IBM

IBM Tivoli Decision Support for OS/390 Version 1.6 (WebSphere V4)

Warehouse Enablement Pack, Version 1.2.0

Implementation Guide

for Tivoli Data Warehouse, Version 1.2

Note:

Before using this information and the product it supports, read the information in Notices on page 26.

First Edition (February 2004)

This edition applies to IBM Tivoli Decision Support for OS/390 Version 1.6 and to all subsequent releases and modifications until otherwise indicated in new editions.

Contents

1 About this guide

This document describes the warehouse enablement pack, Version 1.2.0 for IBM Tivoli® Decision Support for OS/390® Version 1.6 (WebSphereV4)®. This warehouse enablement pack (hereafter referred to as warehouse pack) is created for Tivoli Data Warehouse, Version 1.2 and it is used to load WebSphere data into a central data warehouse.

With this implementation guide, you can install and configure the warehouse pack and analyze the data structures it uses.

1.1 Who should read this guide

This guide is for people who do any of the following activities:

- Plan for and install the warehouse pack
- Use and maintain the warehouse pack
- Create new reports
- Create additional warehouse packs that use data from this warehouse pack

Administrators and installers should have the following knowledge or experience:

- Basic system administration and file management of the operating systems on which the components of Tivoli Data Warehouse are installed
- An understanding of the basic concepts of relational database management
- Experience administering IBM DB2 Universal Database

Additionally, report designers and warehouse pack creators should have the following knowledge or experience:

- An understanding of the source data and application
- Data warehouse information and design, extract, transform, and load (ETL) processes, and online analytical processing (OLAP)

1.2 Publications

This section lists publications in the Tivoli Data Warehouse library and other related documents. It also describes how to access Tivoli publications online and how to order Tivoli publications.

The following sets of documentation are available to help you understand, install, and manage this warehouse pack:

- IBM Tivoli Decision Support for OS/390
- IBM Tivoli Data Warehouse
- Crystal Enterprise
- IBM DB2, DB2 Data Warehouse Center, and DB2 Warehouse Manager
- IBM Redbooks

Note: The documentation for Crystal Enterprise is available on the Crystal Enterprise CD, which is distributed with Tivoli Data Warehouse.

1.2.1 IBM Tivoli Decision Support for OS/390 library

The following documents are available in the IBM Tivoli Decision Support for OS/390 library:

- *Tivoli Decision Support for OS/390, System Performance Feature Reference, (vol. II), Version 1.6,* SH19-4494

  Provides reference information for the System Performance feature, describes the component tables and look up tables associated with the feature, and provides a detailed explanation of how the feature processes each type of system performance data.

- *Tivoli Decision Support for OS/390*, *Administration Guide, Version 1.6,* SH19-6816

  Provides information about customizing Tivoli Decision Support for OS/390.

1.2.2 Tivoli Data Warehouse library

The following documents are available in the Tivoli Data Warehouse library. The library is available on the Tivoli Data Warehouse Documentation CD as well as online, as described in "Accessing publications online" on page 4.

- *Tivoli Data Warehouse Release Notes*, SC32-1399

  Provides late-breaking information about Tivoli Data Warehouse and lists hardware requirements and software prerequisites.

- *Installing and Configuring Tivoli Data Warehouse*, GC32-0744

  Describes how Tivoli Data Warehouse fits into your enterprise, explains how to plan for its deployment, and gives installation and configuration instructions. It contains maintenance procedures and troubleshooting information.

- *Enabling an Application for Tivoli Data Warehouse*, GC32-0745

  Provides information about connecting an application to Tivoli Data Warehouse. This book is for application programmers who use Tivoli Data Warehouse to store and report on their application data, data warehousing experts who import Tivoli Data Warehouse data into business intelligence applications, and customers who put their local data in Tivoli Data Warehouse. This document is available only from the IBM Web site.

- *Tivoli Data Warehouse Messages*, SC09-7776

  Lists the messages generated by Tivoli Data Warehouse, and describes the corrective actions you should take.

1.2.3 Related publications

The following sections describe additional publications to help you understand and use Tivoli Data Warehouse.

1.2.3.1 IBM DB2, DB2 Data Warehouse Center, and DB2 Warehouse Manager library

The DB2 library contains important information about the database and data warehousing technology provided by IBM DB2, DB2 Data Warehouse Center, and DB2 Warehouse Manager. Refer to the DB2 library for help in installing, configuring, administering, and troubleshooting DB2, which is available on the IBM Web site:

http://www-3.ibm.com/software/data/db2/library/

After you install DB2, its library is also available on your system.

The following DB2 documents are particularly relevant for people working with Tivoli Data Warehouse:

- *IBM DB2 Universal Database for Windows Quick Beginnings*, GC09-2971

  Guides you through the planning, installation, migration (if necessary), and setup of a partitioned database system using the IBM DB2 product on Microsoft Windows.

- *IBM DB2 Universal Database for UNIX Quick Beginnings*, GC09-2970

Guides you through the planning, installation, migration (if necessary), and setup of a partitioned database system using the IBM DB2 product on UNIX.

- *IBM DB2 Universal Database Administration Guide: Implementation*, SC09-2944

  Covers the details of implementing your database design. Topics include creating and altering a database, database security, database recovery, and administration using the Control Center, which is a DB2 graphical user interface.

- *IBM DB2 Universal Database Data Warehouse Center Administration Guide*, SC26-9993

  Provides information on how to build and maintain a data warehouse using the DB2 Data Warehouse Center.

- *IBM DB2 Warehouse Manager Installation Guide*, GC26-9998

  Provides information on how to install the following Warehouse Manager components: Information Catalog Manager, warehouse agents, and warehouse transformers.

- *IBM DB2 Universal Database and DB2 Connect Installation and Configuration Supplement*, GC09-2957

  Provides advanced installation considerations, and guides you through the planning, installation, migration (if necessary), and set up of a platform-specific DB2 client. This supplement also contains information on binding, setting up communications on the server, the DB2 GUI tools, DRDA® AS, distributed installation, the configuration of distributed requests, and accessing heterogeneous data sources.

- *IBM DB2 Universal Database Message Reference Volume 1*, GC09-2978 and *IBM DB2 Universal Database Message Reference Volume 2*, GC09-2979

  Lists the messages and codes issued by DB2, the Information Catalog Manager, and the DB2 Data Warehouse Center, and describes the actions you should take.

- *IBM DB2 UDB for z/OS and OS/390 Administration Guide,* SC26-9931

  Provides information on how to administer DB2 UDB on z/OS and OS/390 systems.

- *IBM DB2 UDB for z/OS and OS/390 An introduction to DB2 for OS/390,* SC26-9937

  Provides start-up information for DB2 for OS/390 users.

- *IBM DB2 UDB for z/OS and OS/390 Messages and codes,* GC26-9940

  Lists the messages and codes issued by DB2 on z/OS and OS/390 systems.

- *IBM DB2 UDB for z/OS and OS/390 Installation Guide,* GC26-9936

  Provides information on how to install DB2 UDB on z/OS and OS/390 systems.

- *IBM DB2 UDB for z/OS and OS/390 Diagnosis Guide and Reference,* LY37-3740

  Provides information on how to understand DB2 errors and instruct corrective actions that should be taken.

1.2.3.2 IBM Redbooks

IBM Redbooks are developed and published by the IBM International Technical Support Organization, the ITSO. They explore integration, implementation, and operation of realistic customer scenarios. The following Redbooks contain information about Tivoli Data Warehouse:

- *Introduction to Tivoli Enterprise Data Warehouse*, SG24-6607

  Provides a broad understanding of Tivoli Data Warehouse. Some of the topics that are covered are concepts, architecture, writing your own extract, transform, and load processes (ETLs), and best practices in creating data marts.

- *Planning a Tivoli Enterprise Data Warehouse Project*, SG24-6608

  Describes the necessary planning you must complete before you can deploy Tivoli Data Warehouse. The guide shows how to apply these planning steps in a real-life deployment of a warehouse pack using IBM Tivoli Monitoring. It also contains frequently used Tivoli and DB2 commands and lists troubleshooting tips for Tivoli Data Warehouse.

1.2.4 Accessing publications online

The publications CD or product CD contains the publications that are in the product library. The format of the publications is PDF, HTML, or both.

IBM posts publications for this and all other Tivoli products, as they become available and whenever they are updated, to the Tivoli Software Information Center Web site. The Tivoli Software Information Center is located at the following Web address:

http://publib.boulder.ibm.com/tividd/td/tdprodlist.html

Note: If you print PDF documents on other than letter-sized paper, select the **Fit to page** check box in the Adobe Acrobat Print dialog. This option is available when you click **File → Print**. **Fit to page** ensures that the full dimensions of a letter-sized page print on the paper that you are using.

1.2.5 Ordering publications

You can order many Tivoli publications online at the following Web site:

http://www.elink.ibmlink.ibm.com/public/applications/publications/cgibin/pbi.cgi

You can also order by telephone by calling one of these numbers:

- In the United States: 800-879-2755
- In Canada: 800-426-4968
- In other countries, for a list of telephone numbers, see the following Web site:

  http://www.ibm.com/software/tivoli/order-lit/

1.3 Accessibility

Accessibility features help users with a physical disability, such as restricted mobility or limited vision, to use software products successfully. For the warehouse pack, you use the interfaces of IBM DB2 and the Crystal Enterprise. See those documentation sets for accessibility information.

1.4 Contacting software support

If you have a problem with a Tivoli product, refer to the following IBM Software Support Web site:

http://www.ibm.com/software/sysmgmt/products/support/

If you want to contact customer support, see the IBM Software Support Guide at the following Web site:

http://techsupport.services.ibm.com/guides/handbook.html

The guide provides information about how to contact IBM Software Support, depending on the severity of your problem, and the following information:

- Registration and eligibility
- Telephone numbers, depending on the country in which you are located
- Information you must have before contacting IBM Software Support

1.5 Participating in newsgroups

User groups provide software professionals with a forum for communicating ideas, technical expertise, and experiences related to the product. They are located on the Internet, and are available using standard newsreader programs. These groups are primarily intended for user-to-user communication, and are not a replacement for formal support. You can use Web browsers like Netscape Navigator or Microsoft Internet Explorer to view these newsgroups:

Tivoli Data Warehouse

news://news.software.ibm.com/ibm.software.tivoli.enterprise-data-warehouse

1.6 Typeface conventions

This guide uses the following typeface conventions:

Bold

- Lowercase commands and mixed case commands that are otherwise difficult to distinguish from surrounding text
- Interface controls (check boxes, push buttons, radio buttons, spin buttons, fields, folders, icons, list boxes, items inside list boxes, multicolumn lists, containers, menu choices, menu names, tabs, property sheets), labels (such as **Tip** and **Operating system considerations**)
- Column headings in a table
- Keywords and parameters in text

Italic

- Citations (titles of books, diskettes, and CDs)
- Words defined in text
- Emphasis of words (words as words)
- Letters as letters
- New terms in text (except in a definition list)
- Variables and values you must provide

`Monospace`

- Examples and code examples
- File names, programming keywords, and other elements that are difficult to distinguish from surrounding text
- Message text and prompts addressed to the user
- Text that the user must type
- Values for arguments or command options

2 Overview

The following sections provide an overview of Tivoli Data Warehouse and the warehouse pack for Tivoli Decision Support for OS/390 WebSphere V4 Component.

2.1 Overview of Tivoli Data Warehouse

Tivoli Data Warehouse provides the infrastructure for the following:

- Extract, transform, and load (ETL) processes through the IBM DB2 Data Warehouse Center tool
- Schema generation of the central data warehouse
- Historical reports

As shown in Figure 1, Tivoli Data Warehouse consists of a centralized data store where historical data from many management applications can be stored, aggregated, and correlated.
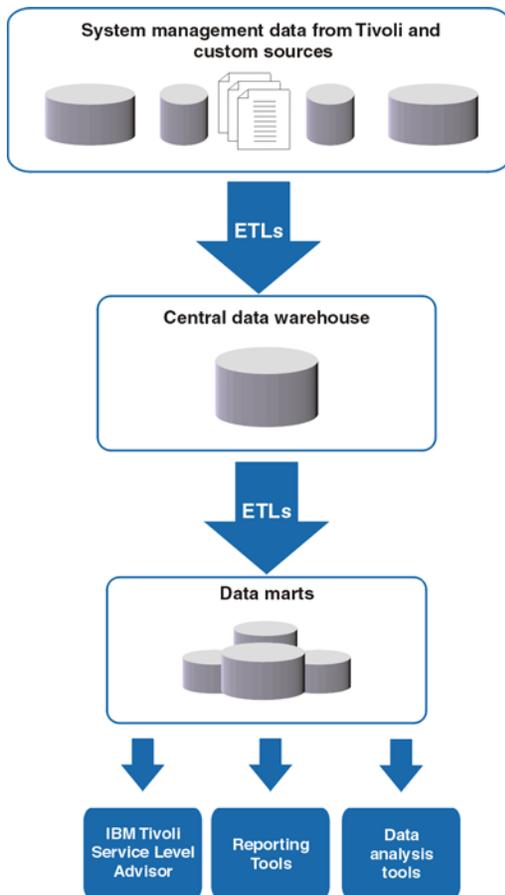
Figure 1. Tivoli Data Warehouse basic architecture

The central data warehouse uses a generic schema that is the same for all applications. As new components or new applications are added, more data is added to the database; however, no new database objects are added in the schema.

A *data mart* is a subset of a data warehouse that contains data that is tailored and optimized for the specific reporting needs of a department or team.

The central data warehouse *ETL* reads the data from the operational data stores of the application that collects it, verifies the data, makes the data conform to the schema, and places the data into the central data warehouse.

The *data mart ETL* extracts a subset of data from the central data warehouse, transforms it, and loads it into one or more star schemas, which can be included in data marts to answer specific business questions.

A program that provides these ETLs is called a *warehouse pack*.

The ETLs are typically scheduled to run periodically, usually during non-peak hours.

2.2 Overview of the warehouse pack for Tivoli Decision Support for OS/390

Tivoli Decision Support for OS/390 is structured with several components relative to the different applications where it collects data. Consequently the extract transform and load processes are also defined as different Subject Areas according to each Tivoli Decision Support component. For instance in the "DB2 Warehouse Center" you can find the following Subject Areas, if the corresponding warehouse packs were installed:

- D01_TDS/390-MVS_v1.6.0_Subject_Area (ETLs for Tivoli Decision Support for OS/390 System performance feature MVS component)

- D07_TDS/390-OPC_v1.6.0_Subject_Area (ETLs for Tivoli Decision Support for OS/390 System performance feature OPC component)

- D12_TDS/390-WAS_v1.6.0_Subject_Area (ETLs for Tivoli Decision Support for OS/390 System performance feature WAS component)

The relationship between Tivoli Decision Support and Tivoli Data Warehouse through the ETL processes varies according to the different tasks they perform. The graph below shows what has been just stated:
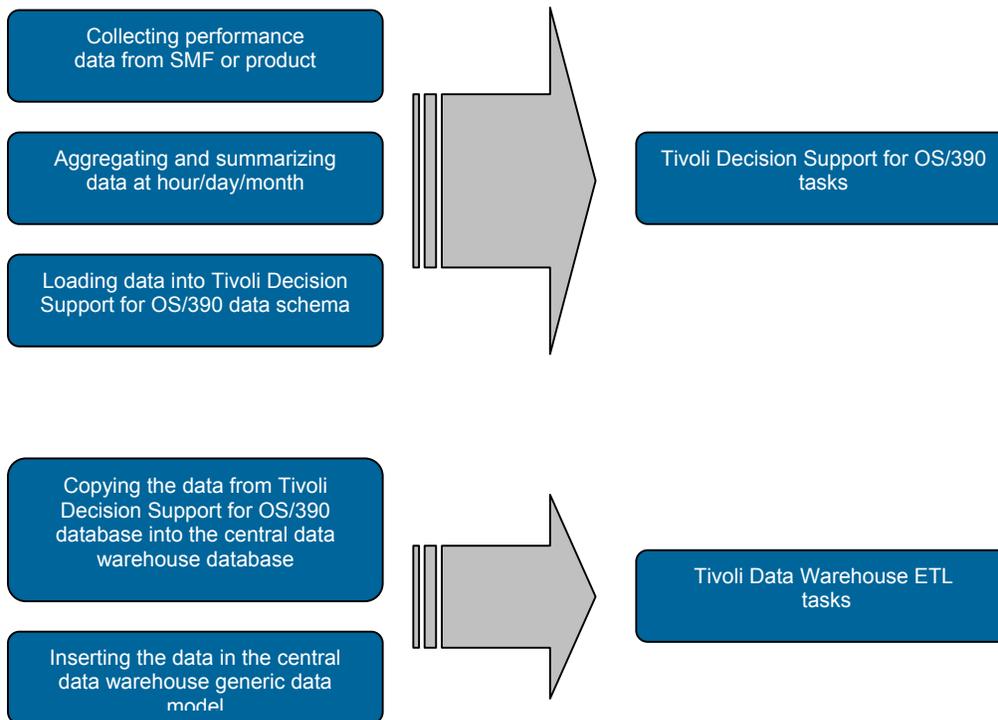
Figure 2. Overview of the warehouse pack for Tivoli Decision Support for OS/390

This figure refers only to the central data warehouse loading, because this warehouse pack does not provide either data marts or reports.
To understand how Tivoli Decision Support for OS/390 interacts with Tivoli Data Warehouse, see that topic in *Installing and Configuring Tivoli Data Warehouse*.

2.3 Data source and targets for Tivoli Decision Support for OS/390 (WebSphere V4)

The following table shows the corresponding Tivoli Decision Support for OS/390 source locations for the central data warehouse OS/390 component types and measurement types managed by the warehouse pack.

Tivoli Decision Support for OS/390 source Table name	Tivoli Decision Support for OS/390 Source field or Source formula	Tivoli Data Warehouse CompTyp_Cd (C) MsmtTyp_Nm (M) AttrTyp_Cd (A)
WAS_INT_SERVER_H	SYSPLEX_NAME	(C) 'SYSPLEX'
	MVS_SYSTEM_ID	(C) 'MVS_SYSTEM'
	SUBSYSTEM_ID	(C) 'MVS_SUBSYSTEM'
	WEB_SER_NAME	(C) 'D12_APPSERV'
	WEB_SER_INSTA_NAME	(C) 'D12_APPSERV_INST'
	SERVER_TYPE	(A) 'D12_SV_INST_TYPE'
	'WAS'	(A) 'MVS_SUBSYS_TYPE'
	(KB_RCVD_GCLIENTS+ KB_RCVD_LCLIENTS)*1000	(M) 'Number of Bytes Received'
	(KB_SENT_GCLIENTS+ KB_SENT_LCLIENTS)*1000	(M) 'Number of Bytes Sent'
WAS_INT_SERVLETS_H	SYSPLEX_NAME	(C) 'SYSPLEX'
	MVS_SYSTEM_ID	(C) 'MVS_SYSTEM'
	SUBSYSTEM_ID	(C) 'MVS_SUBSYSTEM'
	WEB_SER_NAME	(C) 'D12_APPSERV'
	WEB_SER_INSTA_NAME	(C) 'D12_APPSERV_INST'
	'$UNKNOWN'	(C) 'D12_WEB_CONTAIN'
	WEB_APPL_NAME	(C) 'D12_WEB_APPL'
	SERVLET_NAME	(C) 'D12_SERVLET'
	'WAS'	(A) 'MVS_SUBSYS_TYPE'
	TOTAL_REQUESTS	(M) 'WebSphere Servlet Requests'
	TOTAL_REQUESTS/MEASURED_SEC	(M) 'WebSphere Concurrent Servlet Requests'
	NUMBER_ERRORS	(M) 'WebSphere Servlet Errors '
	RESPONSE_TIME_AVG, RESPONSE_TIME_MIN, RESPONSE_TIME_MAX	(M) 'WebSphere Servlet Response Time '
WAS_INT_HTTPSESS_H	SYSPLEX_NAME	(C) 'SYSPLEX'
	MVS_SYSTEM_ID	(C) 'MVS_SYSTEM'
	SUBSYSTEM_ID	(C) 'MVS_SUBSYSTEM'
	WEB_SER_NAME	(C) 'D12_APPSERV'
	WEB_SER_INSTA_NAME	(C) 'D12_APPSERV_INST'
	'WAS'	(A) 'MVS_SUBSYS_TYPE'
	CREATED_SESSIONS	(M) 'WebSphere HTTP Sessions Created'
	CREATED_SESSIONS/MEASURED_SEC	(M) 'WebSphere HTTP Concurrent Sessions Created'
WAS_INT_J2EECNT_H	SYSPLEX_NAME	(C) 'SYSPLEX'
	MVS_SYSTEM_ID	(C) 'MVS_SYSTEM'
	SUBSYSTEM_ID	(C) 'MVS_SUBSYSTEM'
	WEB_SER_NAME	(C) 'D12_APPSERV'
	WEB_SER_INSTA_NAME	(C) 'D12_APPSERV_INST'

	WEB_J2EE_CONTAINER	(C) 'D12_EJB_CONTAIN'
	'WAS'	(A) 'MVS_SUBSYS_TYPE'
	ENTITY_CREATE	(M) 'WebSphere EJB Entities Created'
	ENTITY_REMOVE	(M) 'WebSphere EJB Entities Removed'
WAS_INT_BEANMTHD_H	SYSPLEX_NAME	(C) 'SYSPLEX'
	MVS_SYSTEM_ID	(C) 'MVS_SYSTEM'
	SUBSYSTEM_ID	(C) 'MVS_SUBSYSTEM'
	WEB_SER_NAME	(C) 'D12_APPSERV'
	WEB_SER_INSTA_NAME	(C) 'D12_APPSERV_INST'
	WEB_J2EE_CONTAINER	(C) 'D12_EJB_CONTAIN'
	BEAN_AMC_NAME	(C) 'D12_EJB'
	BEAN_TYPE	(A) 'D12_EJB_TYPE'
	TRANSACTION_POLICY	(A) 'D12_EJB_POLICY'
	'WAS'	(A) 'MVS_SUBSYS_TYPE'
	RESPONSE_TIME_AVG, RESPONSE_TIME_MAX	(M) 'WebSphere EJB Response Time'
	METHOD_INVOCATION	(M) 'WebSphere EJB Requests'
	METHOD_INVOCATION/MEASURED_SEC	(M) 'WebSphere Concurrent EJB Requests'
AVAILABILITY_T	Count(Substr(INTERVAL_TYPE,1,1) = '|')	(M) 'WebSphere Starts'
	Count(Substr(INTERVAL_TYPE,3,1) = '|')	(M) 'WebSphere Stops'
	((DAYS(END_TIME)*60*24)+(MIDNIGHT_SECONDS(END_TIME)/60))- ((DAYS(START_TIME)*60*24)+(MIDNIGHT_SECONDS(.START_TIME)/60)) (where INTERVAL_TYPE IN ('===','==|','|=|'))	(M) 'Available'
	((DAYS(END_TIME)*60*24)+(MIDNIGHT_SECONDS(END_TIME)/60))- ((DAYS(START_TIME)*60*24)+(MIDNIGHT_SECONDS(.START_TIME)/60)) (where INTERVAL_TYPE = (' ') and previous recorded INTERVAL_TYPE = ('==!'))	(M) 'Unavailable'
	((DAYS(END_TIME)*60*24)+(MIDNIGHT_SECONDS(END_TIME)/60))- ((DAYS(START_TIME)*60*24)+(MIDNIGHT_SECONDS(.START_TIME)/60)) (where INTERVAL_TYPE = (' '))	(M) 'Unknown'

3 Installing and configuring the warehouse pack

This section describes the installation and configuration of the warehouse pack.

3.1 Prerequisite hardware and software

Before installing the warehouse pack for Tivoli Decision Support for OS/390 WebSphere V4 component, you must install the following software:

- IBM Tivoli Decision Support for OS/390 Version 1.6 System performance feature with the following components:
  - ➢ WebSphere Interval Component (for Websphere Application Server version 4)
  - ➢ MVS Availability Component
- IBM DB2 Universal Database, Version 7.2
- IBM DB2 Universal Database for z/OS and OS/390, Version 7
- Tivoli Data Warehouse, Version 1.2 and its prerequisites
- Crystal Enterprise and its prerequisites

This warehouse pack supports central data warehouses on DB2 UDB for z/OS and OS/390.

Refer to the *Tivoli Data Warehouse Release Notes* and *Tivoli Decision Support for OS/390 Administration Guide* for specific information about hardware prerequisites, database and operating system support, and product prerequisites. For late-breaking news about prerequisites, refer to the following IBM Software Support Web site:

http://www.ibm.com/software/sysmgmt/products/support/

3.2 Product notes and limitations

For performance and disk capacity reasons, data from Tivoli Decision Support for OS/390 can only be stored in the central data warehouse database on OS/390 system.

In addition, place Tivoli Decision Support for OS/390 in the same DB2 subsystem as central data warehouse.

To avoid resource contention, warehouse packs on OS/390 must be run in sequence. See the following sections for instructions on how to install and schedule multiple Tivoli Decision Support for OS/390 warehouse packs.

3.3 Database-sizing considerations

Refer to the "Estimating the size of your Tivoli Data Warehouse deployment" in the *Installing and Configuring Tivoli Data Warehouse* manual.

Note: This warehouse pack can work, in compatibility mode, with higher versions of WebSphere Application Server, but important information for such higher versions (e.g cell name, mode name) are not handled.

3.4 Pre-installation procedures

3.4.1 Configure Tivoli Decision Support for OS/390 to get availability data

To collect MVS availability data for Webshpere into Tivoli Decision Support for OS/390, you must configure the MVS_AVAIL_RESOURCE lookup table. The following can be used as a sample:

MVS_SYSTEM_ID	SUBSYSTEM_ID	JOB_NAME	RESOURCE_TYPE	RESOURCE_NAME
%	%	%	OTHER	OTHER
S1E	STC	WAS%	SUBSYS	WAS
S1E	WAS	%	SUBSYS	WAS

Where:

- MVS_SYSTEM_ID: Name of your MVS system (% can be used as a wildcard).

- SUBSYSTEM_ID: Subsystem type or name (% can be used as a wildcard) as defined in SYS1.PARMLIB (IEAICSxx) member. For subsystems not explicitly defined in this member, the STC type is used, leaving the details in the JOB_NAME column.

- JOB_NAME: Name of the job for which you would measure availability (% can be used as a wildcard).

- RESOURCE_TYPE: In this field you must specify "SUBSYS" for the MVS resources for which you want to collect availability data.

- RESOURCE_NAME: The name used as a component name in Tivoli Data Warehouse for MVS data. For correlation purposes with other measurements, ensure that this name is a subsystem identifier.

Note: to have availability data for the WebSphere MVS Subsystem loaded into the central data warehouse you must specify a RESOURCE_NAME in the MVS_AVAIL_RESOURCE table that refer to the subsystem names of your MVS Subsystem.

3.5 Installation of the warehouse pack

To install this warehouse pack, perform the following steps:

1. Make sure that Tivoli Decision Support for OS/390 is installed and the data source is available.

2. Make sure that all prerequisite product patches are applied.

3. Make sure that Tivoli Data Warehouse is installed. For instructions about installing Tivoli Data Warehouse, refer to *Installing and Configuring Tivoli Data Warehouse.*

4. Record the following information that will be used during the installation:

ODBC source	User ID	Password	Database type	Database alias
TDS390	Your DB2 UDB for z/OS and OS/390 User ID	Your DB2 UDB for z/OS and OS/390 Password	DB2 UDB for z/OS and OS/390	The ODBC data source used for central data warehouse (for example,TCDW1)

5. Install the warehouse pack as described in *Installing and Configuring Tivoli Data Warehouse*, using the installation properties file (twh_install_props.cfg file): located in the tdw_weps\d12\v1200 directory.

6. If you want to run multiple warehouse packs on OS/390 select "Do not schedule the data extraction, transformation and loading", when the ETL configuration window is displayed. In this way you are able to manually schedule ETLs in sequence as explained in the following *Post-installation procedures* section.

7. Perform the post-installation steps described in *Post-installation procedures*.

3.6 Post-installation procedures

Complete the following post-installation procedures.

3.6.1 How to change the default schema name of Tivoli Decision Support for OS/390

Before running any ETL process, if this is the first Tivoli Decision Support for OS/390 warehouse pack that you are installing and you have installed Tivoli Decision Support for OS/390 using a schema (Tivoli Decision Support for OS/390 table prefix) name different from DRL (which is the default name), you must customize the db2os390.translate file, as described in *Installing and Configuring Tivoli Data Warehouse*. For instance, if your schema name is DRL*xxx*, you must change the following:

__TDS390_SCHEMA   DRL

into:

__TDS390_SCHEMA   DRL*xxx*

3.6.2 How to schedule ETL processes

If you are installing this warehouse pack as the only OS/390 warehouse pack, you can schedule it using the ETL configuration window during the installation steps. On the contrary, if you are installing multiple OS/390 warehouse packs, you must ensure that their ETLs must be run in sequence. During the installation process, you selected "Do not schedule data extraction, transformation and loading". Now you must create shortcuts in the Data Warehouse Interface to link the ETL processes in sequence. With shortcuts you specify only the first ETL process runs. All the other processes run automatically because they are linked to that process. For details see "Scheduling warehouse pack ETL processes" in *Installing and Configuring Tivoli Data Warehouse* manual.

3.7 Migration from a previous release of the warehouse pack

This warehouse pack has no migration from previous release.

3.8 Uninstallation of the warehouse pack

To uninstall the warehouse pack on your computer select **Start > Programs> Tivoli Data Warehouse> Uninstall a Warehouse Pack**. For further information see *Installing and Configuring Tivoli Data Warehouse*, *"Uninstalling warehouse packs"* chapter. Before uninstalling the warehouse pack, you can delete the related data from the central data warehouse by running a specific SQL script. A sample of it can be found in the twh\apps\d12\v1200\misc directory, the name is d12_data_delete.sql. The sample deletes both the static data and the instances loaded in the central data warehouse by this warehouse pack. Before running this script make sure you do not need those data anymore and make sure you are connected to the central data warehouse Database on host.

To uninstall the warehouse pack using this script you must open a DB2 Command Window and enter the following command from the twh\apps\d12\v1200\misc directory:

db2 –z <your logfile name> -tvf d12_data_delete.sql

3.9 Multiple data centers

After you install the warehouse pack, you can configure Tivoli Data Warehouse to separate data for multiple data centers. To set this up, you must create SQL scripts with the following values:

Information for scripts	Value or location
Field in source data	MVS System ID
Name of lookup table	D12.Centr_lookup table
Name of center list	TWG.Centr

For the procedural instructions and example of SQL statements, see the information about warehouse pack installation in the *Installing and Configuring Tivoli Data Warehouse* guide.

After the configuration for multiple data centers, you must modify the tables when data centers are added and removed.

3.10 Multiple customer environments

After you install the warehouse pack, you can configure Tivoli Data Warehouse to separate data for the multiple customer environments. To set this up, you must create SQL scripts with the following values:

Information for scripts	Value or location
Field in source data	MVS System ID
Name of lookup table	D12.Cust_lookup table
Name of customer list	TWG.Cust

For the procedural instructions and example of SQL statements, see the information about warehouse pack installation in the *Installing and Configuring Tivoli Data Warehouse* guide.

After your configuration of the multiple customer environments, you must modify the tables when customers are added and removed.

4 Maintenance and problem determination

This section describes maintenance tasks for the warehouse pack.

4.1 Backing up and restoring

Together with the procedures describing maintenance tasks in *Installing and Configuring Tivoli Data Warehouse,* it is recommended that you back up your data on a regular basis. Ensure you have sufficient backup to restore as much event data as you need to store in the central data warehouse.

For further information refer to backing up and restoring in *Installing and Configuring Tivoli Data Warehouse.*

4.2 Deleting data in the central data warehouse

To manage the high volume of measurement data, use the Prune_Msmt_Control table where the deletion criteria are specified. The Prune_Msmt_Log table keeps a history of all data deletion activity.

By default any data older than the deletion criteria specified in the Prune_Msmt_Control table is deleted when the CDW_c05_Prune_and_Mark_Active process runs. This process is within the CDW_Tivoli_Data_Warehouse_v1.2.0_Subject_Area. By default, this process runs daily at 6:00 a.m.

4.2.1 Deleting measurement data (table Prune_Msmt_Control)

This table provides the deletion criteria for the data in the Msmt table

MSrc_Cd CHAR (6)	Tmsum_Cd CHAR (1)	PMsmtC_Age_In_Days DECIMAL(8,0)
D12	H	100
D12	D	300
D12	W	10000
D12	M	10000

Note: PMsmtC_Age_In_Days column contains the "Prune Measurement Control Age in Days". This is the age at which measurements are deleted (day duration *yyyymmdd*).

4.3 Maintenance of customized environments

For successful Tivoli Data Warehouse maintenance do not change the Tivoli Data Warehouse ETLs, but rather create new ETLs in another subdirectory of the apps directory. At the same time define your process in the Data Warehouse Center. Tivoli Data Warehouse provides standard maintenance of its subdirectories and processes, if not modified. Refer to *Enabling an Application* for details on how to create your ETLs.

4.4 Problem determination

For common problems and solutions, see the *Installing and Configuring Tivoli Data Warehouse* guide.

5 ETL process

The warehouse pack has the following process:

- D12_c05_WAS _Process

5.1 D12_c05_WAS_Process

This process is used to load component and measurement tables from source data into the central data warehouse database.

The process has the following steps:

- D12_c05_s010_processWAS

This step populates the component table (Comp table), the component attribute table (CompAttr table) and the component relationship table (CompReln table).

- D12_c05_s020_processWAS

This step populates the measurement table (Msmt table).

6 Central Data Warehouse information

Before reading this section, read about the generic schema for the central data warehouse, which is described in *Enabling an Application for Tivoli Data Warehouse*. That document defines the content of each table and explains the relationships between the tables in this document.

This section provides an example of how information is stored in Tivoli Data Warehouse. The data values shown in the following tables come from a generic installation.

Shaded columns in the following tables are translated. These columns are also marked with an asterisk (*) after the column name.

6.1 Component configuration

The following sections describe the component configuration.

6.1.1 Component type (table CompTyp)

CompTyp_Cd CHAR (17)	CompTyp_Parent_Cd CHAR (17)	CompTyp_Nm * VARCHAR (120)	CompTyp_Strt_DtTm TIMESTAMP	CompTyp_End _DtTm TIMESTAMP	MSrc_Corr_Cd CHAR (6)
SYSPLEX		Sysplex	2002-01-01-00.00.00.000000	9999-01-01-00.00.00.000000	MODEL1
MVS_SYSTEM		MVS System	2002-01-01-00.00.00.000000	9999-01-01-00.00.00.000000	MODEL1
MVS_SUBSYSTEM		MVS Subsystem	2002-01-01-00.00.00.000000	9999-01-01-00.00.00.000000	MODEL1
D12_APPSERV		WebSphere Application Server z/OS	2002-01-01-00.00.00.000000	9999-01-01-00.00.00.000000	D12
D12_APPSERV_INST		WebSphere Application Server Instance z/OS	2002-01-01-00.00.00.000000	9999-01-01-00.00.00.000000	D12
D12_WEB_APPL		WebSphere Web Application	2002-01-01-00.00.00.000000	9999-01-01-00.00.00.000000	D12
D12_SERVLET		WebSphere Servlet	2002-01-01-00.00.00.000000	9999-01-01-00.00.00.000000	D12
D12_EJB_CONTAIN		WebSphere Enterprise JavaBean Container	2002-01-01-00.00.00.000000	9999-01-01-00.00.00.000000	D12
D12_WEB_CONTAIN		WebSphere WEB Container	2002-01-01-00.00.00.000000	9999-01-01-00.00.00.000000	D12
D12_EJB		WebSphere Enterprise JavaBean	2002-01-01-00.00.00.000000	9999-01-01-00.00.00.000000	D12
*This column is translated.					

6.1.2 Component extension (table Comp_ext)

This table is not used by this warehouse pack.

6.1.3 Component (table Comp)

Comp_ID INTEGER	CompTyp_Cd CHAR (17)	Centr_Cd CHAR (6)	Cust_ID INTEGER	Comp_Corr_ID INTEGER	Comp_Nm VARCHAR (254)	Comp_Corr_Val VARCHAR (254)	Comp_Strt_DtTm TIMESTAMP	Comp_End_DtTm TIMESTAMP	Comp_Ds VARCHAR (254)	MSrc_Corr_Cd CHAR (6)
1	SYSPLEX	CDW	1	0	UTCPLXBS		2002-01-01-00.00.00.000000	9999-01-01-00.00.00.000000		SHARED
2	MVS_SYSTEM	CDW	1	0	S1E		2002-01-01-00.00.00.000000	9999-01-01-00.00.00.000000		SHARED
3	MVS_SUBSYSTEM	CDW	1	0	WAS		2002-01-01-00.00.00.000000	9999-01-01-00.00.00.000000		SHARED
4	D12_APPSERV_INST	CDW	1	0	IBWJSR2A		2002-01-01-00.00.00.000000	9999-01-01-00.00.00.000000		D12
5	D12_WEB_APPL	CDW	1	0	ERWWPriceChangeHTTPSession_26		2002-01-01-00.00.00.000000	9999-01-01-00.00.00.000000		D12
6	D12_SERVLET	CDW	1	0	FormLogin Servlet		2002-01-01-00.00.00.000000	9999-01-01-00.00.00.000000		D12
7	D12_EJB_CONTAIN	CDW	1	0	Default		2002-01-01-00.00.00.000000	9999-01-01-00.00.00.000000		D12
8	D12_EJB	CDW	1	0	ERWW::DeliverySessionJava.jar::DeliverySession		2002-01-01-00.00.00.000000	9999-01-01-00.00.00.000000		D12
9	D12_WEB_CONTAIN	CDW	1	0	$UNKNOWN		2002-01-01-00.00.00.000000	9999-01-01-00.00.00.000000		D12
10	D12_APPSERV	CDW	1	0	Server1		2002-01-01-00.00.00.000000	9999-01-01-00.00.00.000000		D12

Note 1: The Comp_Corr_Val column is used to correlate the component instance to its parents. In the above Comp table sample this column was left empty for better readability. However in a real case, for this warehouse pack, it is built using the following structure:

```
 CompType_Cd              Component instance            Comp_Corr_Val
SYSPLEX                   sysplex_name                  ----
MVS_SYSTEM                mvs_system_id                 "LCONT_SYSPLEX - sysplex_name"
MVS_SUBSYSTEM             subsystem_id                  "LCONT_SYSPLEX - sysplex_name - MVS  - mvs_system_id"
D12_APPSERV               was_appserv                   "LCONT_SYSPLEX - sysplex_name"
D12_APPSERV_INST          was_appserv_inst              "LCONT_SYSPLEX - sysplex_name - MVS - mvs_system_id
                                                        - APPSERV - was_appserv"
D12_WEB_CONTAIN           web_container                 "LCONT_SYSPLEX - sysplex_name - MVS - mvs_system_id
                                                        - APPSERV - was_appserv - APPL_SERVER_INST - was_appserv_inst
D12_WEB_APPL              web_appl_name                 "LCONT_SYSPLEX - sysplex_name - MVS - mvs_system_id
                                                        - APPSERV - was_appserv - APPL_SERVER_INST - was_appserv_inst
                                                        - WEB_CONTAIN - web_container"
D12_SERVLET               servlet_id                    "LCONT_SYSPLEX - sysplex_name - MVS - mvs_system_id
                                                        - APPSERV - was_appserv - APPL_SERVER_INST - was_appserv_inst
                                                        - WEB_CONTAIN - web_container  - WEB_APPL - web_appl_name"
D12_EJB_CONTAIN           ejb_container                 "LCONT_SYSPLEX - sysplex_name - MVS - mvs_system_id
```

		- APPSERV - *was_appserv* - APPL_SERVER_INST - *was_appserv_inst*
D12_EJB	*ejb_id*	"LCONT_SYSPLEX - *sysplex_name* - MVS - *mvs_system_id*
		- APPSERV - *was_appserv* - APPL_SERVER_INST - *was_appserv_inst*
		- EJB_CONTAIN - *ejb_container*"

Note 2: The Component Name (Comp_Nm column), for components of type MVS_SYSTEM, contains the MVS System Identifier (SID) as specified in the SMFPRM00 member in the SYS1.PARMLIB. The SID is to 4 characters long.

Note that an alternative MVS identifier is the SYSNAME which is 1-8 characters long and could also be used in the future.

6.1.4 Component relationship type (table RelnTyp)

RelnTyp_Cd CHAR (6)	RelnTyp_Nm * VARCHAR (120)	MSrc_Corr_Cd CHAR (6)
PCHILD	Parent Child Relation	MODEL1
LCONT	Logical Containment Relation	MODEL1
*This column is translated.		

6.1.5 Component relationship rule (table RelnRul)

CompTyp_Source_Cd CHAR (17)	CompTyp_Target_Cd CHAR (17)	RelnTyp_Cd CHAR (6)	RelnRul_Strt_DtTm TIMESTAMP	RelnRul_End_DtTm TIMESTAMP
SYSPLEX	D12_APPSERV	PCHILD	2002-01-01-00.00.00.000000	9999-01-01-00.00.00.000000
D12_APPSERV	D12_APPSERV_INST	PCHILD	2002-01-01-00.00.00.000000	9999-01-01-00.00.00.000000
D12_APPSERV_INST	D12_WEB_CONTAIN	PCHILD	2002-01-01-00.00.00.000000	9999-01-01-00.00.00.000000
D12_APPSERV_INST	D12_EJB_CONTAIN	PCHILD	2002-01-01-00.00.00.000000	9999-01-01-00.00.00.000000
D12_WEB_CONTAIN	D12_WEB_APPL	PCHILD	2002-01-01-00.00.00.000000	9999-01-01-00.00.00.000000
D12_EJB_CONTAIN	D12_EJB	PCHILD	2002-01-01-00.00.00.000000	9999-01-01-00.00.00.000000
D12_WEB_APPL	D12_SERVLET	PCHILD	2002-01-01-00.00.00.000000	9999-01-01-00.00.00.000000
MVS_SYSTEM	SYSPLEX	LCONT	2002-01-01-00.00.00.000000	9999-01-01-00.00.00.000000
MVS_SYSTEM	MVS_SUBSYSTEM	PCHILD	2002-01-01-00.00.00.000000	9999-01-01-00.00.00.000000
D12_APPSERV_INST	MVS_SYSTEM	LCONT	2002-01-01-00.00.00.000000	9999-01-01-00.00.00.000000

6.1.6 Component relationship (table CompReln)

CompReln_ID INTEGER	Comp_Source _ID INTEGER	Comp_Target_I D INTEGER	RelnTyp_Cd CHAR (6)	CompReln_Strt_Dt Tm TIMESTAMP	CompReln_End_D tTm TIMESTAMP	MSrc_Corr _Cd CHAR (6)
1	2	1	LCONT	2002-01-01-00.00.00.000000	9999-01-01-00.00.00.000000	SHARED
2	2	3	PCHILD	2002-01-01-00.00.00.000000	9999-01-01-00.00.00.000000	SHARED
3	4	2	LCONT	2002-01-01-00.00.00.000000	9999-01-01-00.00.00.000000	D12
4	4	9	PCHILD	2002-01-01-00.00.00.000000	9999-01-01-00.00.00.000000	D12
5	4	7	PCHILD	2002-01-01-00.00.00.000000	9999-01-01-00.00.00.000000	D12
6	7	8	PCHILD	2002-01-01-00.00.00.000000	9999-01-01-00.00.00.000000	D12
7	5	6	PCHILD	2002-01-01-00.00.00.000000	9999-01-01-00.00.00.000000	D12
8	1	10	PCHILD	2002-01-01-00.00.00.000000	9999-01-01-00.00.00.000000	D12
9	10	4	PCHILD	2002-01-01-00.00.00.000000	9999-01-01-00.00.00.000000	D12
10	9	5	PCHILD	2002-01-01-00.00.00.000000	9999-01-01-00.00.00.000000	D12

6.1.7 Component type keyword (table CompTyp_Keyword)

This table is not used by this warehouse pack.

6.1.8 Attribute type (table AttrTyp)

AttrTyp_Cd CHAR (17)	AttrTyp_Nm * VARCHAR (120)	MSrc_Corr_Cd CHAR (6)
MVS_SUBSYS_TYPE	MVS Subsystem Type	MODEL1
D12_SV_INST_TYPE	WebSphere Server Instance Type	D12
D12_EJB_TYPE	WebSphere Enterprise JavaBean Type	D12
D12_EJB_POLICY	WebSphere Enterprise JavaBean Policy	D12
* This column is translated.		

6.1.9 Attribute rule (table AttrRul)

CompTyp_Cd CHAR (17)	AttrTyp_Cd CHAR (17)	AttrRul_Strt_DtT m TIMESTAMP	AttrRul_End_DtT m TIMESTAMP	AttrTyp_Multi_ Val CHAR (1)	AttrRul_Dom_Ind CHAR (1)
MVS_SUBSYSTEM	MVS_SUBSYS_TY PE	2002-01-01-00.00.00.000000	9999-01-01-00.00.00.000000	N	N
D12_APPSERV_INST	D12_SV_INST_TYP E	2002-01-01-00.00.00.000000	9999-01-01-00.00.00.000000	N	N
D12_EJB	D12_EJB_TYPE	2002-01-01-00.00.00.000000	9999-01-01-00.00.00.000000	N	N
D12_EJB	D12_EJB_POLICY	2002-01-01-00.00.00.000000	9999-01-01-00.00.00.000000	N	N

6.1.10 Attribute domain (table AttrDom)

This table is not used by this warehouse pack.

6.1.11 Component attribute (table CompAttr)

CompAttr_ID INTEGER	Comp_ID INTEGER	AttrTyp_Cd CHAR (17)	CompAttr_Strt_DtTm TIMESTAMP	CompAttr_End_DtTm TIMESTAMP	CompAttr_Val VARCHAR (254)	MSrc_Corr_Cd CHAR (6)
1	3	MVS_SUBSYS_TYPE	2002-01-01-00.00.00.000000	9999-01-01-00.00.00.000000	WAS	SHARED
2	4	D12_SV_INST_TYPE	2002-01-01-00.00.00.000000	9999-01-01-00.00.00.000000	J2EE	D12
3	8	D12_EJB_TYPE	2002-01-01-00.00.00.000000	9999-01-01-00.00.00.000000	Stateful session	D12
4	8	D12_EJB_POLICY	2002-01-01-00.00.00.000000	9999-01-01-00.00.00.000000	TX_BEAN_MANAGED	D12

Note: The following CompAttr_Vals can be found for each Attrtyp_Cd:

- D12_SV_INST_TYP: 'MOFW', 'J2EE'
- D12_EJB_TYPE: 'CMP entity', 'BMP entity', 'Stateless session', 'Stateful session'
- D12_EJB_POLICY: 'TX_NOT_SUPPORTED','TX_BEAN_MANAGED',

                                                  'TX_NOT_SUPPORTED','TX_BEAN_MANAGED','TX_REQUIRED', 'TX_SUPPORTS','TX_REQUIRES_NEW', 'TX_MANDATORY','TX_NEVER'

6.1.12 Component type relationship (table CTypReln)

This table is not used by this warehouse pack.

6.1.13 Component attribute type relationship (table ATypReln)

This table is not used by this warehouse pack.

6.2 Component measurement

The following sections describe the component measurement.

6.2.1 Measurement group type (table MGrpTyp)

MGrpTyp_Cd CHAR (6)	MGrpTyp_Nm * VARCHAR (120)
CATEG	Category
GROUP	Aggregate Types or Group Functions
TRANS	State Transition Groups
* This column is translated.	

6.2.2 Measurement group (table MGrp)

MGrp_Cd CHAR (6)	MGrpTyp_Cd CHAR (6)	MGrp_Parent_Cd CHAR (6)	MGrp_Nm * VARCHAR (120)
PERF	CATEG		Performance
UTIL	CATEG		Utilization
AVG_E	GROUP		Average Value Exists
MIN_E	GROUP		Minimum Value Exists
MAX_E	GROUP		Maximum Value Exists
TOT_E	GROUP		Total Value Exists
DRLWA1	TRANS		WebSphere Subsystem State Transition Measurements
* This column is translated.			

6.2.3 Measurement group member (table MGrpMbr)

MGrp_Cd CHAR (6)	MGrpTyp_Cd CHAR (6)	MsmtTyp_ID INTEGER
UTIL	CATEG	1,2,7-10,17,18
PERF	CATEG	3-6,11-13
DRLWA1	TRANS	14-16
AVG_E	GROUP	4,6,8,12,13
MIN_E	GROUP	4,6,8,12
MAX_E	GROUP	4,6,8,12,13
TOT_E	GROUP	1-3,5,7,9-11,14-18

6.2.4 Measurement unit category (table MUnitCat)

MunitCat_Cd CHAR (6)	MunitCat_Nm * VARCHAR (120)
TM	Time Duration
QTY	Quantity
RT	Rate
* This column is translated.	

6.2.5 Measurement unit (table MUnit)

MUnit_Cd CHAR (6)	MUnitCat_Cd CHAR (6)	Munit_Nm * VARCHAR (120)
QTY	QTY	Quantity
Sec	TM	Seconds
Min	TM	Minutes
Rps	RT	Requests per Second
* This column is translated.		

6.2.6 Measurement alias names (table MTypReln)

This table is not used by this warehouse pack.

6.2.7 Time summary (table TmSum)

The period over which a measurement may be summarized.

TmSum_Cd CHAR (1)	TmSum_Nm * VARCHAR (120)
H	Hourly
P	Point
* This column is translated.	

6.2.8 Measurement source (table MSrc)

MSrc_Cd CHAR (6)	MSrc_Parent_Cd CHAR (6)	MSrc_Nm VARCHAR (120)
SHARED		Shared
MODEL1		Tivoli Common Data Model V1
Tivoli		Tivoli Application
DRL	Tivoli	Tivoli Decision Support for OS/390
D12	DRL	Tivoli Decision Support for OS/390 (WebSphere component)

6.2.9 Measurement source history (table MSrcHistory)

This table is not used by this warehouse pack.

6.2.10 Measurement type (table MsmtTyp)

MsmtTyp_ID INTEGER	MUnit_Cd CHAR (6)	MSrc_Cd CHAR (6)	MsmtTyp_Nm * VARCHAR (120)	MsmtTyp_Ds * VARCHAR (254)
1	QTY	MODEL1	Number of Bytes Received	Number of bytes received from the server
2	QTY	MODEL1	Number of Bytes Sent	Number of bytes sent from the server
3	QTY	D12	WebSphere Servlet Requests	Number of requests handled by the servlet instance
4	Rps	D12	WebSphere Concurrent Servlet Requests	Number of requests per second handled by the servlet instance
5	QTY	D12	WebSphere Servlet Errors	Number of errors associated with the servlet instance
6	Sec	D12	WebSphere Servlet Response Time	Indicates the time spent performing services by the servlet instance
7	QTY	D12	WebSphere HTTP Sessions Created	Number of HTTP sessions created
8	Rps	D12	WebSphere HTTP Concurrent Sessions Created	Number of HTTP sessions created per second
9	QTY	D12	WebSphere EJB Entities Created	Number of entity bean objects created by the server
10	QTY	D12	WebSphere EJB Entities Removed	Number of entity bean objects removed by the server
11	QTY	D12	WebSphere EJB Requests	The total number of times the methods were invoked
12	Rps	D12	WebSphere Concurrent EJB Requests	Number of invocations of the methods per second
13	Sec	D12	WebSphere EJB Response Time	Indicates the time spent performing services by the EJB instance
14	Min	MODEL1	Available	The amount of time that the resource is available
15	Min	MODEL1	Unavailable	The amount of time that the resource is unavailable
16	Min	MODEL1	Unknown	The amount of time that the state of the resource is unknown
17	QTY	D12	WebSphere Starts	Total number of WebSphere Subsystem starts
18	QTY	D12	WebSphere Stops	Total number of WebSphere Subsystem stops

*This column is translated.

6.2.11 Component measurement rule (table MsmtRul)

CompTyp_Cd CHAR (17)	MsmtTyp_ID INTEGER
MVS_SUBSYSTEM	14-18
D12_APPSERV_INST	1,2,7,8
D12_SERVLET	3-6
D12_EJB_CONTAIN	9,10
D12_EJB	11-13

6.2.12 Measurement (table Msmt)

Msmt_ID BIGINT	Comp_ID INTEGER	Msmt_Typ_ID INTEGER	TmSum_Cd CHAR(1)	Msmt_Strt_Dt DATE	Msmt_Strt_Tm TIME	Msmt_Min_Val FLOAT	Msmt_Max_Val FLOAT	Msmt_Avg_Val FLOAT	Msmt_Tot_Val FLOAT	Msmt_Smpl_Cnt INTEGER	Msmt_Err_Cnt INTEGER	Msmt_stddev_Val DOUBLE	MSrc_Corr_Cd CHAR(6)
1	6	6	H	2002-12-18	13.00.00	+0.438885585 1033565E-01	+0.438885585 1033565E-01	+0.438 885585 103356 5E-01					D12
2	6	4	H	2002-12-18	13.00.00	+0.55277 36166808 098E-01	+0.55277 36166808 098E-01	+0.552 773616 680809 8E-01					D12
3	8	11	H	2002-12-18	13.00.00				5.0000 E+02				D12
. . .													

6.2.13 Threshold measurement objective (table Mobj)

This table is not used by this warehouse pack.

6.2.14 Threshold measurement objective range (table MobjRng)

This table is not used by this warehouse pack.

6.2.15 Threshold severity level (table SevLvl)

This table is not used by this warehouse pack.

6.3 Component events

There are no component events for this warehouse pack

6.4 Helper tables

These tables are not used by this warehouse pack.

6.5 Exception tables

These tables are not used by this warehouse pack.

6.6 Incremental extraction

Data extraction into Tivoli Data Warehouse is done in an incremental way.

New data from the source database is loaded into the data warehouse by checking that the existing measurements for a component are older than the new available ones.

The following columns d12.stage_cntl table store this information:

- cntl_comp_id (INTEGER)
- cntl_dttm (TIMESTAMP)

When loading measurements, this control table checks each comp_id, and accepts only those with a newer timestamp.

After successful loading of the measurement data, this control table is updated with the last timestamp present in the twg.msmt table for each comp_id.

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