IBM Tivoli Monitoring for Tivoli Network Manager IP Edition
Version 3.9

User Guide

SC27-2770-04

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Note
Before using this information and the product it supports, read the information in Appendix C, "Notices," on page 103.

This edition applies to version 3.9 of IBM Tivoli Monitoring for Tivoli Network Manager IP Edition (5724-S45) and to all subsequent releases and modifications until otherwise indicated in new editions.

Contents

Tables v

About this guide vii
Intended audience for this guide vii
What this guide contains vii
Publications viii
Prerequisite publications viii
Related publications viii
Accessing terminology online viii
Accessing publications online ix
Ordering publications ix
Accessibility ix
Tivoli technical training x
Support information x
Conventions used in this guide x
Typeface conventions x
Operating system-dependent variables and paths xi

Chapter 1. Overview of IBM Tivoli Monitoring for Tivoli Network Manager IP Edition 1
IBM Tivoli Monitoring overview 1
Features of the IBM Tivoli Monitoring for Tivoli Network Manager IP Edition 1
IBM Tivoli Monitoring for Tivoli Network Manager IP Edition functions 1
Components of IBM Tivoli Monitoring for Network Manager 2
User interface options 2

Chapter 2. Installing and configuring the monitoring agent 5
Planning for deployment 5
Requirements for the monitoring agent 5
Architecture overview 6
Applying application support on the IBM Tivoli Monitoring servers 9
Applying application support on UNIX operating systems 9
Applying application support on Windows operating systems 10
Installing the monitoring agent 11
Installing the agent on a local Network Manager server (UNIX) 12
Installing the agent on a local Network Manager server (Windows) 14
Installing the agent on a remote machine . . . 15
Starting the monitoring agent 16
Starting the monitoring agent on UNIX operating systems 16
Starting the monitoring agent on Windows operating systems 16
Configuring pruning and summarization for the Tivoli Data Warehouse 17
Configure Tivoli Data Warehouse (Oracle) . . . 17
Configure Tivoli Data Warehouse (DB2) 17
Configuring Network Manager to use Tivoli Data Warehouse 18
Configure History Collection for Network Manager 18
Configure Network Manager Performance Reports to use Tivoli Data Warehouse 19
Configure Network Manager MIB Grapher to use Tivoli Data Warehouse 20
Reconfiguring monitoring agent connection details 20

Chapter 3. Workspaces reference . . . 21
About workspaces 21
More information about workspaces 21
Predefined workspaces 21
IBM Tivoli Monitoring for Tivoli Network Manager IP Navigator item 22
Availability Navigator item 22
Discovery Navigator item 23
Monitoring Navigator item 23
Network Navigator item 23

Chapter 4. Attributes reference 25
About attributes 25
More information about attributes 25
Attribute groups and attributes for the IBM Tivoli Monitoring for Tivoli Network Manager IP Edition . 25
Agent Status attribute group 26
Availability attribute group 27
Current Discovery attribute group 31
Devices Being Polled attribute group 32
Devices With SNMP Access attribute group . . . 33
Entities On Model DB attribute group 34
Interfaces Up and Down attribute group 35
Last Discovery attribute group 36
MIB Objects Retrieved attribute group 38
Network Elements attribute group 39
Objects Discovered attribute group 42
Packets Sent And Processed By Poller attribute group 43
Performance Object Status attribute group 44
Poll Data Collection attribute group 47
Polling Capacity attribute group 52
SNMP Errors And Timeouts attribute group . . . 52
Work Item Queue attribute group 53
Disk capacity planning for historical data 54

Chapter 5. Situations reference 57
About situations 57
More information about situations 57
Predefined situations 58
IBM Tivoli Monitoring for Tivoli Network Manager IP Edition Navigator item 59
Availability Navigator item 59

KNP_Process_Data_Unavailable situation . . . 59
KNP_Process_CPU_High situation. 59
KNP_Process_CPU_Critical situation 60
KNP_NCP_STORE_Process_Down situation . . 61
KNP_NCP_MODEL_Process_Down situation . . 61
KNP_NCP_F_AMOS_Process_Down situation . . 62
KNP_NCP_D_HELPSRV_Process_Down situation 62
KNP_NCP_CONFIG_Process_Down situation . . 63
KNP_NCP_POLLER_Process_Down situation . . 63
KNP_NCPMONITOR_Process_Down situation 64
KNP_NCP_NCOGATE_Process_Down situation 65
KNP_NCP_WEBTOOL_Process_Down situation 65
KNP_NCP_G_EVENT_Process_Down situation 66
KNP_NCP_VIRTUAL_Process_Down situation 66
Discovery Navigator item 67
Monitoring Navigator item 67
KNP_Work_Item_Queue_Warning situation. . . 67
KNP_Polling_Capacitiy_Warning situation . . . 68
KNP_Polling_Capacitiy_Critical situation . . . 68
Network Navigator item 69
KNP_Total_Entities_Warning situation 69
KNP_Total_Entities_Critical situation 69

Chapter 6. Take Action commands reference 71
About Take Action commands 71
More information about Take Action commands . . 71
Predefined Take Action commands 71

Chapter 7. Policies reference 73
About policies 73
More information about policies 73
Predefined policies 73

Chapter 8. Troubleshooting 75
Gathering product information for IBM Software Support 75
Built-in troubleshooting features 75
Problem classification 76
Trace logging 76
Overview of log file management 76
Principal trace log files 77
Setting RAS trace parameters 79
Problems and workarounds 81
Installation and configuration troubleshooting . . 82
Remote deployment troubleshooting 84
Agent troubleshooting 85
Workspace troubleshooting 86
Situation troubleshooting 87
Take Action commands troubleshooting 90
Support for problem solving. 90
Using IBM Support Assistant 91
Obtaining fixes 91
Receiving weekly support updates 91
Contacting IBM Software Support 92

Appendix A. IBM Tivoli Enterprise Console event mapping 95

Appendix B. Accessibility 101
Navigating the interface using the keyboard . . . 101
Magnifying what is displayed on the screen . . . 101

Appendix C. Notices 103
Trademarks 104

Index 107

Tables

1. Capacity planning for historical data logged by IBM Tivoli Monitoring for Tivoli Network Manager IP Edition 55
2. Information to gather before contacting IBM Software Support 75
3. Trace log files for troubleshooting agents 77
4. Problems and solutions for installation and configuration 82
5. General problems and solutions for uninstallation 83
6. Remote deployment problems and solutions 85
7. Agent problems and solutions 85
8. Workspace problems and solutions. 86
9. General situation problems and solutions 88
10. Problems with configuring situations that you solve in the Situation Editor 88
11. Problems with configuration of situations that you solve in the Workspace area 90
12. Take Action commands problems and solutions 90

About this guide

The *IBM Tivoli Monitoring for Tivoli Network Manager IP User's Guide* provides information about installing and using the IBM Tivoli Monitoring for Tivoli Network Manager IP Edition.

Use the configuration chapter in this guide along with the *IBM Tivoli Monitoring Installation and Setup Guide* to install and set up the software.

Use the information in this guide along with the *IBM Tivoli Monitoring User's Guide* to monitor IBM Tivoli Network Manager IP Edition.

Intended audience for this guide

This guide is for system administrators who install and use the IBM Tivoli Monitoring for Tivoli Network Manager IP Edition to monitor and manage IBM Tivoli Network Manager IP Edition resources.

Readers should be familiar with the following topics:

- Tivoli Enterprise Portal interface
- IBM® Tivoli® Monitoring application software
- IBM Tivoli Enterprise Console® (optional)
- IBM Tivoli Network Manager IP Edition environments

What this guide contains

This guide contains the following chapters:

- Chapter 1, "Overview of IBM Tivoli Monitoring for Tivoli Network Manager IP Edition," on page 1

  Provides an introduction to the IBM Tivoli Monitoring for Tivoli Network Manager IP Edition.
- Chapter 2, "Installing and configuring the monitoring agent," on page 5

  Provides information about the requirements for the IBM Tivoli Monitoring for Tivoli Network Manager IP Edition.
- Chapter 3, "Workspaces reference," on page 21

  Provides an overview of workspaces, references to additional information about workspaces, and descriptions of predefined workspaces in this monitoring agent.
- Chapter 4, "Attributes reference," on page 25

  Provides an overview of attributes, references to additional information about attributes, descriptions of the attribute groups and attributes in this monitoring agent, and disk space requirements for historical data.
- Chapter 5, "Situations reference," on page 57

  Provides an overview of situations, references to additional information about situations, and descriptions of the predefined situations in this monitoring agent.
- Chapter 6, "Take Action commands reference," on page 71

  Provides detailed information about the Take Action commands, references to additional information about Take Action commands, and descriptions of the Take Action commands provided in this monitoring agent.

- Chapter 7, “Policies reference,” on page 73

  Provides an overview of policies, references for detailed information about policies, and descriptions of the predefined policies included in this monitoring agent.
- Chapter 8, “Troubleshooting,” on page 75

  Provides information about troubleshooting the various components of the IBM Tivoli Monitoring for Tivoli Network Manager IP Edition, information about log files, and information about your options for obtaining software support.
- Appendix A, “IBM Tivoli Enterprise Console event mapping,” on page 95

  Provides an overview of the IBM Tivoli Enterprise Console event mapping information for this monitoring agent.
- Appendix B, “Accessibility,” on page 101

  Provides information about the accessibility features in the IBM Tivoli Monitoring for Tivoli Network Manager IP Edition.
- Appendix C, “Notices,” on page 103

  Provides IBM and Tivoli notices and trademark information as it applies to the IBM Tivoli Monitoring for Tivoli Network Manager IP Edition.

Publications

This section lists publications relevant to the use of the IBM Tivoli Monitoring for Tivoli Network Manager IP Edition. It also describes how to access Tivoli publications online and how to order Tivoli publications.

Prerequisite publications

To use the information in this guide effectively, you must have some knowledge of IBM Tivoli Monitoring products, which you can obtain from the following books:

- *IBM Tivoli Monitoring Administrator's Guide*
- *IBM Tivoli Monitoring Installation and Setup Guide*
- *IBM Tivoli Monitoring Problem Determination Guide*
- *IBM Tivoli Monitoring User's Guide*
- *IBM Tivoli Monitoring Readme First*

Related publications

The following documents also provide useful information:

- *IBM Tivoli Enterprise Console Adapters Guide*
- *IBM Tivoli Enterprise Console Event Integration Facility User's Guide*
- *IBM Tivoli Enterprise Console Reference Manual*
- *IBM Tivoli Enterprise Console Rule Developer's Guide*

Accessing terminology online

The *Tivoli Software Glossary* includes definitions for many of the technical terms related to Tivoli software. The *Tivoli Software Glossary* is available at the following Tivoli software library Web site:

http://publib.boulder.ibm.com/tividd/glossary/tivoliglossarymst.htm

The IBM Terminology Web site consolidates the terminology from IBM product libraries in one convenient location. You can access the Terminology Web site at the following Web address:

http://www.ibm.com/ibm/terminology

Accessing publications online

The documentation CD contains the publications that are in the product library. The format of the publications is PDF, HTML, or both. Refer to the readme file on the CD for instructions on how to access the documentation.

IBM posts publications for this and all other Tivoli products, as they become available and whenever they are updated, to the Tivoli software information center Web site. Access the Tivoli software information center by first going to the Tivoli software library at the following Web address:

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

In the Tivoli Information Center window, click **Tivoli product manuals**. Click the letter that matches the first letter of your product name to access your product library. For example, click **M** to access the IBM Tivoli Monitoring library.

Note: If you print PDF documents on other than letter-sized paper, set the option in the **File → Print** window that allows Adobe Reader to print letter-sized pages on your local paper.

Ordering publications

You can order many Tivoli publications online at http://www.elink.ibmlink.ibm.com/public/applications/publications/cgibin/pbi.cgi

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

- In the United States: 800-879-2755
- In Canada: 800-426-4968

In other countries, contact your software account representative to order Tivoli publications. To locate the telephone number of your local representative, perform the following steps:

1. Go to http://www.elink.ibmlink.ibm.com/public/applications/publications/cgibin/pbi.cgi.
2. Select your country from the list and click **Go**.
3. Click **About this site** in the main panel to see an information page that includes the telephone number of your local representative.

Accessibility

Accessibility features help users with a physical disability, such as restricted mobility or limited vision, to use software products successfully. With this product, you can use assistive technologies to hear and navigate the interface. You can also use the keyboard instead of the mouse to operate most features of the graphical user interface.

For additional information, see Appendix B, “Accessibility,” on page 101.

Tivoli technical training

For Tivoli technical training information, refer to the following IBM Tivoli Education Web site:

http://www.ibm.com/software/tivoli/education/

Support information

"Support for problem solving" on page 90 describes the following options for obtaining support for IBM products:

- "Using IBM Support Assistant" on page 91
- "Obtaining fixes" on page 91
- "Receiving weekly support updates" on page 91
- "Contacting IBM Software Support" on page 92

Conventions used in this guide

This guide uses several conventions for special terms and actions, and operating system-dependent commands and paths.

Typeface conventions

This guide uses the following typeface conventions:

Bold

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

Italic

- Citations (examples: titles of books, diskettes, and CDs
- Words defined in text (example: a nonswitched line is called a *point-to-point line*)
- Emphasis of words and letters (words as words example: "Use the word *that* to introduce a restrictive clause."; letters as letters example: "The LUN address must start with the letter *L*.")
- New terms in text (except in a definition list): a *view* is a frame in a workspace that contains data.
- Variables and values you must provide: ... where *myname* represents....

`Monospace`

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

Operating system-dependent variables and paths

The direction of the slash for directory paths might vary in this documentation. No matter which type of slash you see in the documentation, use the following guidelines for a slash:

- If using UNIX, use a forward slash (*/*).
- If using Windows, use a backslash (\).

The names of environment variables are not always the same in Windows and UNIX. For example, %TEMP% in Windows is equivalent to $TEMP in UNIX.

For environment variables, use the following guidelines:

- If using UNIX, use **$***variable*.
- If using Windows, use **%***variable***%**.

Note: If you are using the bash shell on a Windows system, you can use the UNIX conventions.

Chapter 1. Overview of IBM Tivoli Monitoring for Tivoli Network Manager IP Edition

This guide provides information about IBM Tivoli Monitoring for Tivoli Network Manager IP Edition. IBM Tivoli Monitoring for Tivoli Network Manager IP Edition enables IBM Tivoli Network Manager IP Edition Health views, Launch in context for Tivoli Enterprise Portal, and Tivoli Data Warehouse for storing IBM Tivoli Network Manager IP Edition historical performance data.

IBM Tivoli Monitoring overview

IBM Tivoli Monitoring is the base software for IBM Tivoli Monitoring for Tivoli Network Manager IP Edition. IBM Tivoli Monitoring provides a way to monitor the availability and performance of all the systems in your enterprise from one or several designated workstations. It also provides useful historical data that you can use to track trends and to troubleshoot system problems.

The Tivoli Enterprise Portal is the interface for IBM Tivoli Monitoring products. By providing a consolidated view of your environment, the Tivoli Enterprise Portal permits you to monitor and resolve performance issues throughout the enterprise.

See the IBM Tivoli Monitoring publications listed in "Prerequisite publications" on page viii for complete information about IBM Tivoli Monitoring and the Tivoli Enterprise Portal.

Features of the IBM Tivoli Monitoring for Tivoli Network Manager IP Edition

The IBM Tivoli Monitoring for Tivoli Network Manager IP Edition software can identify, notify you of, and correct common problems with the application that it monitors. The software includes the following features:

- Monitoring
- Data gathering
- Event management

IBM Tivoli Monitoring for Tivoli Network Manager IP Edition functions

The IBM Tivoli Monitoring for Tivoli Network Manager IP Edition provides the following functions:

Monitoring IBM Tivoli Network Manager IP Edition
: Monitor IBM Tivoli Network Manager IP Edition (Network Manager) for alerts on the systems that you are managing by using predefined situations or custom situations.

Performance thresholds
: Establish your own performance thresholds.

Trace data collection
: Trace the causes leading to an alert.

Comprehensive data collection
: Gather comprehensive data about system conditions.

Policy enforcement
Use policies to perform actions, schedule work, and automate manual tasks.

Components of IBM Tivoli Monitoring for Network Manager

After you install and set up IBM Tivoli Monitoring for Tivoli Network Manager IP Edition, your environment contains the following components:

- Tivoli Enterprise Portal client has a Java™-based user interface and is used to view and monitor your enterprise.
- Tivoli Enterprise Portal Server is located between the client and the Tivoli Enterprise Monitoring Server and enables retrieval, manipulation, and analysis of data from the monitoring agents. The Tivoli Enterprise Portal Server is the central repository for all user data.
- Tivoli Enterprise Monitoring Server acts as a collection and control point for alerts received from the monitoring agents, and collects their performance and availability data. The Tivoli Enterprise Monitoring Server is also a repository for historical data.
- Tivoli Enterprise Monitoring Agent, IBM Tivoli Monitoring for Tivoli Network Manager IP Edition, serves two purposes. The agent collects data from Network Manager for IBM Tivoli Monitoring. IBM Tivoli Monitoring uses this data to monitor the availability and performance of network processes and to summarize the state of the network. See the Workspace reference in this guide for information about supported workspaces. The agent can also store Simple Network Management Protocol (SNMP) and Internet Control Message Protocol (ICMP) polled data in the Tivoli Data Warehouse instead of storing data on the local Network Manager database. Storing polled data in the Tivoli Data Warehouse allows you to leverage the capabilities of the warehouse and use the stored data for further analysis.
- Tivoli Data Warehouse is a central warehouse that stores data for various Tivoli products and monitoring agents. Data stored in the warehouse can be summarized and displayed in charts and reports. The Tivoli Data Warehouse includes the Data Warehouse Proxy agent, used for data input, and the Summarization and Pruning agent, used for maintaining data in the warehouse in accordance with user policies.

User interface options

Installation of the base software and other integrated applications provides the following interfaces that you can use to work with your resources and data:

Tivoli Enterprise Portal browser client interface
The browser client interface is automatically installed with the Tivoli Enterprise Portal Server. To start the Tivoli Enterprise Portal browser client in your Internet browser, enter the URL for a specific Tivoli Enterprise Portal browser client installed on your Web server.

Tivoli Enterprise Portal desktop client interface
The desktop client interface is a Java-based graphical user interface (GUI) on a Windows or Linux workstation.

IBM Tivoli Enterprise Console
Event management application

Manage Tivoli Enterprise Monitoring Services window

The window for the Manage Tivoli Enterprise Monitoring Services utility is used for configuring the agent and starting Tivoli services not already designated to start automatically.

Chapter 2. Installing and configuring the monitoring agent

This chapter describes how to install and configure IBM Tivoli Monitoring for Tivoli Network Manager IP Edition on a local server.

After you have installed and configured IBM Tivoli Monitoring for Tivoli Network Manager IP Edition, you can enable the Health views, launch in context from Tivoli Enterprise Portal, and use the Tivoli Data Warehouse to store Network Manager historical performance data.

To install and set up the monitoring agent, complete the following steps in order:

1. Familiarize yourself with the requirements for the IBM Tivoli Monitoring for Tivoli Network Manager IP Edition agent and with the way that the components and products work together. Use the information in the section "Planning for deployment" in this chapter.
2. Install and configure a compatible version of IBM Tivoli Monitoring. Use the procedures in the *Installation Guide* or *Installation and Setup Guide* (depending on the version of IBM Tivoli Monitoring), available from the IBM Tivoli Monitoring information center at http://publib.boulder.ibm.com/infocenter/tivihelp/v15r1/index.jsp.
3. Apply application support on the servers where IBM Tivoli Monitoring is installed. Use the procedures described in the section "Applying application support on the IBM Tivoli Monitoring servers" on page 9 in this chapter.
4. Install the IBM Tivoli Monitoring for Tivoli Network Manager IP Edition agent. Use the procedures described in the section "Installing the monitoring agent" on page 11 in this chapter.
5. Start the IBM Tivoli Monitoring for Tivoli Network Manager IP Edition agent. Use the procedures described in the section "Starting the monitoring agent" on page 16 in this chapter.
6. Configure different components of Network Manager to use Tivoli Data Warehouse. Use the procedures described in the section "Configuring Network Manager to use Tivoli Data Warehouse" on page 18 in this chapter.

Planning for deployment

This section provides information about planning the installation and configuration of the monitoring agent.

Requirements for the monitoring agent

In addition to the requirements described in the IBM Tivoli Monitoring installation documentation, IBM Tivoli Monitoring for Tivoli Network Manager IP Edition has the following requirements:

Supported operating systems

- The monitoring agent runs on these operating systems:
  - AIX® 7.1
  - AIX 6.1 (32/64 bit)
  - AIX 5.3 (32/64 bit)
  - Solaris V9 (SPARC) (32/64 bit)

  - Solaris V10 (SPARC) (64 bit)
  - Windows 2008 R2
  - Windows 2008 Server
  - Red Hat Enterprise and Desktop Linux 4 for Intel
  - Red Hat Enterprise and Desktop Linux 5 for Intel
  - SUSE Linux Enterprise Server 9 on Intel
  - SUSE Linux Enterprise Server 10 for Intel

  If you are running this monitoring agent on a Windows operating system, then the user ID must have Windows administrator privileges.

  Note: For the most current information about supported operating systems, see http://publib.boulder.ibm.com/infocenter/prodguid/v1r0/clarity/index.html.
- This agent monitors the following product versions:
  - IBM Tivoli Network Manager IP Edition version 3.9
- A single computer that hosts the hub monitoring server, portal server, and a monitoring agent requires approximately 300 MB of space. A computer that hosts only the monitoring agent requires approximately 30 MB of space, including the specific enablement code for the monitoring agent. More space is required for each additional monitoring agent that you deploy on the monitoring computer.
- Install the following prerequisite software:
  - IBM Tivoli Monitoring V6.2.1, V6.2.2, or V6.2.3
  - Tivoli Enterprise Portal V6.2.1, V6.2.2, or V6.2.3

Requirements for searching the online help

To use the search function for the online help for this monitoring agent, ensure that you have selected the IBM Eclipse help server check box when installing the Tivoli Enterprise Portal Server. The 'Searching Agent Help' topic in the online help for this monitoring agent contains a link to the Eclipse help, where the search function is enabled. From the Table of Contents in the left-hand pane of the help, select the 'Searching Agent Help' topic to find the link to the Eclipse help in the right-hand pane.

Architecture overview

This information explains how the monitoring agent interacts with IBM Tivoli Monitoring and Network Manager.

You install and configure the monitoring agent on the Network Manager server that contains the discovery and monitoring components. The discovery and monitoring components are the Network Manager core components.

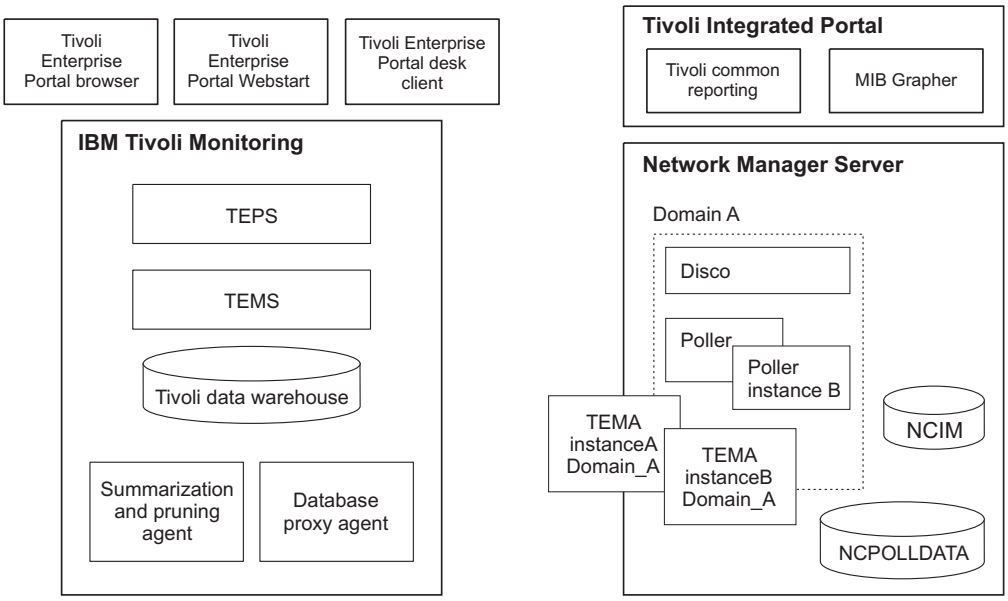
You install the application support on the following IBM Tivoli Monitoring components, which store and analyze data received from the agent:

- Tivoli Enterprise Monitoring Server (TEMS)
- Tivoli Enterprise Portal Server (TEPS)
- Tivoli Enterprise Portal Desktop Client (TEPD)
- Tivoli Enterprise Portal browser (applies to UNIX version of the browser)

Each of the IBM Tivoli Monitoring and Network Manager components might be installed on different machines with different operating systems. You must select the appropriate agent installer for the operating system.

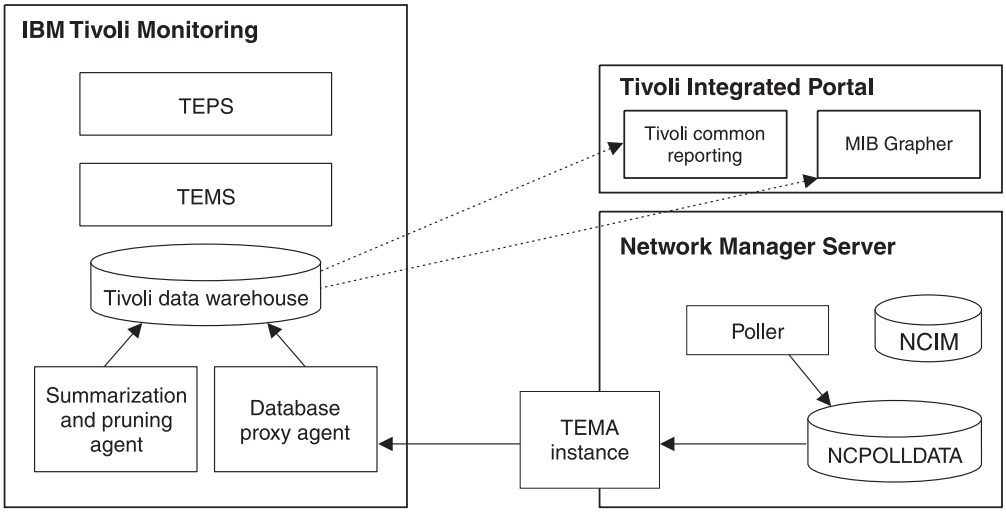
You only install the agent once, but you might need to configure multiple instances of the agent. You must configure an instance of the agent for each Network Manager domain. Also, if multiple pollers for Network Manager monitoring are set up within a domain, then you must configure a separate instance for each poller in the domain.

Figure 1 shows two poller instances in DOMAIN_A. Two Tivoli Enterprise Monitoring Agent (TEMA) instances are instantiated with instanceA attached to poller A and instanceB attached to poller B. The NCIM and NCPOLLDATA databases might or might not be installed on the same system as the agent.



Each agent instance communicates with the Tivoli Enterprise Monitoring Server which handles agent communication with the Warehouse Proxy transparently. The Tivoli Enterprise Portal Server handles the health workspaces for the various clients. The Tivoli Enterprise Portal Desktop and Tivoli Enterprise Portal browser (applies to UNIX version of the browser) are thin clients that must be updated with information about the agent workspaces.

Figure 2 shows the data flow of polling data to Tivoli Data Warehouse. The diagram shows the components that must be configured if you want to store Network Manager polled data in Tivoli Data Warehouse.



Each poller instance continues to populate the local NCPOLLDATA database. The agent instance periodically exports the data from the NCPOLLDATA database at a specified time interval. You specify a value for this time interval, called Collection Interval, in the History Configuration window when you configure the agent. The agent deletes the data that was exported from the NCPOLLDATA database before forwarding this data to the Database Warehouse Proxy agent. The Database Warehouse Proxy agent imports the data to the warehouse at a specified time interval. You specify a value for this time interval, called Warehouse Interval, in the History Configuration window when you configure the agent. Set the upload interval to 15 minutes.

Because large amounts of data are sent to the Warehouse, you must balance the frequency of transactions against the currency of the data for readers. If transactions are infrequent, then performance is improved. Contact the administrator for your IBM Tivoli Monitoring database warehouse if you want to set a frequency less than one hour.

Data collected from Network Manager is read by two Tivoli Integrated Portal applications. For information about the data collected from Network Manager, see the "Attributes reference" chapter in this guide.

You must configure the Tivoli Common Reporting Performance reports to access the Tivoli Data Warehouse instead of the local NCPOLLDATA database. Because Performance reports access the Tivoli Data Warehouse database directly, you must configure the datasource connection. To configure the datasource connection, you need the specific database vendor connection details. For information about database vendor connection details, see “Configure Network Manager Performance Reports to use Tivoli Data Warehouse” on page 19.

The Management Information Base (MIB) Grapher can also access the Warehouse to collect historical data. Historical data is different from real time data, which is polled and displayed but not stored. For information about MIB Grapher datasource configuration, see “Configuring Network Manager to use Tivoli Data Warehouse” on page 18.

Applying application support on the IBM Tivoli Monitoring servers

The procedure for applying application support on local systems differs depending on the platform. For information about configuring application support on non-local monitoring servers, see the *IBM Tivoli Monitoring Installation and Setup Guide*.

Applying application support involves stopping and restarting IBM Tivoli Monitoring components. Work with your IBM Tivoli Monitoring administrator to choose an appropriate time to do this.

Applying application support on UNIX operating systems

To apply the application support for IBM Tivoli Monitoring components on UNIX systems, complete these steps on the server where IBM Tivoli Monitoring is installed.

1. Using the Network Manager installation media, start the Launchpad and select **Post Installation** and click **Install Monitoring Agent > Start ITM Agent Installation**.
2. If you are unable to start the Launchpad, for example if the installation media does not include the Launchpad, start the installation wizard using the install.sh script in the ITMAgent directory.
3. The installation finds the IBM Tivoli Monitoring installation directory and displays it. By default, the location is /opt/IBM/ITM, but it might be different if IBM Tivoli Monitoring was installed in a different location. Accept the suggested install directory.
4. Confirm that it is ok to restart existing processes.
5. Select **Install products to the local host**.
6. Accept the default key, **IBMTivoliMonitoringEncryptionKey**, unless you use a different key for each product.
7. Accept the licensing agreement.
8. Specify an application support package to install. This list varies depending on your operating system and on which IBM Tivoli Monitoring components are installed. For example, the following packages might be displayed:
   - IBM Tivoli Monitoring components for this operating system
   - Tivoli Enterprise Portal Browser Client support
   - Tivoli Enterprise Portal Desktop Client support
   - Tivoli Enterprise Portal Server support
   - Tivoli Enterprise Monitoring Server support

   Install all of these support packages. If some components are installed on another server, repeat this whole procedure (from step 1 through to the last step) on that server.
9. If the Tivoli Enterprise Portal Server, Tivoli Enterprise Monitoring Server, Tivoli Enterprise Portal Desktop, and Tivoli Enterprise Portal Browser are all installed on the same machine, configure the agent support for all these applications using a script:

   CAUTION:
   Only use this option if all components are installed on the same server.

   a. Change to the ITMagent directory on the Network Manager installation media.
   b. If you are not using the default /opt/IBM/ITM location, set *CANDLE_HOME* to the ITM installation directory.

c. Run the `setupITNMAgentSupport.sh` script.

10. If some of the IBM Tivoli Monitoring components are installed on different servers, complete the following steps on the appropriate servers:
    - On the server where the **Tivoli Enterprise Monitoring Server**, is installed, run the following commands from the $*ITMHOME*/bin directory, where *ITMHOME* is the directory where IBM Tivoli Monitoring is installed:
      a. If it is not already started, start the monitoring server. *tems_name* is the name of the monitoring server. You can find out the name of the monitoring server by looking for the value `TEMS Name` in the monitoring server configuration screen.
         ```
         ./itmcmd server start tems_name
         ```
      b. Activate application support on the monitoring server. *np* is the product code for the Network Manager agent.
         ```
         ./itmcmd support -f install -t tems_name np
         ```
      c. Stop the monitoring server.
         ```
         ./itmcmd server stop tems_name
         ```
      d. Restart the monitoring server.
         ```
         ./itmcmd server start tems_name
         ```
    - On the server where the **Tivoli Enterprise Portal Server** is installed, run these commands from the $*ITMHOME*/bin directory, where *ITMHOME* is the directory where IBM Tivoli Monitoring is installed.
      a. Stop the portal server
         ```
         ./itmcmd agent stop cq
         ```
      b. Configure the portal server with the new agent information
         ```
         ./itmcmd config -A cq
         ```
      c. Restart the portal server
         ```
         ./itmcmd agent start cq
         ```
    - On the server where the **Tivoli Enterprise Portal Desktop** is installed, run these commands from the $*ITMHOME*/bin directory, where *ITMHOME* is the directory where the desktop client is installed.
      a. Stop the desktop client
         ```
         ./itmcmd agent stop cj
         ```
      b. Configure the desktop client with the new agent information
         ```
         ./itmcmd config -A cj
         ```
      c. Restart the desktop client
         ```
         ./itmcmd agent start cj
         ```
      You must restart any Web Start Tivoli Enterprise Portal clients to view the new agent workspaces.

Applying application support on Windows operating systems

To apply application support, first install the correct JRE, and then install application support.

Installing the correct JRE (Windows)

ITM requires the IBM SDK policy files.

To install theJRE files, complete the following steps:

1. Run *%ITMHOME%*\InstallITM\CandleGetJavaHome.bat to determine which JRE ITM is using. Make a note of the version.

2. Go to the following web page: http://www.ibm.com/developerworks/java/jdk/security/50/
3. Click the IBM SDK Policy files link under the Java Cryptography Extension (JCE) section.
4. Sign in with your IBM ID.
5. Choose the correct version of the policy files according to the version of the JRE.
6. Download the package.
7. Unzip the policy package and copy the .jar files to the <IBM_JRE>/jre/lib/security directory.

Installing application support

Complete these steps to install the application support for IBM Tivoli Monitoring servers on Windows systems.

1. From the Launchpad, select **Post Installation** and click **Start ITM Agent Installation**.
2. Accept the recommendation for the JRE version.
3. The installation finds the IBM Tivoli Monitoring installation directory and displays it. By default, the location is /opt/IBM/ITM, but it might be different if IBM Tivoli Monitoring was installed in a different location. Accept the suggested install directory.
4. If you do not have a product custom key, accept the default key, **IBMTivoliMonitoringEncryptionKey**.
5. Select one or more of these options.

   Note: These options are only available on servers where the components are installed.

   - Tivoli Enterprise Monitoring Server - TEMS
   - Tivoli Enterprise Portal Server - TEPS
   - Tivoli Enterprise Portal Desktop Client - TEPD
6. Select **IBM Tivoli Network Manager** for each option you selected. If the framework is not installed on your system, also select **TEMA Agent Framework** for each option you selected.

Installing the monitoring agent

This section provides information for installing the agent on the Network Manager server and the application support on the Tivoli Enterprise Portal Server, Tivoli Enterprise Monitoring Server, and Tivoli Enterprise Portal Desktop. If the Tivoli Enterprise Portal Browser is installed on a UNIX system, then you must install the application support on the same system.

You can install the monitoring agent locally on each server or remotely from the IBM Tivoli Monitoring depot.

You can configure the agent in multiple ways after installation. To configure the agent on UNIX systems, you can use one of the following methods: the command line tool, itmcmd config; the Manage Tivoli Monitoring Services user interface; or the Tivoli Enterprise Portal. Information for configuring the agent from the command line is provided in this guide.

On Windows systems, you can configure the agent from the Windows user interface installer using the Manage Tivoli Monitoring Services user interface.

Select the appropriate agent installation package for your operating system.

Installing the agent on a local Network Manager server (UNIX)

Complete these steps to install and configure the monitoring agent on the Network Manager server.

1. From the Launchpad, select **Post Installation**, select **Install the Monitoring Agent**, and click **Start ITM Agent Installation**.
2. If you are unable to start the Launchpad, for example if the installation media does not include the Launchpad, start the installation wizard using the install.sh script in the ITMAgent directory.
3. The installation finds the IBM Tivoli Monitoring installation directory and displays it. By default, the location is /opt/IBM/ITM, but it might be different if IBM Tivoli Monitoring was installed in a different location. Accept the suggested install directory.
4. Select **Install products to the local host**.
5. Accept the licensing agreement.
6. Accept the default key, **IBMTivoliMonitoringEncryptionKey** , unless you use a different key for each product.
7. For a non-root installation, specify a root password to configure an automatic restart of the agent.
8. Specify an operating system or an application support package to install. This list varies depending on your operating system and on whether any IBM Tivoli Monitoring components are installed. Accept the default or choose your operating system from the list.
9. Select **All of the above** from the options, which are listed below.
   - **IBM Tivoli Network Manager**
   - **Tivoli Enterprise Services User Interface**
   - **All of the above**
10. When asked for additional products, choose **No** to exit the installation.

Configuring the agent

To perform post-installation configuration on the agent, complete the following steps:

1. If you want to instantiate multiple agents, ensure that the pollers with which you want to associate the agents are all created and running. Use the itnm_status command to verify that the pollers are running and note the names of the pollers.
2. Issue the following command to instantiate an instance of the agent.

   `$ITMHOME/bin/itmcmd config -A np`

   where *ITMHOME* is the installation path provided for the agent in step 3 of the installation.

   To instantiate multiple instances of the agent, repeat this command using different poller names.
3. Choose a name for each monitoring agent and enter the name in the **Instance name** field. In a distributed monitoring environment, define a new agent instance for each Network Manager domain or each Network Manager poller.

The instance name can be any unique meaningful name. For example, the instance name of each agent could include the name of the poller with which it is associated.

Note: If you use multiple pollers, and you want to monitor the pollers individually using the Availability workspace, you must define a unique name for the pollers by editing the knp.ref file. For more information on how to edit the knp.ref file to name the pollers, see the following technote: http://www-01.ibm.com/support/docview.wss?uid=swg21600387

4. Specify a value for **NCHOME Path**. The default is /opt/IBM/tivoli/netcool.
5. Specify a value for **Network Manager domain name**. The default is NCOMS.
6. Specify a value for **Network Manager poller name**. If you leave this field blank, the agent is mapped to the default poller.

   In a distributed polling environment, you must specify a value. This field is empty if you are not using distributed polling.
7. Specify a value for **Password for Network Manager NCPOLLDATA database**.

   The password needed to access the NCPOLLDATA database is defined in the DbLogins.cfg file and may be encrypted. By default, this is the same password entered when installing Network Manager or when running the following script to create the database: `$NCHOME/precision/scripts/<` *`database_name`*`>/create_`*`database_name`*`_database.sql`. You must specify a value for this field when using the Tivoli Data Warehouse as a repository for Network Manager polled data. All subsequent data is stored in the Tivoli Data Warehouse.
8. Specify a username for **Network Manager OQL database** By default, the username is admin.
9. Specify a username for **Password for Network Manager OQL database**. This password is empty by default.
10. Specify a value for **Refresh interval (in minutes)**. The default value is 10.

    This number specifies the maximum amount of time, in minutes, before data is cached. If you specify a value of zero, then a database query is done each time data is requested. Otherwise, a database query is done at the specified time interval. Specifying a low number impacts performance for the Network Manager server because some queries require a significant amount of processing time.
11. Specify a value for **Rows to migrate from NCPOLLDATA Database to Tivoli Data Warehouse**.

    This value allows you to control how much historical data, if any, is migrated to the Tivoli Data Warehouse upon first startup. The default value is 0.
12. Select **Yes** to connect the agent to a Tivoli Enterprise Monitoring Server.
13. Specify the DNS name for Tivoli Enterprise Monitoring Server when you are prompted for the **Tivoli Enterprise Monitoring Server Host Name**.

    Note: Do not specify the name of the Tivoli Enterprise Monitoring Server. Specify the DNS name.
14. Unless your IBM Tivoli Monitoring administrator gives you different settings, accept the defaults for these options.
    - For **Network Protocol** (The default is ip.pipe.)
    - Choose the next protocol from these options.
      - sna
      - ip.spipe

- 0 for none
- Network Protocol 2 (The default value is 0.)
- IP.PIPE Port Number (The default value is: 1918.)

- **KDC_PARTITION** (The default value is null.)
- **Configure connection for a secondary TEMS? [1=YES, 2=NO]** (The default value is 2.)
- **Optional Primary Network Name** (The default value is 0 or none.)

15. For a non-root installation only, you must complete the following extra tasks:
    a. Specify the root password to update the automatic restart scripts.
    b. As the root user, run the ITMHOME/bin/SetPerm from the directory where IBM Tivoli Monitoring is installed.
    c. As the root user, run the ITMHOME/bin/UpdateAutoRun.sh from the directory where IBM Tivoli Monitoring is installed.

    Note: If you are running the SetPerm utility on AIX 6.X or 7.X, you must select the AIX 5.X options.
16. Repeat this procedure from step 3 on page 12 to set up multiple pollers for the same agent.

Installing the agent on a local Network Manager server (Windows)

Complete these steps to install and instantiate one or more instances of the agent on the Network Manager server.

1. From the Launchpad, select **Post Installation** and click **Start ITM Agent Installation**.
2. Accept the recommended JRE version.

   Note: The agent installation process fails if an unsupported JRE version is already defined in the Windows registry when attempting to install the agent. If this occurs, remove the existing JRE from the server, and run the agent installation again.
3. Accept the licensing agreement.
4. The installation finds the IBM Tivoli Monitoring installation directory and displays it. By default, the location is /opt/IBM/ITM, but it might be different if IBM Tivoli Monitoring was installed in a different location. Accept the suggested install directory.
5. If you do not have a product-wide custom key, then accept the default value (The default is IBMTivoliMonitoringEncryptionKey).
6. The following options are available on servers where these components are installed. Select one or more of the following options. For a Network Manager server without IBM Tivoli Monitoring installed, **Tivoli Enterprise Monitoring Agents - TEMA** is the only option available.
   - Tivoli Enterprise Monitoring Agents - TEMA
   - Tivoli Enterprise Monitoring Server - TEMS
   - Tivoli Enterprise Portal Server - TEPS
   - Tivoli Enterprise Portal Desktop Client - TEPD
7. Select **IBM Tivoli Network Manager** for each option you selected. If the framework is not installed on your system, also select **TEMA Agent Framework** for each option you selected.

8. Select **Configure the agent's connection to TEMS** and **Launch Manage Tivoli Monitoring Services**.
9. Double-click on **Monitoring Agent for IBM Tivoli Monitoring for Tivoli Network Manager IP**.
10. Accept the defaults for the IBM Tivoli Monitoring connection information, such as IP.PIPE settings, and ensure that the hostname or IP address for the Tivoli Enterprise Monitoring Server is correct.
11. From the Network Manager Configuration tab, specify a value for these fields.
    - **Instance name**.

      This string specifies an instance name for each monitoring agent. In a distributed monitoring environment, define a new agent instance for each Network Manager domain or each Network Manager poller.
    - **Tivoli Enterprise Monitoring Server domain name**
    - **Network Manager poller name**
    - **Password for Network Manager NCPOLLDATA database**

      The password needed to access the NCPOLLDATA database is defined in the DbLogins.cfg file and may be encrypted. By default, this is the same password entered when installing Network Manager or when running the following script to create the database: `$NCHOME/precision/scripts/<database_name>/create_database_name_database.sql`. You must specify a value for this field when using the Tivoli Data Warehouse as a repository for Network Manager polled data. All subsequent data is stored in the Tivoli Data Warehouse.
    - **Username for Network Manager OQL database**

      By default, the username is admin.
    - **Password for Network Manager OQL database**

      By default, the password is empty.
    - **Refresh interval (in minutes)**

      This number specifies the maximum amount of time, in minutes, before data is cached. If you specify a value of zero, then a database query is done each time data is requested. Otherwise, a database query is done at the specified time interval. Specifying a low number impacts performance for the Network Manager server because some queries require a significant amount of processing time.
    - **Rows to migrate from NCPOLLDATA Database to Tivoli Data Warehouse**

      This value allows you to control how much historical data, if any, is migrated to the Tivoli Data Warehouse upon first startup. The default value is 0.
12. Click **OK**.
13. Right-click on the new agent and select **Start** to run the agent.

Installing the agent on a remote machine

To install the agent remotely, complete the following steps using the instructions for your version of IBM Tivoli Monitoring:

- For IBM Tivoli Monitoring 6.2.3, see the information about *deploying monitoring agents across your environment* in the Tivoli Monitoring Installation Guide.
- For IBM Tivoli Monitoring 6.2.1 and 6.2.2, see the information about *deploying monitoring agents across your environment* in the Tivoli Monitoring Installation and Setup Guide.

For all versions, use the following configuration values when following the procedure:

TIVOLI_NETWORK_MANAGER_IP_CONFIGURATION.KNP_DOMAIN
The Network Manager domain name.

TIVOLI_NETWORK_MANAGER_IP_CONFIGURATION.KNP_MIGRATION_ROWS
The number of rows to migrate from the NCPOLLDATA Database to Tivoli Data Warehouse on first startup.

TIVOLI_NETWORK_MANAGER_IP_CONFIGURATION.KNP_PASSWORD
The password for the Network Manager OQL database.

TIVOLI_NETWORK_MANAGER_IP_CONFIGURATION.KNP_POLLER_NAME
The name of the Network Manager poller.

TIVOLI_NETWORK_MANAGER_IP_CONFIGURATION.KNP_REFRESH_INTERVAL
The maximum amount of time, in minutes, before data is cached.

INSTANCE
The instance name for the monitoring agent.

Starting the monitoring agent

Complete one of the following procedures to ensure that the monitoring agent runs correctly in your environment.

Starting the monitoring agent on UNIX operating systems

When you install the monitoring agent, the files used to start the agent when the system reboots are automatically set up. The file used to restart the agent is /etc/init.d/ITMAgents*2*. If you install another agent, the *2* is incremented; for example, the next agent installed would be ITMAgents*3*.

Run the following command to start the agent:

```
./ITMAgents2
```

Starting the monitoring agent on Windows operating systems

During the installation, the environment variables, such as *NCHOME*, are set as system variables by default. A user with administrator access to the OQL databases must start the monitoring agent. Complete the following steps to modify the startup configuration:

1. Start the Manage Tivoli Enterprise Monitoring Services application.
2. Select the IBM Tivoli Monitoring for Tivoli Network Manager IP Edition agent.
3. From the **Actions** menu, select **Change startup**.
4. In the **Log On As** field, select **This Account**.
5. Enter the user ID and password for a Windows account with Windows administrator privileges.
6. Click **OK**.
7. Start the IBM Tivoli Monitoring for Tivoli Network Manager IP Edition service.

   Note: The agent is a Windows service.

Configuring pruning and summarization for the Tivoli Data Warehouse

Configure Tivoli Data Warehouse (Oracle)

Complete these steps if you are using Tivoli Data Warehouse on an Oracle database.

1. Add the Tivoli Data Warehouse database to the $ORACLE_HOME/network/admin/tnsnames.ora file.
2. Edit the following fields:

```
TNS_service_name =
 (DESCRIPTION =
   (ADDRESS_LIST =
      (ADDRESS = (PROTOCOL = TCP)(HOST = hostname)(PORT = port))
   )
 (CONNECT_DATA =
   (SERVICE_NAME = WAREHOUS)
 )
)
```

   Where

   - *TNS_service_name* is the name of your database service name, for example, WAREHOUS.
   - *hostname* is the name of the server where Tivoli Data Warehouse is installed.
   - *port* is the port on which the database is running.

Configure Tivoli Data Warehouse (DB2)

Complete these steps if you are using Tivoli Data Warehouse on a DB2® database.

1. If you do not already have a DB2 client installed on the server where the Tivoli Integrated Portal is running, you must install one.
   a. Make a note of the host and port of the database, as well as the database name (by default, WAREHOUS), and the username and password of a user with sufficient permissions to access the database before installing the client.
   b. Install the client using the instructions for your version of DB2.
   c. Configure the client to connect to your DB2 database.
   d. If the Tivoli Integrated Portal is running Windows, restart the server before continuing.
2. Log in as the DB2 administrator on a DB2 client.
3. Optional: If you have changed the DB2 settings, or if you have reinstalled the product, you must uncatalog the database before you catalog it again. To uncatalog the database, run the following commands:

```
db2 UNCATALOG DATABASE Tivoli_Data_Warehouse_name;
db2 UNCATALOG NODE TDWNODE;
db2 TERMINATE
```

4. Required: Run the following commands to catalog the database:

```
db2 CATALOG TCPIP NODE TDWNODE REMOTE Tivoli_Data_Warehouse_server SERVER port;
db2 CATALOG DATABASE Tivoli_Data_Warehouse_name AT NODE TDWNODE;
db2 TERMINATE
```

   Where:

   - *Tivoli_Data_Warehouse_server* is the server on which the Tivoli Data Warehouse is installed.
   - *port* is the port on which the DB2 client on the Network Manager server communicates with the Tivoli Data Warehouse. The port is usually 50000.

- *Tivoli_Data_Warehouse_name* is the name of the warehouse database. The name can be displayed by running the following command: `db2 list db directory` on the DB2 server.

Note: The CATALOG commands produce a warning that a refresh is required. The TERMINATE command forces the required refresh.

Configuring Network Manager to use Tivoli Data Warehouse

This section provides information for configuring Network Manager to store polled data in the Tivoli Data Warehouse. By default, Network Manager stores polled data in the local NCPOLLDATA database. You can configure your system to store polled data in the Tivoli Data Warehouse instead.

1. "Configure History Collection for Network Manager"
2. "Configure Network Manager Performance Reports to use Tivoli Data Warehouse" on page 19
3. "Configure Network Manager MIB Grapher to use Tivoli Data Warehouse" on page 20

Configure History Collection for Network Manager

You must configure the settings for collecting historical data for Network Manager, and then enable the data collection. The instructions differ depending on which version of IBM Tivoli Monitoring you have installed.

1. Create a history collection for **IBM Tivoli Monitoring for Tivoli Network Manager IP Edition** using the instructions for your version of IBM Tivoli Monitoring:
   - For IBM Tivoli Monitoring 6.2.2 and 6.2.3, see the information about *creating a historical collection* in the Tivoli Enterprise Portal User's Guide.
   - For IBM Tivoli Monitoring 6.2.1, see the information about *configuring data collection and warehousing* in the Tivoli Monitoring User's Guide.

   For all versions, use the following additional information when editing the parameters:
   - Specify KNP_POLL_DATA_COLLECTION as the attribute group.
   - Select TEMA for the collection location. This setting improves scalability.
   - Specify a collection interval of 5 minutes, and a warehouse interval of 10 minutes.
2. Distribute and start the data collection using the instructions for your version of IBM Tivoli Monitoring:
   - For IBM Tivoli Monitoring 6.2.2 and 6.2.3, see the information about *distributing a historical collection* in the Tivoli Enterprise Portal User's Guide.
   - For IBM Tivoli Monitoring 6.2.1, see the information about *starting data collection* in the Tivoli Monitoring User's Guide.

   For all versions, use the following additional information when editing the parameters:
   - Select the history collection that you created and that is listed under the **IBM Tivoli Monitoring for Network Manager** monitored application.
   - Distribute the collections to a Managed System (Agent), rather than a Managing System (TEMS).

3. If your IBM Tivoli Monitoring administrator has not already configured the Warehouse Summarization and Pruning Agent, configure the JDBC sources and other parameters for the agent, using the instructions for your version of IBM Tivoli Monitoring:
   - For IBM Tivoli Monitoring 6.2.3, see the information about *configuring the summarization and pruning agent (JDBC connection)* in the Tivoli Monitoring Installation Guide.
   - For IBM Tivoli Monitoring 6.2.1 and 6.2.2, see the information about *configuring the summarization and pruning agent (JDBC connection)* in the Tivoli Monitoring Installation and Setup Guide.
4. Configure summarization and pruning values for the KNP POLL DATA COLLECTION attribute group, within the **IBM Tivoli Monitoring for Network Manager** monitored application, using the instructions for your version of IBM Tivoli Monitoring:
   - For IBM Tivoli Monitoring 6.2.2 and 6.2.3, see the information about *configuring summarization and pruning for attribute groups* in the Tivoli Enterprise Portal User's Guide.
   - For IBM Tivoli Monitoring 6.2.1, see the information about *configuring your data for summarization and pruning* in the Tivoli Monitoring User's Guide.

   For all versions, use the following additional information when editing the parameters:
   - In the summarization section, select the options Hourly, Daily, Weekly, and Monthly. Specify pruning values that are appropriate for your system.

Configure Network Manager Performance Reports to use Tivoli Data Warehouse

The steps to change the NCPOLLDATA data source to use Tivoli Data Warehouse are different depending whether the reports you want to use are based on the BIRT or Cognos data model. The default reports include reports that the BIRT data model as well as reports that use the Cognos data model.

1. Find and note down the connection parameters for Tivoli Data Warehouse. Complete these steps on the server where the Warehouse Summarization and Pruning agent is running:
   a. Run the Manage Tivoli Enterprise Management Services program.
   b. Right click **Warehouse Summarization and Pruning Agent**.
   c. Select **Browse settings**.

      Note: When you access the Warehouse Summarization and Pruning Agent window, **Browse Settings** is disabled until you configure the Warehouse Summarization and Pruning Agent. After the initial configuration of this agent, **Browse Settings** is enabled.
2. Determine if the reports you want to use are based on the BIRT or Cognos data models. Refer to the report descriptions in the GUI, the report reference information in the *IBM Tivoli Network Manager Administration Guide* PDF or in the information center at this URL: http://publib.boulder.ibm.com/infocenter/tivihelp/v8r1/topic/com.ibm.networkmanagerip.doc_3.9/itnm/ip/wip/ref/reference/nmip_ref_reportsperformancereports.html.
3. Note down the following information:
   - The username and password of an administrative user for the Tivoli Integrated Portal. By default, this is tipadmin.

- The username and password of an administrative user for the Tivoli Data Warehouse. By default, this is itmuser.
- The port on which the Tivoli Data Warehouse is accessible. By default, this is 50000.

4. Perform the appropriate configuration steps for the BIRT or Cognos data sources, taking into account the type of database used for the Tivoli Data Warehouse. Refer to the task *Configuring data sources for reporting* in the *IBM Tivoli Network Manager Administration Guide* PDF or in the information center at this URL: http://publib.boulder.ibm.com/infocenter/tivihelp/v8r1/topic/com.ibm.networkmanagerip.doc_3.9/itnm/ip/wip/admin/task/nmip_adm_configuringdatasourcesforreports.html

Configure Network Manager MIB Grapher to use Tivoli Data Warehouse

Complete these steps to configure the MIB Grapher to use the poll data stored in Tivoli Data Warehouse. Contact the Tivoli Data Warehouse administrator for the database parameters.

1. From the Tivoli Integrated Portal task navigation tree, select **Administration > Network > Database Access Configuration**.
2. From the Database Access Configuration window, in the Configure Historical Database Access section, specify a value in each field.
3. From the Database Server drop-down list, select the database type used by Tivoli Data Warehouse.
4. In the Database Host field, specify the server name of the Tivoli Data Warehouse.
5. In the Database Port field, specify the port number for the database.
6. In the Username and Password fields, specify the username and password for an existing read access account. Confirm the password for validation.
7. In the Database name field, specify the name of the database. Query the database or ask your database administrator if you do not know the name of the database.
   - **DB2**

     The default IBM Tivoli Monitoring database name is `WAREHOUS`.
   - **Oracle**

     The default IBM Tivoli Monitoring database name is `Warehous`.
8. In the Database schema name field, specify a value. The default value varies depending on your database, for example, ITMUser for DB2.
9. Save the Historical Polling Database options.

Reconfiguring monitoring agent connection details

If the ODBC details, such as the username and password of the Tivoli Data Warehouse user, change, you must reconfigure the Warehouse Proxy Agent using the instructions for your version of IBM Tivoli Monitoring:

- For IBM Tivoli Monitoring 6.2.2 and 6.2.3, see the information about *Configuring a Warehouse Proxy Agent (ODBC connection)* in the IBM Tivoli Monitoring Installation Guide.
- For IBM Tivoli Monitoring 6.2.1, see the information about *Configuring a Warehouse Proxy Agent (ODBC connection)* in the IBM Tivoli Monitoring Installation and Setup Guide.

Chapter 3. Workspaces reference

This chapter contains an overview of workspaces, references for detailed information about workspaces, and descriptions of the predefined workspaces included in this monitoring agent.

About workspaces

A workspace is the working area of the Tivoli Enterprise Portal application window. At the left of the workspace is a Navigator that you use to select the workspace you want to see. As part of the application window, the right side of the status bar shows the Tivoli Enterprise Portal server name and port number to which the displayed information applies, and the ID of the current user.

When you select an item in the Navigator tree, a default workspace is displayed. When you right-click a Navigator item, a menu that includes a Workspace item is displayed. The Workspaces item contains a list of workspaces for that Navigator item. Each workspace has at least one view. Some views have links to other workspaces.

This monitoring agent provides predefined workspaces. You cannot modify or delete the predefined workspaces, but you can create new workspaces by editing them and saving the changes with a different name.

A table view within a workspace corresponds to a group of attributes; the columns in the table view show some or all of the attributes available for the creation of situations.

More information about workspaces

For more information about creating, customizing, and working with workspaces, see *IBM Tivoli Monitoring User's Guide*.

For a list of the predefined workspaces for this monitoring agent and a description of each workspace, refer to the Predefined workspaces section in this chapter and the information in that section for each individual workspace.

Some attribute groups for this monitoring agent might not be represented in the predefined workspaces or views for this agent. For a full list of the attribute groups, see the Attributes reference section.

Predefined workspaces

The IBM Tivoli Monitoring for Tivoli Network Manager IP Edition provides the following predefined workspaces, which are organized by Navigator item:

- IBM Tivoli Monitoring for Tivoli Network Manager IP Navigator item
  - IBM Tivoli Monitoring for Tivoli Network Manager IP workspace
- Availability Navigator item
  - Availability workspace
- Discovery Navigator item
  - Discovery workspace

- Monitoring Navigator item
  - Monitoring workspace
- Network Navigator item
  - Network workspace

The remaining sections of this chapter contain descriptions of each of these predefined workspaces. The workspaces are organized by the Navigator item to which the workspaces are relevant.

IBM Tivoli Monitoring for Tivoli Network Manager IP Navigator item

IBM Tivoli Monitoring for Tivoli Network Manager IP workspace

This workspace displays the overall state of the Tivoli Network Manager IP application.

This workspace contains the following views:

Availability

Displays the state of the Tivoli Network Manager IP processes.

Discovery

Displays the state of the Tivoli Network Manager IP Discovery.

Network

Displays the Tivoli Network Manager IP Network metrics.

Availability Navigator item

Availability workspace

The Availability workspace displays the overall health of the application.

This workspace contains the following views:

Availability

Displays the state of each component in the application. Each process is displayed using a descriptive name, the name of the running process, and the state of the process (UP, DOWN, or PROCESS_DATA_NOT_AVAILABLE). When the state of the component is DOWN (for a process, or service) it is highlighted with a red background.

Processor

Displays the amount of CPU used by each process that is a component of the application. This displays the 2 main components of CPU usage, privileged time which is time spent in the kernel on behalf of the process and user mode time, which is the time spent running the process code.

Threads

Displays the number of threads used by each process that is a component of the application.

Memory

Displays the amount of memory being consumed by each process that is a component of the application. This total (virtual) size of the process and the size of the process in memory (working set) are displayed.

Discovery Navigator item

Discovery workspace

The Discovery workspace displays the health of the network discovery done by Tivoli Network Manager IP and gathers the metrics used to generate reports.

This workspace contains the following views:

Current_Discovery
This view displays a snapshot of the current discovery. The values are all set to zero, no discovery is available at the moment.

Last Discovery Phase Duration
Displays a snapshot of the duration of each phase of the last completed discovery.

Last Discovery Memory Usage in KBytes
Displays a snapshot of the memory usage to process the last completed discovery.

Objects Discovered
Displays a snapshot of the objects discovered during the last completed discovery.

Agent Status
Displays a snapshot of the status of each agent configured in the system.

Monitoring Navigator item

Monitoring workspace

This workspace displays information related to ITNM monitoring. The workspace gathers network monitoring metrics used to monitor the ITNM pollers and to generate reports.

This workspace contains the following views:

Displays the total number of MIB objects retrieved per second.

Number of Devices Being Polled by Poll Definition Type
Displays the total number of devices being polled by poll definition type.

Packets Sent by Poller
Displays the total number of packets sent by the poller.

Packets Processed by Poller
Displays the total number of packets processed by the poller.

SNMP Errors and Timeout Responses
Displays the total number of SNMP errors and timeouts.

Network Navigator item

Network workspace

This workspace displays information related to a network monitored by ITNM. The workspace gathers network discovery metrics used to monitor the network and to generate reports.

This workspace contains the following views:

Network elements
Displays the total number of network elements listed by type in a monitored network.

Nodes with and without SNMP access
Displays the total number of devices with and without SNMP access.

Interfaces Up and Down
Displays a counter of the interface Operational status that can be UP or DOWN.

Chapter 4. Attributes reference

This chapter contains an overview of attributes, references for detailed information about attributes, and descriptions of the attributes for each attribute group included in this monitoring agent.

About attributes

Attributes are the application properties being measured and reported by the IBM Tivoli Monitoring for Tivoli Network Manager IP Edition.

Attributes are organized into groups according to their purpose. The attributes in a group can be used in the following two ways:

- Chart or table views

  Attributes are displayed in chart and table views. The chart and table views use queries to specify which attribute values to request from a monitoring agent. You use the Query editor to create a new query, modify an existing query, or apply filters and set styles to define the content and appearance of a view based on an existing query.
- Situations

  You use attributes to create situations that monitor the state of your operating system, database, or application. A situation describes a condition you want to test. When you start a situation, the Tivoli Enterprise Portal compares the values you have assigned to the situation attributes with the values collected by the IBM Tivoli Monitoring for Tivoli Network Manager IP Edition and registers an *event* if the condition is met. You are alerted to events by indicator icons that are displayed in the Navigator.

More information about attributes

For more information about using attributes and attribute groups, see *IBM Tivoli Monitoring User's Guide*.

For a list of the attributes groups, a list of the attributes in each attribute group, and descriptions of the attributes for this monitoring agent, refer to the Attribute groups and attributes section in this chapter.

Attribute groups and attributes for the IBM Tivoli Monitoring for Tivoli Network Manager IP Edition

This monitoring agent contains the following attribute groups:

- Agent Status
- Availability
- Current® Discovery
- Devices Being Polled
- Devices With SNMP Access
- Entities On Model DB
- Interfaces Up and Down
- Last Discovery

- MIB Objects Retrieved
- Network Elements
- Objects Discovered
- Packets Sent And Processed By Poller
- Performance Object Status
- Poll Data Collection
- Polling Capacity
- SNMP Errors And Timeouts
- Work Item Queue

The remaining sections of this chapter contain descriptions of these attribute groups, which are listed alphabetically. The following information is provided for each attribute group:

Historical group
Whether the attribute group is a historical type that you can roll off to a data warehouse

Attribute descriptions
Description and type for each attribute in the attribute group

Agent Status attribute group

This view displays a snapshot of the status of each agent configured in the system. If the warehouse default setting is enabled, data for this attribute group is stored in Tivoli Data Warehouse.

Historical group

This attribute group is part of the default historical group.

Attribute descriptions

The following list contains information about each attribute in the Agent Status attribute group:

Node attribute - This attribute is a key attribute.

Description
The managed system name of the agent.

Type String

Timestamp attribute

Description
The local time at the agent when the data was collected.

Type String

Agent Name attribute - This attribute is a key attribute.

Description
Displays the agent name configured in the system.

Type String

Agent Status attribute

Description
Displays the status of the agents used by discovery.

Type Integer with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values shown in parentheses. The following values are defined:

- Inactive state (0)
- Yet to be started (1)
- Being started (2)
- Receiving and sending data (3)
- Active but finished processing (4)
- Was active but has died (5)

Any other values will display the actual value returned by the agent in the Tivoli Enterprise Portal.

Agent Connections attribute

Description
Displays the total number of agent connections.

Type Integer (Counter) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values shown in parentheses. The following values are defined:

- Value_Exceeds_Maximum (2147483647)
- Value_Exceeds_Minimum (-2147483648)

Any other values will display the actual value returned by the agent in the Tivoli Enterprise Portal.

Availability attribute group

The Availability attribute group contains the availability data for all processes and services that make up this application. If the warehouse default setting is enabled, data for this attribute group is stored in Tivoli Data Warehouse.

Historical group

This attribute group is part of the default historical group.

Attribute descriptions

The following list contains information about each attribute in the Availability attribute group:

Node attribute - This attribute is a key attribute.

Description
The managed system name of the agent.

Type String

Timestamp attribute

Description
The local time at the agent when the data was collected.

Type String

Application Component attribute - This attribute is a key attribute.

Description
The descriptive name of a part of the application.

Type String

Name attribute

Description
The name of the process, service, or functionality test. This name matches the executable name of the process, the service short name or the name of the process used to test the application.

Type String with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values shown in parentheses. The following values are defined:

- N/A (N/A)

Any other values will display the actual value returned by the agent in the Tivoli Enterprise Portal.

Status attribute

Description
The status of the application component.

- For processes 'UP', 'DOWN', 'WARNING', or 'PROCESS_DATA_NOT_AVAILABLE': 'PROCESS_DATA_NOT_AVAILABLE' is displayed for a process when the matching process is running but the resource use information cannot be collected for that process.
- For services 'UP', 'DOWN', or 'UNKNOWN': 'UNKNOWN' is displayed when the service is not installed.
- For functionality tests: 'PASSED' or 'FAILED' is displayed.

Type Integer with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values shown in parentheses. The following values are defined:

- DOWN (0)
- UP (1)
- WARNING (2)
- UNKNOWN (3)
- PASSED (4)
- FAILED (5)
- PROCESS_DATA_NOT_AVAILABLE (6)

Any other values will display the actual value returned by the agent in the Tivoli Enterprise Portal.

Full Name attribute

Description
The full name of the process including the path.

Type String with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values shown in parentheses. The following values are defined:

- N/A (N/A)

Any other values will display the actual value returned by the agent in the Tivoli Enterprise Portal.

Type attribute

Description
The type of the application component. Components are processes, services, or functionality tests.

Type Integer with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values shown in parentheses. The following values are defined:

- PROCESS (0)
- SERVICE (1)
- FUNCTIONALITY_TEST (2)

Any other values will display the actual value returned by the agent in the Tivoli Enterprise Portal.

Virtual Size attribute

Description
The virtual size (in MB) of the process.

Type Integer (Gauge)

Page Faults per Sec attribute

Description
The rate of page faults for the process measured in faults per second. This attribute only contains valid data for processes.

Type Integer (Gauge)

Working Set Size attribute

Description
The working set size of the process in MB. This attribute only contains valid data for processes.

Type Integer (Gauge)

Thread Count attribute

Description
The number of threads currently allocated by this process. This attribute only contains valid data for processes.

Type Integer (Gauge)

PID attribute

Description
The process ID associated with the process. This attribute only contains valid data for processes.

Type Integer (Gauge)

Percent Privileged Time attribute

Description
The percentage of the available CPU time that is being used by this process for privileged operation.

Type Integer (Gauge)

Percent User Mode Time attribute

Description
The percentage of the available CPU time that is being used by this process for user mode operation.

Type Integer (Gauge)

Percent Processor Time attribute

Description
The percentage of the elapsed time that this process used the processor to execute instructions.

Type Integer (Gauge)

Command Line attribute

Description
The program name and any arguments specified on the command line when the process was started. This has the value N/A if this is a Service, or Functionality test.

Type String with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values shown in parentheses. The following values are defined:

- N/A (N/A)

Any other values will display the actual value returned by the agent in the Tivoli Enterprise Portal.

Functionality Test Status attribute

Description
The return code of the functionality test. When the monitored application is running correctly, 'SUCCESS' is displayed. 'NOT_RUNNING' is displayed when it is not running correctly. 'N/A' is displayed when the row does not represent a functionality test.

Type Integer with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values shown in parentheses. The following values are defined:

- SUCCESS (0)
- N/A (1)
- GENERAL_ERROR (2)
- WARNING (3)
- NOT_RUNNING (4)
- DEPENDENT_NOT_RUNNING (5)
- ALREADY_RUNNING (6)
- PREREQ_NOT_RUNNING (7)
- TIMED_OUT (8)
- DOESNT_EXIST (9)
- UNKNOWN (10)
- DEPENDENT_STILL_RUNNING (11)
- INSUFFICIENT_USER_AUTHORITY (12)

Any other values will display the actual value returned by the agent in the Tivoli Enterprise Portal.

Functionality Test Message attribute

Description
The text message that corresponds to the Functionality Test Status. This is only valid for functionality tests.

Type String with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values shown in parentheses. The following values are defined:

- N/A (N/A)

Any other values will display the actual value returned by the agent in the Tivoli Enterprise Portal.

Current Discovery attribute group

This view displays a snapshot of the current discovery. If there is no current discovery, all values are set to zero. If the warehouse default setting is enabled, data for this attribute group is stored in Tivoli Data Warehouse.

Historical group

This attribute group is part of the default historical group.

Attribute descriptions

The following list contains information about each attribute in the Current Discovery attribute group:

Node attribute - This attribute is a key attribute.

Description
The managed system name of the agent.

Type String

Timestamp attribute

Description
The local time at the agent when the data was collected.

Type String

Discovery Mode attribute

Description
The discovery mode

Type Integer with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values shown in parentheses. The following values are defined:

- Full (0)
- Partial (1)

Any other values will display the actual value returned by the agent in the Tivoli Enterprise Portal.

Discovery Phase attribute

Description
The discovery phase

Type Integer with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values shown in parentheses. The following values are defined:

- Phase 0 (Not Running) (0)
- Phase 1 (1)
- Phase 2 (2)

- Phase 3 (3)
- Phase 4 (4)

Any other values will display the actual value returned by the agent in the Tivoli Enterprise Portal.

Blackout State attribute

Description
The blackout state

Type Integer with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values shown in parentheses. The following values are defined:

- False (0)
- True (1)

Any other values will display the actual value returned by the agent in the Tivoli Enterprise Portal.

Cycle Count attribute

Description
The discovery cycle count

Type Integer (Counter) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values shown in parentheses. The following values are defined:

- Value_Exceeds_Maximum (2147483647)
- Value_Exceeds_Minimum (-2147483648)

Any other values will display the actual value returned by the agent in the Tivoli Enterprise Portal.

Processing Needed attribute

Description
The discovery processing needed

Type Integer with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values shown in parentheses. The following values are defined:

- No (0)
- Yes (1)

Any other values will display the actual value returned by the agent in the Tivoli Enterprise Portal.

Devices Being Polled attribute group

This view displays the total number of devices being polled by poll definition type. If the warehouse default setting is enabled, data for this attribute group is stored in Tivoli Data Warehouse.

Historical group

This attribute group is part of the default historical group.

Attribute descriptions

The following list contains information about each attribute in the Devices Being Polled attribute group:

Node attribute - This attribute is a key attribute.

Description
The managed system name of the agent.

Type String

Timestamp attribute

Description
The local time at the agent when the data was collected.

Type String

Pollicy Name attribute

Description
Displays the policy name that is polling the devices.

Type String

Addresses attribute

Description
Displays the total number of addresses being polled.

Type Integer (Counter) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values shown in parentheses. The following values are defined:

- Value_Exceeds_Maximum (2147483647)
- Value_Exceeds_Minimum (-2147483648)

Any other values will display the actual value returned by the agent in the Tivoli Enterprise Portal.

Entities attribute

Description
Displays the total number of entities being monitored

Type Integer (Counter) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values shown in parentheses. The following values are defined:

- Value_Exceeds_Maximum (2147483647)
- Value_Exceeds_Minimum (-2147483648)

Any other values will display the actual value returned by the agent in the Tivoli Enterprise Portal.

Devices With SNMP Access attribute group

Displays the total number of devices with and without SNMP Access. If the warehouse default setting is enabled, data for this attribute group is stored in Tivoli Data Warehouse.

Historical group

This attribute group is part of the default historical group.

Attribute descriptions

The following list contains information about each attribute in the Devices With SNMP Access attribute group:

Node attribute - This attribute is a key attribute.

Description
The managed system name of the agent.

Type String

Timestamp attribute

Description
The local time at the agent when the data was collected.

Type String

SNMP Access attribute

Description
Displays the total number of nodes with SNMP access.

Type Integer (Counter) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values shown in parentheses. The following values are defined:

- Value_Exceeds_Maximum (2147483647)
- Value_Exceeds_Minimum (-2147483648)

Any other values will display the actual value returned by the agent in the Tivoli Enterprise Portal.

No SNMP Access attribute

Description
Displays the total number of nodes without SNMP access.

Type Integer (Counter) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values shown in parentheses. The following values are defined:

- Value_Exceeds_Maximum (2147483647)
- Value_Exceeds_Minimum (-2147483648)

Any other values will display the actual value returned by the agent in the Tivoli Enterprise Portal.

Entities On Model DB attribute group

Displays the total number of entities defined in the model database. If the warehouse default setting is enabled, data for this attribute group is stored in Tivoli Data Warehouse.

Historical group

This attribute group is part of the default historical group.

Attribute descriptions

The following list contains information about each attribute in the Entities On Model DB attribute group:

Node attribute - This attribute is a key attribute.

Description
The managed system name of the agent.

Type String

Timestamp attribute

Description
The local time at the agent when the data was collected.

Type String

Entities attribute

Description
Displays the total number of entities defined in the model database.

Type Integer (Counter) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values shown in parentheses. The following values are defined:

- Value_Exceeds_Maximum (2147483647)
- Value_Exceeds_Minimum (-2147483648)

Any other values will display the actual value returned by the agent in the Tivoli Enterprise Portal.

Interfaces Up and Down attribute group

Displays a counter of the Interfaces operational status, which can be UP and DOWN. If the warehouse default setting is enabled, data for this attribute group is stored in Tivoli Data Warehouse.

Historical group

This attribute group is part of the default historical group.

Attribute descriptions

The following list contains information about each attribute in the Interfaces Up and Down attribute group:

Node attribute - This attribute is a key attribute.

Description
The managed system name of the agent.

Type String

Timestamp attribute

Description
The local time at the agent when the data was collected.

Type String

Up attribute

Description
Displays the total number of Interfaces Up

Type Integer (Counter) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values shown in parentheses. The following values are defined:

- Value_Exceeds_Maximum (2147483647)
- Value_Exceeds_Minimum (-2147483648)

Any other values will display the actual value returned by the agent in the Tivoli Enterprise Portal.

Down attribute

Description
Displays the total number of Interfaces Down

Type Integer (Counter) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values shown in parentheses. The following values are defined:

- Value_Exceeds_Maximum (2147483647)
- Value_Exceeds_Minimum (-2147483648)

Any other values will display the actual value returned by the agent in the Tivoli Enterprise Portal.

Last Discovery attribute group

This view displays a snapshot of the duration and memory usage for each phase of the last completed discovery. If the warehouse default setting is enabled, data for this attribute group is stored in Tivoli Data Warehouse.

Historical group

This attribute group is part of the default historical group.

Attribute descriptions

The following list contains information about each attribute in the Last Discovery attribute group:

Node attribute - This attribute is a key attribute.

Description
The managed system name of the agent.

Type String

Timestamp attribute

Description
The local time at the agent when the data was collected.

Type String

Start time attribute

Description
Displays the discovery start time.

Type String

Phase one start attribute

Description
Displays the phase one start time.

Type String

Phase two start attribute

Description
Displays the phase two start time.

Type String

Phase three start attribute

Description
Displays the phase three start time.

Type String

Completion time attribute

Description
Displays the discovery completion time.

Type String

Starting memory attribute

Description
Displays the discovery starting memory size.

Type Integer (Counter) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values shown in parentheses. The following values are defined:

- Value_Exceeds_Maximum (2147483647)
- Value_Exceeds_Minimum (-2147483648)

Any other values will display the actual value returned by the agent in the Tivoli Enterprise Portal.

Phase one memory attribute

Description
Displays the phase one memory usage.

Type Integer (Counter) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values shown in parentheses. The following values are defined:

- Value_Exceeds_Maximum (2147483647)
- Value_Exceeds_Minimum (-2147483648)

Any other values will display the actual value returned by the agent in the Tivoli Enterprise Portal.

Phase two memory attribute

Description
Displays the phase two memory usage.

Type Integer (Counter) with enumerated values. The strings are

displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values shown in parentheses. The following values are defined:

- Value_Exceeds_Maximum (2147483647)
- Value_Exceeds_Minimum (-2147483648)

Any other values will display the actual value returned by the agent in the Tivoli Enterprise Portal.

Phase three memory attribute

Description
Displays the phase three memory.

Type Integer (Counter) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values shown in parentheses. The following values are defined:

- Value_Exceeds_Maximum (2147483647)
- Value_Exceeds_Minimum (-2147483648)

Any other values will display the actual value returned by the agent in the Tivoli Enterprise Portal.

Completion memory attribute

Description
Displays the discovery completion memory.

Type Integer (Counter) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values shown in parentheses. The following values are defined:

- Value_Exceeds_Maximum (2147483647)
- Value_Exceeds_Minimum (-2147483648)

Any other values will display the actual value returned by the agent in the Tivoli Enterprise Portal.

Total discovery time attribute

Description
Displays the total time spent by discovery.

Type String

MIB Objects Retrieved attribute group

Displays the total number of MIB objects retrieved per second. If the warehouse default setting is enabled, data for this attribute group is stored in Tivoli Data Warehouse.

Historical group

This attribute group is part of the default historical group.

Attribute descriptions

The following list contains information about each attribute in the MIB Objects Retrieved attribute group:

Node attribute - This attribute is a key attribute.

Description
The managed system name of the agent.

Type String

Timestamp attribute

Description
The local time at the agent when the data was collected.

Type String

Total attribute

Description
Displays the total number of MIB objects retrieved per second

Type Integer (Counter) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values shown in parentheses. The following values are defined:

- Value_Exceeds_Maximum (2147483647)
- Value_Exceeds_Minimum (-2147483648)

Any other values will display the actual value returned by the agent in the Tivoli Enterprise Portal.

Network Elements attribute group

This view displays the total number of network elements listed by type in a monitored network. If the warehouse default setting is enabled, data for this attribute group is stored in Tivoli Data Warehouse.

Historical group

This attribute group is part of the default historical group.

Attribute descriptions

The following list contains information about each attribute in the Network Elements attribute group:

Node attribute - This attribute is a key attribute.

Description
The managed system name of the agent.

Type String

Timestamp attribute

Description
The local time at the agent when the data was collected.

Type String

Unknown attribute

Description
Displays the total number of Unknown.

Type Integer (Counter) with enumerated values. The strings are

displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values shown in parentheses. The following values are defined:

- Value_Exceeds_Maximum (2147483647)
- Value_Exceeds_Minimum (-2147483648)

Any other values will display the actual value returned by the agent in the Tivoli Enterprise Portal.

Chassis attribute

Description
Displays the total number of chassis.

Type Integer (Counter) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values shown in parentheses. The following values are defined:

- Value_Exceeds_Maximum (2147483647)
- Value_Exceeds_Minimum (-2147483648)

Any other values will display the actual value returned by the agent in the Tivoli Enterprise Portal.

Interfaces attribute

Description
Displays the total number of interfaces.

Type Integer (Counter) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values shown in parentheses. The following values are defined:

- Value_Exceeds_Maximum (2147483647)
- Value_Exceeds_Minimum (-2147483648)

Any other values will display the actual value returned by the agent in the Tivoli Enterprise Portal.

Logical Interface attribute

Description
Displays the total number of logical interfaces.

Type Integer (Counter) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values shown in parentheses. The following values are defined:

- Value_Exceeds_Maximum (2147483647)
- Value_Exceeds_Minimum (-2147483648)

Any other values will display the actual value returned by the agent in the Tivoli Enterprise Portal.

VLAN Objects attribute

Description
Displays the total number of VLAN objects.

Type Integer (Counter) with enumerated values. The strings are

displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values shown in parentheses. The following values are defined:

- Value_Exceeds_Maximum (2147483647)
- Value_Exceeds_Minimum (-2147483648)

Any other values will display the actual value returned by the agent in the Tivoli Enterprise Portal.

Card attribute

Description
Displays the total number of Cards.

Type Integer (Counter) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values shown in parentheses. The following values are defined:

- Value_Exceeds_Maximum (2147483647)
- Value_Exceeds_Minimum (-2147483648)

Any other values will display the actual value returned by the agent in the Tivoli Enterprise Portal.

PSU attribute

Description
Displays the total number of PSU.

Type Integer (Counter) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values shown in parentheses. The following values are defined:

- Value_Exceeds_Maximum (2147483647)
- Value_Exceeds_Minimum (-2147483648)

Any other values will display the actual value returned by the agent in the Tivoli Enterprise Portal.

Subnet attribute

Description
Displays the total number of Subnets.

Type Integer (Counter) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values shown in parentheses. The following values are defined:

- Value_Exceeds_Maximum (2147483647)
- Value_Exceeds_Minimum (-2147483648)

Any other values will display the actual value returned by the agent in the Tivoli Enterprise Portal.

Module attribute

Description
Displays the total number of Modules.

Type Integer (Counter) with enumerated values. The strings are

displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values shown in parentheses. The following values are defined:

- Value_Exceeds_Maximum (2147483647)
- Value_Exceeds_Minimum (-2147483648)

Any other values will display the actual value returned by the agent in the Tivoli Enterprise Portal.

Objects Discovered attribute group

This view displays a snapshot of the objects discovered during the last completed discovery. If the warehouse default setting is enabled, data for this attribute group is stored in Tivoli Data Warehouse.

Historical group

This attribute group is part of the default historical group.

Attribute descriptions

The following list contains information about each attribute in the Objects Discovered attribute group:

Node attribute - This attribute is a key attribute.

Description
The managed system name of the agent.

Type String

Timestamp attribute

Description
The local time at the agent when the data was collected.

Type String

Devices attribute

Description
Displays the total number of devices.

Type Integer (Counter) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values shown in parentheses. The following values are defined:

- Value_Exceeds_Maximum (2147483647)
- Value_Exceeds_Minimum (-2147483648)

Any other values will display the actual value returned by the agent in the Tivoli Enterprise Portal.

Interfaces attribute

Description
Displays the total number of interfaces.

Type Integer (Counter) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values shown in parentheses. The following values are defined:

- Value_Exceeds_Maximum (2147483647)
- Value_Exceeds_Minimum (-2147483648)

Any other values will display the actual value returned by the agent in the Tivoli Enterprise Portal.

Switches attribute

Description
Displays the total number of switches.

Type Integer (Counter) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values shown in parentheses. The following values are defined:

- Value_Exceeds_Maximum (2147483647)
- Value_Exceeds_Minimum (-2147483648)

Any other values will display the actual value returned by the agent in the Tivoli Enterprise Portal.

Routers attribute

Description
Displays the total number of routers.

Type Integer (Counter) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values shown in parentheses. The following values are defined:

- Value_Exceeds_Maximum (2147483647)
- Value_Exceeds_Minimum (-2147483648)

Any other values will display the actual value returned by the agent in the Tivoli Enterprise Portal.

Packets Sent And Processed By Poller attribute group

Displays the number of packets, per second, sent and processed by the poller. If the warehouse default setting is enabled, data for this attribute group is stored in Tivoli Data Warehouse.

Historical group

This attribute group is part of the default historical group.

Attribute descriptions

The following list contains information about each attribute in the Packets Sent And Processed By Poller attribute group:

Node attribute - This attribute is a key attribute.

Description
The managed system name of the agent.

Type String

Timestamp attribute

Description
The local time at the agent when the data was collected.

Type String

Sent attribute

Description
Displays the total number of packets, per second, sent by the poller.

Type Integer (Counter) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values shown in parentheses. The following values are defined:

- Value_Exceeds_Maximum (2147483647)
- Value_Exceeds_Minimum (-2147483648)

Any other values will display the actual value returned by the agent in the Tivoli Enterprise Portal.

Processed attribute

Description
Displays the total number of packets, per second, processed by the poller.

Type Integer (Counter) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values shown in parentheses. The following values are defined:

- Value_Exceeds_Maximum (2147483647)
- Value_Exceeds_Minimum (-2147483648)

Any other values will display the actual value returned by the agent in the Tivoli Enterprise Portal.

Performance Object Status attribute group

The Performance Object Status attribute group contains information that reflects the status of other attribute groups so you can see the status of all of the performance objects that make up this application all at once. Each of these other performance attribute groups is represented by a row in this table (or other type of view). The status for an attribute group reflects the result of the last attempt to collect data for that attribute group, which allows you to see whether the agent is performing correctly. Unlike other attribute groups, the Performance Object Status attribute group does not reflect the state of the monitored application. This attribute group is most often used to determine why data is not available for one of the performance attribute groups. If the warehouse default setting is enabled, data for this attribute group is stored in Tivoli Data Warehouse.

Historical group

This attribute group is part of the default historical group.

Attribute descriptions

The following list contains information about each attribute in the Performance Object Status attribute group:

Node attribute - This attribute is a key attribute.

Description
The managed system name of the agent.

Type String

Timestamp attribute

Description
The local time at the agent when the data was collected.

Type String

Query Name attribute - This attribute is a key attribute.

Description
The name of the attribute group.

Type String

Object Name attribute

Description
The name of the performance object.

Type String

Object Type attribute

Description
The type of the performance object.

Type Integer with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values shown in parentheses. The following values are defined:

- WMI (0)
- PERFMON (1)
- WMI_ASSOCIATION_GROUP (2)
- JMX (3)
- SNMP (4)
- SHELL_COMMAND (5)
- JOINED_GROUPS (6)
- CIMOM (7)
- CUSTOM (8)
- ROLLUP_DATA (9)
- WMI_REMOTE_DATA (10)
- LOG_FILE (11)
- JDBC (12)
- CONFIG_DISCOVERY (13)
- NT_EVENT_LOG (14)
- FILTER (15)

Any other values will display the actual value returned by the agent in the Tivoli Enterprise Portal.

Object Status attribute

Description
The status of the performance object.

Type Integer with enumerated values. The strings are displayed in the

Tivoli Enterprise Portal. The warehouse and queries return the values shown in parentheses. The following values are defined:

- ACTIVE (0)
- INACTIVE (1)

Any other values will display the actual value returned by the agent in the Tivoli Enterprise Portal.

Error Code attribute

Description
The error code associated with the query

Type Integer with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values shown in parentheses. The following values are defined:

- NO_ERROR (0)
- GENERAL_ERROR (1)
- OBJECT_NOT_FOUND (2)
- COUNTER_NOT_FOUND (3)
- NAMESPACE_ERROR (4)
- OBJECT_CURRENTLY_UNAVAILABLE (5)
- COM_LIBRARY_INIT_FAILURE (6)
- SECURITY_INIT_FAILURE (7)
- PROXY_SECURITY_FAILURE (9)
- NO_INSTANCES_RETURNED (10)
- ASSOCIATOR_QUERY_FAILED (11)
- REFERENCE_QUERY_FAILED (12)
- NO_RESPONSE_RECEIVED (13)
- CANNOT_FIND_JOINED_QUERY (14)
- CANNOT_FIND_JOIN_ATTRIBUTE_IN_QUERY_1_RESULTS (15)
- CANNOT_FIND_JOIN_ATTRIBUTE_IN_QUERY_2_RESULTS (16)
- QUERY_1_NOT_A_SINGLETON (17)
- QUERY_2_NOT_A_SINGLETON (18)
- NO_INSTANCES_RETURNED_IN_QUERY_1 (19)
- NO_INSTANCES_RETURNED_IN_QUERY_2 (20)
- CANNOT_FIND_ROLLUP_QUERY (21)
- CANNOT_FIND_ROLLUP_ATTRIBUTE (22)
- FILE_OFFLINE (23)
- NO_HOSTNAME (24)
- MISSING_LIBRARY (25)
- ATTRIBUTE_COUNT_MISMATCH (26)
- ATTRIBUTE_NAME_MISMATCH (27)
- COMMON_DATA_PROVIDER_NOT_STARTED (28)
- CALLBACK_REGISTRATION_ERROR (29)
- MDL_LOAD_ERROR (30)
- AUTHENTICATION_FAILED (31)

- CANNOT_RESOLVE_HOST_NAME (32)
- SUBNODE_UNAVAILABLE (33)
- SUBNODE_NOT_FOUND_IN_CONFIG (34)
- ATTRIBUTE_ERROR (35)
- CLASSPATH_ERROR (36)
- CONNECTION_FAILURE (37)
- FILTER_SYNTAX_ERROR (38)
- FILE_NAME_MISSING (39)
- SQL_QUERY_ERROR (40)
- SQL_FILTER_QUERY_ERROR (41)
- SQL_DB_QUERY_ERROR (42)
- SQL_DB_FILTER_QUERY_ERROR (43)
- PORT_OPEN_FAILED (44)
- ACCESS_DENIED (45)
- TIMEOUT (46)
- NOT_IMPLEMENTED (47)

Any other values will display the actual value returned by the agent in the Tivoli Enterprise Portal.

Poll Data Collection attribute group

Poll Data Collection. If the warehouse default setting is enabled, data for this attribute group is stored in Tivoli Data Warehouse.

Historical group

This attribute group is part of the default historical group.

Attribute descriptions

The following list contains information about each attribute in the Poll Data Collection attribute group:

DOMAIN_NAME attribute - This attribute is a key attribute.

Description
The name of the Network Manager domain in which the polling is being done.

Type String

POLLER_NAME attribute

Description
The name of the Network Manager poller that is collecting data.

Type String

POLICY_NAME attribute - This attribute is a key attribute.

Description
The name of the poll policy that is collecting data.

Type String

IP_ADDRESS attribute - This attribute is a key attribute.

Description
The IP address of the elment that was polled. For ICMP Ping polls it is the interface that was polled. For SNMP polls it is the management interface through which the data is acquired.

Type String

MAIN_NODE_ENTITY_ID attribute

Description
The ID number of the chassis that contains the entity that was polled, as stored in the ncim.mainNodeDetails database table.

Type Integer (Counter) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values shown in parentheses. The following values are defined:

- Value_Exceeds_Maximum (2147483647)
- Value_Exceeds_Minimum (-2147483648)

Any other values will display the actual value returned by the agent in the Tivoli Enterprise Portal.

HOSTNAME attribute - This attribute is a key attribute.

Description
The hostname of the chassis that contains the polled entity.

Type String

POLL_TIME attribute

Description
The time that the polling data was collected.

Type String

INSTANCE_NAME attribute - This attribute is a key attribute.

Description
This is the ifTable ifIndex for polled interface instances.

Type String

INSTANCE_ID attribute

Description
This is the entityID for the polled interface as in the ncim.interfaces table.

Type Integer (Counter) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values shown in parentheses. The following values are defined:

- Value_Exceeds_Maximum (2147483647)
- Value_Exceeds_Minimum (-2147483648)

Any other values will display the actual value returned by the agent in the Tivoli Enterprise Portal.

IFNAME attribute - This attribute is a key attribute.

Description
The interface name as described in the ifName SNMP ObjectID.

Type String

IFALIAS attribute - This attribute is a key attribute.

Description
The interface alias, as described by the ifAlias SNMP ObjectID.

Type String

IFTYPE attribute

Description
The interface type, as described by the ifType SNMP ObjectID.

Type Integer (Counter) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values shown in parentheses. The following values are defined:

- Value_Exceeds_Maximum (2147483647)
- Value_Exceeds_Minimum (-2147483648)

Any other values will display the actual value returned by the agent in the Tivoli Enterprise Portal.

POLLDEF_NAME attribute - This attribute is a key attribute.

Description
The poll definition name.

Type String

DATA_LABEL attribute

Description
This label can be used to group and identify similar data. For example, data relating to pings are grouped using the PingResult label for up or down status, and the PingTime label for response time. Labels can be defined with the Poll Definition in the Network Polling GUI.

Type String

OID attribute

Description
The MIB object identifier. This might be blank.

Type String

SAMPLE_ID attribute

Description
An ID for the sample made, based on Epoch Time (UTC) for the poll.

Type Integer (Counter) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values shown in parentheses. The following values are defined:

- Value_Exceeds_Maximum (2147483647)
- Value_Exceeds_Minimum (-2147483648)

Any other values will display the actual value returned by the agent in the Tivoli Enterprise Portal.

ERROR_CODE attribute

Description

Error codes are generated by the poll. The codes are described below.

100 POLLSTATUS_SUCCESS
Poll was successful. The poller received an expected response from the target device.

101 POLLSTATUS_NODATA
SNMP only. A GetNext traversal of a columnar object returned no data. Either the table is empty, the target device does not implement the table, or the SNMP credentials being used don't have access to the table.

102 POLLSTATUS_SNMPTIMEOUT
SNMP only. The request timed out after exhausting the configured retry count.

103 POLLSTATUS_ICMPTIMEOUT
ICMP only. The request timed out after exhausting the configured retry count.

104 POLLSTATUS_DISPATCHBUSY
SNMP only. Internal request dispatch queue full.

105 POLLSTATUS_ASNERROR
This error code is not used.

106 POLLSTATUS_PDUERROR
SNMP only. This error code is set in two situations: 1. When an error packet with an invalid error-index value, that is, greater than the number of request varbinds, is received. 2. An unexpected Report PDU SNMPv3 is received.

107 POLLSTATUS_KEYERROR
SNMPv3 only. The poller failed to calculate the keys necessary for SNMPv3 message exchange.

108 POLLSTATUS_HANDLER
SNMP only. The poller received a Report PDU containing the snmpUnknownPDUHandlers counter. This can indicate that the target device is misconfigured.

109 POLLSTATUS_NOICMPSOCKET
ICMP only. No ICMP echo request was sent because the poller failed to create a raw socket. This is normally due to running as a non-root user without having run the setup_run_as_setuid_root.sh script.

110 POLLSTATUS_NOACCESSDISCOVERED
SNMP only. There are one or more sets of SNMP access credentials configured (in the Discovery Configuration Password panel) whose address or subnet match the device being polled, but the poller was unable to successfully poll the device using any of these credentials.

111 POLLSTATUS_NOACCESSCONFIGURED
SNMP only. There are no SNMP access credentials configured (in the Discovery Configuration Password

panel) whose address or subnet match the device being polled. SNMP polling has not been attempted.

112 POLLSTATUS_NUMOUTOFRANGE
The polled value was larger than can be stored in a 32-bit integer field. This is a limitation of the current schema due to requirements of integration with Tivoli Data Warehouse.

201 POLLSTATUS_BADSECLEV
SNMPv3 only. The target device responded with a Report PDU containing the usmStatsUnsupportedSecLevels counter. This indicates that the target device does not support the Network Manager-configured SNMPv3 security level.

203 POLLSTATUS_UNKNOWNUSER
SNMPv3 only. The target device responded with a Report PDU containing the usmStatsUnknownUserNames counter. This indicates that the target device does not know about the Network Manager-configured SNMPv3 user.

205 POLLSTATUS_WRONGDIGEST
SNMPv3 only. The target device responded with a Report PDU containing the usmStatsWrongDigests counter. The target device disagrees with the poller's calculation of the SNMPv3 message authentication digest.

206 POLLSTATUS_DECRYPT
SNMPv3 only. The target device responded with a Report PDU containing the usmStatsDecryptionErrors counter. The target device decrypt an SNMPv3 message sent by the poller.

Type Integer (Counter) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values shown in parentheses. The following values are defined:

- Value_Exceeds_Maximum (2147483647)
- Value_Exceeds_Minimum (-2147483648)

Any other values will display the actual value returned by the agent in the Tivoli Enterprise Portal.

VALUE attribute

Description
The metric value returned from the poll. The Poll Definition defines the calculation, if any, that is used to derive this value.

Type Integer (Counter) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values shown in parentheses. The following values are defined:

- Value_Exceeds_Maximum (2147483647)
- Value_Exceeds_Minimum (-2147483648)

Any other values will display the actual value returned by the agent in the Tivoli Enterprise Portal.

Polling Capacity attribute group

Displays the monitoring polling capacity. If the warehouse default setting is enabled, data for this attribute group is stored in Tivoli Data Warehouse.

Historical group

This attribute group is part of the default historical group.

Attribute descriptions

The following list contains information about each attribute in the Polling Capacity attribute group:

Node attribute - This attribute is a key attribute.

Description
The managed system name of the agent.

Type String

Timestamp attribute

Description
The local time at the agent when the data was collected.

Type String

Total attribute

Description
Displays the total number of threads available for use.

Type Integer (Counter) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values shown in parentheses. The following values are defined:

- Value_Exceeds_Maximum (2147483647)
- Value_Exceeds_Minimum (-2147483648)

Any other values will display the actual value returned by the agent in the Tivoli Enterprise Portal.

SNMP Errors And Timeouts attribute group

Displays the total number of SNMP error and timeout responses. If the warehouse default setting is enabled, data for this attribute group is stored in Tivoli Data Warehouse.

Historical group

This attribute group is part of the default historical group.

Attribute descriptions

The following list contains information about each attribute in the SNMP Errors And Timeouts attribute group:

Node attribute - This attribute is a key attribute.

Description
The managed system name of the agent.

Type String

Timestamp attribute

Description
The local time at the agent when the data was collected.

Type String

Errors attribute

Description
Displays the total number of SNMP Errors per second.

Type Integer (Counter) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values shown in parentheses. The following values are defined:

- Value_Exceeds_Maximum (2147483647)
- Value_Exceeds_Minimum (-2147483648)

Any other values will display the actual value returned by the agent in the Tivoli Enterprise Portal.

Timeouts attribute

Description
Displays the total number of SNMP timeouts per second.

Type Integer (Counter) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values shown in parentheses. The following values are defined:

- Value_Exceeds_Maximum (2147483647)
- Value_Exceeds_Minimum (-2147483648)

Any other values will display the actual value returned by the agent in the Tivoli Enterprise Portal.

Work Item Queue attribute group

Displays the number of work items in the queue to be processed. If the warehouse default setting is enabled, data for this attribute group is stored in Tivoli Data Warehouse.

Historical group

This attribute group is part of the default historical group.

Attribute descriptions

The following list contains information about each attribute in the Work Item Queue attribute group:

Node attribute - This attribute is a key attribute.

Description
The managed system name of the agent.

Type String

Timestamp attribute

Description
The local time at the agent when the data was collected.

Type String

Total attribute

Description
Displays the total number of work items in the queue.

Type Integer (Counter) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values shown in parentheses. The following values are defined:

- Value_Exceeds_Maximum (2147483647)
- Value_Exceeds_Minimum (-2147483648)

Any other values will display the actual value returned by the agent in the Tivoli Enterprise Portal.

Disk capacity planning for historical data

Disk capacity planning for a monitoring agent is a prediction of the amount of disk space to be consumed for each attribute group whose historical data is being collected. Required disk storage is an important factor to consider when you are defining data collection rules and your strategy for historical data collection.

The table in this chapter provides the following information required to calculate disk space for this monitoring agent:

- *Table* is the table name as it is displayed in the warehouse database, if the attribute group is configured to be written to the warehouse.
- *Attribute group* is the name of the attribute group as it is displayed in the warehouse configuration panel.
- *Bytes per instance (agent)* is an estimate of the record length for each row or instance written to the agent disk for historical data collection. This estimate can be used for agent disk space planning purposes.
- *Database bytes per instance (warehouse)* is an estimate of the record length for detailed records written to the warehouse database, if the attribute group is configured to be written to the warehouse. Detailed records are those that have been uploaded from the agent for long-term historical data collection. This estimate can be used for warehouse disk space planning purposes.
- *Aggregate bytes per instance (warehouse)* is an estimate of the record length for aggregate records written to the warehouse database, if the attribute group is configured to be written to the warehouse. Aggregate records are created by the Summarization agent for attribute groups that have been configured for summarization. This estimate can be used for warehouse disk space planning purposes.

In addition to the information in the tables, you must know the number of instances of data that you plan to collect. An attribute group can have single or multiple instances of data depending on the application environment that is being monitored. For example, if your attribute group is monitoring each processor in your computer and you have a dual processor computer, the number of instances is two.

The following table contains capacity planning information for the data logged by IBM Tivoli Monitoring for Tivoli Network Manager IP Edition.

Table 1. Capacity planning for historical data logged by IBM Tivoli Monitoring for Tivoli Network Manager IP Edition

Table	Attribute group	Bytes per instance (agent)	Database bytes per instance (warehouse)	Aggregate bytes per instance (warehouse)
KNPAGTSTS	KNP_AGENT_STATUS	184	183	235
KNPAVAIL	KNP_AVAILABILITY	3272	3296	3606
KNPCURDISC	KNP_CURRENT_DISCOVERY	96	97	149
KNPDEVPOLL	KNP_DEVICES_BEING_POLLED	184	183	250
KNPSNMPAC	KNP_DEVICES_WITH_SNMP_ACCESS	84	82	149
KNPTOTENT	KNP_ENTITIES_ON_MODEL_DB	80	77	129
KNPNODETO	KNP_INTERFACES_UP_AND_DOWN	84	82	149
KNPLSTDISC	KNP_LAST_DISCOVERY	216	223	335
KNPMIBOBJ	KNP_MIB_OBJECTS_RETRIEVED	80	77	129
KNPNETELEM	KNP_NETWORK_ELEMENTS	112	117	289
KNPOBJDISC	KNP_OBJECTS_DISCOVERED	92	92	189
KNPPACPROC	KNP_PACKETS_SENT_AND_PROCESSED_ BY_POLLER	84	82	149
KNPPOBJST	KNP_PERFORMANCE_OBJECT_STATUS	288	289	326
KNPCAPPACT	KNP_POLLING_CAPACITY	80	77	129
KNPPOLLPER	KNP_POLL_DATA_COLLECTION	1124	1137	1264
KNPSNMPERR	KNP_SNMP_ERRORS_AND_TIMEOUTS	84	82	149
KNPWORKQUE	KNP_WORK_ITEM_QUEUE	80	77	129

For more information about historical data collection, see the *IBM Tivoli Monitoring Administrator's Guide*.

Chapter 5. Situations reference

This chapter contains an overview of situations, references for detailed information about situations, and descriptions of the predefined situations included in this monitoring agent.

About situations

A *situation* is a logical expression involving one or more system conditions. Situations are used to monitor the condition of systems in your network. You can manage situations from Tivoli Enterprise Portal by using the Situation editor.

The monitoring agents that you use to monitor your system environment are delivered with a set of predefined situations that you can use as-is or you can create new situations to meet your requirements. Predefined situations contain attributes that check for system conditions common to many enterprises.

Using predefined situations can improve the speed with which you can begin using the IBM Tivoli Monitoring for Tivoli Network Manager IP Edition. You can examine and, if necessary, change the conditions or values being monitored by a predefined situation to those best suited to your enterprise.

You can display predefined situations and create your own situations using the Situation editor. The left frame of the Situation editor initially lists the situations associated with the Navigator item that you selected. When you click a situation name or create a new situation, the right frame opens with the following tabs:

Formula
Formula describing condition being tested

Distribution
List of managed systems (operating systems, subsystems, or applications) to which the situation can be distributed. All of the IBM Tivoli Monitoring for Tivoli Network Manager IP Edition managed systems are assigned by default.

Expert advice
Comments and instructions to be read in the event workspace

Action
Command to be sent to the system

Until Options to close the event after a period of time, or when another situation becomes true

More information about situations

IBM Tivoli Monitoring User's Guide contains more information about predefined and custom situations and how to use them to respond to alerts.

For a list of the predefined situations for this monitoring agent and a description of each situation, refer to the Predefined situations section in this chapter and the information in that section for each individual situation.

Predefined situations

This monitoring agent contains the following predefined situations, which are organized by Navigator item:

- IBM Tivoli Monitoring for Tivoli Network Manager IP Edition
  - Not applicable
- Availability
  - KNP_Process_Data_Unavailable
  - KNP_Process_CPU_High
  - KNP_Process_CPU_Critical
  - KNP_NCP_STORE_Process_Down
  - KNP_NCP_MODEL_Process_Down
  - KNP_NCP_F_AMOS_Process_Down
  - KNP_NCP_D_HELPSRV_Process_Down
  - KNP_NCP_CONFIG_Process_Down
  - KNP_NCP_POLLER_Process_Down
  - KNP_NCPMONITOR_Process_Down
  - KNP_NCP_NCOGATE_Process_Down
  - KNP_NCP_WEBTOOL_Process_Down
  - KNP_NCP_G_EVENT_Process_Down
  - KNP_NCP_VIRTUAL_Process_Down
- Discovery
  - Not applicable
- Monitoring
  - KNP_Work_Item_Queue_Warning
  - KNP_Polling_Capacitiy_Warning
  - KNP_Polling_Capacitiy_Critical
- Network
  - KNP_Total_Entities_Warning
  - KNP_Total_Entities_Critical

The remaining sections of this chapter contain descriptions of each of these situations. The situations are organized by Navigator item. The following information is provided about each situation:

Description
Information about the conditions that the situation tests

Formula
Syntax that contains one or more logical expressions describing the conditions for the situation to monitor

Run at startup
Whether the situation is automatically distributed to instances of the agent or is available for manual distribution.

Sampling interval
Number of seconds that elapses between one sample of data that the monitoring agent collects for the server and the next sample

Situation persistence
Whether the conditions specified in the situation evaluate to "true" for the

defined number of occurrences in a row before the situation is raised. The default of 1 means no persistence checking takes place.

Severity
Severity of the predefined events: Warning, Informational, or Critical

Clearing conditions
Controls when a true situation closes: after a period of time, when another situation is true, or whichever occurs first if both are selected.

IBM Tivoli Monitoring for Tivoli Network Manager IP Edition Navigator item

There are no predefined situations for this Navigator item.

Availability Navigator item

KNP_Process_Data_Unavailable situation

Description
Unable to gather process data for this process.

The situation will be evaluated for each distinct value of the COMPONENT attribute.

Formula
```
*IF *VALUE KNP_AVAILABILITY.Type *EQ PROCESS *AND  *VALUE
KNP_AVAILABILITY.Status *EQ PROCESS_DATA_NOT_AVAILABLE
```

See "Attribute groups and attributes for the IBM Tivoli Monitoring for Tivoli Network Manager IP Edition" on page 25 for descriptions of the attributes in this formula.

Run at startup
This situation is automatically distributed to instances of this agent.

Sampling interval
1 minute

Situation persistence
The number of times the conditions of the situation must occur for the situation to be true is 3.

Severity
Informational

Clearing conditions
The situation clears when the condition becomes false.

KNP_Process_CPU_High situation

Description
CPU usage of the Network Manager process is high.

The situation will be evaluated for each distinct value of the COMPONENT attribute.

Formula

```
*IF ( ( *VALUE KNP_AVAILABILITY.Status *EQ UP ) *AND ( *VALUE
KNP_AVAILABILITY.Percent_Processor_Time *LT 80 ) *AND ( *VALUE
KNP_AVAILABILITY.Percent_Processor_Time *GE 20 ) )
```

See "Attribute groups and attributes for the IBM Tivoli Monitoring for Tivoli Network Manager IP Edition" on page 25 for descriptions of the attributes in this formula.

Run at startup

This situation is automatically distributed to instances of this agent.

Sampling interval

5 minutes

Situation persistence

The number of times the conditions of the situation must occur for the situation to be true is 1.

Severity

Warning

Clearing conditions

The situation clears when the condition becomes false.

KNP_Process_CPU_Critical situation

Description

A running Network Manager process has high CPU usage.

The situation will be evaluated for each distinct value of the COMPONENT attribute.

Formula

```
*IF ( ( *VALUE KNP_AVAILABILITY.Status *EQ UP ) *AND ( *VALUE
KNP_AVAILABILITY.Percent_Processor_Time *GE 80 ) )
```

See "Attribute groups and attributes for the IBM Tivoli Monitoring for Tivoli Network Manager IP Edition" on page 25 for descriptions of the attributes in this formula.

Run at startup

This situation is automatically distributed to instances of this agent.

Sampling interval

5 minutes

Situation persistence

The number of times the conditions of the situation must occur for the situation to be true is 1.

Severity

Critical

Clearing conditions

The situation clears when the condition becomes false.

KNP_NCP_STORE_Process_Down situation

Description
The Network Manager process is not running.

The situation will be evaluated for each distinct value of the COMPONENT attribute.

Formula
```
*IF ( ( *VALUE KNP_AVAILABILITY.Status *EQ DOWN ) *AND ( *VALUE
KNP_AVAILABILITY.Application_Component *EQ 'ncp_store' ) )
```

See "Attribute groups and attributes for the IBM Tivoli Monitoring for Tivoli Network Manager IP Edition" on page 25 for descriptions of the attributes in this formula.

Run at startup
This situation is automatically distributed to instances of this agent.

Sampling interval
5 minutes

Situation persistence
The number of times the conditions of the situation must occur for the situation to be true is 1.

Severity
Critical

Clearing conditions
The situation clears when the condition becomes false.

KNP_NCP_MODEL_Process_Down situation

Description
The Network Manager process is not running.

The situation will be evaluated for each distinct value of the COMPONENT attribute.

Formula
```
*IF ( ( *VALUE KNP_AVAILABILITY.Status *EQ DOWN ) *AND ( *VALUE
KNP_AVAILABILITY.Application_Component *EQ 'ncp_model' ) )
```

See "Attribute groups and attributes for the IBM Tivoli Monitoring for Tivoli Network Manager IP Edition" on page 25 for descriptions of the attributes in this formula.

Run at startup
This situation is automatically distributed to instances of this agent.

Sampling interval
5 minutes

Situation persistence
The number of times the conditions of the situation must occur for the situation to be true is 1.

Severity
Critical

Clearing conditions
The situation clears when the condition becomes false.

KNP_NCP_F_AMOS_Process_Down situation

Description
The Network Manager process is not running.

The situation will be evaluated for each distinct value of the COMPONENT attribute.

Formula
```
*IF ( ( *VALUE KNP_AVAILABILITY.Status *EQ DOWN ) *AND ( *VALUE
KNP_AVAILABILITY.Application_Component *EQ 'ncp_f_amos' ) )
```

See "Attribute groups and attributes for the IBM Tivoli Monitoring for Tivoli Network Manager IP Edition" on page 25 for descriptions of the attributes in this formula.

Run at startup
This situation is automatically distributed to instances of this agent.

Sampling interval
5 minutes

Situation persistence
The number of times the conditions of the situation must occur for the situation to be true is 1.

Severity
Critical

Clearing conditions
The situation clears when the condition becomes false.

KNP_NCP_D_HELPSRV_Process_Down situation

Description
The Network Manager process is not running.

The situation will be evaluated for each distinct value of the COMPONENT attribute.

Formula
```
*IF ( ( *VALUE KNP_AVAILABILITY.Status *EQ DOWN ) *AND ( *VALUE
KNP_AVAILABILITY.Application_Component *EQ 'ncp_d_helpserv' ) )
```

See "Attribute groups and attributes for the IBM Tivoli Monitoring for Tivoli Network Manager IP Edition" on page 25 for descriptions of the attributes in this formula.

Run at startup
This situation is automatically distributed to instances of this agent.

Sampling interval
5 minutes

Situation persistence
The number of times the conditions of the situation must occur for the situation to be true is 1.

Severity
Critical

Clearing conditions
The situation clears when the condition becomes false.

KNP_NCP_CONFIG_Process_Down situation

Description
The Network Manager process is not running.

The situation will be evaluated for each distinct value of the COMPONENT attribute.

Formula
```
*IF ( ( *VALUE KNP_AVAILABILITY.Status *EQ DOWN ) *AND ( *VALUE
KNP_AVAILABILITY.Application_Component *EQ 'ncp_config' ) )
```

See "Attribute groups and attributes for the IBM Tivoli Monitoring for Tivoli Network Manager IP Edition" on page 25 for descriptions of the attributes in this formula.

Run at startup
This situation is automatically distributed to instances of this agent.

Sampling interval
5 minutes

Situation persistence
The number of times the conditions of the situation must occur for the situation to be true is 1.

Severity
Critical

Clearing conditions
The situation clears when the condition becomes false.

KNP_NCP_POLLER_Process_Down situation

Description
The Network Manager process is not running.

The situation will be evaluated for each distinct value of the COMPONENT attribute.

Formula

```
*IF ( ( *VALUE KNP_AVAILABILITY.Status *EQ DOWN ) *AND ( *VALUE
KNP_AVAILABILITY.Application_Component *EQ 'ncp_poller' ) )
```

See "Attribute groups and attributes for the IBM Tivoli Monitoring for Tivoli Network Manager IP Edition" on page 25 for descriptions of the attributes in this formula.

Run at startup

This situation is automatically distributed to instances of this agent.

Sampling interval

5 minutes

Situation persistence

The number of times the conditions of the situation must occur for the situation to be true is 1.

Severity

Critical

Clearing conditions

The situation clears when the condition becomes false.

KNP_NCPMONITOR_Process_Down situation

Description

The Network Manager process is not running.

The situation will be evaluated for each distinct value of the COMPONENT attribute.

Formula

```
*IF ( ( *VALUE KNP_AVAILABILITY.Status *EQ DOWN ) *AND ( *VALUE
KNP_AVAILABILITY.Application_Component *EQ 'nco_p_ncpmonitor' ) )
```

See "Attribute groups and attributes for the IBM Tivoli Monitoring for Tivoli Network Manager IP Edition" on page 25 for descriptions of the attributes in this formula.

Run at startup

This situation is automatically distributed to instances of this agent.

Sampling interval

5 minutes

Situation persistence

The number of times the conditions of the situation must occur for the situation to be true is 1.

Severity

Critical

Clearing conditions
The situation clears when the condition becomes false.

KNP_NCP_NCOGATE_Process_Down situation

Description
The Network Manager process is not running.

The situation will be evaluated for each distinct value of the COMPONENT attribute.

Formula
```
*IF ( ( *VALUE KNP_AVAILABILITY.Status *EQ DOWN ) *AND ( *VALUE
KNP_AVAILABILITY.Application_Component *EQ 'ncp_ncogate' ) )
```

See "Attribute groups and attributes for the IBM Tivoli Monitoring for Tivoli Network Manager IP Edition" on page 25 for descriptions of the attributes in this formula.

Run at startup
This situation is automatically distributed to instances of this agent.

Sampling interval
5 minutes

Situation persistence
The number of times the conditions of the situation must occur for the situation to be true is 1.

Severity
Critical

Clearing conditions
The situation clears when the condition becomes false.

KNP_NCP_WEBTOOL_Process_Down situation

Description
The Network Manager process is not running.

The situation will be evaluated for each distinct value of the COMPONENT attribute.

Formula
```
*IF ( ( *VALUE KNP_AVAILABILITY.Status *EQ DOWN ) *AND ( *VALUE
KNP_AVAILABILITY.Application_Component *EQ 'ncp_webtool' ) )
```

See "Attribute groups and attributes for the IBM Tivoli Monitoring for Tivoli Network Manager IP Edition" on page 25 for descriptions of the attributes in this formula.

Run at startup
This situation is automatically distributed to instances of this agent.

Sampling interval
5 minutes

Situation persistence
The number of times the conditions of the situation must occur for the situation to be true is 1.

Severity
Critical

Clearing conditions
The situation clears when the condition becomes false.

KNP_NCP_G_EVENT_Process_Down situation

Description
The Network Manager process is not running.

The situation will be evaluated for each distinct value of the COMPONENT attribute.

Formula
```
*IF ( ( *VALUE KNP_AVAILABILITY.Status *EQ DOWN ) *AND ( *VALUE
KNP_AVAILABILITY.Application_Component *EQ 'ncp_g_event' ) )
```

See "Attribute groups and attributes for the IBM Tivoli Monitoring for Tivoli Network Manager IP Edition" on page 25 for descriptions of the attributes in this formula.

Run at startup
This situation is automatically distributed to instances of this agent.

Sampling interval
5 minutes

Situation persistence
The number of times the conditions of the situation must occur for the situation to be true is 1.

Severity
Critical

Clearing conditions
The situation clears when the condition becomes false.

KNP_NCP_VIRTUAL_Process_Down situation

Description
The Network Manager process is not running.

The situation will be evaluated for each distinct value of the COMPONENT attribute.

Formula
```
*IF ( ( *VALUE KNP_AVAILABILITY.Status *EQ DOWN ) *AND ( *VALUE
KNP_AVAILABILITY.Application_Component *EQ 'ncp_virtual' ) )
```

See "Attribute groups and attributes for the IBM Tivoli Monitoring for Tivoli Network Manager IP Edition" on page 25 for descriptions of the attributes in this formula.

Run at startup
This situation is automatically distributed to instances of this agent.

Sampling interval
5 minutes

Situation persistence
The number of times the conditions of the situation must occur for the situation to be true is 1.

Severity
Critical

Clearing conditions
The situation clears when the condition becomes false.

Discovery Navigator item

There are no predefined situations for this Navigator item.

Monitoring Navigator item

KNP_Work_Item_Queue_Warning situation

Description
The number of work items in the poller queue is high.

The situation will be evaluated for each distinct value of the TOTAL attribute.

Formula
```
*IF *VALUE KNP_WORK_ITEM_QUEUE.Total *GT 0
```

See "Attribute groups and attributes for the IBM Tivoli Monitoring for Tivoli Network Manager IP Edition" on page 25 for descriptions of the attributes in this formula.

Run at startup
This situation is automatically distributed to instances of this agent.

Sampling interval
5 minutes

Situation persistence
The number of times the conditions of the situation must occur for the situation to be true is 1.

Severity
Warning

Clearing conditions
The situation clears when the condition becomes false.

KNP_Polling_Capacitiy_Warning situation

Description
The monitor is near polling capacity.

The situation will be evaluated for each distinct value of the TOTAL attribute.

Formula
```
*IF *VALUE KNP_POLLING_CAPACITY.Total *GE 6
```

See "Attribute groups and attributes for the IBM Tivoli Monitoring for Tivoli Network Manager IP Edition" on page 25 for descriptions of the attributes in this formula.

Run at startup
This situation is automatically distributed to instances of this agent.

Sampling interval
5 minutes

Situation persistence
The number of times the conditions of the situation must occur for the situation to be true is 1.

Severity
Warning

Clearing conditions
The situation clears when the condition becomes false.

KNP_Polling_Capacitiy_Critical situation

Description
The monitor has reached the polling capacity.

The situation will be evaluated for each distinct value of the TOTAL attribute.

Formula
```
*IF *SIT KNP_Polling_Capacity_Warning *EQ *TRUE *AND *VALUE
KNP_POLLING_CAPACITY.Total *LT 1
```

See "Attribute groups and attributes for the IBM Tivoli Monitoring for Tivoli Network Manager IP Edition" on page 25 for descriptions of the attributes in this formula.

Run at startup
This situation is automatically distributed to instances of this agent.

Sampling interval
5 minutes

Situation persistence
The number of times the conditions of the situation must occur for the situation to be true is 1.

Severity
Critical

Clearing conditions
The situation clears when the condition becomes false.

Network Navigator item

KNP_Total_Entities_Warning situation

Description
The total number of entities in the model database is high.

The situation will be evaluated for each distinct value of the ENTITIES attribute.

Formula
```
*IF ( ( *VALUE KNP_ENTITIES_ON_MODEL_DB.Entities *GE 200000 ) *AND ( *VALUE
KNP_ENTITIES_ON_MODEL_DB.Entities *LE 225000 ) )
```

See "Attribute groups and attributes for the IBM Tivoli Monitoring for Tivoli Network Manager IP Edition" on page 25 for descriptions of the attributes in this formula.

Run at startup
This situation is automatically distributed to instances of this agent.

Sampling interval
15 minutes

Situation persistence
The number of times the conditions of the situation must occur for the situation to be true is 1.

Severity
Warning

Clearing conditions
The situation clears when the condition becomes false.

KNP_Total_Entities_Critical situation

Description
The total number of entities in the model database is critical.

The situation will be evaluated for each distinct value of the ENTITIES attribute.

Formula
```
*IF ( ( *VALUE KNP_ENTITIES_ON_MODEL_DB.Entities *GE 225000 ) )
```

See "Attribute groups and attributes for the IBM Tivoli Monitoring for Tivoli Network Manager IP Edition" on page 25 for descriptions of the attributes in this formula.

Run at startup
This situation is automatically distributed to instances of this agent.

Sampling interval
15 minutes

Situation persistence
The number of times the conditions of the situation must occur for the situation to be true is 1.

Severity
Critical

Clearing conditions
The situation clears when the condition becomes false.

Chapter 6. Take Action commands reference

This chapter contains an overview of Take Action commands, references for detailed information about Take Action commands, and descriptions of the Take Action commands included in this monitoring agent, if any.

About Take Action commands

Take Action commands can be run from the portal client or included in a situation or a policy.

When included in a situation, the command runs when the situation becomes true. A Take Action command in a situation is also referred to as reflex automation. When you enable a Take Action command in a situation, you automate a response to system conditions. For example, you can use a Take Action command to send a command to restart a process on the managed system or to send a text message to a cell phone.

Advanced automation uses policies to perform actions, schedule work, and automate manual tasks. A policy comprises a series of automated steps called activities that are connected to create a workflow. After an activity is completed, Tivoli Enterprise Portal receives return code feedback, and advanced automation logic responds with subsequent activities prescribed by the feedback.

A basic Take Action command displays the return code of the operation in a message box that is displayed after the action completes or in a log file. After you close this window, no further information is available for this action.

More information about Take Action commands

For more information about working with Take Action commands, see the *IBM Tivoli Monitoring User's Guide*.

Predefined Take Action commands

The IBM Tivoli Monitoring for Tivoli Network Manager IP Edition does not provide predefined Take Action commands.

Chapter 7. Policies reference

This chapter contains an overview of policies, references for detailed information about policies, and descriptions of the predefined policies included in this monitoring agent, if any.

About policies

Policies are an advanced automation technique for implementing more complex workflow strategies than you can create through simple automation.

A *policy* is a set of automated system processes that can perform actions, schedule work for users, or automate manual tasks. You use the Workflow Editor to design policies. You control the order in which the policy executes a series of automated steps, which are also called activities. Policies are connected to create a workflow. After an activity is completed, Tivoli Enterprise Portal receives return code feedback and advanced automation logic responds with subsequent activities prescribed by the feedback.

More information about policies

This monitoring agent does not provide predefined policies. For more information about working with policies, see the *IBM Tivoli Monitoring User's Guide*.

For information about using the Workflow Editor, see the *IBM Tivoli Monitoring Administrator's Guide* or the Tivoli Enterprise Portal online help.

Predefined policies

The IBM Tivoli Monitoring for Tivoli Network Manager IP Edition does not provide predefined policies.

Chapter 8. Troubleshooting

This chapter provides agent-specific troubleshooting information. See the *IBM Tivoli Monitoring Problem Determination Guide* for general troubleshooting information. Also see "Support for problem solving" on page 90 for other problem-solving options.

Note: You can resolve some problems by ensuring that your system matches the system requirements listed in Chapter 2, "Installing and configuring the monitoring agent," on page 5.

Gathering product information for IBM Software Support

Before contacting IBM Software Support about a problem you are experiencing with this product, gather the information in Table 2 that relates to the problem.

Table 2. Information to gather before contacting IBM Software Support

Information type	Description
Log files	Collect trace log files from failing systems. Most logs are located in a `logs` subdirectory on the host computer. See "Trace logging" on page 76 for lists of all trace log files and their locations. See the *IBM Tivoli Monitoring User's Guide* for general information about the IBM Tivoli Monitoring environment.
IBM Tivoli Network Manager IP Edition information	• Version number and patch level
Operating system	Operating system version number and patch level
Messages	Messages and other information displayed on the screen
Version numbers for IBM Tivoli Monitoring	Version number of the following members of the monitoring environment: • IBM Tivoli Monitoring. Also provide the patch level, if available. • IBM Tivoli Monitoring for Tivoli Network Manager IP Edition
Screen captures	Screen captures of incorrect output, if any.
(*UNIX only*) Core dump files	If the system stops on UNIX systems, collect the core dump file from *install_dir*/bin directory, where *install_dir* is the directory where you installed the monitoring agent.

Upload files for review to the following FTP site: ftp.emea.ibm.com. Log in as **anonymous** and place your files in the directory that corresponds to the IBM Tivoli Monitoring component that you use. See "Contacting IBM Software Support" on page 92 for more information about working with IBM Software Support.

Built-in troubleshooting features

The primary troubleshooting feature in the IBM Tivoli Monitoring for Tivoli Network Manager IP Edition is logging. *Logging* refers to the text messages and trace data generated by the IBM Tivoli Monitoring for Tivoli Network Manager IP Edition. Messages and trace data are sent to a file.

Trace data captures transient information about the current operating environment when a component or application fails to operate as designed. IBM Software Support personnel use the captured trace information to determine the source of an error or unexpected condition. See "Trace logging" on page 76 for more information.

Problem classification

The following types of problems might occur with the IBM Tivoli Monitoring for Tivoli Network Manager IP Edition:

- Installation and configuration
- General usage and operation
- Display of monitoring data
- Take Action commands

This chapter provides symptom descriptions and detailed workarounds for these problems, as well as describing the logging capabilities of the monitoring agent. See the *IBM Tivoli Monitoring Problem Determination Guide* for general troubleshooting information.

Trace logging

Trace logs capture information about the operating environment when component software fails to operate as intended. The principal log type is the RAS (Reliability, Availability, and Serviceability) trace log. These logs are in the English language only. The RAS trace log mechanism is available for all components of IBM Tivoli Monitoring. Most logs are located in a `logs` subdirectory on the host computer. See the following sections to learn how to configure and use trace logging:

- "Principal trace log files" on page 77
- "Examples: using trace logs" on page 78
- "Setting RAS trace parameters" on page 79

Note: The documentation refers to the RAS facility in IBM Tivoli Monitoring as "RAS1".

IBM Software Support uses the information captured by trace logging to trace a problem to its source or to determine why an error occurred. All components in the IBM Tivoli Monitoring environment have a default tracing level. The tracing level can be changed on a per-component level to adjust the type of trace information collected, the degree of trace detail, the number of trace logs to be kept, and the amount of disk space used for tracing.

Overview of log file management

Table 3 on page 77 provides the names, locations, and descriptions of RAS1 log files. The log file names adhere to the following naming convention:

Windows systems

hostname_productcode_program_HEXtimestamp-nn.log

Linux and UNIX systems

hostname_productcode_HEXtimestamp-nn.log

where:

- *hostname* is the host name of the computer where the monitoring component is running.
- *productcode* is the two-character product code. For IBM Tivoli Monitoring for Tivoli Network Manager IP, the product code is np.
- *program* is the name of the program being run.
- *HEXtimestamp* is a hexadecimal time stamp representing the time at which the program started.

- *nn* is a rolling log suffix.

Principal trace log files

Table 3 contains locations, file names, and descriptions of trace logs that can help determine the source of problems with agents.

Table 3. Trace log files for troubleshooting agents

System where log is located	File name and path	Description
On the Tivoli Enterprise Monitoring Server	• **Windows:** The file in the *install_dir*\InstallITM path • **UNIX:** The candle_installation.log file in the *install_dir*/logs path	Provides details about products that are installed. **Note:** Trace logging is enabled by default. A configuration step is not required to enable this tracing.
	The Warehouse_Configuration.log file is in the following locations on Windows systems: *install_dir*\InstallITM	Provides details about the configuration of data warehousing for historical reporting.
	The name of the RAS log file is as follows: • **Windows:** *install_dir*\logs\ hostname_productcode_HEXtimestamp-nn.log • **UNIX:** *install_dir*/logs/ hostname_productcode_timestamp.log **Note:** File names for RAS1 logs include a hexadecimal time stamp. Also on UNIX, a log with a decimal time stamp is provided: *hostname_productcode_timestamp*.log and *hostname_productcode_ timestamp*.pid*nnnnn* in the *install_dir*/logs path, where nnnnn is the process ID number.	Traces activity on the monitoring server.
On the Tivoli Enterprise Portal Server	The name of the RAS log file is as follows: • **Windows:** *install_dir*\logs\ hostname_cq_HEXtimestamp-nn.log • **UNIX:** *install_dir*/logs/ *hostname*_cq_HEXtimestamp-nn.log **Note:** File names for RAS1 logs include a hexadecimal time stamp. Also on UNIX, a log with a decimal time stamp is provided: *hostname_productcode_timestamp*.log and *hostname_productcode_ timestamp*.pid*nnnnn* in the *install_dir*/logs path, where nnnnn is the process ID number.	Traces activity on the portal server.
	The teps_odbc.log file is located in the following path • **Windows**: *install_dir*\InstallITM path. • **UNIX**: *install_dir*/logs	When you enable historical reporting, this log file traces the status of the warehouse proxy agent.

Table 3. Trace log files for troubleshooting agents (continued)

System where log is located	File name and path	Description
On the computer that hosts the monitoring agent	The RAS1 log files are as follows: • **Windows:** hostname_np_knpagent _HEXtimestamp-nn.log in the *install_dir*\tmaitm6\logs directory • **UNIX:** hostname_np_HEXtimestamp-nn.log in the *install_dir*/logs directory These logs are in the following directories: • **Windows:** *install_dir*\tmaitm6\logs	Traces activity of the monitoring agent.
	The agent operations log files are as follows: *instance_hostname*_NP.LG0 is the current log created when the agent was started *instance_hostname*_NP.LG1 is the backup of the previous log These logs are in the following directory depending on the operating system that you are using: • **Windows:** *install_dir*\tmaitm6\logs • **UNIX:** *install_dir*/logs	Shows whether the agent was able to connect to the monitoring server. Shows which situations are started and stopped, and shows other events while the agent is running. A new version of this file is generated every time the agent is restarted. IBM Tivoli Monitoring generates one backup copy of the *.LG0 file with the tag .LG1. View .LG1 to learn the following details regarding the *previous* monitoring session: • Status of connectivity with the monitoring server. • Situations that were running. • The success or failure status of Take Action commands.
	The Take Action command log files are as follows: • *host*_np_*instance_takeactioncommand*.log The logs are in the following directories: • **Windows:** *install_dir*\tmaitm6\logs • **UNIX:** *install_dir*/logs	Traces activity each time a Take Action command runs. For example, when a hypothetical **start_command** Take Action command runs, IBM Tivoli Monitoring generates a start_command.log file.
Definitions of variables: *timestamp* is time stamp whose format includes year (y), month (m), day (d), hour (h), and minute (m), as follows: **yyyymmdd hhmm** *HEXtimestamp* is a hexadecimal representation of the time at which the process was started. *install_dir* represents the directory path where you installed the IBM Tivoli Monitoring component. *install_dir* can represent a path on the computer that host the monitoring system, the monitoring agent, or the portal. *instance* refers to the name of the database instance that you are monitoring. *hostname* refers to the name of the computer on which the IBM Tivoli Monitoring component runs. *nn* represents the circular sequence in which logs are rotated. Ranges from 1-5, by default, though the first is always retained, because it includes configuration parameters. *productcode* specifies the product codes, for example, um for Universal Agent or nt for Windows.		

See the *IBM Tivoli Monitoring Installation and Setup Guide* for more information on the complete set of trace logs that are maintained on the monitoring server.

Examples: using trace logs

Typically IBM Software Support applies specialized knowledge to analyze trace logs to determine the source of problems. However, you can open trace logs in a

text editor to learn some basic facts about your IBM Tivoli Monitoring environment. The following examples are from the Tivoli Enterprise Monitoring Server log.

Example one

This excerpt shows the typical log for a failed connection between a monitoring agent and a monitoring server with the host name **server1a**:

```
(Thursday, August 11, 2005, 08:21:30-{94C}kdcl0cl.c,105,"KDCL0_ClientLookup") status=1c020006,
 "location server unavailable", ncs/KDC1_STC_SERVER_UNAVAILABLE
(Thursday, August 11, 2005, 08:21:35-{94C}kraarreg.cpp,1157,"LookupProxy") Unable to connect to
 broker at ip.pipe:: status=0, "success", ncs/KDC1_STC_OK
(Thursday, August 11, 2005, 08:21:35-{94C}kraarreg.cpp,1402,"FindProxyUsingLocalLookup") Unable
 to find running CMS on CT_CMSLIST <IP.PIPE:#server1a>
```

Example two

The following excerpts from the trace log *for the monitoring server* show the status of an agent, identified here as "Remote node." The name of the computer where the agent is running is **SERVER5B**:

```
(42C039F9.0000-6A4:kpxreqhb.cpp,649,"HeartbeatInserter") Remote node SERVER5B:NP is ON-LINE.
. . .
(42C3079B.0000-6A4:kpxreqhb.cpp,644,"HeartbeatInserter") Remote node SERVER5B:NP is OFF-LINE.
```

Key points regarding the preceding excerpt:

- The monitoring server appends the **NP** product code to the server name to form a unique name (`SERVER5B:NP`) for this instance of the IBM Tivoli Monitoring for Tivoli Network Manager IP Edition. This unique name enables you to distinguish multiple monitoring products that might be running on **SERVER5B**.
- The log shows when the agent started (ON-LINE) and later stopped (OFF-LINE) in the environment.
- For the sake of brevity an ellipsis (...) represents the series of trace log entries that were generated while the agent was running.
- Between the ON-LINE and OFF-LINE log entries, the agent was communicating with the monitoring server.
- The ON-LINE and OFF-LINE log entries are always available in the trace log. All trace levels that are described in “Setting RAS trace parameters” provide these entries.

On Windows, you can use the following alternate method to view trace logs:

1. In the Windows **Start** menu, choose **Program Files > IBM Tivoli Monitoring > Manage Tivoli Enterprise Monitoring Services**. The Manage Tivoli Enterprise Monitoring Services window is displayed.
2. Right-click a component and select **Advanced > View Trace Log** in the pop-up menu. For example, if you want to view the trace log of the IBM Tivoli Network Manager IP Edition agent, right-click the name of the that agent in the window. You can also use the viewer to access remote logs.

   Note: The viewer converts time stamps in the logs to a format that is easier to read.

Setting RAS trace parameters

Objective

Pinpoint a problem by setting detailed tracing of individual components of the monitoring agent and modules.

Background Information

The IBM Tivoli Monitoring for Tivoli Network Manager IP Edition uses RAS1 tracing and generates the logs described in Table 3 on page 77. The default RAS1 trace level is ERROR.

Before you begin

See "Overview of log file management" on page 76 to ensure that you understand log rolling and can reference the correct log files when you manage log file generation.

After you finish

Monitor the size of the **logs** directory. Default behavior can generate a total of 45 to 60 MB for each agent that is running on a computer. For example, each database instance that you monitor can generate 45 to 60 MB of log data. See the "Procedure" section to learn how to adjust file size and numbers of log files to prevent logging activity from occupying too much disk space.

Regularly prune log files other than the RAS1 log files in the logs directory. Unlike the RAS1 log files that are pruned automatically, other log types can grow indefinitely, for example, the logs in Table 3 on page 77 that include a process ID number (PID).

Consider using collector trace logs as an additional source of troubleshooting information.

Note: The **KDC_DEBUG** setting and the Maximum error tracing setting can generate a large amount of trace logging. Use them only temporarily, while you are troubleshooting problems. Otherwise, the logs can occupy excessive amounts of hard disk space.

Procedure

On Windows systems, you can use the graphical user interface to set trace options:

1. Open the Manage Tivoli Enterprise Monitoring Services window.
2. Right-click the icon of the monitoring agent whose logging you want to modify.
3. Select **Advanced** > **Edit Trace Parms**. The Tivoli Enterprise Monitoring Server Trace Parameters window is displayed.
4. Select a new trace setting in the pull-down menu in the **Enter RAS1 Filters** field or type a valid string.

   The selections are as follows:

   - General error tracing. `KBB_RAS1=ERROR`
   - Intensive error tracing. `KBB_RAS1=ERROR (UNIT:kqz ALL)`
   - Maximum error tracing. `KBB_RAS1=ERROR (UNIT:kqz ALL) (UNIT:kra ALL)`

     Notes®: As this example shows, you can set multiple RAS tracing options in a single statement.
5. Modify the value for 'Maximum Log Size Per File (MB)" to change the log file size (changes LIMIT value).
6. Modify the value for 'Maximum Number of Log Files Per Session" to change the number of log files per startup of a program (changes COUNT value).
7. Modify the value for 'Maximum Number of Log Files Total" to change the number of log files for all startups of a program (changes MAXFILES value).

8. (*Optional*) Click Y (Yes) in the **KDC_DEBUG Setting** menu to log information that can help you diagnose communications and connectivity problems between the monitoring agent and the monitoring server.

   Note: The **KDC_DEBUG** setting and the Maximum error tracing setting can generate a large amount of trace logging. Use them only temporarily, while you are troubleshooting problems. Otherwise, the logs can occupy excessive amounts of hard disk space.
9. Click **OK**. You see a message reporting a restart of the monitoring agent so that your changes take effect.

You can also manually edit the RAS1 trace logging parameters using this method:

1. Open the trace options file:

   Windows: *install_dir*\tmaitm6\KNPENV

   UNIX: *install_dir*/config/np.ini
2. Edit the line that begins with KBB_RAS1= to set trace logging preferences. For example, if you want detailed trace logging, set the Maximum Tracing option:`KBB_RAS1=ERROR (UNIT:kqz ALL) (UNIT:kra ALL)`
3. Edit the line that begins with **KBB_RAS1_LOG**= to manage the generation of log files:
   - MAXFILES: the total number of files that are to be kept for all startups of a given program. When this value is exceeded, the oldest log files are discarded. Default value is 9.
   - LIMIT: the maximum size, in megabytes (MB) of a RAS1 log file. Default value is 5.
   - IBM Software Support might guide you to modify the following parameters:
     - COUNT: the number of log files to keep in the rolling cycle of one program startup. Default is 3.
     - PRESERVE: the number of files that are not to be reused in the rolling cycle of one program startup. Default value is 1.

   Notes: The **KBB_RAS1_LOG** parameter also provides for the specification of the log file directory, log file name, and the inventory control file directory and name. Do not modify these values or log information can be lost.
4. Restart the monitoring agent so that your changes take effect.

Problems and workarounds

The following sections provide symptoms and workarounds for problems that might occur with the IBM Tivoli Monitoring for Tivoli Network Manager IP Edition:

- "Installation and configuration troubleshooting" on page 82
- "Remote deployment troubleshooting" on page 84
- "Agent troubleshooting" on page 85
- "Workspace troubleshooting" on page 86
- "Situation troubleshooting" on page 87

Note: You can resolve some problems by ensuring that your system matches the system requirements listed in Chapter 2, "Installing and configuring the monitoring agent," on page 5.

This chapter provides agent-specific troubleshooting information. See the *IBM Tivoli Monitoring Problem Determination Guide* for general troubleshooting information.

Installation and configuration troubleshooting

This section provides tables that show solutions for installation, configuration, and uninstallation problems.

Table 4. Problems and solutions for installation and configuration

Problem	Solution
(*UNIX only*) During a command-line installation, you choose to install a component that is already installed, and you see the following warning: `WARNING - you are about to install the SAME version of "component_name"` where *component_name* is the name of the component that you are attempting to install. **Note:** This problem affects UNIX command-line installations. If you monitor only Windows environments, you see this problem if you choose to install a product component (for example, a monitoring server) on UNIX.	You must exit and restart the installation process. You cannot return to the list where you selected components to install. When you run the installer again, do not attempt to install any component that is already installed.
A problem can arise when you install and configure a new monitoring agent to a computer where other agents are running as described in this example: • Agents are running on computer and communicating with a Tivoli Enterprise Monitoring Server, called **TEMS1**. • You install a new agent on the same computer and you want this agent to communicate with a different monitoring server, called **TEMS2**. • When you configure the new agent to communicate with **TEMS2**, all the existing agents are re-configured to communicate with **TEMS2**.	You must reconfigure the previously existing agents to restore their communication connection with **TEMS1**. For example, you can right-click the row for a specific agent in the Manage Tivoli Enterprise Monitoring Services, and select **Reconfigure**. See the *IBM Tivoli Monitoring Installation and Setup Guide* for more information on reconfiguration.
Diagnosing problems with product browse settings (Windows systems only).	When you have problems with browse settings, perform the following steps: 1. Click **Start > Programs > IBM Tivoli Monitoring > Manage Tivoli Enterprise Monitoring Services**. The Manage Tivoli Enterprise Monitoring Services window is displayed. 2. Right-click the Windows agent and select **Browse Settings**. A text window is displayed. 3. Click **Save As** and save the information in the text file. If requested, you can forward this file to IBM Software Support for analysis.

Table 4. Problems and solutions for installation and configuration (continued)

Problem	Solution
A message similar to "Unable to find running CMS on CT_CMSLIST" in the log file is displayed.	If a message similar to "Unable to find running CMS on CT_CMSLIST" is displayed in the Log file, the agent is not able to connect to the monitoring server. Confirm the following points: • Do multiple network interface cards (NICs) exist on the system? • If multiple NICs exist on the system, find out which one is configured for the monitoring server. Ensure that you specify the correct host name and port settings for communication in the IBM Tivoli Monitoring environment.
The system is experiencing high CPU usage.	**Agent process:** View the memory usage of the KNPCMA process. If CPU usage seems to be excessive, recycle the monitoring agent. **Network Cards:** The network card configurations can decrease the performance of a system. Each of the stream of packets that a network card receives (assuming it is a broadcast or destined for the under-performing system) must generate a CPU interrupt and transfer the data through the I/O bus. If the network card in question is a bus-mastering card, work can be off-loaded and a data transfer between memory and the network card can continue without using CPU processing power. Bus-mastering cards are generally 32-bit and are based on PCI or EISA bus architectures.

Table 5. General problems and solutions for uninstallation

Problem	Solution
On Windows, uninstallation of IBM Tivoli Monitoring fails to uninstall the entire environment.	Be sure that you follow the general uninstallation process described in the *IBM Tivoli Monitoring Installation and Setup Guide*: 1. Remove Tivoli Enterprise Monitoring Server Application support by completing the following steps: a. Use Manage Tivoli Enterprise Monitoring Services. b. Select **Tivoli Enterprise Monitoring Server**. c. Right-click and select **Advanced**. d. Select **Remove TEMS application support**. e. Select the agent to remove its application support. 2. Uninstall monitoring agents first, as in the following examples: • Uninstall a single monitoring agent for a specific database. -OR- • Uninstall all instances of a monitoring product, such as IBM Tivoli Monitoring for Databases. 3. Uninstall IBM Tivoli Monitoring.

Table 5. General problems and solutions for uninstallation (continued)

Problem	Solution
The way to remove inactive managed systems (systems whose status is OFFLINE) from the Navigator tree in the portal is not obvious.	Use the following steps to remove, but not uninstall, an offline managed system from the Navigator tree: 1. Click the Enterprise icon in the Navigator tree. 2. Right-click, then click **Workspace** > **Managed System Status**. 3. Right-click the offline managed system, and select **Clear offline entry**. If you also want to uninstall the monitoring agent, use the procedure described in the *IBM Tivoli Monitoring Installation and Setup Guide*.
After the remote removal from the Tivoli Enterprise Portal of a running instance, the instance name is still listed in the Start List.	Bring up the configure list to remove the instance name from the Start list.
IBM Tivoli Monitoring might not be able to generate a unique name for monitoring components because of the truncation of names that the product automatically generates.	If the agent supports multi-instances, IBM Tivoli Monitoring automatically creates a name for each monitoring component by concatenating the subsystem name, host name, and product code separated by colons (*subsystem_name*:*hostname*:KNP). **Note:** When you monitor a multinode system, such as a database, IBM Tivoli Monitoring adds a subsystem name to the concatenated name, typically a database instance name.The length of the name that IBM Tivoli Monitoring generates is limited to 32 characters. Truncation can result in multiple components having the same 32-character name. If this problem happens, shorten the *hostname* portion of the name as follows: 1. Open the configuration file for the monitoring agent, which is located in the following path: • **On Windows:** *install_dir*\tmaitm6\K*product_code*CMA.INI. For example, the product code for the Monitoring Agent for Windows OS is NT. The file name for is KNTCMA.INI. • **On UNIX and Linux:** itm_home/config/*product_code*.ini and *product_code*.config. For example, the file names for the Monitoring Agent for UNIX OS is ux.ini and ux.config. 2. Find the line the begins with **CTIRA_HOSTNAME=**. 3. Type a new name for host name that is a unique, shorter name for the host computer. The final concatenated name including the subsystem name, new host name, and KNP, cannot be longer than 32 characters. **Note:** You must ensure that the resulting name is unique with respect to any existing monitoring component that was previously registered with the Tivoli Enterprise Monitoring Server. 4. Save the file. 5. Restart the agent.

Remote deployment troubleshooting

Table 6 on page 85 lists problems that might occur with remote deployment. This section provides information about troubleshooting remote deployment of the monitoring agent. See the *IBM Tivoli Monitoring Problem Determination Guide* for general troubleshooting information.

This section describes problems and solutions for remote deployment and removal of agent software using Agent Remote Deploy.

Table 6. Remote deployment problems and solutions

Problem	Solution
While you are using the remote deployment feature to install the IBM Tivoli Monitoring for Tivoli Network Manager IP Edition, an empty command window is displayed on the target computer. This problem occurs when the target of remote deployment is a Windows computer. (See the *IBM Tivoli Monitoring Installation and Setup Guide* for more information on the remote deployment feature.)	Do not close or modify this window. It is part of the installation process and is dismissed automatically.
The removal of a monitoring agent fails when you use the remote removal process in the Tivoli Enterprise Portal desktop or browser.	This problem might occur when you attempt the remote removal process immediately after you have restarted the Tivoli Enterprise Monitoring Server. You must allow time for the monitoring agent to refresh its connection with the Tivoli Enterprise Monitoring Server before you begin the remote removal process.

Agent troubleshooting

This section lists problems that might occur with agents.

This chapter provides agent-specific troubleshooting information. See the *IBM Tivoli Monitoring Problem Determination Guide* for general troubleshooting information.

Table 7. Agent problems and solutions

Problem	Solution
Log data accumulates too rapidly.	Check the RAS trace option settings, which are described in "Setting RAS trace parameters" on page 79. The trace options settings that you can set on the `KBB_RAS1=` and `KDC_DEBUG=` lines potentially generate large amounts of data.
When using the F1 key or selecting Help --> Contents and Index, you receive a message in your Microsoft Internet Explorer browser which states, "It seems javascript is disabled in your browser, please enable it and reload again, or click here to view without javascript." If you select 'here', the Tivoli Enterprise Portal V6.1 Help is displayed, but the agent help is not.	Ensure that the local site is added to the trusted site for the browser, and then enable the javascript.
If you want to receive multiple trace logs for separate invocations of the same Take Action command, leaving this setting on permanently fills the available disk space.	Do not leave this setting permanently. By doing so, you create a new log file for each invocation of the Take Action command and ALL of them are left on the agent system.

Table 7. Agent problems and solutions (continued)

Problem	Solution
Online Help Search cannot find any agent online help.	To search the online help for this agent the user must use the IBM Eclipse help search function and not the search function in the web based help online help. To use the search function for the online help for this agent, ensure that you have selected the IBM Eclipse help server check box when installing the Tivoli Enterprise Portal Server. The 'Searching Agent Help' topic in the online help contains a link to the Eclipse help, where the search function is enabled. From the Table of Contents in the left-hand pane of the help, select the 'Searching Agent Help' topic to find the link to the Eclipse help in the right-hand pane.

Workspace troubleshooting

Table 8 shows problems that might occur with workspaces. This chapter provides agent-specific troubleshooting information. See the *IBM Tivoli Monitoring Problem Determination Guide* for general troubleshooting information.

Table 8. Workspace problems and solutions

Problem	Solution
The process application components are available, but the Availability status shows PROCESS_DATA_NOT_ AVAILABLE.	This problem occurs because the **PerfProc** performance object is disabled. When this condition exists, IBM Tivoli Monitoring cannot collect performance data for this process. Do the following to confirm that this problem exists and resolve it: 1. Choose **Run** in the Windows **Start** menu. 2. Type perfmon.exe in the **Open** field of the Run window. The Performance window is displayed. 3. Click the plus sign (+) in the tool bar located above the right pane. The Add Counters window is displayed. 4. Look for **Process** in the **Performance object** pull-down menu. 5. Perform one of the following actions: • If you see **Process** in the pull-down menu, the **PerfProc** performance object is enabled and the problem is coming from a different source. You might need to contact IBM Software Support. • If you do not see **Process** in the pull-down menu, use the Microsoft utility from the following Web site to enable the **PerfProc** performance object: `http://www.microsoft.com/windows2000/techinfo /reskit/tools/existing /exctrlst-o.asp` The **Process** performance object becomes visible in the **Performance object** pull-down menu of the Add Counters windows, and IBM Tivoli Monitoring is able to detect Availability data. 6. Restart the monitoring agent.
The name of the attribute does not display in a bar chart or graph view.	When a chart or graph view that includes the attribute is scaled to a small size, a blank space is displayed instead of a truncated name. To see the name of the attribute, expand the view of the chart until there is sufficient space to display all characters of the attribute name.
At the bottom of each view, you see the following Historical workspace KFWITM220E error: **Request failed during execution**.	Ensure that you configure all groups that supply data to the view. In the Historical Configuration view, ensure that data collection is started for all groups that supply data to the view.

Table 8. Workspace problems and solutions (continued)

Problem	Solution
You start collection of historical data but the data cannot be seen.	Managing options for historical data collection: • Basic historical data collection populates the Warehouse with raw data. This type of data collection is turned off by default. See the *IBM Tivoli Monitoring Administrator's Guide* for information on managing this feature including how to set the interval at which data is collected. By setting a more frequent interval for data collection you reduce the load on the system incurred every time data is uploaded. • You use the Summarization and Pruning monitoring agent to collect specific amounts and types of historical data. Be aware that historical data is not displayed until the Summarization and Pruning monitoring agent begins collecting the data. By default, this agent begins collection at 2 AM daily. At that point, data is visible in the workspace view. See the *IBM Tivoli Monitoring Administrator's Guide* to learn how to modify the default collection settings.
Historical data collection is unavailable because of incorrect queries in the Tivoli Enterprise Portal.	The column, Sort By, Group By, and First/Last functions are not compatible with the historical data collection feature. Use of these advanced functions makes a query ineligible for historical data collection. Even if data collection has been started, you cannot use the time span feature if the query for the chart or table includes column functions or advanced query options (Sort By, Group By, First / Last). To ensure support of historical data collection, do not use the Sort By, Group By, or First/Last functions in your queries. See the *IBM Tivoli Monitoring Administrator's Guide* the Tivoli Enterprise Portal online help for information about the Historical Data Collection function.
When you use a long process name in the situation, the process name is truncated.	Truncation of process or service names for situations in the Availability table in the portal display is the expected behavior. 100 bytes is the maximum name length.
Regular (non-historical) monitoring data fails to be displayed.	Check the formation of the queries you use to gather capture data. For example, look for invalid SQL statements.
No row of data for 64-bit applications is displayed in the workspaces when the monitoring agent is running on a 64-bit operating system.	The Tivoli Enterprise Portal shows data only for 32-bit applications. There is no solution for this problem at this time.

Situation troubleshooting

This section provides information about both general situation problems and problems with the configuration of situations. See the *IBM Tivoli Monitoring Problem Determination Guide* for more information about troubleshooting for situations.

General situation problems

Table 9 lists general problems that might occur with situations.

Table 9. General situation problems and solutions

Problem	Solution
Monitoring activity requires too much disk space.	Check the RAS trace logging settings that are described in "Setting RAS trace parameters" on page 79. For example, trace logs grow rapidly when you apply the **ALL** logging option.
Monitoring activity requires too many system resources.	"Disk capacity planning for historical data" on page 54 describes the performance impact of specific attribute groups. If possible, decrease your use of the attribute groups that require greater system resources.
A formula that uses mathematical operators appears to be incorrect. For example, if you were monitoring Linux, a formula that calculates when **Free Memory** falls under 10 percent of **Total Memory** does not work: `LT #'Linux_VM_Stats.Total_Memory' / 10`	This formula is incorrect because situation predicates support only logical operators. Your formulas cannot have mathematical operators. **Note:** The Situation Editor provides alternatives to math operators. Regarding the example, you can select % **Memory Free** attribute and avoid the need for math operators.
You want to change the appearance of situations when they are displayed in the Navigation tree.	1. Right-click an item in the Navigation tree. 2. Select **Situations** in the pop-up menu. The Situation Editor window is displayed. 3. Select the situation that you want to modify. 4. Use the **State** pull-down menu in the lower right of the window to set the status and appearance of the Situation when it triggers. **Note:** The **State** setting is not related to severity settings in IBM Tivoli Enterprise Console.
When a situation is triggered in the Event Log attribute group, it remains in the Situation Event Console as long as the event ID entry is present in the Event Log workspace. When this event ID entry is removed from the Event Log workspace on the Tivoli Enterprise Portal, the situation is also cleared even if the actual problem that caused the event is not resolved, and the event ID entry is also present in the Windows Event Viewer.	There is a timeout on the cache of events for the NT Event Log group. Increase the cache time of Event Log collection to meet your requirements by adding the following variable and timeout value to the KXXENV file for the agent: CDP_NT_EVENT_LOG_CACHE_TIMEOUT=3600 This variable determines how long events from the NT Event Log are kept.

Problems with configuration of situations

Table 10 lists problems that might occur with configuring situations.

This section provides information for troubleshooting for agents. Be sure to consult the *IBM Tivoli Monitoring Problem Determination Guide* for more general troubleshooting information.

Table 10. Problems with configuring situations that you solve in the Situation Editor

Problem	Solution
Note: To get started with the solutions in this section, perform these steps: 1. Launch the Tivoli Enterprise Portal. 2. Click **Edit > Situation Editor**. 3. In the tree view, choose the agent whose situation you want to modify. 4. Choose the situation in the list. The Situation Editor view is displayed.	

Table 10. Problems with configuring situations that you solve in the Situation Editor (continued)

Problem	Solution
The situation for a specific agent is not visible in the Tivoli Enterprise Portal.	Open the Situation Editor. Access the All managed servers view. If the situation is absent, confirm that the monitoring server has been seeded for the agent. If not, seed the server, as described in the *IBM Tivoli Monitoring Installation and Setup Guide.*
The monitoring interval is too long.	Access the Situation Editor view for the situation that you want to modify. Check the **Sampling interval** area in the **Formula** tab. Adjust the time interval as needed.
The situation did not activate at startup.	Manually recycle the situation as follows: 1. Right-click the situation and choose **Stop Situation**. 2. Right-click the situation and choose **Start Situation**. **Note:** You can permanently avoid this problem by placing a check mark in the **Run at Startup** option of the Situation Editor view for a specific situation.
The situation is not displayed.	Click the **Action** tab and check whether the situation has an automated corrective action. This action can occur directly or through a policy. The situation might be resolving so quickly that you do not see the event or the update in the graphical user interface.
An Alert event has not occurred even though the predicate has been properly specified.	Check the logs, reports, and workspaces.
A situation fires on an unexpected managed object.	Confirm that you have distributed and started the situation on the correct managed system.
The product did not distribute the situation to a managed system.	Click the **Distribution** tab and check the distribution settings for the situation.
The situation does not fire.	This problem can be caused when incorrect predicates are present in the formula that defines the situation. For example, the managed object shows a state that normally triggers a monitoring event, but the situation is not true because the wrong attribute is specified in the formula. In the **Formula** tab, analyze predicates as follows: 1. Click the *fx* icon in the upper-right corner of the Formula area. The Show formula window is displayed. a. Confirm the following details in the **Formula** area at the top of the window: • The attributes that you intend to monitor are specified in the formula. • The situations that you intend to monitor are specified in the formula. • The logical operators in the formula match your monitoring goal. • The numerical values in the formula match your monitoring goal. b. (*Optional*) Click the **Show detailed formula** check box in the lower left of the window to see the original names of attributes in the application or operating system that you are monitoring. c. Click **OK** to dismiss the Show formula window. 2. (*Optional*) In the Formula area of the **Formula** tab, temporarily assign numerical values that immediately trigger a monitoring event. The triggering of the event confirms that other predicates in the formula are valid. **Note:** After you complete this test, you must restore the numerical values to valid levels so that you do not generate excessive monitoring data based on your temporary settings. See the *IBM Tivoli Monitoring Problem Determination Guide* for additional information about situations that do not fire.

Table 11. Problems with configuration of situations that you solve in the Workspace area

Problem	Solution
Situation events are not displayed in the Events Console view of the workspace.	Associate the situation with a workspace. **Note:** The situation does not need to be displayed in the workspace. It is sufficient that the situation be associated with any workspace.
You do not have access to a situation.	**Note:** You must have administrator privileges to perform these steps. 1. Select **Edit** > **Administer Users** to access the Administer Users window. 2. In the **Users** area, select the user whose privileges you want to modify. 3. In the **Permissions** tab, **Applications** tab, and **Navigator Views** tab, select the permissions or privileges that correspond to the user role. 4. Click **OK**.
A managed system seems to be offline.	1. Select Physical View and highlight the Enterprise Level of the navigator tree. 2. Select **View** > **Workspace** > **Managed System Status** to see a list of managed systems and their status. 3. If a system is offline, check network connectivity and the status of the specific system or application.

Take Action commands troubleshooting

Table 12 lists general problems that might occur with Take Action commands. When each Take Action command runs it generates the log file listed in Table 3 on page 77. This chapter provides agent-specific troubleshooting information.

See the *IBM Tivoli Monitoring Problem Determination Guide* for general troubleshooting information.

Table 12. Take Action commands problems and solutions

Problem	Solution
Take Action commands often require several minutes to complete.	Allow several minutes. If you do not see a pop-up message advising you of completion, try to run the command manually.
Situations fail to trigger Take Action commands.	Attempt to manually run the Take Action command in the Tivoli Enterprise Portal. If the Take Action command works, look for configuration problems in the situation. See "Situation troubleshooting" on page 87. If the Take Action command fails, see *IBM Tivoli Monitoring Problem Determination Guide* for general information on troubleshooting Take Action commands.

Support for problem solving

If you have a problem with your IBM software, you want to resolve it quickly. This section describes the following options for obtaining support for IBM software products:

- "Using IBM Support Assistant" on page 91
- "Obtaining fixes" on page 91
- "Receiving weekly support updates" on page 91
- "Contacting IBM Software Support" on page 92

Using IBM Support Assistant

The IBM Support Assistant is a free, stand-alone application that you can install on most workstations and also use to perform remote troubleshooting of other workstations. You can enhance the application by installing product-specific add-ons for the IBM products you use.

The IBM Support Assistant saves you the time it takes to search the product, support, and educational resources. Several troubleshooting features are provided, including the ability to perform guided troubleshooting to aid in problem resolution. Often, the product-specific add-ons include the ability to collect diagnostic information related to the product. The collected diagnostic information can then be used to self-diagnose the problem, or it can be included in an Electronic Service Request (ESR) submitted to IBM Support engineers.

For more information, and to download the IBM Support Assistant, see http://www.ibm.com/software/support/isa. Currently, the add-on is supported by IBM Support Assistant V4.0.1 or later. After you download and install the IBM Support Assistant, follow these steps to install the IBM Support Assistant add-on for IBM Tivoli Monitoring for Tivoli Network Manager IP Edition:

1. Start the IBM Support Assistant application.
2. From the **Update** menu, select **Find New** and **Product Add-ons**.
3. Under **Tivoli**, select your product, read the description, and then click **Next**.

   If your product is not included in the list under **Tivoli**, no add-on is available yet for the product.
4. Read the license and description, and if you comply, select **I accept the terms in the license agreements** and click **Next**.
5. Click **Finish** to proceed with the installation, and when prompted, restart the IBM Support Assistant to complete the installation.

Obtaining fixes

A product fix might be available to resolve your problem. To determine which fixes are available for your Tivoli software product, follow these steps:

1. Go to the IBM Software Support Web site at http://www.ibm.com/software/support.
2. Under **Select a brand and/or product**, select **Tivoli**.

   If you click **Go**, the **Search within all of Tivoli support** section is displayed. If you don't click **Go**, you see the **Select a product** section.
3. Select your product and click **Go**.
4. Under **Download**, click the name of a fix to read its description and, optionally, to download it.

   If there is no **Download** heading for your product, supply a search term, error code, or APAR number in the field provided under **Search Support (this product)**, and click **Search**.

For more information about the types of fixes that are available, see the *IBM Software Support Handbook* at http://techsupport.services.ibm.com/guides/handbook.html.

Receiving weekly support updates

To receive weekly e-mail notifications about fixes and other software support news, follow these steps:

1. Go to the IBM Software Support Web site at http://www.ibm.com/software/support.
2. Click **My support** in the far upper-right corner of the page under **Personalized support**.
3. If you have already registered for **My support**, sign in and skip to the next step. If you have not registered, click **register now**. Complete the registration form using your e-mail address as your IBM ID and click **Submit**.
4. The **Edit profile** tab is displayed.
5. In the first list under **Products**, select **Software**. In the second list, select a product category (for example, **Systems and Asset Management**). In the third list, select a product sub-category (for example, **Application Performance & Availability** or **Systems Performance**). A list of applicable products is displayed.
6. Select the products for which you want to receive updates.
7. Click **Add products**.
8. After selecting all products that are of interest to you, click **Subscribe to email** on the **Edit profile** tab.
9. In the **Documents** list, select **Software**.
10. Select **Please send these documents by weekly email**.
11. Update your e-mail address as needed.
12. Select the types of documents you want to receive.
13. Click **Update**.

If you experience problems with the **My support** feature, you can obtain help in one of the following ways:

Online
Send an e-mail message to erchelp@ca.ibm.com, describing your problem.

By phone
Call 1-800-IBM-4You (1-800-426-4968).

Contacting IBM Software Support

IBM Software Support provides assistance with product defects. The easiest way to obtain that assistance is to open a PMR or ETR directly from the IBM Support Assistant (see "Using IBM Support Assistant" on page 91).

Before contacting IBM Software Support, your company must have an active IBM software maintenance contract, and you must be authorized to submit problems to IBM. The type of software maintenance contract that you need depends on the type of product you have:

- For IBM distributed software products (including, but not limited to, Tivoli, Lotus®, and Rational® products, as well as DB2 and WebSphere® products that run on Windows or UNIX operating systems), enroll in Passport Advantage® in one of the following ways:

  Online
  Go to the Passport Advantage Web site at http://www-306.ibm.com/software/howtobuy/passportadvantage/pao_customers.htm .

  By phone
  For the phone number to call in your country, go to the IBM Software Support Web site at http://techsupport.services.ibm.com/guides/contacts.html and click the name of your geographic region.

- For customers with Subscription and Support (S & S) contracts, go to the Software Service Request Web site at https://techsupport.services.ibm.com/ssr/login.
- For customers with IBMLink, CATIA, Linux, OS/390®, iSeries®, pSeries®, zSeries®, and other support agreements, go to the IBM Support Line Web site at http://www.ibm.com/services/us/index.wss/so/its/a1000030/dt006.
- For IBM eServer™ software products (including, but not limited to, DB2 and WebSphere products that run in zSeries, pSeries, and iSeries environments), you can purchase a software maintenance agreement by working directly with an IBM sales representative or an IBM Business Partner. For more information about support for eServer software products, go to the IBM Technical Support Advantage Web site at http://www.ibm.com/servers/eserver/techsupport.html.

If you are not sure what type of software maintenance contract you need, call 1-800-IBMSERV (1-800-426-7378) in the United States. From other countries, go to the contacts page of the *IBM Software Support Handbook* on the Web at http://techsupport.services.ibm.com/guides/contacts.html and click the name of your geographic region for phone numbers of people who provide support for your location.

To contact IBM Software support, follow these steps:

1. "Determining the business impact"
2. "Describing problems and gathering information"
3. "Submitting problems" on page 94

Determining the business impact

When you report a problem to IBM, you are asked to supply a severity level. Use the following criteria to understand and assess the business impact of the problem that you are reporting:

Severity 1
: The problem has a *critical* business impact. You are unable to use the program, resulting in a critical impact on operations. This condition requires an immediate solution.

Severity 2
: The problem has a *significant* business impact. The program is usable, but it is severely limited.

Severity 3
: The problem has *some* business impact. The program is usable, but less significant features (not critical to operations) are unavailable.

Severity 4
: The problem has *minimal* business impact. The problem causes little impact on operations, or a reasonable circumvention to the problem was implemented.

Describing problems and gathering information

When describing a problem to IBM, be as specific as possible. Include all relevant background information so that IBM Software Support specialists can help you solve the problem efficiently. To save time, know the answers to these questions:

- Which software versions were you running when the problem occurred?
- Do you have logs, traces, and messages that are related to the problem symptoms? IBM Software Support is likely to ask for this information.

- Can you re-create the problem? If so, what steps were performed to re-create the problem?
- Did you make any changes to the system? For example, did you make changes to the hardware, operating system, networking software, and so on.
- Are you currently using a workaround for the problem? If so, be prepared to explain the workaround when you report the problem.

Submitting problems

You can submit your problem to IBM Software Support in one of two ways:

Online

Click **Submit and track problems** on the IBM Software Support site at http://www.ibm.com/software/support/probsub.html. Type your information into the appropriate problem submission form.

By phone

For the phone number to call in your country, go to the contacts page of the *IBM Software Support Handbook* at http://techsupport.services.ibm.com/guides/contacts.html and click the name of your geographic region.

If the problem you submit is for a software defect or for missing or inaccurate documentation, IBM Software Support creates an Authorized Program Analysis Report (APAR). The APAR describes the problem in detail. Whenever possible, IBM Software Support provides a workaround that you can implement until the APAR is resolved and a fix is delivered. IBM publishes resolved APARs on the Software Support Web site daily, so that other users who experience the same problem can benefit from the same resolution.

Appendix A. IBM Tivoli Enterprise Console event mapping

Each event class corresponds to an attribute group in the IBM Tivoli Enterprise Console. For a description of the event slots for each event class, see the lists in this appendix. For more information about mapping attribute groups to event classes, see the *IBM Tivoli Monitoring Administrator's Guide*.

Generic event mapping provides useful event class and attribute information for situations that do not have specific event mapping defined. BAROC files are found on the Tivoli Enterprise Monitoring Server in the installation directory in TECLIB (that is, *install_dir*/cms/TECLIB for Windows systems and *install_dir*/tables/*TEMS_hostname*/TECLIB for UNIX systems). IBM Tivoli Enterprise Console event synchronization provides a collection of ready-to-use rule sets that you can deploy with minimal configuration. Be sure to install IBM Tivoli Enterprise Console event synchronization to access the correct Sentry.baroc, which is automatically included during base configuration of IBM Tivoli Enterprise Console rules if you indicate that you want to use an existing rulebase. See the *IBM Tivoli Monitoring Installation and Setup Guide* for details.

Each of the event classes is a child of KNP_Base and is defined in the knp.baroc file. The KNP_Base event class can be used for generic rules processing for any event from the IBM Tivoli Monitoring for Tivoli Network Manager IP Edition.

For events generated by situations in the Agent Status attribute group, IBM Tivoli Enterprise Console events are sent using the ITM_KNP_AGENT_STATUS class. This class contains the following slots:

- node: STRING
- timestamp: STRING
- agent_name: STRING
- agent_status: INTEGER
- agent_status_enum: STRING
- agent_connections: INTEGER

For events generated by situations in the Availability attribute group, IBM Tivoli Enterprise Console events are sent using the ITM_KNP_AVAILABILITY class. This class contains the following slots:

- node: STRING
- timestamp: STRING
- application_component: STRING
- name: STRING
- knp_status: INTEGER
- knp_status_enum: STRING
- full_name: STRING
- type: INTEGER
- type_enum: STRING
- virtual_size: INTEGER
- page_faults_per_sec: INTEGER
- working_set_size: INTEGER

- thread_count: INTEGER
- pid: INTEGER
- percent_privileged_time: INTEGER
- percent_user_mode_time: INTEGER
- percent_processor_time: INTEGER
- command_line: STRING
- functionality_test_status: INTEGER
- functionality_test_status_enum: STRING
- functionality_test_message: STRING

For events generated by situations in the Current Discovery attribute group, IBM Tivoli Enterprise Console events are sent using the ITM_KNP_CURRENT_DISCOVERY class. This class contains the following slots:

- node: STRING
- timestamp: STRING
- discovery_mode: INTEGER
- discovery_mode_enum: STRING
- discovery_phase: INTEGER
- discovery_phase_enum: STRING
- blackout_state: INTEGER
- blackout_state_enum: STRING
- cycle_count: INTEGER
- processing_needed: INTEGER
- processing_needed_enum: STRING

For events generated by situations in the Devices Being Polled attribute group, IBM Tivoli Enterprise Console events are sent using the ITM_KNP_DEVICES_BEING_POLLED class. This class contains the following slots:

- node: STRING
- timestamp: STRING
- pollicy_name: STRING
- addresses: INTEGER
- entities: INTEGER

For events generated by situations in the Devices With SNMP Access attribute group, IBM Tivoli Enterprise Console events are sent using the ITM_KNP_DEVICES_WITH_SNMP_ACCESS class. This class contains the following slots:

- node: STRING
- timestamp: STRING
- snmp_access: INTEGER
- no_snmp_access: INTEGER

For events generated by situations in the Entities On Model DB attribute group, IBM Tivoli Enterprise Console events are sent using the ITM_KNP_ENTITIES_ON_MODEL_DB class. This class contains the following slots:

- node: STRING

- timestamp: STRING
- entities: INTEGER

For events generated by situations in the Interfaces Up and Down attribute group, IBM Tivoli Enterprise Console events are sent using the ITM_KNP_INTERFACES_UP_AND_DOWN class. This class contains the following slots:

- node: STRING
- timestamp: STRING
- up: INTEGER
- down: INTEGER

For events generated by situations in the Last Discovery attribute group, IBM Tivoli Enterprise Console events are sent using the ITM_KNP_LAST_DISCOVERY class. This class contains the following slots:

- node: STRING
- timestamp: STRING
- start_time: STRING
- phase_one_start: STRING
- phase_two_start: STRING
- phase_three_start: STRING
- completion_time: STRING
- starting_memory: INTEGER
- phase_one_memory: INTEGER
- phase_two_memory: INTEGER
- phase_three_memory: INTEGER
- completion_memory: INTEGER
- total_discovery_time: STRING

For events generated by situations in the MIB Objects Retrieved attribute group, IBM Tivoli Enterprise Console events are sent using the ITM_KNP_MIB_OBJECTS_RETRIEVED class. This class contains the following slots:

- node: STRING
- timestamp: STRING
- total: INTEGER

For events generated by situations in the Network Elements attribute group, IBM Tivoli Enterprise Console events are sent using the ITM_KNP_NETWORK_ELEMENTS class. This class contains the following slots:

- node: STRING
- timestamp: STRING
- unknown: INTEGER
- chassis: INTEGER
- interfaces: INTEGER
- logical_interface: INTEGER
- vlan_objects: INTEGER
- card: INTEGER

- psu: INTEGER
- subnet: INTEGER
- module: INTEGER

For events generated by situations in the Objects Discovered attribute group, IBM Tivoli Enterprise Console events are sent using the ITM_KNP_OBJECTS_DISCOVERED class. This class contains the following slots:

- node: STRING
- timestamp: STRING
- devices: INTEGER
- interfaces: INTEGER
- switches: INTEGER
- routers: INTEGER

For events generated by situations in the Packets Sent And Processed By Poller attribute group, IBM Tivoli Enterprise Console events are sent using the ITM_KNP_PACKETS_SENT_AND_PROCESSED_BY_POLLER class. This class contains the following slots:

- node: STRING
- timestamp: STRING
- sent: INTEGER
- processed: INTEGER

For events generated by situations in the Performance Object Status attribute group, IBM Tivoli Enterprise Console events are sent using the ITM_KNP_PERFORMANCE_OBJECT_STATUS class. This class contains the following slots:

- node: STRING
- timestamp: STRING
- query_name: STRING
- object_name: STRING
- object_type: INTEGER
- object_type_enum: STRING
- object_status: INTEGER
- object_status_enum: STRING
- error_code: INTEGER
- error_code_enum: STRING

For events generated by situations in the Poll Data Collection attribute group, IBM Tivoli Enterprise Console events are sent using the ITM_KNP_POLL_DATA_COLLECTION class. This class contains the following slots:

- node: STRING
- timestamp: STRING
- domain_name: STRING
- policy_name: STRING
- ip_address: STRING
- main_node_entity_id: INTEGER
- knp_hostname: STRING

- poll_time: STRING
- instance_name: STRING
- instance_id: INTEGER
- ifname: STRING
- ifalias: STRING
- iftype: INTEGER
- polldef_name: STRING
- data_label: STRING
- oid: STRING
- sample_id: INTEGER
- error_code: INTEGER
- knp_value: INTEGER

For events generated by situations in the Polling Capacity attribute group, IBM Tivoli Enterprise Console events are sent using the ITM_KNP_POLLING_CAPACITY class. This class contains the following slots:

- node: STRING
- timestamp: STRING
- total: INTEGER

For events generated by situations in the SNMP Errors And Timeouts attribute group, IBM Tivoli Enterprise Console events are sent using the ITM_KNP_SNMP_ERRORS_AND_TIMEOUTS class. This class contains the following slots:

- node: STRING
- timestamp: STRING
- errors: INTEGER
- timeouts: INTEGER

For events generated by situations in the Work Item Queue attribute group, IBM Tivoli Enterprise Console events are sent using the ITM_KNP_WORK_ITEM_QUEUE class. This class contains the following slots:

- node: STRING
- timestamp: STRING
- total: INTEGER

Appendix B. Accessibility

Accessibility features help users with physical disabilities, such as restricted mobility or limited vision, to use software products successfully. The major accessibility features in this product enable users to do the following:

- Use assistive technologies, such as screen-reader software and digital speech synthesizer, to hear what is displayed on the screen. Consult the product documentation of the assistive technology for details on using those technologies with this product.
- Operate specific or equivalent features using only the keyboard.
- Magnify what is displayed on the screen.

In addition, the product documentation was modified to include the following features to aid accessibility:

- All documentation is available in both HTML and convertible PDF formats to give the maximum opportunity for users to apply screen-reader software.
- All images in the documentation are provided with alternative text so that users with vision impairments can understand the contents of the images.

Navigating the interface using the keyboard

Standard shortcut and accelerator keys are used by the product and are documented by the operating system. Refer to the documentation provided by your operating system for more information.

Magnifying what is displayed on the screen

You can enlarge information on the product windows using facilities provided by the operating systems on which the product is run. For example, in a Microsoft Windows environment, you can lower the resolution of the screen to enlarge the font sizes of the text on the screen. Refer to the documentation provided by your operating system for more information.

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Index

A

accessibility ix, 101
Addresses attribute 33
agent
  trace logs 77
Agent Connections attribute 27
Agent Name attribute 26
Agent Status attribute 26
Agent Status attribute group 26
agents
  troubleshooting 85
Application Component attribute 27
attribute groups
  Agent Status 26
  Availability 27
  Current Discovery 31
  Devices Being Polled 32
  Devices With SNMP Access 33
  Entities On Model DB 34
  Interfaces Up and Down 35
  Last Discovery 36
  list of all 25
  MIB Objects Retrieved 38
  more information 25
  Network Elements 39
  Objects Discovered 42
  overview 25
  Packets Sent And Processed By Poller 43
  Performance Object Status 44
  Poll Data Collection 47
  Polling Capacity 52
  SNMP Errors And Timeouts 52
  Work Item Queue 53
attributes
  Addresses 33
  Agent Connections 27
  Agent Name 26
  Agent Status 26
  Application Component 27
  Availability 27
  Blackout State 32
  Card 41
  Chassis 40
  Command Line 30
  Completion memory 38
  Completion time 37
  Current Discovery 31
  Cycle Count 32
  DATA LABEL 49
  Devices 42
  Devices Being Polled 33
  Devices With SNMP Access 34
  Discovery Mode 31
  Discovery Phase 31
  DOMAIN NAME 47
  Down 36
  Entities 33, 35
  Entities On Model DB 35
  Error Code 46
  ERROR CODE 50
  Errors 53
attributes *(continued)*
  Full Name 28
  Functionality Test Message 30
  Functionality Test Status 30
  HOSTNAME 48
  IFALIAS 49
  IFNAME 48
  IFTYPE 49
  INSTANCE ID 48
  INSTANCE NAME 48
  Interfaces 40, 42
  Interfaces Up and Down 35
  IP ADDRESS 47
  Last Discovery 36
  Logical Interface 40
  MAIN NODE ENTITY ID 48
  MIB Objects Retrieved 38
  Module 41
  more information 25
  Name 28
  Network Elements 39
  No SNMP Access 34
  Node 26, 27, 31, 33, 34, 35, 36, 39, 42, 43, 44, 52, 53
  Object Name 45
  Object Status 45
  Object Type 45
  Objects Discovered 42
  OID 49
  overview 25
  Packets Sent And Processed By Poller 43
  Page Faults per Sec 29
  Percent Privileged Time 29
  Percent Processor Time 30
  Percent User Mode Time 29
  Performance Object Status 44
  Phase one memory 37
  Phase one start 37
  Phase three memory 38
  Phase three start 37
  Phase two memory 37
  Phase two start 37
  PID 29
  POLICY NAME 47
  Poll Data Collection 47
  POLL TIME 48
  POLLDEF NAME 49
  Pollicy Name 33
  Polling Capacity 52
  Processed 44
  Processing Needed 32
  PSU 41
  Query Name 45
  Routers 43
  SAMPLE ID 49
  Sent 44
  SNMP Access 34
  SNMP Errors And Timeouts 52
  Start time 36
  Starting memory 37
  Status 28
  Subnet 41

attributes *(continued)*
Switches 43
Thread Count 29
Timeouts 53
Timestamp 26, 27, 31, 33, 34, 35, 36, 39, 42, 43, 45, 47, 52, 53
Total 39, 52, 54
Total discovery time 38
Type 28
Unknown 39
Up 35
VALUE 51
Virtual Size 29
VLAN Objects 40
Work Item Queue 53
Working Set Size 29
Availability
situations 58, 59
workspaces
descriptions 22
list 21
Availability attribute group 27
Availability workspace 22

B

Blackout State attribute 32
books
feedback viii
online viii
ordering viii
see publications ix
built-in troubleshooting features 75

C

calculate historical data disk space 54
capacity planning
IBM Tivoli Monitoring for Tivoli Network Manager IP Edition 54
capacity planning for historical data 54
Card attribute 41
Chassis attribute 40
Command Line attribute 30
commands
tacmd addSystem 16
commands, Take Action 71
Completion memory attribute 38
Completion time attribute 37
components 2
configuration 5
MIB Grapher 18
performance reports 18
remote 15
conventions
operating system xi
typeface x
Current Discovery attribute group 31
customer support
See Software Support
Cycle Count attribute 32

D

data
trace logs 76
DATA LABEL attribute 49
data logged
IBM Tivoli Monitoring for Tivoli Network Manager IP Edition 54
data provider logs
See agent
Devices attribute 42
Devices Being Polled attribute group 32
Devices With SNMP Access attribute group 33
directory names, notation xi
Discovery
situations 58, 67
workspaces
descriptions 23
list 21
Discovery Mode attribute 31
Discovery Phase attribute 31
Discovery workspace 23
disk capacity planning
See capacity planning
disk capacity planning for historical data 54
DOMAIN NAME attribute 47
Down attribute 36

E

education
see Tivoli technical training x
Entities attribute 33, 35
Entities On Model DB attribute group 34
environment
features 1
functions 1
environment variables, notation xi
Error Code attribute 46
ERROR CODE attribute 50
Errors attribute 53
event
mapping 95

F

features, IBM Tivoli Monitoring for Tivoli Network Manager IP Edition 1
files
agent trace 77
installation trace 77
other trace log 77
trace logs 76
fixes, obtaining 91
Full Name attribute 28
Functionality Test Message attribute 30
Functionality Test Status attribute 30
functions, IBM Tivoli Monitoring for Tivoli Network Manager IP Edition 1

G

gathering support information 75

H

historical data
calculate disk space 54

historical data *(continued)*
capacity planning
IBM Tivoli Monitoring for Tivoli Network Manager IP Edition 54
disk capacity planning 54
HOSTNAME attribute 48

I

IBM Redbooks 91
IBM Software Support
See support
IBM Support Assistant 91
IBM Tivoli Enterprise Console
event mapping 95
IBM Tivoli Monitoring for Tivoli Network Manager IP
workspaces
descriptions 22
list 21
IBM Tivoli Monitoring for Tivoli Network Manager IP Edition
components 2
features 1
functions 1
performance considerations 88
situations 58, 59
IBM Tivoli Monitoring for Tivoli Network Manager IP workspace 22
IFALIAS attribute 49
IFNAME attribute 48
IFTYPE attribute 49
information
troubleshooting 75
information, additional
attributes 25
policies 73
situations 57
Take Action commands 71
workspaces 21
installation
log file 77
monitoring agent 11
problems 82
remote 15
installing the monitoring agent 11
INSTANCE ID attribute 48
INSTANCE NAME attribute 48
interface, user 2
Interfaces attribute 40, 42
Interfaces Up and Down attribute group 35
IP ADDRESS attribute 47

K

KNP_NCP_CONFIG_Process_Down situation 63
KNP_NCP_D_HELPSRV_Process_Down situation 62
KNP_NCP_F_AMOS_Process_Down situation 62
KNP_NCP_G_EVENT_Process_Down situation 66
KNP_NCP_MODEL_Process_Down situation 61
KNP_NCP_NCOGATE_Process_Down situation 65
KNP_NCP_POLLER_Process_Down situation 63
KNP_NCP_STORE_Process_Down situation 61
KNP_NCP_VIRTUAL_Process_Down situation 66
KNP_NCP_WEBTOOL_Process_Down situation 65
KNP_NCPMONITOR_Process_Down situation 64
KNP_Polling_Capacitiy_Critical situation 68
KNP_Polling_Capacitiy_Warning situation 68
KNP_Process_CPU_Critical situation 60
KNP_Process_CPU_High situation 59
KNP_Process_Data_Unavailable situation 59
KNP_Total_Entities_Critical situation 69
KNP_Total_Entities_Warning situation 69
KNP_Work_Item_Queue_Warning situation 67

L

Last Discovery attribute group 36
legal notices 103
logged data
IBM Tivoli Monitoring for Tivoli Network Manager IP Edition 54
logging
agent trace logs 77
built-in features 75
installation log files 77
trace log files 76
Logical Interface attribute 40

M

MAIN NODE ENTITY ID attribute 48
manuals
feedback viii
online viii
ordering viii
see publications ix
messages
built-in features 75
MIB Objects Retrieved attribute group 38
Module attribute 41
Monitoring
situations 58, 67
workspaces
descriptions 23
list 22
Monitoring workspace 23

N

Name attribute 28
Network
situations 58, 69
workspaces
descriptions 23
list 22
Network Elements attribute group 39
Network workspace 23
No SNMP Access attribute 34
Node attribute 26, 27, 31, 33, 34, 35, 36, 39, 42, 43, 44, 52, 53
notation
environment variables xi
path names xi
typeface xi

O

Object Name attribute 45
Object Status attribute 45
Object Type attribute 45
Objects Discovered attribute group 42
OID attribute 49

online publications
accessing ix
ordering publications ix

P

Packets Sent And Processed By Poller attribute group 43
Page Faults per Sec attribute 29
path names, notation xi
Percent Privileged Time attribute 29
Percent Processor Time attribute 30
Percent User Mode Time attribute 29
performance considerations 88
Performance Object Status attribute group 44
Phase one memory attribute 37
Phase one start attribute 37
Phase three memory attribute 38
Phase three start attribute 37
Phase two memory attribute 37
Phase two start attribute 37
PID attribute 29
planning
deployment 5
planning for deployment 5
policies
more information 73
overview 73
POLICY NAME attribute 47
Poll Data Collection attribute group 47
POLL TIME attribute 48
POLLDEF NAME attribute 49
Pollicy Name attribute 33
Polling Capacity attribute group 52
problem resolution 91
problems and workarounds 81
Processed attribute 44
Processing Needed attribute 32
PSU attribute 41
publications
accessing online ix
feedback viii
online viii
ordering viii, ix
purposes
troubleshooting 75

Q

queries, using attributes 25
Query Name attribute 45

R

Redbooks 91
remote
installation and configuration 15
remote deployment
troubleshooting 84
requirements 5
Routers attribute 43

S

SAMPLE ID attribute 49
Sent attribute 44
situations
general troubleshooting 88
KNP_NCP_CONFIG_Process_Down 63
KNP_NCP_D_HELPSRV_Process_Down 62
KNP_NCP_F_AMOS_Process_Down 62
KNP_NCP_G_EVENT_Process_Down 66
KNP_NCP_MODEL_Process_Down 61
KNP_NCP_NCOGATE_Process_Down 65
KNP_NCP_POLLER_Process_Down 63
KNP_NCP_STORE_Process_Down 61
KNP_NCP_VIRTUAL_Process_Down 66
KNP_NCP_WEBTOOL_Process_Down 65
KNP_NCPMONITOR_Process_Down 64
KNP_Polling_Capacitiy_Critical 68
KNP_Polling_Capacitiy_Warning 68
KNP_Process_CPU_Critical 60
KNP_Process_CPU_High 59
KNP_Process_Data_Unavailable 59
KNP_Total_Entities_Critical 69
KNP_Total_Entities_Warning 69
KNP_Work_Item_Queue_Warning 67
list of all 58
more information 57
overview 57
predefined 58
situations, using attributes 25
SNMP Access attribute 34
SNMP Errors And Timeouts attribute group 52
Software Support
contacting 92
describing problems 93
determining business impact 93
overview 90
receiving weekly updates 91
submitting problems 94
Start time attribute 36
Starting memory attribute 37
starting the monitoring agent 16
Status attribute 28
Subnet attribute 41
support
gathering information for 75
support assistant 91
Switches attribute 43

T

tacmd addSystem command 16
Take Action commands
more information 71
overview 71
troubleshooting 90
Thread Count attribute 29
Timeouts attribute 53
Timestamp attribute 26, 27, 31, 33, 34, 35, 36, 39, 42, 43, 45, 47, 52, 53
Tivoli Data Warehouse 17
Tivoli software information center ix
Tivoli technical training x
Total attribute 39, 52, 54
Total discovery time attribute 38
trace logs 76
trademarks 104
training, Tivoli technical x
troubleshooting 75, 81
agents 85
built-in features 75

troubleshooting *(continued)*
describing problems 93
determining business impact 93
installation 82
installation logs 77
remote deployment 84
situations 87, 88
submitting problems 94
Take Action commands 90
uninstallation 82
uninstallation logs 77
workspaces 86
Type attribute 28
typeface conventions x

U

uninstallation
log file 77
problems 82
Unknown attribute 39
Up attribute 35
user interfaces options 2

V

VALUE attribute 51
variables, notation for xi
views
Availability workspace 22
Discovery workspace 23
IBM Tivoli Monitoring for Tivoli Network Manager IP workspace 22
Monitoring workspace 23
Network workspace 23
Virtual Size attribute 29
VLAN Objects attribute 40

W

Work Item Queue attribute group 53
workarounds 81
agents 85
remote deployment 84
situations 87
Take Action commands 90
workspaces 86
Working Set Size attribute 29
workspaces
_EnDNAVIGATOR_ITEM_EnD 22, 23
Availability 22
Discovery 23
IBM Tivoli Monitoring for Tivoli Network Manager IP 22
list of all 21
Monitoring 23
more information 21
Network 23
overview 21
predefined 21
troubleshooting 86

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