

IBM Tivoli Monitoring for Operating Systems Warehouse Enablement Pack Implementation Guide

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Edition notice

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1 About this document

This document describes the Tivoli Enterprise™ 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.

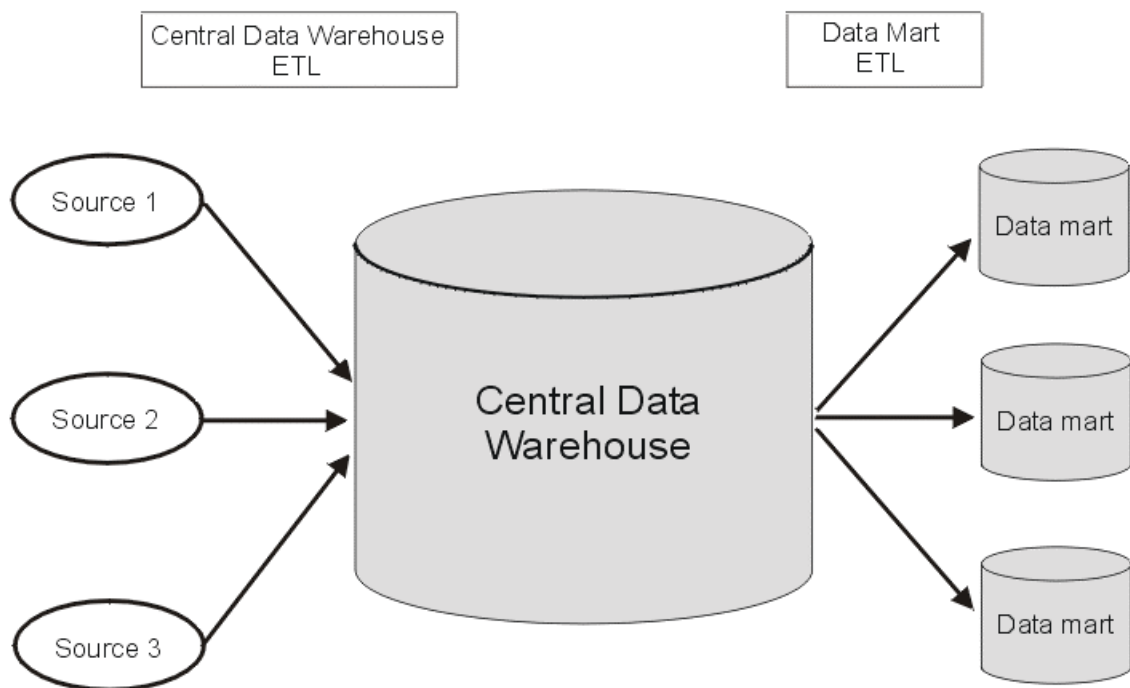


Figure 1. Tivoli Enterprise Data Warehouse overview

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.

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.

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

5.1 *AMY_m10_buildStarSchema_process*

This process builds a sample star schema for the metrics grouped under the IBM Tivoli Monitoring, Monitoring Collections for Operating Systems Measurement Group Type.

This process has the following step:

AMY_m10_s010_buildStarSchema

This step fills the Metric Dimension Table with the static data retrieved at installation time and stored in the AMY.Stage_D_ITM_Metric staging table. It also fills the Fact Table with the data retrieved from TWG.Msmt table and the Component Dimension Table with the data retrieved from TWG.Comp table.

Each data movement is controlled by a proper extraction function. That is, by a WHERE condition built on the proper records of the TWG.Extract_Control table and on the AMY product code, so that it is possible to recover the extraction in case of failure.

5.2 *AMY_m05_deleteStarSchema_Process*

This Process is used only for maintenance and simply purges all the records from the sample star schema and resets the extract functions in the TWG.Extract_Control table.

5.3 *AMY_m15_buildOSStarSchema_Process*

This process builds a three dimensional star schema for each measurement group defined in the "ITM Monitoring Collection for Operating Systems" group type: the third dimension allows to report data logged for a specific logged instance. This process should be ran once a day and should be ran after the AMX_c05_ETL1_Process that 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_m15_s010_metric

This step fills all the Metric Dimension Tables used by the different star schemas with the static data retrieved at installation time and stored in the AMY.Stage_D_ITM_Metric staging table at the TWH_CDW database.

AMY_m15_s020_dimension

This step fills all the Dimension Tables, used by the different star schemas, with the instance information logged, for each component, into the TWG.Comp and TWG.CompAttr tables.

AMY_m15_s030_prune_fact

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 'yyymmdd', so an entry of 300 indicates 3 months of data to be pruned.

AMY_m15_s040_fact

This step fills the fact tables, defined at the TWH_MART database under the AMY schema, with the proper data extracted from the TWG.Msmt table.

5.4 *AMY_m20_rollupOSStarSchema_Process*

This process performs a rollup of data from the hourly fact tables to the daily weekly and monthly fact tables.

Once the Hourly fact tables have been populated by the previous step (AMY_m15_s040_fact), the rollup step populates the daily, weekly and monthly fact tables in the data mart based on the data in the stage fact tables. The stage fact tables only contains today's data.

The rollup step also populates the RPI.SSUpdated table in the control database to enable report scheduling. The report gets rerun when the runReport user-defined program is run if the following are true:

- The RPI.SSUpdated table has an entry for the star schema indicating that data is new

- When the user created a report in the report interface GUI, they selected the option to schedule reports

This process contains a step for each hourly fact table that must be rolled-up.

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
IP_HOST	NULL	IP Host	8/30/2002 8:55:36 AM	1/1/9999 12:00:00 PM
IP_INTERFACE	NULL	IP Interface	8/30/2002 8:55:36 AM	1/1/9999 12:00:00 PM
TME_ENDPOINT	NULL	Tivoli endpoint	8/30/2002 8:55:36 AM	1/1/9999 12:00:00 PM
AMY_CPU	NULL	System Processor	9/2/2002 6:36:04 AM	1/1/9999 12:00:00 PM
AMY_FILE	NULL	File	9/2/2002 6:36:04 AM	1/1/9999 12:00:00 PM
AMY_FS	NULL	File System	9/2/2002 6:36:04 AM	1/1/9999 12:00:00 PM
AMY_HOST	NULL	Host monitored by ITM	9/2/2002 6:36:04 AM	1/1/9999 12:00:00 PM
AMY_IP	NULL	IP Protocol	9/2/2002 6:36:04 AM	1/1/9999 12:00:00 PM
AMY_LDISK	NULL	Logical Disk	9/2/2002 6:36:04 AM	1/1/9999 12:00:00 PM
AMY_MEMORY	NULL	Memory	9/2/2002 6:36:04 AM	1/1/9999 12:00:00 PM
AMY_NETSEG	NULL	Network Segment	9/2/2002 6:36:04 AM	1/1/9999 12:00:00 PM
AMY_NETWORK	NULL	Network	9/2/2002 6:36:04 AM	1/1/9999 12:00:00 PM
AMY_NFS	NULL	Network File System	9/2/2002 6:36:04 AM	1/1/9999 12:00:00 PM
AMY_OS400ASP	NULL	Auxiliary Storage Pool	9/2/2002 6:36:04 AM	1/1/9999 12:00:00 PM
AMY_OS400BCPU	NULL	Basic Average CPU	9/2/2002 6:36:04 AM	1/1/9999 12:00:00 PM
AMY_OS400BCPU	NULL	Database CPU	9/2/2002 6:36:04 AM	1/1/9999 12:00:00 PM
AMY_OS400DISK	NULL	System Disk	9/2/2002 6:36:04 AM	1/1/9999 12:00:00 PM
AMY_OS400ICPU	NULL	Basic Interactive CPU	9/2/2002 6:36:04 AM	1/1/9999 12:00:00 PM
AMY_OS400IFCPU	NULL	Interactive Feature CPU	9/2/2002 6:36:04 AM	1/1/9999 12:00:00 PM
AMY_OS400SPOOL	NULL	Storage Pools	9/2/2002 6:36:04 AM	1/1/9999 12:00:00 PM
AMY_PDISK	NULL	Physical Disk	9/2/2002 6:36:04 AM	1/1/9999 12:00:00 PM
AMY_PORT	NULL	Port	9/2/2002 6:36:04 AM	1/1/9999 12:00:00 PM
AMY_PRNQUEUE	NULL	Printer	9/2/2002 6:36:04 AM	1/1/9999 12:00:00 PM
AMY_PROCESS	NULL	Process	9/2/2002 6:36:04 AM	1/1/9999 12:00:00 PM
AMY_REDIR	NULL	Network Redirector	9/2/2002 6:36:04 AM	1/1/9999 12:00:00 PM

AMY_RPC	NULL	Remote Procedure Call	9/2/2002 6:36:04 AM	1/1/9999 12:00:00 PM
AMY_SERVER	NULL	Server	9/2/2002 6:36:04 AM	1/1/9999 12:00:00 PM
AMY_SERVICE	NULL	Service	9/2/2002 6:36:04 AM	1/1/9999 12:00:00 PM
AMY_TCPIP	NULL	TCPIP Protocol	9/2/2002 6:36:04 AM	1/1/9999 12:00:00 PM
AMY_USER	NULL	User	9/2/2002 6:36:04 AM	1/1/9999 12:00:00 PM

6.1.2 Component (table Comp)

Comp_ID INTEGER	CompTyp_Cd CHAR (17)	Centr_Cd CHAR (6)	Cust_ID INTEGER	Comp_Corr_ID INTEGER	Comp_Nm VARCHAR (254)	Comp_Corr_Val VARCHAR (254)	Comp_Strt_DtTm TIMESTAMP	Comp_End_DtTm TIMESTAMP	Comp_Ds VARCHAR (254)
0	IP_HOST	CDW	1	0	dmw2k3.rome.tivoli.com		9/2/2002 7:17:20 AM	1/1/9999	IP HOST
1	AMY_CPU	CDW	1	0	0	0	8/29/2002 4:00:17 AM	1/1/9999	
2	AMY_SERVICE	CDW	1	0	Browser	Browser	8/29/2002 4:00:15 AM	1/1/9999	
3	AMY_SERVICE	CDW	1	0	Eventlog	Eventlog	8/29/2002 4:00:16 AM	1/1/9999	
4	AMY_SERVICE	CDW	1	0	Netlogon	Netlogon	8/29/2002 4:00:16 AM	1/1/9999	
5	AMY_SERVICE	CDW	1	0	NtLmSsp	NtLmSsp	8/29/2002 4:00:17 AM	1/1/9999	
6	AMY_SERVICE	CDW	1	0	lanmanserver	lanmanserver	8/29/2002 4:00:17 AM	1/1/9999	
7	AMY_SERVICE	CDW	1	0	lanmanworkstation	lanmanworkstation	8/29/2002 4:00:16 AM	1/1/9999	
8	AMY_SERVICE	CDW	1	0	lcfid	lcfid	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 ReInRul)

CompTyp_Source_Cd CHAR(17)	CompTyp_Target_Cd CHAR(17)	ReInTyp_Cd CHAR(6)	ReInRul_Strt_DtTm TIMESTAMP	ReInRul_End_DtTm TIMESTAMP
AMY_HOST	AMY_PDISK	PCHILD	9/2/2002 6:36:09 AM	1/1/9999
AMY_HOST	AMY_LDISK	PCHILD	9/2/2002 6:36:09 AM	1/1/9999
AMY_HOST	AMY_PROCESS	PCHILD	9/2/2002 6:36:09 AM	1/1/9999
AMY_HOST	AMY_MEMORY	PCHILD	9/2/2002 6:36:09 AM	1/1/9999
AMY_HOST	AMY_REDIR	PCHILD	9/2/2002 6:36:09 AM	1/1/9999
AMY_HOST	AMY_NETSEG	PCHILD	9/2/2002 6:36:09 AM	1/1/9999
AMY_HOST	AMY_SERVER	PCHILD	9/2/2002 6:36:09 AM	1/1/9999
AMY_HOST	AMY_SERVICE	PCHILD	9/2/2002 6:36:09 AM	1/1/9999
AMY_HOST	AMY_PORT	PCHILD	9/2/2002 6:36:10 AM	1/1/9999
AMY_HOST	AMY_PRNQUEUE	PCHILD	9/2/2002 6:36:10 AM	1/1/9999
AMY_HOST	AMY_TCPIP	PCHILD	9/2/2002 6:36:10 AM	1/1/9999
AMY_HOST	AMY_IP	PCHILD	9/2/2002 6:36:10 AM	1/1/9999
AMY_HOST	AMY_CPU	PCHILD	9/2/2002 6:36:10 AM	1/1/9999
AMY_HOST	AMY_FILE	PCHILD	9/2/2002 6:36:10 AM	1/1/9999
AMY_HOST	AMY_FS	PCHILD	9/2/2002 6:36:10 AM	1/1/9999
AMY_HOST	AMY_NETWORK	PCHILD	9/2/2002 6:36:10 AM	1/1/9999
AMY_HOST	AMY_NFS	PCHILD	9/2/2002 6:36:10 AM	1/1/9999
AMY_HOST	AMY_RPC	PCHILD	9/2/2002 6:36:10 AM	1/1/9999
AMY_HOST	AMY_USER	PCHILD	9/2/2002 6:36:10 AM	1/1/9999
AMY_HOST	AMY_OS400DISK	PCHILD	9/2/2002 6:36:10 AM	1/1/9999
AMY_HOST	AMY_OS400IFCPU	PCHILD	9/2/2002 6:36:10 AM	1/1/9999
AMY_HOST	AMY_OS400BCPU	PCHILD	9/2/2002 6:36:10 AM	1/1/9999
AMY_HOST	AMY_OS400ICPU	PCHILD	9/2/2002 6:36:10 AM	1/1/9999
AMY_HOST	AMY_OS400BCPU	PCHILD	9/2/2002 6:36:10 AM	1/1/9999
AMY_HOST	AMY_OS400ASP	PCHILD	9/2/2002 6:36:10 AM	1/1/9999
AMY_HOST	AMY_OS400SPOOL	PCHILD	9/2/2002 6:36:10 AM	1/1/9999
IP_HOST	AMY_PDISK	PCHILD	9/2/2002 6:36:09 AM	1/1/9999
IP_HOST	AMY_LDISK	PCHILD	9/2/2002 6:36:09 AM	1/1/9999
IP_HOST	AMY_PROCESS	PCHILD	9/2/2002 6:36:09 AM	1/1/9999
IP_HOST	AMY_MEMORY	PCHILD	9/2/2002 6:36:09 AM	1/1/9999
IP_HOST	AMY_REDIR	PCHILD	9/2/2002 6:36:09 AM	1/1/9999
IP_HOST	AMY_NETSEG	PCHILD	9/2/2002 6:36:09 AM	1/1/9999

IP_HOST	AMY_SERVER	PCHILD	9/2/2002 6:36:09 AM	1/1/9999
IP_HOST	AMY_SERVICE	PCHILD	9/2/2002 6:36:09 AM	1/1/9999
IP_HOST	AMY_PORT	PCHILD	9/2/2002 6:36:10 AM	1/1/9999
IP_HOST	AMY_PRNQUEUE	PCHILD	9/2/2002 6:36:10 AM	1/1/9999
IP_HOST	AMY_TCPIP	PCHILD	9/2/2002 6:36:10 AM	1/1/9999
IP_HOST	AMY_IP	PCHILD	9/2/2002 6:36:10 AM	1/1/9999
IP_HOST	AMY_CPU	PCHILD	9/2/2002 6:36:10 AM	1/1/9999
IP_HOST	AMY_FILE	PCHILD	9/2/2002 6:36:10 AM	1/1/9999
IP_HOST	AMY_FS	PCHILD	9/2/2002 6:36:10 AM	1/1/9999
IP_HOST	AMY_NETWORK	PCHILD	9/2/2002 6:36:10 AM	1/1/9999
IP_HOST	AMY_NFS	PCHILD	9/2/2002 6:36:10 AM	1/1/9999
IP_HOST	AMY_RPC	PCHILD	9/2/2002 6:36:10 AM	1/1/9999
IP_HOST	AMY_USER	PCHILD	9/2/2002 6:36:10 AM	1/1/9999
IP_HOST	AMY_OS400DISK	PCHILD	9/2/2002 6:36:10 AM	1/1/9999
IP_HOST	AMY_OS400IFCPU	PCHILD	9/2/2002 6:36:10 AM	1/1/9999
IP_HOST	AMY_OS400DBCPU	PCHILD	9/2/2002 6:36:10 AM	1/1/9999
IP_HOST	AMY_OS400ICPU	PCHILD	9/2/2002 6:36:10 AM	1/1/9999
IP_HOST	AMY_OS400BCPU	PCHILD	9/2/2002 6:36:10 AM	1/1/9999
IP_HOST	AMY_OS400ASP	PCHILD	9/2/2002 6:36:10 AM	1/1/9999
IP_HOST	AMY_OS400SPOOL	PCHILD	9/2/2002 6:36:10 AM	1/1/9999

6.1.5 Component relationship (table CompReIn)

CompReIn_ID INTEGER	Comp_Source_ID INTEGER	Comp_Target_ID INTEGER	ReInTyp_Cd CHAR(6)	CompReIn_Strt_DtTm TIMESTAMP	CompReIn_End_DtTm TIMESTAMP
1	0	1	PCHILD	9/2/2002 7:17:24 AM	1/1/9999
2	0	2	PCHILD	9/2/2002 7:18:37 AM	1/1/9999
3	0	3	PCHILD	9/2/2002 7:18:37 AM	1/1/9999
4	0	4	PCHILD	9/2/2002 7:18:37 AM	1/1/9999
5	0	5	PCHILD	9/2/2002 7:18:37 AM	1/1/9999
6	0	6	PCHILD	9/2/2002 7:18:37 AM	1/1/9999
7	0	7	PCHILD	9/2/2002 7:18:37 AM	1/1/9999
8	0	8	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)
LAST_IP_ADDRESS	Last IP Address
TME_OBJECT_ID	Tivoli object ID
TME_LABEL	Tivoli endpoint label
OS_NAME	Operating system name
OS_TYPE	Operating system type
MAJOR_VERSION	Major version number
MINOR_VERSION	Minor version number
SUB_VERSION	Sub version number
VERSION	Version number
CONTACT	Contact name
MANUFACTURER	Manufacturer
MACHINE_TYPE	Machine type
MACHINE_MODEL	Machine model number
SERIAL_NUMBER	Serial number
AMX_EID	IBM Tivoli Monitoring Endpoint Identifier
AMX_GMT_OFFSET	IBM Tivoli Monitoring Endpoint GMT Offset
AMY_PROCNM	Process name
AMY_PROCID	Process ID
AMY_SERVICESTATE	Service state
AMY_SERVICESTATUS	Service status
AMY_PORTSTATE	Port state
AMY_FPATHNM	Full path to the file
AMY_FGROUP	File group
AMY_FOWNER	Owner of the file
AMY_FMODE	Type of access permission to the file
AMY_USRID	ID of the suspicious user

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
IP_HOST	LAST_IP_ADDRESS	8/30/2002 8:55:38 AM	1/1/9999 12:00:00 PM	N
IP_HOST	TME_OBJECT_ID	8/30/2002 8:55:38 AM	1/1/9999 12:00:00 PM	N
IP_HOST	TME_LABEL	8/30/2002 8:55:38 AM	1/1/9999 12:00:00 PM	N

IP_HOST	OS_NAME	8/30/2002 8:55:38 AM	1/1/9999 12:00:00 PM	N
IP_HOST	OS_TYPE	8/30/2002 8:55:38 AM	1/1/9999 12:00:00 PM	N
IP_HOST	MAJOR_VERSION	8/30/2002 8:55:38 AM	1/1/9999 12:00:00 PM	N
IP_HOST	MINOR_VERSION	8/30/2002 8:55:38 AM	1/1/9999 12:00:00 PM	N
IP_HOST	SUB_VERSION	8/30/2002 8:55:38 AM	1/1/9999 12:00:00 PM	N
IP_HOST	VERSION	8/30/2002 8:55:38 AM	1/1/9999 12:00:00 PM	N
IP_HOST	CONTACT	8/30/2002 8:55:38 AM	1/1/9999 12:00:00 PM	N
IP_HOST	MANUFACTURER	8/30/2002 8:55:38 AM	1/1/9999 12:00:00 PM	N
IP_HOST	MACHINE_TYPE	8/30/2002 8:55:38 AM	1/1/9999 12:00:00 PM	N
IP_HOST	MACHINE_MODEL	8/30/2002 8:55:38 AM	1/1/9999 12:00:00 PM	N
IP_HOST	SERIAL_NUMBER	8/30/2002 8:55:38 AM	1/1/9999 12:00:00 PM	N
IP_INTERFACE	TME_OBJECT_ID	8/30/2002 8:55:38 AM	1/1/9999 12:00:00 PM	N
IP_INTERFACE	TME_LABEL	8/30/2002 8:55:38 AM	1/1/9999 12:00:00 PM	N
IP_INTERFACE	OS_NAME	8/30/2002 8:55:38 AM	1/1/9999 12:00:00 PM	N
IP_INTERFACE	OS_TYPE	8/30/2002 8:55:38 AM	1/1/9999 12:00:00 PM	N
IP_INTERFACE	MAJOR_VERSION	8/30/2002 8:55:38 AM	1/1/9999 12:00:00 PM	N
IP_INTERFACE	MINOR_VERSION	8/30/2002 8:55:38 AM	1/1/9999 12:00:00 PM	N
IP_INTERFACE	SUB_VERSION	8/30/2002 8:55:38 AM	1/1/9999 12:00:00 PM	N
IP_INTERFACE	VERSION	8/30/2002 8:55:38 AM	1/1/9999 12:00:00 PM	N
IP_INTERFACE	CONTACT	8/30/2002 8:55:38 AM	1/1/9999 12:00:00 PM	N
IP_INTERFACE	MANUFACTURER	8/30/2002 8:55:38 AM	1/1/9999 12:00:00 PM	N
IP_INTERFACE	MACHINE_TYPE	8/30/2002 8:55:38 AM	1/1/9999 12:00:00 PM	N
IP_INTERFACE	MACHINE_MODEL	8/30/2002 8:55:38 AM	1/1/9999 12:00:00 PM	N
IP_INTERFACE	SERIAL_NUMBER	8/30/2002 8:55:38 AM	1/1/9999 12:00:00 PM	N
TME_ENDPOINT	TME_LABEL	8/30/2002 8:55:38 AM	1/1/9999 12:00:00 PM	N
TME_ENDPOINT	OS_NAME	8/30/2002 8:55:38 AM	1/1/9999 12:00:00 PM	N
TME_ENDPOINT	OS_TYPE	8/30/2002 8:55:38 AM	1/1/9999 12:00:00 PM	N
TME_ENDPOINT	MAJOR_VERSION	8/30/2002 8:55:39 AM	1/1/9999 12:00:00 PM	N
TME_ENDPOINT	MINOR_VERSION	8/30/2002 8:55:39 AM	1/1/9999 12:00:00 PM	N
TME_ENDPOINT	SUB_VERSION	8/30/2002 8:55:39 AM	1/1/9999 12:00:00 PM	N
TME_ENDPOINT	VERSION	8/30/2002 8:55:39 AM	1/1/9999 12:00:00 PM	N
TME_ENDPOINT	CONTACT	8/30/2002 8:55:39 AM	1/1/9999 12:00:00 PM	N
TME_ENDPOINT	MANUFACTURER	8/30/2002 8:55:39 AM	1/1/9999 12:00:00 PM	N
TME_ENDPOINT	MACHINE_TYPE	8/30/2002 8:55:39 AM	1/1/9999 12:00:00 PM	N
TME_ENDPOINT	MACHINE_MODEL	8/30/2002 8:55:39 AM	1/1/9999 12:00:00 PM	N

TME_ENDPOINT	SERIAL_NUMBER	8/30/2002 8:55:39 AM	1/1/9999 12:00:00 PM	N
AMY_HOST	AMX_GMT_OFFSET	9/2/2002 6:36:10 AM	1/1/9999	N
AMY_HOST	AMX_EID	9/2/2002 6:36:10 AM	1/1/9999	N
AMY_PROCESS	AMY_PROCNM	9/2/2002 6:36:10 AM	1/1/9999	N
AMY_PROCESS	AMY_PROCID	9/2/2002 6:36:10 AM	1/1/9999	N
AMY_SERVICE	AMY_SERVICESTATE	9/2/2002 6:36:10 AM	1/1/9999	N
AMY_SERVICE	AMY_SERVICESTATUS	9/2/2002 6:36:10 AM	1/1/9999	N
AMY_PORT	AMY_PORTSTATE	9/2/2002 6:36:10 AM	1/1/9999	N
AMY_FILE	AMY_FPATHNM	9/2/2002 6:36:10 AM	1/1/9999	N
AMY_FILE	AMY_FGROUP	9/2/2002 6:36:11 AM	1/1/9999	N
AMY_FILE	AMY_FOWNER	9/2/2002 6:36:11 AM	1/1/9999	N
AMY_FILE	AMY_FMODE	9/2/2002 6:36:11 AM	1/1/9999	N
AMY_USER	AMY_USRID	9/2/2002 6:36:11 AM	1/1/9999	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	2	AMY_SERVICESTATE	8/29/2002 4:00:15 AM	1/1/9999	Running
2	3	AMY_SERVICESTATE	8/29/2002 4:00:16 AM	1/1/9999	Running
3	4	AMY_SERVICESTATE	8/29/2002 4:00:16 AM	1/1/9999	Stopped
4	7	AMY_SERVICESTATE	8/29/2002 4:00:16 AM	1/1/9999	Running
5	8	AMY_SERVICESTATE	8/29/2002 4:00:16 AM	1/1/9999	Running
6	5	AMY_SERVICESTATE	8/29/2002 4:00:17 AM	1/1/9999	Running
7	6	AMY_SERVICESTATE	8/29/2002 4:00:17 AM	1/1/9999	Running
8	2	AMY_SERVICESTATUS	8/29/2002 4:00:15 AM	1/1/9999	OK
9	3	AMY_SERVICESTATUS	8/29/2002 4:00:16 AM	1/1/9999	OK
10	4	AMY_SERVICESTATUS	8/29/2002 4:00:16 AM	1/1/9999	OK
11	7	AMY_SERVICESTATUS	8/29/2002 4:00:16 AM	1/1/9999	OK
12	8	AMY_SERVICESTATUS	8/29/2002 4:00:16 AM	1/1/9999	OK
13	5	AMY_SERVICESTATUS	8/29/2002 4:00:17 AM	1/1/9999	OK
14	6	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
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)	MGrpTyp_Cd CHAR(6)	MsmtTyp_ID INTEGER
AVG_E	GROUP	1
AVG_E	GROUP	2
AVG_E	GROUP	3
AVG_E	GROUP	4
AVG_E	GROUP	5
AVG_E	GROUP	6

MGrp_Cd CHAR(6)	MGrpTyp_Cd CHAR(6)	MsmtTyp_ID INTEGER
AVG_E	GROUP	7
AVG_E	GROUP	8
AVG_E	GROUP	9
AVG_E	GROUP	10
AVG_E	GROUP	11
AVG_E	GROUP	12
AVG_E	GROUP	13
AVG_E	GROUP	14
AVG_E	GROUP	15
AVG_E	GROUP	16
AVG_E	GROUP	17
AVG_E	GROUP	18
AVG_E	GROUP	19
AVG_E	GROUP	20
AVG_E	GROUP	21
AVG_E	GROUP	22
AVG_E	GROUP	23
AVG_E	GROUP	24
AVG_E	GROUP	25
AVG_E	GROUP	26
AVG_E	GROUP	27
AVG_E	GROUP	28
AVG_E	GROUP	29
AVG_E	GROUP	30
AVG_E	GROUP	31
AVG_E	GROUP	32
AVG_E	GROUP	33
AVG_E	GROUP	34
AVG_E	GROUP	35
AVG_E	GROUP	36
AVG_E	GROUP	37
AVG_E	GROUP	38
AVG_E	GROUP	39

MGrp_Cd CHAR(6)	MGrpTyp_Cd CHAR(6)	MsmtTyp_ID INTEGER
AVG_E	GROUP	40
AVG_E	GROUP	41
AVG_E	GROUP	42
AVG_E	GROUP	43
AVG_E	GROUP	44
AVG_E	GROUP	45
AVG_E	GROUP	46
AVG_E	GROUP	47
AVG_E	GROUP	48
AVG_E	GROUP	49
AVG_E	GROUP	50
AVG_E	GROUP	54
AVG_E	GROUP	55
AVG_E	GROUP	56
AVG_E	GROUP	57
AVG_E	GROUP	58
AVG_E	GROUP	59
AVG_E	GROUP	60
AVG_E	GROUP	61
AVG_E	GROUP	62
AVG_E	GROUP	63
AVG_E	GROUP	64
AVG_E	GROUP	65
AVG_E	GROUP	66
AVG_E	GROUP	67
AVG_E	GROUP	68
AVG_E	GROUP	69
AVG_E	GROUP	70
AVG_E	GROUP	71
AVG_E	GROUP	72
AVG_E	GROUP	73
AVG_E	GROUP	74
AVG_E	GROUP	75

MGrp_Cd CHAR(6)	MGrpTyp_Cd CHAR(6)	MsmtTyp_ID INTEGER
AVG_E	GROUP	76
AVG_E	GROUP	77
AVG_E	GROUP	78
AVG_E	GROUP	79
AVG_E	GROUP	80
AVG_E	GROUP	81
AVG_E	GROUP	82
AVG_E	GROUP	83
AVG_E	GROUP	84
AVG_E	GROUP	85
AVG_E	GROUP	86
AVG_E	GROUP	87
AVG_E	GROUP	88
AVG_E	GROUP	89
AVG_E	GROUP	90
AVG_E	GROUP	91
AVG_E	GROUP	92
AVG_E	GROUP	93
AVG_E	GROUP	94
AVG_E	GROUP	95
AVG_E	GROUP	96
AVG_E	GROUP	97
AVG_E	GROUP	98
AVG_E	GROUP	99
AVG_E	GROUP	100
CPU_E	ITM	5
CPU_E	ITM	6
CPU_E	ITM	7
CPU_E	ITM	35
CPU_E	ITM	36
CPU_E	ITM	37
CPU_E	ITM	38
CPU_E	ITM	39

MGrp_Cd CHAR(6)	MGrpTyp_Cd CHAR(6)	MsmtTyp_ID INTEGER
CPU_E	ITM	40
CPU_E	ITM	41
CPU_E	ITM	42
CPU_E	ITM	43
CPU_E	ITM	44
CPU_E	ITM	45
CPU_E	ITM	46
CPU_E	ITM	47
CPU_E	ITM	48
CPU_E	ITM	49
CPU_E	ITM	80
CPU_E	ITM	84
CPU_E	ITM	85
CPU_E	ITM	86
CPU_E	ITM	87
CPU_E	ITM	88
CPU_E	ITM	89
FS_E	ITM	50
FS_E	ITM	51
FS_E	ITM	52
FS_E	ITM	53
FS_E	ITM	54
FS_E	ITM	55
FS_E	ITM	56
FS_E	ITM	82
FS_E	ITM	83
HD_E	ITM	1
HD_E	ITM	2
HD_E	ITM	3
HD_E	ITM	4
HD_E	ITM	90
HD_E	ITM	91
MAX_E	GROUP	1

MGrp_Cd CHAR(6)	MGrpTyp_Cd CHAR(6)	MsmtTyp_ID INTEGER
MAX_E	GROUP	2
MAX_E	GROUP	3
MAX_E	GROUP	4
MAX_E	GROUP	5
MAX_E	GROUP	6
MAX_E	GROUP	7
MAX_E	GROUP	8
MAX_E	GROUP	9
MAX_E	GROUP	10
MAX_E	GROUP	11
MAX_E	GROUP	12
MAX_E	GROUP	13
MAX_E	GROUP	14
MAX_E	GROUP	15
MAX_E	GROUP	16
MAX_E	GROUP	17
MAX_E	GROUP	18
MAX_E	GROUP	19
MAX_E	GROUP	20
MAX_E	GROUP	21
MAX_E	GROUP	22
MAX_E	GROUP	23
MAX_E	GROUP	24
MAX_E	GROUP	25
MAX_E	GROUP	26
MAX_E	GROUP	27
MAX_E	GROUP	28
MAX_E	GROUP	29
MAX_E	GROUP	30
MAX_E	GROUP	31
MAX_E	GROUP	32
MAX_E	GROUP	33
MAX_E	GROUP	34

MGrp_Cd CHAR(6)	MGrpTyp_Cd CHAR(6)	MsmtTyp_ID INTEGER
MAX_E	GROUP	35
MAX_E	GROUP	36
MAX_E	GROUP	37
MAX_E	GROUP	38
MAX_E	GROUP	39
MAX_E	GROUP	40
MAX_E	GROUP	41
MAX_E	GROUP	42
MAX_E	GROUP	43
MAX_E	GROUP	44
MAX_E	GROUP	45
MAX_E	GROUP	46
MAX_E	GROUP	47
MAX_E	GROUP	48
MAX_E	GROUP	49
MAX_E	GROUP	50
MAX_E	GROUP	54
MAX_E	GROUP	55
MAX_E	GROUP	56
MAX_E	GROUP	57
MAX_E	GROUP	58
MAX_E	GROUP	59
MAX_E	GROUP	60
MAX_E	GROUP	61
MAX_E	GROUP	62
MAX_E	GROUP	63
MAX_E	GROUP	64
MAX_E	GROUP	65
MAX_E	GROUP	66
MAX_E	GROUP	67
MAX_E	GROUP	68
MAX_E	GROUP	69
MAX_E	GROUP	70

MGrp_Cd CHAR(6)	MGrpTyp_Cd CHAR(6)	MsmtTyp_ID INTEGER
MAX_E	GROUP	71
MAX_E	GROUP	72
MAX_E	GROUP	73
MAX_E	GROUP	74
MAX_E	GROUP	75
MAX_E	GROUP	76
MAX_E	GROUP	77
MAX_E	GROUP	78
MAX_E	GROUP	79
MAX_E	GROUP	80
MAX_E	GROUP	81
MAX_E	GROUP	82
MAX_E	GROUP	83
MAX_E	GROUP	84
MAX_E	GROUP	85
MAX_E	GROUP	86
MAX_E	GROUP	87
MAX_E	GROUP	88
MAX_E	GROUP	89
MAX_E	GROUP	90
MAX_E	GROUP	91
MAX_E	GROUP	92
MAX_E	GROUP	93
MAX_E	GROUP	94
MAX_E	GROUP	95
MAX_E	GROUP	96
MAX_E	GROUP	97
MAX_E	GROUP	98
MAX_E	GROUP	99
MAX_E	GROUP	100
MEM_E	ITM	8
MEM_E	ITM	9
MEM_E	ITM	10

MGrp_Cd CHAR(6)	MGrpTyp_Cd CHAR(6)	MsmtTyp_ID INTEGER
MEM_E	ITM	11
MEM_E	ITM	12
MEM_E	ITM	60
MEM_E	ITM	57
MEM_E	ITM	58
MEM_E	ITM	59
MEM_E	ITM	92
MEM_E	ITM	93
MEM_E	ITM	94
MEM_E	ITM	95
MEM_E	ITM	96
MEM_E	ITM	97
MEM_E	ITM	98
MEM_E	ITM	99
MEM_E	ITM	100
MIN_E	GROUP	1
MIN_E	GROUP	2
MIN_E	GROUP	3
MIN_E	GROUP	4
MIN_E	GROUP	5
MIN_E	GROUP	6
MIN_E	GROUP	7
MIN_E	GROUP	8
MIN_E	GROUP	9
MIN_E	GROUP	10
MIN_E	GROUP	11
MIN_E	GROUP	12
MIN_E	GROUP	13
MIN_E	GROUP	14
MIN_E	GROUP	15
MIN_E	GROUP	16
MIN_E	GROUP	17
MIN_E	GROUP	18

MGrp_Cd CHAR(6)	MGrpTyp_Cd CHAR(6)	MsmtTyp_ID INTEGER
MIN_E	GROUP	19
MIN_E	GROUP	20
MIN_E	GROUP	21
MIN_E	GROUP	22
MIN_E	GROUP	23
MIN_E	GROUP	24
MIN_E	GROUP	25
MIN_E	GROUP	26
MIN_E	GROUP	27
MIN_E	GROUP	28
MIN_E	GROUP	29
MIN_E	GROUP	30
MIN_E	GROUP	31
MIN_E	GROUP	32
MIN_E	GROUP	33
MIN_E	GROUP	34
MIN_E	GROUP	35
MIN_E	GROUP	36
MIN_E	GROUP	37
MIN_E	GROUP	38
MIN_E	GROUP	39
MIN_E	GROUP	40
MIN_E	GROUP	41
MIN_E	GROUP	42
MIN_E	GROUP	43
MIN_E	GROUP	44
MIN_E	GROUP	45
MIN_E	GROUP	46
MIN_E	GROUP	47
MIN_E	GROUP	48
MIN_E	GROUP	49
MIN_E	GROUP	50
MIN_E	GROUP	54

MGrp_Cd CHAR(6)	MGrpTyp_Cd CHAR(6)	MsmtTyp_ID INTEGER
MIN_E	GROUP	55
MIN_E	GROUP	56
MIN_E	GROUP	57
MIN_E	GROUP	58
MIN_E	GROUP	59
MIN_E	GROUP	60
MIN_E	GROUP	61
MIN_E	GROUP	62
MIN_E	GROUP	63
MIN_E	GROUP	64
MIN_E	GROUP	65
MIN_E	GROUP	66
MIN_E	GROUP	67
MIN_E	GROUP	68
MIN_E	GROUP	69
MIN_E	GROUP	70
MIN_E	GROUP	71
MIN_E	GROUP	72
MIN_E	GROUP	73
MIN_E	GROUP	74
MIN_E	GROUP	75
MIN_E	GROUP	76
MIN_E	GROUP	77
MIN_E	GROUP	78
MIN_E	GROUP	79
MIN_E	GROUP	80
MIN_E	GROUP	81
MIN_E	GROUP	82
MIN_E	GROUP	83
MIN_E	GROUP	84
MIN_E	GROUP	85
MIN_E	GROUP	86
MIN_E	GROUP	87

MGrp_Cd CHAR(6)	MGrpTyp_Cd CHAR(6)	MsmtTyp_ID INTEGER
MIN_E	GROUP	88
MIN_E	GROUP	89
MIN_E	GROUP	90
MIN_E	GROUP	91
MIN_E	GROUP	92
MIN_E	GROUP	93
MIN_E	GROUP	94
MIN_E	GROUP	95
MIN_E	GROUP	96
MIN_E	GROUP	97
MIN_E	GROUP	98
MIN_E	GROUP	99
MIN_E	GROUP	100
NIC_E	ITM	13
NIC_E	ITM	14
NIC_E	ITM	15
NIC_E	ITM	16
NIC_E	ITM	21
NIC_E	ITM	22
NIC_E	ITM	23
NIC_E	ITM	24
NIC_E	ITM	25
NIC_E	ITM	26
NIC_E	ITM	27
NIC_E	ITM	28
NIC_E	ITM	29
NIC_E	ITM	30
NIC_E	ITM	31
NIC_E	ITM	61
NIC_E	ITM	62
NIC_E	ITM	63
NIC_E	ITM	64
NIC_E	ITM	65

MGrp_Cd CHAR(6)	MGrpTyp_Cd CHAR(6)	MsmtTyp_ID INTEGER
NIC_E	ITM	66
NIC_E	ITM	67
NIC_E	ITM	68
NIC_E	ITM	69
NIC_E	ITM	70
NIC_E	ITM	71
NIC_E	ITM	72
NIC_E	ITM	73
NIC_E	ITM	74
NIC_E	ITM	75
NIC_E	ITM	76
NIC_E	ITM	77
NIC_E	ITM	78
NIC_E	ITM	79
PRN_E	ITM	32
PRN_E	ITM	33
PRN_E	ITM	34
SEC_E	ITM	17
SEC_E	ITM	18
SEC_E	ITM	19
SEC_E	ITM	20
SEC_E	ITM	81
STORAG	CATEG	1
STORAG	CATEG	2
STORAG	CATEG	3
STORAG	CATEG	4
STORAG	CATEG	50
STORAG	CATEG	54
STORAG	CATEG	55
STORAG	CATEG	56
STORAG	CATEG	82
STORAG	CATEG	83
STORAG	CATEG	90

MGrp_Cd CHAR(6)	MGrpTyp_Cd CHAR(6)	MsmtTyp_ID INTEGER
STORAG	CATEG	91

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
MB	QTY	megabytes
B	QTY	bytes
MSec	TM	milliseconds
Sec	TM	seconds
Min	TM	minutes
Hr	TM	hours
Day	TM	days

MUnit_Cd CHAR(6)	MUnitCat_Cd CHAR(6)	Munit_Nm* VARCHAR(120)
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)
1	Bps	AMY	DiskBytesSec	Amount of bytes per second being written or read
2	QTY	AMY	AvgQLength	Average queue length for jobs
3	PRC	AMY	PercentFreeSpace	Percentage of free space on the logical disk
4	PRC	AMY	PercentDiskTime	Percentage of time that the logical drive is being used
5	QTY	AMY	WorkingSet	Working set
6	B	AMY	PrivateBytes	Number of private bytes used by the process
7	B	AMY	VirtualBytes	Number of virtual bytes used by the process
8	MB	AMY	TotalAvail	Total available memory
9	KB	AMY	TotalCache	Total cache memory
10	B	AMY	CommittedBytes	Bytes committed to this memory

MsmtTyp_ID INTEGER	MUnit_Cd CHAR(6)	MSrc_Cd CHAR (6)	MsmtTyp_Nm VARCHAR(120)	MsmtTyp_Ds VARCHAR(254)
11	Qps	AMY	PagesSec	Number of pages per second
12	Qps	AMY	PageFaultsSec	Rate of page faults per second
13	PRC	AMY	PercentNetworkUtil	Percent of the network being used
14	PRC	AMY	PercentBroadcastFrames	Percent of the network that is broadcast frames
15	Bps	AMY	BytesTotalSec	Rate at which the redirector is processing data
16	Bps	AMY	CurrentBandwidth	Network bandwidth
17	QTY	AMY	ServerTotalSessions	Number of sessions on the server
18	QTY	AMY	SessionsErroredOut	Number of sessions that ended in error
19	QTY	AMY	SessionsForcedOff	Number of sessions forced offline
20	QTY	AMY	SessionsLoggedOff	Number of sessions logged off
21	QTY	AMY	WorkItemShortages	Identifies work item shortages
22	QTY	AMY	OutputQueueLength	Length of the queue for output
23	QTY	AMY	CurrentCommands	Number of requests that are currently queued for the redirector
24	QTY	AMY	SegmentsRetransmitted	Number of segments retransmitted
25	Qps	AMY	SegmentSentSec	Number of segments sent per second
26	Qps	AMY	SegmentsSec	Number of segments per second
27	Qps	AMY	SegmentRcvdSec	Number of segments received per second
28	Qps	AMY	DGSentSec	Number of datagrams sent per second
29	Qps	AMY	DGSec	Number of datagrams per second
30	Qps	AMY	DGReceivedSec	Number of datagrams received per second
31	Qps	AMY	FragmentsReceivedSec	Number of fragments received per second
32	QTY	AMY	JobErrors	Number of jobs in error
33	QTY	AMY	NotReadyErrors	Number of not ready errors
34	QTY	AMY	OutOfPaperErrors	Number of Out-of-Paper errors
35	QTY	AMY	HandleCount	Number of handles allocated to the process
36	PRC	AMY	PercentUserTime	Percentage usage of the CPU that is being used by the process
37	PRC	AMY	PercentPrivilegedTime	Percentage privileged time of the CPU that is being used by the process
38	PRC	AMY	PercentProcessorTime	Percent of processor time used by the process
39	QTY	AMY	ProcessorQueueLength	Queue length of the processor
40	PRC	AMY	HighestPercentUsage	Identifies what percent of the most used processor is being used

MsmtTyp_ID INTEGER	MUnit_Cd CHAR(6)	MSrc_Cd CHAR (6)	MsmtTyp_Nm VARCHAR(120)	MsmtTyp_Ds VARCHAR(254)
41	PRC	AMY	LowestPercentUsage	Identifies what percent of the least used processor is being used
42	Qps	AMY	InterruptsSec	Number of interrupts per second that are passed to the CPU
43	PRC	AMY	PercentInterruptTime	Current percentage usage of the CPU as it handles interrupt requests
44	QTY	AMY	loadAvg1	Number of processes running every minute
45	QTY	AMY	loadAvg5	Number of processes running every 5 minutes
46	QTY	AMY	loadAvg15	Number of processes running every 15 minutes
47	PRC	AMY	prcIdleTime	Percent of the time that the CPU is idle
48	PRC	AMY	prcSysTime	Percent of the time that the CPU is in system mode
49	PRC	AMY	prcUserTime	Percent of the time that the CPU is in user mode
50	B	AMY	size	File size
51	QTY	AMY	checksum	File checksum
52	Sec	AMY	modificationTime	Time when the contents of file change
53	Sec	AMY	changeTime	Time when the file attributes change
54	PRC	AMY	percUsed	Percent of file system space that is being used
55	PRC	AMY	perclnodesUsed	Percent of i-nodes being used
56	PRC	AMY	percAvail	Percent of file system space available
57	Qps	AMY	PageInsRate	Rate of paging in for the cycle
58	Qps	AMY	PageOutsRate	Rate of paging out for the cycle
59	PRC	AMY	PrcAvailSwap	Percent of swap space that is available
60	PRC	AMY	PrcAvailStorage	Percentage of storage space that is available
61	QTY	AMY	InPacks	Total number of input packets
62	PRC	AMY	InPacksErr	Percent of input packets in error
63	QTY	AMY	OutPacks	Total number of output packets
64	PRC	AMY	OutPackErr	Percent of output packets in error
65	PRC	AMY	OutPackColl	Percent of output packets colliding
66	QTY	AMY	NFScalls	NFS calls
67	QTY	AMY	NFSbadcalls	NFS calls that are timed out
68	QTY	AMY	NFSgetattr	NFS requests to read the client attribute cache
69	QTY	AMY	NFSread	NFS read operations
70	QTY	AMY	NFSwrite	NFS write operations
71	QTY	AMY	NFSlookup	Lookup calls on the NFS server

MsmtTyp_ID INTEGER	MUnit_Cd CHAR(6)	MSrc_Cd CHAR (6)	MsmtTyp_Nm VARCHAR(120)	MsmtTyp_Ds VARCHAR(254)
72	QTY	AMY	NFSreadlink	NFS server calls for readlink operations
73	QTY	AMY	RPCcalls	Client RPC calls
74	QTY	AMY	RPCbadcalls	Number of timed-out client RPC calls
75	QTY	AMY	RPCretrans	RPC client calls being retransmitted
76	QTY	AMY	RPCbadxids	Bad xids
77	QTY	AMY	RPCtimeouts	Client RPC calls that timed out
78	QTY	AMY	RPCDuprequests	RPC server calls that are duplicate requests
79	QTY	AMY	RPCDupchecks	Number of RPC server calls that are looked up in the duplicate request cache
80	PRC	AMY	PercentProcessUsage	Percentage of CPU that the process is using
81	QTY	AMY	numLogged	Number of times the user is logged in
82	MB	AMY	overflowStorageMBytes	Number of megabytes exceeding the ASP capacity
83	PRC	AMY	totalAvailableMBytesPercentage	Percentage of total available megabytes in the ASP
84	PRC	AMY	basicAverageCPUPct	Percentage of overall CPU utilization
85	QTY	AMY	numOfProcessors	Number of available CPUs for the system or partition
86	PRC	AMY	basicInteractiveCPUPct	Percentage of interactive CPU utilization
87	PRC	AMY	databaseCapabilityCPUPct	Percentage of database CPU utilization
88	PRC	AMY	databaseThresholdPct	Percentage of database CPU utilization allowed before performance problems occur
89	PRC	AMY	interactiveThresholdPct	Percentage of interactive CPU utilization allowed before performance problems occur
90	PRC	AMY	systemASPUsePct	Percentage of the system ASP which is used
91	PRC	AMY	totalAuxiliaryStorageAvailablePercentage	Percentage of total auxiliary storage available
92	Qps	AMY	databaseFaults	Rate of database page faults in page faults per second
93	Qps	AMY	nonDatabaseFaults	Rate of Non-database page faults in page faults per second
94	Qps	AMY	databasePages	Rate at which database pages are brought into the storage pool in pages per second
95	Qps	AMY	nonDatabasePages	Rate at which Non-database pages are brought into the storage pool in pages per second
96	Qpm	AMY	activeToWaitTransitions	Rate of transitions of threads from an active condition to a waiting condition in transitions per minute
97	Qpm	AMY	activeToIneligibleTransitions	Rate of transitions of threads from an active condition to an ineligible condition in transitions per minute
98	Qpm	AMY	waitToIneligibleTransitions	Rate of transitions of threads from a waiting condition to an ineligible condition in transitions per minute

MsmtTyp_ID INTEGER	MUnit_Cd CHAR(6)	MSrc_Cd CHAR (6)	MsmtTyp_Nm VARCHAR(120)	MsmtTyp_Ds VARCHAR(254)
99	QTY	AMY	ActivityLevel	Maximum number of threads that can be active in the pool at any one time
100	MB	AMY	totalSizeMBytes	Amount of main storage in the pool

6.2.9 Component measurement rule (table MsmtRul)

CompTyp_Cd CHAR(17)	MsmtTyp_ID INTEGER
AMY_CPU	36
AMY_CPU	37
AMY_CPU	38
AMY_CPU	40
AMY_CPU	41
AMY_CPU	42
AMY_CPU	43
AMY_CPU	39
AMY_CPU	44
AMY_CPU	45
AMY_CPU	46
AMY_CPU	47
AMY_CPU	48
AMY_CPU	49
AMY_FILE	50
AMY_FILE	51
AMY_FILE	52
AMY_FILE	53
AMY_FS	54
AMY_FS	55
AMY_FS	56
AMY_IP	28
AMY_IP	29
AMY_IP	30
AMY_IP	31
AMY_LDISK	1
AMY_LDISK	2

CompTyp_Cd CHAR(17)	MsmtTyp_ID INTEGER
AMY_LDISK	3
AMY_LDISK	4
AMY_MEMORY	8
AMY_MEMORY	9
AMY_MEMORY	10
AMY_MEMORY	11
AMY_MEMORY	12
AMY_MEMORY	57
AMY_MEMORY	58
AMY_MEMORY	59
AMY_MEMORY	60
AMY_NETSEG	13
AMY_NETSEG	14
AMY_NETWORK	15
AMY_NETWORK	16
AMY_NETWORK	22
AMY_NETWORK	61
AMY_NETWORK	62
AMY_NETWORK	63
AMY_NETWORK	64
AMY_NETWORK	65
AMY_NFS	66
AMY_NFS	67
AMY_NFS	68
AMY_NFS	69
AMY_NFS	70
AMY_NFS	71
AMY_NFS	72
AMY_OS400ASP	82
AMY_OS400ASP	83
AMY_OS400BCPU	84
AMY_OS400BCPU	85
AMY_OS400DBCPU	87

CompTyp_Cd CHAR(17)	MsmtTyp_ID INTEGER
AMY_OS400DBCPU	88
AMY_OS400DISK	90
AMY_OS400DISK	91
AMY_OS400ICPU	85
AMY_OS400ICPU	86
AMY_OS400IFCPU	86
AMY_OS400IFCPU	89
AMY_OS400SPOOL	92
AMY_OS400SPOOL	93
AMY_OS400SPOOL	94
AMY_OS400SPOOL	95
AMY_OS400SPOOL	96
AMY_OS400SPOOL	97
AMY_OS400SPOOL	98
AMY_OS400SPOOL	99
AMY_OS400SPOOL	100
AMY_PDISK	1
AMY_PDISK	2
AMY_PDISK	4
AMY_PRNQUEUE	32
AMY_PRNQUEUE	33
AMY_PRNQUEUE	34
AMY_PROCESS	5
AMY_PROCESS	6
AMY_PROCESS	7
AMY_PROCESS	35
AMY_PROCESS	36
AMY_PROCESS	37
AMY_PROCESS	38
AMY_PROCESS	80
AMY_REDIR	15
AMY_REDIR	23
AMY_RPC	73

CompTyp_Cd CHAR(17)	MsmtTyp_ID INTEGER
AMY_RPC	74
AMY_RPC	75
AMY_RPC	76
AMY_RPC	77
AMY_RPC	78
AMY_RPC	79
AMY_SERVER	15
AMY_SERVER	17
AMY_SERVER	18
AMY_SERVER	19
AMY_SERVER	20
AMY_SERVER	21
AMY_TCPIP	24
AMY_TCPIP	25
AMY_TCPIP	26
AMY_TCPIP	27
AMY_USER	81

6.2.10 Measurement (table Msmt)

Msm t_ID BIGI NT	Comp _ID INTEG ER	MsmtTy p_ID INTEGE R	TmSu m_Cd CHAR	Msmt_Strt _Dt DATE	Msmt_Strt _Tm TIME	Msmt_ Min_Val I FLOAT	Msmt_Ma x_Val FLOAT	Msmt_A vg_Val FLOAT	Msmt_T ot_Val FLOAT	Msmt_ Smpl_ Cnt INTEG ER	Msmt_ Err_Cnt INTEG ER
1	1	36	H	8/29/2002	9/2/2002 4:00:17 AM	0	0.3833299 8752594	3	NULL	NULL	NULL
2	1	36	H	8/29/2002	9/2/2002 5:00:16 AM	0	0.4915199 8758316	5	NULL	NULL	NULL
3	1	36	H	8/29/2002	9/2/2002 6:00:17 AM	0	0.7833300 23288727	3	NULL	NULL	NULL
4	1	36	H	8/29/2002	9/2/2002 7:00:17 AM	0	0.6610100 26931763	5	NULL	NULL	NULL
5	1	36	H	8/29/2002	9/2/2002 8:00:17 AM	0	0.5333300 23288727	3	NULL	NULL	NULL

6	1	36	H	8/29/2002	9/2/2002 9:00:17 AM	0	3.1355900 7644653	80	NULL	NULL	NULL
7	1	36	H	8/29/2002	9/2/2002 10:00:17 AM	0	1.4666600 227356	17	NULL	NULL	NULL
8	1	36	H	8/29/2002	9/2/2002 11:00:17 AM	0	0.5	5	NULL	NULL	NULL
9	1	36	H	8/29/2002	9/2/2002 12:00:17 PM	0	0.4067800 04501343	2	NULL	NULL	NULL
10	1	36	H	8/29/2002	9/2/2002 1:00:17 PM	0	0.4833300 11367798	3	NULL	NULL	NULL
11	1	36	H	8/29/2002	9/2/2002 2:00:17 PM	0	0.6271100 04425049	14	NULL	NULL	NULL
12	1	36	H	8/29/2002	9/2/2002 3:00:17 PM	0	0.6499999 76158142	8	NULL	NULL	NULL
13	1	36	H	8/29/2002	9/2/2002 4:00:17 PM	0	0.2203299 99923706	3	NULL	NULL	NULL
14	1	36	H	8/29/2002	9/2/2002 5:00:16 PM	0	0.5666599 86972809	3	NULL	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 VARCHAR(128)	CompTyp_Cd VARCHAR(17)
PhysicalDisk	AMY_PDISK
LogicalDisk	AMY_LDISK
Process	AMY_PROCESS
Memory	AMY_MEMORY
Redirector	AMY_REDIR
NetworkSegment	AMY_NETSEG
Server	AMY_SERVER
Service	AMY_SERVICE
Port	AMY_PORT
PrintQueue	AMY_PRNQUEUE
TCPIP	AMY_TCPIP
IP	AMY_IP
CPU	AMY_CPU
File	AMY_FILE
FileSystem	AMY_FS
Network	AMY_NETWORK
NFS	AMY_NFS
RPC	AMY_RPC
User	AMY_USER
Disk	AMY_OS400DISK
InteractiveFeatureCPU	AMY_OS400IFCPU
DatabaseCPU	AMY_OS400DBCPU
InteractiveCPU	AMY_OS400ICPU
BasicCPU	AMY_OS400BCPU
ASP	AMY_OS400ASP
StoragePool	AMY_OS400SPOOL

7.1.2 Category translation (table Category_Transl)

Category VARCHAR(128)	MSrc_Cd 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	PhysicalDisk.PhysicalDisk	AMY_PDISK	PhysicalDisk.PhysicalDisk
AMY	LogicalDisk.LogicalDisk	AMY_LDISK	LogicalDisk.LogicalDisk
AMY	Process.Process;Process.ID	AMY_PROCESS	Process.Process
AMY	Redirector.Redirector	AMY_REDIR	Redirector.Redirector
AMY	NetworkSegment.Segment	AMY_NETSEG	NetworkSegment.Segment
AMY	Server.Server	AMY_SERVER	Server.Server
AMY	Service.Service	AMY_SERVICE	Service.Service
AMY	Port.Port	AMY_PORT	Port.Port
AMY	PrintQueue.PrintQueue	AMY_PRNQUEUE	PrintQueue.PrintQueue
AMY	TCPIP.TCP	AMY_TCPIP	TCPIP.TCP
AMY	IP.IP	AMY_IP	IP.IP
AMY	CPU.name	AMY_CPU	CPU.name
AMY	Memory.name	AMY_MEMORY	Memory.name
AMY	File.pathname	AMY_FILE	File.pathname
AMY	FileSystem.mountpoint	AMY_FS	FileSystem.mountpoint
AMY	Network.InterfaceName	AMY_NETWORK	Network.InterfaceName
AMY	NFS.name	AMY_NFS	NFS.name
AMY	RPC.name	AMY_RPC	RPC.name
AMY	User.userName	AMY_USER	User.userName
AMY	Disk.spare	AMY_OS400DISK	Disk.spare
AMY	InteractiveFeatureCPU.spare	AMY_OS400IFCPU	InteractiveFeatureCPU.spare
AMY	DatabaseCPU.spare	AMY_OS400DBCPU	DatabaseCPU.spare
AMY	InteractiveCPU.spare	AMY_OS400ICPU	InteractiveCPU.spare
AMY	BasicCPU.spare	AMY_OS400BCPU	BasicCPU.spare
AMY	ASP.ASPInstance	AMY_OS400ASP	ASP.ASPInstance
AMY	StoragePool.storagePoolName	AMY_OS400SPOOL	StoragePool.storagePoolName

¹ Use a semicolon (;) to separate values in ITM_Key_Property and Comp_Format_Nm. Do not use a semicolon

MSrc_Cd VARCHAR(6)	ITM_Key_Property ¹ VARCHAR(1096)	CompTyp_Cd VARCHAR(17)	Comp_Format_Nm ¹ VARCHAR(254)
after the final value.			

7.1.4 Attribute translation (table AttrTyp_Transl)

MSrc_Cd VARCHAR(6)	ITM_Attr_Property VARCHAR(254)	AttrTyp_Cd VARCHAR(17)
AMY	Process.Process	AMY_PROCNM
AMY	Process.ID	AMY_PROCID
AMY	Service.State	AMY_SERVICESTATE
AMY	Service.Status	AMY_SERVICESTATUS
AMY	Port.State	AMY_PORTSTATE
AMY	File.group	AMY_FGROUP
AMY	File.owner	AMY_FOWNER
AMY	File.mode	AMY_FMODE

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)	System , Processor
	Context VARCHAR(64)	Processor Queue Length, Load Balance, Interrupt Time, CPU Usage
Instances	InstanceKey VARCHAR(2096)	Processor=0;
Metrics	Name VARCHAR(50)	ProcessorQueueLength, HighestPercentUsage, LowestPercentUsage, InterruptsSec, 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.		

7.2.2 Resource model for the Windows Logical Disk (TMW_LogicalDisk)

ITM Table Name	Column Name	Value
Resources	Resourc VARCHAR(128)	System , Processor
	Context VARCHAR(64)	Bytes Transferred, Queue Length, Percent Space, Percent Disk Usage
Instances	InstanceKey VARCHAR(2096)	LogicalDisk=C::;
Metrics	Name VARCHAR(50)	DiskBytesSec, AvgQLength, PercentFreeSpace, PercentDiskTime
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)	System , Processor
	Context VARCHAR(64)	Bytes Transferred, Queue Length, Percent Disk Usage
Instances	InstanceKey VARCHAR(2096)	PhysicalDisk=0;
Metrics	Name VARCHAR(50)	DiskBytesSec, AvgQLength, 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)	Process, Memory
	Context VARCHAR(64)	Process Memory Usage, Memory Usage, Paging
Instances	InstanceKey VARCHAR(2096)	Memory=_total;
Metrics	Name VARCHAR(50)	WorkingSet, PrivateBytes, VirtualBytes, TotalAvail, TotalCache, CommittedBytes, PagesSec, PagesFaultsSec
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, NetworkInterfaceCard, Server, Redirector
	Context VARCHAR(64)	Percent Broadcast, Network Traffic, Bytes Rate, Server Activity, Output Queue Length, Current Commands
Instances	InstanceKey VARCHAR(2096)	Segment =@; NetworkInterfaceCard=0; Server=@; Redirector=@;
Metrics	Name VARCHAR(50)	PercentNetworkUtil, PercentBroadcastFrames, BytesTotalSec, CurrentBandwidth, ServerTotalSessions, ServerErroredOut, SessionsForcedOff, SessionsLoggedOff, WorkItemShortages, OutputQueueLength, 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, IP

	Context VARCHAR(64)	Segments Retransmitted, Segments Traffic, Datagrams Traffic, Fragments Received
Instances	InstanceKey VARCHAR(2096)	TCPIP=@; IP=@;
Metrics	Name VARCHAR(50)	SegmentsRetransmitted, SegmentSentSec, SegmentsSec, SegmentRcvdSec, 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.		

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
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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, CPU Usage
Instances	InstanceKey VARCHAR(2096)	Process=lcfd;ID=624;
Metrics	Name VARCHAR(50)	HandleCount, 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, Percent usage

Instances	InstanceKey VARCHAR(2096)	name=0;
Metrics	Name VARCHAR(50)	loadAvg1, loadAvg5, loadAvg15, prcIdleTime, prcSysTime, prcUserTime
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, File Times
Instances	InstanceKey VARCHAR(2096)	filename=/etc/passwd; pathname=/etc/passwd;
Metrics	Name VARCHAR(50)	size, checksum, 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)	File System
	Context VARCHAR(64)	File System Availability
Instances	InstanceKey VARCHAR(2096)	mountpoint=/usr;
Metrics	Name VARCHAR(50)	percUsed, perclnodesUsed,percAvail
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, Memory Availability
Instances	InstanceKey VARCHAR(2096)	Name=total;
Metrics	Name VARCHAR(50)	PageInsRate, PageOutsRate, 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, RPC
	Context VARCHAR(64)	Server, Client
Instances	InstanceKey VARCHAR(2096)	name=spare;

Metrics	Name VARCHAR(50)	NFScalls, NFSbadcalls, NFSgetattr, NFSread, NFSwrite, NFSlookup, NFSreadlink, 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, File
	Context VARCHAR(64)	Logging, File Usage
Instances	InstanceKey VARCHAR(2096)	filename=/etc/passwd; username=root;
Metrics	Name VARCHAR(50)	numLogged, 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)	systemASPUsePct,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

Before using this section, read about the data mart 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.

This warehouse pack provides the following star schema:

8.1.1 AMY hourly IBM Tivoli Monitoring, Monitoring Collection Star Schema

The following table defines the star schema. The description of the star schema is translated.

Description of star schema (in IWH_STARSHEMA)	This is a sample star schema built on the measurements grouped under the IBM Tivoli Monitoring, Monitoring Collection for Operating Systems Measurement Group Type
Name of fact table	AMY.F_OS_HOUR
Name of metric dimension table	AMY.D_ITM_METRIC
Names of other dimension tables	AMY.D_HOST

8.1.1.1 Fact table AMY.F_OS_HOUR

Metric_ID INTEGER	Host_ID INTEGER	Meas_hour TIMESTAMP	Min_value DOUBLE	Max_value DOUBLE	Avg_value DOUBLE	Total_val ue DOUBLE	Sample_ count DOUBLE
36	0	2002-08-29 04:00:17	0.00	3.00	0.38	NULL	NULL
37	0	2002-08-29 04:00:17	2.00	9.00	3.15	NULL	NULL
38	0	2002-08-29 04:00:17	2.00	11.00	3.50	NULL	NULL
43	0	2002-08-29 04:00:17	0.00	0.00	0.00	NULL	NULL
42	0	2002-08-29 04:00:18	67.00	217.00	84.15	NULL	NULL
39	0	2002-08-29 04:00:19	5.00	11.00	7.78	NULL	NULL
36	0	2002-08-29 05:00:16	0.00	5.00	0.49	NULL	NULL
37	0	2002-08-29 05:00:16	2.00	36.00	4.03	NULL	NULL
38	0	2002-08-29	2.00	39.00	4.42	NULL	NULL

		05:00:16					
43	0	2002-08-29 05:00:16	0.00	2.00	0.03	NULL	NULL
39	0	2002-08-29 05:00:17	6.00	13.00	8.03	NULL	NULL
42	0	2002-08-29 05:00:17	69.00	208.00	81.84	NULL	NULL

8.1.1.2 Fact table AMY.F_CPU_HOUR

Metric_ID INTEGER	Host_ID INTEGER	CPU_ID INTEGER	Meas_hour TIMESTAMP	Min_value DOUBLE	Max_value DOUBLE	Avg_value DOUBLE	Total_val ue DOUBLE	Sample_ count DOUBLE
60	0	4	2002-08-29 04:00:17	0.00	3.00	0.38	NULL	NULL

8.1.1.3 Fact table AMY.F_FILE_HOUR

Metric_ID INTEGER	Host_ID INTEGER	File_ID INTEGER	Meas_hour TIMESTAMP	Min_value DOUBLE	Max_value DOUBLE	Avg_value DOUBLE	Total_val ue DOUBLE	Sample_ count DOUBLE
74	1	7	2002-08-29 04:00:17	1.84E+2	1.84E+2	1.84E+2	NULL	NULL

8.1.1.4 Fact table AMY.F_FS_HOUR

Metric_ID INTEGER	Host_ID INTEGER	Fs_ID INTEGER	Meas_hour TIMESTAMP	Min_value DOUBLE	Max_value DOUBLE	Avg_value DOUBLE	Total_val ue DOUBLE	Sample_ count DOUBLE
78	1	14	2002-08-29 04:00:17	6.37E+1	6.37E+1	6.37E+1	NULL	NULL

8.1.1.5 Fact table AMY.F_LDISK_HOUR

Metric_ID INTEGER	Host_ID INTEGER	Ldisk_ID INTEGER	Meas_hour TIMESTAMP	Min_value DOUBLE	Max_value DOUBLE	Avg_value DOUBLE	Total_val ue DOUBLE	Sample_ count DOUBLE
25	1	65	2002-08-29 04:00:17	230	250	296	NULL	NULL

8.1.1.6 Fact table AMY.F_PROCESS_HOUR

Metric_ID INTEGER	Host_ID INTEGER	Process_ID INTEGER	Meas_hour TIMESTAMP	Min_value DOUBLE	Max_value DOUBLE	Avg_value DOUBLE	Total_val ue DOUBLE	Sample_ count DOUBLE
59	0	38	2002-08-29 04:00:17	6,67E+3	6,67E+3	6,67E+3	NULL	NULL

8.1.1.7 Fact table AMY.F_PROCESS_HOUR

Metric_ID INTEGER	Host_ID INTEGER	Process_ID INTEGER	Meas_hour TIMESTAMP	Min_value DOUBLE	Max_value DOUBLE	Avg_value DOUBLE	Total_val ue DOUBLE	Sample_ count DOUBLE
59	0	38	2002-08-29 04:00:17	6,67E+3	6,79E+3	6,73E+3	NULL	NULL

8.1.1.8 Fact table AMY.F_MEMORY_HOUR

Metric_ID INTEGER	Host_ID INTEGER	Memory_ID INTEGER	Meas_hour TIMESTAMP	Min_value DOUBLE	Max_value DOUBLE	Avg_value DOUBLE	Total_val ue DOUBLE	Sample_ count DOUBLE
81	1	31	2002-08-29 04:00:17	0	1,54E-1	3,17E-3	NULL	NULL

8.1.1.9 Fact table AMY.F_NETWORK_HOUR

Metric_ID INTEGER	Host_ID INTEGER	Net_ID INTEGER	Meas_hour TIMESTAMP	Min_value DOUBLE	Max_value DOUBLE	Avg_value DOUBLE	Total_val ue DOUBLE	Sample_ count DOUBLE
52	0	30	2002-08-29 04:00:17	0	0	0	NULL	NULL

8.1.1.10 Fact table AMY.F_PRINTER_HOUR

Metric_ID INTEGER	Host_ID INTEGER	Prn_ID INTEGER	Meas_hour TIMESTAMP	Min_value DOUBLE	Max_value DOUBLE	Avg_value DOUBLE	Total_val ue DOUBLE	Sample_ count DOUBLE
56	0	41	2002-08-29 04:00:17	3	21	12	NULL	NULL

8.1.1.11 Fact table AMY.F_SECURITY_HOUR

Metric_ID INTEGER	Host_ID INTEGER	Sec_ID INTEGER	Meas_hour TIMESTAMP	Min_value DOUBLE	Max_value DOUBLE	Avg_value DOUBLE	Total_val ue DOUBLE	Sample_ count DOUBLE
105	3	5227	2002-08-29 04:00:17	1.5E+1	1.5E+1	1.5E+1	NULL	NULL

8.2 Metric dimension tables

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

8.2.1 AMY.D_ITM_METRIC

This tables stores all the metrics belonging to the ITM Monitoring Collection measurement groups

Metric_ID INTEGER	met_nam e * VARCHA R(254)	met_des c * VARCHA R(254)	met_unit s * VARCHA R(254)	met_cate gory * VARCHA R(254)	min_exis ts CHAR(1)	max_exis ts CHAR(1)	ave_exist s ir CHAR(1)	total exists CHAR(1)	msrc_nm * VARCHA R(254)
36	CPU	Percentag e usage of the CPU that is being used by the process	PercentU serTime	PRC	Y	Y	Y	N	ITM for Operating Systems

8.2.2 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_nam e * VARCHA R(254)	met_des c * VARCHA R(254)	met_unit s * VARCHA R(254)	met_cate gory * VARCHA R(254)	min_exis ts CHAR(1)	max_exis ts CHAR(1)	ave_exist s ir CHAR(1)	total exists CHAR(1)	msrc_nm * VARCHA R(254)
29	WorkingS et	Working set	QTY	CPU	Y	Y	Y	N	ITM for Operating Systems

8.2.3 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 R(254)	met_desc * VARCHAR R(254)	met_units * VARCHAR R(254)	met_category * VARCHAR R(254)	min_exists CHAR(1)	max_exists CHAR(1)	ave_exists CHAR(1)	total_exists CHAR(1)	msrc_name * VARCHAR R(254)
74	size	File size	B	File system	Y	Y	Y	N	ITM for Operating Systems

8.2.4 AMY.D_IO_METRIC

This table 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 R(254)	met_desc * VARCHAR R(254)	met_units * VARCHAR R(254)	met_category * VARCHAR R(254)	min_exists CHAR(1)	max_exists CHAR(1)	ave_exists CHAR(1)	total_exists CHAR(1)	msrc_name * VARCHAR R(254)
25	DiskBytesSec	Amount of bytes per second being written or read	Bps	I/O	Y	Y	Y	N	ITM for Operating Systems

8.2.5 AMY.D_MEM_METRIC

This table 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 R(254)	met_desc * VARCHAR R(254)	met_units * VARCHAR R(254)	met_category * VARCHAR R(254)	min_exists CHAR(1)	max_exists CHAR(1)	ave_exists CHAR(1)	total_exists CHAR(1)	msrc_name * VARCHAR R(254)
32	TotalAvail	Total available memory	MB	Memory	Y	Y	Y	N	ITM for Operating Systems

8.2.6 AMY.D_NET_METRIC

This table 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 R(254)	met_desc * VARCHAR R(254)	met_units * VARCHAR R(254)	met_category * VARCHAR R(254)	min_exists CHAR(1)	max_exists CHAR(1)	ave_exists CHAR(1)	total_exists CHAR(1)	msrc_name * VARCHAR R(254)
37	PercentNetworkUtil	Percent of the network being	PRC	Network interface	Y	Y	Y	N	ITM for Operating Systems

		used							
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8.2.7 AMY.D_PRN_METRIC

This table 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

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 CHAR(1)	total_exists CHAR(1)	msrc_name * VARCHAR(254)
56	JobErrors	Number of jobs in error	QTY	Printer	Y	Y	Y	N	ITM for Operating Systems

8.2.8 AMY.D_SEC_METRIC

This table stores only the security related metrics, i.e. the metrics belonging to the SEC_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 CHAR(1)	total_exists CHAR(1)	msrc_name * VARCHAR(254)
41	ServerTotalSessions	Number of sessions on the server	QTY	Security	Y	Y	Y	N	ITM for Operating Systems

8.3 Dimension tables

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

8.3.1 Dimension table AMY.D_HOST

This table stores information about the monitored hosts (both IP_HOSTs and AMY_HOSTs)

Host_ID INTEGER	Host_start_dttm TIMESTAMP	Host_end_dttm TIMESTAMP	Hostname VARCHAR(120)	Network_domain VARCHAR(120)	Network_subdomain VARCHAR(120)	Network_subdomain2 VARCHAR(120)	Short_hostname VARCHAR(120)
0	2002-09-02 07:17:20	9999-01-01 00:00:00	dmw2k3.rome.tivoli.com	tivoli.com	rome.tivoli.com	no value	dmw2k3

8.3.2 Dimension table AMY.D_HOST_IP

This table stores the same information of the previous table, adding the last IP assigned to the host and the customer/center information

Host_ID INTEGER	Host_start_dttm TIMESTAMP	Host_end_dttm TIMESTAMP	Hostname VARCHAR(120)	Network_domain VARCHAR(120)	Network_subdomain VARCHAR(120)	Network_subdomain2 VARCHAR(120)	Short_hostname VARCHAR(120)	Last_IP_Address VARCHAR(120)	Customer_Name VARCHAR(120)
0	2002-09-02 07:17:20	9999-01-01 00:00:00	dmw2k3.rome.tivoli.com	tivoli.com	rome.tivoli.com	no value	dmw2k3	dmw2k3	dmw2k3

8.3.3 Dimension table AMY.D_CPU

This table stores information about the monitored CPUs

CPU_ID INTEGER	CPU_NM VARCHAR(254)
4	0

8.3.4 Dimension table AMY.D_FILE

This table stores information about the monitored files

FILE_ID INTEGER	FILE_NAME VARCHAR(254)	FILE_OWNER VARCHAR(120)	FILE_PERMISSIONS VARCHAR(15)	FILE_GROUP VARCHAR(120)
7	/etc/group	Root	-r--r--r--	root

8.3.5 Dimension table AMY.D_FS

This table stores information about the monitored file systems

FS_ID INTEGER	FS_MOUNTPOINT VARCHAR(254)
27	/usr

8.3.6 Dimension table AMY.D_LDISK

This table stores information about the monitored logical disks

LDISK_ID INTEGER	LDISK_NM VARCHAR(254)
65	D:

8.3.7 Dimension table AMY.D_PDISH

This table stores information about the monitored physical disks

PDISK_ID INTEGER	PDISK_NM VARCHAR(254)
37	0

8.3.8 Dimension table AMY.D_PROCESS

This table stores information about the monitored processes

PROCESS_ID INTEGER	PROC_NM VARCHAR(254)	PROC_ID VARCHAR(16)
53	Tmw2k	3496

8.3.9 Dimension table AMY.D_MEMORY

This table stores information about the monitored memory

MEMORY_ID INTEGER	MEMORY_NM VARCHAR(254)
31	total

8.3.10 Dimension table AMY.D_NETWORK

This table stores information about the monitored network resources

NET_ID INTEGER	NET_NM VARCHAR(254)
33	eth0

8.3.11 Dimension table AMY.D_PRINTER

This table stores information about the monitored printers and printer queue

PRN_ID INTEGER	PRN_NM VARCHAR(254)
41	IBM Infoprint 40

8.3.12 Dimension table AMY.D_SECURITY

This table stores information about security related resources

SEC_ID INTEGER	SEC_NM VARCHAR(254)
5227	root

8.4 Data marts and reports

This warehouse pack provides the following sample data mart.

8.4.1 AMY sample operating system data mart

This data mart uses the following star schemas:

AMY Hourly ITM Monitoring Collection Star Schema

This provides sample reports for hourly aggregated metrics collected by the IBM Tivoli Monitoring sample Resource Models for Operating Systems.

8.4.2 AMY sample operating reports

WIN_CPU_STATS: Overall CPU Statistics for Windows Machines

UNIX_CPU_STATS: Overall CPU Statistics for Unix Machines

NET_STATS: Network statistics for all systems

BUSIEST_SYS: Busiest system

Memory Utilization: System Memory Utilization

Health of a backup server: Health of a backup server for core network machines

Paging File Utilization: Windows paging file utilization

Usage of a Domain Controller: Usage of a Windows Domain Controller