

<u>Code</u>	<u>Meaning</u>
PRI	Primary (rightmost) card hopper needs attention.
SEC	Secondary (leftmost) card hopper needs attention.

The system attempts to perform its previous operation when the operator has cleared the error condition: if it was reading when an error occurred, it tries to read the same card again; if it was punching, it tries to punch again. Therefore, if the 5424 was punching, the operator should throw away the last card punched; if the 5424 was reading, he should place the last card read in the hopper again, so the system can reread it. First, however, he must lift the cards out of the indicated hopper and press the NPRO key to clear the error condition.

5203 PRINTER: The only 5203 error message is 05sssss0E, where ssss represents the 5203 status indicators. If any error light is on at the 5203 control panel, the operator must correct the condition and press printer START. The system automatically retries printing when an incrementer failure or print check occurred.

1442 CARD READ PUNCH: The only 1442 error message is 05sssss05, where ssss represents the status indicators. The system recovers from 1442 errors the same way it recovers from MFCU errors. The operator should perform the action indicated by the 1442 error lights; then, throw away the last card punched or place the last card read back in the hopper and press START.

#### Remote Station Restart

In the event of an untimely interruption of the remote station operation such as a machine, program, communications, or environmental failure, the remote operator should notify appropriate maintenance personnel of the malfunction, save material which may be of use in determining the source of the failure, and with the aid of the RSCS operator, prepare for restarting the station as follows:

1. Notify the RSCS operator of the failure and, if necessary, request his assistance in preparing for restart.
2. Determine the current deck that was being transmitted to RSCS. (The RSCS operator has a record of the current deck being submitted to RSCS.) The input stream starting with the current job must be submitted to RSCS after restart.
3. Determine the loss of data on the output devices and inform the RSCS operator to backspace or restart the printer or punch as necessary. (The RSCS link should be made available for subsequent session with the remote station or other stations within the system.)
4. When the remote terminal is available, restart the session beginning with the Initial Program Load of HASP/RTPSYS3.

## IBM 1130 SYSTEM AS A REMOTE STATION

The following section contains instructions for operating an IBM 1130 System, equipped with a Binary Synchronous Communications Adapter, as a RSCS MULTI-LEAVING remote station.

### CONFIGURATION SPECIFICATIONS

Any model of the 1130 (except Models 4A and 4B) with at least 8K words of storage, the Synchronous Communications Adapter, and any card reader, may be used as a RSCS remote station. All standard readers, printers, and punches available for the 1130 system are supported in any combination. The console printer/keyboard is supported as a limited remote operator's console. Any standard communication line (switched or nonswitched) of any speed is supported. The RPQ feature that allows the use of high-speed communication facilities is not supported.

### HASP/RTP1130 REMOTE TERMINAL PROCESSOR PROGRAM

A special program exists for the IBM 1130 that allows it to operate as a remote workstation for MULTI-LEAVING operating systems such as HASP and ASP. For details on generating the appropriate workstation program, see the publication OS/VS2 HASP II Version 4 System Programmer's Guide, GC27-6992. An 1130 System under control of this program and communicating with RSCS can be viewed as a logical extension of the VM/370 spool system. This program (HASP/RTP1130) performs input, output, and communication functions.

HASP/RTP1130 can read, print, and punch data concurrently, depending on the options selected by the installation and the capabilities of the unit record devices.

Due to the use of blocking and character compression to minimize line transmission time, the speed at which the 1130 unit record devices operate is dependent on the data being transmitted and the number of concurrent functions. Certain job mixes, because of their data characteristics, enable HASP/RTP1130 to operate the unit record devices at near maximum speed. Other job mixes can cause the devices to operate in short bursts because of contention on the communications line.

### Input Functions

HASP/RTP1130 provides the following input functions at the remote station:

- Reads from the attached card reader(s)
- Recognizes operator requests, and reads from the attached console
- Identifies, compresses, and blocks card images and commands for transmission to RSCS
- Queues blocked records for transmission to RSCS.

#### Output Functions

HASP/RTP1130 provides the following output functions at the remote station:

- Dequeues blocked records received from RSCS
- Identifies the device required for output of the records
- Deblocks and decompresses output records, queueing the images for printing, punching, or typing
- Prints, punches, and types the output records, as required
- Sets status flags, indicating backlog conditions on the output devices.

#### Communication Functions

HASP/RTP1130 provides the following communication functions at the remote station:

- Establishes and maintains synchronization with RSCS
- Dequeues blocked input requests and transmits them to RSCS (upon request from RSCS)
- Provides backlog status flags, indicating the terminal's ability to receive the various output streams from RSCS
- Receives output from RSCS and queues the blocked records for processing.

## OPERATING PROCEDURES

The following sections provide information for initiating and operating the HASP/RTP1130 program during the remote job stream processing session.

The initiation of a remote job stream processing session involves initial program loading of the HASP/RTP1130 program deck, establishment of the communication lines, and exchange of initial control information between RSCS and the HASP/RTP1130 program. The initial control sequence ends with the passing of the sign-on information from the remote station.

### Initial Program Load (IPL)

To perform the initial program loading of the HASP/RTP1130 program deck:

1. Ready the HASP/RTP1130 deck in the primary card reader (do not place decks behind the HASP/RTP1130 deck). If two cards readers exist, be sure the second is not in ready status.
2. Ready all printers.
3. Set the STR/BSC switch to BSC.
4. Set the line speed control to the appropriate value (1200, 2000, 2400, etc.).
5. Verify that the rotary CPU control switch is set to the RUN position.
6. Press IMM STOP, RESET, and PROGRAM LOAD on the 1130 console.
7. After the last card has been read, the card reader goes out of ready status. Ready the card reader (press START on the reader until it becomes ready) and press START on the 1130 console. The last card should be the END card of the HASP/RTP1130 deck, a /\*SIGNON card or a REP card. All unidentified cards are ignored.
8. Establish the communications line.

Note: The message DATA SET NOT READY is printed after the execution of Item 7 if the data set is not ready and establishing the communications line is not possible.

9. Processing can then begin in the full MULTI-LEAVING mode.



### Establishing a Communication Line

The procedures for establishing communications with RSCS are as follows:

1. Ready the data set. This involves different actions, depending on the type of data set. For nonswitched lines when the BSC RDY indicator is on, no action is required. Certain nonswitched lines require that the data set DATA button be pressed. To ready a dial line data set, perform the following:
  - a. Press the TALK button and lift the receiver on the data set.
  - b. Dial the assigned number for the remote station.
  - c. If the RSCS line is available, the central system answers with a high pitched tone. Press DATA and replace the receiver immediately (the data set is now ready).
  - d. If the RSCS line is in use, a busy signal is received. Replace the receiver and try again later, or dial an alternate communications line number.
  - e. If the call is not answered, the RSCS operator has not given the necessary RSCS command (START) to authorize use of that communication line. Contact the RSCS operator and request that he issue the START command for your link.
2. When the data set is ready, the BSC RDY indicator is on. When requested, HASP/RTP1130 begins the initial control sequence. The REC and TSM lights alternate during normal operation.
3. When the initial sequence is complete, control information is transmitted to RSCS and "handshaking" (with the REC and TSM lights alternating) continues. In addition, the message:

COMMUNICATION LINE ESTABLISHED

is printed on the console typewriter.

### Output Processing

The printing and punching of remote output is handled automatically by the HASP/RTP1130 system, except as controlled by the remote station operator or RSCS operator via commands to RSCS.

OUTPUT PROCESSING ON THE 1442 CARD READ PUNCH: A system with the 1442 defined as a punch-only device requires no operator action other than a ready condition and blank cards in the hopper.

## Input Processing

Card decks can be submitted at any time, depending on the capabilities of the card reader/punch attached to the 1130 System.

The 2501 Card Reader allows the cards to be placed in the hopper as desired. The reader stops after reading the last card in the hopper and the message INTERVENTION REQUIRED ON 2501 is printed on the console printer. The operator may then press START on the reader to terminate the input stream or load more cards in the hopper, press START and continue the input stream. The intervention message is typed whenever the 2501 goes from a ready condition to a not ready condition.

The input reader to HASP/RTP1130 is considered always "hot"; that is, it is continually testing the reader and attempting to read cards.

INPUT PROCESSING ON THE 1442 CARD READ PUNCH: The function of the 1442 Card Read Punch is defined via operator action at the keyboard/console. Initially, the 1442 Card Read Punch is considered to be a card reader. When punch data is transmitted to the 1130 System, a message is printed:

```
PUNCH PROCESSOR WAITING FOR 1442
```

The operator may then define the 1442 as a punch by entering the command:

```
.DPUNCH ( or .DP)
```

This specification is needed for each job that transmits punch data to the station.

When defined as a reader by issuing the command

```
.DREADER (or .DR)
```

the 1442 retains the assignment until a .DPUNCH is given. As a reader the 1442 operates like the 2501 Card Reader.

Note that during input processing on the 1442 Card Read Punch:

- The .DPUNCH and .DREADER commands result in no action if the opposite function is active when the command is issued.
- Defining the 1442 Card Read Punch as a punch with input cards in the hopper and punch data available from RSCS destroys the data in the input cards.

### Entering Commands

RSCS commands and local commands may be entered at the remote station's console. Any message entered at the keyboard, which is not recognized as a local command, is transmitted to RSCS for action. Although all commands transmitted to RSCS are listed on the RSCS operator's console, only those designated as being available to the remote user are acted upon.

ENTERING RSCS COMMANDS: The remote station operator should perform the following steps when entering RSCS commands:

1. Press the INT REQ button which is located to the right of the console typewriter keyboard.
2. When the K.B. Select indicator comes on, type in the command, and press EOF.
3. If a typing error is noticed before pressing EOF, press the ERASE FIELD key, and repeat step 1.

Note that the BACKSPACE key is processed in the same manner as the ERASE FIELD key.

ENTERING LOCAL COMMANDS: The following local commands can be entered at the remote station's console:

- .DR Defines the combination 1442 Card Read Punch as a reader. This definition remains in effect until a .DP command is entered and accepted.
- .DP Defines the combination 1442 Card Read Punch as a punch. This definition remains in effect for one output only. The function next assigned is dependent on the entering of another .DP or .DR.

Local Commands are identified by a period in the first available type position. No blanks are allowed in the body of a command. Acceptance of a console command is signaled by the message:

OK!

Rejection is signaled by the message:

WHAT?

### Terminating a Session

To terminate remote processing, the remote station operator can send a /\*SIGNOFF card through the card reader input stream or issue the DRAIN command. This tells RSCS not to initiate the sending of any more remote

output and to release the communication line (if DIAL) when the current print or punch stream is finished. The RDY light on the data set goes out, and an SCA log message Code 3 is released periodically. The operator should ensure that printing and punching of output streams have successfully terminated and then press STOP on the CPU. To start a new session, the operator must perform the steps described previously, starting with the Initial Program Load of HASP/RTP1130.

## ERROR RECOVERY PROCEDURES

The following sections indicate some of the common error conditions that can arise and the necessary steps required for recovery.

### Communications Adapter Errors

Due to the design of the synchronization technique for RSCS remote stations, no errors are expected during a processing session. The occurrence, therefore, of any error condition is an unusual condition resulting from either system or communication facility malfunction or operational conditions. In general, the display of error messages is only informational, since HASP/RTP1130 automatically initiates the appropriate recovery action. A list of error messages that may be displayed on the console printer is shown in Figure 17.

### Unit Record Errors

Many of the unit record device errors that can occur during processing allow HASP/RTP1130 to continue processing without operator intervention. Some errors, such as DATA check and END OF FORM, require operator assistance before use of the device can be continued. In any event, all errors occurring on unit record devices are logged in the RSCS Environmental Recording Error Printout Table and are displayed immediately on the 1052 operator's console.

When the error message is printed, you should:

1. Determine which device is in error (see Figure 18).
2. Note the device status; if HASP/RTP360 continues to use the device, the error message is informative in nature.
3. Correct the error in accordance with procedures prescribed for the device.
4. Ready the device to resume operation.

Message	Meaning	Action Taken
FFrree00	Block sequence check. A transmission block was duplicated or lost. rr = received block number ee = expected block number	If duplicate, the received block is ignored. If the block is lost, SML restarts the job.
02dddd00	Abnormal read complete. The number of bytes requested have been read, but no end sequence was detected.	SML is requested to retransmit the record.
03dddd00	Timeout while attempting to synchronize an initial sequence	
04dddd00	Received timeout while reading data.	
05dddd00	BCC compare error after normal read complete condition.	
06dddd00	Data overrun. Program can't read data before next character is received from transmission line.	
07dddd00	Data set not ready. Discovered at interrupt time.	
08dddd00	Error on initial read. First character not SOH, DLE, ENQ, or NAK ...or... SOH-STX, DLE-STX, or DLE-ACK0 pair not found.	SML is requested to retransmit the record.
09dddd00	NAK received.	Last data recorded is retransmitted to SML.
0Bdddd00	Single DLE found in transparent data.	SML is requested to retransmit the record.
0Cdddd00	ENQ received after initial sign-on sequence.	
0ddddd00	No pad character following NAK.	
Note: dddd = device status word received for the Synchronous Communication Adapter		

Figure 17. HASP/RTP1130 Communication Adapter Error Messages

Message	Description	Program Action
05ss0aaa	<p>Unit check. Device with address "aaa" has unit check error described by sense byte "ss" and/or indicator lights on the device console.</p> <p>Sample sense byte settings:</p> <p>40 = Intervention required  10 = Equipment check  08 = Data check - card read, card punched, or line printed incorrectly.  01 = Carriage control tape channel 9 encountered on printer</p>	<p>Wait for operator.  Treat as data check.  Depending on device: ignore, retry, or wait for operator.  Ignore.</p>
06cc0aaa	<p>Unusual end. Previous I/O came to an unusual end. Service personnel should be consulted.  cc = CSW byte 5  aaa = device address</p>	<p>Treat as data check.</p>
<p><u>Note:</u> Printing on a line that has a carriage control tape channel 9 or 12 punch appears as an error and is logged as an error. The installation should place these punches in line positions that do not contain print information. Do not eliminate the punches from the carriage tape.</p>		

Figure 18. HASP/RTP1130 Unit Record Error Messages

### Remote Station Restart

In the event of an untimely interruption of the remote station operation (such as a machine, program, communications, or environmental failure), the remote station operator should notify appropriate maintenance personnel of the malfunction. He should also save material that may be of use in determining the source of the failure and, with the aid of the RSCS operator, should prepare for restarting the station, as follows:

1. Notify the RSCS operator of the failure and, if necessary, request his assistance in preparing for restart.
2. Determine the current deck being transmitted to RSCS. (The RSCS operator has a record of the current deck being submitted to RSCS.) The input stream, starting with that current deck, must be submitted to RSCS after restart.

3. Determine the loss of data on the output devices, and inform the central operator to backspace or restart the printer or punch, as necessary. (The RSCS link should be made available for a subsequent session with the remote station or other stations within the system.)
4. When the remote station is available, restart the session beginning with the Initial Program Load of HASP/RTP1130.

Load Process Unusual Conditions

The first eight cards of the 1130 remote station deck are the bootstrap loader (RTPBOOT), that loads the main loader (RTPLOAD) into upper 1130 storage. RTPLOAD then loads the main station deck (HASP/RTP1130), processes REP cards (if any), and processes the /\*SIGNON card (if included).

Figures 19 and 20 describe the unusual conditions that may occur during execution of RTPBOOT and RTPLOAD.

Error Indication	Error Description	Operator Action
System loop at location 'AA' with IAR displayed at location 'AB'.	RTPBOOT-computed sum (checksum) of columns 1-72 of last card read does not match value in columns 73-74, previously computed during RTPLOAD generation.	Loading of RTPLOAD is permanently terminated. Note card being processed, and contact system programmer or lead operator.
System loop at location 'AE' with IAR displaying location 'AF'. AC contains card code value of column in error. XR2 contains 2s complement of card column in error.	RTPBOOT detected illegal punch in the RTPLOAD card just read, or the last four cards of RTPBOOT contain an illegal EBCDIC punch.	Same as above.

Figure 19. HASP/RTP1130 Loading Errors (RTPBOOT)

Error Indication	Error Description	Operator Action
System wait at location '0010'. AC displays value 'FFF3'.	The last REP card read contained a format error.	Loading is permanently terminated. Note that a card is in error and contact system programmer or lead operator.
System wait at location '0010'. AC displays value 'FFF2'.	RTPLOAD-computed sum (checksum) of columns 1-72 of last HASP/RTP1130 card read does not match value in columns 73-74, previously computed.	Loading may be resumed by pressing START on 1130 console. Unpredictable results may occur. Best action is to note card in error and contact system programmer or lead operator.
System wait at location '0010'. AC displays value 'FFF1'.	This is not an error. The last card has been read by the 2501 or 1442, and operator action is required.	To start HASP/RTP1130 processing, press START on the card reader until ready; then press START on the 1130 console.

Figure 20. HASP/RTP1130 Loading Errors (RTPLOAD)

Local Message Summary

Messages printed on the console typewriter originate from RSCS or are generated by HASP/RTP1130, in conjunction with the station operation. Messages from RSCS have the three-character prefix DMT; they are printed in red if the red/black typewriter ribbon is installed.

Local messages (typed in black) are listed in Figure 21 along with a detailed explanation of each message.



Message	Explanation/Action
INTERVENTION REQUIRED ON xxxx	Where xxxx is 1442, 2501, 1403, or 1132. This message indicates that the indicated device has gone from a read to a "not ready" condition, usually because the device was manually stopped or because the device requires operator action (for example, cards or paper). The device should be serviced as required and made ready to continue operation.
PUNCH PROCESSOR WAITING FOR 1442	This message is issued whenever punch data is waiting to be punched on a system equipped with a combination Card Read Punch. If the 1442 is defined as a reader, it must complete the read function before it can be defined as a punch. If the 1442 is defined as a punch, no further action (other than providing blank cards and making the device ready) is necessary.
DATA SET NOT READY	This message is issued when the communications adapter signals HASP/RTP1130 that the attached telephone data set is in a "not ready" condition. The program does not attempt to use the communication adapter until a "ready" condition is detected. All other functions (card input, typewriter, etc.) continue until they require the service of the data set. If the data set was made "not ready" by manual intervention, operation may be resumed by making it ready.  CAUTION: The RSCS machine may print error messages that could cause the operator to restart the communications line. In this event, the HASP/RTP1130 program must be reloaded.
SCA LOG xxxxxx00	Indicates an unusual condition associated with the SCA (Synchronous Communication Adapter).
COMMUNICATION LINE ESTABLISHED	Issued when the HASP/RTP1130 program is initialized and when communications have been established with the RSCS machine.
WHAT?	Response to any local command not recognized or accepted by HASP/RTP1130.
OK!	Response to any local command recognized or accepted by HASP/RTP1130.

Figure 21. IBM 1130 Local Messages

## RSCS AS A REMOTE JOB ENTRY STATION

The RSCS virtual machine, through an SML line driver operating in RJE mode, can act as a MULTI-LEAVING workstation. In this capacity, RSCS accepts job files that are either spooled to it by VM/370 virtual machines or received from other nodes in the network. It then transmits the job files, via the SML line driver, to the remote batch system for processing. Output received from the remote system is sent to the real printer or punch of the directly connected VM/370 system.

## CONFIGURATION SPECIFICATIONS

Any of the System/370 Models 135, 135-3, 138, 145, 145-3, 148, 155 II, 158, 165 II, and 168, or a 3031, 3032, 3033, or 4300 Processors with at least 240K of processor storage, a minimum of two direct access storage devices, and equipped with a transmission control unit supported by RSCS, can be used as a remote job entry station to access a remote batch processor. The supported transmission control units are:

- Integrated Communications Adapter (ICA) with Synchronous Data Adapter Type II on the System/370 Model 135
- IBM 2701 Data Adapter Unit with Synchronous Data Adapter Type II
- IBM 2703 Transmission Control Unit with Synchronous Terminal Control
- IBM 3704 Communications Controller in emulation mode only
- IBM 3705 Communications Controller in emulation mode only.

## SML AS THE REMOTE TERMINAL PROCESSOR (RTP) PROGRAM

For a system or device to function as a MULTI-LEAVING workstation, a Remote Terminal Processor (RTP) program must be loaded to provide the software functions of input, output, and communication according to the protocol established by the host batch processor. An SML line driver task, operating in RJE mode, provides these functions for RSCS when it is to act as a workstation for a remote batch system.

### Input Functions

The SML line driver, operating in RJE mode, provides the following input functions at the RSCS virtual machine:

- Accesses job files received by RSCS from VM/370 virtual machines or remote stations (either workstations or remote NJI/NJE systems)
- Accepts batch system commands entered at the RSCS operator's console (RJE mode only)
- Compresses and blocks card images and commands into transmission records according to the protocol requirements of the batch system
- Transmits the blocked records to the remote batch system.

#### Output Functions

The SML line driver, operating in RJE mode, provides the following output functions at the RSCS virtual machine:

- Deblocks and decompresses transmission records received from the remote system
- Identifies the device required for output
- Spools the output to the real printer and/or punch, as well as to the virtual machine specified in the output, for RJE mode
- Directs messages from the remote batch system to the RSCS operator's console.

#### OPERATING PROCEDURES

With the exception of the initialization and sign-on procedure, the operation of RSCS as a MULTI-LEAVING workstation is similar to that described under the section "IBM System/370 as a Remote Station".

#### Starting the SML Line Driver

After the RSCS virtual machine is logged on and RSCS is loaded, the RSCS operator can start the SML line driver.

Issue the START command for the link to the remote batch system.

If the link attributes in the link table are appropriate for this session, the START command can be issued as:

START	linkid	Parm	<	[ Hrn Rrn Arn >	[Bnnnn]	[password]
-------	--------	------	---	-----------------------------	---------	------------

A description of the START command operands, including those that override previous definitions, is in the section "Starting an SML Line Driver (DMTSML)", "Part 3: RSCS Operation".

The Hrn, Rrn, and Arn operands specify the type of remote batch system (HASP, RES, or ASP) and the workstation number or name that was assigned to RSCS when the remote system was generated.

For HASP (or JES2), rn is a number from 1 through 99; the entry could look like: H3, H20, or H43.

For RES, rn is also a number from 1 through 99; the entry could look like: R2, R50, or R77.

For ASP (or JES3), rn is a five-character alphanumeric name; the entry could look like: ANEWYK, ABURL5, APOK16, or A62121.

Successful execution of the START command results in the message:

```
DMTSML141I LINE 'vaddr' READY FOR CONNECTION TO LINK 'linkid'
```

#### Establishing a Communication Line

If the line identified by vaddr in the previous message is a nonswitched line, the line connection is automatically completed and the following message is issued:

```
DMTSML142I LINK 'linkid' LINE 'vaddr' CONNECTED
```

If the line is a switched line, the RSCS operator should:

1. Press the TALK button, and lift the receiver off the data set.
2. When you hear the dial tone, dial the telephone number of the remote system.
3. If the line is available, the remote system answers with a high pitched tone. Press DATA and hang up immediately; the data set is now ready and the DMTSML142I message is issued.
4. If the line is in use, a busy signal is heard. Hang up and try later, or dial an alternate number.

5. If the call is not answered, the remote system operator has not given the necessary command to authorize use of that communication line. Contact the remote system operator and request that he issue the appropriate START command for your workstation.

When requested by the remote system, the SML line driver begins the initial control sequence. When the initial sequence is complete, the sign-on procedure is performed.

#### Signing On to the Remote System

In RJE mode the SML line driver builds a SIGNON record from information in the RSCS START command. This record is then sent to the remote system for validation. When accepted, the SML line driver "handshakes" with the remote system until processing of job streams and output data actually begins.



The RSCS virtual machine, through the POW line driver, provides a connection to a remote DOS/VSE batch system running VSE/POWER, using the POWER MULTI-LEAVING line protocol. In this capacity, RSCS accepts job files that are either spooled to it by VM/370 virtual machines or received from other nodes in the network. It then transmits the job files, via the POW line driver, to the remote batch system for processing. Output received from the remote system is sent to the real printer or punch of the directly connected VM/370 system.

### GENERATING VSE/POWER FOR THE RSCS CONNECTION

The following is an example of DOS/VSE JCL which generates and catalogs a basic VSE/POWER system for connection to an RSCS system. Refer to the VSE/POWER Installation and Operations Guide, SH12-5329, for details of the VSE/POWER generation procedure.

#### Sample Job:

```
// JOB POWGEN
// OPTION CATAL
// EXEC ASSEMBLY
    POWER CPUID=2                (see note 1)
    PLINE ADDR=X'028',POW2=YES    (see note 2)
    PRMT TYPE=POWER,REMOTE=1     (see note 3)
END
/*
// EXEC LNKEDT
/*
/&
```

#### Notes:

1. Specifies 2 as the remote CPUID of the VSE/POWER system.
2. POW2=YES is required for connection to RSCS on the line specified by ADDR=.
3. Specifies 1 as the remote CPUID of the RSCS system. This corresponds to the Cnnn parameter of the RSCS START command for DMTPOW.

### CONFIGURATION SPECIFICATIONS

The following transmission control units are supported for the connection between processors running VM/370 with RSCS and DOS/VSE with VSE/POWER:

- IBM 2701 Data Adapter Unit with Synchronous Data Adapter Type II
- IBM 2703 Transmission Control Unit with Synchronous Terminal Control
- IBM 3704 Communications Controller in emulation mode only
- IBM 3705 Communications Controller in emulation mode only.

#### INPUT FUNCTIONS

The POW line driver provides the following input functions at the RSCS virtual machine:

- Accesses job files received by RSCS from local virtual machine users or remote nodes in the network.
- Compresses and blocks card images, messages, and commands into transmission records according to the protocol requirements of the batch system.
- Transmits the blocked records to the remote batch system.

#### OUTPUT FUNCTIONS

The POW line driver provides the following output functions at the RSCS virtual machine:

- Deblocks and decompresses transmission records received from the remote VSE/POWER system.
- Identifies the output requirements (for example, device type, output class, number of copies).
- Spools the output to the real printer and/or punch.
- Directs messages from the remote batch system to the RSCS operator's console.

#### OPERATING PROCEDURES

To establish the connection to the VSE/POWER system, the RSCS operator must:

- Establish the connection by issuing the START command to initiate the signon procedure.



- Provide for return of job output from the VSE/POWER system by issuing the CMD command to cause activation of VSE/POWER writer tasks.

Having established the connection, the RSCS operator interacts with the line driver via existing RSCS operator commands.

#### STARTING THE POW LINE DRIVER

After the RSCS virtual machine is logged on and RSCS is loaded, the RSCS operator can start the POW line driver.

Issue the START command for the link to the remote batch system.

If the link attributes in the link table are appropriate for this session, the START command can be issued as:

```
START linkid [Parm [Cnnn] [/password]]
```

A description of the START command operands, including those that override previous definitions, is in the section "Starting a POW Line Driver (DMTPOW)", "Part 3: RSCS Operation".

Successful execution of the START command results in the message:

```
DMTPOW141I LINE 'vaddr' READY FOR CONNECTION TO LINK 'linkid'
```

#### ESTABLISHING A COMMUNICATION LINE

If the line identified by vaddr in the previous message is a nonswitched line, the line connection is automatically completed and the following message is issued:

```
DMTPOW142I LINK 'linkid' LINE 'vaddr' CONNECTED
```

If the line is a switched line, the RSCS operator should:

1. Press the TALK button, and lift the receiver off the data set.
2. When you hear the dial tone, dial the telephone number of the remote system.
3. If the line is available, the remote DOS/VSE system answers with a high pitched tone. Press DATA and hang up immediately; the data set is now ready and the DMTPOW142I message is issued.
4. If the line is in use, a busy signal is heard. Hang up and try

later, or dial an alternate number.

5. If the call is not answered, the remote DOS/VSE system operator has not given the necessary command to authorize use of that communication line. Contact the DOS/VSE operator and request that he issue the appropriate PSTART command for your system.

The POW line driver then begins the initial control sequence. When the initial sequence is complete, the sign-on procedure is performed.

#### SIGNON PROCEDURE FOR THE REMOTE VSE/POWER SYSTEM

The POW line driver internally interacts with the VSE/POWER system to perform the sign-on procedure. When completed, the following message is issued:

```
DMTPOW905I  SIGNON OF LINK 'linkid' COMPLETE
```

The POW line driver then "handshakes" with the remote system until processing of job streams and output data actually begins.

#### RETURN OF JOB OUTPUT TO RSCS

Since VSE/POWER does not provide for the unsolicited return of job output, the RSCS operator must request transmission of listings and punched output from the DOS/VSE system. In order to accomplish this, a START command for the appropriate POWER output tasks must be issued.

After message DMTPOW905I (SIGNON COMPLETE) has been issued, the RSCS operator can start the LST or PUN output tasks with the CMD command. The RSCS operator can stop the transmission of output from VSE/POWER and/or change the output class by using the POWER START and/or STOP commands.

The CMD command (for linkid POWER) is issued as follows:

```
CMD POWER  [ START ] LST [,class(es)]
             [ S     ]
             [ STOP  ] PUN
             [ P     ]
```

where:

START or S initiate a writer task in the VSE/POWER system for list or punch output.

STOP or P terminates an active writer task in the VSE/POWER system.

LST specifies a writer task for printed output.

PUN specifies a writer task for punched output.

class(es) is an optional parameter for specifying up to four output classes for list or punch output. Classes may be specified as A-Z. If omitted, the default is class A.

Note: These correspond to the classes supported at the local VM/370 system.

#### TERMINATION OF THE VSE/POWER CONNECTION

To terminate the connection to the remote VSE/POWER system, the RSCS operator issues the DRAIN or SHUTDOWN command for the link. This causes the POW line driver to send an internal command to the VSE/POWER system to stop its RJE input task. The POW line driver then deactivates itself.

If the DOS/VSE system operator stops the RJE task on the VSE/POWER system, or issues a PEND to terminate VSE/POWER, an internal command is sent to the POW line driver causing the following message to be issued:

```
DMTPOW945I LINK 'linkid' DEACTIVATION INITIATED BY POWER
```

The POW line driver is then deactivated.



## Appendix G: Base Tape Contents

The following describes the contents of the RSCS Base Tape at First Customer Ship. The contents of the service tapes vary depending upon service activity. Therefore, you should refer to the user memo on the service tape (the second file) for this level of information.

### 1. Base Tape Loading EXEC

FILENAME	FILETYPE	FUNCTION
RSCSBASE	EXEC	Load other files from the tape
SAMPLE	DIRECT	Sample Directory
PROFILE	SAMPLE	Sample Profile

## 2. Required Data

FILENAME	FILETYPE	FUNCTION
DMTLOAD	EXEC	Loadlist for RSCS Nucleus
DMKLD00E	LOADER	VM Nucleus Loader Program
LDT	DMTINIW	Indicates Where to Start Loading
RSCS	CNTRL	Control File for use with VMFASM or VMFLOAD
DMTAKE	TEXT	Task Communication - Take Module
DMTASK	TEXT	Task Supervision - Create & Delete
DMTASY	TEXT	Task Supervision - Task Asych. Exits
DMTAXA	TEXT	Accounting
DMTAXM	TEXT	CP SPOOL Interface Module
DMTAXS	TEXT	Preloaded Spooling Task Manager
DMTCMX	TEXT	Commands - Routing
DMTCMY	TEXT	Commands - Routing (Part 2)
DMTCOM	TEXT	Routines - Reent.: GETPAGE, FREEPAGE, GETLINK
DMTCRE	TEXT	Task Supervision - Create New Tasks
DMTDSP	TEXT	Dispatcher
DMTEXT	TEXT	Interrupt Handler - Extern1
DMTGIV	TEXT	Task Communication - Give Module
DMTINI	TEXT	Initialization
DMTIOM	TEXT	IOS & IO Interrupt Handler
DMTIRX	TEXT	Initialization - Non-MSUP, Transient
DMTLAX	TEXT	Line Allocation Task
DMTMGX	TEXT	Message Processing
DMTMIN	TEXT	Initialization - MSUP
DMTMSG	TEXT	Messages - No Code
DMTNCM	TEXT	Line Driver - NJE/NJI on BSC or CTC
DMTNHD	TEXT	Network Routines - Commands, MSGS, Header Rtns
DMTNIT	TEXT	Line Driver Init. - For DMTNJI
DMTNJI	TEXT	Preloaded NJI Line Driver
DMTNPT	TEXT	Line Driver - 2770, 2780, 3770, AND 3780
DMTPOW	TEXT	Line Driver - MLI to VSE/POWER
DMTPRE	TEXT	Utility - Combine, Link, and Relocate Text Decks
DMTPST	TEXT	Task Supervision - Post Routine
DMTQRQ	TEXT	MSUP Status Queue Manager
DMTQREX	TEXT	REX Supervisor Task-PC'S, Lock Mgr, Timer, ROUTE
DMTRGX	TEXT	Commands - CMD & MSG Routing Processor
DMTRPT	TEXT	Line Driver - 3270 Information Display System Printers
DMTSIG	TEXT	Task Communication - Task Alert Exit
DMTSML	TEXT	Line Driver - RJE Work Sta. With MULTI-LEAVING
DMTSTO	TEXT	Storage Mgt - Reserves Pages of Free Storage
DMTSVC	TEXT	Interupt Handler - SVC
DMTVEC	TEXT	Low Storage Def. from X'200'
DMTVMB	TEXT	Line Driver - BSC CP SPOOL File Transmission
DMTVMC	TEXT	Line Driver - CTC CP SPOOL File Transmission
DMTWAT	TEXT	Task Supervision - Wait Module

### 3. Tools for Servicing RSCS

FILENAME	FILETYPE	FUNCTION
DMTMAC	EXEC	Loadlist to build DMTMAC MACLIB
DMTAXS	EXEC	Loadlist to preload DMTAXS TEXT
DMTNJI	EXEC	Loadlist to preload DMTNJI TEXT
PRELOAD	MODULE	Module to build DMTAXS and DMTNJI

#### 4. RSCS Module Source Code

FILENAME	FILETYPE	FUNCTION
DMTAKE	ASSEMBLE	Task Communication - Take Module
DMTASK	ASSEMBLE	Task Supervision - Create & Delete
DMTASY	ASSEMBLE	Task Supervision - Task Asynch. Exits
DMTAXA	ASSEMBLE	Accounting
DMTAXM	ASSEMBLE	CP SPOOL Interface Module
DMTCMX	ASSEMBLE	Commands - Routing
DMTCMY	ASSEMBLE	Commands - Routing (Part 2)
DMTCOM	ASSEMBLE	Routines - Reent.: GETPAGE, FREEPAGE, GETLINK
DMTCRE	ASSEMBLE	Task Supervision - Create New Tasks
DMTDSP	ASSEMBLE	Dispatcher
DMTEXT	ASSEMBLE	Interrupt Handler - Exteran1
DMTGIV	ASSEMBLE	Task Communication - Give Module
DMTINI	ASSEMBLE	Initialization
DMTIOM	ASSEMBLE	IOS & IO Interrupt Handler
DMTIRX	ASSEMBLE	Initialization - Non-MSUP, Transient
DMTLAX	ASSEMBLE	Line Allocation Task
DMTMGX	ASSEMBLE	Message Processing
DMTMIN	ASSEMBLE	Initialization - MSUP
DMTMSG	ASSEMBLE	Messages - No Code
DMTNCM	ASSEMBLE	Line Driver - NJE/NJI on BSC or CTC
DMTNHD	ASSEMBLE	Network Routines - Commands, MSGS, Header Rtns
DMTNIT	ASSEMBLE	Line Driver Init. - For DMTNJI
DMTNPT	ASSEMBLE	Line Driver - 2770, 2780, 3770, AND 3780
DMTPOW	ASSEMBLE	Line Driver - MLI to VSE/POWER
DMTPRE	ASSEMBLE	Utility - Combine, Link, and Relocate Text Decks
DMTPST	ASSEMBLE	Task Supervision - Post Routine
DMTQRQ	ASSEMBLE	MSUP Status Queue Manager
DMTREX	ASSEMBLE	REX Supervisor Task
DMTRGX	ASSEMBLE	Commands - CMD & MSG Routing Processor
DMTRPT	ASSEMBLE	Line Driver - 3270 Information Display System Printers
DMTSIG	ASSEMBLE	Task Communication - Task Alert Exit
DMTSMML	ASSEMBLE	Line Driver - RJE Work Sta. With MULTI-LEAVING
DMTSTO	ASSEMBLE	Storage Mgt - Reserves Pages of Free Storage
DMTSVC	ASSEMBLE	Interrupt Handler - SVC
DMTVEC	ASSEMBLE	Low Storage Def. from X'200'
DMTVMB	ASSEMBLE	Line Driver - BSC CP SPOOL File Transmission
DMTVMC	ASSEMBLE	Line Driver - CTC CP SPOOL File Transmission
DMTWAT	ASSEMBLE	Task Supervision - Wait Module

#### 5. RSCS Macro Library

FILENAME	FILETYPE	FUNCTION
DMTMAC	MACLIB	RSCS Macro Library



6. RSCS Macro and Copy Source Code

FILENAME	FILETYPE	FUNCTION
\$NCC	MACRO	Network Connection Control Record
\$NHD	MACRO	Network Job and Data set Header Records
\$NMR	MACRO	Network Message Record
DIAG	MACRO	Diagnose Interface to VM/370
FREEZE	MACRO	Stops Tasks and Saves Status
MLX1REC	MACRO	VSE/POWER MLX1 Format
MLX2REC	MACRO	VSE/POWER MLX2 Format
MLX3REC	MACRO	VSE/POWER MLX3 Format
VNETMSG	MACRO	Generates RSCS Message Format and Routine
ASYNE	COPY	Asynch Interrupt Request Element
A2ALERT	COPY	Format A2 Alert Element
BQELM	COPY	Message and Command Queue Element
BUFF	COPY	Telecommunications Buffer
CMSACCES	COPY	CMS Read Access Method Table
DEVTYPE\$	COPY	VM/SP Device Type Equates
FREEE	COPY	Free Queue Element
GIVEE	COPY	Give Request Element
IOE	COPY	I/O Element
IOTABLE	COPY	I/O Table
LINKTABLE	COPY	Link Table Entry
L3ALERT	COPY	Format L3 Alert Element
NJEEQU	COPY	NJI Line Driver Equates
OUTDEVT	COPY	Output Device Table Entry
RCMELM	COPY	Message and Command Routing Element
ROUTE	COPY	Routing Table Entry
RSSEQU	COPY	RSCS and CP Equate Symbols
SPOOL	COPY	VM/SP SFBLOK and SPLINK
SVECTORS	COPY	Low Core Definitions
TAG	COPY	TAG
TANK	COPY	Unit Record Tank
TAREA	COPY	Task Save Area
TASKE	COPY	Task Element
TCT	COPY	Task Control Table



The abbreviations used in this manual are:

ASP	Asymmetric Multiprocessing System
BSC	Binary Synchronous Communication
BSCA	Binary Synchronous Communication Adapter
CMS	Conversational Monitor System
CP	Control Program (in VM/370)
CPU	Central Processing Unit
CSW	Channel Status Word
CTCA	Channel-to-Channel Adapter
DASD	Direct Access Storage Device
DOS/VSE	Disk Operating System/Virtual Storage Extended
EBCDIC	Extended Binary-Coded Decimal Interchange Code
EDF	Enhanced Disk Format
HASP	Houston Automatic Spooling System
HEREP	HASP Environmental Recording and Editing Program
I/O	Input/Output
ICA	Integrated Communications Adapter
IPL	Initial Program Load
JCL	Job Control Language
JECL	Job Entry Control Language
JES	Job Entry Subsystem
MFCU	Multi-Function Card Unit
MFT	Multiprogramming with a Fixed Number of Tasks
MRJE/WS	MULTI-LEAVING Remote Job Entry Workstation
MVS	Multiple Virtual Storage (OS/VS2 Release 2 and above)
MVT	Multiprogramming with a Variable Number of Tasks
NJE	Network Job Entry
NJI	Network Job Interface
NPT	Nonprogrammable Terminal
OS	Operating System
OS/VS1	Operating System/Virtual Storage 1
OS/VS2	Operating System/Virtual Storage 2
PLC	Program Level Change
PRPQ	Programming Request for Price Quotation
RES	Remote Entry Services
RJE	Remote Job Entry
RSCS	Remote Spooling Communications Subsystem
RTP	Remote Terminal Processor
SIO	Start Input/Output
SML	Spool MULTI-LEAVING
SVS	Single Virtual Storage (OS/VS2 Release 1.x)
VNET	VM/370 Networking
VSE/POWER	Virtual Storage Extended/Priority Output Writers, Execution Processors, and Input Readers



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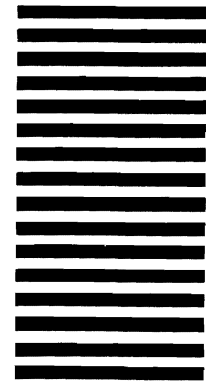
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