IBM Tivoli Agentless Monitoring for HP-UX Operating Systems

Version 6.2.1 (Revised)

User's Guide

SC23-9763-01

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Note
Before using this information and the product it supports, read the information in "Notices" on page 115.

This edition applies to version 6.2.1 of IBM Tivoli Agentless Monitoring for HP-UX Operating Systems (product number 5724-C04) and to all subsequent releases and modifications until otherwise indicated in new editions.

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Chapter 1. Overview of the agent

The IBM Tivoli Agentless Monitoring for HP-UX Operating Systems provides you with the capability to monitor HP-UX Operating Systems.

IBM® Tivoli® Monitoring is the base software for the Agentless Monitor for HP-UX. The Agentless Monitor for HP-UX can identify and notify you of common problems with the application that it monitors.

IBM Tivoli Monitoring

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.

You can use IBM Tivoli Monitoring to achieve the following tasks:

- Monitor for alerts on the systems that you are managing by using predefined situations or custom situations.
- Establish your own performance thresholds.
- Trace the causes leading to an alert.
- Gather comprehensive data about system conditions.
- Use policies to take actions, schedule work, and automate manual tasks.

The Tivoli Enterprise Portal is the interface for IBM Tivoli Monitoring products. You can use the consolidated view of your environment as seen in the Tivoli Enterprise Portal to monitor and resolve performance issues throughout the enterprise.

See the IBM Tivoli Monitoring publications listed in "Prerequisite publications" on page 111 for complete information about IBM Tivoli Monitoring and the Tivoli Enterprise Portal.

Functions of the monitoring agent

The Agentless Monitor for HP-UX provides the following functions:

Agentless Monitoring for HP-UX Operating Systems using SNMP

New in this release

For this revised version 6.2.1 of the Agentless Monitor for HP-UX documentation, the following changes have been made to the documentation since the original version 6.2.1.

- Support for the self-describing agent capability has been noted. For more information, see "Requirements for the monitoring agent" on page 5

Components of the IBM Tivoli Monitoring environment

After you install and set up the Agentless Monitor for HP-UX, you have an environment that contains the client, server, and monitoring agent implementation for Tivoli Monitoring.

This Tivoli Monitoring environment contains the following components:

Tivoli Enterprise Portal client
The portal has a user interface based on Java™ for viewing and monitoring your enterprise.

Tivoli Enterprise Portal Server
The portal server is placed 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
The 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, Agentless Monitor for HP-UX
This monitoring agent collects data and distributes the data to the Tivoli Enterprise Monitoring Server, Tivoli Enterprise Portal Server, Tivoli Enterprise Portal, Tivoli Data Warehouse, and Tivoli Integrated Portal.

This agent can run on a separate system from the system where the HP-UX Operating Systems is running.

Multiple copies of this agent can run on the same system.

IBM Tivoli Netcool/OMNIbus
Tivoli Netcool/OMNIbus is an optional component and the recommended event management component. The Netcool/OMNIbus software is a service level management (SLM) system that delivers real-time, centralized monitoring of complex networks and IT domain events. Event information is tracked in a high-performance, in-memory database and presented to specific users through individually configurable filters and views. The software includes automation functions that you can use to perform intelligent processing on managed events. You can use this software to forward events for Tivoli Monitoring situations to Tivoli Netcool/OMNIbus.

IBM Tivoli Enterprise Console®
The Tivoli Enterprise Console is an optional component that acts as a central collection point for events from various sources, including events from other Tivoli software applications, Tivoli partner applications, custom applications, network management platforms, and relational database systems. You can view these events through the Tivoli Enterprise Portal (by using the event viewer), and you can forward events from Tivoli Monitoring situations to the Tivoli Enterprise Console component. If you do not already use Tivoli Enterprise Console and need an event management component, you can choose to use IBM Tivoli Netcool/OMNIbus.

IBM Tivoli Business Service Manager
The Tivoli Business Service Manager component delivers real-time information to help you respond to alerts effectively based on business requirements. Optionally, you can use this component to meet service-level agreements (SLAs). Use the Tivoli Business Service Manager tools to help build a service model that you can integrate with Tivoli Netcool/OMNIbus alerts or optionally integrate with data from an SQL data source. Optional components provide access to data from other IBM Tivoli applications such as Tivoli Monitoring and TADDM.

Agent Management Services

You can use IBM Tivoli Monitoring Agent Management Services to manage the Agentless Monitor for HP-UX.

Agent Management Services is available for the following IBM Tivoli Monitoring OS agents: Windows, Linux, and UNIX. The services are designed to keep the Agentless Monitor for HP-UX available, and to provide information about the status of the product to the Tivoli Enterprise Portal. IBM Tivoli Monitoring V6.2.2, Fix Pack 2 or later provides support for Agent Management Services. For more information about Agent Management Services, see *Agent Management Services* in the *IBM Tivoli Monitoring Administrator's Guide*.

User interface options

Installation of the base IBM Tivoli Monitoring software and other integrated applications provides various interfaces that you can use to work with your resources and data.

The following interfaces are available:

Tivoli Enterprise Portal user interface
You can run the Tivoli Enterprise Portal as a desktop application or a browser application. The client interface is a graphical user interface (GUI) based on Java on a Windows or Linux workstation. The browser application is automatically installed with the Tivoli Enterprise Portal Server. The desktop application is installed by using the Tivoli Monitoring installation media or with a Java Web Start application. 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.

Command-line interface
You can use Tivoli Monitoring commands to manage the Tivoli Monitoring components and their configuration. You can also run commands at the Tivoli Enterprise Console event server or the Tivoli Netcool/OMNIbus ObjectServer to configure event synchronization for enterprise situations.

Manage Tivoli Enterprise Monitoring Services window
You can use the window for the Manage Tivoli Enterprise Monitoring Services utility to configure the agent and start Tivoli services not designated to start automatically.

IBM Tivoli Netcool/OMNIbus event list
You can use the Netcool/OMNIbus event list to monitor and manage events. An event is created when the Netcool/OMNIbus ObjectServer receives an event, alert, message, or data item. Each event is made up of columns (or fields) of information that are displayed in a row in the ObjectServer alerts.status table. The Tivoli Netcool/OMNIbus web GUI is also a web-based application that processes network events from one or more data sources and presents the event data in various graphical formats.

IBM Tivoli Enterprise Console
You can use the Tivoli Enterprise Console to help ensure the optimal availability of an IT service for an organization. The Tivoli Enterprise Console is an event management application that integrates system, network, database, and application management. If you do not already use Tivoli Enterprise Console and need an event management component, you can choose to use Tivoli Netcool/OMNIbus.

IBM Tivoli Common Reporting
Use the Tivoli Common Reporting web user interface for specifying report parameters and other report properties, generating formatted reports, scheduling reports, and viewing reports. This user interface is based on the Tivoli Integrated Portal.

IBM Tivoli Application Dependency Discovery Manager
The Discovery Management Console is the TADDM client user interface for managing discoveries.

IBM Tivoli Business Service Manager
The Tivoli Business Service Manager console provides a graphical user interface that you can use to logically link services and business requirements within the service model. The service model provides an operator with a second-by-second view of how an enterprise is performing at any moment in time or how the enterprise performed over a time period.

Chapter 2. Requirements and agent installation and configuration

Agent installation and configuration requires the use of the *IBM Tivoli Monitoring Installation and Setup Guide* and agent-specific installation and configuration information.

To install and configure IBM Tivoli Agentless Monitoring for HP-UX Operating Systems, use the procedures for installing monitoring agents in the *IBM Tivoli Monitoring Installation and Setup Guide* along with the agent-specific installation and configuration information.

If you are installing silently by using a response file, see "Performing a silent installation of IBM Tivoli Monitoring" in the *IBM Tivoli Monitoring Installation and Setup Guide*.

With the self-describing agent capability, new or updated IBM Tivoli Monitoring agents using IBM Tivoli Monitoring V6.2.3 or later can become operational after installation without having to perform additional product support installation steps. To take advantage of this capability, see "Enabling self-describing agent capability at the hub monitoring server" in the *IBM Tivoli Monitoring Installation and Setup Guide*. Also, see "Self-describing monitoring agents" in the *IBM Tivoli Monitoring Administrator's Guide*.

Requirements for the monitoring agent

In addition to the requirements described in the *IBM Tivoli Monitoring Installation and Setup Guide*, agents typically have agent-specific requirements.

See the Software product compatibility reports website to generate a variety of reports related to product and component requirements.

Agentless Monitor for HP-UX has the following agent-specific requirements:

- Use the following link for information about the requirements for Agentless Monitoring: Summary for OS Agents & TEMA (Tivoli Enterprise Management Agent)
  - If you are running this monitoring agent on a Red Hat Enterprise Linux 5 operating system, SELinux must not be enabled.
  - If running this monitoring agent on a Windows operating system, the User ID must have Administrator privileges.
- This agent monitors the following versions:
  - HP-UX Operating Systems v1 (B.11.11), v2 (B.11.23)
- 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.
- Linux versions require some compatibility libraries to be installed for the agent to work correctly. The latest versions of the libstdc++, libgcc, and compat-libstdc++ libraries are required for the agent to run correctly. Linux RedHat 4 and 5, and SuSE 9 and 10 also require the C++ Runtime 6.0 library (libstdc++.so.6).
- The monitoring agent must be connected to the following software:
  - IBM Tivoli Monitoring V6.2.1 or later.

The following software is required for the Agentless Monitor for HP-UX to operate:

- Agentless Monitor for HP-UX
- Agentless Monitor for HP-UX for Tivoli Enterprise Monitoring Server support

- Agentless Monitor for HP-UX for Tivoli Enterprise Portal Server support
- Agentless Monitor for HP-UX for Tivoli Enterprise Portal Desktop Client support
- Agentless Monitor for HP-UX for Tivoli Enterprise Portal Browser Client support

To collect metrics through the Windows APIs, the Agentless Windows OS Monitor must be hosted on a Windows operating system, and remote registry administration must be enabled on the remote systems.

The Agentless Monitor for HP-UX has the following limitations:

- The agent can report processor utilization only as an aggregated system-wide value. There is no way to identify the utilization of an individual processor.
- DRC 10956 has been opened with HP Support to verify the value returned for `computerSystemFreeMemory`.
- The agent may show incorrect values for very large mounted file systems, due to size restrictions within the IBM Tivoli Monitoring framework.

The **itmcmd** command-line interface does now allow you to override a default configuration parameter when configuring your monitoring agent.

Agent-specific installation and configuration

In addition to the installation and configuration information in the *IBM Tivoli Monitoring Installation and Setup Guide*, use this agent-specific installation and configuration information to install the Agentless Monitor for HP-UX.

The Agentless Monitor for HP-UX uses the Simple Network Management Protocol (SNMP) to remotely collect metrics from the operating system. SNMP Version 1, SNMP Version 2c, or SNMP Version 3 can be used, depending on the configuration of the HP-UX operating system.

Configuration values

For both local and remote configuration, you provide the configuration values for the agent to operate.

When you are configuring an agent, a panel is displayed so you can enter each value. When a default value exists, this value is pre-entered into the field. If a field represents a password, two entry fields are displayed. You must enter the same value in each field. The values you type are not displayed to help maintain the security of these values.

The configuration for this agent is organized into the following groups:

SNMP connection (KQZ_SNMP)
HP-UX SNMP server properties

The configuration elements defined in this group are always present in the agent's configuration.

This group defines information that applies to the entire agent.

Port Number (SNMP_PORT)
The port number of the SNMP server.

The type is numeric.

This value is required.

Default value: 161

SNMP Version (SNMP_VERSION)
The SNMP version to use to make the connection.

The type is one of the following values: "SNMP Version 1", "SNMP Version 2c", "SNMP Version 3".

This value is required.

Default value: snmpV1

SNMP Version 1 (KQZ_SNMPV1)
SNMP version 1 parameters

The configuration elements defined in this group appear only if the corresponding value is selected in a previous group.

This group defines information that applies to the entire agent.

Community Name (SNMP_COMMUNITY)
The SNMP server community name.

The type is password.

This value is required.

Default value: None

SNMP Version 2c (KQZ_SNMPV2)
SNMP version 2c parameters

The configuration elements defined in this group appear only if the corresponding value is selected in a previous group.

This group defines information that applies to the entire agent.

Community Name (SNMP_COMMUNITY)
The SNMP server community name.

The type is password.

This value is required.

Default value: None

SNMP Version 3 (KQZ_SNMPV3)
SNMP version 3 parameters

The configuration elements defined in this group appear only if the corresponding value is selected in a previous group.

This group defines information that applies to the entire agent.

Auth Password (SNMP_AUTH_PASSWORD)
The authentication pass phrase for connecting to the SNMP server.

The type is password.

This value is optional.

Default value: None

Auth Protocol (SNMP_AUTH_PROTOCOL)
The authentication protocol used to connect to the SNMP server. Required for AuthNoPriv and AuthPriv security levels.

The type is one of the following values: "MD5", "SHA".

This value is optional.

Default value: None

Priv Password (SNMP_PRIV_PASSWORD)
The privacy pass phrase for connecting to the SNMP server.

The type is password.

This value is optional.

Default value: None

Priv Protocol (SNMP_PRIV_PROTOCOL)
The privacy protocol used to connect to the SNMP server. Required for the AuthPriv security level.

The type is one of the following values: "DES", "CBC DES".

This value is optional.

Default value: None

Security Level (SNMP_SECURITY_LEVEL)
The security level used to connect to the SNMP server. NoAuthNoPriv is equivalent to SNMPv1, but using User-based Security Model versus the Community based security model. AuthNoPriv uses authentication. AuthPriv uses authentication and privacy.

The type is one of the following values: "noAuthNoPriv", "authNoPriv", "authPriv".

This value is required.

Default value: None

User Name (SNMP_USER_NAME)
The USM user name for connecting to the SNMP server. Required to use SNMPv3.

The type is string.

This value is required.

Default value: None

Remote System Details (HP)
Managed System Details

The configuration elements defined in this group are always present in the agent's configuration.

Use the information in this group to create additional subnodes.

SNMP host (SNMP_HOST)
The host or IP address of the SNMP server.

The type is string.

This value is required.

Default value: None

Advanced (Advanced)
Allows the user to override values specified in previous sections.

The type is restricted - displays the configuation values that can be overridden.

This value is only used if it is necessary to override higher level values.

Default value: None

Managed System Name (Managed System Name)
The name that appears in the Tivoli Enterprise Portal Navigator tree for this host. The name must be unique across all instances of this agent.

The type is string.

This value is required.

Default value: None

Remote installation and configuration

You can install the monitoring agent remotely from the Tivoli Enterprise Portal or from the command line.

When installing the agent remotely, you must provide the configuration values for the agent to operate. See “Configuration values” on page 6.

To install from the portal, see the *IBM Tivoli Monitoring Installation and Setup Guide*.

To remotely install or configure an agent through the Tivoli Enterprise Portal, you must have installed the application support for that agent (Tivoli Enterprise Monitoring Server, Tivoli Enterprise Portal Server, and Tivoli Enterprise Portal). You must also have installed the agent bundle into the Remote Deploy Depot.

For information about displaying the configuration options that are available to use with the **configureSystem** or **addSystem** commands see "tacmd describeSystemType" in the *IBM Tivoli Monitoring Command Reference*.

If you are using the command line, the following command is an example of remote deployment of agentless HP (R5) agent to a Windows operating system node. In this example, `remotesystem2` uses a different community than the default:

```
tacmd addsystem -n Primary:node:NT -t r5
     -p INSTANCE=snmp1
         KQZ_SNMP.SNMP_PORT=161
         KQZ_SNMP.SNMP_VERSION=snmpV1
         KQZ_SNMPV1.SNMP_COMMUNITY=public
         HP:remotesystem1.SNMP_HOST=remotesystem1.ibm.com
         HP:remotesystem2.SNMP_HOST=remotesystem2.ibm.com
         HP:remotesystem2.SNMP_COMMUNITY=community
```

Chapter 3. Workspaces reference

A workspace is the working area of the Tivoli Enterprise Portal application window. The Navigator tree contains a list of the workspaces provided by the agent.

About workspaces

Use the Navigator tree to select the workspace you want to see. As part of the application window, 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 Workspace item contains a list of workspaces for that Navigator item. Each workspace has at least one view. Some views have links to other workspaces. You can also use the Workspace Gallery tool as described in the *Tivoli Enterprise Portal User's Guide* to open workspaces.

The workspaces in the Navigator are displayed in a Physical view that shows your enterprise as a physical mapping or a dynamically populated logical view that is agent-specific. You can also create a Logical view. The Physical view is the default view.

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.

The IBM Tivoli Agentless Monitoring for HP-UX Operating Systems provides various default workspaces. These workspaces are displayed in the Navigator tree under the following nodes and subnodes for this monitoring agent:

Agentless HP-UX OS (R5 node)
Corresponds to a Agentless HP-UX OS instance and contains agent instance-level workspaces.

SNMP HP-UX Systems (HP subnode)
Each node is an individual server.

When multiple instances of the monitoring agent are defined on a system, the top-level node becomes Agentless HP-UX OS. The Agentless HP-UX OS workspace is undefined at this node. A node for each instance is created called *Instance*:*Hostname*:R5. A workspace that is called *Instance*:*Hostname*:R5 is associated with the instance node. This workspace is comparable to the Agentless HP-UX OS workspace.

Workspace views can be any combination of query-based views, event views, and special purpose views.

Additional information about workspaces

For more information about creating, customizing, and working with workspaces, see "Using workspaces" in the *Tivoli Enterprise Portal User's Guide*.

For a list of the predefined workspaces for this monitoring agent and a description of each workspace, see Predefined workspaces and the information about 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 "Attribute groups for the monitoring agent" on page 15.

If you are using remote management to navigate to your systems in the Tivoli Enterprise Portal, navigate from the host name of the computer where you installed the agent.

Predefined workspaces

The Agentless Monitor for HP-UX provides predefined workspaces, which are organized by Navigator item.

Agent-level navigator items

- Agentless HP-UX OS Navigator item
  - Agentless HP-UX OS workspace
- Managed Systems Navigator item
  - Managed Systems workspace

SNMP HP-UX Systems (HP) subnode

- SNMP HP-UX Systems Navigator item
  - SNMP HP-UX Systems workspace
  - Data Collection Status workspace
- Disk Navigator item
  - Disk workspace
- Memory Navigator item
  - Memory workspace
- Network Navigator item
  - Network workspace
- Processes Navigator item
  - Processes workspace
- Processor Navigator item
  - Processor workspace
- System Navigator item
  - System workspace

Workspace descriptions

Each workspace description provides information about the workspace such as the purpose and a list of views in the workspace.

Workspaces are listed under Navigator items. When the agent has subnodes, the Navigator items are listed under the subnode.

Agentless HP-UX OS Navigator item

The workspace descriptions are organized by the Navigator item to which the workspaces are relevant.

Agentless HP-UX OS workspace

This workspace lists the collection status of the managed systems, and lists the systems that are being monitored.

This workspace contains the following views:

SNMP HP-UX Systems

This workspace lists the collection status of the managed systems, and lists the systems that are being monitored.

System Overview
This workspace provides an overview of data collection and memory utilization for this system.

Managed Systems Navigator item

The workspace descriptions are organized by the Navigator item to which the workspaces are relevant.

Managed Systems workspace
This workspace lists the systems that are being monitored.

This workspace contains the following view:

Monitored HP-UX Operating Systems through SNMP
This view lists the HP-UX systems that are currently being monitored through the SNMP subnode. The individual systems can be found under the SNMP HP-UX Systems Navigator item.

SNMP HP-UX Systems subnode

This section contains descriptions of predefined workspaces. The workspaces are organized by the Navigator item to which the workspaces are relevant.

SNMP HP-UX Systems Navigator item

SNMP HP-UX Systems workspace
This workspace contains on overview of the core system attribute utilizations.

This workspace contains the following views:

Memory Utilization
This view lists the percentage of memory in use on the target system.

Disk Utilization
This view lists the percentage of disk space in use on the target system.

Overall CPU Utilization
This view shows the aggregate of processor utilization for all system CPUs.

Data Collection Status workspace
This workspace provides an overview of data collection of the target systems.

This workspace contains the following view:

Data Collection Status
This view contains information that reflects the status of data collection for all attribute groups that make up this application all at once. Each attribute group is represented by a row in this table. 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.

Disk Navigator item

Disk workspace
This workspace contains metrics about hard drives and file systems.

This workspace contains the following views:

Disk Utilization
This view lists the percentage of disk space in use on the target system.

Disk Space
This view lists the disk space in use on the target system.

Memory Navigator item

Memory workspace
This workspace contains metrics about physical and virtual memory.

This workspace contains the following views:

Physical Memory Utilization
This view lists the percentage of physical memory in use on the target system.
Swap Memory Utilization
This view lists the percentage of swap memory in use on the target system.
Virtual Memory Utilization
This view lists the percentage of virtual memory in use on the target system.
Memory Utilization MBs
This view lists the memory in use on the target system.

Network Navigator item

Network workspace
This workspace contains metrics about the network interface cards contained in the system.

This workspace contains the following views:
Administrative and Operational Status
This view lists the status of the network cards.
Byte Rates
This view lists the I/O rates of bytes for each network interface card.

Processes Navigator item

Processes workspace
This workspace contains metrics for the processes currently running on the target system.

This workspace contains the following views:
Process Status and CPU Utilization
This view lists processes currently active on the target system.
Process CPU Utilization
This view lists the amount of CPU that processes are consuming from the target system.

Processor Navigator item

Processor workspace
This workspace contains information about processor capacity of the system.

This workspace contains the following views:
Overall CPU Utilization over time
This view lists the utilization of all processors in the system over a period of time.
Overall System CPU Utilization
This view shows the aggregate of processor utilization for all system CPUs.

System Navigator item

System workspace
This workspace contains metrics on the status of the system and users logged in to the system.

This workspace contains the following views:
System Details
This view lists overall status information for the system.
User Logins
This view lists the number of users logged into the system.
Total Running Processes
This view lists the number of active processes running on the system.

Chapter 4. Attributes reference

Attributes are the application properties that are being measured and reported by the IBM Tivoli Agentless Monitoring for HP-UX Operating Systems.

About attributes

Attributes are organized into attribute groups. Attributes in an attribute group relate to a single object such as an application, or to a single kind of data such as status information.

Attributes in a group can be used in queries, query-based views, situations, policy workflows, take action definitions, and launch application definitions. Chart or table views and situations are two examples of how attributes in a group can be used:

- 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 Properties editor to 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 values you assign to the situation attributes are compared with the values collected by the Agentless Monitor for HP-UX and registers an *event* if the condition is met. You are alerted to events by indicator icons that are displayed in the Navigator.

Additional information about attributes

For more information about using attributes and attribute groups, see the *Tivoli Enterprise Portal User's Guide*.

For a list of the attribute groups, a list of the attributes in each attribute group, and descriptions of the attributes for this monitoring agent, see "Attribute groups for the monitoring agent" and "Attributes in each attribute group" on page 16.

Attribute groups for the monitoring agent

The Agentless Monitor for HP-UX contains the following attribute groups. The table name depends on the maximum table name limits of the target database being used for the Tivoli Data Warehouse. If the maximum name is 30 characters, any warehouse table name longer than 30 characters is shortened to 30 characters.

- Attribute group name: Disk
  - Table name: KR5FILESYS
  - Warehouse table name: KR5_DISK or KR5FILESYS
- Attribute group name: HP Performance Object Status
  - Table name: KR5HPPOS
  - Warehouse table name: KR5_HP_PERFORMANCE_OBJECT_STATUS or KR5HPPOS
- Attribute group name: Managed Systems
  - Table name: KR5MEPS
  - Warehouse table name: KR5_MANAGED_SYSTEMS or KR5MEPS
- Attribute group name: Memory

  - Table name: KR5MEMORY
  - Warehouse table name: KR5_MEMORY
- Attribute group name: Network
  - Table name: KR5IFTABLE
  - Warehouse table name: KR5_NETWORK or KR5IFTABLE
- Attribute group name: Performance Object Status
  - Table name: KR5POBJST
  - Warehouse table name: KR5_PERFORMANCE_OBJECT_STATUS or KR5POBJST
- Attribute group name: Processes
  - Table name: KR5PROCLST
  - Warehouse table name: KR5_PROCESSES or KR5PROCLST
- Attribute group name: Processor
  - Table name: KR5PROCSR
  - Warehouse table name: KR5_PROCESSOR or KR5PROCSR
- Attribute group name: System
  - Table name: KR5SYSTEM
  - Warehouse table name: KR5_SYSTEM
- Attribute group name: Thread Pool Status
  - Table name: KR5THPLST
  - Warehouse table name: KR5_THREAD_POOL_STATUS or KR5THPLST

Attributes in each attribute group

Attributes in each Agentless Monitor for HP-UX attribute group collect data that the agent uses for monitoring.

The descriptions of the attribute groups contain the following information:

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

Attribute descriptions
Description, type, warehouse name (if applicable), and other information for each attribute in the attribute group.

Some attributes are designated as key attributes. A *key attribute* is an attribute that is used in warehouse aggregation to identify rows of data that represent the same object.

Disk attribute group

Data gathered from SNMP Object fileSystemTable.

Historical group
This attribute group is eligible for use with Tivoli Data Warehouse.

Attribute descriptions
The following list contains information about each attribute in the Disk attribute group:

Node attribute: This attribute is a key attribute.

Description
The managed system name of the agent.

Type
String

Source
The source for this attribute is the agent.

Warehouse name
NODE

Timestamp attribute

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

Type
String

Source
The source for this attribute is the agent.

Warehouse name
TIMESTAMP

File System ID1 attribute: This attribute is a key attribute.

Description
First file system ID.

Type
Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:
- Value Exceeds Maximum (2147483647)
- Value Exceeds Minimum (-2147483648)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Source
The source for this attribute is SNMP - 1.3.6.1.4.1.11.2.3.1.2.2.1.1.index value.

Warehouse name
FILE_SYSTEM_ID1 or FSYSINDX1

File System ID2 attribute: This attribute is a key attribute.

Description
Second file system ID.

Type
Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:
- Value Exceeds Maximum (2147483647)
- Value Exceeds Minimum (-2147483648)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Source
The source for this attribute is SNMP - 1.3.6.1.4.1.11.2.3.1.2.2.1.2.index value.

Warehouse name
FILE_SYSTEM_ID2 or FSYSINDX2

File System Name attribute: This attribute is a key attribute.

Description
Name of mounted file system.

Type
String

Source
The source for this attribute is SNMP - 1.3.6.1.4.1.11.2.3.1.2.2.1.3.index value.

Warehouse name
FILE_SYSTEM_NAME or FSYSNAME

Total Blocks attribute

Description
Total blocks in file system.

Type
Integer (64-bit gauge) with enumerated values. The strings are displayed in the

Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:
- Value Exceeds Maximum (9223372036854775807)
- Value Exceeds Minimum (-9223372036854775808)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Source

The source for this attribute is SNMP - 1.3.6.1.4.1.11.2.3.1.2.2.1.4.index value.

Warehouse name

TOTAL_BLOCKS or FSYSTOTBLK

Free Blocks attribute

Description

Free blocks in file system.

Type

Integer (64-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:
- Value Exceeds Maximum (9223372036854775807)
- Value Exceeds Minimum (-9223372036854775808)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Source

The source for this attribute is SNMP - 1.3.6.1.4.1.11.2.3.1.2.2.1.5.index value.

Warehouse name

FREE_BLOCKS or FSYSFREBLK

Block Size attribute

Description

Fundamental file system block size.

Type

Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:
- Value Exceeds Maximum (2147483647)
- Value Exceeds Minimum (-2147483648)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Source

The source for this attribute is SNMP - 1.3.6.1.4.1.11.2.3.1.2.2.1.7.index value.

Warehouse name

BLOCK_SIZE or FSYSBLKSIZ

Total Disk Space MB attribute

Description

File system size in MB

Type

Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:
- Value Exceeds Maximum (2147483647)
- Value Exceeds Minimum (-2147483648)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Source

The source for this attribute is derived: Total_Blocks * (Block_Size / 1024) / 1024.

Warehouse name

TOTAL_DISK_SPACE_MB or FSYSTOTMB

Available Disk Space MB attribute

Description

Free file system size in MB

Type

Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:

- Value Exceeds Maximum (2147483647)
- Value Exceeds Minimum (-2147483648)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Source

The source for this attribute is derived: Free_Blocks * (Block_Size / 1024) / 1024.

Warehouse name

AVAILABLE_DISK_SPACE_MB or FSYSFREMB

Used Disk Space MB attribute

Description

Used file system size in MB

Type

Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:

- Value Exceeds Maximum (2147483647)
- Value Exceeds Minimum (-2147483648)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Source

The source for this attribute is derived: Total_Disk_Space_MB - Available_Disk_Space_MB.

Warehouse name

USED_DISK_SPACE_MB or FSYSUSEMB

% Available Disk Space attribute

Description

The percentage of the total storage that is available.

Type

Real number (32-bit gauge) with two decimal places of precision with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:

- Value Exceeds Maximum (2147483647)
- Value Exceeds Minimum (-2147483648)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Source

The source for this attribute is derived: (Free_Blocks / Total_Blocks) * 100.

Warehouse name

PERCENTAGE_OF_AVAILABLE_DISK_SPACE or FSYSPCTFRE

% Used Disk Space attribute

Description

The percentage of the total storage that is allocated.

Type

Real number (32-bit gauge) with two decimal places of precision with

enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:
- Value Exceeds Maximum (2147483647)
- Value Exceeds Minimum (-2147483648)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Source

The source for this attribute is derived: 100 - (Free_Blocks / Total_Blocks * 100).

Warehouse name

PERCENTAGE_OF_USED_DISK_SPACE or FSYSPCTUSE

Mount Point attribute

Description

The path name of the root of this file system.

Type

String

Source

The source for this attribute is SNMP - 1.3.6.1.4.1.11.2.3.1.2.2.1.10.index value.

Warehouse name

MOUNT_POINT or FSYSMOUNT

HP 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.

Historical group

This attribute group is eligible for use with Tivoli Data Warehouse.

Attribute descriptions

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

Node attribute: This attribute is a key attribute.

Description

The managed system name of the agent.

Type

String

Source

The source for this attribute is the agent.

Warehouse name

NODE

Timestamp attribute

Description

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

Type

String

Source

The source for this attribute is the agent.

Warehouse name

TIMESTAMP

Query Name attribute: This attribute is a key attribute.

Description

The name of the attribute group.

Type

String

Warehouse name

QUERY_NAME or ATTRGRP

Object Name attribute

Description

The name of the performance object.

Type

String

Warehouse name

OBJECT_NAME or OBJNAME

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 that are 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)
- SNMP EVENT (16)
- PING (17)
- DIRECTOR DATA (18)
- DIRECTOR EVENT (19)
- SSH REMOTE SHELL COMMAND (20)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Warehouse name

OBJECT_TYPE or OBJTYPE

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 that are shown in parentheses. The following values are defined:

- ACTIVE (0)
- INACTIVE (1)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Warehouse name

OBJECT_STATUS or OBJSTTS

Error Code attribute

Description

The error code that is 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 that are 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)
- REQUESTED A BAD VALUE (48)
- RESPONSE TOO BIG (49)
- GENERAL RESPONSE ERROR (50)
- SCRIPT NONZERO RETURN (51)
- SCRIPT NOT FOUND (52)
- SCRIPT LAUNCH ERROR (53)
- CONF FILE DOES NOT EXIST (54)
- CONF FILE ACCESS DENIED (55)
- INVALID CONF FILE (56)
- EIF INITIALIZATION FAILED (57)
- CANNOT OPEN FORMAT FILE (58)
- FORMAT FILE SYNTAX ERROR (59)
- REMOTE HOST UNAVAILABLE (60)
- EVENT LOG DOES NOT EXIST (61)
- PING FILE DOES NOT EXIST (62)
- NO PING DEVICE FILES (63)
- PING DEVICE LIST FILE MISSING (64)
- SNMP MISSING PASSWORD (65)
- DISABLED (66)
- URLS FILE NOT FOUND (67)
- XML PARSE ERROR (68)
- NOT INITIALIZED (69)
- ICMP SOCKETS FAILED (70)
- DUPLICATE CONF FILE (71)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Warehouse name

ERROR_CODE or ERRCODE

Last Collection Start attribute

Description

The most recent time a data collection of this group started.

Type

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

- NOT COLLECTED (0691231190000000)
- NOT COLLECTED (0000000000000001)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Warehouse name

LAST_COLLECTION_START or COLSTRT

Last Collection Finished attribute

Description

The most recent time a data collection of this group finished.

Type

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

- NOT COLLECTED (0691231190000000)
- NOT COLLECTED (0000000000000001)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Warehouse name
LAST_COLLECTION_FINISHED or COLFINI

Last Collection Duration attribute

Description
The duration of the most recently completed data collection of this group in seconds.

Type
Real number (32-bit counter) with two decimal places of precision

Warehouse name
LAST_COLLECTION_DURATION or COLDURA

Average Collection Duration attribute

Description
The average duration of all data collections of this group in seconds.

Type
Real number (32-bit counter) with two decimal places of precision with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:

- NO DATA (-100)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Warehouse name
AVERAGE_COLLECTION_DURATION or COLAVGD

Refresh Interval attribute

Description
The interval at which this group is refreshed in seconds.

Type
Integer (32-bit counter)

Warehouse name
REFRESH_INTERVAL or REFRINT

Number of Collections attribute

Description
The number of times this group has been collected since agent start.

Type
Integer (32-bit counter)

Warehouse name
NUMBER_OF_COLLECTIONS or NUMCOLL

Cache Hits attribute

Description
The number of times an external data request for this group was satisfied from the cache.

Type
Integer (32-bit counter)

Warehouse name
CACHE_HITS or CACHEHT

Cache Misses attribute

Description
The number of times an external data request for this group was not available in the cache.

Type
Integer (32-bit counter)

Warehouse name
CACHE_MISSES or CACHEMS

Cache Hit Percent attribute

Description
The percentage of external data requests for this group that were satisfied from the cache.
Type
Real number (32-bit counter) with two decimal places of precision
Warehouse name
CACHE_HIT_PERCENT or CACHPCT

Intervals Skipped attribute
Description
The number of times a background data collection for this group was skipped because the previous collection was still running when the next one was due to start.
Type
Integer (32-bit counter)
Warehouse name
INTERVALS_SKIPPED or INTSKIP

Managed Systems attribute group

Managed HP Systems

Historical group
This attribute group is eligible for use with Tivoli Data Warehouse.

Attribute descriptions
The following list contains information about each attribute in the Managed Systems attribute group:

Node attribute: This attribute is a key attribute.
Description
The managed system name of the agent.
Type
String
Source
The source for this attribute is the agent.
Warehouse name
NODE

Timestamp attribute
Description
The local time at the agent when the data was collected.
Type
String
Source
The source for this attribute is the agent.
Warehouse name
TIMESTAMP

Subnode MSN attribute: This attribute is a key attribute.
Description
The Managed System Name of the subnode agent.
Type
String
Warehouse name
SUBNODE_MSN or SN_MSN

Subnode Affinity attribute
Description
The affinity for the subnode agent.
Type
String

Warehouse name
SUBNODE_AFFINITY or SN_AFFIN

Subnode Type attribute: This attribute is a key attribute.

Description
The Node Type of this subnode.

Type
String

Warehouse name
SUBNODE_TYPE or SN_TYPE

Subnode Resource Name attribute

Description
The Resource Name of the subnode agent.

Type
String

Warehouse name
SUBNODE_RESOURCE_NAME or SN_RES

Subnode Version attribute

Description
The Version of the subnode agent.

Type
String

Warehouse name
SUBNODE_VERSION or SN_VER

Memory attribute group

Data gathered from SNMP Object computerSystem.

Historical group
This attribute group is eligible for use with Tivoli Data Warehouse.

Attribute descriptions
The following list contains information about each attribute in the Memory attribute group:

Node attribute: This attribute is a key attribute.

Description
The managed system name of the agent.

Type
String

Source
The source for this attribute is the agent.

Warehouse name
NODE

Timestamp attribute

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

Type
String

Source
The source for this attribute is the agent.

Warehouse name
TIMESTAMP

Available Physical Memory KB attribute

Description
Free memory in KB.

Type
Integer (64-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:

- Value Exceeds Maximum (9223372036854775807)
- Value Exceeds Minimum (-9223372036854775808)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Source

The source for this attribute is SNMP - 1.3.6.1.4.1.11.2.3.1.1.7.0.

Warehouse name

AVAILABLE_PHYSICAL_MEMORY_KB or PMEMFREKB

Total Physical Memory KB attribute

Description

Physical memory in KB.

Type

Integer (64-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:

- Value Exceeds Maximum (9223372036854775807)
- Value Exceeds Minimum (-9223372036854775808)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Source

The source for this attribute is SNMP - 1.3.6.1.4.1.11.2.3.1.1.8.0.

Warehouse name

TOTAL_PHYSICAL_MEMORY_KB or PMEMTOTKB

Used Physical Memory KB attribute

Description

Used memory in KB

Type

Integer (64-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:

- Value Exceeds Maximum (9223372036854775807)
- Value Exceeds Minimum (-9223372036854775808)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Source

The source for this attribute is derived: Total_Physical_Memory_KB - Available_Physical_Memory_KB.

Warehouse name

USED_PHYSICAL_MEMORY_KB or PMEMUSEKB

Total Physical Memory MB attribute

Description

Physical memory in MB.

Type

Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:

- Value Exceeds Maximum (2147483647)
- Value Exceeds Minimum (-2147483648)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Source

The source for this attribute is derived: Total_Physical_Memory_KB / 1024.

Warehouse name

TOTAL_PHYSICAL_MEMORY_MB or PMEMTOTMB

Used Physical Memory MB attribute

Description

Used Memory in MB.

Type

Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:

- Value Exceeds Maximum (2147483647)
- Value Exceeds Minimum (-2147483648)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Source

The source for this attribute is derived: Used_Physical_Memory_KB / 1024.

Warehouse name

USED_PHYSICAL_MEMORY_MB or PMEMUSEMB

Available Physical Memory MB attribute

Description

Free memory in MB.

Type

Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:

- Value Exceeds Maximum (2147483647)
- Value Exceeds Minimum (-2147483648)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Source

The source for this attribute is derived: Available_Physical_Memory_KB / 1024.

Warehouse name

AVAILABLE_PHYSICAL_MEMORY_MB or PMEMFREMB

% Used Physical Memory attribute

Description

Percentage of memory in use.

Type

Real number (32-bit gauge) with two decimal places of precision with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:

- Value Exceeds Maximum (2147483647)
- Value Exceeds Minimum (-2147483648)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Source

The source for this attribute is derived: (Used_Physical_Memory_KB / Total_Physical_Memory_KB) * 100.

Warehouse name

USED_PHYSICAL_MEMORY_PCT or PMEMPCTUSE

% Available Physical Memory attribute

Description

Percentage of memory currently free.

Type

Real number (32-bit gauge) with two decimal places of precision with

enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:
- Value Exceeds Maximum (2147483647)
- Value Exceeds Minimum (-2147483648)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Source

The source for this attribute is derived: 100 - (Used_Physical_Memory_KB / Total_Physical_Memory_KB * 100).

Warehouse name

AVAILABLE_PHYSICAL_MEMORY_PCT or PMEMPCTFRE

Total Swap Space KB attribute

Description

Swap space configured in KB.

Type

Integer (64-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:
- Value Exceeds Maximum (9223372036854775807)
- Value Exceeds Minimum (-9223372036854775808)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Source

The source for this attribute is SNMP - 1.3.6.1.4.1.11.2.3.1.1.10.0.

Warehouse name

TOTAL_SWAP_SPACE_KB or SWAPTOTKB

Available Swap Space KB attribute

Description

Currently free swap space in KB.

Type

Integer (64-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:
- Value Exceeds Maximum (9223372036854775807)
- Value Exceeds Minimum (-9223372036854775808)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Source

The source for this attribute is SNMP - 1.3.6.1.4.1.11.2.3.1.1.12.0.

Warehouse name

AVAILABLE_SWAP_SPACE_KB or SWAPFREKB

Used Swap Space KB attribute

Description

Currently used swap space in KB.

Type

Integer (64-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:
- Value Exceeds Maximum (9223372036854775807)
- Value Exceeds Minimum (-9223372036854775808)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Source

The source for this attribute is derived: Total_Swap_Space_KB - Available_Swap_Space_KB.

Warehouse name

USED_SWAP_SPACE_KB or SWAPUSEKB

Total Swap Space MB attribute

Description

Swap space configured in MB.

Type

Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:

- Value Exceeds Maximum (2147483647)
- Value Exceeds Minimum (-2147483648)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Source

The source for this attribute is derived: Total_Swap_Space_KB / 1024.

Warehouse name

TOTAL_SWAP_SPACE_MB or SWAPTOTMB

Available Swap Space MB attribute

Description

Currently free swap space in MB.

Type

Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:

- Value Exceeds Maximum (2147483647)
- Value Exceeds Minimum (-2147483648)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Source

The source for this attribute is derived: Available_Swap_Space_KB / 1024.

Warehouse name

AVAILABLE_SWAP_SPACE_MB or SWAPFREMB

Used Swap Space MB attribute

Description

Currently used swap space in MB.

Type

Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:

- Value Exceeds Maximum (2147483647)
- Value Exceeds Minimum (-2147483648)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Source

The source for this attribute is derived: Used_Swap_Space_KB / 1024.

Warehouse name

USED_SWAP_SPACE_MB or SWAPUSEMB

% Available Swap Space attribute

Description

Percentage of swap space currently free.

Type

Real number (32-bit gauge) with two decimal places of precision with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:

- Value Exceeds Maximum (2147483647)
- Value Exceeds Minimum (-2147483648)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Source

The source for this attribute is derived: (Available_Swap_Space_KB / Total_Swap_Space_KB) * 100.

Warehouse name

AVAILABLE_SWAP_SPACE_PCT or SWAPPCTFRE

% Used Swap Space attribute

Description

Percentage of swap space in use.

Type

Real number (32-bit gauge) with two decimal places of precision with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:

- Value Exceeds Maximum (2147483647)
- Value Exceeds Minimum (-2147483648)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Source

The source for this attribute is derived: 100 - (Available_Swap_Space_KB / Total_Swap_Space_KB * 100).

Warehouse name

USED_SWAP_SPACE_PCT or SWAPPCTUSE

Total Virtual Memory KB attribute

Description

Sum of total physical memory and configured swap memory, in KB.

Type

Integer (64-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:

- Value Exceeds Maximum (9223372036854775807)
- Value Exceeds Minimum (-9223372036854775808)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Source

The source for this attribute is derived: Total_Physical_Memory_KB + Total_Swap_Space_KB.

Warehouse name

TOTAL_VIRTUAL_MEMORY_KB or VMEMTOTKB

Available Virtual Memory KB attribute

Description

Sum of free physical memory and free swap memory, in KB.

Type

Integer (64-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:

- Value Exceeds Maximum (9223372036854775807)
- Value Exceeds Minimum (-9223372036854775808)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Source

The source for this attribute is derived: Available_Swap_Space_KB + Available_Physical_Memory_KB.

Warehouse name

AVAILABLE_VIRTUAL_MEMORY_KB or VMEMFREKB

Used Virtual Memory KB attribute

Description

Difference between free virtual memory and total virtual memory, in KB.

Type

Integer (64-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:

- Value Exceeds Maximum (9223372036854775807)
- Value Exceeds Minimum (-9223372036854775808)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Source

The source for this attribute is derived: Total_Virtual_Memory_KB - Available_Virtual_Memory_KB.

Warehouse name

USED_VIRTUAL_MEMORY_KB or VMEMUSEKB

Total Virtual Memory MB attribute

Description

Sum of total physical memory and configured swap memory, in MB.

Type

Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:

- Value Exceeds Maximum (2147483647)
- Value Exceeds Minimum (-2147483648)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Source

The source for this attribute is derived: Total_Virtual_Memory_KB / 1024.

Warehouse name

TOTAL_VIRTUAL_MEMORY_MB or VMEMTOTMB

Used Virtual Memory MB attribute

Description

Difference between free virtual memory and total virtual memory, in MB.

Type

Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:

- Value Exceeds Maximum (2147483647)
- Value Exceeds Minimum (-2147483648)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Source

The source for this attribute is derived: Used_Virtual_Memory_KB / 1024.

Warehouse name
USED_VIRTUAL_MEMORY_MB or VMEMUSEMB

Available Virtual Memory MB attribute

Description
Sum of free physical memory and free swap memory, in MB.

Type
Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:
- Value Exceeds Maximum (2147483647)
- Value Exceeds Minimum (-2147483648)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Source
The source for this attribute is derived: Available_Virtual_Memory_KB / 1024.

Warehouse name
AVAILABLE_VIRTUAL_MEMORY_MB or VMEMFREMB

% Available Virtual Memory attribute

Description
Percentage of virtual memory currently free.

Type
Real number (32-bit gauge) with two decimal places of precision with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:
- Value Exceeds Maximum (2147483647)
- Value Exceeds Minimum (-2147483648)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Source
The source for this attribute is derived: (Available_Virtual_Memory_KB / Total_Virtual_Memory_KB) * 100.

Warehouse name
AVAILABLE_VIRTUAL_MEMORY_PCT or VMEMPCTFRE

% Used Virtual Memory attribute

Description
Percentage of virtual memory in use.

Type
Real number (32-bit gauge) with two decimal places of precision with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:
- Value Exceeds Maximum (2147483647)
- Value Exceeds Minimum (-2147483648)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Source
The source for this attribute is derived: 100 - (Available_Virtual_Memory_KB / Total_Virtual_Memory_KB * 100).

Warehouse name
USED_VIRTUAL_MEMORY_PCT or VMEMPCTUSE

Network attribute group

Data gathered from SNMP Object ifTable.

Historical group

This attribute group is eligible for use with Tivoli Data Warehouse.

Attribute descriptions

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

Node attribute: This attribute is a key attribute.

Description

The managed system name of the agent.

Type

String

Source

The source for this attribute is the agent.

Warehouse name

NODE

Timestamp attribute

Description

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

Type

String

Source

The source for this attribute is the agent.

Warehouse name

TIMESTAMP

Index attribute: This attribute is a key attribute.

Description

A unique value for each interface. The value ranges between 1 and the value of ifNumber. The value for each interface must remain constant from one re-initialization of the network management system for the entity to the next re-initialization.

Type

Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:

- Value Exceeds Maximum (2147483647)
- Value Exceeds Minimum (-2147483648)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Source

The source for this attribute is SNMP - 1.3.6.1.2.1.2.2.1.1.index value.

Warehouse name

INDEX or IFINDEX

Description attribute: This attribute is a key attribute.

Description

A textual string containing information about the interface. This string must include the name of the manufacturer, the product name, and the version of the interface hardware or software.

Type

String

Source

The source for this attribute is SNMP - 1.3.6.1.2.1.2.2.1.2.index value.

Warehouse name

DESCRIPTION or IFDESCR

Type attribute

Description

The type of interface. Additional values for ifType are assigned by the Internet Assigned Numbers Authority (IANA), through updating the syntax of the IANAifType textual convention.

Type

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

- other (1)
- regular1822 (2)
- hdh1822 (3)
- ddnX25 (4)
- rfc877x25 (5)
- ethernet (6)
- ethernet (7)
- iso88024TokenBus (8)
- iso88025TokenRing (9)
- iso88026Man (10)
- ethernet (11)
- proteon10Mbit (12)
- proteon80Mbit (13)
- hyperchannel (14)
- fddi (15)
- lapb (16)
- sdlc (17)
- ds1 (18)
- e1 (19)
- basicISDN (20)
- primaryISDN (21)
- Proprietary PointToPoint Serial (22)
- ppp (23)
- softwareLoopback (24)
- eon (25)
- ethernet3Mbit (26)
- nsip (27)
- slip (28)
- ultra (29)
- ds3 (30)
- sip (31)
- frameRelay (32)
- rs232 (33)
- parallel-port (34)
- arcnet (35)
- arcnetPlus (36)
- atm (37)
- miox25 (38)
- sonet (39)
- x25ple (40)
- iso88022llc (41)
- localTalk (42)
- smdsDxi (43)
- frameRelayService (44)
- v35 (45)
- hssi (46)
- hippi (47)
- modem (48)

- aal5 (49)
- sonetPath (50)
- sonetVT (51)
- smdsIcip (52)
- Proprietary Virtual (53)
- proprietary Multiplexor (54)
- 100BaseVG (55)
- fibreChannel (56)
- HIPPI Interface (57)
- Frame Relay Interconnect (58)
- ATM Emulated LAN for 802.3 (59)
- ATM Emulated LAN for 802.5 (60)
- ATM Emulated circuit (61)
- ethernet (62)
- ISDN and X.25 (63)
- CCITT V.11/X.21 (64)
- CCITT V.36 (65)
- CCITT G703 at 64Kbps (66)
- g703at2mb (67)
- SNA QLLC (68)
- ethernet (69)
- radio spread spectrum (71)
- IBM System 360/370 OEMI Channel (72)
- IBM Enterprise Systems Connection (73)
- Data Link Switching (74)
- ISDN S/T interface (75)
- ISDN U interface (76)
- Link Access Protocol D (77)
- IP Switching Objects (78)
- Remote Source Route Bridging (79)
- ATM Logical Port (80)
- Digital Signal Level 0 (81)
- group of ds0s on the same ds1 (82)
- Bisynchronous Protocol (83)
- Asynchronous Protocol (84)
- Combat Net Radio (85)
- ISO 802.5r DTR (86)
- Ext Pos Loc Report Sys (87)
- Appletalk Remote Access Protocol (88)
- Proprietary Connectionless Protocol (89)
- CCITT-ITU X.29 PAD Protocol (90)
- CCITT-ITU X.3 PAD Facility (91)
- Multiproto Interconnect over FR (92)
- CCITT-ITU X213 (93)
- Asymmetric Digital Subscriber Loop (94)
- Rate-Adapt. Digital Subscriber Loop (95)
- Symmetric Digital Subscriber Loop (96)
- Very H-Speed Digital Subscrib. Loop (97)
- ISO 802.5 CRFP (98)
- Myricom Myrinet (99)
- voice recEive and transMit (100)
- voice Foreign Exchange Office (101)
- voice Foreign Exchange Station (102)
- voice encapsulation (103)
- voice over IP encapsulation (104)
- ATM DXI (105)

- ATM FUNI (106)
- ATM IMA (107)
- PPP Multilink Bundle (108)
- IBM ipOverCdlc (109)
- IBM Common Link Access to Workstn (110)
- IBM stackToStack (111)
- IBM VIPA (112)
- IBM multi-protocol channel support (113)
- IBM ipOverAtm (114)
- ISO 802.5j Fiber Token Ring (115)
- IBM twinaxial data link control (116)
- ethernet (117)
- HDLC (118)
- LAP F (119)
- V.37 (120)
- X.25 Multi-Link Protocol (121)
- X25 Hunt Group (122)
- Transp HDLC (123)
- Interleave channel (124)
- Fast channel (125)
- IP (for APPN HPR in IP networks) (126)
- CATV Mac Layer (127)
- CATV Downstream interface (128)
- CATV Upstream interface (129)
- Avalon Parallel Processor (130)
- tunnel encapsulation interface (131)
- coffee pot (132)
- Circuit Emulation Service (133)
- ATM Sub Interface (134)
- Layer 2 Virtual LAN using 802.1Q (135)
- Layer 3 Virtual LAN using IP (136)
- Layer 3 Virtual LAN using IPX (137)
- IP over Power Lines (138)
- Multimedia Mail over IP (139)
- Dynamic syncronous Transfer Mode (140)
- Data Communications Network (141)
- IP Forwarding Interface (142)
- Multi-rate Symmetric DSL (143)
- IEEE1394 High Performance Serial Bus (144)
- HIPPI-6400 (145)
- DVB-RCC MAC Layer (146)
- DVB-RCC Downstream Channel (147)
- DVB-RCC Upstream Channel (148)
- ATM Virtual Interface (149)
- MPLS Tunnel Virtual Interface (150)
- Spatial Reuse Protocol (151)
- Voice Over ATM (152)
- Voice Over Frame Relay (153)
- Digital Subscriber Loop over ISDN (154)
- Avici Composite Link Interface (155)
- SS7 Signaling Link (156)
- Prop. P2P wireless interface (157)
- Frame Forward Interface (158)
- Multiprotocol over ATM AAL5 (159)
- USB Interface (160)
- IEEE 802.3ad Link Aggregate (161)

- BGP Policy Accounting (162)
- FRF .16 Multilink Frame Relay (163)
- H323 Gatekeeper (164)
- H323 Voice and Video Proxy (165)
- MPLS (166)
- Multi-frequency signaling link (167)
- High Bit-Rate DSL - 2nd generation (168)
- Multirate High Bit-Rate DSL - 2nd generation (169)
- Facility Data Link 4Kbps on a DS1 (170)
- Packet over SONET/SDH Interface (171)
- DVB-ASI Input (172)
- DVB-ASI Output (173)
- Power Line Communtications (174)
- Non Facility Associated Signaling (175)
- TR008 (176)
- Remote Digital Terminal (177)
- Integrated Digital Terminal (178)
- ISUP (179)
- Cisco proprietary Maclayer (180)
- Cisco proprietary Downstream (181)
- Cisco proprietary Upstream (182)
- HIPERLAN Type 2 Radio Interface (183)
- propBWAp2Mp (184)
- SONET Overhead Channel (185)
- Digital Wrapper (186)
- ATM adaptation layer 2 (187)
- MAC layer over radio links (188)
- ATM over radio links (189)
- Inter Machine Trunks (190)
- Multiple Virtual Lines DSL (191)
- Long Reach DSL (192)
- Frame Relay DLCI End Point (193)
- ATM VCI End Point (194)
- Optical Channel (195)
- Optical Transport (196)
- Proprietary ATM (197)
- Voice Over Cable Interface (198)
- Infiniband (199)
- TE Link (200)
- Q.2931 (201)
- Virtual Trunk Group (202)
- SIP Trunk Group (203)
- SIP Signaling (204)
- CATV Upstream Channel (205)
- Acorn Econet (206)
- FSAN 155Mb Symetrical PON interface (207)
- FSAN622Mb Symetrical PON interface (208)
- Transparent bridge interface (209)
- Interface common to multiple lines (210)
- voice E and M Feature Group D (211)
- voice FGD Exchange Access North American (212)
- voice Direct Inward Dialing (213)
- MPEG transport interface (214)
- 6to4 interface (215)
- GTP (GPRS Tunneling Protocol) (216)
- Paradyne EtherLoop 1 (217)

- Paradyne EtherLoop 2 (218)
- Optical Channel Group (219)
- HomePNA ITU-T G.989 (220)
- Generic Framing Procedure (GFP) (221)
- Layer 2 Virtual LAN using Cisco ISL (222)
- Acteleis proprietary MetaLOOP High Speed Link (223)
- FCIP Link (224)
- Resilient Packet Ring Interface Type (225)
- RF Qam Interface (226)
- Link Management Protocol (227)
- Cambridge Broadband Networks Limited VectaStar (228)
- CATV Modular CMTS Downstream Interface (229)
- Asymmetric Digital Subscriber Loop Version 2 (230)
- MACSecControlled (231)
- MACSecUncontrolled (232)
- Avici Optical Ethernet Aggregate (233)
- atmbond (234)
- voice FGD Operator Services (235)
- MultiMedia over Coax Alliance (MoCA) Interface (236)
- IEEE 802.16 WMAN interface (237)
- Asymmetric Digital Subscriber Loop Version 2 (238)
- DVB-RCS MAC Layer (239)
- DVB Satellite TDM (240)
- DVB-RCS TDMA (241)
- LAPS based on ITU-T X.86/Y.1323 (242)
- 3GPP WWAN (243)
- 3GPP2 WWAN (244)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Source

The source for this attribute is SNMP - 1.3.6.1.2.1.2.2.1.3.index value.

Warehouse name

TYPE or IFTYPE

MTU attribute

Description

The size of the largest packet that can be sent or received on the interface, specified in octets. For interfaces that are used for transmitting network datagrams, this is the size of the largest network datagram that can be sent on the interface.

Type

Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:

- Value Exceeds Maximum (2147483647)
- Value Exceeds Minimum (-2147483648)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Source

The source for this attribute is SNMP - 1.3.6.1.2.1.2.2.1.4.index value.

Warehouse name

MTU or IFMTU

Speed bps attribute

Description

An estimate of the current bandwidth for the interface in bits per second.

Type

Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:

- Value Exceeds Maximum (2147483647)
- Value Exceeds Minimum (-2147483648)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Source

The source for this attribute is SNMP - 1.3.6.1.2.1.2.2.1.5.index value.

Warehouse name

SPEED_BPS or IFSPEED

MAC Address attribute

Description

The interface address at the protocol layer immediately below the network layer in the protocol stack. For interfaces that do not have such an address (for example, a serial line), this object must contain an octet string of zero length.

Type

String

Source

The source for this attribute is SNMP - 1.3.6.1.2.1.2.2.1.6.index value.

Warehouse name

MAC_ADDRESS or IFMACADDR

Administrative Status attribute

Description

The desired state of the interface. The testing(3) state indicates that no operational packets can be passed. When a managed system initializes, all interfaces start with Administrative Status in the down(2) state.

Type

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

- up (1)
- down (2)
- testing (3)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Source

The source for this attribute is SNMP - 1.3.6.1.2.1.2.2.1.7.index value.

Warehouse name

ADMINISTRATIVE_STATUS or IFADMNSTAT

Operational Status attribute

Description

The current operational state of the interface. The testing(3) state indicates that no operational packets can be passed.

Type

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

- up (1)
- down (2)
- testing (3)
- unknown (4)
- dormant (5)
- notPresent (6)

- lowerLayerDown (7)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Source

The source for this attribute is SNMP - 1.3.6.1.2.1.2.2.1.8.index value.

Warehouse name

OPERATIONAL_STATUS or IFOPERSTAT

Bytes In per sec attribute

Description

The total number of octets received on the interface, including framing characters. Discontinuities in the value of this counter can occur at re-initialization of the management system.

Type

DEFAULT(2) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:

- Value Exceeds Maximum (9223372036854775807)
- Value Exceeds Minimum (-9223372036854775808)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Source

The source for this attribute is SNMP - 1.3.6.1.2.1.2.2.1.10.index value.

Warehouse name

BYTES_IN_PER_SEC or IFINOCTETS

Inbound Discarded Packets attribute

Description

The number of inbound packets that were chosen to be discarded though no errors had been detected to prevent them from being deliverable to a higher-layer protocol. One possible reason for discarding such a packet might be to free buffer space.

Type

Integer (32-bit counter) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:

- Value Exceeds Maximum (2147483647)
- Value Exceeds Minimum (-2147483648)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Source

The source for this attribute is SNMP - 1.3.6.1.2.1.2.2.1.13.index value.

Warehouse name

INBOUND_DISCARDED_PACKETS or IFINDISCAR

Inbound Packet Errors attribute

Description

The number of inbound packets or transmission units that contained errors preventing them from being deliverable to a higher-layer protocol.

Type

Integer (32-bit counter) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:

- Value Exceeds Maximum (2147483647)
- Value Exceeds Minimum (-2147483648)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Source

The source for this attribute is SNMP - 1.3.6.1.2.1.2.2.1.14.index value.

Warehouse name

INBOUND_PACKET_ERRORS or IFINERRORS

Inbound Protocol Errors attribute

Description

The number of packets or transmission units received through the interface that were discarded because of an unknown or unsupported protocol.

Type

Integer (32-bit counter) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:

- Value Exceeds Maximum (2147483647)
- Value Exceeds Minimum (-2147483648)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Source

The source for this attribute is SNMP - 1.3.6.1.2.1.2.2.1.15.index value.

Warehouse name

INBOUND_PROTOCOL_ERRORS or IFINUNKNOW

Bytes Out per sec attribute

Description

The total number of octets transmitted out of the interface, including framing characters. Discontinuities in the value of this counter can occur at re-initialization of the management system.

Type

DEFAULT(2) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:

- Value Exceeds Maximum (9223372036854775807)
- Value Exceeds Minimum (-9223372036854775808)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Source

The source for this attribute is SNMP - 1.3.6.1.2.1.2.2.1.16.index value.

Warehouse name

BYTES_OUT_PER_SEC or IFOUTOCTET

Outbound Discarded Packets attribute

Description

The number of outbound packets that were chosen to be discarded though no errors had been detected to prevent them from being transmitted. One possible reason for discarding such a packet might be to free buffer space.

Type

Integer (32-bit counter) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:

- Value Exceeds Maximum (2147483647)
- Value Exceeds Minimum (-2147483648)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Source

The source for this attribute is SNMP - 1.3.6.1.2.1.2.2.1.19.index value.

Warehouse name

OUTBOUND_DISCARDED_PACKETS or IFOUTDISCA

Outbound Packet Errors attribute

Description

For packet-oriented interfaces, the number of outbound packets that cannot be transmitted because of errors. For character-oriented or fixed-length interfaces, the number of outbound transmission units that cannot be transmitted because of errors.

Type

Integer (32-bit counter) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:

- Value Exceeds Maximum (2147483647)
- Value Exceeds Minimum (-2147483648)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Source

The source for this attribute is SNMP - 1.3.6.1.2.1.2.2.1.20.index value.

Warehouse name

OUTBOUND_PACKET_ERRORS or IFOUTERROR

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.

Historical group

This attribute group is eligible for use with Tivoli Data Warehouse.

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

Source

The source for this attribute is the agent.

Warehouse name

NODE

Timestamp attribute

Description

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

Type

String

Source

The source for this attribute is the agent.

Warehouse name

TIMESTAMP

Query Name attribute: This attribute is a key attribute.

Description

The name of the attribute group.

Type

String

Warehouse name

QUERY_NAME or ATTRGRP

Object Name attribute

Description

The name of the performance object.

Type

String

Warehouse name

OBJECT_NAME or OBJNAME

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 that are 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)
- SNMP EVENT (16)
- PING (17)
- DIRECTOR DATA (18)
- DIRECTOR EVENT (19)
- SSH REMOTE SHELL COMMAND (20)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Warehouse name

OBJECT_TYPE or OBJTYPE

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 that are shown in parentheses. The following values are defined:

- ACTIVE (0)
- INACTIVE (1)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Warehouse name

OBJECT_STATUS or OBJSTTS

Error Code attribute

Description

The error code that is 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 that are 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)

- REQUESTED A BAD VALUE (48)
- RESPONSE TOO BIG (49)
- GENERAL RESPONSE ERROR (50)
- SCRIPT NONZERO RETURN (51)
- SCRIPT NOT FOUND (52)
- SCRIPT LAUNCH ERROR (53)
- CONF FILE DOES NOT EXIST (54)
- CONF FILE ACCESS DENIED (55)
- INVALID CONF FILE (56)
- EIF INITIALIZATION FAILED (57)
- CANNOT OPEN FORMAT FILE (58)
- FORMAT FILE SYNTAX ERROR (59)
- REMOTE HOST UNAVAILABLE (60)
- EVENT LOG DOES NOT EXIST (61)
- PING FILE DOES NOT EXIST (62)
- NO PING DEVICE FILES (63)
- PING DEVICE LIST FILE MISSING (64)
- SNMP MISSING PASSWORD (65)
- DISABLED (66)
- URLS FILE NOT FOUND (67)
- XML PARSE ERROR (68)
- NOT INITIALIZED (69)
- ICMP SOCKETS FAILED (70)
- DUPLICATE CONF FILE (71)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Warehouse name

ERROR_CODE or ERRCODE

Last Collection Start attribute

Description

The most recent time a data collection of this group started.

Type

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

- NOT COLLECTED (0691231190000000)
- NOT COLLECTED (0000000000000001)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Warehouse name

LAST_COLLECTION_START or COLSTRT

Last Collection Finished attribute

Description

The most recent time a data collection of this group finished.

Type

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

- NOT COLLECTED (0691231190000000)
- NOT COLLECTED (0000000000000001)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Warehouse name

LAST_COLLECTION_FINISHED or COLFINI

Last Collection Duration attribute

Description

The duration of the most recently completed data collection of this group in seconds.

Type

Real number (32-bit counter) with two decimal places of precision

Warehouse name

LAST_COLLECTION_DURATION or COLDURA

Average Collection Duration attribute

Description

The average duration of all data collections of this group in seconds.

Type

Real number (32-bit counter) with two decimal places of precision with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:

- NO DATA (-100)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Warehouse name

AVERAGE_COLLECTION_DURATION or COLAVGD

Refresh Interval attribute

Description

The interval at which this group is refreshed in seconds.

Type

Integer (32-bit counter)

Warehouse name

REFRESH_INTERVAL or REFRINT

Number of Collections attribute

Description

The number of times this group has been collected since agent start.

Type

Integer (32-bit counter)

Warehouse name

NUMBER_OF_COLLECTIONS or NUMCOLL

Cache Hits attribute

Description

The number of times an external data request for this group was satisfied from the cache.

Type

Integer (32-bit counter)

Warehouse name

CACHE_HITS or CACHEHT

Cache Misses attribute

Description

The number of times an external data request for this group was not available in the cache.

Type

Integer (32-bit counter)

Warehouse name

CACHE_MISSES or CACHEMS

Cache Hit Percent attribute

Description

The percentage of external data requests for this group that were satisfied from the cache.

Type
Real number (32-bit counter) with two decimal places of precision
Warehouse name
CACHE_HIT_PERCENT or CACHPCT

Intervals Skipped attribute
Description
The number of times a background data collection for this group was skipped because the previous collection was still running when the next one was due to start.
Type
Integer (32-bit counter)
Warehouse name
INTERVALS_SKIPPED or INTSKIP

Processes attribute group

Data gathered from SNMP Object processTable.

Historical group
This attribute group is eligible for use with Tivoli Data Warehouse.

Attribute descriptions
The following list contains information about each attribute in the Processes attribute group:

Node attribute: This attribute is a key attribute.
Description
The managed system name of the agent.
Type
String
Source
The source for this attribute is the agent.
Warehouse name
NODE

Timestamp attribute
Description
The local time at the agent when the data was collected.
Type
String
Source
The source for this attribute is the agent.
Warehouse name
TIMESTAMP

Process ID attribute: This attribute is a key attribute.
Description
The process ID (pid).
Type
Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:
- Value Exceeds Maximum (2147483647)
- Value Exceeds Minimum (-2147483648)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.
Source
The source for this attribute is SNMP - 1.3.6.1.4.1.11.2.3.1.4.2.1.1.index value.
Warehouse name
PROCESS_ID or PROCPID

Parent Process ID attribute

Description

Parent process ID.

Type

Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:

- Value Exceeds Maximum (2147483647)
- Value Exceeds Minimum (-2147483648)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Source

The source for this attribute is SNMP - 1.3.6.1.4.1.11.2.3.1.4.2.1.4.index value.

Warehouse name

PARENT_PROCESS_ID or PROCPPID

Memory Address attribute

Description

Address of process (in memory).

Type

Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:

- Value Exceeds Maximum (2147483647)
- Value Exceeds Minimum (-2147483648)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Source

The source for this attribute is SNMP - 1.3.6.1.4.1.11.2.3.1.4.2.1.13.index value.

Warehouse name

MEMORY_ADDRESS or PROCMEMADR

Status attribute

Description

The process status. For SunOS: sleep(1), wait(2), run(3), idle (4), zombie(5), stop(6)

Type

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

- sleep (1)
- run (2)
- stop (3)
- zombie (4)
- other (5)
- idle (6)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Source

The source for this attribute is SNMP - 1.3.6.1.4.1.11.2.3.1.4.2.1.19.index value.

Warehouse name

STATUS or PROCSTATUS

Command attribute: This attribute is a key attribute.

Description

Command that the process is running.

Type

String

Source
The source for this attribute is SNMP - 1.3.6.1.4.1.11.2.3.1.4.2.1.22.index value.
Warehouse name
COMMAND or PROCCMD

Percent CPU attribute
Description
Percent CPU * 100 for this process.
Type
Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:
- Value Exceeds Maximum (2147483647)
- Value Exceeds Minimum (-2147483648)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.
Source
The source for this attribute is SNMP - 1.3.6.1.4.1.11.2.3.1.4.2.1.27.index value.
Warehouse name
PERCENT_CPU or PROCCPUUTL

Processor attribute group

Data gathered from SNMP Object computerSystem.
Historical group
This attribute group is eligible for use with Tivoli Data Warehouse.
Attribute descriptions
The following list contains information about each attribute in the Processor attribute group:
Node attribute: This attribute is a key attribute.
Description
The managed system name of the agent.
Type
String
Source
The source for this attribute is the agent.
Warehouse name
NODE

Timestamp attribute
Description
The local time at the agent when the data was collected.
Type
String
Source
The source for this attribute is the agent.
Warehouse name
TIMESTAMP

User CPU attribute
Description
CPU used by users. SunOS has not been implemented.
Type
Integer (32-bit counter) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:
- Value Exceeds Maximum (2147483647)
- Value Exceeds Minimum (-2147483648)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Source

The source for this attribute is SNMP - 1.3.6.1.4.1.11.2.3.1.1.13.0.

Warehouse name

USER_CPU or CPUUSRTIME

System CPU attribute

Description

CPU used by system. SunOS has not been implemented.

Type

Integer (32-bit counter) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:

- Value Exceeds Maximum (2147483647)
- Value Exceeds Minimum (-2147483648)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Source

The source for this attribute is SNMP - 1.3.6.1.4.1.11.2.3.1.1.14.0.

Warehouse name

SYSTEM_CPU or CPUSYSTIME

Idle CPU attribute

Description

CPU idle. SunOS has not been implemented.

Type

Integer (32-bit counter) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:

- Value Exceeds Maximum (2147483647)
- Value Exceeds Minimum (-2147483648)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Source

The source for this attribute is SNMP - 1.3.6.1.4.1.11.2.3.1.1.15.0.

Warehouse name

IDLE_CPU or CPUIDLTIME

Nice CPU attribute

Description

CPU nice. SunOS has not been implemented.

Type

Integer (32-bit counter) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:

- Value Exceeds Maximum (2147483647)
- Value Exceeds Minimum (-2147483648)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Source

The source for this attribute is SNMP - 1.3.6.1.4.1.11.2.3.1.1.16.0.

Warehouse name

NICE_CPU or CPUNICTIME

Total CPU attribute

Description

Average time in seconds spent by all processors in all modes.

Type

Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:

- Value Exceeds Maximum (2147483647)
- Value Exceeds Minimum (-2147483648)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Source

The source for this attribute is derived: User_CPU + System_CPU + Idle_CPU + Nice_CPU.

Warehouse name

TOTAL_CPU or CPUTOTTIME

% CPU Idle attribute

Description

The average percentage of time that the CPU was idle.

Type

Real number (32-bit gauge) with two decimal places of precision with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:

- Value Exceeds Maximum (2147483647)
- Value Exceeds Minimum (-2147483648)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Source

The source for this attribute is derived: (Idle_CPU / Total_CPU) * 100.

Warehouse name

CPU_IDLE_PCT or CPUIDLEPCT

% CPU Utilization attribute

Description

The average percentage of time that the CPU was in use.

Type

Real number (32-bit gauge) with two decimal places of precision with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:

- Value Exceeds Maximum (2147483647)
- Value Exceeds Minimum (-2147483648)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Source

The source for this attribute is derived: 100 - (Idle_CPU / Total_CPU * 100).

Warehouse name

CPU_USED_PCT or CPUUTILPCT

System attribute group

Data gathered from SNMP Object computerSystem.

Historical group

This attribute group is eligible for use with Tivoli Data Warehouse.

Attribute descriptions

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

Node attribute: This attribute is a key attribute.

Description
The managed system name of the agent.
Type
String
Source
The source for this attribute is the agent.
Warehouse name
NODE

Timestamp attribute
Description
The local time at the agent when the data was collected.
Type
String
Source
The source for this attribute is the agent.
Warehouse name
TIMESTAMP

System Name attribute
Description
An administratively-assigned name for this managed node. By convention, this is the fully qualified domain name for the node.
Type
String
Source
The source for this attribute is SNMP - 1.3.6.1.2.1.1.5.0.
Warehouse name
SYSTEM_NAME or SYSNAME

System upTime attribute
Description
Time since the last boot.
Type
String
Source
The source for this attribute is SNMP - 1.3.6.1.2.1.1.3.0.
Warehouse name
SYSTEM_UPTIME or SYSUPTIME

Current User Logins attribute
Description
Number of users logged on to the system.
Type
Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:
- Value Exceeds Maximum (2147483647)
- Value Exceeds Minimum (-2147483648)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.
Source
The source for this attribute is SNMP - 1.3.6.1.4.1.11.2.3.1.1.2.0.
Warehouse name
CURRENT_USER_LOGINS or SYSACTVUSR

Maximum Allowed Processes attribute
Description
Maximum number of processes allowed in the system.

Type

Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:

- Value Exceeds Maximum (2147483647)
- Value Exceeds Minimum (-2147483648)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Source

The source for this attribute is SNMP - 1.3.6.1.4.1.11.2.3.1.1.6.0.

Warehouse name

MAXIMUM_ALLOWED_PROCESSES or SYSMAXPROC

Total Running Processes attribute

Description

The number of processes running.

Type

Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:

- Value Exceeds Maximum (2147483647)
- Value Exceeds Minimum (-2147483648)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Source

The source for this attribute is SNMP - 1.3.6.1.4.1.11.2.3.1.4.1.0.

Warehouse name

TOTAL_RUNNING_PROCESSES or SYSRUNPROC

Description attribute

Description

Description

Type

String

Source

The source for this attribute is SNMP - 1.3.6.1.2.1.1.1.0.

Warehouse name

DESCRIPTION or SYSDESCR

System Contact attribute

Description

The textual identification of the contact person for this managed node, together with information on how to contact this person.

Type

String

Source

The source for this attribute is SNMP - 1.3.6.1.2.1.1.4.0.

Warehouse name

SYSTEM_CONTACT or SYSCONTACT

System Location attribute

Description

The physical location of this node (for example, telephone closet, 3rd floor).

Type

String

Source

The source for this attribute is SNMP - 1.3.6.1.2.1.1.6.0.

Warehouse name

SYSTEM_LOCATION or SYSLOCATN

% Allowed Processes attribute

Description

The percentage of current to maximum process contexts that this system allows.

Type

Real number (32-bit gauge) with two decimal places of precision with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:

- Value Exceeds Maximum (2147483647)
- Value Exceeds Minimum (-2147483648)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Source

The source for this attribute is derived: (Total_Running_Processes % Maximum_Allowed_Processes) * 100.

Warehouse name

ALLOWED_PROCESSES_PCT or PCT_ALLOWE

Thread Pool Status attribute group

The Thread Pool Status attribute group contains information that reflects the status of the internal thread pool used to collect data asynchronously.

Historical group

This attribute group is eligible for use with Tivoli Data Warehouse.

Attribute descriptions

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

Node attribute: This attribute is a key attribute.

Description

The managed system name of the agent.

Type

String

Source

The source for this attribute is the agent.

Warehouse name

NODE

Timestamp attribute

Description

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

Type

String

Source

The source for this attribute is the agent.

Warehouse name

TIMESTAMP

Thread Pool Size attribute

Description

The number of threads currently existing in the thread pool.

Type

Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:

- NO DATA (-1)
- NO DATA (-100)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Warehouse name

THREAD_POOL_SIZE or THPSIZE

Thread Pool Max Size attribute

Description

The maximum number of threads allowed to exist in the thread pool.

Type

Integer (32-bit numeric property) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:

- NO DATA (-1)
- NO DATA (-100)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Warehouse name

THREAD_POOL_MAX_SIZE or TPMAXSZ

Thread Pool Active Threads attribute

Description

The number of threads in the thread pool currently active doing work.

Type

Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:

- NO DATA (-1)
- NO DATA (-100)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Warehouse name

THREAD_POOL_ACTIVE_THREADS or TPACTTH

Thread Pool Avg Active Threads attribute

Description

The average number of threads in the thread pool simultaneously active doing work.

Type

Real number (32-bit gauge) with two decimal places of precision with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:

- NO DATA (-1)
- NO DATA (-100)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Warehouse name

THREAD_POOL_AVG_ACTIVE_THREADS or TPAVGAT

Thread Pool Min Active Threads attribute

Description

The smallest number of threads in the thread pool that have simultaneously been active doing work.

Type

Integer (32-bit counter) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:

- NO DATA (-1)

- NO DATA (-100)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Warehouse name

THREAD_POOL_MIN_ACTIVE_THREADS or TPMINAT

Thread Pool Max Active Threads attribute

Description

The peak number of threads in the thread pool that have simultaneously been active doing work.

Type

Integer (32-bit counter) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:

- NO DATA (-1)
- NO DATA (-100)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Warehouse name

THREAD_POOL_MAX_ACTIVE_THREADS or TPMAXAT

Thread Pool Queue Length attribute

Description

The number of jobs currently waiting in the thread pool queue.

Type

Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:

- NO DATA (-1)
- NO DATA (-100)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Warehouse name

THREAD_POOL_QUEUE_LENGTH or TPQLGTH

Thread Pool Avg Queue Length attribute

Description

The average length of the thread pool queue during this run.

Type

Real number (32-bit gauge) with two decimal places of precision with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:

- NO DATA (-1)
- NO DATA (-100)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Warehouse name

THREAD_POOL_AVG_QUEUE_LENGTH or TPAVGQL

Thread Pool Min Queue Length attribute

Description

The minimum length the thread pool queue has reached.

Type

Integer (32-bit counter) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:

- NO DATA (-1)

- NO DATA (-100)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Warehouse name
THREAD_POOL_MIN_QUEUE_LENGTH or TPMINQL

Thread Pool Max Queue Length attribute

Description
The peak length the thread pool queue has reached.

Type
Integer (32-bit counter) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:
- NO DATA (-1)
- NO DATA (-100)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Warehouse name
THREAD_POOL_MAX_QUEUE_LENGTH or TPMAXQL

Thread Pool Avg Job Wait attribute

Description
The average time a job spends waiting on the thread pool queue in seconds.

Type
Real number (32-bit gauge) with two decimal places of precision with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:
- NO DATA (-1)
- NO DATA (-100)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Warehouse name
THREAD_POOL_AVG_JOB_WAIT or TPAVJBW

Thread Pool Total Jobs attribute

Description
The number of jobs completed by all threads in the pool since agent start.

Type
Integer (32-bit counter) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:
- NO DATA (-1)
- NO DATA (-100)

Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Warehouse name
THREAD_POOL_TOTAL_JOBS or TPTJOBS

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 by the historical data in each attribute group that is collecting historical data. Required disk storage is an important factor when you are defining data collection rules and your strategy for historical data collection.

The Capacity planning for historical data table provides the following information, which is required to calculate disk space for this monitoring agent:

Table Table name as it is displayed in the warehouse database, if the attribute group is configured to be written to the warehouse. The table name listed here corresponds to the table name in "Attribute groups for the monitoring agent" on page 15.

Attribute group
Name of the attribute group that is used to create the table in the warehouse database if it is short enough to fit in the table naming constraints of the database that is being used for the warehouse. The attribute group name listed here corresponds to the Warehouse table name in "Attribute groups for the monitoring agent" on page 15.

Bytes per row (agent)
Estimate of the record length for each row or instance that is written to the agent disk for historical data collection. This estimate can be used for agent disk space planning purposes.

Database bytes per row (warehouse)
Estimate of the record length for detailed records that are written to the warehouse database, if the attribute group is configured to be written to the warehouse. Detailed records are records 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 row (warehouse)
Estimate of the record length for aggregate records that are 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 rows of data that you plan to collect. An attribute group can have single or multiple rows of data, depending on the application environment that is being monitored. For example, if your attribute group monitors each processor in your computer and you have a dual processor computer, the number of rows is two.

Table 1. Capacity planning for historical data logged by the Agentless Monitor for HP-UX

Table	Attribute group	Bytes per row (agent)	Database bytes per row (warehouse)	Aggregate bytes per row (warehouse)
KR5FILESYS	KR5_DISK	244	276	649
KR5HPPOS	KR5_HP_PERFORMANCE_OBJECT_STATUS	352	387	616
KR5MEPS	KR5_MANAGED_SYSTEMS	197	198	235
KR5MEMORY	KR5_MEMORY	172	264	1309
KR5IFTABLE	KR5_NETWORK	447	458	726
KR5POBJST	KR5_PERFORMANCE_OBJECT_STATUS	352	387	616
KR5PROCLST	KR5_PROCESSES	160	162	316
KR5PROCSR	KR5_PROCESSOR	104	131	369
KR5SYSTEM	KR5_SYSTEM	1179	1208	1413
KR5THPLST	KR5_THREAD_POOL_STATUS	124	168	493

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

Chapter 5. Situations reference

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 the Tivoli Enterprise Portal by using the Situation Editor or from the command-line interface using the tacmd commands for situations. You can manage private situations in the private configuration XML file.

About situations

The monitoring agents that you use to monitor your system environment include a set of predefined situations that you can use as-is. You can also 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 Agentless Monitoring for HP-UX Operating Systems. You can change the conditions or values being monitored by a predefined situation to the conditions or values best suited to your enterprise.

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

Formula
Formula describing the condition being tested.

Distribution
List of managed systems (operating systems, subsystems, or applications) to which the situation can be distributed. All the Agentless Monitor for HP-UX 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.

EIF Customize forwarding of the event to an Event Integration Facility receiver. (Available when the Tivoli Enterprise Monitoring Server is configured to forward events.)

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

Additional information about situations

The *Tivoli Enterprise Portal 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 and information about each individual situation for this monitoring agent, see "Predefined situations."

Predefined situations

The monitoring agent contains predefined situations, which are organized by Navigator item.

Agent level Navigator items

- Agentless HP-UX OS
  - Not applicable

- Managed Systems
  - Not applicable

SNMP HP-UX Systems (HP) subnode
- SNMP HP-UX Systems
  - Not applicable
- Disk
  - KR5_Disk_Util_High
- Memory
  - KR5_VirtMemory_Util_High
  - KR5_PhysMemory_Util_High
  - KR5_SwapSpace_Util_High
- Network
  - KR5_NIC_Status_Down
  - KR5_NIC_Status_Unknown
- Processes
  - Not applicable
- Processor
  - KR5_CPU_Util_High
- System
  - Not applicable

Situation descriptions

Each situation description provides information about the situation that you can use to monitor the condition of systems in your network.

The situation descriptions provide the following information:

Description
Information about the conditions that the situation tests.

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

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

Run at startup
Whether the situation starts monitoring when the agent starts.

Sampling interval
Number of seconds that elapse 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 one means that 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, when another situation is true, or whichever occurs first if both are selected.

Agentless HP-UX OS Navigator item

No predefined situations are included for this Navigator item.

Managed Systems Navigator item

No predefined situations are included for this Navigator item.

SNMP HP-UX Systems subnode

The situation descriptions are organized by the Navigator item to which the situations are relevant.

SNMP HP-UX Systems Navigator item

No predefined situations are included for this Navigator item.

Disk Navigator item

KR5_Disk_Util_High situation

Description
Free space on a file system is shrinking.

The situation is evaluated for each distinct value of Mount_Point.

Formula

```
*IF *VALUE KR5_DISK.Percentage_of_Available_Disk_Space *LT 10.00 *AND *VALUE
KR5_DISK.Total_Blocks *NE 0
```

See "Attributes in each attribute group" on page 16 for descriptions of the attributes in this formula.

Distribution
This situation is automatically distributed to instances of this agent.

Run at startup
Yes

Sampling interval
3 minutes

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

Error conditions
Critical

Clearing conditions
The situation clears when the condition becomes false.

Memory Navigator item

KR5_VirtMemory_Util_High situation

Description
Monitors the virtual memory availability on the system.

The situation is evaluated for the table.

Formula

```
*IF *VALUE KR5_MEMORY.Available_Virtual_Memory_Pct *LT 10.00
```

See "Attributes in each attribute group" on page 16 for descriptions of the attributes in this formula.

Distribution
This situation is automatically distributed to instances of this agent.

Run at startup
Yes
Sampling interval
3 minutes
Situation persistence
The number of times the conditions of the situation must occur for the situation to be true is 1.
Error conditions
Critical
Clearing conditions
The situation clears when the condition becomes false.

KR5_PhysMemory_Util_High situation
Description
Monitors the physical memory availability on the system.

The situation is evaluated for the table.
Formula
```
*IF *VALUE KR5_MEMORY.Available_Physical_Memory_Pct *LT 10.00
```

See "Attributes in each attribute group" on page 16 for descriptions of the attributes in this formula.
Distribution
This situation is automatically distributed to instances of this agent.
Run at startup
Yes
Sampling interval
3 minutes
Situation persistence
The number of times the conditions of the situation must occur for the situation to be true is 1.
Error conditions
Critical
Clearing conditions
The situation clears when the condition becomes false.

KR5_SwapSpace_Util_High situation
Description
Monitors the swap space availability on the system.

The situation is evaluated for the table.
Formula
```
*IF *VALUE KR5_MEMORY.Available_Swap_Space_Pct *LT 10.00
```

See "Attributes in each attribute group" on page 16 for descriptions of the attributes in this formula.
Distribution
This situation is automatically distributed to instances of this agent.
Run at startup
Yes
Sampling interval
3 minutes
Situation persistence
The number of times the conditions of the situation must occur for the situation to be true is 1.
Error conditions
Critical
Clearing conditions
The situation clears when the condition becomes false.

Network Navigator item

KR5_NIC_Status_Down situation

Description

The Network Interface Card is not currently up.

The situation is evaluated for each distinct value of Description.

Formula

```
*IF ( ( *VALUE KR5_NETWORK.Operational_Status *EQ down )  *OR ( *VALUE
KR5_NETWORK.Operational_Status *EQ testing ) )
```

See "Attributes in each attribute group" on page 16 for descriptions of the attributes in this formula.

Distribution

This situation is automatically distributed to instances of this agent.

Run at startup

Yes

Sampling interval

3 minutes

Situation persistence

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

Error conditions

Critical

Clearing conditions

The situation clears when the condition becomes false.

KR5_NIC_Status_Unknown situation

Description

The Network Interface Card is not currently up.

The situation is evaluated for each distinct value of Description.

Formula

```
*IF  *VALUE KR5_NETWORK.Operational_Status *EQ unknown
```

See "Attributes in each attribute group" on page 16 for descriptions of the attributes in this formula.

Distribution

This situation is automatically distributed to instances of this agent.

Run at startup

Yes

Sampling interval

3 minutes

Situation persistence

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

Error conditions

Warning

Clearing conditions

The situation clears when the condition becomes false.

Processes Navigator item

No predefined situations are included for this Navigator item.

Processor Navigator item

KR5_CPU_Util_High situation

Description

Percent of time all processors are busy.

The situation is evaluated for the table.

Formula

```
*IF *VALUE KR5_PROCESSOR.CPU_Used_Pct *GT 90.00
```

See "Attributes in each attribute group" on page 16 for descriptions of the attributes in this formula.

Distribution

This situation is automatically distributed to instances of this agent.

Run at startup

Yes

Sampling interval

3 minutes

Situation persistence

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

Error conditions

Critical

Clearing conditions

The situation clears when the condition becomes false.

System Navigator item

No predefined situations are included for this Navigator item.

Chapter 6. Take Action commands reference

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

About Take Action commands

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.

In advanced automation, policies are used to take 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, the Tivoli Enterprise Portal receives return-code feedback, and advanced automation logic responds with subsequent activities that are prescribed by the feedback.

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

Additional information about Take Action commands

For more information about working with Take Action commands, see *Take Action commands* in the *Tivoli Enterprise Portal User's Guide*.

Predefined Take Action commands

Not all agents have predefined Take Action commands. But you can create Take Action commands for any agent.

The IBM Tivoli Agentless Monitoring for HP-UX Operating Systems does not provide predefined Take Action commands.

Chapter 7. Policies reference

Policies are used as an advanced automation technique for implementing more complex workflow strategies than you can create through simple automation. All agents do not provide predefined policies, but you can create policies for any agent.

A *policy* is a set of automated system processes that can take 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, the Tivoli Enterprise Portal receives return-code feedback, and advanced automation logic responds with subsequent activities prescribed by the feedback.

For more information about working with policies, see *Automation with policies* in the *Tivoli Enterprise Portal 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

Not all agents have predefined policies. But you can create policies for any agent.

The IBM Tivoli Agentless Monitoring for HP-UX Operating Systems does not provide predefined policies.

Chapter 8. Troubleshooting

Problems can be related to IBM Tivoli Monitoring or the specific agent that you are using.

For general troubleshooting information, see the *IBM Tivoli Monitoring Troubleshooting Guide*. For other problem-solving options, see "Support information" on page 97.

You can resolve some problems by ensuring that your system matches the system requirements listed in the Prerequisites topic for the agent in the information center, or in the Requirements topic of the agent user's guide.

The following activities can help you find a solution to the problem you are having:

- "Gathering product information for IBM Software Support"
- "Using logging" on page 72
- "Consulting the lists of identified problems and workarounds" on page 72

Gathering product information for IBM Software Support

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

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 "Principal trace log files" on page 73 for lists of all trace log files and their locations. For general information about the IBM Tivoli Monitoring environment, see the *Tivoli Enterprise Portal User's Guide*.
HP-UX Operating Systems 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 Agentless Monitoring for HP-UX Operating Systems
Screen captures	Screen captures of incorrect output, if any
(UNIX systems only) Core dump files	If the system stops on UNIX systems, collect the core dump file from the *install_dir*/bin directory, where *install_dir* is the directory where you installed the monitoring agent.

You can use the pdcollect tool to collect the most commonly used information from a system. This tool gathers log files, configuration information, version information, and other data. For more information about using this tool, see the "pdcollect tool" in the *IBM Tivoli Monitoring Troubleshooting Guide*.

For information about working with IBM Software Support, see IBM Support Portal Service Requests and PMRs (http://www.ibm.com/support/entry/portal/Open_service_request/Software/Software_support_(general)).

Using logging

Logging is the primary troubleshooting feature in the Agentless Monitor for HP-UX. *Logging* refers to the text messages and trace data that is generated by the Agentless Monitor for HP-UX. 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" for more information.

Consulting the lists of identified problems and workarounds

Known problems are organized into types such as those in the following list to make them easier to locate:

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

Information about symptoms and detailed workarounds for these types of problems is located in "Problems and workarounds" on page 82.

For general troubleshooting information, see the *IBM Tivoli Monitoring Troubleshooting Guide*.

Trace logging

Trace logs are used to capture information about the operating environment when component software fails to operate as designed.

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 information to learn how to configure and use trace logging:

- "Principal trace log files" on page 73
- "Examples: Using trace logs" on page 76
- "Setting RAS trace parameters by using the GUI" on page 77

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

IBM Software Support personnel use 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

Knowing the naming conventions for log files helps you to find the files.

Agent log file naming conventions

Table 3 provides the names, locations, and descriptions of IBM Tivoli Monitoring general RAS1 log files. The log file names for the Agentless Monitor for HP-UX adhere to the following naming convention:

Windows systems
hostname_productcode_instance-name_program_HEXtimestamp-nn.log

Linux and UNIX systems
hostname_productcode_instance-name_program_HEXtimestamp-nn.log

Where:

hostname
Host name of the computer where the monitoring component is running.

productcode
Two-character product code. For IBM Tivoli Agentless Monitoring for HP-UX Operating Systems, the product code is r5.

instance-name
Instance name of the agent.

program
Name of the program being run.

HEXtimestamp
Hexadecimal time stamp representing the time at which the program started.

nn Rolling log suffix.

Principal trace log files

Trace log files are located on various systems.

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 • **Linux:** 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.
On the Tivoli Enterprise Monitoring Server	The Warehouse_Configuration.log file is in the following location on Windows systems: *install_dir*\InstallITM	Provides details about the configuration of data warehousing for historical reporting.

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

System where log is located	File name and path	Description
On the Tivoli Enterprise Monitoring Server	The name of the RAS log file is as follows: • **Windows:** *install_dir*\logs\ *hostname*_ms_*timestamp-nn*.log • **UNIX:** *install_dir*/logs/ *hostname*_ms_*timestamp-nn*.log • **Linux:** *install_dir*/logs/ *hostname*_ms_*timestamp-nn*.log **Note:** File names for RAS1 logs include a hexadecimal time stamp. Also on UNIX systems, 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 • **Linux:** *install_dir* /logs/*hostname*_cq_HEXtimestamp-nn.log **Note:** File names for RAS1 logs include a hexadecimal time stamp. Also on UNIX systems, 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.
On the Tivoli Enterprise Portal Server	The teps_odbc.log file is located in the following path: • **Windows:** *install_dir*\InstallITM • **UNIX:** *install_dir*/logs • **Linux:** *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*_r5_*instance_name*_kr5agent_HEXtimestamp-nn.log in the *install_dir*\tmaitm6\logs directory • **UNIX:** *hostname*_r5_*instance_name*_kr5agent_HEXtimestamp-nn.log in the *install_dir*/logs directory • **Linux:** *hostname*_r5_*instance_name*_kr5agent_HEXtimestamp-nn.log in the *install_dir*/logs directory These logs are in the following directories: • **Windows:** *install_dir*\tmaitm6\logs • **UNIX:** *install_dir*/logs • **Linux:** *install_dir*/logs On Linux systems, the following additional logs are provided: – *hostname*_r5_timestamp.log – *hostname*_r5_timestamp.pidnnnnn in the *install_dir*/logs path, where *nnnnn* is the process ID number	Traces activity of the monitoring agent.
On the computer that hosts the monitoring agent	The agent operations log files are as follows: *instance_hostname*R5.LG0 is the current log created when the agent was started. *instance_hostname*_R5.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 • **Linux:** *install_dir*/logs • **UNIX:** *install_dir*/logs	Shows whether the agent could 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 the .LG1 tag 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

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

System where log is located	File name and path	Description
Definitions of variables: • *timestamp* is a time stamp with a format that 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 hosts the monitoring system, the monitoring agent, or the portal. • *instance* refers to the name of the database instance that you are monitoring. • *instance_name* refers to the name of the agent instance. • *hostname* refers to the name of the computer on which the IBM Tivoli Monitoringcomponent runs. • *nn* represents the circular sequence in which logs are rotated. this value includes a range from 1 - 5, by default. The first is always retained because it includes configuration parameters. • *productcode* specifies the product code, for example, um for Universal Agent or nt for Windows systems.		

For more information about the complete set of trace logs that are maintained on the monitoring server, see the *IBM Tivoli Monitoring Installation and Setup Guide*.

Examples: Using trace logs

You can open trace logs in a text editor to learn some basic facts about your IBM Tivoli Monitoring environment.

IBM Software Support applies specialized knowledge to analyze trace logs to determine the source of problems. 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:R5 is ON-LINE.
. . .
(42C3079B.0000-6A4:kpxreqhb.cpp,644,"HeartbeatInserter") Remote node SERVER5B:R5 is OFF-LINE.
```

See the following key points about the preceding excerpts:

- The monitoring server appends the **R5** product code to the server name to form a unique name (SERVER5B:R5) for this instance of the IBM Tivoli Agentless Monitoring for HP-UX Operating Systems. By using this unique name, you can 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 by using the GUI" provide these entries.

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

1. In the Windows **Start** menu, click **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 click **Advanced** > **View Trace Log** in the menu. For example, if you want to view the trace log of the IBM Tivoli Agentless Monitoring for HP-UX Operating Systems, right-click the name of 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.

RAS trace parameters

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

See "Overview of log file management" on page 72 to ensure that you understand log rolling and can reference the correct log files when you manage log file generation.

Setting RAS trace parameters by using the GUI

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

About this task

The IBM Tivoli Agentless Monitoring for HP-UX Operating Systems uses RAS1 tracing and generates the logs described in Table 3 on page 73. The default RAS1 trace level is ERROR.

Procedure

1. Open the Manage Tivoli Enterprise Monitoring Services window.
2. Select **Advanced** > **Edit Trace Parms**. The Tivoli Enterprise Monitoring Server Trace Parameters window is displayed.
3. Select a new trace setting in the pull-down menu in the **Enter RAS1 Filters** field or type a valid string.
   - General error tracing. KBB_RAS1=ERROR
   - Intensive error tracing. KBB_RAS1=ERROR (UNIT:kr5 ALL)
   - Maximum error tracing. KBB_RAS1=ERROR (UNIT:kr5 ALL) (UNIT:kra ALL)

   Note: As this example shows, you can set multiple RAS tracing options in a single statement.
4. Modify the value for Maximum Log Size Per File (MB) to change the log file size (changes LIMIT value).
5. 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).
6. 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).
7. 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. The **KDC_DEBUG** setting and the **Maximum error tracing** setting can generate a large amount of trace logging. Use these settings only temporarily, while you are troubleshooting problems. Otherwise, the logs can occupy excessive amounts of hard disk space.

8. Click **OK**. You see a message reporting a restart of the monitoring agent so that your changes take effect.

What to do next

Monitor the size of the `logs` directory. Default behavior can generate a total of 45 - 60 MB for each agent that is running on a computer. For example, each database instance that you monitor can generate 45 - 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 73 that include a process ID number (PID).

Use 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 these settings only temporarily while you are troubleshooting problems. Otherwise, the logs can occupy excessive amounts of hard disk space.

Manually setting RAS trace parameters

You can manually edit the RAS1 trace logging parameters.

About this task

The Agentless Monitor for HP-UX uses RAS1 tracing and generates the logs described in Table 3 on page 73. The default RAS1 trace level is ERROR.

Procedure

1. Open the trace options file:
   - **Windows systems:**
     install_dir\tmaitm6\KR5ENV_*instance name*
   - **UNIX systems:**
     install_dir /config/r5_*instance name*.config
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:kr5 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 specific program. When this value is exceeded, the oldest log files are discarded. The default value is 9.
   - **LIMIT**: The maximum size, in megabytes (MB) of a RAS1 log file. The 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. The default is 3.
     – **PRESERVE**: The number of files that are not to be reused in the rolling cycle of one program startup. The default value is 1.

     Note: 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.

What to do next

Monitor the size of the `logs` directory. Default behavior can generate a total of 45 - 60 MB for each agent that is running on a computer. For example, each database instance that you monitor can generate 45 - 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 73 that include a process ID number (PID).

Use 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 these settings only temporarily while you are troubleshooting problems. Otherwise, the logs can occupy excessive amounts of hard disk space.

Dynamic modification of trace settings

You can dynamically modify the trace settings for an IBM Tivoli Monitoring component, such as, Tivoli Enterprise Monitoring Server, Tivoli Enterprise Portal Server, most monitoring agents, and other components. You can access these components, except for a few monitoring agents, from the tracing utility.

Dynamic modification of the trace settings is the most efficient method, because you can do it without restarting the component. Settings take effect immediately. Modifications by this method are not persistent.

Note: When the component is restarted, the trace settings are read again from the `.env` file. Dynamically modifying these settings does not change the settings in the `.env` files. To modify these trace settings permanently, modify them in the `.env` files.

ras1

Run this command to modify the trace settings for a Tivoli Monitoring component.

The syntax is as follows:

```
ras1 set|list (UNIT|COMP: class_name ANY|ALL|Detail|ERROR|Flow|INPUT|Metrics|OUTPUT|STATE)
{(UNIT|COMP: class_name ANY|ALL|Detail|ERROR|Flow|INPUT|Metrics|OUTPUT|STATE)}
```

You can specify more than one component class to which to apply the trace settings.

Command options

set
: Turns on or off tracing depending upon the value of its parameters. If the parameter is **ANY**, it turns it off. All other parameters turn on tracing based on the specified type or level.

list
: Displays the default level and type of tracing that is set by default.

Parameters

The parameters that determine the component classes to which to apply the trace settings are as follows:

COMP: *class_name*
: Modifies the trace setting for the name of the component class, as specified by *class_name* , for example, `COMP:KDH`. The output contains trace for the specified class.

UNIT: *class_name*
Modifies the trace setting for any unit that starts with the specified *class_name* value, for example, `UNIT: kra`. The output contains trace for any unit that begins with the specified filter pattern.

The parameters that determine the trace level and type are as follows:

ALL
Displays all trace levels, including every trace point defined for the component. This setting might result in a large amount of trace, so specify other parameters to exclude unwanted trace. You might require the **ALL** parameter to isolate a problem, which is the equivalent to setting `"Error Detail Flow State Input Output Metrics"`.

ANY
Turns off tracing.

Detail
Displays detailed information about each function.

When entered with the `list` option, the trace is tagged with `Det`.

ERROR
Logs internal error conditions.

When entered with the `list` option, the trace is tagged with `ER`. The output can also be tagged with `EVERYE+EVERYU+ER`.

Flow
Displays control flow data for each function entry and exit.

When entered with the `list` option, the trace is tagged with `Fl`.

INPUT
Displays input data for each function.

When entered with the `list` option, the trace is tagged with `IN`.

Metrics
Displays metrics on each function.

When entered with the `list` option, the trace is tagged with `ME`.

OUTPUT
Displays output data for each function.

When entered with the `list` option, the trace is tagged with `OUT`.

State
Displays the status for each function.

When entered with the `list` option, the trace is tagged with `St`.

Example

If you enter `ras1 set (COMP:KDH ALL) (COMP:ACF1 ALL) (COMP:KDE ALL)`, the trace utility turns on all levels of tracing for all the files and functions for which `KDH`, `ACF1`, and `KDE` are the classes.

```
kbbcre1.c, 400, May 29 2007, 12:54:43, 1.1, *
kbbcrn1.c, 400, May 29 2007, 12:54:42, 1.1, *
kdhb1de.c, 400, May 29 2007, 12:59:34, 1.1, KDH
kdh0med.c, 400, May 29 2007, 12:59:24, 1.1, KDH
kdhsrej.c, 400, May 29 2007, 13:00:06, 1.5, KDH
kdhb1fh.c, 400, May 29 2007, 12:59:33, 1.1, KDH
kdhb1oe.c, 400, May 29 2007, 12:59:38, 1.2, KDH
kdhs1ns.c, 400, May 29 2007, 13:00:08, 1.3, KDH
kbbacdl.c, 400, May 29 2007, 12:54:27, 1.2, ACF1
kbbaclc.c, 400, May 29 2007, 12:54:27, 1.4, ACF1
```

```
kbbac1i.c, 400, May 29 2007, 12:54:28, 1.11, ACF1
vkdhsfcn.c, 400, May 29 2007, 13:00:11, 1.1, KDH
kdhserq.c, 400, May 29 2007, 12:59:53, 1.1, KDH
kdhb1pr.c, 400, May 29 2007, 12:59:39, 1.1, KDH
kdhsgnh.c, 400, May 29 2007, 12:59:49, 1.1, KDH
kdh0uts.c, 400, May 29 2007, 12:59:23, 1.1, KDH
kdhsrsp.c, 400, May 29 2007, 13:00:13, 1.2, KDH
kdhs1rp.c, 400, May 29 2007, 13:00:12, 1.1, KDH
kdhscsv.c, 400, May 29 2007, 12:59:58, 1.9, KDH
kdebbac.c, 400, May 29 2007, 12:56:50, 1.10, KDE
...
```

Turning on tracing

To use the tracing utility, you must use a local logon credential for the computer. This tracing method uses the IBM Tivoli Monitoring Service Console. Access the Service Console by using a web browser.

About this task

When you start the Service Console, information is displayed about the components that are currently running on that computer. For example, these components are listed as follows:

- Tivoli Enterprise Portal Server: `cnp`
- Monitoring Agent for Windows OS: `nt`
- Tivoli Enterprise Monitoring Server: `ms`

After you log on, you can type a question mark (?) to display a list of the supported commands. Use the **ras1** command to modify trace settings. If you type this command in the field provided in the Service Console window and click **Submit**, the help for this command is displayed.

Procedure

1. Open a web browser and enter the URL to access the Service Console.

   `http://`*`hostname`*`:1920`

   where *hostname* is the IP address or host name of the computer on which the IBM Tivoli Monitoring component is running.
2. Click the hyperlink associated with the component for which you want to modify its trace settings.

   Note: In the previous view, if you want to modify tracing for the Tivoli Enterprise Monitoring Server, select **IBM Tivoli Monitoring Service Console** under **Service Point: system.*your host name*_ms**.
3. Enter a user ID and password to access the system. This ID is any valid user that has access to the system.
4. Enter the command to turn on the required level of trace for the specified component classes or units.

   ```
   ras1 set (UNIT|COMP: class_name ALL|Flow|ERROR|Detail|INPUT|Metrics|OUTPUT|STATE)
   {(UNIT|COMP: class_name ALL|Flow|ERROR|Detail|INPUT|Metrics|OUTPUT|STATE)}
   ```

   For example, to turn on the control flow trace for the KDE, the command is:

   ```
   ras1 (COMP:KDE Flow)
   ```

Turning off tracing

You can use the IBM Tivoli Monitoring Service Console to run the **ras1** command and dynamically turn off tracing.

Procedure

1. Open a web browser and enter the URL to access the Service Console.

   `http://`*`hostname`*`:1920`

where *hostname* is the IP address or host name of the computer on which the IBM Tivoli Monitoring component is running.

2. Click the hyperlink associated with the component for which you want to modify its trace settings.
3. Enter a user ID and password to access the system. This ID is any valid user that has access to the system.
4. Enter the command to turn off the required level of trace for the specified component classes or units.

   ```
   ras1 set (UNIT|COMP: class_name ANY)
   {(UNIT|COMP: class_name ANY)}
   ```

   For example, to turn off tracing for the kbbcrcd class of the Windows OS agent, the command is:

   ```
   ras1 set (UNIT:kbbcrcd ANY)
   ```

Setting trace parameters for the Tivoli Enterprise Console server

In addition to the trace information captured by IBM Tivoli Monitoring, you can also collect additional trace information for the Tivoli Enterprise Console components that gather event server metrics.

About this task

To collect this information, modify the .tec_diag_config file on the Tivoli Enterprise Console event server. Use the steps in the following procedure to modify the event server trace parameters.

Procedure

1. Open the $BINDIR/TME/TEC/.tec_diag_config file in an ASCII editor.
2. Locate the entries that configure trace logging for the agent components on the event server. Two entries are included, one for tec_reception and one for tec_rule:

   ```
   # to debug Agent Utils
   tec_reception Agent_Utils  error   /tmp/tec_reception
   SP
   # to debug Agent Utils
   tec_rule Agent_Utils   error   /tmp/tec_rule
   ```

3. To gather additional trace information, modify these entries to specify a trace level of trace2:

   ```
   # to debug Agent Utils
   tec_reception Agent_Utils   trace2  /tmp/tec_reception
   SP
   # to debug Agent Utils
   tec_rule Agent_Utils       trace2  /tmp/tec_rule
   ```

4. In addition, modify the Highest_level entries for tec_rule and tec_reception:

   ```
   tec_reception Highest_level  trace2
   SP
   tec_rule Highest_level trace2
   ```

Problems and workarounds

The known problems and workarounds are organized into types of problems that might occur with the Agentless Monitor for HP-UX, for example installation and configuration problems and workspace problems.

Note: You can resolve some problems by ensuring that your system matches the system requirements listed in Chapter 2, “Requirements and agent installation and configuration,” on page 5.

For general troubleshooting information, see the *IBM Tivoli Monitoring Troubleshooting Guide*.

Installation and configuration troubleshooting

Problems can occur during installation, configuration, and uninstallation of the agent.

The problems and solutions in Table 4 can occur during installation, configuration, and uninstallation of the agent.

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 currently 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 a UNIX system.	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 currently installed.
Diagnosing problems with product browse settings (Windows systems only).	When you have problems with browse settings, complete 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.
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 cannot 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.

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

Problem	Solution
The system is experiencing high CPU usage.	**Agent process:** View the memory usage of the KR5CMA process. If CPU usage seems to be excessive, restart the monitoring agent. **Note:** As the number of remote systems is increased, the CPU, memory, and network utilization on the agent server also increases. A dedicated agent server might be added to the environment to handle a large agentless monitoring environment. **Network cards:** The network card configurations can decrease the performance of a system. Each stream of packets that a network card receives (assuming that 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 offloaded and a data transfer between memory and the network card can continue without using CPU processing power. Bus-mastering cards are 32-bit and are based on PCI or EISA bus architectures.
The configuration panel is blank on 64-bit Windows systems where the Tivoli Enterprise Monitoring Agent Framework (component GL) is version 06.23.00.00 or 06.23.01.00.	Check the GL component version by running kincinfo -t GL from a Windows command line. Example: `%CANDLE_HOME%\InstallITM\kincinfo -t GL` If the GL component version is 06.23.00.00 or 06.23.01.00, take one of the following actions: • **Preferred action:** Upgrade the Windows OS Agent to Version 6.2.3 Fix Pack 2. • **Alternate action:** Install the Agent Compatibility (AC) component from the IBM Tivoli Monitoring V6.2.3 Fix Pack 1 media. See Installing the Agent Compatibility (AC) component (http://pic.dhe.ibm.com/infocenter/tivihelp/v15r1/topic/com.ibm.itm.doc_6.2.3fp1/itm623FP1_install199.htm#acpinstall).

Table 5. General problems and solutions for uninstallation

Problem	Solution
On Windows systems, 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 the 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.
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, and then click **Workspace** > **Managed System Status**. 3. Right-click the offline managed system, and select **Clear offline entry**. To uninstall the monitoring agent, use the procedure described in the *IBM Tivoli Monitoring Installation and Setup Guide*.

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

Problem	Solution
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 multiple 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*:KR5). **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 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 that 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 KR5, 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.
The software inventory tag for the agent on UNIX and Linux systems is not removed during uninstallation of the agent.	After uninstalling the agent, manually remove the file named *`full name of agent`*`.cmptag` from the `$CANDLEHOME/properties/version/` directory.

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

Problem	Solution
When the agent is installed using group deployment, deploygroup was run multiple times. The group deployment starts and completes successfully, but there were multiple entries in the Deploy Status Summary workspace on the Tivoli Enterprise Portal. When the command tried to install multiple times, the additional installations were queued and then were in failed state though the agent was deployed successfully. **Note:** • When the bundle group contains a single bundle and the deployment group contains more than one member (managed system of the same type as AIX or Linux), the deployment is successful on both systems. • When the bundle group contains more than one bundle and the deploy group contains single or multiple members, the deployment will be executed on each group member (managed system) depending on the members present in the bundle group and deploy group. • The command creates a transaction for each XX bundle for each target system; the bundle matching the operating system for the deployment member is processed successfully; and remaining transactions were in a queued or failed state.	There is no solution at this time.

Remote deployment troubleshooting

Problems can occur with remote deployment and removal of agent software using the Agent Remote Deploy process.

Table 6 contains problems and solutions related to remote deployment.

Table 6. Remote deployment problems and solutions

Problem	Solution
While you are using the remote deployment feature to install the IBM Tivoli Agentless Monitoring for HP-UX Operating Systems, an empty command window is displayed on the target computer. This problem occurs when the target of remote deployment is a Windows computer. (For more information about the remote deployment feature, see the *IBM Tivoli Monitoring Installation and Setup Guide*.)	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 restart 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

A problem can occur with the agent after it has been installed.

Table 7 on page 88 contains problems and solutions that can occur with the agent after it is installed.

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 by using the GUI" on page 77. The trace option settings that you can set on the `KBB_RAS1=` and `KDC_DEBUG=` lines potentially generate large amounts of data.
SNMP attribute groups are not reporting data.	1. Check the Data Collection Status workspace to identify the error being reported. 2. Verify connectivity with the target system: a. Make sure that the system can be reached using a tool such as ping. b. Make sure no firewalls are blocking communications on the SNMP port (UDP 161). c. Verify that the community strings and passwords match what is configured on the SNMP system. d. Review the `snmpd.conf` file and verify that the SNMP system is not restricting access to localhost. e. Use an SNMP tool like snmpwalk to verify connectivity to the SNMP system. f. Verify that the SNMP service is installed, configured, and running.
The Managed System Name for the remote system keeps switching between agent instances.	The remote system has been defined in two different agent configurations. The remote system nodes must have a name that is unique across an IBM Tivoli Monitoring environment.
When using the **itmcmd agent** commands to start or stop this monitoring agent, you receive the following error message: `MKCIIN0201E Specified product is not configured.`	Include the command option **-o** to specify the instance to start or stop. The instance name must match the name used for configuring the agent. For example: `./itmcmd agent -o Test1 start r5` For more information about using the itmcmd commands, see the *IBM Tivoli Monitoring Command Reference*.
Perfmon attribute groups are not reporting data.	Use the Extensible Performance Counter List (exctrlst) Microsoft utility from the Microsoft Support website (http://support.microsoft.com/kb/927229) to determine whether the performance features are installed correctly on the remote system. Scroll to the Extensible Performance Counter List (`exctrlst.exe`). The Microsoft TechNet article on how to use exctrlst can be found in the Microsoft TechnNet Library (http://technet.microsoft.com/en-us/library/cc737958.aspx).

Table 7. Agent problems and solutions (continued)

Problem	Solution
A configured and running instance of the monitoring agent is not displayed in the Tivoli Enterprise Portal, but other instances of the monitoring agent on the same system are displayed in the portal.	IBM Tivoli Monitoring products use Remote Procedure Call (RPC) to define and control product behavior. RPC is the mechanism that a client process uses to make a subroutine call (such as GetTimeOfDay or ShutdownServer) to a server process somewhere in the network. Tivoli processes can be configured to use TCP/UDP, TCP/IP, SNA, and SSL as the protocol (or delivery mechanism) for RPCs that you want. IP.PIPE is the name given to Tivoli TCP/IP protocol for RPCs. The RPCs are socket-based operations that use TCP/IP ports to form socket addresses. IP.PIPE implements virtual sockets and multiplexes all virtual socket traffic across a single physical TCP/IP port (visible from the **netstat** command). A Tivoli process derives the physical port for IP.PIPE communications based on the configured, well-known port for the hub Tivoli Enterprise Monitoring Server. (This well-known port or BASE_PORT is configured by using the 'PORT:' keyword on the **KDC_FAMILIES / KDE_TRANSPORT** environment variable and defaults to '1918'.) The physical port allocation method is defined as (BASE_PORT + 4096*N), where N=0 for a Tivoli Enterprise Monitoring Server process and N={1, 2, ..., 15} for another type of monitoring server process. Two architectural limits result as a consequence of the physical port allocation method: • No more than one Tivoli Enterprise Monitoring Server reporting to a specific Tivoli Enterprise Monitoring Server hub can be active on a system image. • No more than 15 IP.PIPE processes can be active on a single system image. A single system image can support any number of Tivoli Enterprise Monitoring Server processes (address spaces) if each Tivoli Enterprise Monitoring Server on that image reports to a different hub. By definition, one Tivoli Enterprise Monitoring Server hub is available per monitoring enterprise, so this architecture limit has been reduced to one Tivoli Enterprise Monitoring Server per system image. No more than 15 IP.PIPE processes or address spaces can be active on a single system image. With the first limit expressed earlier, this second limitation refers specifically to Tivoli Enterprise Monitoring Agent processes: no more than 15 agents per system image. Continued on next row.

Table 7. Agent problems and solutions (continued)

Problem	Solution
Continued from previous row.	This limitation can be circumvented (at current maintenance levels, IBM Tivoli Monitoring V6.1, Fix Pack 4 and later) if the Tivoli Enterprise Monitoring Agent process is configured to use the EPHEMERAL IP.PIPE process. (This process is IP.PIPE configured with the 'EPHEMERAL:Y' keyword in the **KDC_FAMILIES / KDE_TRANSPORT** environment variable). The number of ephemeral IP.PIPE connections per system image has no limitation. If ephemeral endpoints are used, the Warehouse Proxy agent is accessible from the Tivoli Enterprise Monitoring Server associated with the agents using ephemeral connections either by running the Warehouse Proxy agent on the same computer or by using the Firewall Gateway feature. (The Firewall Gateway feature relays the Warehouse Proxy agent connection from the Tivoli Enterprise Monitoring Server computer to the Warehouse Proxy agent computer if the Warehouse Proxy agent cannot coexist on the same computer.)
I cannot find my queries.	Agents that include subnodes display their queries within the element in the Query Editor list that represents the location of the attribute group. The queries are most often found under the name of the subnode, not the name of the agent.
No historical data is returned including the startup entries previously displayed in the workspace.	No support is available in the auditing for relaying subnode data. To see the historical data, you must choose nodes and not subnodes. A subnode in the Managed System Status workspace will not have a Tivoli Enterprise Monitoring Server name listed under the Managing System. Examples: • The Managing System for R4:icvr5d06:LNX is icvr5d06_LZ_icvw3d62:ICVW3D62:R4 (not a Tivoli Enterprise Monitoring Server), so this system is a subnode • The Managing System for icvr5d06_LZ_icvw3d62:ICVW3D62:R4 is icvw3d62 (the hub Tivoli Enterprise Monitoring Server), so this system is a node. After you distribute to the correct group, you can see the historical data that is saved in the Short term History (STH) file `KRAAUDIT` under %*CANDLEHOME*%/CMS. You can trace the Tivoli Enterprise Monitoring Server log file with ERROR(UNIT: KFAAPHST) to see the AUDIT data saved in the STH.

Workspace troubleshooting

Problems can occur with general workspaces and agent-specific workspaces.

Table 8 on page 91 contains problems and solutions related to workspaces.

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. Use the following steps to confirm that this problem exists and to resolve it: 1. In the Windows **Start** menu, click **Run**. 2. Type `perfmon.exe` in the **Open** field of the Run window. The Performance window is displayed. 3. Click the plus sign (+) in the toolbar. The Add Counters window is displayed. 4. Look for **Process** in the **Performance object** menu. 5. Complete one of the following actions: • If you see **Process** in the 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 menu, use the Microsoft utility from the Microsoft.com Operations website to enable the PerfProc performance object. The **Process** performance object becomes visible in the **Performance object** menu of the Add Counters windows, and IBM Tivoli Monitoring is able to detect Availability data. 6. Restart the monitoring agent.

Table 8. Workspace problems and solutions (continued)

Problem	Solution
Event Log workspace events are unfiltered, are not collected more than every 60 seconds, and are removed from the Event Log Views after 1 hour of being received.	All events currently in the Application Event Log are sent to the Tivoli Enterprise Monitoring Server when the agent starts. Environment variables that control the behavior of the Event Log Workspace are stored in the agent `ENV` file on the Tivoli Enterprise Monitoring Agent where the agent is running. These variables are stored: **`CDP_DP_CACHE_TTL`** This value is the minimum number of seconds before data (for a particular table) is collected again. By default this variable is present in the `ENV` file and the value is set to 60. **`CDP_NT_EVENT_LOG_GET_ALL_ENTRIES_FIRST_TIME`** This variable determines whether the agent sends all events currently in the Application Event Log to the Tivoli Enterprise Monitoring Server when the agent starts. Legal values are YES and NO. By default this variable is present in the `ENV` file and the value is set to NO. **`CDP_NT_EVENT_LOG_CACHE_TIMEOUT`** This variable determines how long in seconds that events are displayed in the Tivoli Enterprise Monitoring Server Event Log Views. By default, this variable is *not* present in the `ENV` file. A default value of 3600 (1 Hour) is used unless overridden by the presence of this variable in the agent `ENV` file. The minimum legal value is 300. To view or edit the agent `ENV` file on the Tivoli Enterprise Monitoring agent where the agent is installed, use Manage Tivoli Enterprise Monitoring Services to select the agent. Right-click and select **Advanced - Edit ENV File**. The agent must be restarted to implement changes.
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 sufficient space is available 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.	Use the following 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. For information about managing this feature including how to set the interval at which data is collected, see *Managing historical data* in the *IBM Tivoli Monitoring Administrator's Guide*. By setting a more frequent interval for data collection, you reduce the load on the system incurred every time data is uploaded. • Use the Summarization and Pruning agent to collect specific amounts and types of historical data. Historical data is not displayed until the Summarization and Pruning monitoring agent begins collecting the data. By default, this agent begins collection at 2 a.m. daily. At that point, data is visible in the workspace view. For information about how to modify the default collection settings, see *Managing historical data* in the *IBM Tivoli Monitoring Administrator's Guide*.
Historical data collection is unavailable because of incorrect queries in the Tivoli Enterprise Portal.	The Sort By, Group By, and First/Last functions column 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 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. For information about the historical data collection function, See *Managing historical data*in the *IBM Tivoli Monitoring Administrator's Guide* or the Tivoli Enterprise Portal online help .
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. The maximum name length is 100 bytes.
Regular (non-historical) monitoring data fails to be displayed.	Check the formation of the queries you use to gather 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. No solution is available for this problem at this time.

Table 8. Workspace problems and solutions (continued)

Problem	Solution
The SNMP attribute group is not collecting data reliably. Data is collected intermittently or not at all. The SNMP version and credentials are configured correctly. The Performance Object Status Error Code for the attribute group shows "NO RESPONSE RECEIVED". **Note:** This problem applies to SNMP attribute groups, so the Object Type in the Performance Object Status table is SNMP. The agent trace file shows the following message: `Timeout occurred. No response from agent.` Here is a sample entry: `(48A18C71.000A-12:snmpqueryclass.cpp,1714, "internalCollectData") Timeout occurred. No response from agent.`	The IBM Tivoli Monitoring SNMP data provider is multithreaded to enhance performance. The SNMP data source that is being monitored might not be able to respond to multiple incoming requests in a timely manner. The following tuning options can improve reliability of data collections: **Reduce the thread pool size** The default thread pool size is 15. Try reducing the size to 5. This setting can be adjusted in the agent `ENV` file by setting the **`CDP_DP_THREAD_POOL_SIZE`** environment variable. **Increase the SNMP Response Timeout** The default SNMP Timeout is 2 seconds. Try increasing the timeout to 6 seconds. This setting can be adjusted in the agent `ENV` file by setting the **`CDP_SNMP_RESPONSE_TIMEOUT`** environment variable. **Reduce the number of SNMP retries** The default number of SNMP retries is 2. Try reducing the size to 1. This setting can be adjusted in the agent `ENV` file by setting the **`CDP_SNMP_MAX_RETRIES`** environment variable.
Navigator items and workspace titles are labeled with internal names such as `Kxx:KXX0000` instead of the correct names (such as Disk), where XX and xx represent the two-character agent code.	Ensure that application support has been added on the monitoring server, portal server, and portal client. For more information about installing application support, see *Installing and enabling application support* in the *IBM Tivoli Monitoring Installation and Setup Guide*.

Situation troubleshooting

Problems can occur with situations and situation configuration.

Table 9 contains problems and solutions for situations.

Table 9. 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 by using the GUI” on page 77. 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 58 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 a Linux system, the 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. In the example, you can select the **% Memory Free** attribute and avoid the need for math operators.

Table 9. Situation problems and solutions (continued)

Problem	Solution
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. Click **Situations** in the menu. The Situation Editor window is displayed. 3. Select the situation that you want to modify. 4. Use the **State** menu to set the status and appearance of the Situation when it triggers. **Note:** The **State** setting is not related to severity settings in the 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.	A timeout occurs 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 K*pc*ENV file for the agent (where *pc* is the two-letter product code): `CDP_NT_EVENT_LOG_CACHE_TIMEOUT=3600` This variable determines how long events from the NT Event Log are kept.
For a situation that uses the 'MISSING' operator and is distributed to a remote agentless monitoring subnode, no indication is displayed in the Tivoli Enterprise Portal or in the Situation Event Console when the situation becomes true.	The MISSING predicate is currently not supported on subnodes. If a situation with a MISSING predicate is distributed to a subnode, the agent cannot tell which subnode or node the event is occurring on. It inserts the system name as the origin node for the event and returns. When the event reaches the Tivoli Enterprise Portal Server, the origin node does not match the system name of the subnode where the situation is associated, so the event is dropped.
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 not displayed, 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 required.
The situation did not activate at startup.	Manually recycle the situation as follows: 1. Right-click the situation and select **Stop Situation**. 2. Right-click the situation and select **Start Situation**. **Note:** You can permanently avoid this problem by selecting the **Run at Startup** check box 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 did not occur even though the predicate was correctly specified.	Check the logs, reports, and workspaces.
A situation fires on an unexpected managed object.	Confirm that you 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.

Table 9. Situation problems and solutions (continued)

Problem	Solution
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 **Formula** area. The Show formula window is displayed. a. Confirm the following details in the **Formula** area 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 numeric values in the formula match your monitoring goal. b. (Optional) Select the **Show detailed formula** check box 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 numeric 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 numeric values to valid levels so that you do not generate excessive monitoring data based on your temporary settings. For additional information about situations that do not fire, see *Situations are not firing* in the *IBM Tivoli Monitoring Troubleshooting Guide*.
Situation events are not displayed in the Events Console view of the workspace.	Associate the situation with a Navigator item. **Note:** The situation does not need to be displayed in the workspace. It is sufficient that the situation is associated with any Navigator item.
You do not have access to a situation.	**Note:** You must have administrator privileges to complete these steps. 1. Click **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**.

Table 9. Situation problems and solutions (continued)

Problem	Solution
A managed system seems to be offline.	1. Select **Physical View** and click the Enterprise Level of the navigator tree. 2. Click **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

Problems can occur with Take Action commands.

Table 10 contains problems and solutions that can occur with Take Action commands.

When each Take Action command runs, it generates a log file listed in Table 3 on page 73.

Table 10. 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 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 94. If the Take Action command fails, for general information about troubleshooting Take Action commands, see the *IBM Tivoli Monitoring Troubleshooting Guide*.

Support information

If you have a problem with your IBM software, you want to resolve it quickly.

IBM provides the following ways for you to obtain the support you need:

Online

The following websites contain troubleshooting information:

- Go to the IBM Software Support website (http://www.ibm.com/support/entry/portal/software) and follow the instructions.
- Go to the Application Performance Management Wiki (http://www.ibm.com/developerworks/servicemanagement/apm/index.html). Feel free to contribute to this wiki.

IBM Support Assistant

The IBM Support Assistant (ISA) is a free local software serviceability workbench that helps you resolve questions and problems with IBM software products. The ISA provides quick access to support-related information and serviceability tools for problem determination. To install the ISA software, go to the IBM Support Assistant website (http://www.ibm.com/software/support/isa).

Informational, warning, and error messages overview

Messages relay information about how the system or application is performing and can alert you to exceptional conditions when they occur.

Messages are sent to an output destination, such as a file, database, or console screen.

If you receive a warning or error message, you can do one of the following actions:

- Follow the instructions listed in the Detail window of the message if this information is included there.
- Consult the message details listed in this topic to see what action you can take to correct the problem.
- Consult the message log for message ID, text, time, and date of the message, as well as other data you can use to diagnose the problem.

Message format

The message format contains a message ID and text, an explanation, and an operator response.

IBM Tivoli Agentless Monitoring for HP-UX Operating Systems messages have the following format:

Message ID and text
Explanation
Operator Response

The message ID has the following format:

`CCC####severity`

where:

CCC Prefix that indicates the component to which the message applies. The following components are used:

KR5 General Agentless Monitor for HP-UX messages

Number of the message

severity
Severity of the message. Three levels of severity are used:

I Informational messages provide feedback about something that happened in the product or system that might be important. These messages can provide guidance when you are requesting a specific action from the product.

W Warning messages call your attention to an exception condition. The condition might not be an error but can cause problems if not resolved.

E Error messages indicate that an action cannot be completed because of a user or system error. These messages require user response.

The *Text* of the message provides a general statement regarding the problem or condition that occurred. The *Explanation* provides additional information about the message and the possible cause for the condition. The *Operator Response* provides actions to take in response to the condition, particularly for error messages (messages with the "E" suffix).

Note: Many message texts and explanations contain variables, such as the specific name of a server or application. Those variables are represented in this topic as symbols, such as "&1." Actual messages contain values for these variables.

Agent messages

The following messages apply to IBM Tivoli Agentless Monitoring for HP-UX Operating Systems.

KR55001I

`The request to start SNMP data collection was sent successfully.`

Explanation:

The agent has begun collecting responses from the specified remote endpoint system.

Operator response:

None.

KR55002E

`Could not perform the requested SNMP data collection start action. The InstanceName you specified is already configured.`

Explanation:

The task could not be performed as requested.

Operator response:

None.

KR55003E

`Could not perform the requested SNMP data collection start action. The InstanceName you specified does not exist.`

Explanation:

The task could not be performed as requested.

Operator response:

None.

KR55004E

`Could not perform the requested SNMP data collection start action. The InstanceName was not specified.`

Explanation:

The task could not be performed as requested.

Operator response:

None.

KR55005E

`Could not perform the requested SNMP data collection start action. The InstanceName is invalid.`

Explanation:

The task could not be performed as requested.

Operator response:

None.

KR55006E

`Could not perform the requested SNMP data collection start action. The InstanceName you specified does not exist.`

Explanation:

The task could not be performed as requested.

Operator response:

None.

KR55007E

`Could not perform the requested SNMP data collection start action. The InstanceName is invalid.`

Explanation:
The task could not be performed as requested.

Operator response:
None.

KR55008E
`Could not perform the requested SNMP data collection start action. The Configuration file could not be opened.`

Explanation:
The task could not be performed as requested.

Operator response:
None.

KR55009E
`Could not perform the requested SNMP data collection start action. No parameters were specified.`

Explanation:
The task could not be performed as requested.

Operator response:
None.

KR55010I
`The request to stop SNMP data collection was sent successfully.`

Explanation:
The agent will no longer collecting responses from the specified remote endpoint system.

Operator response:
None.

KR55011E
`Could not perform the requested SNMP data collection stop action. The InstanceName you specified is already configured.`

Explanation:
The task could not be performed as requested.

Operator response:
None.

KR55012E
`Could not perform the requested SNMP data collection stop action. The InstanceName you specified does not exist.`

Explanation:
The task could not be performed as requested.

Operator response:
None.

KR55013E
`Could not perform the requested SNMP data collection stop action. The InstanceName was not specified.`

Explanation:
The task could not be performed as requested.

Operator response:
None.

KR55014E

`Could not perform the requested SNMP data collection stop action. The InstanceName is invalid.`

Explanation:

The task could not be performed as requested.

Operator response:

None.

KR55015E

`Could not perform the requested SNMP data collection stop action. The InstanceName you specified does not exist.`

Explanation:

The task could not be performed as requested.

Operator response:

None.

KR55016E

`Could not perform the requested SNMP data collection stop action. The InstanceName is invalid.`

Explanation:

The task could not be performed as requested.

Operator response:

None.

KR55017E

`Could not perform the requested SNMP data collection stop action. The Configuration file could not be opened.`

Explanation:

The task could not be performed as requested.

Operator response:

None.

KR55018E

`Could not perform the requested SNMP data collection stop action. No parameters were specified.`

Explanation:

The task could not be performed as requested.

Operator response:

None.

Appendix A. Event mapping

The Tivoli Event Integration Facility (EIF) interface is used to forward situation events to Tivoli Netcool/OMNIbus or Tivoli Enterprise Console.

EIF events specify an event class, and the event data is specified as name-value pairs that identify the name of an event slot and the value for the slot. An event class can have subclasses. IBM Tivoli Monitoring provides the base event class definitions and a set of base slots that are included in all monitoring events. Agents extend the base event classes to define subclasses that include agent-specific slots. For Agentless Monitor for HP-UX events, the event classes correspond to the agent attribute groups, and the agent-specific slots correspond to the attributes in the attribute group.

The situation editor in the Tivoli Enterprise Portal can be used to perform custom mapping of data to EIF slots instead of using the default mapping described in this topic. For more information about EIF slot customization, see the *Tivoli Enterprise Portal User's Guide*.

Tivoli Enterprise Console requires that event classes and their slots are defined in BAROC (Basic Recorder of Objects in C) files. Each agent provides a BAROC file that contains event class definitions for the agent and is installed on the Tivoli Enterprise Monitoring Server in the `TECLIB` directory (`install_dir/cms/TECLIB` for Windows systems and `install_dir/tables/TEMS_hostname/TECLIB` for UNIX systems) when application support for the agent is installed. The BAROC file for the agent and the base BAROC files provided with Tivoli Monitoring must also be installed onto the Tivoli Enterprise Console. For details, see "Setting up event forwarding to Tivoli Enterprise Console" in the *IBM Tivoli Monitoring Installation and Setup Guide*.

Each of the event classes is a child of KR5_Base and is defined in the `kr5.baroc` (version 06.20.10) file. The KR5_Base event class can be used for generic rules processing for any event from the IBM Tivoli Agentless Monitoring for HP-UX Operating Systems.

For events that are generated by situations in the Disk attribute group, events are sent by using the ITM_KR5_DISK event class. This event class contains the following slots:

- node: STRING
- timestamp: STRING
- file_system_id1: INTEGER
- file_system_id1_enum: STRING
- file_system_id2: INTEGER
- file_system_id2_enum: STRING
- file_system_name: STRING
- total_blocks: REAL
- total_blocks_enum: STRING
- free_blocks: REAL
- free_blocks_enum: STRING
- block_size: INTEGER
- block_size_enum: STRING
- total_disk_space_mb: INTEGER
- total_disk_space_mb_enum: STRING
- available_disk_space_mb: INTEGER
- available_disk_space_mb_enum: STRING

- used_disk_space_mb: INTEGER
- used_disk_space_mb_enum: STRING
- percentage_of_available_disk_space: REAL
- percentage_of_available_disk_space_enum: STRING
- percentage_of_used_disk_space: REAL
- percentage_of_used_disk_space_enum: STRING
- mount_point: STRING

For events that are generated by situations in the HP Performance Object Status attribute group, events are sent by using the ITM_KR5_HP_PERFORMANCE_OBJECT_STATUS event class. This event 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
- last_collection_start: STRING
- last_collection_start_enum: STRING
- last_collection_finished: STRING
- last_collection_finished_enum: STRING
- last_collection_duration: REAL
- average_collection_duration: REAL
- average_collection_duration_enum: STRING
- refresh_interval: INTEGER
- number_of_collections: INTEGER
- cache_hits: INTEGER
- cache_misses: INTEGER
- cache_hit_percent: REAL
- intervals_skipped: INTEGER

For events that are generated by situations in the Managed Systems attribute group, events are sent by using the ITM_KR5_MANAGED_SYSTEMS event class. This event class contains the following slots:

- node: STRING
- timestamp: STRING
- subnode_msn: STRING
- subnode_affinity: STRING
- subnode_type: STRING
- subnode_resource_name: STRING
- subnode_version: STRING

For events that are generated by situations in the Memory attribute group, events are sent by using the ITM_KR5_MEMORY event class. This event class contains the following slots:

- node: STRING
- timestamp: STRING
- available_physical_memory_kb: REAL
- available_physical_memory_kb_enum: STRING
- total_physical_memory_kb: REAL
- total_physical_memory_kb_enum: STRING
- used_physical_memory_kb: REAL
- used_physical_memory_kb_enum: STRING
- total_physical_memory_mb: INTEGER
- total_physical_memory_mb_enum: STRING
- used_physical_memory_mb: INTEGER
- used_physical_memory_mb_enum: STRING
- available_physical_memory_mb: INTEGER
- available_physical_memory_mb_enum: STRING
- used_physical_memory_pct: REAL
- used_physical_memory_pct_enum: STRING
- available_physical_memory_pct: REAL
- available_physical_memory_pct_enum: STRING
- total_swap_space_kb: REAL
- total_swap_space_kb_enum: STRING
- available_swap_space_kb: REAL
- available_swap_space_kb_enum: STRING
- used_swap_space_kb: REAL
- used_swap_space_kb_enum: STRING
- total_swap_space_mb: INTEGER
- total_swap_space_mb_enum: STRING
- available_swap_space_mb: INTEGER
- available_swap_space_mb_enum: STRING
- used_swap_space_mb: INTEGER
- used_swap_space_mb_enum: STRING
- available_swap_space_pct: REAL
- available_swap_space_pct_enum: STRING
- used_swap_space_pct: REAL
- used_swap_space_pct_enum: STRING
- total_virtual_memory_kb: REAL
- total_virtual_memory_kb_enum: STRING
- available_virtual_memory_kb: REAL
- available_virtual_memory_kb_enum: STRING
- used_virtual_memory_kb: REAL
- used_virtual_memory_kb_enum: STRING
- total_virtual_memory_mb: INTEGER
- total_virtual_memory_mb_enum: STRING
- used_virtual_memory_mb: INTEGER
- used_virtual_memory_mb_enum: STRING
- available_virtual_memory_mb: INTEGER

- available_virtual_memory_mb_enum: STRING
- available_virtual_memory_pct: REAL
- available_virtual_memory_pct_enum: STRING
- used_virtual_memory_pct: REAL
- used_virtual_memory_pct_enum: STRING

For events that are generated by situations in the Network attribute group, events are sent by using the ITM_KR5_NETWORK event class. This event class contains the following slots:

- node: STRING
- timestamp: STRING
- index: INTEGER
- index_enum: STRING
- description: STRING
- type: INTEGER
- type_enum: STRING
- mtu: INTEGER
- mtu_enum: STRING
- speed_bps: INTEGER
- speed_bps_enum: STRING
- mac_address: STRING
- administrative_status: INTEGER
- administrative_status_enum: STRING
- operational_status: INTEGER
- operational_status_enum: STRING
- bytes_in_per_sec: INTEGER
- bytes_in_per_sec_enum: STRING
- inbound_discarded_packets: INTEGER
- inbound_discarded_packets_enum: STRING
- inbound_packet_errors: INTEGER
- inbound_packet_errors_enum: STRING
- inbound_protocol_errors: INTEGER
- inbound_protocol_errors_enum: STRING
- bytes_out_per_sec: INTEGER
- bytes_out_per_sec_enum: STRING
- outbound_discarded_packets: INTEGER
- outbound_discarded_packets_enum: STRING
- outbound_packet_errors: INTEGER
- outbound_packet_errors_enum: STRING

For events that are generated by situations in the Performance Object Status attribute group, events are sent by using the ITM_KR5_PERFORMANCE_OBJECT_STATUS event class. This event 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
- last_collection_start: STRING
- last_collection_start_enum: STRING
- last_collection_finished: STRING
- last_collection_finished_enum: STRING
- last_collection_duration: REAL
- average_collection_duration: REAL
- average_collection_duration_enum: STRING
- refresh_interval: INTEGER
- number_of_collections: INTEGER
- cache_hits: INTEGER
- cache_misses: INTEGER
- cache_hit_percent: REAL
- intervals_skipped: INTEGER

For events that are generated by situations in the Processes attribute group, events are sent by using the ITM_KR5_PROCESSES event class. This event class contains the following slots:

- node: STRING
- timestamp: STRING
- process_id: INTEGER
- process_id_enum: STRING
- parent_process_id: INTEGER
- parent_process_id_enum: STRING
- memory_address: INTEGER
- memory_address_enum: STRING
- kr5_status: INTEGER
- kr5_status_enum: STRING
- command: STRING
- percent_cpu: INTEGER
- percent_cpu_enum: STRING

For events that are generated by situations in the Processor attribute group, events are sent by using the ITM_KR5_PROCESSOR event class. This event class contains the following slots:

- node: STRING
- timestamp: STRING
- user_cpu: INTEGER
- user_cpu_enum: STRING
- system_cpu: INTEGER
- system_cpu_enum: STRING
- idle_cpu: INTEGER
- idle_cpu_enum: STRING

- nice_cpu: INTEGER
- nice_cpu_enum: STRING
- total_cpu: INTEGER
- total_cpu_enum: STRING
- cpu_idle_pct: REAL
- cpu_idle_pct_enum: STRING
- cpu_used_pct: REAL
- cpu_used_pct_enum: STRING

For events that are generated by situations in the System attribute group, events are sent by using the ITM_KR5_SYSTEM event class. This event class contains the following slots:

- node: STRING
- timestamp: STRING
- system_name: STRING
- system_uptime: STRING
- current_user_logins: INTEGER
- current_user_logins_enum: STRING
- maximum_allowed_processes: INTEGER
- maximum_allowed_processes_enum: STRING
- total_running_processes: INTEGER
- total_running_processes_enum: STRING
- description: STRING
- system_contact: STRING
- system_location: STRING
- allowed_processes_pct: REAL
- allowed_processes_pct_enum: STRING

For events that are generated by situations in the Thread Pool Status attribute group, events are sent by using the ITM_KR5_THREAD_POOL_STATUS event class. This event class contains the following slots:

- node: STRING
- timestamp: STRING
- thread_pool_size: INTEGER
- thread_pool_size_enum: STRING
- thread_pool_max_size: INTEGER
- thread_pool_max_size_enum: STRING
- thread_pool_active_threads: INTEGER
- thread_pool_active_threads_enum: STRING
- thread_pool_avg_active_threads: REAL
- thread_pool_avg_active_threads_enum: STRING
- thread_pool_min_active_threads: INTEGER
- thread_pool_min_active_threads_enum: STRING
- thread_pool_max_active_threads: INTEGER
- thread_pool_max_active_threads_enum: STRING
- thread_pool_queue_length: INTEGER
- thread_pool_queue_length_enum: STRING
- thread_pool_avg_queue_length: REAL

- thread_pool_avg_queue_length_enum: STRING
- thread_pool_min_queue_length: INTEGER
- thread_pool_min_queue_length_enum: STRING
- thread_pool_max_queue_length: INTEGER
- thread_pool_max_queue_length_enum: STRING
- thread_pool_avg_job_wait: REAL
- thread_pool_avg_job_wait_enum: STRING
- thread_pool_total_jobs: INTEGER
- thread_pool_total_jobs_enum: STRING

Appendix B. Documentation library

A variety of publications are relevant to the use of the IBM Tivoli Agentless Monitoring for HP-UX Operating Systems.

The *IBM Tivoli Monitoring, OMEGAMON XE, and Composite Application Manager products: Documentation Guide* contains information about accessing and using publications. You can find the Documentation Guide in the following information centers:

- IBM Tivoli Monitoring and OMEGAMON® XE (http://publib.boulder.ibm.com/infocenter/tivihelp/v15r1/index.jsp)
- IBM Tivoli Composite Application Manager (http://publib.boulder.ibm.com/infocenter/tivihelp/v24r1/index.jsp)

To open the Documentation Guide in the information center, select **Using the publications** in the **Contents** pane.

To find a list of new and changed publications, click **What's new in the information center** on the Welcome page of the IBM Tivoli Monitoring and OMEGAMON XE Information Center.

To find publications from the previous version of a product, click **Previous versions** under the name of the product in the **Contents** pane.

IBM Tivoli Agentless Monitoring for HP-UX Operating Systems library

The documentation for this agent and other product components is located in the IBM Tivoli Monitoring Information Center (http://pic.dhe.ibm.com/infocenter/tivihelp/v61r1/index.jsp).

One document is specific to the IBM Tivoli Agentless Monitoring for HP-UX Operating Systems: IBM Tivoli Agentless Monitoring for HP-UX Operating Systems User's Guide. This publication provides agent-specific information for configuring, using, and troubleshooting the Agentless Monitor for HP-UX.

The *Offering Guide* also provides information about installing and configuring the component products in the offering.

The **Prerequisites** topic in the information center contains information about the prerequisites for each component.

Use the information in the user's guide for the agent with the *Tivoli Enterprise Portal User's Guide* to monitor HP-UX Operating Systems resources.

Prerequisite publications

To use the information in this publication effectively, you must have some prerequisite knowledge.

See the following publications to gain the required prerequisite knowledge:

- *IBM Tivoli Monitoring Administrator's Guide*
- *IBM Tivoli Monitoring Agent Builder User's Guide*
- *IBM Tivoli Monitoring Command Reference*
- *IBM Tivoli Management Services on z/OS: Configuring the Tivoli Enterprise Monitoring Server on z/OS*
- *IBM Tivoli Monitoring Installation and Setup Guide*
- *IBM Tivoli Monitoring High Availability Guide for Distributed Systems*

- *IBM Tivoli Monitoring: Messages*
- *IBM Tivoli Monitoring Troubleshooting Guide*
- *IBM Tivoli Monitoring Universal Agent User's Guide*
- *IBM Tivoli Universal Agent API and Command Programming Reference Guide*
- *IBM Tivoli Monitoring: i5/OS™ Agent User's Guide*
- *IBM Tivoli Monitoring: Linux OS Agent User's Guide*
- *IBM Tivoli Monitoring: UNIX OS Agent User's Guide*
- *IBM Tivoli Monitoring: UNIX Logs OS Agent User's*
- *IBM Tivoli Monitoring: Windows OS Agent User's Guide*
- *Tivoli Enterprise Portal User's Guide*
- *IBM Tivoli Performance Analyzer User's Guide*
- *IBM Tivoli Warehouse Proxy Agent User's Guide*
- *IBM Tivoli Warehouse Summarization and Pruning Agent User's Guide*

Related publications

The publications in related information centers provide useful information.

See the following information centers, which you can find by accessing Tivoli Documentation Central (http://www.ibm.com/developerworks/wikis/display/tivolidoccentral/Home):

- IBM Tivoli Monitoring
- IBM Tivoli Netcool/OMNIbus
- IBM Tivoli Application Dependency Discovery Manager
- IBM Tivoli Enterprise Console

Other sources of documentation

You can obtain additional technical documentation about monitoring products from other sources.

See the following sources of technical documentation about monitoring products:

- Service Management Connect (SMC)

  See the introductory information about SMC (http://www.ibm.com/developerworks/servicemanagement/).

  For information about Tivoli products, see the Application Performance Management community on SMC (http://www.ibm.com/developerworks/servicemanagement/apm/index.html).

  Connect, learn, and share with Service Management professionals. Get access to developers and product support technical experts who provide their perspectives and expertise. You can use SMC for these purposes:

  – Become involved with transparent development, an ongoing, open engagement between external users and developers of Tivoli products where you can access early designs, sprint demos, product roadmaps, and pre-release code.
  – Connect one-on-one with the experts to collaborate and network about Tivoli and Integrated Service Management.
  – Benefit from the expertise and experience of others using blogs.
  – Collaborate with the broader user community using wikis and forums.
- IBM Integrated Service Management Library (http://www.ibm.com/software/brandcatalog/ismlibrary/) is an online catalog that contains integration documentation as well as other downloadable product extensions.

- IBM Redbook publications (http://www.redbooks.ibm.com/) include Redbooks® publications, Redpapers, and Redbooks technotes that provide information about products from platform and solution perspectives.
- Technotes (http://www.ibm.com/support/entry/portal/software), which are found through the IBM Software Support website, provide the latest information about known product limitations and workarounds.
- Tivoli wikis

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