IBM

IBM Tivoli NetView, Version 7.1.4
Warehouse Pack, Version 1.2.1
Implementation Guide

for Tivoli Data Warehouse, Version 1.2
Revised August 2005

SC32-1237-03

Note:

Before using this information and the product it supports, read the information in Notices on page 68.

Fourth Edition (August 2005)

This edition applies to version 1, release 2, of Tivoli Data Warehouse and to all subsequent releases and modifications until otherwise indicated in new editions.

Contents

1 About this document

This document describes the warehouse packs for IBM® Tivoli® NetView®, Version 7.1.4. The Tivoli NetView warehouse packs (hereafter referred to as the warehouse packs), provide support for availability data and performance data. These warehouse packs are created for Tivoli Data Warehouse, Version 1.2.

Note: This document only provides supplemental information that is specific to the Tivoli NetView warehouse packs. It must be used in conjunction with the information that is shipped with the Tivoli Data Warehouse product.

With the Tivoli NetView warehouse packs, you can store and maintain network availability and performance information. You can use this information to create reports. Using this reporting function requires that you install and configure the Tivoli Data Warehouse product and the Tivoli NetView warehouse packs. The *Installing and Configuring Tivoli Data Warehouse* document provides the following information:

- Planning, installation, and configuration information for the Tivoli Data Warehouse

- General planning and installation information for warehouse packs

- Getting started information

This document provides the following information specifically for the Tivoli NetView warehouse packs:

- Supplemental planning and installation information

- Configuration information

- User information such as problem diagnosis and database maintenance

- A description of the Tivoli NetView extract, transform, and load (ETL) processes

- Schema information to help you understand the sample reports that are provided and for creating your own reports

This document specifies both UNIX® and Microsoft® Windows® paths. Change the path as required for your system. For example, if \example\directory\file is specified and you are using a UNIX system, use /example/directory/file.

1.1 Who should read this document

This document is for Tivoli NetView administrators who plan for, install, configure, and maintain the Tivoli NetView warehouse packs.

It is important to note that because the Tivoli Data Warehouse function is comprised of three products (Tivoli NetView, Tivoli Data Warehouse, and the DB2® product), it is essential that administrators and installers meet the following minimum criteria:

- You understand that there are numerous system configurations available and that you thoroughly understand the system configuration that you are going to use. See the *Installing and Configuring Tivoli Data Warehouse* documentation for more information.

- You have the following knowledge and skills:

  o Basic system administration and file management for Microsoft Windows systems and optionally for the UNIX-based platforms that you have deployed

  o Basic relational database concepts and DB2 administration experience

- You have read and thoroughly understand the following documentation:

  o The first three chapters of this warehouse pack guide

  o The *Installing and Configuring Tivoli Data Warehouse* document

o   The appropriate DB2 information as described in the *Installing and Configuring Tivoli Data Warehouse* document

1.2 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.ibm.com/software/tivoli/library/

The following sets of documentation are available to help you understand, install, and manage the Tivoli NetView warehouse packs:

- Tivoli NetView library

- Tivoli Data Warehouse library

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

The following sections list and briefly describe these libraries.

1.2.1 Tivoli NetView library

See either the *Tivoli NetView for UNIX* or the *Tivoli NetView for Windows* libraries for more information about the Tivoli NetView product.

1.2.2 Tivoli Data Warehouse library

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

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

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

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

    Describes how Tivoli Data Warehouse fits into your enterprise, explains how to plan for its deployment, and gives installation and configuration instructions. It 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 Data Warehouse*, GC32-0745

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

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

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

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

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

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

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

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

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

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

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

  Covers the details of implementing your database design. Topics include creating and altering a database, database security, database recovery, and administration using the Control Center, 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 setup of 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 Data Warehouse and the Tivoli NetView warehouse packs.

2.1 Overview of Tivoli Data Warehouse

Tivoli Data Warehouse provides the infrastructure for the following:

- Extract, transform, and load (ETL) processes through the IBM DB2 Data Warehouse Center tool

- Schema generation of the central data warehouse

- Historical reporting

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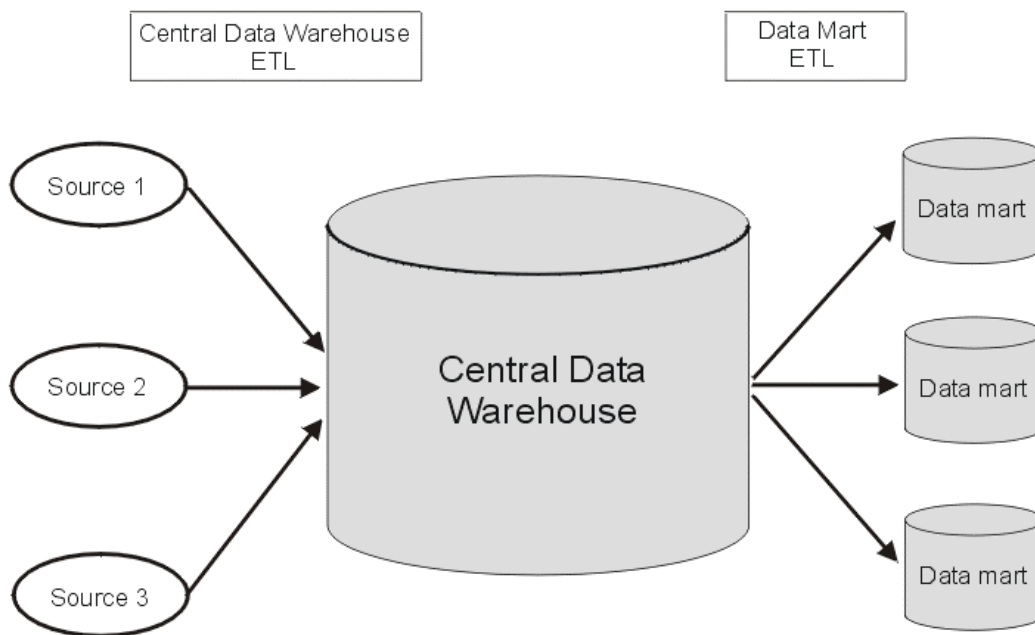
Figure 1. Tivoli Data Warehouse overview

The *central data warehouse* uses a generic schema that is the same for all applications. As new components or new applications are added, more data is added to the database; however, no new 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 pack.* The ETLs are typically scheduled to run periodically, usually during non-peak hours.

2.2 Overview of the Tivoli NetView warehouse packs

The Tivoli NetView warehouse packs provide support for availability data and performance data.

Figure 2 is provided to help you understand where the product components are installed, and on which system to perform tasks described in this document. The Tivoli NetView product and the Tivoli NetView warehouse database are installed on system **A**. All components of the Tivoli Data Warehouse product are installed on system **B**. Note that Figure 2 shows a simple distributed installation. If your installation is more complex, use this figure only as a conceptual guide.
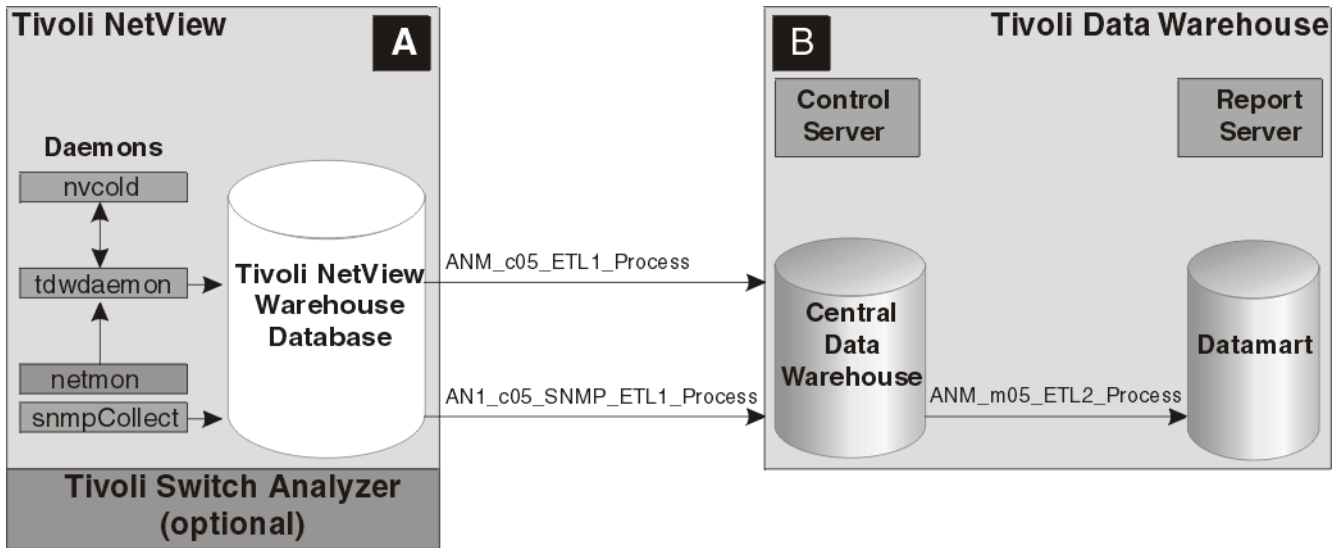
Figure 2. Simple distributed Tivoli NetView warehouse installation

The Tivoli NetView product stores and maintains network availability and performance information in the Tivoli NetView warehouse database. The Tivoli NetView warehouse database is a DB2 database that is created either when Tivoli NetView is installed or some time after installation. See "Enabling the tdwdaemon daemon and creating a Tivoli NetView warehouse database after installation" on page 11.

The tdwdaemon daemon stores availability data, and the snmpCollect daemon stores performance data in the Tivoli NetView warehouse database.

Note: If you only want to use performance data, the tdwdaemon daemon must be registered and started for the snmpCollect daemon to function correctly.

When the Tivoli NetView warehouse packs are installed, the ETLs are installed on the Tivoli Data Warehouse control server (see **B** in Figure 2). The central data warehouse ETL process transforms the data and stores it in the central data warehouse database. The data mart ETL process connects to the central data warehouse, reads the information that has not been previously read, and writes it into the Tivoli NetView data mart database. For information about ETL processes, see "ETL processes" on page 31.

Using the Tivoli NetView warehouse packs, you can produce reports that summarize the information.

For availability information, you can use either the sample reports that are provided with the Tivoli NetView product, or you can create your own reports with an additional license from Crystal Reports. The version of Crystal Reports that ships with Tivoli Data Warehouse Version 1.2 or later does not include the ability to create reports. For more information about the reports that are provided with the Tivoli NetView product, see "Data marts and reports" on page 50.

For performance information, you must create your own data mart ETL and reports. The Tivoli NetView product does not provide sample reports for performance information.

2.2.1 Availability information

The Tivoli NetView product stores information about your network nodes, SmartSets, and layer 2 nodes in the Tivoli NetView warehouse database (see **A** in Figure 2).

The tdwdaemon daemon stores availability information about nodes in the Tivoli NetView warehouse database. The tdwdaemon daemon obtains node availability information about nodes from the netmon daemon. SmartSet objects and their relationships to nodes are also stored. The tdwdaemon daemon uses SmartSets to determine which nodes, or groups of nodes, to monitor. The tdwdaemon daemon obtains information about SmartSet membership from the nvcold daemon. Availability information about SmartSets is not stored. However, it is possible to extrapolate the availability of the SmartSet by averaging the availability of all the nodes in the SmartSet.

Layer 2 node availability information is also maintained by the tdwdaemon daemon if the Tivoli Switch Analyzer product is installed (see **A** in Figure 2).

The Tivoli NetView ETLs provide the following processes that process this information and create reports:

* ANM_c05_ETL1_PROCESS

* ANM_m05_ETL2_PROCESS

For more information about ETL processes, see "ETL processes" on page 31.

For more information about the reports that are provided with the Tivoli NetView product, see "Data marts and reports" on page 50.

2.2.2 Performance information

The Tivoli NetView product stores performance information about your Cisco routers and remote network monitoring (RMON) nodes in the Tivoli NetView warehouse database (see **A** in Figure 2 on page 5).

The snmpCollect daemon stores SNMP performance data about network nodes in the Tivoli NetView warehouse database, which is the same database where availability data is stored. The snmpCollect daemon provides this function if the tdwdaemon daemon is configured and registered. The following SNMP data collections are created and activated during a new or upgrade installation of the Tivoli NetView product to provide SNMP performance data about network nodes:

* For the Routers SmartSet: ifInOctets, ifOutOctets, ifInNUcastPkts, ifOutNUcastPkts, ifInDiscards, ifOutDiscards, and inErrRate.
* For the RMON SmartSet: etherStatsOctets, etherStatsMulticastPkts, etherStatsBroadcastPkts, etherStatsCRCAlignErrors, etherStatsFragments, and etherStatsJabbers.
* For all nodes: ifOutUcastPkts

Use the MIB collection GUI to evaluate these collections to ensure that they meet your performance data collection requirements:

* For Windows: from the Tivoli NetView native console, click **Tools–>MIB–>Collect Data**
* For UNIX: from the Tivoli NetView native console, click **Tools–>Data Collections & Thresholds: SNMP**

Use this GUI to modify one or more of the collections, or to learn more information about the collections.
A data mart ETL process that moves performance data from the Tivoli NetView warehouse database to a data mart database and sample performance reports is not provided with the Tivoli NetView product. You must create your own data mart ETL and reports to use the performance information.

3 Installation and configuration

This section provides information about installing and configuring the Tivoli NetView warehouse packs. The warehouse packs are provided on the Tivoli NetView product CD and are installed on the Tivoli Data Warehouse control server.

Note: This document only provides supplemental installation information that is specific to the Tivoli NetView warehouse packs. This information must be used in conjunction with the information that is provided in the *Installing and Configuring Tivoli Data Warehouse* document.

Installation and configuration is a multi-step process that is described in the following documents:

- Perform the pre-installation tasks that are described in "Pre-installation procedures" on page 11 and in the *Installing and Configuring Tivoli Data Warehouse* document.

- Review the installation information that is provided in this document and then install the Tivoli NetView warehouse packs using the procedures provided in the *Installing and Configuring Tivoli Data Warehouse* document.

- Perform the post-installation tasks that are described in "Post-installation procedures" on page 13.

- Perform the post-installation tasks that are described in the *Installing and Configuring Tivoli Data Warehouse* document.

- Begin to use the Tivoli NetView warehouse function as described in the *Installing and Configuring Tivoli Data Warehouse* document.

3.1 General installation information

This section provides supplemental installation information for the Tivoli NetView warehouse packs.

3.1.1 DB2 naming conventions

The Tivoli NetView warehouse database and the Tivoli Data Warehouse are implemented using the DB2 product. This section provides information about DB2 naming conventions for database names and remote node names.

Review the following information about DB2 naming conventions before you begin to install the Tivoli NetView warehouse packs:

- A database name or database alias is a unique character string containing from 1 - 8 letters, numbers, or keyboard characters as follows:

    o Character strings that represent names of database manager objects can contain any of the following characters: a - z, A - Z, 0 - 9, @, #, and $.

    o The first character in the string must be an alphabetic character, @, #, or $. The first character cannot be a number or the letter sequences SYS, DBM, or IBM.

- Names can be entered in lowercase letters. However, the database manager processes them as if they were uppercase. The exception to this is character strings that represent systems network architecture (SNA) names. For SNA, many values (for example, the logical unit names partner_lu and local_lu) are case sensitive, and these names must be entered exactly as they are spelled in the corresponding SNA definitions of the terms.

3.1.2 Understanding user IDs

Review the following information about user IDs before you begin to install the Tivoli NetView warehouse packs:

- If you are configuring the tdwdaemon daemon on a UNIX system, your user ID must have root authority and it must be part of the DB2 administration group. If you are using the root user, the root

user ID must be part of the DB2 administration group. The DB2 administration group is the primary group of the database user when the DB2 instance was created.

- If you are configuring the tdwdaemon daemon on the Linux for zSeries™ platform, the DB2 client user ID must match the DB2 server user ID.

- You must use the same user ID to install the Tivoli NetView warehouse packs that you used to install the Tivoli Data Warehouse control server.

3.1.3 Choosing a database user name for installation

Because the user temporary table space that is created in each central data warehouse database and data mart database during the installation of Tivoli Data Warehouse is accessible only to the user that performed the installation, install the Tivoli NetView warehouse packs using the same database user name that was used to install Tivoli Data Warehouse. If the Tivoli NetView warehouse packs are not installed using the same database user name, you must create a user temporary table space for use by the installation program for each central data warehouse database and data mart database.

If you are installing the warehouse packs using the same database user name that was used to install Tivoli Data Warehouse or if your database user has access to another user temporary table space in the target databases, no additional action is required.

If you do not know the database user name that was used to install Tivoli Data Warehouse, you can determine whether the table space is accessible by attempting to declare a temporary table while connected to each database as the user that will install the warehouse packs. One way to do this is to use the following procedure:

1. From the DB2 command line on the control server (see **B** in Figure 2 on page 5), enter one of the following commands:

    a. For Windows operating systems:

       db2cmd
    b. For UNIX systems:

       su - db2admin
2. Enter the following DB2 commands:

   db2 "connect to TWH_CDW user *installing_user* using *password*"

   db2 "create user temporary tablespace usertmp2 managed by system using ('usertmp2')"

   db2 "disconnect TWH_CDW"

   db2 "connect to TWH_MART user *installing_user* using *password*"

   db2 "create user temporary tablespace usertmp3 managed by system using ('usertmp3')"

   db2 "disconnect TWH_MART"

The *installing_user* identifies the database user that will install the warehouse packs and the *password* specifies the password for the installing user.

3.1.4 Installing the Tivoli NetView availability ETL in a distributed environment

If you are installing the Tivoli NetView availability ETL in a distributed Tivoli Data Warehouse environment, you must select **Installation scripts and tools** when you select **Tivoli Data Warehouse control server** during the installation. If the control server has already been installed (see **B** in Figure 2 on page 5) without this option selected, you can run the Tivoli Data Warehouse installation program again with only the **Installation scripts and tools** option selected. For more information, refer to the *Installing and Configuring Tivoli Data Warehouse* document.

3.2 Prerequisites

Before installing the Tivoli NetView warehouse packs, the following software must be installed:

- IBM Tivoli NetView Version 7.1.4 with fix pack 03 or later

- IBM DB2 Universal Database® Workgroup Edition Version 7.2 or later

  The Tivoli NetView product is shipped with IBM DB2 Universal Database Workgroup Edition Version 7.2. This version can be used if the Tivoli NetView warehouse database and the DB2 server are installed on the same machine, which is referred to as single system installation. However, you must use IBM DB2 Universal Database Enterprise Edition Version 7.2 with fix pack 6 or later if you want to install the Tivoli NetView warehouse database and the DB2 server on different machines, which is referred to as a distributed installation.

- Tivoli Data Warehouse Version 1.2 with fix pack 2 or later

  You can obtain the Tivoli Data Warehouse fix pack from the following Tivoli Data Warehouse Web site:

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

  In the Self help section, click **Downloads**.

- Tivoli Switch Analyzer, Version 1.1 or later

  The IBM Tivoli Switch Analyzer product must be installed if you want to work with layer 2 information for switches.

- The interim fix for the IBM Tivoli Service Level Advisor product.

  The interim fix for APAR IY36983 must be installed if you want to use the IBM Tivoli Service Level Advisor product to create service level agreements using Tivoli NetView availability data.

3.3 Supported hardware and software

The tdwdaemon daemon is supported on all hardware platforms and operating systems that are supported by the Tivoli NetView Version 7.1.4 product. For more information, refer to the *IBM Tivoli NetView for Windows Release Notes* or the *IBM Tivoli NetView for UNIX Release Notes*, Version 7.1.4.

For information about the hardware and software requirements of Tivoli Data Warehouse, refer to the *Tivoli Data Warehouse Release Notes*.

3.4 Product notes and limitations

There are no additional product notes or limitations to consider when you install the Tivoli NetView warehouse pack other than those that are documented in the Tivoli NetView Version 7.1.4 Release Notes and other product documentation.

3.5 Database sizing considerations

Ensure that there is sufficient space in your databases for the data that is collected by the warehouse packs. The recommendations in the table that follows are based on the following assumptions:

- You have 500 managed objects.
- You want to retain the data for 6 months.
- Your network objects undergo an average amount of status transitions.

Database	Disk Space

NetView database	180 MB
Central data warehouse	180 MB
Data Mart	360 MB

The values specified are recommendations based on a typical network. It is important that you analyze your network to determine your actual requirements. To determine the number of managed objects for your network, enter the following command from the Tivoli NetView console:

```
ovtopodump -l
```

3.6 Data sources and targets

Application data that is to be loaded into the central data warehouse is known as a source, and data generated from an ETL process is known as a target.

3.6.1 Availability data sources and targets

The Tivoli NetView availability warehouse pack uses the following data sources and targets for availability data:

Name in Data Warehouse Center	Description	ODBC Data Source Name
ANM_<name_of_avail_source>_Source	This value specifies the name of the data source for the Tivoli NetView warehouse database.	User Defined
ANM_TWH_CDW_Source	This value specifies the name of the data source for the central data warehouse to be used as a source.	TWH_CDW
ANM_TWH_MART_Source	This value specifies the name of the data source for the data mart to be used as a source.	TWH_MART
ANM_TWH_CDW_Target	This value specifies the name of the data source for the central data warehouse to be used as a target.	TWH_ CDW
ANM_TWH_MART_Target	This value specifies the name of the data source for the data mart to be used as a target.	TWH_ MART

Note: For Tivoli Data Warehouse Version 1.2 and later, the Tivoli NetView availability warehouse pack can use more than one data source. This is specified during the installation.

3.6.2 Performance data sources and targets

The Tivoli NetView performance warehouse pack uses the following data sources and targets for performance data:

Name in Data Warehouse Center	Description	ODBC Data Source Name
AN1_SNMP_Source	This value specifies the data source for the Tivoli NetView performance database.	NETVIEW
AN1_TWH_CDW_Target	This value specifies the data source for the central data warehouse.	TWH_CDW

Name in Data Warehouse Center	Description	ODBC Data Source Name
ANM_AVAIL_Source	This value specifies the name of the data source for the Tivoli NetView warehouse database.	NETVIEW

3.7 Pre-installation procedures

Before installing the Tivoli NetView warehouse packs, perform the following tasks in the specified order:

1. Read the first three chapters of this warehouse pack guide.

2. Read the *Installing and Configuring Tivoli Data Warehouse* document. This document is available on the Tivoli Data Warehouse documentation CD.

3. Ensure that the correct version of all prerequisite software is installed.

4. Install version 7.1.4 of the Tivoli NetView product with fix pack 1 or later. Ensure that you select **Yes** when you are asked if you want to configure the tdwdaemon daemon.

    If the Tivoli NetView product is already installed (see **A** in Figure 2 on page 5), perform the following tasks:

    a. Perform one of the following actions to confirm that version 7.1.4 is installed:

    - For Windows operating systems, from the native console main menu, click **Help** → **About NetView**.

    - For UNIX systems click the Tivoli NetView icon on the lower right side of the window.

    b. Run the following command to determine if the tdwdaemon daemon is running:

        ovstatus tdwdaemon

    - If the tdwdaemon daemon is running, continue with step 5.

    - If the tdwdaemon daemon is not started, run the following command to start it:

        ovstart tdwdaemon

    - If the tdwdaemon daemon is not registered, use the procedures in "Enabling the tdwdaemon daemon and creating a Tivoli NetView warehouse database after installation" on page 11 to register it and then continue with step 5.

5. Review the following sections to ensure that the default configuration values that are provided meet your needs:

    - "Changing configuration values in the tdwdaemon.properties file" on page 22

    - "Central data warehouse" on page 28

6. Go to "Installation of the warehouse pack" on page 13.

3.7.1 Enabling the tdwdaemon daemon and creating a Tivoli NetView warehouse database after installation

If you did not enable the tdwdaemon daemon and create a Tivoli NetView warehouse database when you installed the Tivoli NetView product, you can do so at any time after installation. Use the following procedures to enable the tdwdaemon daemon and create a Tivoli NetView warehouse database (see **A** in Figure 2 on page 5) after NetView installation.

3.7.1.1 Enabling the tdwdaemon daemon and creating a Tivoli NetView warehouse database on Windows systems

To enable the tdwdaemon daemon and create a Tivoli NetView warehouse database on Windows, perform the following procedure:

1. On the Tivoli NetView system (see **A** in Figure 2 on page 5), click **Start → Programs → Tivoli NetView → Administration → Configure Data Export to DB2 for use in Tivoli Data Warehouse**. A command window is displayed and then the IBM Tivoli NetView DB2 Server window is displayed.
2. Type the name of the Tivoli NetView warehouse database. See "DB2 naming conventions" on page 7 for more information.
3. If the DB2 server is remote, select the **Remote Server** check box. If the DB2 server is local, clear the **Remote Server** check box and go to step 7.
   Note: A remote DB2 server is installed on a system other than the NetView server.
       A local DB2 server is installed on the same system as the NetView server.
4. Type the remote node name. The remote node name is a user-defined name used to catalog the connection with the DB2 server. See "DB2 naming conventions" on page 7 for more information.
5. Type the new DB2 server hostname or IP Address.
6. Type the DB2 server port number if your DB2 port number is not 50000, which is the default value.
7. Type the DB2 user ID.
8. Type the DB2 password.

Note: When you are creating a database, the user ID and password cannot be verified until after the database creation begins. Verify that the user ID and password are correct before proceeding.

9. Click **OK**.
   If there are no errors and the database does not exist, the following message is displayed:

   ```
   The warehouse database does not exist.

   Click "Create Database" to create the database.
   Click "Retry" to modify the settings and try again.
   ```

10. Click **Create Database** to create the database. After creating the database successfully, the following message is displayed:
        `Register the Data Warehouse daemon and start it?`
11. Click **Yes** to register and start the tdwdaemon daemon.

3.7.1.2 Enabling the tdwdaemon daemon and creating a Tivoli NetView warehouse database on UNIX systems

To enable the tdwdaemon daemon and create a Tivoli NetView warehouse database on UNIX systems, perform the following procedure:

1. Perform one of the following tasks depending on which type of installation method you used to install the Tivoli NetView product:
   - If you installed the Tivoli NetView product in a non-Tivoli environment, enter the **/usr/OV/bin/serversetup** command to start the Server Setup application.
   - If you installed the Tivoli NetView product in a Tivoli environment, run the **nvits_config** script. For more information about the **nvits_config** script, refer to the *Tivoli NetView for UNIX Release Notes*, Version 7.1.4.
2. Click **Configure → Set options for daemons → Set options for topology, discovery, and database daemons → Set options for tdwdaemon**. The IBM Tivoli NetView Setup: Options window is displayed.
3. Ensure that **Yes** is displayed in the **Enable tdwdaemon** field.
4. Ensure that the DB2 user name is correct. If it is not correct, type the correct DB2 user name.
5. Ensure that **Run Setup** is displayed in the **DB2 Connection** field.
6. Click either **Apply** or **OK**. A confirmation window is displayed.

7. Click **Yes** if you want to continue. The IBM Tivoli NetView Setup: Output window is displayed and then the IBM Tivoli NetView DB2 Server window is displayed.
8. Type the name of the warehouse database. See "DB2 naming conventions" on page 7 for more information. If the local machine is running on an AIX system, continue with step 10.
9. If the DB2 server is remote, select the **Remote Server** check box. If the DB2 server is local, clear the **Remote Server** check box and go to step 13.
    > **Note:** For the AIX operating system, the **Remote Server** check box is not displayed because the remote node name must be specified.
10. Type the remote node name. The remote node name is a user-defined name used to catalog the connection with the DB2 server. See "DB2 naming conventions" on page 7 for more information.
11. Type the DB2 server hostname or IP Address.
12. Type the DB2 server port number if your DB2 port number in not 50000, which is the default value.
13. Type the DB2 user ID.
14. Type the DB2 password.
    Note: When you are creating a database, the user ID and password cannot be verified until after the database creation begins. Verify that the user ID and password are correct before proceeding.
15. Click **OK**. If there are no errors and the database does not exist, the following message is displayed:

```
The warehouse database does not exist.

Click "Create Database" to create the database.
Click "Retry" to modify the settings and try again
```

16. Click **Create Database** to create the database.
    After creating or recreating the database, the tdwdaemon daemon is registered and started automatically.
17. Click **Close** in the IBM Tivoli NetView Setup: Output window.

3.8 Installation of the warehouse packs

The warehouse pack installation procedures are provided in the *Installing and Configuring TivoliData Warehouse* document. If you have version 1.1.0 of the warehouse packs installed, the data will be automatically migrated to version 1.2.1 of the warehouse pack with no additional configuration necessary.

The Tivoli NetView warehouse packs are installed on the Tivoli Data Warehouse control server (see **B** in Figure 2 on page 5). The installation media for the warehouse packs is located on the Tivoli NetView product CDs in the following directories:

- \tedw_apps_etl for the Tivoli NetView availability warehouse pack

- \snmp_etl\tedw_apps_etl for the Tivoli NetView SNMP performance warehouse pack

Each warehouse pack must be installed separately. Note that if you want to use only performance information, the availability warehouse pack must be installed. After you have installed one or both of the warehouse packs, perform the procedures provided in "Post-installation procedures" on page 13.s

3.9 Post-installation procedures

After you install the Tivoli NetView warehouse packs, perform the tasks in this section in the order specified.

3.9.1 Verifying the tdwdaemon daemon and snmpcollect daemon configurations

This section provides configuration verification procedures for the following components:

- The tdwdaemon daemon configuration for use with availability information

- The snmpcollect daemon configuration for use with performance information

The tdwdaemon daemon must be registered and started to perform these procedures. Perform the procedure in "Enabling the tdwdaemon daemon and creating a Tivoli NetView warehouse database after installation" on page 11 if you did not register and start the tdwdaemon daemon when you installed the Tivoli NetView product.

Perform the procedure in "Verifying the tdwdaemon daemon configuration for use with availability " on page 14 if you are using either the availability warehouse pack or the performance warehouse pack. If you are using the performance warehouse pack, you must also perform the procedure in "Verifying the tdwdaemon daemon configuration for use with performance information" on page 14.

3.9.1.1 Verifying the tdwdaemon daemon configuration for use with availability information

Use the following procedure to verify that the tdwdaemon daemon has been configured correctly for use with availability data:

1. From the NetView command line on the NetView server (see **A** in Figure 2 on page 5), enter the following command:

`ovstatus tdwdaemon`

2. If the status is RUNNING, continue with step 3. If the status is NOT RUNNING, review the /usr/OV/log/tdwdaemon.log file and correct any problems. When the problems have been corrected, continue with step 3. See "Configuring the tdwdaemon daemon log" on page 24 for more information about the tdwdaemon log.

3. For UNIX systems, from a DB2 window on the Tivoli NetView server, enter the following command to change the user ID to the DB2 user ID:

`su - username`

where *username* is the DB2 user ID.

For Windows operating systems, log on the Tivoli NetView server as the database administrator or with any user id that has been given DB2 administrative rights. Enter the following command to open a DB2 window:

db2cmd

4. From a DB2 window on the Tivoli NetView server (see **A** in Figure 2 on page 5), enter the following command to connect to the Tivoli NetView warehouse database:

`db2 connect to dbname`

where *dbname* is the name of the Tivoli NetView warehouse database that was created either when one of the procedures in section 3.7.1 was performed, or when the Tivoli NetView product was installed.

5. From a DB2 window on the Tivoli NetView server, enter the following command:

`db2 "select count(*) from netview.netview_nodes"`

6. The Tivoli NetView tdwdaemon daemon has installed correctly if the count is greater than 0, or if the count is 0 and there are no nodes displayed on the IP submap.

If nodes are displayed on the IP submap and the count is 0, continue with step 7.

7. From the Tivoli NetView command line, enter the following command: `ovstop netmon`

8. From the Tivoli NetView command line, enter the following command: `ovstop tdwdaemon`

9. From the Tivoli NetView command line, enter the following command: `ovstart tdwdaemon`

10. From the Tivoli NetView command line, enter the following command: `ovstart netmon`

11. Enter one of the following commands to preload the Tivoli NetView warehouse database with the current availability information:

For UNIX: `netmon -a 500`

For Windows: `netmonaction.bat 500`

12. From a DB2 window on the Tivoli NetView server, enter the following command:

 `db2 "select count(*) from netview.netview_nodes"`

13. If the count is greater than 0, the Tivoli NetView warehouse pack has installed correctly. If the count is 0, contact IBM Software Support.

3.9.1.2 Verifying the snmpcollect daemon configuration for use with performance information

Use the following procedure to verify that the snmpcollect daemon is configured correctly for use with performance data:

1. Verify that the -w flag is present by browsing the following files:
   On Windows systems, browse the \usr\ov\lrf\snmpcol.lrf.
   On UNIX systems, browse the /usr/OV/lrf/snmpCol.lrf.

   If the -w flag is present, continue with the next step.

   If the -w flag is not present, perform the following procedure and then continue with the next step.
   a. Edit the snmpcol.lrf file and add the -w flag.
   b. Issue the following commands from the directory that the snmpcol.lrf file is in:
        i. ovdelobj snmpCol.lrf
        ii. ovaddobj snmpCol.lrf
   c. Issue the following commands:
        i. ovstop
        ii. ovstart
2. Browse the \usr\ov\log\snmpCol.trace file on Windows or the /usr/OV/log/snmpCol.trace file on UNIX and ensure that the following message is displayed:

   snmpcollect successfully connected to DB2, rc = 0

3. Browse the following log files and look for DB2 error messages:
   - For Windows:
     - \usr\ov\log\tdwdaemon.log
     - \usr\ov\log\nv.log
     - \usr\ov\log\snmpCol.trace
   - For UNIX:
     - /usr/OV/log/tdwdaemon.log
     - /usr/OV/log/netview_*user*.log
     - /usr/OV/log/snmpCol.trace
     - /usr/OV/log/tdw_dbcreate.log
If no error messages exist, the installation of the performance warehouse pack was successful.
4. If error messages exist on Windows operating systems, correct the problems. Contact IBM Software Support if you cannot resolve the problem.
   For UNIX systems, verify that the /usr/OV/bin/NVenvironment file is sourcing the DB2 profile as follows:
   a. Search the file /usr/OV/bin/NVenvironment file for dbusername= and ensure that it is set to your database administrator user name. If the user name is incorrect, type the correct user name. For example,
      . /home/db2admin/sqllib/db2profile.
   b. Test the NVenvironment file as follows:
        i. Enter the following command: `. /usr/OV/bin/NVenvironment`

ii. Enter **db2**. If the DB2 prompt is displayed, the problem has been corrected. If the DB2 prompt is not displayed, contact IBM Software Support.

5. When the Tivoli NetView server is installed on UNIX, use the following procedure to configure the snmpCollect daemon to write SNMP performance records to the Tivoli NetView warehouse database:

   a. Ensure the tdwdaemon daemon has been enabled and that the Tivoli NetView warehouse database has already been created.

   b. On the Tivoli NetView server, enter **/usr/OV/bin/serversetup** on the command line to start the Server Setup application.

   c. Click **Configure → Set options for daemons → Set options for event and trap processing daemons → Set options for snmpCollect daemon**. The IBM Tivoli NetView Setup: Options window is displayed.

   d. Ensure that **Yes** is displayed in the **Add collected data to the NetView Warehouse** field.

   e. Click **OK**.

3.9.2 Configuring availability data sources and targets

Use the following procedure to configure the Tivoli NetView warehouse database for use with availability data sources and targets on the control server.

The following procedure is performed on the control server (see **B** in Figure 2 on page 5).

1. Create an ODBC data source for the Tivoli NetView availability database on the Tivoli Data Warehouse as follows:

   a. Click **Start → Settings → Control Panel → Administrative Tools → Data Sources (ODBC)**. The ODBC Data Source Administration window is displayed.

   b. Click **System DNS**.

   c. Click **Add**.

   d. Select **IBM DB2 ODBC DRIVER**.

   e. Click **Finish**.

   f. Create a data source name.

   g. If the Tivoli NetView server is installed on the local machine, click the down arrow and select the Tivoli NetView warehouse database name. If the Tivoli NetView server is not installed on the local machine, click **Add** and run the Add DB2 wizard that is provided with the DB2 product to configure a connection to your database. Note that *local* means that the Tivoli NetView warehouse database is installed on the same machine as the Tivoli Data Warehouse control server.

   Note: The above procedure must be repeated for each NetView warehouse data source that is used.

2. From the DB2 Data Warehouse Center, specify the user ID and password for the following data sources and targets:

   - ANM_<datasource>_Source

   - ANM_TWH_CDW_Target

   - ANM_TWH_MART_Target

   - ANM_TWH_MD_Target

   Use the following procedure to specify the user ID and password:

   1. From the left side of the DB2 Data Warehouse Center window, click **Warehouse Sources**.

   2. Right-click **ANM_<datasource>_Source**.

   3. Click **User ID and Password**. The Change User ID and Password window is displayed.

   4. Select **Change user ID**, and type the user ID.

5. Select **Change password**, and type the password. Then retype the password to verify it.

6. Click **OK**.

7. Repeat steps 2 – 7 for the other sources and targets.

3.9.3 Configuring performance data sources and targets

Use the following procedure to configure performance data sources and targets from the Data Warehouse Center.

1. Create an ODBC data source for the Tivoli NetView performance database on the Tivoli Data Warehouse (see **B** in Figure 2 on page 5) as follows:

   a. Click **Start → Settings → Control Panel → Administrative Tools → Data Sources (ODBC)**. The ODBC Data Source Administration window is displayed.

   b. Click **System DSN**

   c. Click **Add**.

   d. Select **IBM DB2 ODBC DRIVER**.

   e. Click **Finish**.

   f. Type **ANM_SOURCE** for the Data source name.

   g. If the Tivoli NetView server is installed on the local machine, click the down arrow and select the Tivoli NetView warehouse database name. If the Tivoli NetView server is not installed on the local machine, click **Add** and use the Add DB2 wizard that is provided with the DB2 product to configure a connection to your database. Note that *local* means that the Tivoli NetView warehouse database is installed on the same machine as the Tivoli Data Warehouse control server.

2. From the DB2 Data Warehouse Center, specify the user ID and password for AN1_SNMP_Target as follows: From the left side of the DB2 Data Warehouse Center window, click **Warehouse Sources**.

   a. Right-click **AN1_SNMP_Target**.

   b. Click **User ID and Password**. The Change User ID and Password window is displayed.

   c. Select **Change user ID**, and type the user ID.

   d. Select **Change password**, and type the password. Then retype the password to verify it.

   e. Click **OK**.

The Tivoli NetView warehouse packs are now ready to be used. See the information about getting started in the *Installing and Configuring Tivoli Data Warehouse* document.

After using the Tivoli NetView warehouse packs, you should continually review the configuration values as described in "Review and modify configuration values" on page 17 to ensure that they meet your needs.

3.9.4 Populate SmartSets on Tivoli NetView for UNIX systems

When the Tivoli NetView product is installed on a UNIX system, SmartSets must be populated before the tdwdaemon daemon can collect data. The Routers SmartSet is required and must be populated. You must also populate any other SmartSets you want to use. To populate the SmartSets, open the SmartSet and it will be automatically populated.

3.9.5 Review and modify configuration values

After the ETLs have run several times, you should review your configuration values to ensure that they meet the needs of your installation. For more information, see "Changing configuration values" on page 19.

4 Working with the Tivoli NetView tdwdaemon daemon

This section provides information about working with the Tivoli NetView tdwdaemon daemon.

4.1 Starting and stopping the tdwdaemon and snmpcollect daemons

After the Tivoli NetView warehouse packs are installed, the tdwdaemon daemon starts automatically when the Tivoli NetView product is started if the tdwdaemon daemon was enabled either during Tivoli NetView installation or manually enabled after installation. However, you might need to manually start or stop the tdwdaemon daemon for one of the following reasons:

- You want to change a configuration value for the Tivoli NetView warehouse packs.
- A problem exists, and you want to manually stop and start the daemons.

Use the following commands to stop and start the tdwdaemon and snmpcollect daemons:

- ovstop tdwdaemon
- ovstart tdwdaemon

or

- ovstop snmpCollect
- ovstart snmpCollect

4.2 Working with the Tivoli NetView warehouse database

This section provides information about deleting and recreating the Tivoli NetView warehouse database (see **A** in Figure 2 on page 5).

4.2.1 Deleting and recreating a Tivoli NetView warehouse database

Use the following procedures to delete and recreate a Tivoli NetView warehouse database:

4.2.1.1 Deleting and recreating a Tivoli NetView warehouse database on Windows

Use the following procedure to delete and recreate a Tivoli NetView warehouse database on Windows:

1. On the Tivoli NetView server (see **A** in Figure 2 on page 5), click **Start → Programs → Tivoli NetView → Administration → Configure Data Export to DB2 for use in Tivoli Data Warehouse**. A command window is displayed and then the IBM Tivoli NetView DB2 Server window is displayed.
2. Type the DB2 password.
3. Click **OK**. The following message is displayed:
   The warehouse database already exists....

   Click "Save" to update the saved User ID or Password only.
   Click "Recreate Database" to also delete and recreate the database.
   Click "Retry" to modify the settings and try again.

   Warning: If "Recreate Database" is chosen, the SNMPCollect daemon will be
    stopped and restarted

4. Click **Recreate Database**.

4.2.1.2 Deleting and recreating a Tivoli NetView warehouse database on UNIX systems

Use the following procedure to delete and recreate a Tivoli NetView warehouse database on UNIX systems:

1. On the Tivoli NetView server (see **A** in Figure 2 on page 5), enter **/usr/OV/bin/serversetup** on the command line to start the Server Setup application.

2. Click **Configure** → **Set options for daemons** → **Set options for topology, discovery, and database daemons** → **Set options for tdwdaemon**. The IBM Tivoli NetView Setup: Options window is displayed.
3. Ensure that **Yes** is displayed in the **Enable tdwdaemon** field.
4. Ensure that the DB2 User name is correct.
5. Ensure that **Run Setup** is displayed in the **DB2 Connection** field.
6. Click **OK** or **Apply**. A confirmation window is displayed.
7. Click **Yes** if you want to continue. The IBM Tivoli NetView Setup: Output window is displayed and then the IBM Tivoli NetView DB2 Server window is displayed.
8. Verify that the information that is displayed is correct.
9. Type the DB2 password.
10. Click **OK**. The following message is displayed:

The `warehouse database already exists....`

```
Click "Save" to update the saved User ID or Password only.

Click "Recreate Database" to also delete and recreate the database.

Click "Retry" to modify the settings and try again.


        Warning: If "Recreate Database" is chosen, the SNMPCollect daemon will be
stopped and restarted
```

11. Click **Recreate Database**.
12. Click **Close** in the IBM Tivoli NetView Setup: Output window.

4.2.2 Changing the Tivoli NetView warehouse database

This section provides information about changing the Tivoli NetView warehouse database server to a different DB2 server.

4.2.2.1 Changing the DB2 database on Windows systems

Use the following procedure to change the Tivoli NetView warehouse database server on Windows systems:

1. On the Tivoli NetView server, click **Start** → **Programs** → **Tivoli NetView** → **Administration** → **Configure Data Export to DB2 for use in Tivoli Data Warehouse**. A command window is displayed and then the IBM Tivoli NetView DB2 Server window is displayed.
2. Type the name of the Tivoli NetView warehouse database. See "DB2 naming conventions" on page 7 for more information.
3. If the DB2 server is remote, select the **Remote Server** check box. If the DB2 server is local, clear the **Remote Server** check box and go to step 7.
4. Type the remote node name. The remote node name is a user-defined name used to catalog the connection with the DB2 server. See "DB2 naming conventions" on page 7 for more information.
5. Type the new DB2 server hostname or IP Address.
6. Type the DB2 server port number if your DB2 port number in not 50000, which is the default value.
7. Type the DB2 user ID.
8. Type the DB2 password.
9. Click **OK**.

If there are no errors and the database does not exist, the following message is displayed:

```
The warehouse database does not exist.

Click "Create Database" to create the database.
Click "Retry" to modify the settings and try again
```

10. Click **Create Database** to create the database and go to step 13.
11. If there are no errors and the database already exists, the following message is displayed:

```
The warehouse database already exists.

Click "Save" to update the saved User ID or Password only.
Click "Recreate Database" to also delete and recreate the database.
Click "Retry" to modify the settings and try again.

    Warning: If "Recreate Database" is chosen, the SNMPCollect daemon will be
 stopped and restarted
```

12. Click **Retry** to modify the settings and try again, or click **Recreate Database** if the database was not used previously to store Tivoli NetView data and you now want to use it to store Tivoli NetView warehouse data.

4.2.2.2 Changing the Tivoli NetView warehouse database on UNIX products

This section provides information about changing the Tivoli NetView warehouse database to a different DB2 server.

1. On the Tivoli NetView server, enter **/usr/OV/bin/serversetup** on the command line to start the Server Setup application.
2. Click **Configure → Set options for daemons → Set options for topology, discovery, and database daemons → Set options for tdwdaemon**. The IBM Tivoli NetView Setup: Options window is displayed.
3. Ensure that **Yes** is displayed in the **Enable tdwdaemon** field.
4. Ensure that the DB2 user name is correct. Type the correct DB2 user name if it is not.
5. Ensure that **Run Setup** is displayed in the **DB2 Connection** field.
6. Click either **Apply** or **OK**. A confirmation window is displayed.
7. Click **Yes** if you want to continue. The IBM Tivoli NetView Setup: Output window is displayed and then the IBM Tivoli NetView DB2 Server window is displayed.
8. Type the name of the warehouse database. See "DB2 naming conventions" on page 7 for more information. If the local machine is running on an AIX system, continue with step 10.
9. If the DB2 server is remote, select the **Remote Server** check box. If the DB2 server is local, clear the **Remote Server** check box and go to step 13. Note that for AIX systems, the **Remote Server** check box is not displayed.
10. Type the remote node name. The remote node name is a user-defined name used to catalog the connection with the DB2 server. See "DB2 naming conventions" on page 7 for more information.
11. Type the DB2 server hostname or IP Address.
12. Type the DB2 server port number if your DB2 port number in not 50000, which is the default value.
13. Type the DB2 user ID.
14. Type the DB2 password.
15. Click **OK**. If there are no errors and the database does not exist, the following message is displayed:

```
The warehouse database does not exist.

Click "Create Database" to create the database.
Click "Retry" to modify the settings and try again
```

16. Click **Create Database** to create the database and go to step 19.
17. If there are no errors and the database already exists, the following message is displayed:

```
The warehouse database already exists.

Click "Save" to update the saved User ID or Password only.
```

```
Click "Recreate Database" to also delete and recreate the database.
Click "Retry" to modify the settings and try again.

    Warning: If "Recreate Database" is chosen, the SNMPCollect daemon will be
stopped and restarted
```

18. Click **Retry** to modify the settings and try again, or click **Recreate Database** if the database was not used previously to store Tivoli NetView data and you want to use it to store Tivoli NetView warehouse data.
19. After creating or recreating the database, the tdwdaemon daemon is started automatically.
20. Click **Close** in the IBM Tivoli NetView Setup: Output window.

4.3 Changing configuration values

This section provides a description of the configuration parameters and the procedures that are used to change the configuration parameters. Configuration parameters are defined in the /usr/OV/conf/tdwdaemon.properties file. The configuration parameter values are changed by either editing the tdwdaemon.properties file or by using the configuration graphical user interface (GUI) as discussed in section 3.3.1.1 for Windows or section 4.3.1.2 for UNIX as follows:

Configuration parameter	Change methods	More information
DBNAME	Tivoli NetView configuration GUI or edit the tdwdaemon.properties file	"Changing the DB2 user ID or password" on page 21
DBPASSWORD	Tivoli NetView configuration GUI	"Changing the DB2 user ID or password" on page 21
DB2USER [1]	Tivoli NetView configuration GUI or edit the tdwdaemon.properties file	"Changing the DB2 user ID or password" on page 21
OUTAGE_STORAGE_TIME	Edit the tdwdaemon.properties file	"Changing configuration values in the tdwdaemon.properties file" on page 22
SMARTSET_LOAD_TIME	Edit the tdwdaemon.properties file	"Changing configuration values in the tdwdaemon.properties file" on page 22
SMARTSETS	Edit the tdwdaemon.properties file	"Changing configuration values in the tdwdaemon.properties file" on page 22

Note: [1] DB2USER specifies the user name that the Tivoli NetView product uses to communicate with Tivoli Data Warehouse. See **A** in Figure 1 on page 4 for more information.

4.3.1 Changing the DB2 user ID or password

Use the procedures in this section to update the Tivoli NetView product when you have changed the DB2 user ID or password that Tivoli NetView uses when it connects to the Tivoli NetView warehouse database.

4.3.1.1 Changing the DB2 user ID or password on Windows systems

This section provides information about updating the Tivoli NetView product when you have changed the DB2 user ID or password that Tivoli NetView uses when it connects to the Tivoli NetView warehouse database.

Use the following procedure to change the DB2 user ID or password on Windows systems:

1. On the Tivoli NetView server (see **A** in Figure 2 on page 5), click **Start → Programs → Tivoli NetView → Administration → Configure Data Export to DB2 for use in Tivoli Data Warehouse**. A command window is displayed and then the IBM Tivoli NetView window is displayed.

2. Verify that the information that is displayed is correct.
3. Type the new user ID or password.
4. Click **OK**.
5. A window with the following message is displayed:

```
The warehouse database already exists.

Click "Save" to update the saved User ID or Password only.
Click "Recreate Database" to also delete and recreate the database.
Click "Retry" to modify the settings and try again.


    Warning: If "Recreate Database" is chosen, the SNMPCollect daemon will be
stopped and restarted
```

Note that the Warning part of this error message is displayed only if the tdwdaemon daemon was previously registered.

6. Click **Save**.

4.3.1.2 Changing the DB2 user ID and password on UNIX products

This section provides information about updating the Tivoli NetView product when you have changed the DB2 user ID or password that Tivoli NetView uses when it connects to the Tivoli NetView warehouse database.

Use the following procedure to change the DB2 user ID and password on UNIX systems:

1. On the Tivoli NetView server (see **A** in Figure 2 on page 5), enter **/usr/OV/bin/serversetup** to start the Server Setup application.
2. Click **Configure → Set options for daemons → Set options for topology, discovery, and database daemons → Set options for tdwdaemon**. The IBM Tivoli NetView: Options window is displayed.
3. Ensure that **Yes** is displayed in the **Enable tdwdaemon** field..
4. Ensure that the DB2 user name is correct. Type the correct DB2 user name if it is not.
5. Verify that **Run Setup** is displayed in the **DB2 Connection** field.
6. Click either **OK** or **Apply**. A confirmation window is displayed.
7. Click **Yes** if you want to continue. The IBM Tivoli NetView Setup: Output window is displayed followed by the IBM Tivoli NetView DB2 Server window.
8. Verify that the information that is displayed is correct.
9. Type the new user ID or password.
10. Click **OK**.
11. A window with the following message is displayed:

```
The warehouse database already exists.

Click "Save" to update the saved User ID or Password only.
Click "Recreate Database" to also delete and recreate the database.
Click "Retry" to modify the settings and try again.


    Warning: If "Recreate Database" is chosen, the SNMPCollect daemon will be
stopped and restarted
```

12. Click **Save**.
13. Click **Close** in the IBM Tivoli NetView Setup: Output window.

4.3.2 Changing configuration values in the tdwdaemon.properties file

This section provides information about changing configuration values that cannot be changed using the Tivoli NetView GUI. The configuration values listed in the table below can only be changed by editing the /usr/OV/conf/tdwdaemon.properties file.

Use the following procedure to change the configuration values:

1. On the Tivoli NetView server (see **A** in Figure 2 on page 5), enter the following command to stop the tdwdaemon daemon:
   `ovstop tdwdaemon`
2. Edit the /usr/OV/conf/tdwdaemon.properties file for UNIX systems or the \usr\ov\conf\tdwdaemon.properties file for Windows systems.
3. Change the specified value.
4. Save the file.
5. At the Tivoli NetView command prompt, enter the following command to start the tdwdaemon daemon:
   `ovstart tdwdaemon`

Parameter	Description
OUTAGE_STORAGE_TIME	This parameter specifies the number of days that you want to retain data before it is purged from the Tivoli NetView warehouse database. For example, the default value 90 specifies that all data in the Tivoli NetView warehouse database that is 90 days old is purged at the time that is specified by the SMARTSET_LOAD_TIME parameter. Specify 0 to never purge data. Note that your databases can get very large if you specify 0.
SMARTSET_LOAD_TIME	This parameter specifies the time of day that you want to load SmartSet information. Schedule this once a day by specifying a number from 0 - 23. For example, the default value of 23 indicates 11:00 p.m. Schedule this at least one hour before the ETLs are scheduled to run.
SMARTSETS	This parameter specifies a list of SmartSets that you want to collect data for. Availability and performance information is collected only for the nodes that are part of the listed SmartSets. The Routers SmartSet is required. For UNIX systems, SmartSets must be populated before the tdwdaemon daemon can collect data. SmartSet names are case sensitive. Separate each SmartSet name with a comma (,) with no spaces (for example, Routers,Printers) Specify ALL to move all nodes to the Tivoli Data Warehouse database. The ALL keyword copies availability data for all of the nodes in your Tivoli NetView object database into the Tivoli Data Warehouse; however, it does not store any SmartSet information for the nodes. SmartSet information will only be included for nodes which are part of a SmartSet. You can select both ALL and any combination of SmartSets when configuring this parameter. For example, assume the following: • You specify Routers,ALL for the SMARTSET parameter • There are 4 nodes named A, B, C and D

	• Node A belongs to the Routers SmartSet
	• Nodes B, C, and D belong to the ImportantNodes SmartSet
	The following information is stored in the Tivoli Data Warehouse database:
	• Information about nodes A, B, C, and D
	• SmartSet Relationships for node A
	SmartSet information for nodes B, C, and D is not stored in the Tivoli Data Warehouse, because the ImportantNodes SmartSet is not specified by the SMARTSETS parameter.

4.4 Configuring the tdwdaemon daemon log

The tdwdaemon daemon log files are located on the Tivoli NetView server (see **A** in Figure 2 on page 5) in the following directory:

- /usr/OV/logs/tdwdaemon.log for UNIX systems
- \usr\ov\log\tdwdaemon.log for Windows systems

Use the /usr/OV/conf/tdwdaemon-log4j.properties file for UNIX systems or the \usr\ov\conf\tdwdaemon-log4j.properties file for Windows systems to specify the level of information that you want written in the tdwdaemon daemon log.

INFO is specified as the default value, which means that informational messages and error information are logged. To write more detailed information to the log, change the following line as shown here:

`log4j.category.com.tivoli.netview.tdw=INFO` ➔ `log4j.category.com.tivoli.netview.tdw=DEBUG`

4.5 Error Messages

This section provides additional information about several messages that might be generated when the ETLs are run:

- The following message is either received during the running of the ETLs or written to the log of the failing step in %TIVOLI_COMMON_DIR%\cdw\logs\etl:

  `CDWEX8087E` A general SQL error occurred: SQL_ERROR: 'Execute Src Select' <date> <time> sqlState = 51002, nativeErr = -805, errorMsg = [IBM][CLI Driver][DB2/6000] SQL0805N Package "NULLID.SYSSH200" was not found.

  This is a known problem when trying to connect a 7.x database with a 8.x database. To correct this error, do the following:
  1. Start the IBM DB2 Configuration Assistant (CA).
  2. Select the database to which you want to bind the utilities. This is the name of your source database(s).
  3. Right click and select Bind.
  4. Select the utility or files to bind.
  5. Enter a user ID and password to connect to the database. The user ID must have the authority to bind new packages against the database. Click Bind.
- If you receive a message that is similar to the following message, the user name or password has not been defined for one or more Tivoli NetView warehouse ANM or AN1 data sources or targets in the

DB2 Data Warehouse Center. Ensure that a user name and password is defined for every data source and target to resolve this problem.
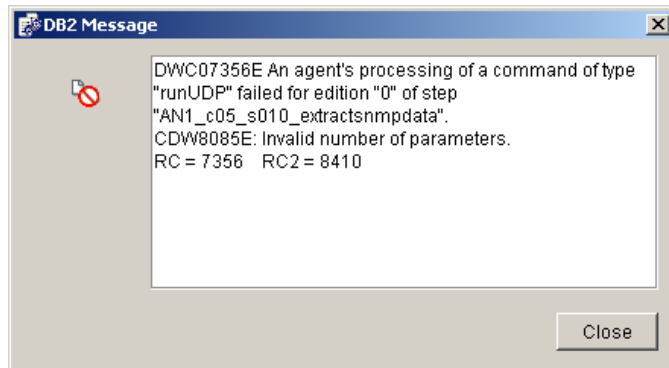
4.6 General usage notes

This section provides the following general usage information about the Tivoli NetView warehouse packs:

- Do not reset the time of the system clock on the system on which the Tivoli NetView server and the Tivoli Data Warehouse are installed. If you reset the time of the clock on the system on which you have installed the Tivoli NetView warehouse pack, availability information is lost. The availability information is lost for the time period that the change encompasses. For example, if you adjust the system clock back one hour from 12:00 a.m. (midnight) to 11:00 p.m., you will lose the availability information for that hour. This might also cause the ETLs to not run properly.
- If your Windows server is set to automatically adjust for daylight saving time, there might be a discrepancy in some data from the time period when the time was adjusted.
- If you attempt to restart your system and the tdwdaemon fails after you have restarted, ensure that the DB2 instance has started. If the DB2 instance did not start, manually start it. You can configure the DB2 product to automatically start when a system is restarted. See the DB2 library for more information.
- If you want to create a remote database on a remote DB2 server that already contains a remote link to a database that has the same name as the name of the remote database that you want to create, you must manually remove the link to the remote database before you install Tivoli NetView or the installation will fail. For example, suppose that you have three DB2 servers: A, B, and C and server B has a remote connection to the Tivoli NetView database on server C. If you want to install Tivoli NetView on server A and create a remote Tivoli NetView database on server B, you must manually remove the link between servers B and C before you begin the installation or the installation will fail.
- If an ETL fails when it is run, correct the problem and rerun the ETL starting with the step that failed. Do not rerun the ETL from the beginning, because an error will occur.

4.7 Diagnosing daemon connection problems

This section provides information about the following daemon connection problems:

- The netmon daemon cannot connect to the tdwdaemon daemon.
- The tdwdaemon daemon cannot connect to the netmon daemon.
- The tdwdaemon daemon cannot connect to the Tivoli NetView warehouse database.

4.7.1 Netmon daemon cannot connect to the tdwdaemon daemon

If the netmon daemon cannot connect to the tdwdaemon daemon, the netmon daemon performs the following tasks:

- Writes availability records to files named TDWError.*mmddhh*, where *mm* is the current month (0-11, January - December), *dd* is the current day, and *hh* is the current hour (1-24). This ensures that no availability records are lost.
- Writes a message similar to the following in the nv.log file for Windows operating systems or the netview_daemon.log and netview_root.log files for UNIX systems:

  ```
  08/30/02 10:30:31 [netmon] A TDWError log has been created and named
  /usr/OV/log/TDWError_073010. log
  ```

  Note: The presence of a TDWError log is an indication that a problem exists. The log does not provide information about the problem.

Perform the following actions to correct the connection problem:

1. Review the /usr/OV/log/tdwdaemon.log file to determine the cause of the problem, and correct any problems that exist.
2. Ensure that the tdwdaemon daemon is started by entering the following command:
   ```
   ovstart tdwdaemon
   ```

When the problem is corrected, the tdwdaemon daemon processes the files and then deletes the files when they are no longer needed.

Notes:

1. All error files with a time stamp of up until one hour before the current hour are processed. The remaining files are processed the next hour.
2. Do not modify or delete TDWError files. Once the tdwdaemon daemon has processed the files, it deletes them from the log directory. If you delete or modify the files, no error message is issued and the availability information will be missing or incorrect.

4.7.2 The tdwdaemon daemon cannot connect to the netmon daemon

If the tdwdaemon daemon cannot connect to the netmon daemon, the tdwdaemon daemon stops and any error messages are written to the /usr/OV/log/tdwdaemon.log file.

Review the log entries in file /usr/OV/log/tdwdaemon.log and correct any problems that exist.

4.7.3 The tdwdaemon daemon cannot connect to the Tivoli NetView warehouse database

If the tdwdaemon daemon cannot connect to the Tivoli NetView warehouse database, the tdwdaemon daemon is stopped and writes any error messages to the /usr/OV/log/tdwdaemon.log file.

Review the log entries in file /usr/OV/log/tdwdaemon.log and correct any problems that exist.

Verify that the database name and database user ID are specified correctly in the /usr/OV/conf/tdwdaemon.properties file.

Note: Do not change the password, because it is encrypted.

4.7.4 The libdb2 library cannot be loaded on UNIX systems

Review the snmpCollect.trace log to determine if there is a message that the snmpCollect daemon cannot load the libdb2 library on UNIX systems. If this message is written in the log, the snmpCollect daemon is not sourcing the DB2 profile correctly.

Perform the following procedure to ensure that the snmpCollect daemon is sourcing the db2profile correctly:

1. Enter su root

2. Enter `. /usr/OV/bin/NVenvironment`
3. Enter `db2`
4. If the DB2 prompt is displayed continue with the next step. If the DB2 prompt is not displayed, correct the problem with the /usr/OV/bin/NVenvironment script, and then continue with the next step.
5. Enter `ovstop`
6. Enter `ovstop nvsecd`
7. For all UNIX systems except the AIX system, enter `/etc/init.d/netnmrc`. For AIX systems, enter `/etc/netnmrc`
8. Review the snmpCollect.trace log to ensure that there are no recent messages about the libdb2 library.

4.8 Disabling the tdwdaemon daemon

This section provides information about disabling the tdwdaemon daemon. You can either temporarily disable the tdwdaemon daemon or you can permanently disable it.

4.8.1 Temporarily disabling the tdwdaemon daemon

Use the following procedure to temporarily disable the tdwdaemon daemon:

1. Edit the /usr/OV/conf/netmon.conf file.

2. Change the value of the TDWAVAILABILITY parameter to FALSE as follows: TDWAVAILABILITY=FALSE.

3. Enter the following command: **ovstop netmon**

4. Enter the following command: **ovstart netmon**

4.8.2 Permanently disabling the tdwdaemon daemon

Perform one of the following procedures to permanently disable the tdwdaemon daemon. Note that this will also prevent the snmpCollect daemon from exporting performance data to Tivoli Data Warehouse.

Perform the following procedure on UNIX platforms:

1. Perform one of the following tasks depending on which type of installation method you used to install the Tivoli NetView product:
    a. If you installed Tivoli NetView in a non-Tivoli environment, enter **/usr/OV/bin/serversetup** to start the Server Setup application.
    b. If you installed Tivoli NetView in a Tivoli environment, run the **nvits_config** script. For more information about the **nvits_config** script, see the *Tivoli NetView for UNIX Release Notes*, Version 7.1.4.
2. Click **Configure** → **Set options for daemons** → **Set options for topology, discovery, and database daemons** → **Set options for tdwdaemon**. The IBM Tivoli NetView Setup: Options window is displayed.
3. Select **No** from the **Enable tdwdaemon** drop-down list.
4. Click **OK**.

Perform the following procedure on Windows platforms:

1. Enter `ovstop tdwdaemon`
    Note: Perform the following step if you are not going to use the Tivoli NetView warehouse function for a prolonged period of time and you do not want the function to use memory. You can use the **ovaddobj** command to create the tdwdaemon daemon at a later time.
2. Enter the following command to delete the tdwdaemon daemon:
    `ovdelobj \usr\OV\lrf\tdwdaemon.lrf.`

5 Maintenance

This section provides the following information that you can use to maintain your databases:

- Backing up your databases and restoring your data
- Pruning your databases

5.1 Backing up and restoring

For information about backing up and restoring your data, refer to the *Installing and Configuring Tivoli Data Warehouse* document. The Tivoli NetView warehouse packs do not require any additional procedures.

5.2 Pruning

This section provides information about pruning the following databases:

- Tivoli NetView warehouse
- Central data warehouse
- Data mart

Parameters are provided to control how often the databases are pruned. The parameter values represent a date duration whose format is *yyyymmdd*. Preceding zeros are not included in the date duration value. For example, the default value of 300 represents three months. The following other default values are used:

yyyymmdd	Example value
600	6 months
10000	1 year
50000	5 years

The following sections provide procedures for changing the parameters either before or after you install the Tivoli NetView enablement packs

5.2.1 Tivoli NetView warehouse

The OUTAGE_STORAGE_TIME parameter controls how often the Tivoli NetView warehouse database is pruned. For the procedure to change this parameter, see "Changing configuration values in the tdwdaemon.properties file" on page 19.

5.2.2 Central data warehouse

The TWG.prune_msmt_control parameter controls when the central data warehouse database is pruned.

5.2.2.1 Changing the TWG.prune_msmt_control parameter for availability information before installation

Use the following procedure to change the TWG.prune_msmt_control parameter for availability information before installing the Tivoli NetView warehouse packs:

1. Follow the procedures for pruning the central data warehouse in the *Installing and Configuring Tivoli Data Warehouse* document and then proceed with the following steps.
2. On the warehouse control server, copy the tedw_apps_etl directory to the local machine.
3. Edit the anm\pkg\v120\cdw\dml\anm_cdw_data.sql file.
4. Change the default value of 600 (6 months) in the following line to the new value: ('ANM', 'P', 600);
5. Save the file.
6. Leave the entire tedw_apps_etl directory on the local machine and point to this machine when you install the Tivoli NetView warehouse packs.

5.2.2.2 Changing the TWG.prune_msmt_control parameter for performance information before installation

Use the following procedure to change the TWG.prune_msmt_control parameter for performance information before installing the Tivoli NetView warehouse packs:

1. Follow the procedures for pruning the central data warehouse in the *Installing and Configuring Tivoli Data Warehouse* document and then proceed with the following steps.
2. On the warehouse control server, copy the snmp_etl\tedw_apps_etl directory to the local machine.
3. Edit the an1\pkg\v120\cdw\dml\an1_cdw_data.sql file.
4. Change the default value of 600 in the following line to the new value: ('AN1', 'P', 600);
   For an explanation of the value format, see on page.
5. Save the file.
6. Leave the entire tedw_apps_etl directory on the local machine and point to this machine when you install the Tivoli NetView warehouse packs.

5.2.2.3 Changing the TWG.prune_msmt_control parameter for availability data after installation

For the procedure to change the TWG.prune_msmt_control parameter, refer to the *Installing and Configuring Tivoli Data Warehouse* document. The default value for the TWG.prune_msmt_control parameter is 'ANM', 600.

5.2.2.4 Changing the TWG.prune_msmt_control parameter for performance data after installation

For the procedure to change the TWG.prune_msmt_control parameter, refer to the *Installing and Configuring Tivoli Data Warehouse* document. The default value for the TWG.prune_msmt_control parameter is 'AN1', 600.

5.2.3 Data mart database

This section provides information about pruning the data mart databases. Note that this procedure only applies to the availability information.

Deleting data from the fact tables is implemented in the ANM_m05_s010_metric step. The prune mart control table ANM.Prune_Mart_Control governs which data is deleted and contains a date duration value. For the list of fact tables and the default pruning values, see Changing the data mart pruning schedule before installation on page 29. The ANM.Prune_Mart_Log table keeps a history of data deletion.

5.2.3.1 Changing the data mart pruning schedule before installation

Use the following procedure to change the data mart pruning schedule before installing the Tivoli NetView warehouse packs:

1. From the warehouse control server, copy the tedw_apps_etl directory to the local machine.

2. Edit the anm\pkg\v120\mart\dml\anm_mart_data.sql file.

3. Change the following default values as required:
   - ('ANM.ETL1_RUNS', 600),
   - ('ANM.F_3TR_HOUR', 300),
   - ('ANM.F_3TR_DAY', 600),
   - ('ANM.F_3TR_WEEK', 10000),
   - ('ANM.F_3TR_MONTH', 50000),
   - ('ANM.F_3TRS_HOUR', 300),
   - ('ANM.F_3TRS_DAY', 600),
   - ('ANM.F_3TRS_WEEK', 10000),
   - ('ANM.F_3TRS_MONTH', 50000),
   - ('ANM.OUTAGES', 600),
   - ('ANM.F_L3_OUTAGES', 600),
   - ('ANM.F_OUT_HOUR', 300),
   - ('ANM.F_OUT_DAY', 600),
   - ('ANM.F_OUT_WEEK', 10000),
   - ('ANM.F_OUT_MONTH', 50000),

- ('ANM.F_OUT_NS_HOUR', 300),
- ('ANM.F_OUT_NS_DAY', 600),
- ('ANM.F_OUT_NS_WEEK', 10000),
- ('ANM.F_OUT_NS_MONTH', 50000),
- ('ANM.F_XOUT_HOUR', 300),
- ('ANM.F_XOUT_WSS_HOUR', 300),
- ('ANM.F_OUT_PERC_DAY', 600),
- ('ANM.F_OUT_PERC_WEEK', 10000),
- ('ANM.F_OUT_PERC_MONTH', 50000),
- ('ANM.F_OUT_PERC_YEAR', 50000),
- ('ANM.F_OUT_PERC_NS_DAY', 600)
- ('ANM.F_OUT_PERC_NS_WEEK', 10000)
- ('ANM.F_OUT_PERC_NS_MONTH', 50000)
- ('ANM.F_OUT_PERC_NS_YEAR', 50000)
- ('ANM.F_3TR_NETWORK', 600)
- ('ANM.F_3TR_ROUTERS', 600)

4. Save the file.

5. Leave the entire tedw_apps_etl directory on the local machine and point to this machine when you install the Tivoli NetView warehouse packs.

5.2.3.2 Changing the data mart pruning schedule after installation

Specify the data to be pruned by setting the value of the PMARTC_DURATION column of the Prune_MART_Control table. Modify the value using an SQL statement.

For example, edit the following SQL command on the Tivoli Data Warehouse data mart database (TWH_MART) to change the prune values:

```
UPDATE ANM.PRUNE_MART_Control
SET PMARTC_DURATION =100
WHERE TABLE_NAME='ANM.OUTAGES'
```

6   ETL processes

This section provides information about the Tivoli NetView warehouse packs extract, transform, and load (ETL) processes. The ETLs are part of the Tivoli NetView warehouse packs, which is installed on the Tivoli Data Warehouse control server.

6.1 Availability ETLs

This section provides information about the following ETLs for availability data:

- ANM_c05_ETL1_Process
- ANM_m05_ETL2_Process

6.1.1 The ANM_c05_ETL1_Process

This process extracts the Tivoli NetView availability data from the Tivoli NetView warehouse database, transforms it, and then writes the data to the central data warehouse.

Schedule this process to run once a day either at 12 a.m. (midnight) or at some other off-peak time. Schedule the SMARTSET_RETRIEVAL_TIME in the tdwdaemon.properties file at least 1 hour before this to give the tdwdaemon daemon ample time to retrieve SmartSet membership data.

> **Note:** Do not schedule individual steps to run.

The ANM_c05_ETL1_Process consists of the following steps:

- **ANM_c05_s005_preExtractNodeInfo**: This step drops and creates staging tables which will be used in the ANM_c05_ETL1_Process.
- **ANM_c05_s010_extractNodeInfo**: This step extracts the NetView availability information from the Tivoli NetView warehouse database. Availability information comprises node information, SmartSet information, SmartSet membership information, and node outage information. This process also updates the pruning tables and the extract control tables.
- **ANM_c05_s020_transformNodeInfo**: This step uses Perl and SQL scripts to transform the Tivoli NetView availability information into the format used by Tivoli Data Warehouse.
- **ANM_c05_s030_loadNodeInfo**: This step takes the availability information from the temporary tables and writes it into the central data warehouse.

6.1.2 The ANM_m05_ETL2_Process

This process connects to the central data warehouse, reads the availability information that has not been previously read, and writes it into the Tivoli NetView data mart database. The Tivoli NetView data mart database consists of the star schemas described in "Data mart schema information" on page 50 and in the *Enabling an Application for Tivoli Data Warehouse* document. This process prepares the data to be inserted in the star schema tables, and prepares the data for the reports. Preparing the data includes creating status changes from outages and storing the outage data in the different formats for the star schemas.

> **Note:** Do not schedule the ANM_m05_ETL2_Process to run. This process is automatically started by the ANM_c05_ETL1_Process.

The ANM_m05_ETL2_Process consists of the following steps:

- **ANM_m05_s001_initialize:** This step drops and creates staging tables which will be used in the ANM_m05_ETL2_Process.
- **ANM_m05_s010_metric:** This step retrieves availability data that has not been previously retrieved from the central data warehouse database and writes it into temporary tables in the data mart database.
- **ANM_m05_s020_fact:** This step transforms the availability data in the temporary tables into the following hourly summaries:
    - o   Node and SmartSet status

- o Outages by node
- o Status changes by node
- o This step provides information for each node, and it also provides information about a node as it relates to the SmartSets to which it belongs.
- **ANM_m05_s030_outage_rollup:** This step summarizes the hourly outage information for the daily, weekly, monthly, and yearly fact tables. It summarizes all the measurements for one day and creates one row for each node per day in the daily fact table.
- **ANM_m05_s040_transition_rollup:** This step summarizes the hourly status change information for the node fact tables into daily, weekly, monthly, and yearly fact tables. It summarizes all of the measurements for one day and creates one row per node per day in the daily fact table.
- **ANM_m05_s050_ss_trans_rollup:** This step summarizes the hourly status change information for the node and SmartSet fact tables into daily, weekly, monthly, and yearly fact tables. It summarizes all of the measurements for one day and creates one row per node per day in the daily fact table.
- **ANM_m05_s060_out_rollup:** This step summarizes the hourly outage information for the node and SmartSet fact tables into daily, weekly, monthly, and yearly fact tables. It summarizes the measurements over one day and creates one row per node per day in the daily fact table.
- **ANM_m05_s070_total:** This step uses the total outage time for each node to calculate the daily status of the entire monitored network and of each of the SmartSets to which the nodes belong. For example, if SmartSet A is composed of four nodes and one node has been down for the entire day, this step calculates that the status of SmartSet A was 75 percent AVAILABLE and 25 percent UNAVAILABLE for the day. This status is calculated for both the entire network and for each of the SmartSets.

6.2 Performance ETL

- This section provides information abut the AN1_c05_SNMP_ETL1_Process ETL for performance data.

6.2.1 AN1_c05_SNMP_ETL1_Process

This process extracts performance data from the Tivoli NetView database, transforms it, and loads data to the central data warehouse.

It is recommended that you schedule this process to run once a day either at 12 a.m. (midnight) or at some other off-peak time. Schedule the SMARTSET_RETRIEVAL_TIME in the tdwdaemon.properties file at least 1 hour before this to give the tdwdaemon daemon ample time to retrieve SmartSet membership data.

Notes:

1. Do not schedule individual steps to run.
2. Schedule this process to run after the ANM_C05_ETL1_Process.

The AN1_c05_SNMP_ETL1_Process consists of the following steps:

- **AN1_c05_s010_extractsnmpdata**: This step extracts the performance data from the Tivoli NetView warehouse database. It extracts node information, SmartSet information, and SmartSet membership information. This process also updates the pruning tables and extract control tables.
- **AN1_c05_s020_transformsnmpdata**: This step uses SQL scripts that transform the Tivoli NetView performance data into the data warehouse data model format.
- **AN1_c05_s030_loadsnmpdata**: This step takes the Tivoli NetView performance data from the temporary tables and writes it into the central data warehouse.

7 Central data warehouse information

Before reading this section, read about the generic schema for the Tivoli Data Warehouse central data warehouse, which is described in the *Enabling an Application for Tivoli Data Warehouse* document. This 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. These columns are also marked with an asterisk (*) after the column name.

The information in this section is divided into two sections:

- Availability information
- Performance information (See "Performance information" on page 39 for more information.)

7.1 Availability information

This section provides an example of how information about Tivoli NetView availability information is stored in Tivoli Data Warehouse. The availability configuration and measurement values are based on the following example network scenario.

7.1.1 Sample network scenario

The sample scenario uses the Routers SmartSet and the following node information:

Name	IP address	Network address
x.raleigh.tivoli.com (predefined as an IP_HOST in CDW)	1.2.3.4	143.5.23.0
y.raleigh.tivoli.com	9.8.7.6	143.5.23.0
unresolved	5.4.3.2	123.99.7.8
abc.raleigh.tivoli.com	1.3.5.7	123.99.7.8

The following assumptions are used for this scenario:

- Measurement data has been collected for the following days: 1 April 2002, 2 April 2002, and 3 April 2002.
- The ETL processes ran for the first time on 2 April 2002 at 12:00 a.m. (midnight).
- The ETL processes ran for the second time on 3 April 2002 at 1:00 p.m.
- The ETL process ran for the third and last time on 4 April 2002 at 6:00 a.m.
- The following timeline was used:
- All of the nodes listed above are discovered for the first time, and all of them are in the AVAILABLE state at 3:00 a.m. on 1 April 2002.
- Node y.raleigh.tivoli.com changed from the AVAILABLE to UNAVAILABLE state at 3:00 p.m. on 1 April 2002.
- Node y.raleigh.tivoli.com changed from the UNAVAILABLE to AVAILABLE state at 4:15 p.m. on 1 April 2002. An outage record was recorded for the node in state UNAVAILABLE since 3:00 p.m. on 1 April 2002.
- The node with the unresolved name (IP address 5.4.3.2) changed from the AVAILABLE to UNREACHABLE state at 6:00 p.m. on 1 April 2002.
- The Routers SmartSet was created in the NetView database, and the x.raleigh.tivoli.com and y.raleigh.tivoli.com nodes were added as members of the Routers SmartSet at 11:00 p.m. on 1 April 2002.
- The y.raleigh.tivoli.com node changed from the AVAILABLE to UNMANAGED state at 7:15 p.m. on 2 April 2002.
- The node with the unresolved name (IP address 5.4.3.2) changed from the UNREACHABLE to UNMANAGED state at 8:00 p.m. on 2 April 2002. An outage record was recorded for the node in state UNREACHABLE since 6:00 p.m. on 1 April 2002.
- The abc.raleigh.tivoli.com node changed from the AVAILABLE to UNAVAILABLE state at 9:04 P.M on 2 April 2002.

- The y.raleigh.tivoli.com node was removed as a SmartSet member of SmartSet Routers at 11:00 p.m. on 2 April 2002.
- The y.raleigh.tivoli.com node transitions from the UNMANAGED to AVAILABLE state at 2:00 p.m. on 3 April 2002. An outage record is recorded for node in state UNMANAGED since 7:15 p.m. on 2 April 2002.
- The node with the unresolved name (IP address 5.4.3.2) changed from the UNMANAGED to UNAVAILABLE state at 2:16 p.m. on 3 April 2002. An outage record was recorded for node in state UNMANAGED since 8:00 p.m. on 2 April 2002.
- The y.raleigh.tivoli.com node layer 2 status changed from the AVAILABLE to UNAVAILABLE state at 3:00 p.m. on 3 April 2002.
- The y.raleigh.tivoli.com node layer 2 status changed from the UNAVAILABLE to AVAILABLE state at 3:15 p.m. on 3 April 2002. A layer 2 outage record was recorded for the node in state UNAVAILABLE since 3:00 p.m. on 3 April 2002.

7.2 Availability component configuration

This section describes the component configuration for availability data. The data is based on the sample scenario described in "Sample network scenario" on page 33.

7.2.1 Component type (table TWG.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	2001-04-01-01.30.54.000000	2001-04-01-01.30.54.000000
IP_NODE	NULL	IP Node	2001-04-01-01.30.54.000000	9999-01-01-00.00.00.000000
ANM_SMARTSET	NULL	SmartSet	2001-04-01-01.30.54.000000	9999-01-01-00.00.00.000000
LAYER2	NULL	Layer 2	2001-04-01-01.30.54.000000	9999-01-01-00.00.00.000000
* This column is translated.				

7.2.2 Component (table TWG.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_Dt Tm TIMESTAMP	Comp_End_DtTm TIMESTAMP	Comp_Ds VARCHAR (254)
1	IP_HOST	CDW	1		x.raleigh.tivoli.com		2002-04-01-03.00.00	9999-01-01-00.00.00	
2	IP_NODE	CDW	1		y.raleigh.tivoli.com		2002-04-01-03.00.00	9999-01-01-00.00.00	
3	IP_NODE	CDW	1		5.4.3.2		2002-04-01-03.00.00	9999-01-01-00.00.00	
4	ANM_SMARTSET	CDW	1		Routers		2002-04-01-23.00.00	9999-01-01-00.00.00	
5	IP_NODE	CDW	1		abc.raleigh.tivoli.com		9999-01-01-00.00.00	9999-01-01-00.00.00	
6	LAYER2	CDW	1		y.raleigh.tivoli.com		9999-01-01-00.00.00	9999-01-01-00.00.00	

7.2.3 Component relationship type (table TWG.ReInTyp)

ReInTyp_Cd CHAR(6)	ReInTyp_Nm * VARCHAR(120)
PCHILD	Parent Child Relation
* This column is translated.	

7.2.4 Component relationship rule (table TWG.ReInRul)

CompTyp_Source_Cd CHAR(17)	CompTyp_Target_Cd CHAR(17)	ReInTyp_Cd CHAR(6)	ReInRul_Strt_DtTm TIMESTAMP	ReInRul_End_DtTm TIMESTAMP
ANM_SMARTSET	IP_HOST	PCHILD	2001-04-01-01.30.54.000000	9999-01-01-00.00.00.000000
ANM_SMARTSET	IP_NODE	PCHILD	2001-04-01-01.30.54.000000	9999-01-01-00.00.00.000000
IP_NODE	LAYER2	PCHILD	2001-04-01-01.30.54.000000	9999-01-01-00.00.00.000000
IP_HOST	LAYER2	PCHILD	2001-04-01-01.30.54.000000	9999-01-01-00.00.00.000000

7.2.5 Component relationship (table TWG.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	4	1	PCHILD	2001-04-01-01.30.54	9999-01-01-00.00.00
2	4	2	PCHILD	2001-04-01-01.30.54	2001-04-02-23.00.00
3	2	6	PCHILD	2001-04-01-01.30.54	2001-04-02-23.00.00

7.2.6 Attribute type (table TWG.AttrTyp)

AttrTyp_Cd CHAR(17)	AttrTyp_Nm * VARCHAR(120)
IP_NET_ADDRESS	IP Network Address
LAST_IP_ADDRESS	Last IP Address
MANAGED_BY	Managed By
* This column is translated.	

7.2.7 Attribute rule (table TWG.AttrRul)

CompTyp_Cd CHAR(17)	AttrTyp_Cd CHAR(17)	AttrRul_Strt_DtTm TIMESTAMP	AttrRul_End_DtTm TIMESTAMP	AttrRul_ Dom_Ind CHAR
IP_HOST	IP_NET_ADDRESS	2001-04-01-01.30.54	9999-01-01-00.00.00	N
IP_HOST	LAST_IP_ADDRESS	2001-04-01-01.30.54	9999-01-01-00.00.00	N
IP_NODE	IP_NET_ADDRESS	2001-04-01-01.30.54	9999-01-01-00.00.00	N

CompTyp_Cd CHAR(17)	AttrTyp_Cd CHAR(17)	AttrRul_Strt_DtTm TIMESTAMP	AttrRul_End_DtTm TIMESTAMP	AttrRul_ Dom_Ind CHAR
IP_NODE	LAST_IP_ADDRESS	2001-04-01-01.30.54	9999-01-01-00.00.00	N
IP_HOST	MANAGED_BY	2001-04-01-01.30.54	9999-01-01-00.00.00	N
IP_NODE	MANAGED_BY	2001-04-01-01.30.54	9999-01-01-00.00.00	

7.2.8 Attribute domain (table TWG.AttrDom)

The Tivoli NetView product does not specify attribute domain values.

7.2.9 Component attribute (table TWG.CompAttr)

CompAttr _ID INTEGER	Comp_ID INTEGER	AttrTyp_Cd CHAR(17)	CompAttr_Strt _DtTm TIMESTAMP	CompAttr_End_DtTm TIMESTAMP	CompAttr_Val VARCHAR (254)
1	1	IP_NET_ADDRESS	2002-04-01-03.00.00	9999-01-01-00.00.00	1.2.3.4
2	1	LAST_IP_ADDRESS	2002-04-01-03.00.00	9999-01-01-00.00.00	143.5.23.0
3	1	MANAGED_BY	2002-04-01-03.00.00	9999-01-01-00.00.00	ANM
4	2	IP_NET_ADDRESS	2002-04-01-03.00.00	9999-01-01-00.00.00	9.8.7.6
5	2	LAST_IP_ADDRESS	2002-04-01-03.00.00	9999-01-01-00.00.00	143.5.23.0
6	2	MANAGED_BY	2002-04-01-03.00.00	9999-01-01-00.00.00	ANM
7	3	IP_NET_ADDRESS	2002-04-01-03.00.00	9999-01-01-00.00.00	5.4.3.2
8	3	LAST_IP_ADDRESS	2002-04-01-03.00.00	9999-01-01-00.00.00	123.99.7.8
9	3	MANAGED_BY	2002-04-01-03.00.00	9999-01-01-00.00.00	ANM
10	5	IP_NET_ADDRESS	2002-04-01-03.00.00	9999-01-01-00.00.00	1.3.5.7
11	5	LAST_IP_ADDRESS	2002-04-01-03.00.00	9999-01-01-00.00.00	123.99.7.8
12	5	MANAGED_BY	2002-04-01-03.00.00	9999-01-01-00.00.00	ANM

7.3 Availability component measurement

The following sections provide information about the availability component measurement.

7.3.1 Measurement group type (table TWG.MGrpTyp)

MGrpTyp_Cd CHAR(6)	MGrpTyp_Nm * VARCHAR(120)
TRANS	State transition groups
GROUP	Aggregate Types or Group Functions
* This column is translated.	

7.3.2 Measurement group (table TWG.MGrp)

MGrp_Cd CHAR(6)	MGrpTyp_Cd CHAR(6)	MGrp_Parent_Cd CHAR(6)	MGrp_Nm * VARCHAR(120)
ANMOUT	TRANS	NULL	Node or Host Outage
ANML2	TRANS	NULL	Layer 2 Node Outage
TOT	GROUP	NULL	Total Value Exists
* This column is translated.			

7.3.3 Measurement group member (table TWG.MGrpMbr)

MGrp_Cd CHAR(6)	MGrpTyp_Cd CHAR(6)	MsmtTyp_ID INTEGER
ANMOUT	TRANS	1
ANMOUT	TRANS	2
ANMOUT	TRANS	3
ANMOUT	TRANS	4
ANML2	TRANS	1
ANML2	TRANS	2
ANML2	TRANS	5
TOT_E	GROUP	1
TOT_E	GROUP	2
TOT_E	GROUP	3
TOT_E	GROUP	4
TOT_E	GROUP	5

7.3.4 Measurement unit category (table TWG.MUnitCat)

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

7.3.5 Measurement unit (table TWG.MUnit)

MUnit_Cd CHAR(6)	MUnitCat_Cd CHAR(6)	Munit_Nm * VARCHAR(120)
Min	TM	Minutes
* This column is translated.		

7.3.6 Time summary (table TWG.TmSum)

The period over which a measurement can be summarized.

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

7.3.7 Measurement source (table TWG.MSrc)

MSrc_Cd CHAR(6)	MSrc_Parent_Cd CHAR(6)	MSrc_Nm * VARCHAR(120)
Tivoli	NULL	Tivoli Application
ANM	Tivoli	IBM Tivoli NetView
* This column is translated.		

7.3.8 Measurement type (table TWG.MsmtTyp)

MsmtTyp_ID INTEGER	MUnit_Cd CHAR(6)	MSrc_Cd CHAR (6)	MsmtTyp_Nm * VARCHAR(120)	MsmtTyp_Ds * VARCHAR(254)
1	Min	MODEL1	Available	The amount of time that the resource is available.
2	Min	MODEL1	Unavailable	The amount of time that the resource is unavailable.
3	Min	MODEL1	Unreachable	The amount of time that the resource is unreachable.
4	Min	MODEL1	Unmanaged	The amount of time that the resource is unmanaged.
5	Min	MODEL1	Degraded	The amount of time that the resource is degrading.
6	QTY	MODEL1	Number of Transitions	The number of transitions that the resource has encountered.
* This column is translated.				

7.3.9 Component measurement rule (table TWG.MsmtRul)

CompTyp_Cd CHAR(17)	MsmtTyp_ID INTEGER
IP_HOST	1
IP_HOST	2
IP_HOST	3
IP_HOST	4
IP_NODE	1
IP_NODE	2
IP_NODE	3
IP_NODE	4

CompTyp_Cd CHAR(17)	MsmtTyp_ID INTEGER
LAYER2	1
LAYER2	2
LAYER2	5

7.3.10 Measurement (table TWG.Msmt)

Msmt_ ID BIGINT	Comp_ID INTEGER	MsmtTyp_ ID INTEGER	TmSum _Cd CHAR	Msmt_ Strt_ Dt DATE	Msmt _Strt _Tm TIME	Msmt _ Min _Val FLOAT	Msmt _Max _Val FLOAT	Msmt _Avg _Val FLOAT	Msmt_T ot _Val FLOAT	Msmt _Smpl _Cnt INTEGER	Ms _C IN
1	2	2	P	2002/04/01	15:00:00				75		
2	2	2	P	2002/04/01	18:00:00				360		
3	2	2	P	2002/04/02	00:00:00				1200		
4	2	2	P	2002/04/02	19:15:00				285		
5	3	4	P	2002/04/02	20:00:00				240		
6	5	2	P	2002/04/02	21:04:00				176		
7	2	4	P	2002/04/03	00:00:00				780		
8	3	4	P	2002/04/03	00:00:00				780		
9	5	2	P	2002/04/03	00:00:00				780		
10	2	4	P	2002/04/03	13:00:00				60		
11	3	4	P	2002/04/03	13:00:00				76		
12	3	4	P	2002/04/03	14:16:00				584		
13	5	2	P	2002/04/03	13:00:00				660		
14	5	2	P	2002/04/03	00:00:00				360		
15	3	4	P	2002/04/03	00:00:00				360		
16	6	2	P	2002/04/03	15:15:00				15		

7.4 Performance information

This section provides an example of how information about Tivoli NetView performance information is stored in the Tivoli Data Warehouse. The performance configuration and measurement values are based on the following sample network scenario.

7.4.1 Sample network scenario

The sample network scenario uses the Routers SmartSet and the following node information:

Name	IP address	Network address
x.raleigh.tivoli.com (This value is predefined as an IP_HOST in the central data warehouse.)	1.2.3.4	143.5.23.0
y.raleigh.tivoli.com	9.8.7.6	143.5.23.0

This scenario is based on collecting the following bandwidth information:

- The minimum (MIN) bandwidth utilization during the reporting interval
- The maximum (MAX) bandwidth utilization during the reporting interval
- The average (AVG) bandwidth utilization during the reporting interval

7.4.1.1 Understanding bandwidth calculations

Interface utilization is the primary measurement that is used to measure network utilization. The formulas that are used depend on whether the connection you measure is half-duplex or full-duplex. Shared LAN connections tend to be half-duplex, because contention detection requires that a device listens before transmitting. WAN connections typically are full-duplex, because the connection is point-to-point. Both devices can transmit and receive at the same time, because there is only one other device sharing the connection.

Measurements must be taken for two polling cycles, because MIB-II variables are stored as counters. The difference between the two measurements is the delta.

The following variables are used in the formulas:

IfInOctets is the number of octets received on an interface.

InOutOctets is the number of octets transmitted on an interface.

IfSpeed is the speed of the interface as reported in the snmpifSpeed object**.**

Note: The MIB-II object that is used for interface speed, .iso.org.dod.internet.mgmt.mib-2.interfaces.ifTable.ifEntry.ifSpeed, might not be set for some types of interfaces or it might be manually set by the network administrator to indicate contracted bandwidth limits rather than the actual bandwidth being used.

The following formula is used:

Bandwidth Utilization = (IfInOctets +IfOutOctets) *8* 100/time * IfSpeed

7.4.1.2 Bandwidth calculation examples

This section provides information about the example bandwidth calculations that were used to calculate the bandwidth of the sample network. The following information pertains to both bandwidth calculation examples:

- Measurement data was collected on 3 April 2002.
- The Routers SmartSet was created in the Tivoli NetView database, and the x.raleigh.tivoli.com and y.raleigh.tivoli.com nodes were added as members of the Routers SmartSet on 3 April 2002 at 11:00 pm.
- The ETL process ran on 4 April 2002 at 12:00 am (midnight).

7.4.1.2.1 Bandwidth utilization example

This example uses the following bandwidth utilization measurements for the example nodes to calculate the average bandwidth. Note that bandwidth utilization is collected for the first index in the Interface table in this example.

- The bandwidth utilization for the x.raleigh.tivoli.com node that was collected on 3 April 2002 at 1:00 pm was 100 percent.
- The bandwidth utilization for the x.raleigh.tivoli.com node that was collected on 3 April 2002 at 1:15 pm was 20 percent.
- The bandwidth utilization for the x.raleigh.tivoli.com node that was collected on 3 April 2002 at 1:30 pm was 30 percent.
- The bandwidth utilization for the x.raleigh.tivoli.com node that was collected on 3 April 2002 at 1:45 pm was 40 percent.
- The bandwidth utilization for the x.raleigh.tivoli.com node that was collected on 3 April 2002 at 2:00 pm was 20 percent.

- The bandwidth utilization for the x.raleigh.tivoli.com node that was collected on 3 April 2002 at 2:15 pm was 30 percent.
- The bandwidth utilization for the x.raleigh.tivoli.com node that was collected on 3 April 2002 at 2:30 pm was 40 percent.
- The bandwidth utilization for the x.raleigh.tivoli.com node that was collected on 3 April 2002 at 2:45 pm was 50 percent.

7.4.1.2.2 Multicast traffic example

This example uses the following multicast measurements for the example nodes to calculate the average bandwidth. Note that multicast traffic is collected for the first index in the Interface table in this example.

- The number of packets delivered for node y.raleigh.tivoli.com that was collected on 3 April 2002 at 1:00 pm was 10.
- The number of packets delivered for node y.raleigh.tivoli.com that was collected on 3 April 2002 at 1:30 pm was 20.
- The number of packets delivered for node y.raleigh.tivoli.com that was collected on 3 April 2002 at 1:55 pm was 30.
- Number of Packets delivered for node y.raleigh.tivoli.com at 1:30 pm on April 3rd, 2002 was 20.
- Number of Packets delivered for node y.raleigh.tivoli.com at 1:55 pm on April 3rd, 2002 was 30.
- The total number of packets delivered for node y.raleigh.tivoli.com was 60.

7.5 Performance component configuration

This section describes the component configuration for performance data. The data is based on the sample scenario described in "Sample network scenario" on page 39.

7.5.1 Component (table TWG.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	2002-04-03-03.00.00	9999-01-01-00.00.00
IP_NODE	NULL	IP Node	2002-04-03-03.00.00	9999-01-01-00.00.00
ANM_SMARTSET	NULL	SmartSet	2002-04-03-03.00.00	9999-01-01-00.00.00
AN1_SNMP_AGENT	NULL	Communication Object	2002-04-03-03.00.00	9999-01-01-00.00.00
SNMP_OBJ	NULL	SNMP Object	2002-04-03-03.00.00	9999-01-01-00.00.00

*This column is translated

7.5.2 Component (table TWG.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)
1	IP_HOST	CDW	1		x.Raleigh.Tivoli.com		2002-04-03-03.00.00	9999-01-01-00.00.00	
2	IP_NODE	CDW	1		y.Raleigh.Tivoli.com		2002-04-03-03.00.00	9999-01-01-00.00.00	

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)
3	ANM_ SMARTSET	CDW	1		Routers		2002-04-03-03.00.00	9999-01-01-00.00.00	
4	AN1_SNMP _AGENT	CDW	1		161		2002-04-03-03.00.00	9999-01-01-00.00.00	
5	SNMP_OBJ	CDW	1		Bandwidth Utilization for Number of Octets.1		2002-04-03-03.00.00	9999-01-01-00.00.00	
6	AN1_SNMP _AGENT	CDW	1		161		2002-04-03-03.00.00	9999-01-01-00.00.00	
7	SNMP_OBJ	CDW	1		1.3.6.1.2.1.31.1.1. 1.2.1		2002-04-03-03.00.00	9999-01-01-00.00.00	

7.5.3 Component relationship type (table TWG.RelnTyp)

RelnTyp_Cd CHAR(6)	RelnTyp_Nm * VARCHAR(120)
PCHILD	Parent Child Relationship
*This column is translated	

7.5.4 Component relationship rule (table TWG.RelnRul)

CompTyp_Source_ Cd CHAR(17)	CompTyp_Target_Cd CHAR(17)	RelnTyp_Cd CHAR(6)	RelnRul_Strt_DtTm TIMESTAMP	RelnRul_End_DtTm TIMESTAMP
ANM_ SMARTSET	IP_HOST	PCHILD	2002-04-03-03.00.00	9999-01-01-00.00.00
ANM_ SMARTSET	IP_NODE	PCHILD	2002-04-03-03.00.00	9999-01-01-00.00.00
IP_HOST	AN1_SNMP_AGENT	PCHILD	2002-04-03-03.00.00	9999-01-01-00.00.00
AN1_SNMP_AGENT	SNMP_OBJ	PCHILD	2002-04-03-03.00.00	9999-01-01-00.00.00
IP_NODE	AN1_SNMP_AGENT	PCHILD	2002-04-03-03.00.00	9999-01-01-00.00.00

7.5.5 Component relationship (table TWG.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	3	1	PCHILD	2002-04-03-03.00.00	9999-01-01-00.00.00
2	3	2	PCHILD	2002-04-03-03.00.00	9999-01-01-00.00.00
3	1	4	PCHILD	2002-04-03-03.00	9999-01-01-00.00.00
4	4	5	PCHILD	2002-04-03-03.00	9999-01-01-00.00.00
5	2	6	PCHILD	2002-04-03-03.00.00	9999-01-01-00.00.00
6	6	7	PCHILD	2002-04-03-03.00	9999-01-01-00.00.00

7.5.6 Attribute type (table TWG.AttrTyp)

AttrTyp_Cd CHAR(17)	AttrTyp_Nm * VARCHAR(120)
IP_NET_ADDRESS	IP Network Address
LAST_IP_ADDRESS	Last IP Address
MANAGED_BY	Managed By
*This column is translated	

7.5.7 Attribute rule (table TWG.AttrRul)

CompTyp_Cd CHAR(17)	AttrTyp_Cd CHAR(17)	AttrRul_Strt_DtTm TIMESTAMP	AttrRul_End_DtTm TIMESTAMP	AttrRul_Dom_Ind CHAR
IP_HOST	IP_NET_ADDRESS	2002-04-03-03.00.00	9999-01-01-00.00.00	N
IP_HOST	LAST_IP_ADDRESS	2002-04-03-03.00.00	9999-01-01-00.00.00	N
IP_NODE	IP_NET_ADDRESS	2002-04-03-03.00.00	9999-01-01-00.00.00	N
IP_NODE	LAST_IP_ADDRESS	2002-04-03-03.00.00	9999-01-01-00.00.00	N
IP_HOST	MANAGED_BY	2002-04-03-03.00.00	9999-01-01-00.00.00	N
IP_NODE	MANAGED_BY	2002-04-03-03.00.00	9999-01-01-00.00.00	N

7.5.8 Attribute domain (table TWG.AttrDom)

The Tivoli NetView product does not specify attribute domain values.

7.5.9 Component attribute (table TWG.CompAttr)

CompAttr_ ID INTEGER	Comp_ID INTEGER	AttrTyp_Cd CHAR(17)	CompAttr_Strt_ DtTm TIMESTAMP	CompAttr_End_ DtTm TIMESTAMP	CompAttr_Val VARCHAR (254)
1	1	IP_NET_ADDRESS	2002-04-03-03.00.00	9999-01-01-00.00.00	1.2.3.4
2	1	LAST_IP_ADDRESS	2002-04-03-03.00.00	9999-01-01-00.00.00	143.5.23.0
3	1	MANAGED_BY	2002-04-03-03.00.00	9999-01-01-00.00.00	ANM
4	2	IP_NET_ADDRESS	2002-04-03-03.00.00	9999-01-01-00.00.00	9.8.7.6
5	2	LAST_IP_ADDRESS	2002-04-03-03.00.00	9999-01-01-00.00.00	143.5.23.0
6	2	MANAGED_BY	2002-04-03-03.00.00	9999-01-01-00.00.00	ANM

7.6 Performance component measurement

The following sections describe the component measurement for performance data.

7.6.1 Measurement group type (table TWG.MGrpTyp)

MGrpTyp_Cd CHAR(6)	MGrpTyp_Nm * VARCHAR(120)
GROUP	Aggregate Types or Group Functions
*This column is translated	

7.6.2 Measurement group (table TWG.MGrp)

MGrp_Cd CHAR(6)	MgrpTyp_Cd CHAR(6)	MGrp_Parent_Cd CHAR(6)	MGrp_Nm * VARCHAR(120)
MIN_E	GROUP	NULL	Minimum Value exists
MAX_E	GROUP	NULL	Maximum Value exists
TOT_E	GROUP	NULL	Total Value exists
AVG_E	GROUP	NULL	Average value exists
*This column is translated			

7.6.3 Measurement group member (table TWG.MGrpMbr)

MGrp_Cd CHAR(6)	MGRpTyp_Cd CHAR(6)	MsmtTyp_ID INTEGER
TOT_E	GROUP	3,7-9,11-19,22-29
AVG_E	GROUP	1
AVG_E	GROUP	2
AVG_E	GROUP	4
AVG_E	GROUP	5
AVG_E	GROUP	6
AVG_E	GROUP	10
AVG_E	GROUP	20
AVG_E	GROUP	21
MIN_E	GROUP	1
MIN_E	GROUP	2
MIN_E	GROUP	4
MIN_E	GROUP	5
MIN_E	GROUP	6
MIN_E	GROUP	10
MIN_E	GROUP	20
MIN_E	GROUP	21
MAX_E	GROUP	1
MAX_E	GROUP	2
MAX_E	GROUP	4
MAX_E	GROUP	5
MAX_E	GROUP	6
MAX_E	GROUP	10
MAX_E	GROUP	20

MGrp_Cd CHAR(6)	MGrpTyp_Cd CHAR(6)	MsmtTyp_ID INTEGER
MAX_E	GROUP	21

7.6.4 Measurement unit category (table TWG.MUnitCat)

MunitCat_Cd CHAR(6)	MunitCat_Nm * VARCHAR(120)
TM	Time Duration
PRC	Percentage
QTY	Quantity
*This column is translated	

7.6.5 Measurement unit (table TWG.MUnit)

MUnit_Cd CHAR(6)	MUnitCat_Cd CHAR(6)	Munit_Nm * VARCHAR(120)
PRC	PRC	Percentage
QTY	QTY	Quantity
B	QTY	Bytes
KB	QTY	Kilobytes
Sec	TM	Seconds
*This column is translated		

7.6.6 Time summary (table TWG.TmSum)

The period over which a measurement may be summarized.

TmSum_Cd CHAR	TmSum_Nm * VARCHAR(120)
H	Hourly
*This column is translated	

7.6.7 Measurement source (table TWG.MSrc)

MSrc_Cd CHAR(6)	MSrc_Parent_Cd CHAR(6)	MSrc_Nm * VARCHAR(120)
Tivoli	NULL	Tivoli Application
ANM	Tivoli	IBM Tivoli Netview
AN1	ANM	IBM Tivoli Netview SNMP
*This column is translated		

7.6.8 Measurement type (table TWG.MsmtTyp)

MsmtTyp_ID INTEGER	MUnit_Cd CHAR(6)	MSrc_Cd CHAR (6)	MsmtTyp_Nm * VARCHAR(120)	MsmtTyp_Ds * VARCHAR(254)
1	PRC	SNMP	avgBusy5	5 minute exponentially-decayed moving average of the processor busy percentage. 1.3.6.1.4.1.9.2.1.58
2	PRC	SNMP	cpmCPUTotal5min	The overall processor busy percentage in the last 5 minute period. 1.3.6.1.4.1.9.9.109.1.1.1.1.5
3	Bytes	SNMP	ciscomemoryPoolFree	The number of bytes from memory pool that are currently unused on the managed device. Sum of ciscoMemoryPoolUsed and ciscoMemoryPoolFree is total amount of memory in the pool. 1.3.6.1.4.1.9.9.48.1.1.1.6
4	PRC	SNMP	Medium Buffer Ratio	(bufferMdMiss/bufferMdHit)*100 The bufferMdMiss (1.3.6.1.4.1.9.2.1.27) contains the number of medium buffer Misses. bufferMdHit contains the number of medium buffer hits. 1.3.6.1.4.1.9.2.1.26
5	PRC	SNMP	sysTraffic	The traffic meter value, i.e. the percentage of bandwidth utilization for the previous polling interval. 1.3.6.1.4.1.9.5.1.1.8
6	PRC	SNMP	SysTrafficMeter	The traffic meter value, i.e. the percentage of bandwidth utilization for the previous polling interval. 1.3.6.1.4.1.9.5.1.1.32.1.2
7	QTY	SNMP	bufferNoMem	Count of the number of buffer create failures due to no free memory. 1.3.6.1.4.1.9.2.1.47
8	QTY	SNMP	ifInOctets	The total number of octets received on the interface, including framing characters. 1.3.6.1.2.1.2.2.1.10
9	QTY	SNMP	ifOutOctets	The total number of octets transmitted out of the interface, including framing characters. 1.3.6.1.2.1.2.2.1.16
10	PRC	SNMP	Bandwidth Utilization for Number of Octets	(ifInOctets+ifOutOctets)*8*100/time* ifSpeed IfSpeed is an estimate of the interface's current bandwidth in bits per second. IfSpeed = 1.3.6.1.2.1.2.2.1.5

MsmtTyp_ID INTEGER	MUnit_Cd CHAR(6)	MSrc_Cd CHAR (6)	MsmtTyp_Nm * VARCHAR(120)	MsmtTyp_Ds * VARCHAR(254)
11	QTY	SNMP	ifInUcastPkts	The number of packets, delivered by this sub-layer to a higher (sub-)layer, which were not addressed to a multicast or broadcast address at this sub- layer.1.3.6.1.2.1.2.2.1.11
12	QTY	SNMP	ifOutUcastPkts	The total number of packets that higher-level protocols requested be transmitted, and which were not addressed to a multicast or broadcast address at this sub-layer, including those that were discarded or not sent. 1.3.6.1.2.1.2.2.1.17
13	QTY	SNMP	ifInNUcastPkts	The number of packets, delivered by this sub-layer to a higher sub-layer, which were addressed to a multicast or broadcast address at this sub-layer. 1.3.6.1.2.1.2.2.1.12
14	QTY	SNMP	ifInBroadcastPkts	The number of packets, delivered by this sub-layer to a higher sub-layer, which were addressed to a broadcast address at this sub-layer. 1.3.6.1.2.1.31.1.1.1.3
15	QTY	SNMP	ifOutBroadcastPkts	The number of packets that higher-level protocols requested be transmitted, and which were addressed to a broadcast address at this sub-layer, including those that were discarded or not sent 1.3.6.1.2.1.31.1.1.1.5
16	QTY	SNMP	ifInMulticastPkts	The number of packets, delivered by this sub-layer to a higher sub-layer, which were addressed to a multicast address at this sub-layer. 1.3.6.1.2.1.31.1.1.1.2
17	QTY	SNMP	ifOutMulticastPkts	The number of packets that higher-level protocols requested be transmitted, and which were addressed to a multicast address at this sub-layer, including those that were discarded or not sent. 1.3.6.1.2.1.31.1.1.1.4
18	QTY	SNMP	ifInErrors	For packet-oriented interfaces, the number of inbound packets that contained errors preventing them from being deliverable to a higher-layer protocol. 1.3.6.1.2.1.2.2.1.14
19	QTY	SNMP	ifOutErrors	For packet-oriented interfaces, the number of outbound packets that could not be transmitted because of errors.1.3.6.1.2.1.2.2.1.20
20	PRC	SNMP	Interface Input Error Rate	ifInErrors*100/(ifInUcastPkts+ ifInNUcastPkts)
21	PRC	SNMP	Interface Output Error Rate	ifOutErrors*100/(ifInOutUcastPkts+ ifOutNUcastPkts)

MsmtTyp_ID INTEGER	MUnit_Cd CHAR(6)	MSrc_Cd CHAR (6)	MsmtTyp_Nm * VARCHAR(120)	MsmtTyp_Ds * VARCHAR(254)
22	QTY	SNMP	ifInDiscards	The number of inbound packets which were chosen to be discarded even though no errors had been detected to prevent their being deliverable to a higher-layer protocol. 1.3.6.1.2.1.2.2.1.13
23	QTY	SNMP	ifOutDiscards	The number of outbound packets which were chosen to be discarded even though no errors had been detected to prevent their being transmitted. 1.3.6.1.2.1.2.2.1.19
24	QTY	SNMP	etherStatsOctets	Total number of octets (including those in bad packets) received on the network. This excludes framing bits but includes Frame Check Sum (FCS) octets.1.3.6.1.2.1.16.1.1.1.4
25	QTY	SNMP	etherStatsMulticastPkts	Total number of good packets that are received directed to a multicast address (excluding broadcast addresses). 1.3.6.1.2.1.16.1.1.1.7
26	QTY	SNMP	etherStatsBroadcastPkts	Total number of good packets received directed to the broadcast address. This does not include Multicast packets. 1.3.6.1.2.1.16.1.1.1.6
27	QTY	SNMP	etherStatsCRCAlignErrors	Total number of packets received with valid size with checksum or alignment errors.1.3.6.1.2.1.16.1.1.1.8
28	QTY	SNMP	etherStatsFragments	Total number of packets received with fewer than 64 octets, with checksum or alignment errors.1.3.6.1.2.1.16.1.1.1.11
29	QTY	SNMP	etherStatsJabbers	Total number of packets received longer than 1518 with checksum or alignment errors. 1.3.6.1.2.1.16.1.1.1.12
* This column is translated.				

7.6.9 Component measurement rule (table TWG.MsmtRul)

CompTyp_Cd CHAR(17)	MsmtTyp_ID INTEGER
SNMP_OBJ	1 - 29

7.6.10   Measurement (table TWG.Msmt)

Msmt_ID BIGINT	Comp_ID INTEGER	MsmtTyp_ID INTEGER	TmSum_Cd CHAR	Msmt_Strt_Dt DATE	Msmt_Strt_Tm TIME	Msmt_Min_Val FLOAT	Msmt_Max_Val FLOAT	Msmt_Avg_Val FLOAT	Msmt_Tot_Val FLOAT	Msmt_Smpl_Cnt INTEGER	Msmt_Err_Cnt INTEGER
1	5	10	H	2002/04/03	01:00:00	10	40	25			
2	5	10	H	2002/04/03	02:00:00	20	50	35			
3	7	16	H	2002/04/03	01:00:00				60		

7.7 Helper tables

The Tivoli NetView product does not provide helper tables.

7.8 Exception tables

The Tivoli NetView product does not provide exception tables.

7.9 Incremental extraction

To incrementally load data about nodes, SmartSets, SmartSet membership, and outage summaries into the Tivoli Data Warehouse, each local NetView database table has a unique identifier field, TDW_ID, which is incremented for each additional row in the database table. The Tivoli NetView warehouse packs record the last record that was extracted from the corresponding tables. Each subsequent extraction begins with the row immediately following the last row that was retrieved.

8 Data mart schema information

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

Note: The Tivoli NetView product does not provide star schemas, metric dimension tables, data marts, and reports for performance information.

Shaded columns in the following tables are translated. The *Installing and Configuring Tivoli Data Warehouse* document contains instructions for installing support for additional languages

8.1 Data marts and reports

This warehouse pack provides the following availability data mart.

8.1.1 Data mart ANM

The Tivoli NetView availability data mart uses the following star schemas. The metrics types that are used by the star schemas are listed for each star schema. Note that only the metric types that are listed for a star schema can be used to create a report that uses the star schema. For example, if you specify MsmtTyp_ID 6 (number of transitions) for a report that uses the Hourly NetView Node Outages star schema, an error message is generated when you try to run the report.

Star Schema	Metric Types (MsmtTyp_ID)	Metric Type Names
Hourly NetView Node Outages	2 3 4	Unavailable Unreachable Unmanaged
Daily NetView Node Outages	2 3 4	Unavailable Unreachable Unmanaged
Weekly NetView Node Outages	2 3 4	Unavailable Unreachable Unmanaged
Monthly NetView Node Outages	2 3 4	Unavailable Unreachable Unmanaged
Daily NetView Node Percent in State Availability	2 3 4	Unavailable Unreachable Unmanaged
Weekly NetView Node Percent in State Availability	2 3 4	Unavailable Unreachable Unmanaged
Monthly NetView Node Percent in State Availability	2 3 4	Unavailable Unreachable Unmanaged
Yearly NetView Node Percent in State Availability	2 3 4	Unavailable Unreachable Unmanaged
Hourly NetView Node Transitions by SmartSet	6	Number of transitions

Daily NetView Node Transitions by SmartSet	6	Number of transitions
Weekly NetView Node Transitions by SmartSet	6	Number of transitions
Monthly NetView Node Transitions by SmartSet	6	Number of transitions
Hourly NetView Node Transitions	6	Number of transitions
Daily NetView Node Transitions	6	Number of transitions
Weekly NetView Node Transitions	6	Number of transitions
Monthly NetView Node Transitions	6	Number of transitions
Hourly Availability Outages excluding Unmanaged	2 3	Unavailable Unreachable
Hourly Availability Outages in Routers SmartSet	2	Unavailable
Hourly NetView Node Outages Without SmartSet	2 3 4	Unavailable Unreachable Unmanaged
Daily NetView Node Outages Without SmartSet	2 3 4	Unavailable Unreachable Unmanaged
Weekly NetView Node Outages Without SmartSet	2 3 4	Unavailable Unreachable Unmanaged
Monthly NetView Node Outages Without SmartSet	2 3 4	Unavailable Unreachable Unmanaged
Daily NetView Node Percent in State Without SmartSet	2 3 4	Unavailable Unreachable Unmanaged
Weekly NetView Node Percent in State Without SmartSet	2 3 4	Unavailable Unreachable Unmanaged
Monthly NetView Node Percent in State Without SmartSet	2 3 4	Unavailable Unreachable Unmanaged
Yearly NetView Node Percent in State Without SmartSet	2 3 4	Unavailable Unreachable Unmanaged
Daily NetView Network Total Status Changes	6	Number of transitions
Daily Routers Total Status Changes	6	Number of transitions

8.1.2 Tables

This section describes the data mart tables that are used by the Tivoli NetView warehouse pack to store status information about nodes and SmartSets.

The following information is provided:

- A list of the tables that are used by Tivoli NetView to store status information
- The name of the measurement table that is used to store status information
- An indication whether an example table is provided Name in "Data mart schema information" on page 50.

Table Name	Description	Example
ANM_ETL1_RUNS	A list of time stamps that indicate when the last ETL process ran. Note that this table must always have at least one entry.	No
ANM.F_3TR_HOUR	A list of hourly transition records for layer 3 nodes.	No
ANM.F_3TR_DAY	A list of daily transition records for layer 3 nodes.	Yes
ANM.F_3TR_WEEK	A list of weekly transition records for layer 3 nodes.	No
ANM.F_3TR_MONTH	A list of monthly transition records for layer 3 nodes.	No
ANM.F_3TR_NETWORK	A list of daily transition records for all nodes.	Yes
ANM.F_3TR_ROUTERS	A list of daily transition records for all routers in a network.	Yes
ANM.F_3TRS_HOUR	A list of hourly transition records for layer 3 nodes listed by SmartSet.	No
ANM.F_3TRS_DAY	A list of daily transition records for layer 3 nodes listed by SmartSet.	Yes
ANM.F_3TRS_WEEK	A list of weekly transition records for layer 3 nodes listed by SmartSet.	No
ANM.F_3TRS_MONTH	A list of monthly transition records for layer 3 nodes listed by SmartSet.	No
ANM_OUTAGES	A list of the last outage records for nodes. If a node outage spans multiple ETL runs, multiple entries are included.	No
ANM_L3_OUTAGES	A list of the last outage records for layer 3 nodes. If a node outage spans multiple ETL runs, multiple entries are included.	No
ANM.F_OUT_NS_HOUR	A list of total hourly outage times for layer 3 nodes.	No
ANM.F_OUT_NS_DAY	A list of total daily outage times for layer 3 nodes.	Yes
ANM.F_OUT_NS_WEEK	A list of total weekly outage times for layer 3 nodes.	No
ANM.F_OUT_NS_MONTHLY	A list of total monthly outage times for layer 3 nodes.	No
ANM.F_OUT_HOUR	A list of total hourly outage times for layer 3 nodes listed by SmartSet.	No
ANM.F_OUT_DAY	A list of total daily outage times for layer 3 nodes listed by SmartSet.	Yes
ANM.F_OUT_WEEK	A list of total weekly outage times for layer 3 nodes listed by SmartSet.	No
ANM.F_OUT_MONTHLY	A list of total monthly outage times for layer 3 nodes listed by SmartSet.	No

Table Name	Description	Example
ANM.F_XOUT_HOUR	A list of hourly outage times for layer 3 nodes whose status is either UNREACHABLE or UNAVAILABLE. UNMANAGED status is not used.	Yes
ANM.F_XOUT_WSS_HOUR	A list of hourly outage times for layer 3 nodes whose status is either UNREACHABLE or UNAVAILABLE listed by SmartSet. UNMANAGED status is not used.	Yes
ANM.F_OUT_PERC_DAY	A list of daily availability percentages for each node by SmartSet. Percentages for AVAILABLE, UNREACHABLE, UNAVAILABLE, and UNMANAGED are provided.	Yes
ANM.F_OUT_PERC_WEEK	A list of weekly availability percentages for each node by SmartSet. Percentages for AVAILABLE, UNREACHABLE, UNAVAILABLE, and UNMANAGED are provided.	No
ANM.F_OUT_PERC_MONTH	A list of monthly availability percentages for each node by SmartSet. Percentages for AVAILABLE, UNREACHABLE, UNAVAILABLE, and UNMANAGED are provided.	No
ANM.F_OUT_PERC_YEAR	A list of yearly availability percentages for each node by SmartSet. Percentages for AVAILABLE, UNREACHABLE, UNAVAILABLE, and UNMANAGED are provided.	No
ANM.F_OUT_PERC_NS_DAY	A list of daily availability percentages for each node. Percentages for AVAILABLE, UNREACHABLE, UNAVAILABLE, and UNMANAGED are provided.	Yes
ANM.F_OUT_PERC_NS_WEEK	A list of weekly availability percentages for each node. Percentages for AVAILABLE, UNREACHABLE, UNAVAILABLE, and UNMANAGED are provided.	No
ANM.F_OUT_PERC_NS_MONTH	A list of monthly availability percentages for each node. Percentages for AVAILABLE, UNREACHABLE, UNAVAILABLE, and UNMANAGED are provided.	No
ANM.F_OUT_PERC_NS_YEAR	A list of yearly availability percentages for each node. Percentages for AVAILABLE, UNREACHABLE, UNAVAILABLE, and UNMANAGED are provided.	No

8.1.3 Reports

This section provides information about the predefined reports that are provided by the Tivoli NetView warehouse pack.

The following information is provided:

- A list of the predefined reports that are provided by the Tivoli NetView product.
- The name of the measurement table that is used to create the report.
- A description of the information contained in the report.

Report Name	Table Name	Description
Daily Status Summary By SmartSet	ANM.F_OUT_PERC_DAY	This summary report summarizes the daily percent in state availability of each SmartSet.
Summary Of Daily Network Status	ANM.F_OUT_PERC_NS_DAY	This health check report details the daily percent in state availability information of the monitored network.
Nodes With The Most Daily Status Changes	ANM.F_3TR_DAY	This extreme case report details the nodes with the most status changes.
Nodes With The Longest Outage Times	ANM.F_XOUT_HOUR	This extreme case report lists the nodes with the longest outage times.
Nodes With Most Status Changes In Routers SmartSet	ANM.F_3TRS_DAY	This extreme case report lists the nodes with the most status changes that are in the Routers SmartSet.
Nodes With Longest Outage Time In Routers SmartSet	ANM.F_XOUT_HOUR	This extreme case report lists the nodes with the longest total outage times in the Routers SmartSet.
Total Daily Status Changes In Routers SmartSet	ANM.F_3TR_ROUTERS	This health check report details the total daily status changes in the Routers SmartSet.
Summary of Total Outage Time By SmartSet	ANM.F_OUT_DAY	This summary report details total outage times by SmartSet.
Summary Of Total Status Changes By SmartSet	ANM.F_3TRS_DAY	This summary report details the total number of status changes by SmartSet.
Total Daily Status Changes In Monitored Network	ANM.F_3TR_NETWORK	This health check reports details the total number of status changes per day for the monitored network.

8.2 Availability star schemas

Before using this section, read about the star schemas in the *Enabling an Application for Tivoli Data Warehouse* document. This document defines the content of each table and explains the relationships between the tables in this document.

This warehouse pack provides the following star schemas for availability information.

8.2.1 ANM Daily NetView node outages star schema

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

Description of star schema (in IWH_STARSCHEMA) *	Daily NetView nodes outage information. *
Name of fact table	ANM.F_OUT_DAY
Name of metric dimension table	ANM.D_OUTAGE_METRIC
Names of other dimension tables	ANM.D_L3NODES
	ANM.D_SMARTSETS
* This column is translated	

8.2.1.1 Description of fact table ANM.F_OUT_DAY

This table lists the colums that are in the ANM.F_OUT_DAY table:

Column Name	Type schema	Type name	Length	Scale	Nulls
Fact_ID	SYSIBM	INTEGER	4	0	No
CDW_ID	SYSIBM	INTEGER	4	0	No
Metric_ID	SYSIBM	INTEGER	4	0	No
NODE_ID	SYSIBM	INTEGER	4	0	No
SS_ID	SYSIBM	INTEGER	4	0	Yes
Meas_Date	SYSIBM	TIMESTAMP	10	0	No
Min_Value	SYSIBM	DOUBLE	8	0	Yes
Max_Value	SYSIBM	DOUBLE	8	0	Yes
Avg_Value	SYSIBM	DOUBLE	8	0	Yes
Total_Value	SYSIBM	DOUBLE	8	0	Yes
Sample_Count	SYSIBM	INTEGER	4	0	Yes

8.2.1.2 Example of fact table ANM.F_OUT_DAY

This fact table contains the total minutes of daily outages for layer 3 nodes. The nodes are listed by SmartSet.

Fact _ID	CDW _ID	Metric _ID	NODE _ID	SS _ID	Meas _Date	Min _Value	Max _Value	Avg _Value	Total _Value	Sample _Count
3698	82744602	2	48	4	2005-07-02-00.00.00.	0	0	0	+1.4396E+3	1440
3722	82744602	2	49	4	2005-07-11-00.00.00	0	0	0	+6.3895E+2	639
3723	82744602	2	49	4	2005-07-22-04.46.30	0	0	0	+1.6667E-1	1
3724	82744602	2	49	4	2005-07-26-17.53.24	0	0	0	+2.0000E-1	1
3725	82744602	2	50	4	2005-07-22-04.33.54	0	0	0	+1.6667E-1	1
3726	82744602	2	51	4	2005-07-01-10.50.25	0	0	0	+7.8935E+2	790

					10.50.25					
4209	82744602	3	47	3	2005-07-13- 17.28.54	0	0	0	+3.6667E-1	1
4210	82744602	3	47	3	2005-07-12- 00.00.00	0	0	0	+8.5000E-1	3
4211	82744602	3	48	4	2005-08-16- 11.54.19	0	0	0	+2.5000E-1	6
4220	82744602	3	57	4	2005-08-16- 11.54.19	0	0	0	+2.5000E-1	6
4232	82744602	3	69	3	2005-07-05- 00.00.00	0	0	0	+1.4396E+3	1440
4676	82744602	4	68	3	2005-07-13- 10.55.13	0	0	0	+0.8667E-0	10

8.2.2 ANM Daily NetView node percent in state availability star schema

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

Description of star schema (in IWH_STARSCHEMA)	Daily NetView node percent in state availability information. *
Name of fact table	ANM.F_OUT_PERC_DAY
Name of metric dimension table	ANM.D_OUTAGE_METRIC
Names of other dimension tables	ANM.D_L3NODES
	ANM.D_SMARTSETS
* The description is translated	

8.2.2.1 Description of fact table ANM.F_OUT_PERC_DAY

This table lists the colums that are in the ANM.F_OUT_PERC_DAY table:The nodes are listed by SmartSet.

Column Name	Type schema	Type name	Length	Scale	Nulls
Fact_ID	SYSIBM	INTEGER	4	0	No
CDW_ID	SYSIBM	INTEGER	4	0	No
Metric_ID	SYSIBM	INTEGER	4	0	No
NODE_ID	SYSIBM	INTEGER	4	0	No
SS_ID	SYSIBM	INTEGER	4	0	Yes
Meas_Date	SYSIBM	TIMESTAMP	10	0	No
Min_Value	SYSIBM	DOUBLE	8	0	Yes
Max_ Value	SYSIBM	DOUBLE	8	0	Yes
Avg_ Value	SYSIBM	DOUBLE	8	0	Yes
Total_ Value	SYSIBM	DOUBLE	8	0	Yes
Sample_Count	SYSIBM	INTEGER	4	0	Yes

8.2.2.2 Example of fact table ANM.F_OUT_PERC_DAY

This fact table contains the daily availability percentages for each node. The nodes are listed by SmartSet.

Fact _ID	CDW _ID	Metric _ID	NODE _ID	SS _ID	Meas_ Date	Min_ Value	Max_ Value	Avg_ Value	Total _Value	Sample _Count
1069	82744602	2	48	4	2005-07-02-00.00	0	0	0	+9.9973E+2	1
1078	82744602	2	48	4	2005-07-11-00.00	0	0	0	+7.3867E-1	1
1089	82744602	2	48	4	2005-07-22-00.00	0	0	0	+1.3889E-2	1
2063	82744602	3	47	3	2005-07-13-00.00	0	0	0	+2.5463E-2	1
2064	82744602	3	47	3	2005-07-14-00.00.00	0	0	0	+5.9028E-2	1
2145	82744602	3	48	3	2005-08-16-00.00.00	0	0	0	+1.7361E-1	1
3045	82744602	3	69	3	2005-06-30-00.00.00	0	0	0	+1.7982E+1	1
3881	82744602	4	65	3	2005-07-01-00.00.00	0	0	0	+9.9973E+1	1
3892	82744602	4	65	3	2005-07-12-00.00.00	0	0	0	+5.4233E+1	1
3929	82744602	4	66	3	2005-06-30-00.00.00	0	0	0	+2.2408E+1	1
3978	82744602	4	67	3	2005-06-30-00.00.00	0	0	0	+2.3049E-1	1

8.2.3 ANM Daily NetView node status changes by SmartSet star schema

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

Description of star schema (in IWH_STARSCHEMA)	The number of daily status changes for each node in a SmartSet *.
Name of fact table	ANM.F_3TRS_DAY
Name of metric dimension table	ANM.D_OUTAGE_METRIC
Names of other dimension tables	ANM.D_L3NODES
	ANM.D_SMARTSETS
* The description is translated	

8.2.3.1 Description of fact table ANM.F_3TRS_DAY

This table lists the colums that are in the ANM.F_3TRS_DAY table.

Column Name	Type schema	Type name	Length	Scale	Nulls
Fact_ID	SYSIBM	INTEGER	4	0	No
CDW_ID	SYSIBM	INTEGER	4	0	No

Metric_ID	SYSIBM	INTEGER	4	0	No
NODE_ID	SYSIBM	INTEGER	4	0	No
SS_ID	SYSIBM	INTEGER	4	0	No
Meas_Date	SYSIBM	TIMESTAMP	10	0	Yes
Min_Value	SYSIBM	DOUBLE	8	0	Yes
Max_ Value	SYSIBM	DOUBLE	8	0	Yes
Avg_ Value	SYSIBM	DOUBLE	8	0	Yes
Total_ Value	SYSIBM	DOUBLE	8	0	Yes
Sample_Count	SYSIBM	INTEGER	4	0	Yes

8.2.3.2 Example of fact table ANM.F_3TRS_DAY

This fact table contains number of daily status transition records for layer 3 nodes. The nodes are listed by SmartSet.

Fact _ID	CDW _ID	Metric_ ID	NODE _ID	SS _ID	Meas_Date	Min_ Value	Max_ Value	Avg_ Value	Total_ Value	Sample_ Count
1513	82744602	2	47	3	2005-07-13-17.28.54	0	0	0	+2.0000E+0	2
1514	82744602	2	47	3	2005-07-14-10.26.08	0	0	0	+6.0000E+0	6
1515	82744602	2	50	4	2005-07-01-11.10.29	0	0	0	+3.0000E+0	3
1516	82744602	2	50	4	2005-07-11-10.38.22	0	0	0	+1.0000E+0	1
1517	82744602	2	51	4	2005-07-11-10.39.07	0	0	0	+2.0000E+0	2
1518	82744602	2	54	4	2005-07-26-19.08.51	0	0	0	+2.0000E+0	2
1519	82744602	3	65	4	2005-08-16-11.54.19	0	0	0	+1.2000E+0	12
1520	82744602	3	65	4	2005-08-17-00.10.22	0	0	0	+2.0000E+0	2
1521	82744602	3	65	4	2005-08-18-09.09.01	0	0	0	+4.0000E+0	4
1522	82744602	3	67	4	2005-07-01-10.50.24	0	0	0	+2.0000E+0	1
1523	82744602	3	68	4	2005-07-11-10.39.07	0	0	0	+1.0000E+0	1

8.2.4 ANM Daily NetView node status changes star schema

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

Description of star schema (in	The number of daily availability status changes per node

IWH_STARSCHEMA) *	*
Name of fact table	ANM.F_3TR_DAY
Name of metric dimension table	ANM.D_OUTAGE_METRIC
Names of other dimension tables	ANM.D_L3NODES
* The description is translated	

8.2.4.1 Description of fact table ANM.F_3TR_DAY

This table lists the colums that are in the ANM.F_3TRS_DAY table.

Column Name	Type schema	Type name	Length	Scale	Nulls
Fact_ID	SYSIBM	INTEGER	4	0	No
CDW_ID	SYSIBM	INTEGER	4	0	No
Metric_ID	SYSIBM	INTEGER	4	0	No
NODE_ID	SYSIBM	INTEGER	4	0	No
Meas_Date	SYSIBM	TIMESTAMP	10	0	Yes
Min_Value	SYSIBM	DOUBLE	8	0	Yes
Max_ Value	SYSIBM	DOUBLE	8	0	Yes
Avg_ Value	SYSIBM	DOUBLE	8	0	Yes
Total_ Value	SYSIBM	DOUBLE	8	0	Yes
Sample_Count	SYSIBM	INTEGER	4	0	Yes

8.2.4.2 Example of fact table ANM.F_3TR_DAY

This fact table contains number of daily status transition records for layer 3 nodes.

Fact _ID	CDW _ID	Metric _ID	NOD E _ID	Meas_Date	Min_ Value	Max_ Value	Avg_ Value	Total_ Value	Sample_ Count
1513	82744602	2	47	2005-07-13-17.28.54	0	0	0	+2.0000E+0	2
1514	82744602	2	47	2005-07-14-10.26.08	0	0	0	+6.0000E+0	6
1515	82744602	2	50	2005-07-01-11.10.29	0	0	0	+3.0000E+0	3
1516	82744602	2	50	2005-07-11-10.38.22	0	0	0	+1.0000E+0	1
1517	82744602	2	51	2005-07-11-10.39.07	0	0	0	+2.0000E+0	2
1518	82744602	2	54	2005-07-26-19.08.51	0	0	0	+2.0000E+0	2
1519	82744602	3	65	2005-08-16-11.54.19	0	0	0	+1.2000E+0	12
1520	82744602	3	65	2005-08-17-00.10.22	0	0	0	+2.0000E+0	2
1521	82744602	3	65	2005-08-18-09.09.01	0	0	0	+4.0000E+0	4

				09.09.01					
1522	82744602	3	67	2005-07-01-10.50.24	0	0	0	+2.0000E+0	1
1523	82744602	3	68	2005-07-11-10.39.07	0	0	0	+1.0000E+0	1

8.2.5 ANM Hourly availability outages excluding unmanaged star schema

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

Description of star schema (in IWH_STARSCHEMA)	Star schema for availability outages excluding unmanaged outages *
Name of fact table	ANM.F_XOUT_HOUR
Name of metric dimension table	ANM.D_OUTAGE_METRIC
Names of other dimension tables	ANM.D_L3NODES
* The description is translated.	

8.2.5.1 Description of fact table ANM.F_XOUT_HOUR

This table lists the colums that are in the ANM.F_XOUT_HOUR table.

Column Name	Type schema	Type name	Length	Scale	Nulls
Fact_ID	SYSIBM	INTEGER	4	0	No
CDW_ID	SYSIBM	INTEGER	4	0	No
Metric_ID	SYSIBM	INTEGER	4	0	No
NODE_ID	SYSIBM	INTEGER	4	0	No
Meas_Hour	SYSIBM	TIMESTAMP	10	0	No
Min_Value	SYSIBM	DOUBLE	8	0	Yes
Max_ Value	SYSIBM	DOUBLE	8	0	Yes
Avg_ Value	SYSIBM	DOUBLE	8	0	Yes
Total_ Value	SYSIBM	DOUBLE	8	0	Yes
Sample_Count	SYSIBM	INTEGER	4	0	Yes

8.2.5.2 Example of fact table ANM.F_XOUT_HOUR

This fact table contains the hourly outage totals for layer 3 nodes for outages caused by UNREACHABLE or UNAVAILABLE status. Nodes with UNMANAGED status are not included.

Fact _ID	CDW _ID	Metric _ID	NODE _ID	Meas_Hour	Min_ Value	Max_ Value	Avg_ Value	Total_ Value	Sample _Count
239	82744602	2	48	2005-07-01-15.10.29	0	0	0	+5.0000E+0	1
240	82744602	2	48	2005-07-01-15.40.35	0	0	0	+1.9400E+1	1

241	82744602	2	48	2005-07-11-14.00.00	0	0	0	+3.8367E+1	1
2426	82744602	2	48	2005-07-22-10.42.13	0	0	0	+2.0000E-1	1
243	82744602	2	48	2005-07-26-23.08.51	0	0	0	+1.6667E-1	1
244	82744602	2	49	2005-07-01-14.50.24	0	0	0	+9.5833E+0	1
245	82744602	2	49	2005-07-11-14.00.00	0	0	0	+3.9117E+1	1
246	82744602	2	49	2005-07-22-08.46.30	0	0	0	+1.6667E-1	1
247	82744602	2	49	2005-07-26-21.53.24	0	0	0	+2.0000E-1	4
248	82744602	2	50	2005-07-22-08.33.54	0	0	0	+5.9983E+1	1

8.2.6 ANM Hourly availability outages in routers SmartSet star schema

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

Description of star schema (in IWH_STARSCHEMA)	Star schema for availability outages excluding unmanaged outages in the Routers SmartSet. *
Name of fact table	ANM.F_XOUT_WSS_HOUR
Name of metric dimension table	ANM.D_OUTAGE_METRIC
Names of other dimension tables	ANM.D_L3NODES
	ANM.D_SMARTSETS
* The description is translated.	

8.2.6.1 Description of fact table ANM.F_XOUT_WSS_HOUR

This table lists the colums that are in the ANM.F_XOUT_WSS_HOUR table.

Column Name	Type schema	Type name	Length	Scale	Nulls
Fact_ID	SYSIBM	INTEGER	4	0	No
CDW_ID	SYSIBM	INTEGER	4	0	No
Metric_ID	SYSIBM	INTEGER	4	0	No
NODE_ID	SYSIBM	INTEGER	4	0	No
SS_ID	SYSIBM	INTEGER	4	0	No
Meas_Hour	SYSIBM	TIMESTAMP	10	0	Yes
Min_Value	SYSIBM	DOUBLE	8	0	Yes
Max_ Value	SYSIBM	DOUBLE	8	0	Yes
Avg_ Value	SYSIBM	DOUBLE	8	0	Yes
Total_ Value	SYSIBM	DOUBLE	8	0	Yes
Sample_Count	SYSIBM	INTEGER	4	0	Yes

8.2.6.2 Example of fact table ANM.F_XOUT_WSS_HOUR

This fact table contains the hourly outage totals for layer 3 nodes for outages caused by UNREACHABLE or UNAVAILABLE status. Nodes with UNMANAGED status are not included.

Fact _ID	CDW _ID	Metric _ID	NODE _ID	SS _ID	Meas_Hour	Min_ Value	Max_ Value	Avg_ Value	Total_ Value	Sample _ Count
239	82744602	2	48	4	2005-07-01-15.10.29	0	0	0	+5.0000E+0	1
240	82744602	2	48	4	2005-07-01-15.40.35	0	0	0	+1.9400E+1	1
241	82744602	2	48	4	2005-07-11-14.00.00	0	0	0	+3.8367E+1	1
2426	82744602	2	48	4	2005-07-22-10.42.13	0	0	0	+2.0000E-1	1
243	82744602	2	48	4	2005-07-26-23.08.51	0	0	0	+1.6667E-1	1
244	82744602	2	49	5	2005-07-01-14.50.24	0	0	0	+9.5833E+0	1
245	82744602	2	49	5	2005-07-11-14.00.00	0	0	0	+3.9117E+1	1
246	82744602	2	49	5	2005-07-22-08.46.30	0	0	0	+1.6667E-1	1
247	82744602	2	49	5	2005-07-26-21.53.24	0	0	0	+2.0000E-1	4
248	82744602	2	50	4	2005-07-22-08.33.54	0	0	0	+5.9983E+1	1

8.2.7 ANM Daily NetView node outages without SmartSets star schema

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

Description of star schema (in IWH_STARSCHEMA)	Contains daily information on node outages without SmartSet information. *
Name of fact table	ANM.F_OUT_NS_DAY
Name of metric dimension table	ANM.D_OUTAGE_METRIC
Names of other dimension tables	ANM.D_L3NODES
* The description is translated.	

8.2.7.1 Description of fact table ANM.F_OUT_NS_DAY

This table lists the colums that are in the ANM.F_OUT__NS_DAY table.

Column Name	Type schema	Type name	Length	Scale	Nulls
Fact_ID	SYSIBM	INTEGER	4	0	No
CDW_ID	SYSIBM	INTEGER	4	0	No
Metric_ID	SYSIBM	INTEGER	4	0	No
NODE_ID	SYSIBM	INTEGER	4	0	No
Meas_Date	SYSIBM	TIMESTAMP	10	0	No
Min_Value	SYSIBM	DOUBLE	8	0	Yes
Max_ Value	SYSIBM	DOUBLE	8	0	Yes
Avg_ Value	SYSIBM	DOUBLE	8	0	Yes
Total_ Value	SYSIBM	DOUBLE	8	0	Yes
Sample_Count	SYSIBM	INTEGER	4	0	Yes

8.2.7.2 Example of fact table ANM.F_OUT_NS_DAY

This fact table contains the daily outage times in minutes for layer 3 nodes.

Fact _ID	CDW _ID	Metric _ID	NODE _ID	Meas_Date	Min_ Value	Max_ Value	Avg_ Value	Total_ Value	Sample _ Count
3698	82744602	2	48	2005-07-02-00.00.00	0	0	0	+1.4396E+3	1440
3722	82744602	2	49	2005-07-11-00.00.00	0	0	0	+6.3895E+2	639
3723	82744602	2	49	2005-07-22-04.46.30	0	0	0	+1.6667E-1	1
3724	82744602	2	49	2005-07-26-17.53.24	0	0	0	+2.0000E-1	1
3725	82744602	2	50	2005-07-22-04.33.54	0	0	0	+1.6667E-1	1
3726	82744602	2	51	2005-07-01-10.50.25	0	0	0	+7.8935E+2	790
4209	82744602	3	47	2005-07-13-17.28.54	0	0	0	+3.6667E-1	1
4210	82744602	3	47	2005-07-14-10.26.08	0	0	0	+8.5000E-1	3
4211	82744602	3	48	2005-08-16-11.54.19	0	0	0	+2.5000E-1	6
4220	82744602	3	57	2005-08-16-11.54.19	0	0	0	+2.5000E-1	6
4232	82744602	3	69	2005-07-05-00.00.00	0	0	0	+1.4396E+3	1440
4676	82744602	4	68	2005-07-13-10.55.13	0	0	0	+9.8667E-0	10

8.2.8 ANM Daily NetView node percent in state without SmartSet availability star schema

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

Description of star schema (in IWH_STARSCHEMA)	Daily NetView node percent in state availability without SmartSet information. *
Name of fact table	ANM.F_OUT_PERC_NS_DAY
Name of metric dimension table	ANM.D_OUTAGE_METRIC
* The description is translated.	
Names of other dimension tables	ANM.D_L3NODES

8.2.8.1 Description of fact table ANM.F_OUT_PERC_NS_DAY

This table lists the colums that are in the ANM.F_OUT___PERC_NS_DAY table.

Column Name	Type schema	Type name	Length	Scale	Nulls
Fact_ID	SYSIBM	INTEGER	4	0	No
CDW_ID	SYSIBM	INTEGER	4	0	No
Metric_ID	SYSIBM	INTEGER	4	0	No
NODE_ID	SYSIBM	INTEGER	4	0	No
Meas_Date	SYSIBM	TIMESTAMP	10	0	No
Min_Value	SYSIBM	DOUBLE	8	0	Yes
Max_ Value	SYSIBM	DOUBLE	8	0	Yes

Avg_ Value	SYSIBM	DOUBLE	8	0	Yes
Total_ Value	SYSIBM	DOUBLE	8	0	Yes
Sample_Count	SYSIBM	INTEGER	4	0	Yes

8.2.8.2 Example of fact table ANM.F_OUT__PERC_NS_DAY

This fact table contains the daily availability percentages for each node.

Fact _ID	CDW _ID	Metric _ID	NODE _ID	Meas_Date	Min_ Value	Max_ Value	Avg_ Value	Total_ Value	Sample _ Count
1068	82744602	2	48	2005-07-01-00.00.00	0	0	0	+5.1683E+1	1
1069	82744602	2	48	2005-07-02-00.00.00	0	0	0	+9.9973E+1	1
1078	82744602	2	48	2005-07-11-00.00.00	0	0	0	+7.3867E-1	1
1089	82744602	2	48	2005-07-22-00.00.00	0	0	0	+1.3889E-2	1
2063	82744602	3	47	2005-07-13-00.00.00	0	0	0	+2.5463E-2	1
2064	82744602	3	47	2005-07-14-00.00.00	0	0	0	+5.9028E-2	1
2145	82744602	3	2005	2005-08-16-00.00.00	0	0	0	+1.7361E-2	1
3045	82744602	3	69	2005-06-30-00.00.00	0	0	0	+1.7982E+1	1
3881	82744602	4	65	2005-07-01-00.00.00	0	0	0	+9.9973E+1	1
3892	82744602	4	65	2005-07-12-00.00.00	0	0	0	+5.4233E+1	1
3929	82744602	4	66	2005-06-30-00.00.00	0	0	0	+2.2408E+1	1
3978	82744602	4	67	2005-06-30-00.00.00	0	0	0	+2.3049E-1	1

8.2.9 ANM Daily NetView network total status changes star schema

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

Description of star schema (in IWH_STARSCHEMA)	This schema contains the daily total status changes for the entire monitored network. *
Name of fact table	ANM.F_3TR_NETWORK
Name of metric dimension table	ANM.D_OUTAGE_METRIC
Names of other dimension tables	ANM.D_L3NODES
* The description is translated.	

8.2.9.1 Description of fact table ANM.F_3TR_NETWORK

This table lists the colums that are in the ANM.F_3TR_NETWORK table.

Column Name	Type schema	Type name	Length	Scale	Nulls
Fact_ID	SYSIBM	INTEGER	4	0	No
CDW_ID	SYSIBM	INTEGER	4	0	No
Metric_ID	SYSIBM	INTEGER	4	0	No
NODE_ID	SYSIBM	INTEGER	4	0	No

Meas_Date	SYSIBM	TIMESTAMP	10	0	No
Min_Value	SYSIBM	DOUBLE	8	0	Yes
Max_ Value	SYSIBM	DOUBLE	8	0	Yes
Avg_ Value	SYSIBM	DOUBLE	8	0	Yes
Total_ Value	SYSIBM	DOUBLE	8	0	Yes
Sample_Count	SYSIBM	INTEGER	4	0	Yes

8.2.9.2 Example of fact table ANM ANM.F_3TR_NETWORK

This fact table contains the number of daily status transition records for all layer 3 nodes in a network.

Fact _ID	CDW _ID	NODE _ID	Metric _ID	Meas_Date	Min_ Value	Max_ Value	Avg_ Value	Total_ Value	Sample _ Count
183	82744887	-1	5	2005-07-20-00.00.00	0	0	0	+2.6000E+1	1
184	82744887	-1	5	2005-07-21-00.00.00	0	0	0	+2.8000E+1	1
185	82744887	-1	5	2005-07-22-00.00.00	0	0	0	+3.8000E+1	1
186	82744887	-1	5	2005-07-23-00.00.00	0	0	0	+3.0000E+1	1
187	82744887	-1	5	2005-07-24-00.00.00	0	0	0	+3.2000E+1	1
188	82744887	-1	5	2005-07-25-00.00.00	0	0	0	+3.8000E+1	1
189	82744887	-1	5	2005-07-26-00.00.00	0	0	0	+3.6000E+1	1
190	82744887	-1	5	2005-07-27-00.00.00	0	0	0	+2.6000E+1	1
191	82744887	-1	5	2005-07-28-00.00.00	0	0	0	+3.0000E+0	1
192	82744887	-1	5	2005-07-29-00.00.00	0	0	0	+8.0000E+0	1

8.2.10   ANM Daily routers total status changes star schema

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

Description of star schema (in IWH_STARSCHEMA)	This schema contains the daily total status changes for the Routers SmartSet. *
Name of fact table	ANM.F_3TR_ROUTERS
Name of metric dimension table	ANM.D_OUTAGE_METRIC
Names of other dimension tables	ANM.D_L3NODES
The description is translated.	

8.2.10.1   Description of fact table ANM.F_3TR_ROUTERS

This table lists the colums that are in the ANM.F_3TR_ROUTERS table.

Column Name	Type schema	Type name	Length	Scale	Nulls
Fact_ID	SYSIBM	INTEGER	4	0	No
CDW_ID	SYSIBM	INTEGER	4	0	No

Metric_ID	SYSIBM	INTEGER	4	0	No
NODE_ID	SYSIBM	INTEGER	4	0	No
SS_ID	SYSIBM	INTEGER	4	0	No
Meas_Date	SYSIBM	TIMESTAMP	10	0	Yes
Min_Value	SYSIBM	DOUBLE	8	0	Yes
Max_ Value	SYSIBM	DOUBLE	8	0	Yes
Avg_ Value	SYSIBM	DOUBLE	8	0	Yes
Total_ Value	SYSIBM	DOUBLE	8	0	Yes
Sample_Count	SYSIBM	INTEGER	4	0	Yes

8.2.10.2   Example of fact table ANM ANM.F_3TR_ROUTERS

This fact table contains the number of daily status transition records for all layer 3 routers in a network.

Fact _ID	CDW _ID	Node _ID	SS _ID	Metric _ID	Meas_Date	Min_ Value	Max_ Value	Avg_ Value	Total_ Value	Sam _Co
100	82744887	-1	3	5	2005-07-09-00.00.00	0	0	0	+5.0000E+	1
101	82744887	-1	3	5	2005-07-10-00.00.00	0	0	0	+5.2000E+1	1
102	82744887	-1	3	5	2005-07-11-00.00.00	0	0	0	+6.2000E+1	1
103	82744887	-1	3	5	2005-07-12-00.00.00	0	0	0	+6.1000E+1	1
104	82744887	-1	3	5	2005-07-13-00.00.00	0	0	0	+5.6000E+1	1
105	82744887	-1	3	5	2005-07-14-00.00.00	0	0	0	+1.8800E+2	1
106	82744887	-1	3	5	2005-07-15-00.00.00	0	0	0	+1.2000E+1	1
107	82744887	-1	3	5	2005-07-16-00.00.00	0	0	0	+0.0000E+0	1

8.3 Metric dimension tables

This section describes the metric dimension tables used by the star schemas in this warehouse pack. Shaded columns indicate text that is translated. These column headings are also marked with an asterisk (*).

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

8.3.1 ANM.D_OUTAGE_METRIC

The ANM.D_OUTAGE_METRIC table lists the types of measurements that are used by the Tivoli NetView product.

metric_ID INTEGER	met_desc* VARCHAR (254)	met_name * VARCHAR (254)	met_units * VARCHAR (254)	min_exists CHAR(1)	max_ exists CHAR(1)	avg_ exists ir CHAR(1)	total exists CHAR(1)	msrc_nm * VARCHAR (254)
1	The amount of time the resource is available	Available	Minutes	N	N	N	Y	MODEL1
2	The amount of time the	Unavailable	Minutes	N	N	N	Y	MODEL1

	resource is unavailable							
3	The amount of time the resource is unreachable	Unreachable	Minutes	N	N	N	Y	MODEL1
4	The amount of time the resource is unmanaged	Unmanaged	Minutes	N	N	N	Y	MODEL1
5	The number of transitions the resource has encountered	Number of Transitions	Quantity	N	N	N	Y	MODEL1

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