IBM Tivoli Monitoring for Operating Systems Warehouse Enablement Pack Implementation Guide

Version 1.1.0

Edition notice

First Edition

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Contents

1 About this document

This document describes the Tivoli Enterprise^{TM} Data Warehouse warehouse enablement pack for IBM® Tivoli® Monitoring for Operating Systems, Version 5.1.1. It covers the following topics:

- Installing and configuring the warehouse pack.

- The data flow and data structures used by the warehouse pack.

This warehouse pack contains the Tivoli Enterprise Data Warehouse metadata used by the IBM Tivoli Monitoring, Version 5.1.1, warehouse pack (otherwise known as Generic ETL1). This enables the data collected by the Operating System Resource Models, (except TMW_Spp and DMXSpp, which remain only for backward compatibility with the Gathering Historical Data Component and the Tivoli Distributed Monitoring warehouse pack (product code AMW)) to be routed to the endpoints and uploaded into the IBM Tivoli Monitoring Middle Layer Repository by the Tivoli Enterprise Data Warehouse Support 5.1.1 component. This warehouse pack also provides a script that builds a sample star schema for all the metrics grouped under the IBM Tivoli Monitoring Collection for Operating Systems measurement group. This star schema is used to produce some data marts in order to show the web-based reporting capability of Tivoli Enterprise Data Warehouse.

It's important to note that this warehouse pack is a replacement for the Tivoli Distributed Monitoring warehouse pack (product code AMW) and that future enhancements will be made only to this warehouse pack. It is strongly recommended that customers use this warehouse pack instead of using the warehouse pack for Tivoli Distributed Monitoring.

1.1 Related documentation

You can access many Tivoli publications online using the Tivoli Information Center, which is available on the Tivoli Customer Support Web site:

http://www.tivoli.com/support/documents/

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

- Tivoli Enterprise Data Warehouse

- IBM DB2, DB2 Data Warehouse Center, and DB2 Warehouse Manager

The following sections list and briefly describe these libraries.

1.1.1 Tivoli Enterprise Data Warehouse

The following Tivoli Enterprise™ Data Warehouse documents are available on the Tivoli Enterprise Data Warehouse Documentation CD:

- *Tivoli Enterprise Data Warehouse Release Notes*, GI11-0857

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

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

  Describes how Tivoli Enterprise Data Warehouse fits into your enterprise, explains how to plan for its deployment, and gives installation and configuration instructions. It provides an introduction to the built-in program for creating and running reports, and contains maintenance procedures and troubleshooting information.

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

  Provides information about connecting an application to Tivoli Enterprise Data Warehouse. This book is for application programmers who use Tivoli Enterprise Data Warehouse to store and report on their application's data, data warehousing experts who import Tivoli Enterprise Data Warehouse data into business intelligence applications, and customers who use their local data in the warehouse.

1.1.2 IBM DB2, DB2 Data Warehouse Center, and DB2 Warehouse Manager

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. The DB2 library is available on the Tivoli Customer Support Web site. After you install DB2, its library is also available on your system.

The following DB2 documents are particularly relevant for people working with Tivoli Enterprise 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, 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 Data Warehouse Center.

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

    Provides the information 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 a platform-specific DB2 client. Once the DB2 client is installed, you then configure communications for both the client and server, using the DB2 GUI tools or the Command Line Processor. 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 Data Warehouse Center, and describes the actions you should take.

2   Overview

The following sections provide an overview of Tivoli Enterprise Data Warehouse and the IBM Tivoli Monitoring warehouse pack.

2.1   Overview of Tivoli Enterprise Data Warehouse

Tivoli Enterprise 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

• Report interfaces

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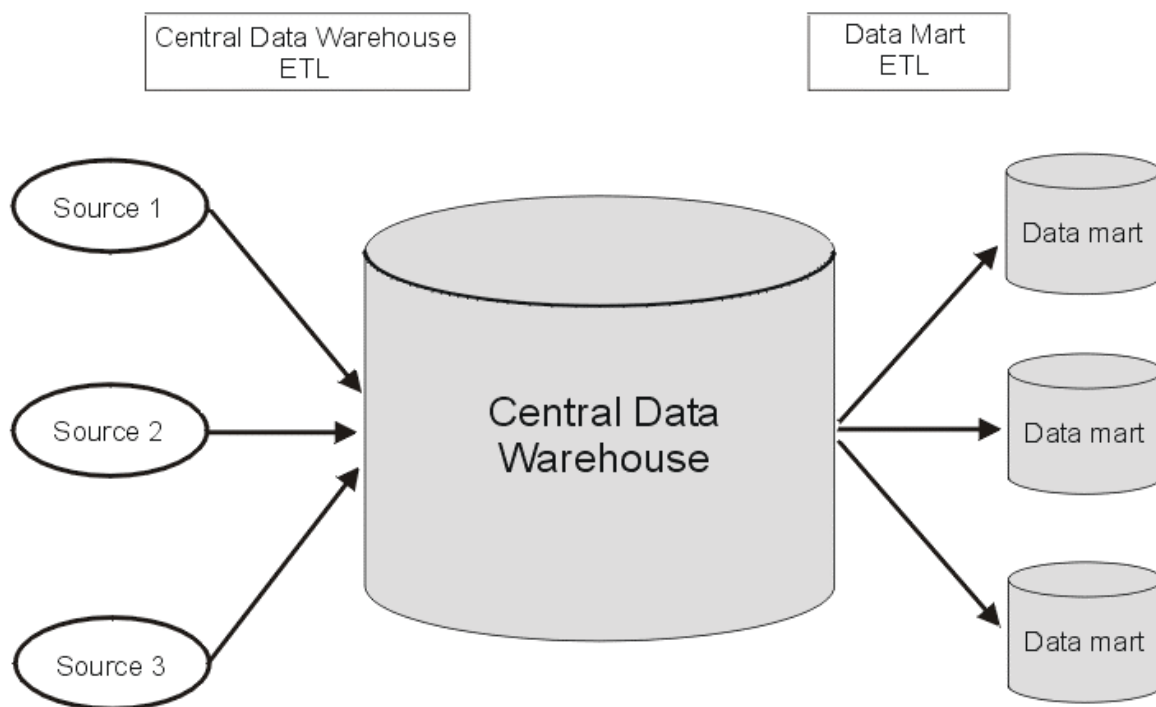
Figure 1. Tivoli Enterprise Data Warehouse overview

The *central data warehouse* uses a generic schema. As new components or new applications are added, more data is added to the database; however, no new tables or columns are added in the schema.

A *data mart* is a subset of a data warehouse that contains data 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 enablement pack*, or *warehouse pack*.

2.2   Overview of IBM Tivoli Monitoring for Operating Systems warehouse pack

The IBM Tivoli Monitoring for Operating Systems warehouse pack provides a set of metadata used by the IBM Tivoli Monitoring, Version 5.1.1 warehouse pack (otherwise known as Generic ETL1) to retrieve data collected by the IBM Tivoli Monitoring 5.1.1 Operating Systems Resource Models.

It also provides hourly, daily, weekly and monthly star schemas for each category defined for the "ITM Monitoring Collection for Operating Systems" Measurement Group. The star schemas are used to build data marts and general-purpose reports, which can be easily extended using the IBM Console.

3 Installing and configuring

3.1 Prerequisites

Before installing the IBM Tivoli Monitoring for Operating Systems warehouse pack (AMY), you must install:

- • The Tivoli Enterprise Data Warehouse Support component 5.1.1, to enable the IBM Tivoli Monitoring infrastructure to collect data for the Tivoli Enterprise Data Warehouse

- • The IBM Tivoli Monitoring, Version 5.1.1 warehouse pack, and all the prerequisite software required by this warehouse pack, as described in the corresponding Implementation Guide

3.2 Supported hardware and software

The IBM Tivoli Monitoring for Operating Systems warehouse pack provides metadata for all the resource models shipped with IBM Tivoli Monitoring, Version 5.1.1.

The IBM Tivoli Monitoring, Version 5.1.1 warehouse pack supports all the databases supported by IBM Tivoli Monitoring, Version 5.1.1, as documented in the *IBM Tivoli Monitoring User's Guide,* Version 5.1.1, as sources of data. However, it supports only IBM DB2, Version 7.2, as a target.

3.3 Limitations

The IBM Tivoli Monitoring for Operating Systems warehouse pack uses the IBM Tivoli Monitoring, Version 5.1.1 warehouse pack (also known as Generic ETL1) to collect data coming from the sample resource models provided with the IBM Tivoli Monitoring 5.1.1 base product.

3.4 Database sizing considerations

Depending on the amount of data that is collected at each run of the central data warehouse ETL, you need an appropriate amount of additional space for the TWH_CDW database. The following tables provide an estimation of the number of records that are inserted into the IBM Tivoli Monitoring database and into the most important tables of the central data warehouse, during one day of logging.

	Windows	
	TMW_Processor	All the Resource Models
Number of Endpoints	100	100
Number of Resources	1	11
Number of Metrics	6	43
Number of records in METRICSDATA	57600	412800
Number of records in TWG.Msmt	14400	103200
Number of records in TWG.Comp	200	1200

	Unix	
	DMXCpu	All the Resource Models
Number of Endpoints	100	100
Number of resources	1	9
Number of metrics	6	38
Number of records in METRICSDATA	57600	364800
Number of records in TWG.Msmt	14400	91200
Number of records in TWG.Comp	200	1000

	OS400	
	BasicCPU400	All the Resource Models
Number of Endpoints	100	100
Number of resources	1	7
Number of metrics	2	19
Number of records in METRICSDATA	19200	182400
Number of records in TWG.Msmt	4800	45600
Number of records in TWG.Comp	200	800

Furthermore, additional space must be provided, because some of the staging tables are purged only when the AMX_RIM_Prune service process is executed. These permanent tables simply reconstitute some of the IBM Tivoli Monitoring Middle Layer Repository tables to recreate the proper relationships between collected measurements. They are no longer required when the service process purges the ITM Middle Layer repository.

3.5 Data sources and targets

The IBM Tivoli Monitoring for Operating Systems Warehouse Enablement pack exploits the IBM Tivoli Monitoring Generic ETL1 (AMX) for the initial data loading from the source database to the Tivoli Enterprise Data Warehouse database; it relies on the following additional warehouse sources and targets for the subsequent ETL2 process, which uploads data from the TWH_CDW database to the TWH_MART database, where the star schemas are defined:

- AMY_TWH_CDW_Source

- AMY_TWH_MART_Source

- AMY_TWH_MART_Target

- AMY_TWH_MD_Target

You must provide the correct logon information for your specific environment using the change user ID and password contextual menu available on the different warehouse sources and targets.

3.6 Pre-installation steps

Before installing the IBM Tivoli Monitoring for Operating Systems warehouse pack, you must install and configure the IBM Tivoli Monitoring, Version 5.1.1 warehouse pack (the Generic ETL1), so that you can use the source and target DSN currently defined in the system.

If you are planning to use a remote TWH_MART database, i.e. the TWH_MART database is located on a remote DB2 node, you must manually define a temporary tablespace that is accessible to the AMY WEP install user.

```
db2 "connect to TWH_MART user <WEP install user> using <password>"
db2 "create user temporary tablespace usertmp3 managed by system using ('usertmp3')"
```

To verify if the new tablespace has been created, try to declare a temporary table in the TWH_MART database, while connected as the AMY Warehouse Enablement Pack install user:

```
db2 "declare global temporary table t1 ( c1 char(1) ) with replace on commit preserve rows not logged"
```

If this test completes successfully, you can proceed with the installation.

3.7 Installation procedure

To install the IBM Tivoli Monitoring for Operating Systems warehouse pack, perform the following steps:

1. Make sure that IBM Tivoli Monitoring warehouse pack is installed and that the ITM_DB data source is available.

2. Make sure that all prerequisite products and patches are applied.

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

4. Perform any pre-installation steps as described in "Pre-installation steps."

5. Install the warehouse pack as described in *Installing and Configuring Tivoli Enterprise Data Warehouse*.

6. Optionally, install language support for the warehouse pack as described in the instructions in *Installing and Configuring Tivoli Enterprise Data Warehouse*.

7. Perform the post-installation steps described in "Post-installation steps."

3.8 Post-installation steps

Check that the data source defined for the warehouse sources and warehouse targets is the same as that defined in the system ODBC data source administration applet. By default the warehouse source uses the TWH_CDW DSN, which points to the Tivoli Enterprise Data Warehouse central data warehouse, while the warehouse target uses the TWH_MART, which points to the Tivoli Enterprise Data Warehouse data mart database.

3.9 Migration from prior levels of Distributed Monitoring and IBM Tivoli Monitoring

This warehouse pack is a replacement for the Tivoli Distributed Monitoring specific ETL (product code AMW). Future enhancements will be made to this warehouse pack and you should use this warehouse pack instead of using the Tivoli Distributed Monitoring warehouse pack.

The Tivoli Distributed Monitoring warehouse pack should only be used if Service Level Agreements (SLAs) from IBM Tivoli Service Level Advisor have been implemented using the data collected by the Tivoli Distributed Monitoring warehouse pack. If active Service Level Agreements are in place, then the Tivoli Distributed Monitoring warehouse pack should be used so that SLA data continues to be collected. Custom reports or data processing might have been built on top of the older data collected by Distributed Monitoring or IBM Tivoli Monitoring.

Anyway, even if you are using the Tivoli Distributed Monitoring specific ETL, you can experiment the new data warehouse support provided by IBM Tivoli Monitoring 5.1.1, because it relies on a completely different database schema and product code, as well as on a non-task based upload process.

4 Maintaining

4.1 Backing up and restoring

This warehouse pack does not add a table to the IBM Tivoli Monitoring Middle Layer repository, so no special precaution is required before running the provided processes. That is, no additional backup of the IBM Tivoli Monitoring Middle Layer repository is required; although a regular backup policy should be implemented for the TEDW databases, as documented in the *Installing and Configuring Tivoli Enterprise Data Warehouse* guide.

4.2 Pruning

With this warehouse pack, the pruning process is implemented directly into the script used to build the fact and dimension tables, according to the values specified in the AMY.PRUNE_MART_CONTROL table.

A maintenance process is provided to delete the sample star schema and reinitialize the TWG.Extract_Control table.

5 ETL processes

Starting from FixPack 5 the two processes *AMY_m05_deleteStarSchema_Process* and *AMY_m10_buildStarSchema_Process*, located under the AMY_*Operating_Systems_PAC_v1.1.0_Subject_Area* subject area, have been removed and the processes *AMY_m15_buildOSStarSchemas_Process* and *AMY_m20_rollupOSData_Process*, introduced under the same subject area since FixPack 3, have been replaced with the process *AMY_m05_ETL2_Process.*

During the installation of the FixPack 5, if FixPack 3 (or 21LA patch) or FixPack 4 for AMY were already installed, all the sample star schema tables created under the AMY schema in the TWH_MART database, are renamed into AMY.X<tablename> to preserve data already loaded using the removed *AMY_m10_buildStarSchema_Process* and *AMY_m15_buildOSStarSchemas_Process* processes.

After the installation of the FixPack 5, the new process *AMY_m05_ETL2_Process* can be executed to reload data into the new fact and dimension tables, always created under the AMY schema in the TWH_MART database.

Since the extraction of measurement data is based on the prune parameter, which by default is settled at 3 months, only the last 3 months of data will be re-extracted, because data older than 3 months is pruned from the mart fact tables. If you want to re-extract more data, you must set accordingly the prune parameter before executing the new processes.

5.1 AMY_m05_ETL2_Process

This process is the first one to be scheduled. It builds a set of multi-dimensional star schemas for each of the components defined by the AMY metadata. This process can be executed once a day: it extracts data from the ITM RIM database and transforms and loads them into the Central Data Warehouse database.

- This process has the following step:
  AMY_m05_s010_mart_prepare_stage

  This step creates staging tables in the TWH_CDW database that combine all the component hierarchy per resource type.

  AMY_m05_s010_mart_pre_extract

  This step drops and creates the staging tables used by the subsequent steps. This activity has been insulated in a separate step, because if a failure occurs, the step can be executed again without data loss.

- **AMY_m05_s020_mart_extract**

  This step populates "translation" dimension tables and stage fact tables. The translation dimension tables are used to track IDs from the original CDW into the target Star Schema, so you can tell where the data actually came from when looking at a Star Schema. Star Schemas re-assign IDs, so that data from various CDW use the same IDs for the same thing.
  Note that the translation dimension tables are "permanent", while the stage fact table is dropped and recreated each time (in the pre-extract step).

- **AMY_m05_s030_mart_load**

  This step loads data from the staging tables into the final Star Schema tables. During this step, the size of the dimension tables is reduced, for optimization purposes, using the translation tables to recycle the dimension IDs.

  For instance, if we measure the memory on 100 endpoints, the component name may always be 'Memory' but they will be attached to 100 different endpoints. The D_HOST dimension table will contain 100 machines and the D_MEMORY table will also contain 100 rows with the same 'Memory' name. Because the fact table links the D_HOST and the D_MEMORY table, we can avoid having the component 'Memory' repeated 100 times using translation tables to recycle the ID.

- **AMY_m05_s040_mart_rollup**

This step rollups hourly aggregated data into the daily, weekly and monthly fact tables, using the AMX_rollup.sh script provided by the AMX Warehouse Enablement Pack.

- **AMY_m05_s050_mart_prune**

This step prunes old data from the fact tables, according to the value specified into the PMartC_Duration field of the AMY.PRUNE_MART_CONTROL table at the TWH_MART database. The default value is 3 month and is defined using the DB2 date duration format: the amount of data to be pruned is based on the format 'yyyymmdd', so an entry of 300 indicates 3 months of data to be pruned.

5.2 AMY_m10_Reset_ETL2_Process

This Process is used only for maintenance purpose; it purges all the records from the sample star schemas and resets the extract functions in the TWG.Extract_Control table, so that the ETL2 process can be executed again, reloading all the data from the CDW database. After executing this process, all the data previously loaded into the dimension and fact tables is erased, so use it very carefully and only after taking a full backup of the TWH_MART database.

6 Generic schema implementation

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

Shaded columns in the following tables are translated. Translated columns are also indicated by an asterisk (*) following the column name in the table heading.

6.1 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
AMY_CPU	NULL	System Processor	9/22/2003 3:07:24 AM	1/1/9999 12:00:00 PM
AMY_FILE	NULL	File	9/22/2003 3:07:24 AM	1/1/9999 12:00:00 PM
AMY_FS	NULL	File System	9/22/2003 3:07:24 AM	1/1/9999 12:00:00 PM
AMY_HOST	NULL	Host monitored by ITM	9/22/2003 3:07:24 AM	1/1/9999 12:00:00 PM
AMY_IP	NULL	IP Protocol	9/22/2003 3:07:24 AM	1/1/9999 12:00:00 PM
AMY_LDISK	NULL	Logical Disk	9/22/2003 3:07:24 AM	1/1/9999 12:00:00 PM
AMY_MEMORY	NULL	Memory	9/22/2003 3:07:24 AM	1/1/9999 12:00:00 PM
AMY_NETSEG	NULL	Network Segment	9/22/2003 3:07:24 AM	1/1/9999 12:00:00 PM
AMY_NETWORK	NULL	Network	9/22/2003 3:07:24 AM	1/1/9999 12:00:00 PM
AMY_NFS	NULL	Network File System	9/22/2003 3:07:24 AM	1/1/9999 12:00:00 PM
AMY_OS400ASP	NULL	Auxiliary Storage Pool	9/22/2003 3:07:24 AM	1/1/9999 12:00:00 PM
AMY_OS400BCPU	NULL	Basic Average CPU	9/22/2003 3:07:24 AM	1/1/9999 12:00:00 PM
AMY_OS400DBCPU	NULL	Database CPU	9/22/2003 3:07:24 AM	1/1/9999 12:00:00 PM
AMY_OS400DISK	NULL	System Disk	9/22/2003 3:07:24 AM	1/1/9999 12:00:00 PM
AMY_OS400ICPU	NULL	Basic Interactive CPU	9/22/2003 3:07:24 AM	1/1/9999 12:00:00 PM
AMY_OS400IFCPU	NULL	Interactive Feature CPU	9/22/2003 3:07:24 AM	1/1/9999 12:00:00 PM
AMY_OS400SPOOL	NULL	Storage Pools	9/22/2003 3:07:24 AM	1/1/9999 12:00:00 PM
AMY_PDISK	NULL	Physical Disk	9/22/2003 3:07:24 AM	1/1/9999 12:00:00 PM
AMY_PORT	NULL	Port	9/22/2003 3:07:24 AM	1/1/9999 12:00:00 PM
AMY_PRNQUEUE	NULL	Printer	9/22/2003 3:07:24 AM	1/1/9999 12:00:00 PM
AMY_PROCESS	NULL	Process	9/22/2003 3:07:24 AM	1/1/9999 12:00:00 PM
AMY_REDIR	NULL	Network Redirector	9/22/2003 3:07:24 AM	1/1/9999 12:00:00 PM
AMY_RPC	NULL	Remote Procedure Call	9/22/2003 3:07:24 AM	1/1/9999 12:00:00 PM
AMY_SERVER	NULL	Server	9/22/2003 3:07:24 AM	1/1/9999 12:00:00 PM

AMY_SERVICE	NULL	Service	9/22/2003 3:07:24 AM	1/1/9999 12:00:00 PM
AMY_SYSTEM	NULL	System	9/22/2003 3:21:38 AM	1/1/9999 12:00:00 PM
AMY_TCPIP	NULL	TCPIP Protocol	9/22/2003 3:07:24 AM	1/1/9999 12:00:00 PM
AMY_USER	NULL	User	9/22/2003 3:07:24 AM	1/1/9999 12:00:00 PM

6.1.2   Component (table Comp)

Comp _ID INTEG ER	CompTyp_Cd CHAR (17)	Centr _Cd CHAR (6)	Cus t_ID INT EGE R	Comp _Corr _ID INTEG ER	Comp_Nm VARCHAR (254)	Comp_Corr_Val VARCHAR (254)	Comp_Strt_DtTm TIMESTAMP	Comp_En d_DtTm TIMESTA MP	Comp_Ds VARCHA R (254)
0	IP_HOST	CDW	1	-	cordoba.austin.ibm.com		9/22/2003 3:56:09 AM	1/1/9999	IP HOST
1	IP_HOST	CDW	1	-	madrid.austin.ibm.com		9/22/2003 3:56:09 AM	1/1/9999	IP HOST
2	IP_HOST	CDW	1	-	toledo.austin.ibm.com		9/22/2003 3:56:09 AM	1/1/9999	IP HOST
3	AMY_CPU	CDW	1	1	0	0	9/1/2003 3:00:00 AM	1/1/9999	
4	AMY_CPU	CDW	1	2	0	0	9/1/2003 3:00:00 AM	1/1/9999	
5	AMY_FS	CDW	1	1	/usr	/usr	9/1/2003 3:00:00 AM	1/1/9999	
6	AMY_LDISK	CDW	1	0	C	C	9/1/2003 3:00:00 AM	1/1/9999	
7	AMY_LDISK	CDW	1	2	C	C	9/1/2003 3:00:00 AM	1/1/9999	
8	AMY_MEMORY	CDW	1	0	_total	_total	9/1/2003 3:00:00 AM	1/1/9999	
9	AMY_SYSTEM	CDW	1	1	0	0	9/1/2003 3:00:00 AM	1/1/9999	
10	AMY_SYSTEM	CDW	1	0	System	System	9/1/2003 3:00:00 AM	1/1/9999	
11	AMY_SERVICE	CDW	1	0	Browser	Browser	8/29/2002 4:00:15 AM	1/1/9999	
12	AMY_SERVICE	CDW	1	0	Eventlog	Eventlog	8/29/2002 4:00:16 AM	1/1/9999	
13	AMY_SERVICE	CDW	1	0	Netlogon	Netlogon	8/29/2002 4:00:16 AM	1/1/9999	
14	AMY_SERVICE	CDW	1	0	NtLmSsp	NtLmSsp	8/29/2002 4:00:17 AM	1/1/9999	
15	AMY_SERVICE	CDW	1	0	lanmanserver	lanmanserver	8/29/2002 4:00:17 AM	1/1/9999	
16	AMY_SERVICE	CDW	1	0	lanmanworkstation	lanmanworkstation	8/29/2002 4:00:16 AM	1/1/9999	

6.1.3   Component relationship type (table RelnTyp)

RelnTyp_Cd CHAR(6)	RelnTyp_Nm[*] VARCHAR(120)
PCHILD	Parent Child Relation

6.1.4   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
AMY_HOST	AMY_CPU	PCHILD	9/22/2003 3:07:26 AM	1/1/9999
AMY_HOST	AMY_FILE	PCHILD	9/22/2003 3:07:26 AM	1/1/9999
AMY_HOST	AMY_FS	PCHILD	9/22/2003 3:07:26 AM	1/1/9999
AMY_HOST	AMY_IP	PCHILD	9/22/2003 3:07:26 AM	1/1/9999
AMY_HOST	AMY_LDISK	PCHILD	9/22/2003 3:07:26 AM	1/1/9999
AMY_HOST	AMY_MEMORY	PCHILD	9/22/2003 3:07:26 AM	1/1/9999
AMY_HOST	AMY_NETSEG	PCHILD	9/22/2003 3:07:26 AM	1/1/9999
AMY_HOST	AMY_NETWORK	PCHILD	9/22/2003 3:07:26 AM	1/1/9999
AMY_HOST	AMY_NFS	PCHILD	9/22/2003 3:07:26 AM	1/1/9999
AMY_HOST	AMY_OS400ASP	PCHILD	9/22/2003 3:07:26 AM	1/1/9999
AMY_HOST	AMY_OS400BCPU	PCHILD	9/22/2003 3:07:26 AM	1/1/9999
AMY_HOST	AMY_OS400DBCPU	PCHILD	9/22/2003 3:07:26 AM	1/1/9999
AMY_HOST	AMY_OS400DISK	PCHILD	9/22/2003 3:07:26 AM	1/1/9999
AMY_HOST	AMY_OS400ICPU	PCHILD	9/22/2003 3:07:26 AM	1/1/9999
AMY_HOST	AMY_OS400IFCPU	PCHILD	9/22/2003 3:07:26 AM	1/1/9999
AMY_HOST	AMY_OS400SPOOL	PCHILD	9/22/2003 3:07:26 AM	1/1/9999
AMY_HOST	AMY_PDISK	PCHILD	9/22/2003 3:07:26 AM	1/1/9999
AMY_HOST	AMY_PORT	PCHILD	9/22/2003 3:07:26 AM	1/1/9999
AMY_HOST	AMY_PRNQUEUE	PCHILD	9/22/2003 3:07:26 AM	1/1/9999
AMY_HOST	AMY_PROCESS	PCHILD	9/22/2003 3:07:26 AM	1/1/9999
AMY_HOST	AMY_REDIR	PCHILD	9/22/2003 3:07:26 AM	1/1/9999
AMY_HOST	AMY_RPC	PCHILD	9/22/2003 3:07:26 AM	1/1/9999
AMY_HOST	AMY_SERVER	PCHILD	9/22/2003 3:07:26 AM	1/1/9999
AMY_HOST	AMY_SERVICE	PCHILD	9/22/2003 3:07:26 AM	1/1/9999
AMY_HOST	AMY_SYSTEM	PCHILD	9/22/2003 3:21:41 AM	1/1/9999
AMY_HOST	AMY_TCPIP	PCHILD	9/22/2003 3:07:26 AM	1/1/9999
AMY_HOST	AMY_USER	PCHILD	9/22/2003 3:07:26 AM	1/1/9999
IP_HOST	AMY_CPU	PCHILD	9/22/2003 3:07:26 AM	1/1/9999
IP_HOST	AMY_FILE	PCHILD	9/22/2003 3:07:26 AM	1/1/9999
IP_HOST	AMY_FS	PCHILD	9/22/2003 3:07:26 AM	1/1/9999
IP_HOST	AMY_IP	PCHILD	9/22/2003 3:07:26 AM	1/1/9999

IP_HOST	AMY_LDISK	PCHILD	9/22/2003 3:07:26 AM	1/1/9999
IP_HOST	AMY_MEMORY	PCHILD	9/22/2003 3:07:26 AM	1/1/9999
IP_HOST	AMY_NETSEG	PCHILD	9/22/2003 3:07:26 AM	1/1/9999
IP_HOST	AMY_NETWORK	PCHILD	9/22/2003 3:07:26 AM	1/1/9999
IP_HOST	AMY_NFS	PCHILD	9/22/2003 3:07:26 AM	1/1/9999
IP_HOST	AMY_OS400ASP	PCHILD	9/22/2003 3:07:26 AM	1/1/9999
IP_HOST	AMY_OS400BCPU	PCHILD	9/22/2003 3:07:26 AM	1/1/9999
IP_HOST	AMY_OS400DBCPU	PCHILD	9/22/2003 3:07:26 AM	1/1/9999
IP_HOST	AMY_OS400DISK	PCHILD	9/22/2003 3:07:26 AM	1/1/9999
IP_HOST	AMY_OS400ICPU	PCHILD	9/22/2003 3:07:26 AM	1/1/9999
IP_HOST	AMY_OS400IFCPU	PCHILD	9/22/2003 3:07:26 AM	1/1/9999
IP_HOST	AMY_OS400SPOOL	PCHILD	9/22/2003 3:07:26 AM	1/1/9999
IP_HOST	AMY_PDISK	PCHILD	9/22/2003 3:07:26 AM	1/1/9999
IP_HOST	AMY_PORT	PCHILD	9/22/2003 3:07:26 AM	1/1/9999
IP_HOST	AMY_PRNQUEUE	PCHILD	9/22/2003 3:07:26 AM	1/1/9999
IP_HOST	AMY_PROCESS	PCHILD	9/22/2003 3:07:26 AM	1/1/9999
IP_HOST	AMY_REDIR	PCHILD	9/22/2003 3:07:26 AM	1/1/9999
IP_HOST	AMY_RPC	PCHILD	9/22/2003 3:07:26 AM	1/1/9999
IP_HOST	AMY_SERVER	PCHILD	9/22/2003 3:07:26 AM	1/1/9999
IP_HOST	AMY_SERVICE	PCHILD	9/22/2003 3:07:26 AM	1/1/9999
IP_HOST	AMY_SYSTEM	PCHILD	9/22/2003 3:21:41 AM	1/1/9999
IP_HOST	AMY_TCPIP	PCHILD	9/22/2003 3:07:26 AM	1/1/9999
IP_HOST	AMY_USER	PCHILD	9/22/2003 3:07:26 AM	1/1/9999
IP_INTERFACE	AMY_CPU	PCHILD	9/22/2003 3:21:41 AM	1/1/9999
IP_INTERFACE	AMY_FILE	PCHILD	9/22/2003 3:21:41 AM	1/1/9999
IP_INTERFACE	AMY_IP	PCHILD	9/22/2003 3:21:41 AM	1/1/9999
IP_INTERFACE	AMY_LDISK	PCHILD	9/22/2003 3:21:41 AM	1/1/9999
IP_INTERFACE	AMY_MEMORY	PCHILD	9/22/2003 3:21:41 AM	1/1/9999
IP_INTERFACE	AMY_NETSEG	PCHILD	9/22/2003 3:21:41 AM	1/1/9999
IP_INTERFACE	AMY_NETWORK	PCHILD	9/22/2003 3:21:41 AM	1/1/9999
IP_INTERFACE	AMY_NFS	PCHILD	9/22/2003 3:21:41 AM	1/1/9999
IP_INTERFACE	AMY_OS400ASP	PCHILD	9/22/2003 3:21:41 AM	1/1/9999
IP_INTERFACE	AMY_OS400BCPU	PCHILD	9/22/2003 3:21:41 AM	1/1/9999
IP_INTERFACE	AMY_OS400DBCPU	PCHILD	9/22/2003 3:21:41 AM	1/1/9999
IP_INTERFACE	AMY_OS400DISK	PCHILD	9/22/2003 3:21:41 AM	1/1/9999

IP_INTERFACE	AMY_OS400ICPU	PCHILD	9/22/2003 3:21:41 AM	1/1/9999
IP_INTERFACE	AMY_OS400IFCPU	PCHILD	9/22/2003 3:21:41 AM	1/1/9999
IP_INTERFACE	AMY_OS400SPOOL	PCHILD	9/22/2003 3:21:41 AM	1/1/9999
IP_INTERFACE	AMY_PDISK	PCHILD	9/22/2003 3:21:41 AM	1/1/9999
IP_INTERFACE	AMY_PORT	PCHILD	9/22/2003 3:21:41 AM	1/1/9999
IP_INTERFACE	AMY_PRNQUEUE	PCHILD	9/22/2003 3:21:41 AM	1/1/9999
IP_INTERFACE	AMY_PROCESS	PCHILD	9/22/2003 3:21:41 AM	1/1/9999
IP_INTERFACE	AMY_REDIR	PCHILD	9/22/2003 3:21:41 AM	1/1/9999
IP_INTERFACE	AMY_RPC	PCHILD	9/22/2003 3:21:41 AM	1/1/9999
IP_INTERFACE	AMY_SERVER	PCHILD	9/22/2003 3:21:41 AM	1/1/9999
IP_INTERFACE	AMY_SERVICE	PCHILD	9/22/2003 3:21:41 AM	1/1/9999
IP_INTERFACE	AMY_SYSTEM	PCHILD	9/22/2003 3:21:41 AM	1/1/9999
IP_INTERFACE	AMY_TCPIP	PCHILD	9/22/2003 3:21:41 AM	1/1/9999
IP_INTERFACE	AMY_USER	PCHILD	9/22/2003 3:21:41 AM	1/1/9999

6.1.5   Component relationship (table CompReln)

CompReln_ID INTEGER	Comp_Source_ID INTEGER	Comp_Target_ID INTEGER	RelnTyp_Cd CHAR(6)	CompReln_Strt_DtTm TIMESTAMP	CompReln_End_DtTm TIMESTAMP
1	1	3	PCHILD	9/22/2003 3:56:11 AM	1/1/9999
2	2	4	PCHILD	9/22/2003 3:56:11 AM	1/1/9999
3	1	5	PCHILD	9/22/2003 3:56:15 AM	1/1/9999
4	0	6	PCHILD	9/22/2003 3:56:18 AM	1/1/9999
5	2	7	PCHILD	9/22/2003 3:56:18 AM	1/1/9999
6	0	8	PCHILD	9/22/2003 3:56:19 AM	1/1/9999
7	1	9	PCHILD	9/22/2003 3:56:46 AM	1/1/9999
8	0	10	PCHILD	9/22/2003 3:56:46 AM	1/1/9999
9	0	11	PCHILD	9/2/2002 7:18:37 AM	1/1/9999
10	0	12	PCHILD	9/2/2002 7:18:37 AM	1/1/9999
11	0	13	PCHILD	9/2/2002 7:18:37 AM	1/1/9999
12	0	14	PCHILD	9/2/2002 7:18:37 AM	1/1/9999
13	0	15	PCHILD	9/2/2002 7:18:37 AM	1/1/9999
14	0	16	PCHILD	9/2/2002 7:18:37 AM	1/1/9999

6.1.6 Attribute type (table AttrTyp)

AttrTyp_Cd CHAR(17)	AttrTyp_Nm * VARCHAR(120)
AMX_EID	IBM Tivoli Monitoring Endpoint Identifier
AMX_GMT_OFFSET	IBM Tivoli Monitoring Endpoint GMT Offset
AMY_FGROUP	File group
AMY_FMODE	Type of access permission to the file
AMY_FOWNER	Owner of the file
AMY_PORTSTATE	Port state
AMY_PROCID	Process ID
AMY_PROCNM	Process name
AMY_SERVICESTATE	Service state
AMY_SERVICESTATUS	Service status
AMY_USRID	ID of the suspicious user
AMY_VISPHYSMEMORY	Total amount of visible physical memory available to the operating system
IP_DOMAIN	IP Domain
IP_HOSTNAME	IP Hostname
IP_NET_ADDRESS	IP Network Address
LAST_IP_ADDRESS	Last IP Address
LAST_NAME	Last Name
NAME	Name
OS_NAME	Operating System Name
OS_TYPE	Operating System Type
OWNER	Owner
TME_LABEL	Tivoli Endpoint Label
TME_OBJECT_ID	Tivoli Object ID
TME_POLICY_REGION	Tivoli Endpoint Policy Region
TYPE	Type
VERSION	Version Number

6.1.7 Attribute rule (table AttrRul)

CompTyp_Cd CHAR(17)	AttrTyp_Cd CHAR(17)	AttrRul_Strt_DtTm TIMESTAMP	AttrRul_End_DtTm TIMESTAMP	AttrRul_Dom_Ind CHAR
AMY_FILE	AMY_FGROUP	9/22/2003 3:07:27 AM	1/1/9999 12:00:00 PM	N
AMY_FILE	AMY_FMODE	9/22/2003 3:07:27 AM	1/1/9999 12:00:00 PM	N
AMY_FILE	AMY_FOWNER	9/22/2003 3:07:27 AM	1/1/9999 12:00:00 PM	N
AMY_HOST	AMX_EID	9/22/2003 3:07:27 AM	1/1/9999 12:00:00 PM	N
AMY_HOST	AMX_GMT_OFFSET	9/22/2003 3:07:27 AM	1/1/9999 12:00:00 PM	N
AMY_MEMORY	AMY_VISPHYSMEMORY	9/22/2003 3:21:40 AM	1/1/9999 12:00:00 PM	N
AMY_PORT	AMY_PORTSTATE	9/22/2003 3:07:27 AM	1/1/9999 12:00:00 PM	N
AMY_PROCESS	AMY_PROCID	9/22/2003 3:07:27 AM	1/1/9999 12:00:00 PM	N
AMY_PROCESS	AMY_PROCNM	9/22/2003 3:07:27 AM	1/1/9999 12:00:00 PM	N
AMY_SERVICE	AMY_SERVICESTATE	9/22/2003 3:07:27 AM	1/1/9999 12:00:00 PM	N
AMY_SERVICE	AMY_SERVICESTATUS	9/22/2003 3:07:27 AM	1/1/9999 12:00:00 PM	N
AMY_USER	AMY_USRID	9/22/2003 3:07:27 AM	1/1/9999 12:00:00 PM	N
IP_HOST	CONTACT	7/30/2003 4:55:34 PM	1/1/9999 12:00:00 PM	N
IP_HOST	DESCRIPTION	7/30/2003 4:55:34 PM	1/1/9999 12:00:00 PM	N
IP_HOST	IP_DOMAIN	7/30/2003 4:55:34 PM	1/1/9999 12:00:00 PM	N
IP_HOST	IP_HOSTNAME	7/30/2003 4:55:34 PM	1/1/9999 12:00:00 PM	N
IP_HOST	IP_NET_ADDRESS	9/22/2003 3:21:36 AM	1/1/9999 12:00:00 PM	N
IP_HOST	LAST_IP_ADDRESS	7/30/2003 4:55:34 PM	1/1/9999 12:00:00 PM	N
IP_HOST	MACHINE_MODEL	9/22/2003 3:07:22 AM	1/1/9999 12:00:00 PM	N
IP_HOST	MACHINE_TYPE	7/30/2003 4:55:34 PM	1/1/9999 12:00:00 PM	N
IP_HOST	MAJOR_VERSION	7/30/2003 4:55:34 PM	1/1/9999 12:00:00 PM	N
IP_HOST	MANUFACTURER	7/30/2003 4:55:34 PM	1/1/9999 12:00:00 PM	N
IP_HOST	MINOR_VERSION	7/30/2003 4:55:34 PM	1/1/9999 12:00:00 PM	N
IP_HOST	MODEL	7/30/2003 4:55:34 PM	1/1/9999 12:00:00 PM	N
IP_HOST	NAME	7/30/2003 4:55:34 PM	1/1/9999 12:00:00 PM	N
IP_HOST	OS_NAME	7/30/2003 4:55:34 PM	1/1/9999 12:00:00 PM	N
IP_HOST	OS_TYPE	7/30/2003 4:55:34 PM	1/1/9999 12:00:00 PM	N
IP_HOST	SERIAL_NUMBER	7/30/2003 4:55:34 PM	1/1/9999 12:00:00 PM	N
IP_HOST	SUB_VERSION	7/30/2003 4:55:34 PM	1/1/9999 12:00:00 PM	N
IP_HOST	TME_LABEL	7/30/2003 4:55:34 PM	1/1/9999 12:00:00 PM	N
IP_HOST	TME_OBJECT_ID	7/30/2003 4:55:34 PM	1/1/9999 12:00:00 PM	N
IP_HOST	TYPE	7/30/2003 4:55:34 PM	1/1/9999 12:00:00 PM	N

IP_HOST	URL_PROTOCOL	9/22/2003 3:21:36 AM	1/1/9999 12:00:00 PM	N
IP_HOST	USER_LABEL	9/22/2003 3:21:36 AM	1/1/9999 12:00:00 PM	N
IP_HOST	VERSION	7/30/2003 4:55:34 PM	1/1/9999 12:00:00 PM	N
IP_INTERFACE	CONTACT	7/30/2003 4:55:34 PM	1/1/9999 12:00:00 PM	N
IP_INTERFACE	DESCRIPTION	7/30/2003 4:55:34 PM	1/1/9999 12:00:00 PM	N
IP_INTERFACE	IP_DOMAIN	7/30/2003 4:55:34 PM	1/1/9999 12:00:00 PM	N
IP_INTERFACE	IP_NET_ADDRESS	9/22/2003 3:21:36 AM	1/1/9999 12:00:00 PM	N
IP_INTERFACE	MACHINE_MODEL	9/22/2003 3:07:22 AM	1/1/9999 12:00:00 PM	N
IP_INTERFACE	MACHINE_TYPE	7/30/2003 4:55:34 PM	1/1/9999 12:00:00 PM	N
IP_INTERFACE	MAJOR_VERSION	7/30/2003 4:55:34 PM	1/1/9999 12:00:00 PM	N
IP_INTERFACE	MANUFACTURER	7/30/2003 4:55:34 PM	1/1/9999 12:00:00 PM	N
IP_INTERFACE	MINOR_VERSION	7/30/2003 4:55:34 PM	1/1/9999 12:00:00 PM	N
IP_INTERFACE	MODEL	7/30/2003 4:55:34 PM	1/1/9999 12:00:00 PM	N
IP_INTERFACE	NAME	7/30/2003 4:55:34 PM	1/1/9999 12:00:00 PM	N
IP_INTERFACE	OS_NAME	7/30/2003 4:55:34 PM	1/1/9999 12:00:00 PM	N
IP_INTERFACE	OS_TYPE	7/30/2003 4:55:34 PM	1/1/9999 12:00:00 PM	N
IP_INTERFACE	SERIAL_NUMBER	7/30/2003 4:55:34 PM	1/1/9999 12:00:00 PM	N
IP_INTERFACE	SUB_VERSION	7/30/2003 4:55:34 PM	1/1/9999 12:00:00 PM	N
IP_INTERFACE	TME_LABEL	7/30/2003 4:55:34 PM	1/1/9999 12:00:00 PM	N
IP_INTERFACE	TME_OBJECT_ID	7/30/2003 4:55:34 PM	1/1/9999 12:00:00 PM	N
IP_INTERFACE	TYPE	7/30/2003 4:55:34 PM	1/1/9999 12:00:00 PM	N
IP_INTERFACE	URL_PROTOCOL	9/22/2003 3:21:36 AM	1/1/9999 12:00:00 PM	N
IP_INTERFACE	USER_LABEL	9/22/2003 3:21:36 AM	1/1/9999 12:00:00 PM	N
IP_INTERFACE	VERSION	7/30/2003 4:55:34 PM	1/1/9999 12:00:00 PM	N
TME_ENDPOINT	CONTACT	7/30/2003 4:55:34 PM	1/1/9999 12:00:00 PM	N
TME_ENDPOINT	DESCRIPTION	7/30/2003 4:55:34 PM	1/1/9999 12:00:00 PM	N
TME_ENDPOINT	IP_DOMAIN	7/30/2003 4:55:34 PM	1/1/9999 12:00:00 PM	N
TME_ENDPOINT	IP_HOSTNAME	7/30/2003 4:55:34 PM	1/1/9999 12:00:00 PM	N
TME_ENDPOINT	IP_NET_ADDRESS	9/22/2003 3:21:36 AM	1/1/9999 12:00:00 PM	N
TME_ENDPOINT	MACHINE_MODEL	9/22/2003 3:07:22 AM	1/1/9999 12:00:00 PM	N
TME_ENDPOINT	MACHINE_TYPE	7/30/2003 4:55:34 PM	1/1/9999 12:00:00 PM	N
TME_ENDPOINT	MAJOR_VERSION	7/30/2003 4:55:34 PM	1/1/9999 12:00:00 PM	N
TME_ENDPOINT	MANUFACTURER	7/30/2003 4:55:34 PM	1/1/9999 12:00:00 PM	N
TME_ENDPOINT	MINOR_VERSION	7/30/2003 4:55:34 PM	1/1/9999 12:00:00 PM	N
TME_ENDPOINT	MODEL	7/30/2003 4:55:34 PM	1/1/9999 12:00:00 PM	N

TME_ENDPOINT	NAME	7/30/2003 4:55:34 PM	1/1/9999 12:00:00 PM	N
TME_ENDPOINT	OS_NAME	7/30/2003 4:55:34 PM	1/1/9999 12:00:00 PM	N
TME_ENDPOINT	OS_TYPE	7/30/2003 4:55:34 PM	1/1/9999 12:00:00 PM	N
TME_ENDPOINT	SERIAL_NUMBER	7/30/2003 4:55:34 PM	1/1/9999 12:00:00 PM	N
TME_ENDPOINT	SUB_VERSION	7/30/2003 4:55:34 PM	1/1/9999 12:00:00 PM	N
TME_ENDPOINT	TME_LABEL	7/30/2003 4:55:34 PM	1/1/9999 12:00:00 PM	N
TME_ENDPOINT	TYPE	7/30/2003 4:55:34 PM	1/1/9999 12:00:00 PM	N
TME_ENDPOINT	URL_PROTOCOL	9/22/2003 3:21:36 AM	1/1/9999 12:00:00 PM	N
TME_ENDPOINT	USER_LABEL	9/22/2003 3:21:36 AM	1/1/9999 12:00:00 PM	N
TME_ENDPOINT	VERSION	7/30/2003 4:55:34 PM	1/1/9999 12:00:00 PM	N

6.1.8   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)
1	0	AMX_EID	9/22/2003 3:56:09 AM	1/1/9999	2
2	1	AMX_EID	9/22/2003 3:56:09 AM	1/1/9999	3
3	2	AMX_EID	9/22/2003 3:56:09 AM	1/1/9999	1
4	0	AMX_GMT_OFFSET	9/22/2003 3:56:09 AM	1/1/9999	-300
5	1	AMX_GMT_OFFSET	9/22/2003 3:56:09 AM	1/1/9999	-300
6	2	AMX_GMT_OFFSET	9/22/2003 3:56:09 AM	1/1/9999	-300
7	0	LAST_IP_ADDRESS	9/22/2003 3:56:09 AM	1/1/9999	107.33.474.228
8	1	LAST_IP_ADDRESS	9/22/2003 3:56:09 AM	1/1/9999	107.33.474.257
9	2	LAST_IP_ADDRESS	9/22/2003 3:56:09 AM	1/1/9999	107.33.474.227
10	8	AMY_VISPHYSMEMORY	9/1/2003 3:00:00 AM	1/1/9999	100
11	11	AMY_SERVICESTATE	8/29/2002 4:00:15 AM	1/1/9999	Running
12	12	AMY_SERVICESTATE	8/29/2002 4:00:16 AM	1/1/9999	Running
13	13	AMY_SERVICESTATE	8/29/2002 4:00:16 AM	1/1/9999	Stopped
14	14	AMY_SERVICESTATE	8/29/2002 4:00:16 AM	1/1/9999	Running
15	15	AMY_SERVICESTATE	8/29/2002 4:00:16 AM	1/1/9999	Running
16	16	AMY_SERVICESTATE	8/29/2002 4:00:17 AM	1/1/9999	Running
17	11	AMY_SERVICESTATUS	8/29/2002 4:00:15 AM	1/1/9999	OK
18	12	AMY_SERVICESTATUS	8/29/2002 4:00:16 AM	1/1/9999	OK
19	13	AMY_SERVICESTATUS	8/29/2002 4:00:16 AM	1/1/9999	OK
20	14	AMY_SERVICESTATUS	8/29/2002 4:00:16 AM	1/1/9999	OK
21	15	AMY_SERVICESTATUS	8/29/2002 4:00:16 AM	1/1/9999	OK
22	16	AMY_SERVICESTATUS	8/29/2002 4:00:17 AM	1/1/9999	OK

6.2   Component measurement

6.2.1   Measurement group type (table MGrpTyp)

MGrpTyp_Cd CHAR(6)	MGrpTyp_Nm[*] VARCHAR(120)
STATE	State
CATEG	Category
GROUP	Aggregate Types or Group Functions

MGrpTyp_Cd CHAR(6)	MGrpTyp_Nm[*] VARCHAR(120)
ITM	ITM Monitoring Collection for Operating Systems

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	NULL	Performance
UTIL	CATEG	NULL	Utilization
AVL	CATEG	NULL	Availability
STATE	CATEG	NULL	Percentage State measurements
STORAG	CATEG	NULL	Storage
AVG_E	GROUP	NULL	Average value exists
MIN_E	GROUP	NULL	Minimum value exists
MAX_E	GROUP	NULL	Maximum value exists
TOT_E	GROUP	NULL	Total value exists
CPU_E	ITM	NULL	CPU
MEM_E	ITM	NULL	Memory
NIC_E	ITM	NULL	Network interface
HD_E	ITM	NULL	I/O
FS_E	ITM	NULL	File system
SEC_E	ITM	NULL	Security
PRN_E	ITM	NULL	Printer

6.2.3   Measurement group member (table MGrpMbr)

MGrp_Cd CHAR(6)	MGrp_Nm VARCHAR(120)	MgrpTyp_Cd CHAR(6)	MsmtTyp_ID INTEGER	MsmtTyp_Nm Varchar(254)
CPU_E	CPU	ITM	59	HandleCount
CPU_E	CPU	ITM	64	HighestPercentUsage
CPU_E	CPU	ITM	66	InterruptsSec
CPU_E	CPU	ITM	65	LowestPercentUsage
CPU_E	CPU	ITM	67	PercentInterruptTime
CPU_E	CPU	ITM	61	PercentPrivilegedTime
CPU_E	CPU	ITM	104	PercentProcessUsage
CPU_E	CPU	ITM	62	PercentProcessorTime
CPU_E	CPU	ITM	60	PercentUserTime
CPU_E	CPU	ITM	30	PrivateBytes
CPU_E	CPU	ITM	63	ProcessorQueueLength
CPU_E	CPU	ITM	31	VirtualBytes
CPU_E	CPU	ITM	29	WorkingSet
CPU_E	CPU	ITM	108	basicAverageCPUPct
CPU_E	CPU	ITM	110	basicInteractiveCPUPct
CPU_E	CPU	ITM	111	databaseCapabilityCPUPct
CPU_E	CPU	ITM	112	databaseThresholdPct
CPU_E	CPU	ITM	113	interactiveThresholdPct
CPU_E	CPU	ITM	68	loadAvg1
CPU_E	CPU	ITM	70	loadAvg15
CPU_E	CPU	ITM	69	loadAvg5
CPU_E	CPU	ITM	109	numOfProcessors
CPU_E	CPU	ITM	71	prcIdleTime
CPU_E	CPU	ITM	72	prcSysTime
CPU_E	CPU	ITM	73	prcUserTime
FS_E	File system	ITM	77	changeTime
FS_E	File system	ITM	75	checksum
FS_E	File system	ITM	225	fileSystemFreeSpace
FS_E	File system	ITM	226	fileSystemTotalSpace
FS_E	File system	ITM	76	modificationTime
FS_E	File system	ITM	106	overflowStorageMBytes

FS_E	File system	ITM	80	percAvail
FS_E	File system	ITM	79	percInodesUsed
FS_E	File system	ITM	78	percUsed
FS_E	File system	ITM	74	size
FS_E	File system	ITM	107	totalAvailableMBytesPercentage
HD_E	I/O	ITM	26	AvgQLength
HD_E	I/O	ITM	25	DiskBytesSec
HD_E	I/O	ITM	222	LogicalDiskFreeSpace
HD_E	I/O	ITM	223	LogicalDiskTotalSize
HD_E	I/O	ITM	28	PercentDiskTime
HD_E	I/O	ITM	27	PercentFreeSpace
HD_E	I/O	ITM	114	systemASPUsedPct
HD_E	I/O	ITM	115	totalAuxiliaryStorageAvailablePercentage
MEM_E	Memory	ITM	227	CommitLimit
MEM_E	Memory	ITM	34	CommittedBytes
MEM_E	Memory	ITM	228	CommittedBytesInUse
MEM_E	Memory	ITM	230	MemoryUsage
MEM_E	Memory	ITM	81	PageInsRate
MEM_E	Memory	ITM	82	PageOutsRate
MEM_E	Memory	ITM	36	PagesFaultsSec
MEM_E	Memory	ITM	35	PagesSec
MEM_E	Memory	ITM	84	PrcAvailStorage
MEM_E	Memory	ITM	83	PrcAvailSwap
MEM_E	Memory	ITM	32	TotalAvail
MEM_E	Memory	ITM	33	TotalCache
MEM_E	Memory	ITM	229	TotalPageFileSize
MEM_E	Memory	ITM	121	activeToIneligibleTransitions
MEM_E	Memory	ITM	120	activeToWaitTransitions
MEM_E	Memory	ITM	123	activityLevel
MEM_E	Memory	ITM	116	databaseFaults
MEM_E	Memory	ITM	118	databasePages
MEM_E	Memory	ITM	117	nonDatabaseFaults
MEM_E	Memory	ITM	119	nonDatabasePages
MEM_E	Memory	ITM	124	totalSizeMBytes
MEM_E	Memory	ITM	122	waitToIneligibleTransitions

NIC_E	Network interface	ITM	39	BytesTotalSec
NIC_E	Network interface	ITM	40	CurrentBandwidth
NIC_E	Network interface	ITM	47	CurrentCommands
NIC_E	Network interface	ITM	54	DGReceivedSec
NIC_E	Network interface	ITM	53	DGSec
NIC_E	Network interface	ITM	52	DGSentSec
NIC_E	Network interface	ITM	55	FragmentsReceivedSec
NIC_E	Network interface	ITM	85	InPacks
NIC_E	Network interface	ITM	86	InPacksErr
NIC_E	Network interface	ITM	91	NFSbadcalls
NIC_E	Network interface	ITM	90	NFScalls
NIC_E	Network interface	ITM	92	NFSgetattr
NIC_E	Network interface	ITM	95	NFSlookup
NIC_E	Network interface	ITM	93	NFSread
NIC_E	Network interface	ITM	96	NFSreadlink
NIC_E	Network interface	ITM	94	NFSwrite
NIC_E	Network interface	ITM	89	OutPackColl
NIC_E	Network interface	ITM	88	OutPackErr
NIC_E	Network interface	ITM	87	OutPacks
NIC_E	Network interface	ITM	46	OutputQueueLength
NIC_E	Network interface	ITM	38	PercentBroadcastFrames
NIC_E	Network interface	ITM	37	PercentNetworkUtil
NIC_E	Network interface	ITM	103	RPCDupchecks
NIC_E	Network interface	ITM	102	RPCDuprequests
NIC_E	Network interface	ITM	98	RPCbadcalls
NIC_E	Network interface	ITM	100	RPCbadxids
NIC_E	Network interface	ITM	97	RPCcalls
NIC_E	Network interface	ITM	99	RPCretrans
NIC_E	Network interface	ITM	101	RPCtimeouts
NIC_E	Network interface	ITM	51	SegmentRcvdSec
NIC_E	Network interface	ITM	49	SegmentSentSec
NIC_E	Network interface	ITM	48	SegmentsRetrasmitted
NIC_E	Network interface	ITM	50	SegmentsSec
NIC_E	Network interface	ITM	45	WorkItemShortages
PRN_E	Printer	ITM	56	JobErrors

PRN_E	Printer	ITM	57	NotReadyErrors
PRN_E	Printer	ITM	58	OutOfPaperErrors
SEC_E	Security	ITM	41	ServerTotalSessions
SEC_E	Security	ITM	42	SessionsErroredOut
SEC_E	Security	ITM	43	SessionsForcedOff
SEC_E	Security	ITM	44	SessionsLoggedOff
SEC_E	Security	ITM	105	numLogged
AVG_E	GROUP	all metrics		
MIN_E	GROUP	all metrics		
MAX_E	GROUP	all metrics		

6.2.4 Measurement unit category (table MUnitCat)

MunitCat_Cd CHAR(6)	MunitCat_Nm[*] VARCHAR(120)
TM	Time Duration
QTY	Quantity
PRC	Percentage
RT	Rate

6.2.5 Measurement unit (table MUnit)

MUnit_Cd CHAR(6)	MUnitCat_Cd CHAR(6)	Munit_Nm[*] VARCHAR(120)
PRC	PRC	Percentage
Bps	RT	Bytes per second
MBps	RT	Megabytes per second
KBps	RT	Kilobytes per second
Rps	RT	Requests per second
Qps	RT	Quantity per sec
Qpm	RT	Quantity per minute
QTY	QTY	Quantity
GB	QTY	gigabytes
KB	QTY	kilobytes

MUnit_Cd CHAR(6)	MUnitCat_Cd CHAR(6)	Munit_Nm[*] VARCHAR(120)
MB	QTY	megabytes
B	QTY	bytes
MSec	TM	milliseconds
Sec	TM	seconds
Min	TM	minutes
Hr	TM	hours
Day	TM	days
HSc	TM	Hundredths of a second

6.2.6   Time summary (table TmSum)

This is the period during which a measurement may be summarized.

TmSum_Cd CHAR	TmSum_Nm[*] VARCHAR(120)
H	Hourly
D	Daily
W	Weekly
M	Monthly
Q	Quarterly
Y	Yearly

6.2.7   Measurement source (table MSrc)

MSrc_Cd CHAR(6)	MSrc_Parent_Cd CHAR(6)	MSrc_Nm[*] VARCHAR(120)
Tivoli	NULL	Tivoli Application
AMX	Tivoli	IBM Tivoli Monitoring
AMY	AMX	IBM Tivoli Monitoring for Operating Systems

6.2.8   Measurement type (table MsmtTyp)

MsmtTyp_ID INTEGER	Munit_Cd CHAR(6)	MSrc_Cd CHAR (6)	MsmtTyp_Nm * VARCHAR(120)	MsmtTyp_Ds * VARCHAR(254)
26	QTY	AMY	AvgQLength	Average queue length for jobs
39	Bps	AMY	BytesTotalSec	Rate at which the redirector is processing data
227	MB	AMY	CommitLimit	Amount of virtual memory that canbe committed without having to extend the paging file(s)
34	B	AMY	CommittedBytes	Bytes committed to this memory
228	PRC	AMY	CommittedBytesInUse	Amount of committed bytes in relation to the committed limit
40	Bps	AMY	CurrentBandwidth	Network bandwidth
47	QTY	AMY	CurrentCommands	Number of requests that are currently queued for the redirector
54	Qps	AMY	DGReceivedSec	Number of datagrams received per second
53	Qps	AMY	DGSec	Number of datagrams per second
52	Qps	AMY	DGSentSec	Number of datagrams sent per second
25	Bps	AMY	DiskBytesSec	Amount of bytes per second being written or read
55	Qps	AMY	FragmentsReceivedSec	Number of fragments received per second
59	QTY	AMY	HandleCount	Number of handles allocated to the process
64	PRC	AMY	HighestPercentUsage	Identifies what percent of the most used processor is being used
85	QTY	AMY	InPacks	Total number of input packets
86	PRC	AMY	InPacksErr	Percent of input packets in error
66	Qps	AMY	InterruptsSec	Number of interrupts per second that are passed to the CPU
56	QTY	AMY	JobErrors	Number of jobs in error
222	MB	AMY	LogicalDiskFreeSpace	Amount of free space on logical disks
223	MB	AMY	LogicalDiskTotalSize	Total size of logical disks
65	PRC	AMY	LowestPercentUsage	Identifies what percent of the least used processor is being used
230	PRC	AMY	MemoryUsage	Amount of committed bytes in relation to the total physical memory (RAM) available to the operating system
91	QTY	AMY	NFSbadcalls	NFS calls that are timed out
90	QTY	AMY	NFScalls	NFS calls
92	QTY	AMY	NFSgetattr	NFS requests to read the client attribute cache
95	QTY	AMY	NFSlookup	Lookup calls on the NFS server
93	QTY	AMY	NFSread	NFS read operations
96	QTY	AMY	NFSreadlink	NFS server calls for readlink operations
94	QTY	AMY	NFSwrite	NFS write operations
57	QTY	AMY	NotReadyErrors	Number of not ready errors

58	QTY	AMY	OutOfPaperErrors	Number of Out-of-Paper errors
89	PRC	AMY	OutPackColl	Percent of output packets colliding
88	PRC	AMY	OutPackErr	Percent of output packets in error
87	QTY	AMY	OutPacks	Total number of output packets
46	QTY	AMY	OutputQueueLength	Length of the queue for output
81	Qps	AMY	PageInsRate	Rate of paging in for the cycle
82	Qps	AMY	PageOutsRate	Rate of paging out for the cycle
36	Qps	AMY	PagesFaultsSec	Rate of page faults per second
35	Qps	AMY	PagesSec	Number of pages per second
38	PRC	AMY	PercentBroadcastFrames	Percent of the network that is broadcast frames
28	PRC	AMY	PercentDiskTime	Percentage of time that the logical drive is being used
27	PRC	AMY	PercentFreeSpace	Percentage of free space on the logical disk
67	PRC	AMY	PercentInterruptTime	Current percentage usage of the CPU as it handles interrupt requests
37	PRC	AMY	PercentNetworkUtil	Percent of the network being used
61	PRC	AMY	PercentPrivilegedTime	Percentage privileged time of the CPU that is being used by the process
104	PRC	AMY	PercentProcessUsage	Percentage of CPU that the process is using
62	PRC	AMY	PercentProcessorTime	Percent of processor time used by the process
60	PRC	AMY	PercentUserTime	Percentage usage of the CPU that is being used by the process
84	PRC	AMY	PrcAvailStorage	Percentage of storage space that is available
83	PRC	AMY	PrcAvailSwap	Percent of swap space that is available
30	B	AMY	PrivateBytes	Number of private bytes used by the process
63	QTY	AMY	ProcessorQueueLength	Queue length of the processor
103	QTY	AMY	RPCDupchecks	Number of RPC server calls that are looked up in the duplicate request cache
102	QTY	AMY	RPCDuprequests	RPC server calls that are duplicate requests
98	QTY	AMY	RPCbadcalls	Number of timed-out client RPC calls
100	QTY	AMY	RPCbadxids	Bad xids
97	QTY	AMY	RPCcalls	Client RPC calls
99	QTY	AMY	RPCretrans	RPC client calls being retransmitted
101	QTY	AMY	RPCtimeouts	Client RPC calls that timed out
51	Qps	AMY	SegmentRcvdSec	Number of segments received per second
49	Qps	AMY	SegmentSentSec	Number of segments sent per second
48	QTY	AMY	SegmentsRetrasmitted	Number of segments retransmitted
50	Qps	AMY	SegmentsSec	Number of segments per second

41	QTY	AMY	ServerTotalSessions	Number of sessions on the server
42	QTY	AMY	SessionsErroredOut	Number of sessions that ended in error
43	QTY	AMY	SessionsForcedOff	Number of sessions forced offline
44	QTY	AMY	SessionsLoggedOff	Number of sessions logged off
224	Sec	AMY	SystemUpTime	Amount of time the system has been running
32	B	AMY	TotalAvail	Total available memory
33	KB	AMY	TotalCache	Total cache memory
229	MB	AMY	TotalPageFileSize	Total amount of page file (swap space) available on all logical disks
31	B	AMY	VirtualBytes	Number of virtual bytes used by the process
45	QTY	AMY	WorkItemShortages	Identifies work item shortages
29	QTY	AMY	WorkingSet	Working set
121	Qpm	AMY	activeToIneligibleTransitions	Rate of transitions of threads from an active condition to an ineligible condition in transitions per minute
120	Qpm	AMY	activeToWaitTransitions	Rate of transitions of threads from an active condition to a waiting condition in transitions per minute
123	QTY	AMY	activityLevel	Maximum number of threads that can be active in the pool at any one time
108	PRC	AMY	basicAverageCPUPct	Percentage of overall CPU utilization
110	PRC	AMY	basicInteractiveCPUPct	Percentage of interactive CPU utilization
77	Sec	AMY	changeTime	Time when the file attributes change
75	QTY	AMY	checksum	File checksum
111	PRC	AMY	databaseCapabilityCPUPct	Percentage of database CPU utilization
116	Qps	AMY	databaseFaults	Rate of database page faults in page faults per second
118	Qps	AMY	databasePages	Rate at which database pages are brought into the storage pool in pages per second
112	PRC	AMY	databaseThresholdPct	Percentage of database CPU utilization allowed before performance problems occur
225	MB	AMY	fileSystemFreeSpace	Amount of free space on the logical file system
226	MB	AMY	fileSystemTotalSpace	Amount of space allocated for the logical file system
113	PRC	AMY	interactiveThresholdPct	Percentage of interactive CPU utilization allowed before performance problems occur
68	QTY	AMY	loadAvg1	Number of processes running every minute
70	QTY	AMY	loadAvg15	Number of processes running every 15 minutes
69	QTY	AMY	loadAvg5	Number of processes running every 5 minutes
76	Sec	AMY	modificationTime	Time when the contents of file change
117	Qps	AMY	nonDatabaseFaults	Rate of Non-database page faults in page faults per second

119	Qps	AMY	nonDatabasePages	Rate at which Non-database pages are brought into the storage pool in pages per second
105	QTY	AMY	numLogged	Number of times the user is logged in
109	QTY	AMY	numOfProcessors	Number of available CPUs for the system or partition
106	MB	AMY	overflowStorageMBytes	Number of megabytes exceeding the ASP capacity
80	PRC	AMY	percAvail	Percent of file system space available
79	PRC	AMY	percInodesUsed	Percent of i-nodes being used
78	PRC	AMY	percUsed	Percent of file system space that is being used
71	PRC	AMY	prcIdleTime	Percent of the time that the CPU is idle
72	PRC	AMY	prcSysTime	Percent of the time that the CPU is in system mode
73	PRC	AMY	prcUserTime	Percent of the time that the CPU is in user mode
74	B	AMY	size	File size
114	PRC	AMY	systemASPUsedPct	Percentage of the system ASP which is used
115	PRC	AMY	totalAuxiliaryStorageAvailablePercentage	Percentage of total auxiliary storage available
107	PRC	AMY	totalAvailableMBytesPercentage	Percentage of total available megabytes in the ASP
124	MB	AMY	totalSizeMBytes	Amount of main storage in the pool
122	Qpm	AMY	waitToIneligibleTransitions	Rate of transitions of threads from a waiting condition to an ineligible condition in transitions per minute

6.2.9   Component measurement rule (table MsmtRul)

CompTyp_Cd CHAR(17)	MsmtTyp_ID INTEGER	MsmtTyp_Nm VARCHAR(120)
AMY_CPU	64	HighestPercentUsage
AMY_CPU	66	InterruptsSec
AMY_CPU	65	LowestPercentUsage
AMY_CPU	67	PercentInterruptTime
AMY_CPU	61	PercentPrivilegedTime
AMY_CPU	62	PercentProcessorTime
AMY_CPU	60	PercentUserTime
AMY_CPU	63	ProcessorQueueLength
AMY_CPU	68	loadAvg1
AMY_CPU	70	loadAvg15
AMY_CPU	69	loadAvg5
AMY_CPU	71	prcIdleTime
AMY_CPU	72	prcSysTime
AMY_CPU	73	prcUserTime
AMY_FILE	77	changeTime
AMY_FILE	75	checksum
AMY_FILE	76	modificationTime
AMY_FILE	74	size
AMY_FS	225	fileSystemFreeSpace
AMY_FS	226	fileSystemTotalSpace
AMY_FS	80	percAvail
AMY_FS	79	percInodesUsed
AMY_FS	78	percUsed
AMY_IP	54	DGReceivedSec
AMY_IP	53	DGSec
AMY_IP	52	DGSentSec
AMY_IP	55	FragmentsReceivedSec
AMY_LDISK	26	AvgQLength
AMY_LDISK	25	DiskBytesSec
AMY_LDISK	222	LogicalDiskFreeSpace
AMY_LDISK	223	LogicalDiskTotalSize
AMY_LDISK	28	PercentDiskTime

AMY_LDISK	27	PercentFreeSpace
AMY_MEMORY	227	CommitLimit
AMY_MEMORY	34	CommittedBytes
AMY_MEMORY	228	CommittedBytesInUse
AMY_MEMORY	230	MemoryUsage
AMY_MEMORY	81	PageInsRate
AMY_MEMORY	82	PageOutsRate
AMY_MEMORY	36	PagesFaultsSec
AMY_MEMORY	35	PagesSec
AMY_MEMORY	84	PrcAvailStorage
AMY_MEMORY	83	PrcAvailSwap
AMY_MEMORY	32	TotalAvail
AMY_MEMORY	33	TotalCache
AMY_MEMORY	229	TotalPageFileSize
AMY_NETSEG	38	PercentBroadcastFrames
AMY_NETSEG	37	PercentNetworkUtil
AMY_NETWORK	39	BytesTotalSec
AMY_NETWORK	40	CurrentBandwidth
AMY_NETWORK	85	InPacks
AMY_NETWORK	86	InPacksErr
AMY_NETWORK	89	OutPackColl
AMY_NETWORK	88	OutPackErr
AMY_NETWORK	87	OutPacks
AMY_NETWORK	46	OutputQueueLength
AMY_NFS	91	NFSbadcalls
AMY_NFS	90	NFScalls
AMY_NFS	92	NFSgetattr
AMY_NFS	95	NFSlookup
AMY_NFS	93	NFSread
AMY_NFS	96	NFSreadlink
AMY_NFS	94	NFSwrite
AMY_OS400ASP	106	overflowStorageMBytes
AMY_OS400ASP	107	totalAvailableMBytesPercentage
AMY_OS400BCPU	108	basicAverageCPUPct
AMY_OS400BCPU	109	numOfProcessors

AMY_OS400DBCPU	111	databaseCapabilityCPUPct
AMY_OS400DBCPU	112	databaseThresholdPct
AMY_OS400DISK	114	systemASPUsedPct
AMY_OS400DISK	115	totalAuxiliaryStorageAvailablePercentage
AMY_OS400ICPU	110	basicInteractiveCPUPct
AMY_OS400ICPU	109	numOfProcessors
AMY_OS400IFCPU	110	basicInteractiveCPUPct
AMY_OS400IFCPU	113	interactiveThresholdPct
AMY_OS400SPOOL	121	activeToIneligibleTransitions
AMY_OS400SPOOL	120	activeToWaitTransitions
AMY_OS400SPOOL	123	activityLevel
AMY_OS400SPOOL	116	databaseFaults
AMY_OS400SPOOL	118	databasePages
AMY_OS400SPOOL	117	nonDatabaseFaults
AMY_OS400SPOOL	119	nonDatabasePages
AMY_OS400SPOOL	124	totalSizeMBytes
AMY_OS400SPOOL	122	waitToIneligibleTransitions
AMY_PDISK	26	AvgQLength
AMY_PDISK	25	DiskBytesSec
AMY_PDISK	28	PercentDiskTime
AMY_PRNQUEUE	56	JobErrors
AMY_PRNQUEUE	57	NotReadyErrors
AMY_PRNQUEUE	58	OutOfPaperErrors
AMY_PROCESS	59	HandleCount
AMY_PROCESS	61	PercentPrivilegedTime
AMY_PROCESS	104	PercentProcessUsage
AMY_PROCESS	62	PercentProcessorTime
AMY_PROCESS	60	PercentUserTime
AMY_PROCESS	30	PrivateBytes
AMY_PROCESS	31	VirtualBytes
AMY_PROCESS	29	WorkingSet
AMY_REDIR	39	BytesTotalSec
AMY_REDIR	47	CurrentCommands
AMY_RPC	103	RPCDupchecks
AMY_RPC	102	RPCDuprequests

AMY_RPC	98	RPCbadcalls
AMY_RPC	100	RPCbadxids
AMY_RPC	97	RPCcalls
AMY_RPC	99	RPCretrans
AMY_RPC	101	RPCtimeouts
AMY_SERVER	39	BytesTotalSec
AMY_SERVER	41	ServerTotalSessions
AMY_SERVER	42	SessionsErroredOut
AMY_SERVER	43	SessionsForcedOff
AMY_SERVER	44	SessionsLoggedOff
AMY_SERVER	45	WorkItemShortages
AMY_SYSTEM	224	SystemUpTime
AMY_TCPIP	51	SegmentRcvdSec
AMY_TCPIP	49	SegmentSentSec
AMY_TCPIP	48	SegmentsRetrasmitted
AMY_TCPIP	50	SegmentsSec
AMY_USER	105	numLogged

6.2.10 Measurement (table Msmt)

Msmt_ ID BIGINT	Comp_ ID INTEGER	Msmt Typ_I D INTEGER	TmSu m_Cd CHAR	Msmt_ Strt_Dt DATE	Msmt_ Strt_T m TIME	Msmt_ Min_V al FLOAT	Msmt_ Max_V al FLOAT	Msmt_ Avg_V al FLOAT	Msmt_ Tot_Val FLOAT	Msmt_ Sampl_ Cnt FLOAT	Msmt_ Err_Cnt FLOAT
1	3	68	H	9/1/200 3	9/22/200 3 3:00:00 AM	54	54	54	NULL	NULL	NULL
2	3	69	H	9/1/200 3	9/22/200 3 3:00:00 AM	13	13	13	NULL	NULL	NULL
3	3	70	H	9/1/200 3	9/22/200 3 3:00:00 AM	13	13	13	NULL	NULL	NULL
4	4	63	H	9/1/200 3	9/22/200 3 3:00:00 AM	54	54	54	NULL	NULL	NULL
5	5	78	H	9/1/200 3	9/22/200 3 3:00:00 AM	13	13	13	NULL	NULL	NULL
6	5	79	H	9/1/200 3	9/22/200 3 3:00:00 AM	13	13	13	NULL	NULL	NULL
7	5	80	H	9/1/200 3	9/22/200 3 3:00:00 AM	54	54	54	NULL	NULL	NULL
8	5	225	H	9/1/200 3	9/22/200 3 3:00:00 AM	54	54	54	NULL	NULL	NULL
9	5	226	H	9/1/200 3	9/22/200 3 3:00:00 AM	54	54	54	NULL	NULL	NULL
10	6	222	H	9/1/200 3	9/22/200 3 3:00:00 AM	13	13	13	NULL	NULL	NULL

11	6	223	H	9/1/2003	9/22/2003 3:00:00 AM	13	13	13	NULL	NULL	NULL
12	7	25	H	9/1/2003	9/22/2003 3:00:00 AM	54	54	54	NULL	NULL	NULL
13	8	35	H	9/1/2003	9/22/2003 3:00:00 AM	13	13	13	NULL	NULL	NULL
14	8	227	H	9/1/2003	9/22/2003 3:00:00 AM	54	54	54	NULL	NULL	NULL
15	8	228	H	9/1/2003	9/22/2003 3:00:00 AM	13	13	13	NULL	NULL	NULL
16	8	229	H	9/1/2003	9/22/2003 3:00:00 AM	54	54	54	NULL	NULL	NULL
17	8	230	H	9/1/2003	9/22/2003 3:00:00 AM	13	13	13	NULL	NULL	NULL
18	9	224	H	9/1/2003	9/22/2003 3:00:00 AM	54	54	54	NULL	NULL	NULL
19	10	224	H	9/1/2003	9/22/2003 3:00:00 AM	13	13	13	NULL	NULL	NULL

6.3 Helper tables

This warehouse pack does not generate helper tables.

However the AMX Warehouse enablement pack on which the DB2 Warehouse Enablement pack depends uses helper tables.

6.4 Exception tables

If the Opertaing resource model does not log data that correspond to the Operating System (AMY) metadata inserted in the Central Datawarehouse database (amy_cdw_data.sql), exceptions will appear in the following exception tables:

✓ AMX.stage_attrtyp_transl_ex: an exception occurs when:

- o Some attributes of a component type are not declared in the metadata table AMX.AttrTyp_Transl.

- o A component having a unique key (not a composite key) has this key declared as an attribute and it should not.

- o The IBM Tivoli Monitoring attribute name that is part of a composite key is not the same in the metadata tables AMX.CompTyp_Transl and the AMX.AttrTyp_Transl.

✓ AMX.stage_comptyp_transl_ex: an exception occurs when there is a component type in the TWG.RelnRul that do not exist in the AMX.CompTyp_Transl table.

✓ AMX.stage_inst_comp_pac_ex: an exception occurs when the IBM Tivoli Monitoring instance key in the AMX.stage_key_parsed contains at least one key that is not pre-defined in the metadata for that application.

✓ AMX.stage_categories_ex: an exception occurs when properties that are inside the categories table are not declared as attributes for that component type in the metadata table AMX.AttrTyp_Transl.

✓ AMX.stage_metrics_ex: an exception occurs when metric names in the METRICS table in the IBM Tivoli Monitoring database (ITM_DB) are not defined in the metadata table TWG.MsmtTyp.

✓ AMX.stage_relnrul_transl_ex: an exception occurs when in the AMX.RelnRul_Transl table there is a source component type that does not correspond to a component type in the metadata table TWG.CompTyp table.

✓ AMX.stage_resource_transl_ex: an exception occurs when:

- o In the AMX.stage1_resources table, there is no corresponding component type code in the table

- o The AMX.RelnRul_Transl table contains a relation type different from PROXY, PCHILD, SAME

- o A component source type without a host for parent has a PROXY relationship.

- o AMX.stage_rmprofiles_ex: an exception occurs when there is in the source RMPROFILES table (in ITM_DB), a category that does not correspond to a category in the metadata table AMX.Category_Transl table.

6.5   Incremental extraction

This warehouse pack uses incremental extraction to extract data from the central data warehouse and store it into the data mart tables. The data in the TWG.Extract_Control table controls this process.

The following DB2 entries appear in the TWG.Extract_Control table.

ExtCtl_Source	ExtCtl_Target	Extctl_From_Intseq	ExtCtl_To_IntSeq
AMY.STG_CPU_MET	AMY.T_CPU_METRIC	NULL	NULL
AMY.STG_FS_MET	AMY.T_FS_METRIC	NULL	NULL
AMY.STG_IO_MET	AMY.T_IO_METRIC	NULL	NULL
AMY.STG_MEM_MET	AMY.T_MEM_METRIC	NULL	NULL
AMY.STG_NET_MET	AMY.T_NET_METRIC	NULL	NULL
AMY.STG_PRN_MET	AMY.T_PRN_METRIC	NULL	NULL
AMY.STG_SERVER_MET	AMY.T_SERVER_METRIC	NULL	NULL
AMY.STG_SYSTEM_MET	AMY.T_SYSTEM_METRIC	NULL	NULL
AMY.STG_USER_MET	AMY.T_USER_METRIC	NULL	NULL
TWG.COMP	AMY.T_HOST_IP	NULL	NULL
TWG.COMP	AMY.T_CPU	NULL	NULL
TWG.COMP	AMY.T_FILE	NULL	NULL
TWG.COMP	AMY.T_FS	NULL	NULL
TWG.COMP	AMY.T_LDISK	NULL	NULL
TWG.COMP	AMY.T_MEMORY	NULL	NULL
TWG.COMP	AMY.T_NETWORK	NULL	NULL
TWG.COMP	AMY.T_OS400ASP	NULL	NULL
TWG.COMP	AMY.T_OS4KDISK	NULL	NULL
TWG.COMP	AMY.T_PDISK	NULL	NULL
TWG.COMP	AMY.T_PRINTER	NULL	NULL
TWG.COMP	AMY.T_PROCESS	NULL	NULL
TWG.COMP	AMY.T_SERVER	NULL	NULL
TWG.COMP	AMY.T_USER	NULL	NULL
TWG.COMP	AMY.T_SYSTEM	NULL	NULL
TWG.MSMT	AMY.STG_CPU_HR	NULL	NULL
TWG.MSMT	AMY.STG_FILE_HR	NULL	NULL
TWG.MSMT	AMY.STG_FS_HR	NULL	NULL
TWG.MSMT	AMY.STG_LDISK_HR	NULL	NULL
TWG.MSMT	AMY.STG_MEMORY_HR	NULL	NULL
TWG.MSMT	AMY.STG_NETWORK_HR	NULL	NULL
TWG.MSMT	AMY.STG_OS400ASP_HR	NULL	NULL
TWG.MSMT	AMY.STG_OS4KDISK_HR	NULL	NULL
TWG.MSMT	AMY.STG_PDISK_HR	NULL	NULL
TWG.MSMT	AMY.STG_PRN_HR	NULL	NULL

TWG.MSMT	AMY.STG_PROCESS_HR	NULL	NULL
TWG.MSMT	AMY.STG_SERVER_HR	NULL	NULL
TWG.MSMT	AMY.STG_USER_HR	NULL	NULL
TWG.MSMT	AMY.STG_SYSTEM_HR	NULL	NULL

7 IBM Tivoli Monitoring integration

7.1 Metadata tables for applications that use the resource model ETL

This section defines the data in the Tivoli Enterprise Data Warehouse central data warehouse.

7.1.1 Resource translation (table Resource_Transl)

Resource	CompTyp_cd
CPUPhysicalDisk	AMY_CPU
File	AMY_FILE
FileSystem	AMY_FS
IP	AMY_IP
LogicalDisk	AMY_LDISK
Memory	AMY_MEMORY
NetworkSegment	AMY_NETSEG
Network	AMY_NETWORK
NFS	AMY_NFS
ASP	AMY_OS400ASP
BasicCPU	AMY_OS400BCPU
DatabaseCPU	AMY_OS400DBCPU
Disk	AMY_OS400DISK
InteractiveCPU	AMY_OS400ICPU
InteractiveFeatureCPU	AMY_OS400IFCPU
StoragePool	AMY_OS400SPOOL
PhysicalDisk	AMY_PDISK
Port	AMY_PORT
PrintQueue	AMY_PRNQUEUE
Process	AMY_PROCESS
Redirector	AMY_REDIR
RPC	AMY_RPC
Server	AMY_SERVER
Service	AMY_SERVICE
RealSystem	AMY_SYSTEM
TCPIP	AMY_TCPIP
User	AMY_USER

7.1.2   Category translation (table Category_Transl)

Category	MSrc_Cd
VARCHAR(128)	**VARCHAR(6)**
OperatingSystem	AMY

7.1.3 Component type translation (table CompTyp_Transl)

MSrc_Cd VARCHAR(6)	ITM_Key_Property [1] VARCHAR(1096)	CompTyp_Cd VARCHAR(17)	Comp_Format_Nm [1] VARCHAR(254)
AMY	CPU.name	AMY_CPU	CPU.name
AMY	File.pathname	AMY_FILE	File.pathname
AMY	FileSystem.mountpoint	AMY_FS	FileSystem.mountpoint
AMY	IP.IP	AMY_IP	IP.IP
AMY	LogicalDisk.LogicalDisk	AMY_LDISK	LogicalDisk.LogicalDisk
AMY	Memory.name	AMY_MEMORY	Memory.name
AMY	NetworkSegment.Segment	AMY_NETSEG	NetworkSegment.Segment
AMY	Network.InterfaceName	AMY_NETWORK	Network.InterfaceName
AMY	NFS.name	AMY_NFS	NFS.name
AMY	ASP.ASPInstance	AMY_OS400ASP	ASP.ASPInstance
AMY	BasicCPU.spare	AMY_OS400BCPU	BasicCPU.spare
AMY	DatabaseCPU.spare	AMY_OS400DBCPU	DatabaseCPU.spare
AMY	Disk.spare	AMY_OS400DISK	Disk.spare
AMY	InteractiveCPU.spare	AMY_OS400ICPU	InteractiveCPU.spare
AMY	InteractiveFeatureCPU.spare	AMY_OS400IFCPU	InteractiveFeatureCPU.spare
AMY	StoragePool.storagePoolName	AMY_OS400SPOOL	StoragePool.storagePoolName
AMY	PhysicalDisk.PhysicalDisk	AMY_PDISK	PhysicalDisk.PhysicalDisk
AMY	Port.Port	AMY_PORT	Port.Port
AMY	PrintQueue.PrintQueue	AMY_PRNQUEUE	PrintQueue.PrintQueue
AMY	Process.Process;Process.ID	AMY_PROCESS	Process.Process
AMY	Redirector.Redirector	AMY_REDIR	Redirector.Redirector
AMY	RPC.name	AMY_RPC	RPC.name
AMY	Server.Server	AMY_SERVER	Server.Server
AMY	Service.Service	AMY_SERVICE	Service.Service
AMY	RealSystem.Name	AMY_SYSTEM	RealSystem.Name
AMY	TCPIP.TCP	AMY_TCPIP	TCPIP.TCP
AMY	User.userName	AMY_USER	User.userName
[1] Use a semicolon (;) to separate values in ITM_Key_Property and Comp_Format_Nm. Do not use a semicolon			

7.1.4   Attribute translation (table AttrTyp_Transl)

MSrc_cd	ITM_Attr_Property	AttrTyp_Cd
AMY	File.group	AMY_FGROUP
AMY	File.mode	AMY_FMODE
AMY	File.owner	AMY_FOWNER
AMY	Memory.TotalVisiblePhysicalMemory	AMY_VISPHYSMEMORY
AMY	Port.State	AMY_PORTSTATE
AMY	Process.ID	AMY_PROCID
AMY	Process.Process	AMY_PROCNM
AMY	Service.State	AMY_SERVICESTATE
AMY	Service.Status	AMY_SERVICESTATUS
AMY	User.id	AMY_USRID

7.1.5   Categories convert (table Categories_Convert)

The IBM Tivoli Monitoring for Operating Systems warehouse pack has multiple categories based on the specific operating system. However, in the IBM Tivoli Monitoring, Version 5.1.1 warehouse pack, the category should represent the product and should be unique. This table is used to map the different categories used by IBM Tivoli Monitoring for Operating Systems into a unique and generic OperatingSystem category. The Operating System information will be known only if the customer installs inventory and pushes the info into the Tivoli Enterprise Data Warehouse common repository.

Category_Convert VARCHAR(128)	Category VARCHAR(128)	Description VARCHAR(128)
OperatingSystem	Windows	Windows NT/2000/XP
OperatingSystem	UNIX_Linux	Unix/Linux
OperatingSystem	Solaris	Solaris
OperatingSystem	OS400	OS400
OperatingSystem	OS2	OS2

7.1.6   Instance keys convert (table Inst_Key_Convert)

The IBM Tivoli Monitoring for Operating Systems warehouse pack has multiple entries in the instances table that should map to one unique CompTyp_Cd in Tivoli Enterprise Data Warehouse. The IBM Tivoli Monitoring, Version 5.1.1 warehouse pack expects to translate an ITM_Key_Property into a Tivoli Enterprise Data Warehouse CompTyp_Cd in the AMX.CompTyp_Transl table only one way. This table is therefore used to indicate which Key_Typ should be translated in the AMX.Stage_Key_Parsed table and to which string.

Key_Typ_Convert VARCHAR(254)	Key_Typ VARCHAR(254)	Description VARCHAR(128)
CPU.name	Processor.Processor	System Processor
CPU.name	System.Processor	System Processor
File.pathname	File.filename	File Name
Memory.name	Memory.Memory	System Memory
Network.InterfaceName	NetworkInterfaceCard.NetworkInterfaceCard	Network Interface Card
Process.ID	Process.PID	Process ID

7.1.7   Resources convert (table Resources_Convert)

The IBM Tivoli Monitoring for Operating Systems warehouse pack has multiple names for the same resource that should map to one unique CompTyp_Cd in Tivoli Enterprise Data Warehouse. The IBM Tivoli Monitoring, Version 5.1.1 warehouse pack expects to translate an IBM Tivoli Monitoring Resource into a Tivoli Enterprise Data Warehouse CompTyp_Cd in the AMX.Resource_Transl table only one way. This table is therefore used to indicate which Resource name should be translated in the AMX.Stage_Resources table and to which string.

Resource_Convert VARCHAR(128)	Resource VARCHAR(128)	Description VARCHAR(128)
CPU	Processor	Processor to CPU conversion
CPU	System	System to CPU conversion
Network	NetworkInterfaceCard	NetworkInterfaceCard to Network conversion

7.2   IBM Tivoli Monitoring resource models

The following sections contain information in the IBM Tivoli Monitoring database that is used as the operational data source for Tivoli Enterprise Data Warehouse. For more information about resource models, see the *IBM Tivoli Monitoring Workbench User's Guide*.

7.2.1   Resource model for the Windows Processor (TMW_Processor)

ITM Table Name	Column Name	Value
Resources	Resourc VARCHAR(128)	Processor
	Context VARCHAR(64)	Processor Queue Length
Instances	InstanceKey VARCHAR(2096)	Processor=0;
Metrics	Name VARCHAR(50)	ProcessorQueueLength
Categories	Name VARCHAR(50)	
IBM Tivoli Monitoring uses a semicolon (;) to separate values within Instances and to terminate the final value.		

ITM Table Name	Column Name	Value
Resources	Resourc VARCHAR(128)	Processor
	Context VARCHAR(64)	Load Balance
Instances	InstanceKey VARCHAR(2096)	Processor=0;
Metrics	Name VARCHAR(50)	HighestPercentUsage, LowestPercentUsage
Categories	Name VARCHAR(50)	
IBM Tivoli Monitoring uses a semicolon (;) to separate values within Instances and to terminate the final value.		

ITM Table Name	Column Name	Value
Resources	Resourc VARCHAR(128)	Processor
	Context VARCHAR(64)	Interrupt Time
Instances	InstanceKey VARCHAR(2096)	Processor=0;
Metrics	Name VARCHAR(50)	InterruptsSec
Categories	Name VARCHAR(50)	
IBM Tivoli Monitoring uses a semicolon (;) to separate values within Instances and to terminate the final value.		

ITM Table Name	Column Name	Value
Resources	Resourc VARCHAR(128)	Processor
	Context VARCHAR(64)	CPU Usage
Instances	InstanceKey VARCHAR(2096)	Processor=0;
Metrics	Name VARCHAR(50)	PercentInterruptTime, PercentProcessorTime, PercentPrivilegedTime, PercentUserTime
Categories	Name VARCHAR(50)	
IBM Tivoli Monitoring uses a semicolon (;) to separate values within Instances and to terminate the final value.		

ITM Table Name	Column Name	Value
Resources	Resourc VARCHAR(128)	RealSystem
	Context VARCHAR(64)	Availability
Instances	InstanceKey VARCHAR(2096)	Name=system;
Metrics	Name VARCHAR(50)	SystemUpTime
Categories	Name VARCHAR(50)	
IBM Tivoli Monitoring uses a semicolon (;) to separate values within Instances and to terminate the final value.		

7.2.2   Resource model for the Windows Logical Disk (TMW_LogicalDisk)

ITM Table Name	Column Name	Value
Resources	Resourc VARCHAR(128)	LogicalDisk
	Context VARCHAR(64)	Bytes Transferred
Instances	InstanceKey VARCHAR(2096)	LogicalDisk=C:;
Metrics	Name VARCHAR(50)	DiskBytesSec
Categories	Name VARCHAR(50)	
IBM Tivoli Monitoring uses a semicolon (;) to separate values within Instances and to terminate the final value.		

ITM Table Name	Column Name	Value
Resources	Resourc VARCHAR(128)	LogicalDisk
	Context VARCHAR(64)	Queue Length
Instances	InstanceKey VARCHAR(2096)	LogicalDisk=C;
Metrics	Name VARCHAR(50)	AvgQLength
Categories	Name VARCHAR(50)	
IBM Tivoli Monitoring uses a semicolon (;) to separate values within Instances and to terminate the final value.		

ITM Table Name	Column Name	Value
Resources	Resourc VARCHAR(128)	LogicalDisk
	Context VARCHAR(64)	Percent Space
Instances	InstanceKey VARCHAR(2096)	LogicalDisk=C;
Metrics	Name VARCHAR(50)	PercentFreeSpace
Categories	Name VARCHAR(50)	
IBM Tivoli Monitoring uses a semicolon (;) to separate values within Instances and to terminate the final value.		

ITM Table Name	Column Name	Value
Resources	Resourc VARCHAR(128)	LogicalDisk
	Context VARCHAR(64)	Percent Disk Usage
Instances	InstanceKey VARCHAR(2096)	LogicalDisk=C:;
Metrics	Name VARCHAR(50)	PercentDiskTime
Categories	Name VARCHAR(50)	
IBM Tivoli Monitoring uses a semicolon (;) to separate values within Instances and to terminate the final value.		

ITM Table Name	Column Name	Value
Resources	Resourc VARCHAR(128)	LogicalDisk
	Context VARCHAR(64)	Storage
Instances	InstanceKey VARCHAR(2096)	LogicalDisk=C;
Metrics	Name VARCHAR(50)	LogicalDiskFreeSpace, LogicalDiskTotalSize
Categories	Name VARCHAR(50)	
IBM Tivoli Monitoring uses a semicolon (;) to separate values within Instances and to terminate the final value.		

7.2.3   Resource model for the Windows Physical Disk (TMW_PhysicalDisk)

ITM Table Name	Column Name	Value
Resources	Resourc VARCHAR(128)	PhysicalDisk
	Context VARCHAR(64)	Bytes Transferred
Instances	InstanceKey VARCHAR(2096)	PhysicalDisk=0;
Metrics	Name VARCHAR(50)	DiskBytesSec
Categories	Name VARCHAR(50)	
IBM Tivoli Monitoring uses a semicolon (;) to separate values within Instances and to terminate the final value.		

ITM Table Name	Column Name	Value
Resources	Resourc VARCHAR(128)	PhysicalDisk
	Context VARCHAR(64)	Queue Length
Instances	InstanceKey VARCHAR(2096)	PhysicalDisk=0;
Metrics	Name VARCHAR(50)	AvgQLength
Categories	Name VARCHAR(50)	
IBM Tivoli Monitoring uses a semicolon (;) to separate values within Instances and to terminate the final value.		

ITM Table Name	Column Name	Value
Resources	Resourc VARCHAR(128)	PhysicalDisk
	Context VARCHAR(64)	Percent Disk Usage
Instances	InstanceKey VARCHAR(2096)	PhysicalDisk=0;
Metrics	Name VARCHAR(50)	PercentDiskTime
Categories	Name VARCHAR(50)	
IBM Tivoli Monitoring uses a semicolon (;) to separate values within Instances and to terminate the final value.		

7.2.4 Resource model for the Windows Memory (TMW_MemoryModel)

ITM Table Name	Column Name	Value
Resources	Resourc VARCHAR(128)	Memory
	Context VARCHAR(64)	Configuration
Instances	InstanceKey VARCHAR(2096)	Memory=Memory;
Metrics	Name VARCHAR(50)	
Categories	Name VARCHAR(50)	TotalVisiblePhysicalMemory
IBM Tivoli Monitoring uses a semicolon (;) to separate values within Instances and to terminate the final value.		

ITM Table Name	Column Name	Value
Resources	Resourc VARCHAR(128)	Process
	Context VARCHAR(64)	Process Memory Usage
Instances	InstanceKey VARCHAR(2096)	Memory=Memory;
Metrics	Name VARCHAR(50)	WorkingSet, PrivateBytes, VirtualBytes,
Categories	Name VARCHAR(50)	
IBM Tivoli Monitoring uses a semicolon (;) to separate values within Instances and to terminate the final value.		

ITM Table Name	Column Name	Value
Resources	Resourc VARCHAR(128)	Memory
	Context VARCHAR(64)	Memory Usage
Instances	InstanceKey VARCHAR(2096)	Memory=Memory;
Metrics	Name VARCHAR(50)	TotalAvail, TotalCache, CommittedBytes,CommitLimit,CommittedBytesInUse, MemoryUsage,
Categories	Name VARCHAR(50)	
IBM Tivoli Monitoring uses a semicolon (;) to separate values within Instances and to terminate the final value.		

ITM Table Name	Column Name	Value
Resources	Resourc VARCHAR(128)	Memory
	Context VARCHAR(64)	Paging
Instances	InstanceKey VARCHAR(2096)	Memory=Memory;
Metrics	Name VARCHAR(50)	PagesSec, PagesFaultsSec, TotalPageFileSize
Categories	Name VARCHAR(50)	
IBM Tivoli Monitoring uses a semicolon (;) to separate values within Instances and to terminate the final value.		

7.2.5   Resource model for the Windows Network Interface Card (TMW_NetworkIntCard)

ITM Table Name	Column Name	Value
Resources	Resourc VARCHAR(128)	NetworkSegment
	Context VARCHAR(64)	Network Traffic ?
Instances	InstanceKey VARCHAR(2096)	Segment =Segment;
Metrics	Name VARCHAR(50)	PercentNetworkUtil
Categories	Name VARCHAR(50)	
IBM Tivoli Monitoring uses a semicolon (;) to separate values within Instances and to terminate the final value.		

ITM Table Name	Column Name	Value
Resources	Resourc VARCHAR(128)	NetworkSegment
	Context VARCHAR(64)	Percent Broadcast
Instances	InstanceKey VARCHAR(2096)	Segment =Segment;
Metrics	Name VARCHAR(50)	PercentBroadcastFrames
Categories	Name VARCHAR(50)	
IBM Tivoli Monitoring uses a semicolon (;) to separate values within Instances and to terminate the final value.		

ITM Table Name	Column Name	Value
Resources	Resourc VARCHAR(128)	NetworkInterfaceCard
	Context VARCHAR(64)	Bytes Rate
Instances	InstanceKey VARCHAR(2096)	NetworkInterfaceCard=0;
Metrics	Name VARCHAR(50)	BytesTotalSec, CurrentBandwidth
Categories	Name VARCHAR(50)	
IBM Tivoli Monitoring uses a semicolon (;) to separate values within Instances and to terminate the final value.		

ITM Table Name	Column Name	Value
Resources	Resourc VARCHAR(128)	Server
	Context VARCHAR(64)	Server Activity
Instances	InstanceKey VARCHAR(2096)	Server=Server;
Metrics	Name VARCHAR(50)	BytesTotalSec, ServerTotalSessions, SessionsErroredOut, SessionsForcedOff, SessionsLoggedOff, WorkItemShortages
Categories	Name VARCHAR(50)	
IBM Tivoli Monitoring uses a semicolon (;) to separate values within Instances and to terminate the final value.		

ITM Table Name	Column Name	Value
Resources	Resourc VARCHAR(128)	Redirector
	Context VARCHAR(64)	Output Queue Length ?
Instances	InstanceKey VARCHAR(2096)	Redirector=Redirector;
Metrics	Name VARCHAR(50)	BytesTotalSec
Categories	Name VARCHAR(50)	
IBM Tivoli Monitoring uses a semicolon (;) to separate values within Instances and to terminate the final value.		

ITM Table Name	Column Name	Value
Resources	Resourc VARCHAR(128)	Redirector
	Context VARCHAR(64)	Current Commands
Instances	InstanceKey VARCHAR(2096)	Redirector=Redirector;
Metrics	Name VARCHAR(50)	CurrentCommand
Categories	Name VARCHAR(50)	
IBM Tivoli Monitoring uses a semicolon (;) to separate values within Instances and to terminate the final value.		

7.2.6   Resource model for the Windows TCP/IP protocol stack (TMW_TCPIP)

ITM Table Name	Column Name	Value
Resources	Resourc VARCHAR(128)	TCPIP
	Context VARCHAR(64)	Segments Retrasmitted
Instances	InstanceKey VARCHAR(2096)	TCPIP=TCP;
Metrics	Name VARCHAR(50)	SegmentsRetrasmitted
Categories	Name VARCHAR(50)	
IBM Tivoli Monitoring uses a semicolon (;) to separate values within Instances and to terminate the final value.		

ITM Table Name	Column Name	Value
Resources	Resourc VARCHAR(128)	TCPIP
	Context VARCHAR(64)	Segments Traffic
Instances	InstanceKey VARCHAR(2096)	TCPIP=TCP;
Metrics	Name VARCHAR(50)	SegmentSentSec, SegmentsSec, SegmentRcvdSec
Categories	Name VARCHAR(50)	
IBM Tivoli Monitoring uses a semicolon (;) to separate values within Instances and to terminate the final value.		

ITM Table Name	Column Name	Value
Resources	Resourc VARCHAR(128)	IP
	Context VARCHAR(64)	Datagrams Traffic, Fragments Received
Instances	InstanceKey VARCHAR(2096)	IP=IP;
Metrics	Name VARCHAR(50)	DGSentSec, DGSec, DGReceivedSec, FragmentsReceivedSec
Categories	Name VARCHAR(50)	
IBM Tivoli Monitoring uses a semicolon (;) to separate values within Instances and to terminate the final value.		

ITM Table Name	Column Name	Value
Resources	Resourc VARCHAR(128)	IP
	Context VARCHAR(64)	Fragments Received
Instances	InstanceKey VARCHAR(2096)	IP=IP;
Metrics	Name VARCHAR(50)	FragmentsReceivedSec
Categories	Name VARCHAR(50)	
IBM Tivoli Monitoring uses a semicolon (;) to separate values within Instances and to terminate the final value.		

7.2.7   Resource model for the Windows ports (TMW_ParamPorts)

ITM Table Name	Column Name	Value
Resources	Resourc VARCHAR(128)	Port
	Context VARCHAR(64)	Port State
Instances	InstanceKey 1 VARCHAR(2096)	Port=80;
Metrics	Name VARCHAR(50)	
Categories	Name VARCHAR(50)	State,Port
IBM Tivoli Monitoring uses a semicolon (;) to separate values within Instances and to terminate the final value.		

7.2.8   Resource model for Windows Services (TMW_ParamServices)

ITM Table Name	Column Name	Value
Resources	Resourc VARCHAR(128)	Service
	Context VARCHAR(64)	Service Status
Instances	InstanceKey VARCHAR(2096)	Service=Browser;
Metrics	Name VARCHAR(50)	
Categories	Name VARCHAR(50)	State, Status

7.2.9   Resource model for Windows Ports (TMW_PrintModel)

ITM Table Name	Column Name	Value
Resources	Resourc VARCHAR(128)	PrintQueue
	Context VARCHAR(64)	Errors
Instances	InstanceKey VARCHAR(2096)	PrintQueue=_total;
Metrics	Name VARCHAR(50)	JobErrors, NotReadyErrors, OutOfPaperErrors
Categories	Name VARCHAR(50)	

7.2.10   Resource model for Windows Process (TMW_Process)

ITM Table Name	Column Name	Value
Resources	Resourc VARCHAR(128)	Process
	Context VARCHAR(64)	Handle Usage
Instances	InstanceKey VARCHAR(2096)	Process=lcfd;ID=624;
Metrics	Name VARCHAR(50)	HandleCount
Categories	Name VARCHAR(50)	

ITM Table Name	Column Name	Value
Resources	Resourc VARCHAR(128)	Process
	Context VARCHAR(64)	CPU Usage
Instances	InstanceKey VARCHAR(2096)	Process=lcfd;ID=624;
Metrics	Name VARCHAR(50)	PercentUserTime, PercentPrivilegedTime, PercentProcessorTime
Categories	Name VARCHAR(50)	

7.2.11 Resource model for Unix CPU (DMXCpu)

ITM Table Name	Column Name	Value
Resources	Resourc VARCHAR(128)	CPU
	Context VARCHAR(64)	Average Loading
Instances	InstanceKey VARCHAR(2096)	name=0;
Metrics	Name VARCHAR(50)	loadAvg1, loadAvg5, loadAvg15
Categories	Name VARCHAR(50)	

ITM Table Name	Column Name	Value
Resources	Resourc VARCHAR(128)	CPU
	Context VARCHAR(64)	Percent usage
Instances	InstanceKey VARCHAR(2096)	name=0;
Metrics	Name VARCHAR(50)	prcIdleTime, prcSysTime, prcUserTime
Categories	Name VARCHAR(50)	

ITM Table Name	Column Name	Value
Resources	Resourc VARCHAR(128)	RealSystem
	Context VARCHAR(64)	Availability
Instances	InstanceKey VARCHAR(2096)	Name=System;
Metrics	Name VARCHAR(50)	SystemUpTime
Categories	Name VARCHAR(50)	

7.2.12   Resource model for Unix Files (DMXFile)

ITM Table Name	Column Name	Value
Resources	Resourc VARCHAR(128)	File
	Context VARCHAR(64)	File Checksum
Instances	InstanceKey VARCHAR(2096)	filename=/etc/passwd; or pathname=/etc/passwd;
Metrics	Name VARCHAR(50)	size, checksum
Categories	Name VARCHAR(50)	

ITM Table Name	Column Name	Value
Resources	Resourc VARCHAR(128)	File
	Context VARCHAR(64)	File Times
Instances	InstanceKey VARCHAR(2096)	filename=/etc/passwd; or pathname=/etc/passwd;
Metrics	Name VARCHAR(50)	modificationTime, changeTime
Categories	Name VARCHAR(50)	

7.2.13   Resource model for Unix File Systems (DMXFileSystem)

ITM Table Name	Column Name	Value
Resources	Resourc VARCHAR(128)	FileSystem
	Context VARCHAR(64)	File System Availability
Instances	InstanceKey VARCHAR(2096)	mountpoint=/usr;
Metrics	Name VARCHAR(50)	percUsed, percInodesUsed,percAvail, fileSystemFreeSpace fileSystemTotalSpace
Categories	Name VARCHAR(50)	

7.2.14   Resource model for Unix File Systems (DMXMemory)

ITM Table Name	Column Name	Value
Resources	Resourc VARCHAR(128)	Memory
	Context VARCHAR(64)	Memory Paging
Instances	InstanceKey VARCHAR(2096)	Name=total;
Metrics	Name VARCHAR(50)	PageInsRate, PageOutsRate
Categories	Name VARCHAR(50)	

ITM Table Name	Column Name	Value
Resources	Resourc VARCHAR(128)	Memory
	Context VARCHAR(64)	Memory Availability
Instances	InstanceKey VARCHAR(2096)	Name=total;
Metrics	Name VARCHAR(50)	PrcAvailSwap, PrcAvailStorage
Categories	Name VARCHAR(50)	

7.2.15 Resource model for Unix Network Interface (DMXNetworkInterface)

ITM Table Name	Column Name	Value
Resources	Resourc VARCHAR(128)	Network
	Context VARCHAR(64)	Interface Card
Instances	InstanceKey VARCHAR(2096)	InterfaceName=eth0;
Metrics	Name VARCHAR(50)	InPacks, InPacksErr, OutPacks, OutPackErr, OutPackColl
Categories	Name VARCHAR(50)	

7.2.16 Resource model for Unix Network RPC/NFS (DMXNetworkRPCNFS)

ITM Table Name	Column Name	Value
Resources	Resourc VARCHAR(128)	NFS
	Context VARCHAR(64)	Server
Instances	InstanceKey VARCHAR(2096)	name=spare;
Metrics	Name VARCHAR(50)	NFScalls, NFSbadcalls, NFSgetattr, NFSread, NFSwrite, NFSlookup, NFSreadlink
Categories	Name VARCHAR(50)	

ITM Table Name	Column Name	Value
Resources	Resourc VARCHAR(128)	RPC
	Context VARCHAR(64)	Client
Instances	InstanceKey VARCHAR(2096)	name=spare;
Metrics	Name VARCHAR(50)	RPCcalls, RPCbadcalls, RPCretrans, RPCbadxids, RPCtimeouts, RPCDuprequests, RPCDupchecks
Categories	Name VARCHAR(50)	

7.2.17   Resource model for Unix Processes (DMXProcess)

ITM Table Name	Column Name	Value
Resources	Resourc VARCHAR(128)	Process
	Context VARCHAR(64)	Processor Usage
Instances	InstanceKey VARCHAR(2096)	PID=123,Process=lcfd;
Metrics	Name VARCHAR(50)	PercentProcessUsage
Categories	Name VARCHAR(50)	

7.2.18   Resource model for Unix Security (DMXSecurity)

ITM Table Name	Column Name	Value
Resources	Resourc VARCHAR(128)	User
	Context VARCHAR(64)	Logging
Instances	InstanceKey VARCHAR(2096)	username=root;
Metrics	Name VARCHAR(50)	numLogged
Categories	Name VARCHAR(50)	

ITM Table Name	Column Name	Value
Resources	Resourc VARCHAR(128)	File
	Context VARCHAR(64)	File Usage
Instances	InstanceKey VARCHAR(2096)	filename=/etc/passwd;
Metrics	Name VARCHAR(50)	size
Categories	Name VARCHAR(50)	group,owner,mode

7.2.19   Resource model for OS/400 ASP Utilization (ASPUtilization400)

ITM Table Name	Column Name	Value
Resources	Resourc VARCHAR(128)	ASP
	Context VARCHAR(64)	Utilization
Instances	InstanceKey VARCHAR(2096)	ASPInstance=1;
Metrics	Name VARCHAR(50)	overflowStorageMBytes, totalAvailableMBytesPercentage
Categories	Name VARCHAR(50)	

7.2.20 Resource model for OS/400 Basic CPU (BasicCPU400)

ITM Table Name	Column Name	Value
Resources	Resourc VARCHAR(128)	BasicCPU
	Context VARCHAR(64)	Utilization
Instances	InstanceKey VARCHAR(2096)	spare=@;
Metrics	Name VARCHAR(50)	basicAverageCPUPct, numOfProcessors
Categories	Name VARCHAR(50)	

7.2.21 Resource model for OS/400 Basic Interactive CPU (BasicInteractiveCPU400)

ITM Table Name	Column Name	Value
Resources	Resourc VARCHAR(128)	InteractiveCPU
	Context VARCHAR(64)	Utilization
Instances	InstanceKey VARCHAR(2096)	spare=@;
Metrics	Name VARCHAR(50)	basicInteractiveCPUPct, numOfProcessors
Categories	Name VARCHAR(50)	

7.2.22   Resource model for OS/400 Database CPU Utilization (DatabaseCPUUtilization400)

ITM Table Name	Column Name	Value
Resources	Resourc VARCHAR(128)	DatabaseCPU
	Context VARCHAR(64)	Utilization
Instances	InstanceKey VARCHAR(2096)	spare=@;
Metrics	Name VARCHAR(50)	databaseCapabilityCPUPct,databaseThresholdPct
Categories	Name VARCHAR(50)	

7.2.23   Resource model for OS/400 Interactive Feature CPU Utilization (InteractiveFeatureCPUUtilization400)

ITM Table Name	Column Name	Value
Resources	Resourc VARCHAR(128)	InteractiveFeatureCPU
	Context VARCHAR(64)	Utilization
Instances	InstanceKey VARCHAR(2096)	spare=@;
Metrics	Name VARCHAR(50)	basicInteractiveCPUPct,interactiveThresholdPct
Categories	Name VARCHAR(50)	

7.2.24 Resource model for OS/400 System Disk Resources (`SystemDiskResources400`)

ITM Table Name	Column Name	Value
Resources	Resourc VARCHAR(128)	Disk
	Context VARCHAR(64)	Utilization
Instances	InstanceKey VARCHAR(2096)	spare=@;
Metrics	Name VARCHAR(50)	systemASPUsedPct,totalAuxiliaryStorageAvailablePercentage
Categories	Name VARCHAR(50)	

7.2.25 Resource model for OS/400 Storage Pools (StoragePools400)

ITM Table Name	Column Name	Value
Resources	Resourc VARCHAR(128)	OS/400 Storage Pool
	Context VARCHAR(64)	Performance
Instances	InstanceKey VARCHAR(2096)	storagePoolName=db;
Metrics	Name VARCHAR(50)	databaseFaults, nonDatabaseFaults, databasePages, nonDatabasePages,activeToWaitTransitions, activeToIneligibleTransitions, waitToIneligibleTransitions, activityLevel,totalSizeMBytes
Categories	Name VARCHAR(50)	

8 Data mart schema information

The following sections contain the definition of star schemas, metric dimension tables, data marts, and reports provided with the IBM Tivoli Monitoring for Operating Systems warehouse pack.

Shaded columns in the following tables are translated. Translated columns are also indicated by an asterisk (*) following the column name in the table heading.

8.1 Star schemas

This warehouse pack provides the following sample star schema:

8.1.1 AMY Hourly/Daily/Weekly/Monthly CPU Star Schema

Description of star schema (in IWH.STARSCHEMA)	Star schema for all the CPU related metrics
Name of fact table	AMY.F_CPU_HOUR, AMY.F_CPU_DAY, AMY.F_CPU_WEEK, AMY.F_CPU_MONTH
Name of metric dimension table	AMY.D_CPU_METRIC
Names of other dimension tables	AMY.D_HOST_IP, AMY.D_HOST_IP_AD, AMY.D_CPU

8.1.2 AMY Hourly/Daily/Weekly/Monthly File Star Schema

Description of star schema (in IWH.STARSCHEMA)	Star schema for all the File related metrics
Name of fact table	AMY.F_FILE_HOUR, AMY.F_FILE_DAY, AMY.F_FILE_WEEK, AMY.F_FILE_MONTH
Name of metric dimension table	AMY.D_FS_METRIC
Names of other dimension tables	AMY.D_HOST_IP, AMY.D_HOST_IP_AD, AMY.D_FATTRIBUTE, AMY.D_FILE

8.1.3 AMY Hourly/Daily/Weekly/Monthly File System Star Schema

Description of star schema (in IWH.STARSCHEMA)	Star schema for all the File System related metrics
Name of fact table	AMY.F_FS_HOUR, AMY.F_FS_DAY, AMY.F_FS_WEEK, AMY.F_FS_MONTH
Name of metric dimension table	AMY.D_FS_METRIC
Names of other dimension tables	AMY.D_HOST_IP, AMY.D_HOST_IP_AD, AMY.D_FS

8.1.4 AMY Hourly/Daily/Weekly/Monthly Logical Disk Star Schema

Description of star schema (in IWH.STARSCHEMA)	Star schema for all the Logical Disk related metrics
Name of fact table	AMY.F_LDISK_HOUR, AMY.F_LDISK_DAY, AMY.F_LDISK_WEEK, AMY.F_LDISK_MONTH
Name of metric dimension table	AMY.D_IO_METRIC
Names of other dimension tables	AMY.D_HOST_IP, AMY.D_HOST_IP_AD, AMY.D_LDISK

8.1.5 AMY Hourly/Daily/Weekly/Monthly Memory Star Schema

Description of star schema (in IWH.STARSCHEMA)	Star schema for all the Memory related metrics
Name of fact table	AMY.F_MEMORY_HOUR, AMY.F_MEMORY_DAY, AMY.F_MEMORY_WEEK, AMY.F_MEMORY_MONTH
Name of metric dimension table	AMY.D_MEM_METRIC
Names of other dimension tables	AMY.D_HOST_IP, AMY.D_HOST_IP_AD, AMY.D_MEMORY

8.1.6 AMY Hourly/Daily/Weekly/Monthly Network Star Schema

Description of star schema (in IWH.STARSCHEMA)	Star schema for all the Network related metrics
Name of fact table	AMY.F_NETWORK_HOUR, AMY.F_NETWORK_DAY, AMY.F_NETWORK_WEEK, AMY.F_NETWORK_MONTH
Name of metric dimension table	AMY.D_NET_METRIC
Names of other dimension tables	AMY.D_HOST_IP, AMY.D_HOST_IP_AD, AMY.D_NETWORK

8.1.7 AMY Hourly/Daily/Weekly/Monthly OS/400 Auxiliary Storage Pool Star Schema

Description of star schema (in IWH.STARSCHEMA)	Star schema for all the OS/400 Auxiliary Storage Pool related metrics
Name of fact table	AMY.F_OS400ASP_HOUR, AMY.F_OS400ASP_DAY, AMY.F_OS400ASP_WEEK, AMY.F_OS400ASP_MONTH
Name of metric dimension table	AMY.D_FS_METRIC
Names of other dimension tables	AMY.D_HOST_IP, AMY.D_HOST_IP_AD, AMY.D_OS400ASP

8.1.8   AMY Hourly/Daily/Weekly/Monthly OS/400 Disk Star Schema

Description of star schema (in IWH.STARSCHEMA)	Star schema for all the OS/400 Disk Star Schema related metrics
Name of fact table	AMY.F_OS4KDISK_HOUR, AMY.F_OS4KDISK_DAY, AMY.F_OS4KDISK_WEEK, AMY.F_OS4KDISK_MONTH
Name of metric dimension table	AMY.D_IO_METRIC
Names of other dimension tables	AMY.D_HOST_IP, AMY.D_HOST_IP_AD, AMY.D_OS4KDISK

8.1.9   AMY Hourly/Daily/Weekly/Monthly Physical Disk Star Schema

Description of star schema (in IWH.STARSCHEMA)	Star schema for all the Physical Disk related metrics
Name of fact table	AMY.F_PDISK_HOUR, AMY.F_PDISK_DAY, AMY.F_PDISK_WEEK, AMY.F_PDISK_MONTH
Name of metric dimension table	AMY.D_IO_METRIC
Names of other dimension tables	AMY.D_HOST_IP, AMY.D_HOST_IP_AD, AMY.D_PDISK

8.1.10   AMY Hourly/Daily/Weekly/Monthly Printer Star Schema

Description of star schema (in IWH.STARSCHEMA)	Star schema for all the Printing Subsystem related metrics
Name of fact table	AMY.F_PRN_HOUR, AMY.F_PRN_DAY, AMY.F_PRN_WEEK, AMY.F_PRN_MONTH
Name of metric dimension table	AMY.D_PRN_METRIC
Names of other dimension tables	AMY.D_HOST_IP, AMY.D_HOST_IP_AD, AMY.D_PRINTER

8.1.11   AMY Hourly/Daily/Weekly/Monthly Process Star Schema

Description of star schema (in IWH.STARSCHEMA)	Star schema for all the System Processes related metrics
Name of fact table	AMY.F_PROCESS_HOUR, AMY.F_PROCESS_DAY, AMY.F_PROCESS_WEEK, AMY.F_PROCESS_MONTH
Name of metric dimension table	AMY.D_CPU_METRIC
Names of other dimension tables	AMY.D_HOST_IP, AMY.D_HOST_IP_AD, AMY.D_PROCESS

8.1.12   AMY Hourly/Daily/Weekly/Monthly Server Star Schema

Description of star schema (in IWH.STARSCHEMA)	Star schema for all the Server related metrics
Name of fact table	AMY.F_SERVER_HOUR, AMY.F_SERVER_DAY, AMY.F_SERVER_WEEK, AMY.F_SERVER_MONTH
Name of metric dimension table	AMY.D_SERVER_METRIC
Names of other dimension tables	AMY.D_HOST_IP, AMY.D_HOST_IP_AD, AMY.D_SERVER

8.1.13   AMY Hourly/Daily/Weekly/Monthly User Star Schema

Description of star schema (in IWH.STARSCHEMA)	Star schema for all the User related metrics
Name of fact table	AMY.F_USER_HOUR, AMY.F_USER_DAY, AMY.F_USER_WEEK, AMY.F_USER_MONTH
Name of metric dimension table	AMY.D_USER_METRIC
Names of other dimension tables	AMY.D_HOST_IP, AMY.D_HOST_IP_AD, AMY.D_USER, AMY.D_USERID

8.1.14   AMY Hourly/Daily/Weekly/Monthly System Star Schema

Description of star schema (in IWH.STARSCHEMA)	Star schema for all the User related metrics
Name of fact table	AMY.F_SYSTEM_HOUR, AMY.F_SYSTEM_DAY, AMY.F_SYSTEM_WEEK, AMY.F_SYSTEM_MONTH
Name of metric dimension table	AMY.D_SYSTEM_METRIC
Names of other dimension tables	AMY.D_HOST_IP, AMY.D_HOST_IP_AD, AMY.D_SYSTEM

8.2 Fact Tables

The following sections describe the fact tables used by the star schemas in this warehouse pack.

8.2.1   Fact table AMY.F_CPU_HOUR

Metric_ID INTEGER	Host_ID INTEGER	HOST_IP _AD_ID INTEGER	CPU_ID INTEGER	Meas_hour TIMESTAMP	Min_value DOUBLE	Max_value DOUBLE	Avg_value DOUBLE	Total_value DOUBLE	Sample_co unt DOUBLE
0	0	0	0	2002-08-29 04:00:17	0.00	3.00	0.38	NULL	NULL

8.2.2   Fact table AMY.F_FILE_HOUR

Metric _ID INTEGER	Host_I D INTEGER	HOST _IP_A D_ID INTEGER	File_I D INTEGER	FATT RIBUT E_ID INTEGER	Meas_hour TIMESTAM P	Min_value DOUBLE	Max_value DOUBLE	Avg_value DOUBLE	Total_value DOUBLE	Sample_co unt DOUBLE
0	0	0	0	0	2002-08-29 04:00:17	1.84E+2	1.84E+2	1.84E+2	NULL	NULL

8.2.3   Fact table AMY.F_FS_HOUR

Metric _ID INTEGER	Host_I D INTEGER	HOST _IP_A D_ID INTEGER	Fs_ID INTEGER	Meas_hour TIMESTAM P	Min_value DOUBLE	Max_value DOUBLE	Avg_value DOUBLE	Total_value DOUBLE	Sample_co unt DOUBLE
0	0	0	0	2002-08-29 04:00:17	6.37E+1	6.37E+1	6.37E+1	NULL	NULL

8.2.4   Fact table AMY.F_LDISK_HOUR

Metri c_ID INTE GER	Host_I D INTEGER	HOST _IP_A D_ID INTEG ER	Ldisk _ID INTEG ER	Meas_hour TIMESTAMP	Min_value DOUBLE	Max_value DOUBLE	Avg_value DOUBLE	Total_value DOUBLE	Sample_cou nt DOUBLE
0	0	0	0	2002-08-29 04:00:17	230	250	296	NULL	NULL

8.2.5   Fact table AMY.F_PDISK_HOUR

Metri c_ID INTE GER	Host_I D INTEGER	HOST _IP_A D_ID INTEG ER	Pdisk _ID INTEG ER	Meas_hour TIMESTAMP	Min_value DOUBLE	Max_value DOUBLE	Avg_value DOUBLE	Total_value DOUBLE	Sample_cou nt DOUBLE
0	0	0	0	2002-08-29 04:00:17	230	250	296	NULL	NULL

8.2.6   Fact table AMY.F_OS4KDISK_HOUR

Metric_ID INTEGER	Host_ID INTEGER	HOST_IP_AD_ID INTEGER	OS4KDISK_ID INTEGER	Meas_hour TIMESTAMP	Min_value DOUBLE	Max_value DOUBLE	Avg_value DOUBLE	Total_value DOUBLE	Sample_count DOUBLE
0	0	0	0	2002-08-29 04:00:17	230	250	296	NULL	NULL

8.2.7   Fact table AMY.F_PROCESS_HOUR

Metric_ID INTEGER	Host_ID INTEGER	HOST_IP_AD_ID INTEGER	Process_ID INTEGER	Meas_hour TIMESTAMP	Min_value DOUBLE	Max_value DOUBLE	Avg_value DOUBLE	Total_value DOUBLE	Sample_count DOUBLE
0	0	0	0	2002-08-29 04:00:17	6,67E+3	6,67E+3	6,67E+3	NULL	NULL

8.2.8   Fact table AMY.F_MEMORY_HOUR

Metric_ID INTEGER	Host_ID INTEGER	HOST_IP_AD_ID INTEGER	Memory_ID INTEGER	Meas_hour TIMESTAMP	Min_value DOUBLE	Max_value DOUBLE	Avg_value DOUBLE	Total_value DOUBLE	Sample_count DOUBLE
0	0	0	0	2002-08-29 04:00:17	0	1,54E-1	3,17E-3	NULL	NULL

8.2.9   Fact table AMY.F_OS400ASP_HOUR

Metric_ID INTEGER	Host_ID INTEGER	HOST_IP_AD_ID INTEGER	OS400ASP_ID INTEGER	Meas_hour TIMESTAMP	Min_value DOUBLE	Max_value DOUBLE	Avg_value DOUBLE	Total_value DOUBLE	Sample_count DOUBLE
0	0	0	0	2002-08-29 04:00:17	0	1,54E-1	3,17E-3	NULL	NULL

8.2.10 Fact table AMY.F_NETWORK_HOUR

Metric_ID INTEGER	Host_ID INTEGER	HOST_IP_AD_ID INTEGER	Net_ID INTEGER	Meas_hour TIMESTAMP	Min_value DOUBLE	Max_value DOUBLE	Avg_value DOUBLE	Total_value DOUBLE	Sample_count DOUBLE
0	0	0	0	2002-08-29 04:00:17	0	0	0	NULL	NULL

8.2.11 Fact table AMY.F_PRN_HOUR

Metric_ID INTEGER	Host_ID INTEGER	HOST_IP_AD_ID INTEGER	Prn_ID INTEGER	Meas_hour TIMESTAMP	Min_value DOUBLE	Max_value DOUBLE	Avg_value DOUBLE	Total_value DOUBLE	Sample_count DOUBLE
0	0	0	0	2002-08-29 04:00:17	3	21	12	NULL	NULL

8.2.12 Fact table AMY.F_SERVER_HOUR

Metric_ID INTEGER	Host_ID INTEGER	HOST_IP_AD_ID INTEGER	Server_ID INTEGER	Meas_hour TIMESTAMP	Min_value DOUBLE	Max_value DOUBLE	Avg_value DOUBLE	Total_value DOUBLE	Sample_count DOUBLE
0	0	0	0	2002-08-29 04:00:17	3	21	12	NULL	NULL

8.2.13 Fact table AMY.F_USER_HOUR

Metric_ID INTEGER	Host_ID INTEGER	HOST_IP_AD_ID INTEGER	USER_ID INTEGER	USERID_ID INTEGER	Meas_hour TIMESTAMP	Min_value DOUBLE	Max_value DOUBLE	Avg_value DOUBLE	Total_value DOUBLE	Sample_count DOUBLE
0	0	0	0	0	2002-08-29 04:00:17	3	21	12	NULL	NULL

8.2.14 Fact table AMY.F_SYSTEM_HOUR

Metric_ID INTEGER	Host_ID INTEGER	HOST_IP_AD_ID INTEGER	SYSTEM_ID INTEGER	Meas_hour TIMESTAMP	Min_value DOUBLE	Max_value DOUBLE	Avg_value DOUBLE	Total_value DOUBLE	Sample_count DOUBLE
0	0	0	0	2002-08-29 04:00:17	3	21	12	NULL	NULL

8.3 Metric dimension tables

This section describes the metric dimension tables used by the star schemas in this warehouse pack.

8.3.1 AMY.D_CPU_METRIC

This table stores only the CPU related metrics, i.e. the metrics belonging to the CPU_E measurement group defined into the ITM Monitoring Collection measurement group

Metric_ID INTEGER	met_name * VARCHAR(254)	met_desc * VARCHAR(254)	met_units * VARCHAR(254)	met_category * VARCHAR(254)	min_exists CHAR(1)	max_exists CHAR(1)	ave_exists ir CHAR(1)	total exists CHAR(1)	msrc_nm * VARCHAR(254)
0	PercentInterruptTime	Current percentage usage of the CPU as it handles interrupt requests	PRC	CPU	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
1	LowestPercentUsage	Identifies what percent of the least used processor is being used	PRC	CPU	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
2	HighestPercentUsage	Identifies what percent of the most used processor is being used	PRC	CPU	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
3	numOfProcessors	Number of available CPUs for the system or partition	QTY	CPU	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
4	HandleCount	Number of handles allocated to the process	QTY	CPU	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
5	InterruptsSec	Number of interrupts per second that are passed to the CPU	Qps	CPU	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
6	PrivateBytes	Number of private bytes used by the process	B	CPU	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
7	loadAvg15	Number of processes running every 15 minutes	QTY	CPU	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
8	loadAvg5	Number of processes running every 5 minutes	QTY	CPU	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
9	loadAvg1	Number of processes running every minute	QTY	CPU	Y	Y	Y	N	IBM Tivoli Monitoring for Operating

									Systems
10	VirtualBytes	Number of virtual bytes used by the process	B	CPU	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
11	PercentProcessorTime	Percent of processor time used by the process	PRC	CPU	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
12	prcIdleTime	Percent of the time that the CPU is idle	PRC	CPU	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
13	prcSysTime	Percent of the time that the CPU is in system mode	PRC	CPU	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
14	prcUserTime	Percent of the time that the CPU is in user mode	PRC	CPU	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
15	PercentProcessUsage	Percentage of CPU that the process is using	PRC	CPU	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
16	databaseCapabilityCPUPct	Percentage of database CPU utilization	PRC	CPU	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
17	databaseThresholdPct	Percentage of database CPU utilization allowed before performance problems occur	PRC	CPU	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
18	basicInteractiveCPUPct	Percentage of interactive CPU utilization	PRC	CPU	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
19	interactiveThresholdPct	Percentage of interactive CPU utilization allowed before performance problems occur	PRC	CPU	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
20	basicAverageCPUPct	Percentage of overall CPU utilization	PRC	CPU	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems

21	PercentPrivilegedTime	Percentage privileged time of the CPU that is being used by the process	PRC	CPU	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
22	PercentUserTime	Percentage usage of the CPU that is being used by the process	PRC	CPU	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
23	ProcessorQueueLength	Queue length of the processor	QTY	CPU	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
24	WorkingSet	Working set	QTY	CPU	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems

8.3.2   AMY.D_FS_METRIC

This tables stores only the file system related metrics, i.e. the metrics belonging to the FS_E measurement group defined into the ITM Monitoring Collection measurement group

Metric_ID INTEGER	met_name * VARCHAR(254)	met_desc * VARCHAR(254)	met_units * VARCHAR(254)	met_category * VARCHAR(254)	min_exists CHAR(1)	max_exists CHAR(1)	ave_exist sir CHAR(1)	total exists CHAR(1)	msrc_nm * VARCHAR(254)
0	fileSystemFreeSpace	Amount of free space on the logical file system	MB	File system	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
1	fileSystemTotalSpace	Amount of space allocated for the logical file system	MB	File system	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
2	checksum	File checksum	QTY	File system	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
3	size	File size	B	File system	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
4	overflowStorageMBytes	Number of megabytes exceeding the ASP capacity	MB	File system	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
5	percAvail	Percent of file system space available	PRC	File system	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
6	percUsed	Percent of file system space that is being used	PRC	File system	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
7	percInodesUsed	Percent of i-nodes being used	PRC	File system	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems

8	totalAvailableMBytesPercentage	Percentage of total available megabytes in the ASP	PRC	File system	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
9	modificationTime	Time when the contents of file change	Sec	File system	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
10	changeTime	Time when the file attributes change	Sec	File system	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems

8.3.3 AMY.D_IO_METRIC

This tables stores only the disk related metrics, i.e. the metrics belonging to the HD_E measurement group defined into the ITM Monitoring Collection measurement group

Metric_ID INTEGER	met_name * VARCHAR(254)	met_desc * VARCHAR(254)	met_units * VARCHAR(254)	met_category * VARCHAR(254)	min_exists CHAR(1)	max_exists CHAR(1)	ave_exists ir CHAR(1)	total exists CHAR(1)	msrc_nm * VARCHAR(254)
0	DiskBytesSec	Amount of bytes per second being written or read	Bps	I/O	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
1	LogicalDiskFreeSpace	Amount of free space on locical disks	MB	I/O	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
2	AvgQLength	Average queue length for jobs	QTY	I/O	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
3	PercentFreeSpace	Percentage of free space on the logical disk	PRC	I/O	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
4	systemASPUsedPct	Percentage of the system ASP which is used	PRC	I/O	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
5	PercentDiskTime	Percentage of time that the logical drive is being used	PRC	I/O	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
6	totalAuxiliaryStorageAvailablePercentage	Percentage of total auxiliary storage available	PRC	I/O	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
7	LogicalDiskTotalSize	Total size of logical disks	MB	I/O	Y	Y	Y	N	IBM Tivoli Monitoring for Operating

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8.3.4 AMY.D_MEM_METRIC

This tables stores only the memory related metrics, i.e. the metrics belonging to the MEM_E measurement group defined into the ITM Monitoring Collection measurement group

Metric_ID INTEGER	met_name * VARCHAR(254)	met_desc * VARCHAR(254)	met_units * VARCHAR(254)	met_category * VARCHAR(254)	min_exists CHAR(1)	max_exists CHAR(1)	ave_exist s ir CHAR(1)	total exists CHAR(1)	msrc_nm * VARCHAR(254)
0	CommittedBytesIn Use	Amount of committed bytes in relation to the committed limit	PRC	Memory	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
1	MemoryUsage	Amount of committed bytes in relation to the total physical memory (RAM) available to the operating system	PRC	Memory	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
2	totalSizeMBytes	Amount of main storage in the pool	MB	Memory	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
3	CommitLimit	Amount of virtual memory that canbe committed without having to extend the paging file(s)	MB	Memory	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
4	CommittedBytes	Bytes committed to this memory	B	Memory	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
5	activityLevel	Maximum number of	QTY	Memory	Y	Y	Y	N	IBM Tivoli Monitoring

		threads that can be active in the pool at any one time							for Operating Systems
6	PagesSec	Number of pages per second	Qps	Memory	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
7	PrcAvailSwap	Percent of swap space that is available	PRC	Memory	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
8	PrcAvailStorage	Percentage of storage space that is available	PRC	Memory	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
9	nonDatabasePages	Rate at which Non-database pages are brought into the storage pool in pages per second	Qps	Memory	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
10	databasePages	Rate at which database pages are brought into the storage pool in pages per second	Qps	Memory	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
11	nonDatabaseFaults	Rate of Non-database page faults in page faults per second	Qps	Memory	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
12	databaseFaults	Rate of database	Qps	Memory	Y	Y	Y	N	IBM Tivoli Monitoring

		page faults in page faults per second							for Operating Systems
13	PagesFaultsSec	Rate of page faults per second	Qps	Memory	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
14	PageInsRate	Rate of paging in for the cycle	Qps	Memory	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
15	PageOutsRate	Rate of paging out for the cycle	Qps	Memory	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
16	waitToIneligibleTra nsitions	Rate of transitions of threads from a waiting condition to an ineligible condition in transitions per minute	Qpm	Memory	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
17	activeToWaitTransi tions	Rate of transitions of threads from an active condition to a waiting condition in transitions per minute	Qpm	Memory	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
18	activeToIneligibleTr ansitions	Rate of transitions of threads from an active condition to an ineligible condition in transitions	Qpm	Memory	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems

		per minute							
19	TotalPageFileSize	Total amount of page file (swap space) available on all logical disks	MB	Memory	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
20	TotalAvail	Total available memory	B	Memory	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
21	TotalCache	Total cache memory	KB	Memory	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems

8.3.5   AMY.D_NET_METRIC

This tables stores only the network related metrics, i.e. the metrics belonging to the NIC_E measurement group defined into the ITM Monitoring Collection measurement group

Metric_ID INTEGER	met_name * VARCHAR(254)	met_desc * VARCHAR(254)	met_units * VARCHAR(254)	met_category * VARCHAR(254)	min_exists CHAR(1)	max_exists CHAR(1)	ave_exists ir CHAR(1)	total exists CHAR(1)	msrc_nm * VARCHAR(254)
0	RPCbadxids	Bad xids	QTY	Network interface	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
1	RPCcalls	Client RPC calls	QTY	Network interface	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
2	RPCtimeouts	Client RPC calls that timed out	QTY	Network interface	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
3	WorkItemShortages	Identifies work item shortages	QTY	Network interface	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
4	OutputQueueLength	Length of the queue for output	QTY	Network interface	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
5	NFSlookup	Lookup calls on the NFS server	QTY	Network interface	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
6	NFScalls	NFS calls	QTY	Network interface	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
7	NFSbadcalls	NFS calls that are timed out	QTY	Network interface	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems

8	NFSread	NFS read operations	QTY	Network interface	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
9	NFSgetattr	NFS requests to read the client attribute cache	QTY	Network interface	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
10	NFSreadlink	NFS server calls for readlink operations	QTY	Network interface	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
11	NFSwrite	NFS write operations	QTY	Network interface	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
12	CurrentBandwidth	Network bandwidth	Bps	Network interface	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
13	RPCDupchecks	Number of RPC server calls that are looked up in the duplicate request cache	QTY	Network interface	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
14	DGSec	Number of datagrams per second	Qps	Network interface	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
15	DGReceivedSec	Number of datagrams received per second	Qps	Network interface	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
16	DGSentSec	Number of datagrams sent per second	Qps	Network interface	Y	Y	Y	N	IBM Tivoli Monitoring for Operating

									Systems
17	FragmentsReceivedSec	Number of fragments received per second	Qps	Network interface	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
18	CurrentCommands	Number of requests that are currently queued for the redirector	QTY	Network interface	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
19	SegmentsSec	Number of segments per second	Qps	Network interface	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
20	SegmentRcvdSec	Number of segments received per second	Qps	Network interface	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
21	SegmentsRetrasmitted	Number of segments retransmitted	QTY	Network interface	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
22	SegmentSentSec	Number of segments sent per second	Qps	Network interface	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
23	RPCbadcalls	Number of timed-out client RPC calls	QTY	Network interface	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
24	InPacksErr	Percent of input packets in error	PRC	Network interface	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
25	OutPackColl	Percent of output packets colliding	PRC	Network interface	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems

26	OutPackErr	Percent of output packets in error	PRC	Network interface	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
27	PercentNetworkUtil	Percent of the network being used	PRC	Network interface	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
28	PercentBroadcastFrames	Percent of the network that is broadcast frames	PRC	Network interface	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
29	RPCretrans	RPC client calls being retransmitted	QTY	Network interface	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
30	RPCDuprequests	RPC server calls that are duplicate requests	QTY	Network interface	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
31	BytesTotalSec	Rate at which the redirector is processing data	Bps	Network interface	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
32	InPacks	Total number of input packets	QTY	Network interface	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
33	OutPacks	Total number of output packets	QTY	Network interface	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems

8.3.6   AMY.D_PRN_METRIC

This tables stores only the printer related metrics, i.e. the metrics belonging to the PRN_E measurement group defined into the ITM Monitoring Collection measurement group

Met ric_ ID INT EG ER	met_name * VARCHAR(25 4)	met_desc * VARCHAR (254)	met_units * VARCHAR(254)	met_category * VARCHAR(25 4)	min_exi sts CHAR(1)	max_exi sts CHAR(1)	ave_exi sts ir CHAR(1)	total exists CHAR(1)	msrc_nm * VARCHAR(254)
0	OutOfPaperErro rs	Number of Out-of-Paper errors	QTY	Printer	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
1	JobErrors	Number of jobs in error	QTY	Printer	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
2	NotReadyErrors	Number of not ready errors	QTY	Printer	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems

8.3.7   AMY.D_SERVER_METRIC

This table stores only the server related metrics, i.e. metrics collected for the AMY_SERVER component type.

Metric_ID INTEGER	met_name * VARCHAR(254)	met_desc * VARCHAR(254)	met_units * VARCHAR(254)	met_category * VARCHAR(254)	min_exists CHAR(1)	max_exists CHAR(1)	ave_exists ir CHAR(1)	total exists CHAR(1)	msrc_nm * VARCHAR(254)
0	WorkItemShortages	Identifies work item shortages	QTY	Not Used	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
1	SessionsForcedOff	Number of sessions forced offline	QTY	Not Used	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
2	SessionsLoggedOff	Number of sessions logged off	QTY	Not Used	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
3	ServerTotalSessions	Number of sessions on the server	QTY	Not Used	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
4	SessionsErroredOut	Number of sessions that ended in error	QTY	Not Used	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems
5	BytesTotalSec	Rate at which the redirector is processing data	Bps	Not Used	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems

8.3.8   AMY.D_USER_METRIC

This table stores only the user related metrics, i.e. metrics collected for the AMY_USER component type.

Metric_ID INTEGER	met_name * VARCHAR(254)	met_desc * VARCHAR(254)	met_units * VARCHAR(254)	met_category * VARCHAR(254)	min_exists CHAR(1)	max_exists CHAR(1)	ave_exists ir CHAR(1)	Total exists CHAR(1)	msrc_nm * VARCHAR(254)
0	numLogged	Number of times the user is logged in	QTY	Not Used	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems

8.3.9 AMY.D_SYSTEM_METRIC

This table stores only the user related metrics, i.e. metrics collected for the AMY_SYSTEM component type.

Metric_ID INTEGER	met_name * VARCHAR(254)	met_desc * VARCHAR(254)	met_units * VARCHAR(254)	met_category * VARCHAR(254)	min_exists CHAR(1)	max_exists CHAR(1)	ave_exists ir CHAR(1)	Total exists CHAR(1)	msrc_nm * VARCHAR(254)
0	SystemUpTime	Amount of time the system has been running	Sec	Not Used	Y	Y	Y	N	IBM Tivoli Monitoring for Operating Systems

8.4 Dimension tables

The following sections describe the dimension tables (other than metric dimension tables) used by the star schemas in this warehouse pack.

8.4.1 Dimension table AMY.D_HOST_IP

This table stores the same information of the previous table, adding fields for Customer Name and Center Name and removing the information about the life period of the host, because it is always filled with data already filtered by the TWG.Cur_Comp view, which only consider the active components.

Host_ID INTEGER	Hostname VARCHAR(120)	Network_ domain VARCHAR(120)	Network_subdo main VARCHAR(120)	Network_sub domain2 VARCHAR(120)	Short_host name VARCHAR(120)	Customer_ Name VARCHAR (120)	Center_ Name VARCHAR(120)
0	dmw2k3.rome.tivoli.com	tivoli.com	rome.tivoli.com	no value	dmw2k3	Default CDW customer	Default CDW center

8.4.2   Dimension table AMY.D_HOST_IP_AD

This table stores the IP address of each host inserted in the previous dimension tables, if it is available.

HOST_IP_AD_ID INTEGER	HOST_IP_AD VARCHAR(120)
0	146.84.112.157

8.4.3   Dimension table AMY.D_CPU

This table stores information about the monitored CPUs.

CPU_ID INTEGER	CPU_TYP VARCHAR(254)	CPU_NM VARCHAR(254)
0	Unix/Windows	0

8.4.4   Dimension table AMY.D_FILE

This table stores the names of the monitored files.

FILE_ID INTEGER	FILE_NAME VARCHAR(254)
0	/etc/group

8.4.5   Dimension table AMY.D_FATTRIBUTE

This table stores the attributes of the monitored files, whose names are stored in the previous table.

FATTRIBUTE_ID INTEGER	FMODE VARCHAR(254)	FGROUP VARCHAR(254)	FOWNER VARCHAR(254)
0	-r--r--r--	root	root

8.4.6   Dimension table AMY.D_FS

This table stores information about the monitored file systems.

FS_ID INTEGER	FS_NM VARCHAR(254)
0	/usr

8.4.7 Dimension table AMY.D_LDISK

This table stores information about the monitored logical disks.

LDISK_ID INTEGER	LDISK_NM VARCHAR(254)
0	D:

8.4.8 Dimension table AMY.D_PDISK

This table stores information about the monitored physical disks

PDISK_ID INTEGER	PDISK_NM VARCHAR(254)
0	0

8.4.9 Dimension table AMY.D_OS4KDISK

This table stores information about the component AMY_OS400DISK (System Disk for OS/400).

OS4KDISK_ID INTEGER	OS4KDISK_NM VARCHAR(254)
0	

8.4.10 Dimension table AMY.D_PROCESS

This table stores information about the monitored processes.

PROCESS_ID INTEGER	PROC_NM VARCHAR(254)
0	Tmw2k

8.4.11 Dimension table AMY.D_MEMORY

This table stores information about the monitored memory.

MEMORY_ID INTEGER	MEMORY_TYPE VARCHAR(254	MEMORY_NM VARCHAR(254)
0	Unix/Windows	_total

8.4.12 Dimension table AMY.D_OS400ASP

This table stores information about the component AMY_OS400ASP (Auxiliary Storage Pool for OS/400).

OS400ASP_ID INTEGER	OS4KASP_NM VARCHAR(254)
0	

8.4.13   Dimension table AMY.D_NETWORK

This table stores information about the monitored network resources.

NET_ID INTEGER	NET_TYPE VARCHAR(254)	NET_NM VARCHAR(254)
0	Unix/Windows	eth0

8.4.14   Dimension table AMY.D_PRINTER

This table stores information about the monitored printers and printer queue

PRN_ID INTEGER	PRN_NM VARCHAR(254)
0	IBM Infoprint 40

8.4.15   Dimension table AMY.D_SERVER

This table stores information about the monitored servers.

SERVER_ID INTEGER	SERVER_NM VARCHAR(254)
0	

8.4.16   Dimension table AMY.D_USER

This table stores information about the monitored user accounts.

USER_ID INTEGER	USER_NM VARCHAR(254)
0	dummyuser

8.4.17   Dimension table AMY.D_USERID

This table stores information about the userid associated to the monitored user accounts.

USER_ID INTEGER	USERID VARCHAR(254)
0	400

8.4.18   Dimension table AMY.D_SYSTEM

This table stores information about the userid associated to the monitored user accounts.

SYSTEM_ID INTEGER	SYSTEM_NM VARCHAR(254)
0	System

8.5 Data marts and reports

This Warehouse Enablement Pack provides one datamart that contain all the star schemas previously described and sample reports.

8.5.1   AMY Data Mart and Sample Reports

Due to the nature and variety of data logged by the Operating System Resource Models, this Warehouse Enablement Pack only provides a limited set of sample reports built on a sample Data Mart (AMY Data Mart), which includes all the available Star Schemas. The provided reports may not suite a specific necessity but are enough to show what kind of information can be graphically displayed leveraging on the data collected by the Operating System Resource Models; for more specific reporting or analysis requirements, you can create your own Data Mart and report, selecting the metrics collected for a given resource that best suite your needs.

8.5.2   Operating System: UNIX CPU statistics

This reports shows over time the average CPU Idle Time, CPU System Mode Time and Processor User Time for all the UNIX systems. It is built using the following queries, generated by the Presentation Services reporting interface:

select avg(avg_value), meas_date from AMY.D_CPU, AMY.D_CPU_METRIC, AMY.D_HOST_IP, AMY.F_CPU_DAY where AMY.F_CPU_DAY.CPU_ID = AMY.D_CPU.CPU_ID AND AMY.F_CPU_DAY.METRIC_ID = AMY.D_CPU_METRIC.METRIC_ID AND AMY.D_HOST_IP.HOST_ID = AMY.F_CPU_DAY.HOST_ID AND AMY.D_CPU_METRIC.met_name = 'prcIdleTime' AND AMY.F_CPU_DAY.meas_date >= (timestamp(current date - 15 days, '00.00.00')) and AMY.F_CPU_DAY.meas_date < (timestamp(current date, '00.00.00')) group by meas_date order by meas_date asc

select avg(avg_value), meas_date from AMY.D_CPU, AMY.D_CPU_METRIC, AMY.D_HOST_IP, AMY.F_CPU_DAY where AMY.F_CPU_DAY.CPU_ID = AMY.D_CPU.CPU_ID AND AMY.F_CPU_DAY.METRIC_ID = AMY.D_CPU_METRIC.METRIC_ID AND AMY.D_HOST_IP.HOST_ID = AMY.F_CPU_DAY.HOST_ID AND AMY.D_CPU_METRIC.met_name = 'prcSysTime' AND AMY.F_CPU_DAY.meas_date >= (timestamp(current date - 15 days, '00.00.00')) and AMY.F_CPU_DAY.meas_date < (timestamp(current date, '00.00.00')) group by meas_date order by meas_date asc

select avg(avg_value), meas_date from AMY.D_CPU, AMY.D_CPU_METRIC, AMY.D_HOST_IP, AMY.F_CPU_DAY where AMY.F_CPU_DAY.CPU_ID = AMY.D_CPU.CPU_ID AND AMY.F_CPU_DAY.METRIC_ID = AMY.D_CPU_METRIC.METRIC_ID AND AMY.D_HOST_IP.HOST_ID = AMY.F_CPU_DAY.HOST_ID AND AMY.D_CPU_METRIC.met_name = 'prcUserTime' AND AMY.F_CPU_DAY.meas_date >= (timestamp(current date - 15 days, '00.00.00')) and AMY.F_CPU_DAY.meas_date < (timestamp(current date, '00.00.00')) group by meas_date order by meas_date asc

8.5.3   Operating System Windows CPU Statistics

This reports shows over time the average Processor Queue Length for all the Windows systems. It is built using the following query, generated by the Presentation Services reporting interface:

select avg(avg_value), meas_date from AMY.D_CPU, AMY.D_CPU_METRIC, AMY.D_HOST_IP, AMY.F_CPU_DAY where AMY.F_CPU_DAY.CPU_ID = AMY.D_CPU.CPU_ID AND AMY.F_CPU_DAY.METRIC_ID = AMY.D_CPU_METRIC.METRIC_ID AND AMY.D_HOST_IP.HOST_ID = AMY.F_CPU_DAY.HOST_ID AND AMY.D_CPU_METRIC.met_name = 'ProcessorQueueLength' AND AMY.F_CPU_DAY.meas_date >= (timestamp(current date - 14 days, '00.00.00')) and AMY.F_CPU_DAY.meas_date < (timestamp(current date, '00.00.00')) group by meas_date order by meas_date asc

8.5.4   Operating System: Health of a Backup Server

This reports shows overtime the health of a system in terms of average pages per second, page faults per second, processor time used , network redirector rate for all systems. It is built using the following queries, generated by the Presentation Services reporting interface:

select avg(avg_value), meas_date from AMY.D_HOST_IP, AMY.D_NETWORK, AMY.D_NET_METRIC, AMY.F_NETWORK_DAY where AMY.D_HOST_IP.HOST_ID = AMY.F_NETWORK_DAY.HOST_ID AND AMY.F_NETWORK_DAY.NET_ID = AMY.D_NETWORK.NET_ID AND AMY.F_NETWORK_DAY.METRIC_ID = AMY.D_NET_METRIC.METRIC_ID AND AMY.D_NET_METRIC.met_name = 'BytesTotalSec' AND AMY.F_NETWORK_DAY.meas_date >= (timestamp(current date - 14 days, '00.00.00')) and AMY.F_NETWORK_DAY.meas_date < (timestamp(current date, '00.00.00')) group by meas_date order by meas_date asc

select avg(avg_value), meas_date from AMY.D_HOST_IP, AMY.D_MEMORY, AMY.D_MEM_METRIC, AMY.F_MEMORY_DAY where AMY.F_MEMORY_DAY.MEMORY_ID = AMY.D_MEMORY.MEMORY_ID AND AMY.F_MEMORY_DAY.METRIC_ID = AMY.D_MEM_METRIC.METRIC_ID AND AMY.D_HOST_IP.HOST_ID = AMY.F_MEMORY_DAY.HOST_ID AND AMY.D_MEM_METRIC.met_name = 'PagesSec' AND AMY.F_MEMORY_DAY.meas_date >= (timestamp(current date - 14 days, '00.00.00')) and AMY.F_MEMORY_DAY.meas_date < (timestamp(current date, '00.00.00')) group by meas_date order by meas_date asc

select avg(avg_value), meas_date from AMY.D_HOST_IP, AMY.D_MEMORY, AMY.D_MEM_METRIC, AMY.F_MEMORY_DAY where AMY.F_MEMORY_DAY.MEMORY_ID = AMY.D_MEMORY.MEMORY_ID AND AMY.F_MEMORY_DAY.METRIC_ID = AMY.D_MEM_METRIC.METRIC_ID AND AMY.D_HOST_IP.HOST_ID = AMY.F_MEMORY_DAY.HOST_ID AND AMY.D_MEM_METRIC.met_name = 'PagesFaultsSec' AND AMY.F_MEMORY_DAY.meas_date >= (timestamp(current date - 14 days, '00.00.00')) and AMY.F_MEMORY_DAY.meas_date < (timestamp(current date, '00.00.00')) group by meas_date order by meas_date asc

select avg(avg_value), meas_date from AMY.D_CPU, AMY.D_CPU_METRIC, AMY.D_HOST_IP, AMY.F_CPU_DAY where AMY.F_CPU_DAY.CPU_ID = AMY.D_CPU.CPU_ID AND AMY.F_CPU_DAY.METRIC_ID = AMY.D_CPU_METRIC.METRIC_ID AND AMY.D_HOST_IP.HOST_ID = AMY.F_CPU_DAY.HOST_ID AND AMY.D_CPU_METRIC.met_name = 'PercentProcessorTime' AND AMY.F_CPU_DAY.meas_date >= (timestamp(current date - 14 days, '00.00.00')) and AMY.F_CPU_DAY.meas_date < (timestamp(current date, '00.00.00')) group by meas_date order by meas_date asc

8.5.5   Operating System: Usage of a Domain Controller

This reports shows overtime the average processor time used by the process WINLOGON and the processor time for all CPUs for all systems. It is built using the following queries, generated by the Presentation Services reporting interface:

select avg(avg_value), meas_date from AMY.D_CPU, AMY.D_CPU_METRIC, AMY.D_HOST_IP, AMY.F_CPU_DAY where AMY.F_CPU_DAY.CPU_ID = AMY.D_CPU.CPU_ID AND AMY.F_CPU_DAY.METRIC_ID = AMY.D_CPU_METRIC.METRIC_ID AND AMY.D_HOST_IP.HOST_ID = AMY.F_CPU_DAY.HOST_ID AND AMY.D_CPU_METRIC.met_name = 'PercentProcessorTime' AND AMY.F_CPU_DAY.meas_date >= (timestamp(current date - 14 days, '00.00.00')) and AMY.F_CPU_DAY.meas_date < (timestamp(current date, '00.00.00')) group by meas_date order by meas_date asc

select avg(avg_value), meas_date from AMY.D_CPU_METRIC, AMY.D_HOST_IP, AMY.D_PROCESS, AMY.F_PROCESS_DAY where AMY.F_PROCESS_DAY.METRIC_ID = AMY.D_CPU_METRIC.METRIC_ID AND AMY.F_PROCESS_DAY.PROCESS_ID = AMY.D_PROCESS.PROCESS_ID AND AMY.D_HOST_IP.HOST_ID = AMY.F_PROCESS_DAY.HOST_ID AND AMY.D_PROCESS.PROC_NM = 'WINLOGON' AND AMY.D_CPU_METRIC.met_name = 'PercentProcessorTime' AND AMY.F_PROCESS_DAY.meas_date >= (timestamp(current date - 14 days, '00.00.00')) and AMY.F_PROCESS_DAY.meas_date < (timestamp(current date, '00.00.00')) group by meas_date order by meas_date asc

8.5.6 Operating System: Memory Utilization

This reports shows overtime the total available memory for all systems. It is built using the following query, generated by the Presentation Services reporting interface:

select avg(avg_value), meas_date from AMY.D_HOST_IP, AMY.D_MEMORY, AMY.D_MEM_METRIC, AMY.F_MEMORY_DAY where AMY.F_MEMORY_DAY.MEMORY_ID = AMY.D_MEMORY.MEMORY_ID AND AMY.F_MEMORY_DAY.METRIC_ID = AMY.D_MEM_METRIC.METRIC_ID AND AMY.D_HOST_IP.HOST_ID = AMY.F_MEMORY_DAY.HOST_ID AND AMY.D_MEM_METRIC.met_name = 'TotalAvail' AND AMY.F_MEMORY_DAY.meas_date >= (timestamp(current date - 14 days, '00.00.00')) and AMY.F_MEMORY_DAY.meas_date < (timestamp(current date, '00.00.00')) group by meas_date order by meas_date asc

8.5.7 Operating System: Network Statistics

This reports shows over time the average input and output packets for al the systems. It is built using the following queries, generated by the Presentation Services reporting interface:

select avg(avg_value), meas_date from AMY.D_HOST_IP, AMY.D_NETWORK, AMY.D_NET_METRIC, AMY.F_NETWORK_DAY where AMY.D_HOST_IP.HOST_ID = AMY.F_NETWORK_DAY.HOST_ID AND AMY.F_NETWORK_DAY.NET_ID = AMY.D_NETWORK.NET_ID AND AMY.F_NETWORK_DAY.METRIC_ID = AMY.D_NET_METRIC.METRIC_ID AND AMY.D_NET_METRIC.met_name = 'InPacks' AND AMY.F_NETWORK_DAY.meas_date >= (timestamp(current date - 14 days, '00.00.00')) and AMY.F_NETWORK_DAY.meas_date < (timestamp(current date, '00.00.00')) group by meas_date order by meas_date asc

select avg(avg_value), meas_date from AMY.D_HOST_IP, AMY.D_NETWORK, AMY.D_NET_METRIC, AMY.F_NETWORK_DAY where AMY.D_HOST_IP.HOST_ID = AMY.F_NETWORK_DAY.HOST_ID AND AMY.F_NETWORK_DAY.NET_ID = AMY.D_NETWORK.NET_ID AND AMY.F_NETWORK_DAY.METRIC_ID = AMY.D_NET_METRIC.METRIC_ID AND AMY.D_NET_METRIC.met_name = 'OutPacks' AND AMY.F_NETWORK_DAY.meas_date >= (timestamp(current date - 14 days, '00.00.00')) and AMY.F_NETWORK_DAY.meas_date < (timestamp(current date, '00.00.00')) group by meas_date order by meas_date asc

8.5.8 Operating System: Paging File Utilization

This report shows overtime the average available swap space. It is built using the following query, generated by the Presentation Services reporting interface:

select avg(avg_value), meas_date from AMY.D_HOST_IP, AMY.D_MEMORY, AMY.D_MEM_METRIC, AMY.F_MEMORY_DAY where AMY.F_MEMORY_DAY.MEMORY_ID = AMY.D_MEMORY.MEMORY_ID AND AMY.F_MEMORY_DAY.METRIC_ID = AMY.D_MEM_METRIC.METRIC_ID AND AMY.D_HOST_IP.HOST_ID = AMY.F_MEMORY_DAY.HOST_ID AND AMY.D_MEM_METRIC.met_name = 'PrcAvailSwap' AND AMY.F_MEMORY_DAY.meas_date >= (timestamp(current date - 14 days, '00.00.00')) and AMY.F_MEMORY_DAY.meas_date < (timestamp(current date, '00.00.00')) group by meas_date order by meas_date asc

8.5.9 Operating System: Busiest Systems

This report shows the busiest systems. It is built using the following query, generated by the Presentation Services reporting interface:

select avg(avg_value), AMY.D_HOST_IP.HOSTNAME from AMY.D_CPU, AMY.D_CPU_METRIC, AMY.D_HOST_IP, AMY.F_CPU_DAY where AMY.F_CPU_DAY.CPU_ID = AMY.D_CPU.CPU_ID AND AMY.F_CPU_DAY.METRIC_ID = AMY.D_CPU_METRIC.METRIC_ID AND AMY.D_HOST_IP.HOST_ID = AMY.F_CPU_DAY.HOST_ID AND AMY.D_CPU_METRIC.met_name = 'prcIdleTime' AND AMY.F_CPU_DAY.meas_date >= (timestamp(current date - 14 days,

'00.00.00')) and AMY.F_CPU_DAY.meas_date < (timestamp(current date, '00.00.00')) group by AMY.D_HOST_IP.HOSTNAME order by 1 asc fetch first 25 rows only