Tivoli Monitoring for Virtual Servers Agent for Citrix XenServer

Version 6.2.3

User's Guide

SC14-7470-00

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Note
Before using this information and the product it supports, read the information in Appendix D, "Notices," on page 185.

This edition applies to version 6.2.3 of IBM Tivoli Monitoring for Virtual Servers Agent for Citrix XenServer (product number 5724-L92) and to all subsequent releases and modifications until otherwise indicated in new editions.

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Chapter 1. Overview of the monitoring agent

The IBM Tivoli Monitoring for Virtual Servers Agent for Citrix XenServer provides you with the capability to monitor Citrix XenServer. This chapter provides a description of the features, components, and interface options for the Citrix XenServer agent.

IBM Tivoli Monitoring overview

IBM Tivoli Monitoring is the base software for the Citrix XenServer agent. 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 complete 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 perform 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 179 for complete information about IBM Tivoli Monitoring and the Tivoli Enterprise Portal.

Components of the IBM Tivoli Monitoring environment

After you install and set up the Citrix XenServer agent, you have an environment that contains the client, server, and monitoring agent implementation for IBM Tivoli Monitoring. This environment contains the following components:

- Tivoli Enterprise Portal client, which has a user interface based on Java for viewing and monitoring your enterprise.
- Tivoli Enterprise Portal Server that 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 that 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, Citrix XenServer agent (one or more instances of the monitoring agent). The instances communicate with the systems

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or subsystems that you want to monitor. This monitoring agent collects and distributes data to a Tivoli Enterprise Portal Server.

- IBM Tivoli Enterprise Console, which is an optional component that acts as a central collection point for events from a variety of 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 (using the event viewer), and you can forward events from IBM Tivoli Monitoring situations to the IBM Tivoli Enterprise Console component.
- IBM Tivoli Netcool/OMNIbus, which is an optional component and an alternative to the IBM Tivoli Enterprise Console. The Netcool/OMNIbus software is a service level management (SLM) system that delivers real-time, centralized monitoring of complex networks and IT domains. The Tivoli Netcool/OMNIbus components work together to collect and manage network event information.

User interface options

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

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

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

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

IBM Tivoli Enterprise Console
An event management application that integrates system, network, database, and application management to help ensure the optimal availability of an IT service for an organization.

Tivoli Netcool/OMNIbus event list
You can use the event list to monitor and manage alerts. An alert is created when the ObjectServer receives an event, alarm, message, or data item. Each alert is made up of columns (or fields) of information that are held 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.

Chapter 2. Agent-specific installation and configuration information for the monitoring agent

This chapter contains information about the requirements for the IBM Tivoli Monitoring for Virtual Servers Agent for Citrix XenServer, and agent-specific information related to installation and configuration of the agent.

Note: The Citrix XenServer agent is different from other IBM Tivoli Monitoring agents in the following notable ways:

- The Citrix XenServer agent installer is based on the IBM Tivoli Monitoring Agent Builder solution installer.
- The Citrix XenServer Agent does not include Java, GSkit, or the IBM Tivoli Monitoring runtime libraries. Installation of an IBM Tivoli Monitoring operating system agent installs these elements. Before you install the Citrix XenServer agent, an existing IBM Tivoli Monitoring operating system agent must exist on the same system.
- The agent installer, as well as the Tivoli Enterprise Portal-based workspaces, situations, attribute descriptions, and so on, are not globalized.

To configure the Citrix XenServer agent, use the procedures for configuring monitoring agents in the *IBM Tivoli Monitoring Installation and Setup Guide* along with the agent-specific information in this chapter.

If you are performing a silent installation by using a response file, see the information about performing a silent installation. This information is located in "Citrix XenServer agent silent installation" on page 9

Configuring the monitoring agent after installation

In addition to the installation and configuration information in the *IBM Tivoli Monitoring Installation and Setup Guide*, use the information in this section to install and configure the Citrix XenServer agent.

Unique Configuration Considerations for the Citrix XenServer Agent

The Citrix XenServer agent provides monitoring of stand-alone XenServer hosts as well as XenServer hosts that exist within XenServer pools. Please note the following when creating Citrix XenServer agent instances:

- If a single stand-alone XenServer host that is not a member of a XenServer pool is to be monitored, a specific Citrix XenServer agent instance must be created to monitor that single XenServer host.
- If 1 to 16 XenServer hosts are grouped together in a unique XenServer pool, a single specific XenServer agent instance must be configured to monitor all of the of the XenServer hosts within that unique XenServer pool. Within the Citrix XenServer agent instance, the configuration details (hostname, username, password) for each XenServer host in the XenServer pool must be entered or the agent will not function correctly.
- Never configure a Citrix XenServer agent instance to monitor two or more stand-alone XenServer hosts that are not grouped together in a XenServer pool.

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If two stand-alone XenServer hosts exist (each not configured as part of a XenServer pool), two Citrix XenServer agent instances must be configured – one for each XenServer host.

- Never mix XenServer hosts from more than one XenServer pool within the configuration of a single Citrix XenServer agent instance.

Agent installation

The Citrix XenServer agent is a remote IBM Tivoli Monitoring agent. Do not install the Citrix XenServer agent on a Citrix XenServer Pool Master or any other XenServer host in a pool.

- **Local Installation - Windows GUI installation**

  To install the agent, extract the downloaded agent installation media, or insert the installation CD. In the root of the installation media, there is a file named `setupwin32.exe`. Run the file to complete any of the following actions:

  – Install the Citrix XenServer agent on a target system
  – Add the Citrix XenServer agent to a Tivoli Enterprise Monitoring Server (monitoring server) depot
  – Add Citrix XenServer agent application support to the monitoring server
  – Add Citrix XenServer agent application support to the Tivoli Enterprise Portal Server (portal server)
  – Add Citrix XenServer agent application support to the Tivoli Enterprise Desktop Client (desktop client)

  Follow the wizard through the basic installation steps. Then in the MTEMS console, start the configuration window for the Citrix XenServer agent.

- **Local Installation - Linux GUI installation**

  For Linux systems, you must install the agent from a valid X window console. Navigate to the top level of the installation media and run the `setupLinux.bin` file. Step through the menu instructions to finish the installation. You can do any of the following actions:

  – Install the Citrix XenServer agent on a target system
  – Add the Citrix XenServer agent to a monitoring server depot
  – Add Citrix XenServer agent application support to the monitoring server
  – Add Citrix XenServer agent application support to the portal server
  – Add Citrix XenServer agent application support to the desktop client

- **Local Installation - command line installation**

  To install the agent from the command line, extract the downloaded agent installation media, or insert the installation CD. From the command line you can complete any of the following actions:

  – Install the Citrix XenServer agent on a target system
  – Add Citrix XenServer agent Application support to the monitoring server
  – Add Citrix XenServer agent Application support to the portal server
  – Add Citrix XenServer agent Application support to the desktop client

  To install the Citrix XenServer monitoring agent on a target system, navigate to the *CD ROOT*`/kxi/UA_APP/BUNDLE` directory and run the appropriate installation script.

  – `InstallIra.bat` *`install_dir`* `[[-h Hub_TEMS_`*`hostname`*`] -u HUB_TEMS_`*`username`* `-p Hub_TEMS_`*`password`*`]-` works on Windows, installs Citrix XenServer agent, Tivoli Enterprise Monitoring Server, Tivoli Enterprise Portal Server, and Tivoli Enterprise Portal support all at once

– `installIraAgent.bat/.sh itm_install_dir` - for the agent-only installation
– `installIraAgentTEMS.bat/.sh install_dir [[-h Hub_TEMS_hostname] -u HUB_TEMS_username -p Hub_TEMS_password]` - installs the Tivoli Enterprise Monitoring Server support.
– `installIraAgentTEPS.bat/.sh itm_installitm_install_location-` installs the Tivoli Enterprise Portal Server and Tivoli Enterprise Portal support.

For the `installIra.bat`, `installIraAgentTEMS.bat`, and `installIraAgentTEMS.sh` installation scripts, the installation location continues to be mandatory, and must be the first argument. The rest is optional.

Notes:

1. For UNIX or Linux systems, depending on how the media was extracted, the execute permissions on the installIRA installation scripts might be missing. If the execute permissions are missing, use the `chmod` command to add the execute permissions back to the installer before proceeding with the installation.
2. For UNIX or Linux systems, follow the instructions in the *IBM Tivoli Monitoring Installation and Setup Guide*, found in the section titled, "Installing and enabling application support" to ensure the agent application support is installed correctly.

- **Required Citrix XenServer Java SDK Download and Manual Installation**

  The Citrix XenServer Agent requires installation of additional files that are not included in the installation media. You must download the XenServerJava-5.6.100-1 version from the Citrix website.

  The SDK kit can be downloaded from http://community.citrix.com/display/xs/Download+SDKs.

  Extract the following JAR (Java archive) files from the downloaded SDK kit:

  – `ws-commons-util-1.0.2.jar`
  – `xenserver-5.6.100-1.jar`

  and place these files in the following locations:

  – **Windows** - `%CANDLE_HOME%\TMAITM6`
  – **Linux** - `$CANDLEHOME/platform_code/xi/bin`

Configuration

The Citrix XenServer agent requires additional configuration to work correctly. Read the following sections carefully when configuring the agent.

Network connectivity between the agent and each XenServer host

Network connectivity to the XenServer Pool Master is not sufficient. Ports 80 and 443 must be open between the Citrix XenServer agent instance and each of the XenServer hosts in a pool.

Enabling SSL communication with Citrix XenServer agent data sources

The Citrix XenServer agent can be configured to securely communicate with its XenServer data sources using SSL certificates. In this configuration, you must add a data source SSL certificate to the certificate truststore of the agent.

Note: The following information applies only if the agent is configured to validate SSL certificates. If SSL certificate validation is turned off, the Citrix XenServer agent connects to XenServer data sources even if their SSL

certificates are expired, untrusted, or invalid. However, turning off SSL certificate validation is potentially not secure and must be done with care.

If a XenServer data source uses an SSL certificate that is signed by a common certificate authority (for example, Verisign, Entrust, or Thawte), then it is not necessary to add certificates to the Citrix XenServer agent certificate truststore. However, if the data source uses a certificate that is not signed by a common certificate authority, as is the case by default, the certificate must be added to the truststore to allow the agent to successfully connect and collect data.

You can add the certificate to the truststore of the agent by completing the following steps:

1. Copy the SSL certificate that was loaded into the XenServer agent to the computer where the agent is installed.
2. Place the certificate file in a directory of your choosing on the agent computer. Do not overlay certificate files. Use unique file names for each certificate. Use a unique label for each certificate that you add.
3. Use the `keytool` command to add the data source certificate to the certificate truststore of the agent:

   ```
   keytool -import -noprompt -trustcacerts -alias CertificateAlias -file
   CertificateFile -keystore Truststore -storepass TruststorePassword
   ```

   Where:

   CertificateAlias

   A unique reference for each certificate added to the certificate truststore of the agent. For example, an appropriate alias for the certificate from *datasource.example.com* is *datasource*.

   CertificateFile

   The complete path and file name to the XenServer data source certificate being added to the truststore.

   Truststore

   Complete path and file name to the Citrix XenServer agent certificate database. Use the following path and file name:

   - Windows (32-bit): *install_dir*\tmaitm6\kxi_truststore.jks
   - Windows (64-bit): *install_dir*\tmaitm6_x64\kxi_truststore.jks
   - Linux (32-bit): *install_dir*/li6263/xi/bin/kxi_truststore.jks
   - Linux (64-bit): *install_dir*/lx8266/xi/bin/kxi_truststore.jks

   TruststorePassword

   XENTRUST is the default password for the Citrix XenServer agent truststore. To change this password, consult the Java Runtime documentation for information about the tools to use.

   Note: To use the `keytool` command, the Java Runtime bin directory must be in your path. Use the following commands:

   - Windows (32-bit): `set PATH=%PATH%;install_dir\CNPSJ\java\bin`
   - Windows (64-bit): `set PATH=%PATH%;install_dir\CNPSJ\java\bin`
   - Linux (32-bit): `PATH="$PATH":install_dir/JRE/li6263/bin`
   - Linux (64-bit): `PATH="$PATH":install_dir/JRE/lx8266/bin`
4. Repeat the preceding process of adding the SSL certificate for every XenServer host in the pool. For example, if the XenServer pool has 16 hosts that are all

enabled with the SS protocolL, the SSL certificates for each of the 16 XenServer hosts must be added to the XenServer agent instance trustore file.

5. After all data source certificates have been added, you can start the monitoring agent.

Configuration values

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

Validate SSL Certificates (DISABLE_CERT_VERIFICATION)
This group enables SSL certificate validation for SSL connections.

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

This group defines information that applies to the entire agent.

Validate SSL Certificates (KXI_VALIDATE_SSL_CERT)
With this group, you can enable or disable SSL Certificate validation when SSL connections are specified.

The type is one of the following values: `Yes`, or `No (Potentially Insecure)`.

This value is required.

The default value is `No`.

Basic Agent Configuration (AGENT_CONFIGURATION)
This group contains configuration settings for the agent itself.

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

This group defines information that applies to the entire agent.

Max Log File Amount (KXI_LOGGING_MAX_FILE_COUNT)
This amount is the maximum amount of files before the log roll resets.

The type is one of the following values: `1`, `3`, `5`, or `7`.

This value is required.

The default value is 5.

Max Log File Size (Megabytes) (KXI_LOGGING_MAX_FILE_SIZE_MB)
This size is the maximum size of the log files before the file rolls.

The type is one of the following values: `1`, `3`, `5`, or `7`.

This value is required.

The default value is 1.

Agent Logging Level (KXI_LOG_LEVEL)
This level is the log level of the agent. `Fatal` is minimal logging, `debug` is maximum.

The type is one of the following values: `Fatal`, `Error`, `Warn`, `Info`, or `Debug`.

This value is required.

The default value is `Warn`.

Connection Info (XENSERVER_HOSTS_CONNECTIONS)
XenServer hosts connections details..

Note: There are between 1 and 16 XenServer hosts in a XenServer pool. Each of the XenServer hosts must be configured by using this repeatable configuration panel, or the agent instance cannot collect data.

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

Use the information in this group to create additional subnodes.

Hostname (Hostname)
The host name of XenServer Host (Hypervisor).

The host name for each XenServer host must match exactly the host name the XenServer has been assigned. The easiest way to confirm the host name is to run the `hostname` command from the command line on the XenServer host. The output of the command is the value that you should enter for the host name configuration element.

Note: If SSL is enabled, this host name must match the fully qualified domain name listed in the imported X.509 certificate for this server.

The type is string.

This value is required.

Default: None

Password (PASSWORD)
The password used to log onto the XenServer host.

The type is password.

This value is required.

Default: None

Username (USERNAME)
The username used to log onto the XenServer host.

The type is string.

This value is required.

Default: None

Use SSL (USE_SSL)
Enable SSL for connection to XenServer host.

The type is one of the following values: `No`, or `Yes`.

This value is required.

The default value is `No`.

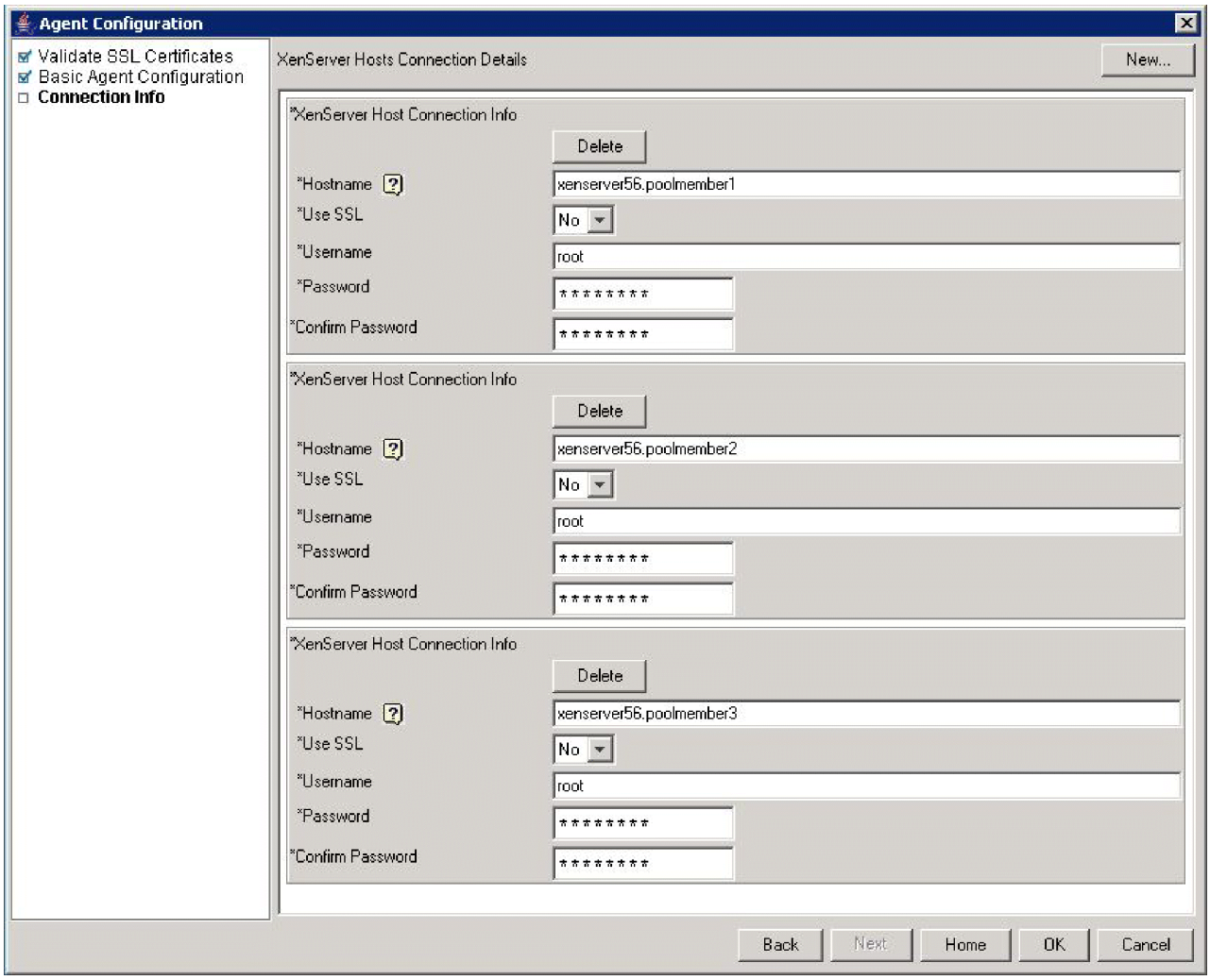

Figure 1. Example Citrix XenServer agent instance configuration of a XenServer pool containing three XenServer hosts within the pool

Note: Within a Citrix XenServer agent instance, the configuration details (**Use SSL**, **Hostname**, **Username**, **Password**) for each XenServer host (between 1 and 16 hosts) in a specific XenServer pool must be entered or the agent will not function correctly. If the XenServer pool to be monitored contains 16 XenServer host members, 16 distinct entries must be added to the above configuration panel – one for each XenServer host.

Requirement for XenTools for virtual machine (vm) performance data collection and reporting

An up-to-date XenTools package must be correctly installed on a virtual machine for all the performance (CPU, memory, network disk) data for that virtual machine to be correctly collected and reported by the Citrix XenServer Agent.

Citrix XenServer agent silent installation

To silently install the Citrix XenServer agent, run the appropriate installer in the main `CD_ROOT` folder for the operating system with the `-silent` option.

For example:

```
setupwin32.exe -silent -options response_file
```

where *response_file* is the path to a copy of the `CD_ROOT/silent.txt` file you have customized for your environment.

Note: This silent installation does not support the `-console` option.

Remote installation and configuration

When installing the agent remotely, you must provide the configuration values for the agent to operate. See "Configuration values" on page 7.

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

You can install the monitoring agent remotely from the Tivoli Enterprise Portal or from the command line. To install from the portal, see the *IBM Tivoli Monitoring Installation and Setup Guide*.

If using the command line, the following command is an example of remote configuration for Windows operating systems:

```
tacmd addSystem -t XI -n Primary:sample.node.name:NT
-p  AGENT_CONFIGURATION.KXI_LOGGING_MAX_FILE_COUNT=5
 AGENT_CONFIGURATION.KXI_LOGGING_MAX_FILE_SIZE_MB=1
 AGENT_CONFIGURATION.KXI_LOG_LEVEL=WARN
 DISABLE_CERT_VERIFICATION.KXI_VALIDATE_SSL_CERT=NO
 XenServer Host Connection Info.Hostname=none
 XENSERVER_HOSTS_CONNECTIONS.PASSWORD=value
 XENSERVER_HOSTS_CONNECTIONS.USERNAME=value
 XENSERVER_HOSTS_CONNECTIONS.USE_SSL=NO
INSTANCE="inst1"
```

Chapter 3. Workspaces reference

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

About workspaces

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

When you select an item in the Navigator tree, a default workspace is displayed. When you right-click a Navigator item, a menu that includes a Workspace item is displayed. The 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.

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 Citrix XenServer agent provides various default workspaces. These workspaces are displayed in the Navigator tree under the following nodes and subnodes for this monitoring agent:

Citrix XenServer (XI node)
Corresponds to a Citrix XenServer instance and contains agent instance-level workspaces.

Hypervisors (XHV subnode)
XenServer Physical Hosts

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

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

More information about workspaces

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

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For a list of the predefined workspaces for this monitoring agent and a description of each workspace, see the Predefined workspaces section in this chapter and the information in that section 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 the Attributes reference section.

Predefined workspaces

The Citrix XenServer agent provides the following predefined workspaces, which are organized by Navigator item.

Agent-level navigator items

- Citrix XenServer Navigator item
  - Citrix XenServer workspace
  - Top 10 Most Utilized (CPU) XenServer Hosts workspace
  - Top 10 Most Utilized (Memory) XenServer Hosts workspace
  - XenServer Host Dashboard workspace
- Events Navigator item
  - Events workspace
  - XenServer ITM Agent Diagnostics workspace
  - XenServer ITM Agent Trace Log workspace
- Hosts Navigator item
  - Hosts workspace
  - XenServer Hosts Uptime and License Expiration (Pool Wide) workspace
- Pool Navigator item
  - Network Summary workspace
  - Pool workspace
  - VIFs workspace
  - XenServer Updates and Patches workspace
- Storage Navigator item
  - All Storage Repositories (SRs) workspace
  - Physical Block Devices (PBDs) workspace
  - Storage workspace
  - Virtual Block Devices (VBDs) workspace
  - Virtual Disk Images (VDIs) workspace

Hypervisors (XHV) subnode

- Hypervisors Navigator item
  - Hypervisors workspace
- CPU Navigator item
  - CPU workspace
- Disk Navigator item
  - All Disks workspace
  - Disk workspace
- Network Navigator item

  - Network workspace
- Patch Navigator item
  - Patch workspace
- Virtual Machines Navigator item
  - Virtual Machines workspace
- XenServer Navigator item
  - XenServer workspace

Agent Navigator items

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

Citrix XenServer Navigator item

Citrix XenServer workspace
The XenServer monitoring agent monitors a XenServer virtualization environment.

This workspace contains the following views:

Monitored XenServer Hosts
A list of the XenServer hosts in the pool.

XenServer ITM Agent Connection Status
Connection status information about the XenServer ITM agent.

XenServer Pool Summary
A summary of the hosts and virtual machines in the pool.

Top 10 Most Utilized (CPU) XenServer Hosts workspace
The top 10 most utilized XenServer hosts by CPU utilization.

This workspace contains the following view:

Top 10 Most Utilized (CPU) XenServer Hosts
A list of the top 10 most utilized (CPU) XenServer hosts.

Top 10 Most Utilized (Memory) XenServer Hosts workspace
The top 10 most utilized XenServer hosts by memory utilization

This workspace contains the following view:

Top 10 Most Utilized (Memory) XenServer Hosts
A list of the top 10 most utilized (Memory) XenServer hosts.

XenServer Host Dashboard workspace
A high-level overview of the XenServer hosts in the pool.

This workspace contains the following view:

XenServer Host Status Dashboard
A high-level overview of the XenServer hosts in the pool.

Events Navigator item

Events workspace
Detailed information about the events occurring in the XenServer pool.

This workspace contains the following views:

Pool Master Transition Events
A detailed listing of the pool master transitions that have occured in the XenServer pool.

XenServer ITM Agent Connection Status
A detailed connection status of the XenServer ITM Agent.

XenServer ITM Agent Diagnostics workspace
Performance Object and Thread Pool status.

This workspace contains the following views:

Performance Object Status
A detailed status of each attribute group in the IBM Tivoli Monitoring Agent for XenServer.

Thread Pool Status
A summary of the thread pool of the agent.

XenServer ITM Agent Trace Log workspace
XenServer ITM Agent trace log events.

This workspace contains the following view:

Agent Trace Log
A detailed list of the IBM Tivoli Monitoring Agent for XenServer.

Hosts Navigator item

Hosts workspace
Detailed information about all hosts in the XenServer pool.

This workspace contains the following views:

XenServer CPU Utilisation (Pool Wide)
A graphical overview of the CPU utilization for each physical host in the XenServer pool.

XenServer Memory Utilisation (Pool Wide)
A graphical overview of the memory utilization for each physical host in the XenServer pool.

XenServer Hosts
Detailed information about each physical host in the XenServer pool.

XenServer Hosts Uptime and License Expiration (Pool Wide) workspace
Uptime and license expiration information about all hosts in the XenServer pool.

This workspace contains the following views:

Days Until License Expires
A graphical view of the number of days until the license of the host expires.

Uptimes (in Minutes)
A graphical view of the uptime, in minutes, of all hosts in the XenServer pool.

Pool Navigator item

Network Summary workspace
A summary of the Networks across the XenServer pool.

This workspace contains the following view:

Network Summary
A summary of the Networks across the XenServer pool.

Pool workspace
A high-level summary of the XenServer pool.

This workspace contains the following views:

Virtual Machines Status
A graphical overview of the runstate of all virtual machines in the pool.

XenServer Hosts Status
A graphical overview of the status of all hosts in the pool.

XenServer Pool Overview
A summary of the hosts and virtual machines in the XenServer pool.

XenServer Pool Configuration
A detailed listing current configuration of the pool.

VIFs workspace
A summary of the Virtual Network Interfaces (VIFs) across the XenServer Pool.

This workspace contains the following view:

Network Summary (Pool Wide)
A summary of the Virtual Network Interfaces (VIFs) across the XenServer Pool.

XenServer Updates and Patches workspace
Update and patch information about the monitored XenServer pool.

This workspace contains the following view:

Patches and Updates Available within Pool
A detailed list of patches and updates available across the XenServer pool.

Storage Navigator item

All Storage Repositories (SRs) workspace
Detailed information about all the storage repositories in the XenServer pool.

This workspace contains the following views:

Storage Repositories (SRs) Utilization
A graphical view of the utilization of all shared repositories in the XenServer pool.

Storage Repositories (SRs)
A detailed list of the of all storage repositories in the XenServer pool.

Physical Block Devices (PBDs) workspace
Detailed information about all physical block devices in the XenServer pool.

This workspace contains the following view:

Physical Block Devices (PBDs) - Pool Wide
A detailed list of all physical block devices in the XenServer pool.

Storage workspace
Information about the shared storage repositories within the monitored pool.

This workspace contains the following views:

Shared Storage Repositories (SRs) Utilization
A graphical view of the utilization of all shared repositories in the XenServer pool.

Shared Storage Repositories (SRs)
A detailed list of the of all shared repositories in the XenServer pool.

Virtual Block Devices (VBDs) workspace
Detailed information about all virtual block devices in the XenServer pool.

This workspace contains the following view:

Virtual Block Devices (VBDs) - Pool Wide
A detailed list of all virtual block devices in the XenServer pool.

Virtual Disk Images (VDIs) workspace
Detailed information about all virtual disk images in the XenServer pool.

This workspace contains the following view:

Virtual Disk Images (VDIs) - Pool Wide
A detailed list of all virtual disk images in the XenServer pool.

Hypervisors subnode

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

Hypervisors Navigator item

Hypervisors workspace
An overview of the metrics associated with this host.

This workspace contains the following views:

XenServer Host Physical CPUs Utilization
A graphical view of the utilization for each CPU on this host.

Overall CPU Utilization
A graphical view of the aggregate CPU utilization for this host.

Overall Memory Utilization
A graphical view of the memory utilization for this host.

CPU Navigator item

CPU workspace
Detailed information about the CPUs for this host.

This workspace contains the following views:

Physical Processor Utilization
A graphical view of the utilization for each CPU on this host.

Physical Processor Details
A detailed list of each CPU on this host.

Disk Navigator item

All Disks workspace
Information about the storage associated with this host.

This workspace contains the following views:

SR Utilization
A graphical view of the utilization of all storage repositories on this host.

SR Repositories (SRs)
A detailed list of all storage repositories on this host.

Disk workspace
Information about the non-ISO storage associated with this host.

This workspace contains the following views:

SR Utilization
A graphical view of the utilization of all non-ISO storage repositories on this host.

Non-ISO Storage Repositories (SRs)
A detailed list of all non-ISO storage repositories on this host.

Network Navigator item

Network workspace
Detailed networking information about this host.

This workspace contains the following views:

PIFs A detailed list of the physical network interfaces on this host.

PIF Read / Write IO
A graphical view of the network traffic for this host.

Patch Navigator item

Patch workspace
Information about the patches and updates applied for this host.

This workspace contains the following view:

Patches and Updates Applied to this this XenServer host
A detailed list of the patches and updates applied to this host.

Virtual Machines Navigator item

Virtual Machines workspace
Information about the virtual machines residing on this host.

This workspace contains the following views:

Virtual Machines Status
A detailed list of the status of all virtual machines residing on this host.

Virtual Machine Metrics
A detailed list of the metrics for each virtual machine on this host.

XenServer Navigator item

XenServer workspace
Metrics information about this host.

This workspace contains the following views:

Dom0 (Control Domain) Summary
A detailed summary of the Control Domain for this host.

Overall CPU Utilization
A graphical view of the overall CPU utilization for this host.

Overall Memory Utilization
A graphical view of the overall memory utilization for this host.

XenServer Host Summary
A detailed summary for this XenServer host.

XenServer Host Parameters
A detailed summary of the parameters for this XenServer host.

Chapter 4. Attributes reference

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

About attributes

Attributes are the application properties that are being measured and reported by the Citrix XenServer agent.

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

- Chart or table views

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

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

More information about attributes

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

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

Attribute groups and attributes for the Citrix XenServer agent

This monitoring agent 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, then any warehouse table name longer than 30 characters is shortened to 30 characters.

- Attribute group name: Agent Connection Status
  - Table name: KXIXENMFND
  - Warehouse table name: KXI_AGENT_CONNECTION_STATUS or KXIXENMFND
- Attribute group name: Agent Trace Log
- Attribute group name: Control Domain
  - Table name: KXIHCTRLDM
  - Warehouse table name: KXI_CONTROL_DOMAIN or KXIHCTRLDM

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- Attribute group name: Host CPU
  - Table name: KXIHHCPUSN
  - Warehouse table name: KXI_HOST_CPU or KXIHHCPUSN
- Attribute group name: Host Details
  - Table name: KXIHVHODET
  - Warehouse table name: KXI_HOST_DETAILS or KXIHVHODET
- Attribute group name: Host Discovery
- Attribute group name: Host Patches
  - Table name: KXIHOSTPCH
  - Warehouse table name: KXI_HOST_PATCHES or KXIHOSTPCH
- Attribute group name: Host PBD
  - Table name: KXIHOSTPBD
  - Warehouse table name: KXI_HOST_PBD or KXIHOSTPBD
- Attribute group name: Host PIF
  - Table name: KXIHOSTPIF
  - Warehouse table name: KXI_HOST_PIF or KXIHOSTPIF
- Attribute group name: Host VMS
  - Table name: KXIHVVMSUB
  - Warehouse table name: KXI_HOST_VMS or KXIHVVMSUB
- Attribute group name: PBD SR Join
  - Table name: KXISRHJOIN
  - Warehouse table name: KXI_PBD_SR_JOIN or KXISRHJOIN
- Attribute group name: Performance Object Status
  - Table name: KXIPOBJST
  - Warehouse table name: KXI_PERFORMANCE_OBJECT_STATUS or KXIPOBJST
- Attribute group name: Pool Host Member Details
  - Table name: KXIHSTDETA
  - Warehouse table name: KXI_POOL_HOST_MEMBER_DETAILS or KXIHSTDETA
- Attribute group name: Pool Master Events
  - Table name: KXIPMCHANG
  - Warehouse table name: KXI_POOL_MASTER_EVENTS or KXIPMCHANG
- Attribute group name: Pool Network
- Attribute group name: Pool Patch
  - Table name: KXIPPATCH
  - Warehouse table name: KXI_POOL_PATCH or KXIPPATCH
- Attribute group name: Pool PBD
  - Table name: KXIPBD
  - Warehouse table name: KXI_POOL_PBD or KXIPBD
- Attribute group name: Pool PIF
  - Table name: KXIATTRIB4
  - Warehouse table name: KXI_POOL_PIF or KXIATTRIB4
- Attribute group name: Pool SR
  - Table name: KXISRS

  - Warehouse table name: KXI_POOL_SR or KXISRS
- Attribute group name: Pool Summary
  - Table name: KXIPOOL
  - Warehouse table name: KXI_POOL_SUMMARY or KXIPOOL
- Attribute group name: Pool VBD
  - Table name: KXIVBD
  - Warehouse table name: KXI_POOL_VBD or KXIVBD
- Attribute group name: Pool VDI
  - Table name: KXIVDI
  - Warehouse table name: KXI_POOL_VDI or KXIVDI
- Attribute group name: Pool VIF
  - Table name: KXIATTRI34
  - Warehouse table name: KXI_POOL_VIF or KXIATTRI34
- Attribute group name: Take Action Status
  - Table name: KXITACTST
  - Warehouse table name: KXI_TAKE_ACTION_STATUS or KXITACTST
- Attribute group name: Thread Pool Status
  - Table name: KXITHPLST
  - Warehouse table name: KXI_THREAD_POOL_STATUS or KXITHPLST
- Attribute group name: XHV Performance Object Status
  - Table name: KXIXHVPOS
  - Warehouse table name: KXI_XHV_PERFORMANCE_OBJECT_STATUS or KXIXHVPOS

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

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

Attribute descriptions
Description, type, and Warehouse name (if applicable) 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.

Agent Connection Status attribute group

Indicates whether the monitoring agent for Citrix XenServer can connect to the xapi (XenServer API) service of the pool master. Without a live connection that works correctly, no metrics can be gathered.

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 Agent Connection Status attribute group:

Node attribute - This attribute is a key attribute.

Description
The managed system name of the agent.

Type

String

Warehouse name
NODE

Timestamp attribute

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

Type

String

Warehouse name
TIMESTAMP

Connected to Pool Master attribute

Description
Indicates whether the monitoring agent was able to establish an active and correctly-functioning connection to the XenServer Pool Master.

Type

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

- True (1)
- False (0)

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

Warehouse name
POOLMASTER_FOUND or XMFFOUND

Pool Master Hostname attribute

Description
The host name of the pool master (if the agent has successfully connected).

Type

String

Warehouse name
POOLMASTER_HOST or XMFHOST

Pool Master IP attribute

Description
The IP Address of the pool master (if the agent has successfully connected).

Type

String

Warehouse name
POOLMASTER_IP or XMFIP

Pool Master Port attribute

Description
The IP port of the pool master (if the agent has successfully connected).

Type

String

Warehouse name
POOLMASTER_PORT or XMFPORT

Agent Trace Log attribute group

The agent data provider trace log for the IBM Tivoli Monitoring Agent for XenServer

Historical group

This attribute group is not eligible for use with Tivoli Data Warehouse.

Attribute descriptions

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

Node attribute - This attribute is a key attribute.

Description
The managed system name of the agent.

Type

String

Timestamp attribute

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

Type

String

Date attribute

Description
Date of log message.

Type

String

Time attribute

Description
Time of log message.

Type

String

Severity attribute

Description
Severity of log message.

Type

String

Server Name attribute

Description
Name of the server that generated the log message.

Type

String

Thread attribute

Description
Name of the thread that generated the log message.

Type

String

Class attribute

Description
Name of the class that generated the log message.

Type

String

Method attribute

Description
Name of the method that generated the log message.

Type

String

Log Entry Text attribute

Description
Log entry text.

Type

String

Log File Name attribute

Description
Log file name.

Type

String

Control Domain attribute group

Information regarding the Control Domain (Dom0)

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 Control Domain attribute group:

Node attribute - This attribute is a key attribute.

Description
The managed system name of the agent.

Type

String

Warehouse name
NODE

Timestamp attribute

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

Type

String

Warehouse name
TIMESTAMP

Hostname attribute - This attribute is a key attribute.

Description
The host name of this XenServer host.

Type

String

Warehouse name
HOSTNAME

Memory Used (MB) attribute

Description
The memory used by the control domain in MB.

Type

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

- Unavailable (-1)

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

Warehouse name
MEMORY_USED or MEMUSED

CPU % Util attribute

Description
The CPU utilization used by the control domain.

Type

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

- Unavailable (-1)

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

Warehouse name
CPU_UTILSATION or CPUUTIL

vCPUs attribute

Description
Total number of virtual CPUs for the control domain.

Type

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

- Unavailable (-1)

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

Warehouse name
VCPU_AMOUNT or NUMVCPU

Disk Read (kb) attribute

Description
The disk reads (in KB) by the control domain.

Type

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

- Unavailable (-1)

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

Warehouse name
DISK_READ_KIB or DSKREAD

Disk Write (kb) attribute

Description
The disk writes (in KB) by the control domain.

Type

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

- Unavailable (-1)

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

Warehouse name
DISK_WRITE_KIB or DSKWRITE

Host CPU attribute group

Metrics on the physical CPUs of the XenServer host

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 Host CPU attribute group:

Node attribute - This attribute is a key attribute.

Description
The managed system name of the agent.

Type

String

Warehouse name
NODE

Timestamp attribute

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

Type

String

Warehouse name
TIMESTAMP

UUID attribute - This attribute is a key attribute.

Description
Universal unique identifier of the Host CPU.

Type

String

Warehouse name
UUID or CPUUUID

CPU Family attribute

Description
The family (number) of the physical CPU.

Type

String

Warehouse name
CPU_FAMILY or CPUFAM

CPU Host (UUID) attribute

Description
The Universal unique identifier of the host where the CPU is located.

Type

String

Warehouse name
CPU_HOST_UUID or HOSTUUID

CPU Host (Name Label) attribute

Description
The human-readable name of the host where the CPU is located.

Type

String

Warehouse name
CPU_HOST_NAME_LABEL or HOSTNAME

CPU Model Number attribute

Description
The model number of the physical CPU.

Type

String

Warehouse name
CPU_MODEL_NUMBER or MODELNUM

CPU Model Name attribute

Description
The model name of the physical CPU.

Type

String

Warehouse name
CPU_MODEL_NAME or MODELNAME

CPU Number attribute

Description
The number of the core within the host.

Type

String

Warehouse name
CPU_NUMBER or CPUNUM

CPU Speed attribute

Description
The speed of the physical CPU in Megahertz.

Type

String

Warehouse name
CPU_SPEED or CPUSPEED

CPU Stepping attribute

Description
The stepping of the physical CPU.

Type

String

Warehouse name
CPU_STEPPING or STEPPING

CPU % Util attribute

Description
The utilization of this CPU.

Type

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

- Unavailable (-1)

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

Warehouse name
CPU_PERCENT_USED or CPUUTIL

CPU Vendor attribute

Description
The vendor of the physical CPU.

Type

String

Warehouse name
CPU_VENDOR or CPUVENDOR

CPU % Free attribute

Description
Percent free of this CPU.

Type

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

- Unavailable (-1)

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

Warehouse name
CPU_PERCENT_FREE or CPUFREE

Host Details attribute group

Details about the XenServer host

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 Host Details attribute group:

Node attribute - This attribute is a key attribute.

Description
The managed system name of the agent.

Type

String

Warehouse name
NODE

Timestamp attribute

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

Type

String

Warehouse name
TIMESTAMP

Last Updated attribute

Description
Time when this information was last updated.

Type

Timestamp

Warehouse name
LAST_UPDATED or LSTUPDATE

Live attribute

Description
Whether the pool master sees that this XenServer host is powered on and responding.

Type

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

- Yes (1)
- No (0)

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

Warehouse name
LIVE

Free Memory (MB) attribute

Description
The amount of physical memory that is currently free in MB.

Type

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

- Unavailable (-1)

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

Warehouse name
MEMORY_FREE or MEMFREE

Physical Memory (MB) attribute

Description
The amount of physical memory in MB on this XenServer host.

Type

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

- Unavailable (-1)

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

Warehouse name
MEMORY_TOTAL or MEMPHYS

Overall CPU % Util attribute

Description
The overall CPU utilization of the XenServer host.

Type

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

- Unavailable (-1)

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

Warehouse name
AGGREGATE_CPU_UTILISATION or CPUUTIL

UUID attribute - This attribute is a key attribute.

Description
Universal unique identifier of the host.

Type

String

Warehouse name
UUID or HOSTUUID

IP Address attribute

Description
The IP address by which this host can be contacted from any other host in the pool.

Type

String

Warehouse name
ADDRESS or HOSTIP

Major Version attribute

Description
Major version number of the API of this host.

Type

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

- Unavailable (-1)

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

Warehouse name
API_VERSION_MAJOR or MAJVER

Minor Version attribute

Description
Minor version number of the API of this host.

Type

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

- Unavailable (-1)

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

Warehouse name
API_VERSION_MINOR or MINVER

CPU Configuration attribute

Description
The CPU configuration on this XenServer host.

Type

String

Warehouse name
CPU_CONFIGURATION or CPUCONFIG

Crashdump SR attribute

Description
The human-readable name of the storage repository where virtual disk images for crash dumps are created.

Type

String

Warehouse name
CRASHDUMP_SR_NAME_LABEL or CRSHSR

Enabled attribute

Description
Whether this XenServer host is currently enabled to run virtual machines (not in maintenance mode).

Type

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

- Yes (1)
- No (0)

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

Warehouse name
ENABLED

Hostname attribute

Description
The host name of this XenServer host.

Type

String

Warehouse name
HOSTNAME

XenServer Description attribute

Description
A notes field containing a human-readable description of this XenServer host.

Type

String

Warehouse name
NAME_DESCRIPTION or XSRVRDESC

XenServer Name attribute

Description
A human-readable name for the XenServer host.

Type

String

Warehouse name
NAME_LABEL or XSRVRNAME

Scheduler Policy attribute

Description
Scheduler policy currently enforced on this XenServer host.

Type

String

Warehouse name
SCHED_POLICY or SCHDPOL

Suspend Image SR Name Label attribute

Description
The human-readable name of the storage repository where virtual disk images for suspend images are created

Type

String

Warehouse name
SUSPEND_IMAGE_SR_NAME_LABEL or SINAME

Is Pool Master attribute

Description
Indicates whether this XenServer host is designated as a pool master.

Type

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

- Yes (1)
- No (0)

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

Warehouse name
POOL_MASTER or ISPLMSTR

Network In (KBps) attribute

Description
The network traffic in, measured by KB per second across all of the physical adapters of this XenServer host.

Type

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

- Unavailable (-1)

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

Warehouse name
NETWORK_IN or NETIN

Network Out (KBps) attribute

Description
The network traffic out, measured by KB per second across all of the physical adapters of this XenServer host.

Type

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

- Unavailable (-1)

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

Warehouse name
NETWORK_OUT or NETOUT

Uptime attribute

Description
The duration in minutes that this XenServer host has been available.

Type

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

- Unavailable (-1)

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

Warehouse name
UPTIME

License Expiration Date attribute

Description
The expiration date of the license for this XenServer host.

Type

Timestamp

Warehouse name
LICENSE_EXPIRATION_DATE or LICEXPR

Days Until License Expiration attribute

Description
The number of days until the license expires for this XenServer host.

Type

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

- Unavailable (-1)

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

Warehouse name
DAYS_UNTIL_EXPIRATION or DAYSEXPR

Host Product Version attribute

Description
The software product version of this XenServer host.

Type

String

Warehouse name
HOST_PRODUCT_VERSION or PRODVER

Host Build Number attribute

Description
The software build number of this XenServer host.

Type

String

Warehouse name
HOST_BUILD_NUMBER or BUILDNUM

Host Logging Multipathing attribute

Description
Indicates whether host multipathing is enabled for this XenServer host.

Type

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

- Yes (1)
- No (0)

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

Warehouse name
HOST_MULTIPATHING or MULTIPTH

XAPI Memory Usage (KB) attribute

Description
The memory used by the XAPI process in KB.

Type

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

- Unavailable (-1)

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

Warehouse name
XAPI_MEMORY_USAGE_KIB or XMEMUSED

XAPI Memory Free (KB) attribute

Description
The memory free for the XAPI process in KB.

Type

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

- Unavailable (-1)

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

Warehouse name
XAPI_MEMORY_FREE_KIB or XMEMFREE

XAPI Live Memory (KB) attribute

Description
The live memory for the XAPI process in KB.

Type

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

- Unavailable (-1)

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

Warehouse name
XAPI_LIVE_MEMORY_KIB or XMEMLIVE

XAPI Allocation (KB) attribute

Description
The allocation of the XAPI process in KB.

Type

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

- Unavailable (-1)

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

Warehouse name
XAPI_ALLOCATION_KIB or XMEMALLOC

Memory Usage (MB) attribute

Description
The amount of physical memory in use in MB.

Type

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

- Unavailable (-1)

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

Warehouse name
MEMORY_USED or MEMUSED

Overall Memory % Free attribute

Description
The percentage of the memory of the XenServer host that is free.

Type

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

- Unavailable (-1)

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

Warehouse name
MEMORY_PERCENT_FREE or PCTMEMFREE

Overall Memory % Util attribute

Description
The overall memory utilization of the XenServer host.

Type

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

- Unavailable (-1)

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

Warehouse name
MEMORY_PERCENT_USED or PCTMEMUTIL

Overall CPU % Free attribute

Description
The percentage of the aggregate CPU of the XenServer host that is free.

Type

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

- Unavailable (-1)

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

Warehouse name
AGGREGATE_CPU_FREE or CPUFREE

Host Discovery attribute group

XenServer physical hosts discovered.

Historical group

This attribute group is not eligible for use with Tivoli Data Warehouse.

Attribute descriptions

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

Node attribute - This attribute is a key attribute.

Description
The managed system name of the agent.

Type

String

Timestamp attribute

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

Type

String

Subnode MSN attribute - This attribute is a key attribute.

Description
Managed system name of the subnode agent.

Type

String

Subnode Affinity attribute

Description
Affinity for the subnode agent.

Type

String

Subnode Type attribute - This attribute is a key attribute.

Description
Node type of this subnode.

Type

String

Subnode Resource Name attribute

Description
Resource name of the subnode agent.

Type

String

Subnode Version attribute

Description
Version of the subnode agent.

Type

String

Host Patches attribute group

Information about patches and updates that are available, installed, or both, on this XenServer host

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 host patches attribute group:

Node attribute - This attribute is a key attribute.

Description
The managed system name of the agent.

Type

String

Warehouse name
NODE

Timestamp attribute

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

Type

String

Warehouse name
TIMESTAMP

Host Patch UUID attribute - This attribute is a key attribute.

Description
The Universal unique identifier of the patch.

Type

String

Warehouse name
PATCH_UUID or PATHCUUID

Applied attribute

Description
Whether the patch has been applied.

Type

String

Warehouse name
PATCH_APPLIED or APPLIED

Host UUID attribute

Description
Universal unique identifier of the host.

Type

String

Warehouse name
PATCH_HOST_UUID or HOSTUUID

Host Name attribute

Description
Host name.

Type

String

Warehouse name
PATCH_HOST_NAME or HOSTNAME

Patch Description attribute

Description
Description of the patch.

Type

String

Warehouse name
PATCH_DESCRIPTION or PATCHDESC

Patch Label attribute

Description
Patch label.

Type

String

Warehouse name
PATCH_LABEL or PATCHNAME

Pool Patch UUID attribute

Description
The Universal unique identifier of the pool patch.

Type

String

Warehouse name
PATCH_POOL_PATCH_UUID or PPATCHUUID

Pool Patch Name Label attribute

Description
The human-readable name of the pool patch.

Type

String

Warehouse name
PATCH_POOL_PATCH_NAME_LABEL or PPATCHNAME

Size attribute

Description
Size of the patch. The size is 0 after it is applied.

Type

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

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

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

Warehouse name
PATCH_SIZE or SIZE

Application Date attribute

Description
When this patch was applied.

Type

Timestamp

Warehouse name
PATCH_APPLICATION_DATE or APPDATE

Version attribute

Description
Version of the patch.

Type

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

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

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

Warehouse name
PATCH_VERSION or VERSION

Host PBD attribute group

Physical block devices (PDBs) associated with this XenServer host

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 Host PBD attribute group:

Node attribute - This attribute is a key attribute.

Description
The managed system name of the agent.

Type

String

Warehouse name
NODE

Timestamp attribute

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

Type

String

Warehouse name
TIMESTAMP

PBD UUID attribute - This attribute is a key attribute.

Description
The universal unique identifier of the physical block device.

Type

String

Warehouse name
PBD_UUID or PBDUUID

PBD Currently Attached attribute

Description
Whether the physical block device is currently attached.

Type

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

- True (true)
- False (false)

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

Warehouse name
CURRENTLY_ATTACHED or CURATTCH

PBD's Host UUID attribute

Description
Universal unique identifier of the host to which the physical block device is attached.

Type

String

Warehouse name
HOST_UUID or HOSTUUID

PBD's Host attribute

Description
Name of the host to which the physical block device is attached.

Type

String

Warehouse name
HOST_NAME_LABEL or HOSTNAME

PBD's SR UUID attribute

Description
Universal unique identifier of the storage repository to which the physical block device is attached.

Type

String

Warehouse name
SR_UUID or SRUUID

PBD's SR attribute

Description
Name of the storage repository to which the physical block device is attached.

Type

String

Warehouse name
PBD_NAME_LABEL or SRNAME

Host PIF attribute group

Physical network interfaces (PIFs) associated with this XenServer host

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 host pif attribute group:

Node attribute - This attribute is a key attribute.

Description
The managed system name of the agent.

Type

String

Warehouse name
NODE

Timestamp attribute

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

Type

String

Warehouse name
TIMESTAMP

physical network interface UUID attribute - This attribute is a key attribute.

Description
The unique object Universal unique identifier of the physical interface.

Type

String

Warehouse name
UUID or PIFUUID

Currently Attached attribute

Description
Whether the physical network interface is currently attached.

Type

String

Warehouse name
CURRENTLY_ATTACHED or CURATTCHED

Device attribute

Description
Machine-readable name of the device (for example `eth0`).

Type

String

Warehouse name
DEVICE

Disallow Unplug attribute

Description
Whether the device might be unplugged.

Type

String

Warehouse name
DISALLOW_UNPLUG or DISUNPLUG

DNS Server Address attribute

Description
IP address of the DNS server.

Type

String

Warehouse name
DNS or DNSIP

Gateway attribute

Description
The IP address of the gateway of this physical network interface.

Type

String

Warehouse name
GATEWAY or GTWYIP

Host (UUID) attribute

Description
The host (UUID) associated with this physical network interface.

Type

String

Warehouse name
HOST_UUID or HOSTUUID

Host (Name) attribute

Description
The human-readable name of the host associated with this physical network interface.

Type

String

Warehouse name
HOST_NAME or HOSTNAME

IP Address attribute

Description
IP address of this physical network interface.

Type

String

Warehouse name
IP or PIFIP

IP Config Mode attribute

Description
Static or DHCP.

Type

String

Warehouse name
CONFIG or IPCNFG

MAC attribute

Description
MAC address of this physical network interface.

Type

String

Warehouse name
MAC

Management attribute

Description
Indicates whether the control software is listening for connections on this interface.

Type

String

Warehouse name
MANAGEMENT or MNGMT

Carrier attribute

Description
Whether this physical network interface is a carrier.

Type

String

Warehouse name
CARRIER

Metrics Device ID attribute

Description
Device ID.

Type

String

Warehouse name
DEVICE_ID or DEVID

Metrics Device Name attribute

Description
Device name.

Type

String

Warehouse name
DEVICE_NAME or DEVNAME

Metrics Duplex attribute

Description
Whether this device is duplex.

Type

String

Warehouse name
DUPLEX

Metrics Read IO (Kbps) attribute

Description
The read bandwidth of the device.

Type

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

- Unavailable (-1)

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

Warehouse name
READ or READIO

Metrics Write IO (Kbps) attribute

Description
The write bandwidth of the device.

Type

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

- Unavailable (-1)

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

Warehouse name
WRITE or WRITEIO

Metrics Last Updated attribute

Description
The last update time of the physical network interface metrics.

Type

Timestamp

Warehouse name
LAST_UPDATE or LSTUPDT

Metrics PCI Bus Path attribute

Description
PCI bus path.

Type

String

Warehouse name
PCI_BUS or PCIBUS

Metrics Speed attribute

Description
Metrics speed.

Type

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

- Unavailable (-1)

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

Warehouse name
SPEED

Metrics Vendor ID attribute

Description
Vendor ID of the physical network interface.

Type

String

Warehouse name
VENDOR or VENDORID

Metrics Vendor Name attribute

Description
Vendor name of the physical network interface.

Type

String

Warehouse name
VENDOR_NAME or VENDORNAME

MTU attribute

Description
Maximum transmission units of the physical network interface.

Type

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

- Unavailable (-1)

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

Warehouse name
MTU

Netmask attribute

Description
The netmask of the physical network interface.

Type

String

Warehouse name
NETMASK

Network UUID attribute

Description
Universal unique identifier of the network of the physical network interface.

Type

String

Warehouse name
NETWORK_UUID or NETUUID

Network Name attribute

Description
Readable name of the network associated with the physical network interface.

Type

String

Warehouse name
NETWORK_NAME or NETNAME

Physical PIF attribute

Description
Whether the network interface is physical.

Type

String

Warehouse name
PHYSICAL or PHYS

VLAN attribute

Description
The VLAN to which the physical network interface for this host is attached.

Type

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

- Unavailable (-1)

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

Warehouse name
VLAN

Host VMs attribute group

Detailed information about the virtual machines that reside on the XenServer host

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 Host VMs attribute group:

Node attribute - This attribute is a key attribute.

Description
The managed system name of the agent.

Type

String

Warehouse name
NODE

Timestamp attribute

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

Type

String

Warehouse name
TIMESTAMP

UUID attribute - This attribute is a key attribute.

Description
Universal unique identifier of the virtual machine.

Type

String

Warehouse name
UUID or VMUUID

Blocked Operations attribute

Description
Operations that are blocked until current ones are finished.

Type

String

Warehouse name
BLOCKED_OPERATIONS or BLCKOPS

Always Running attribute

Description
If true, the system attempts to keep the virtual machine running as much as possible.

Type

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

- False (false)
- True (true)

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

Warehouse name
HA_ALWAYS_RUN or ALWYSRUN

Restart Priority attribute

Description
If `ha_always_run` is set, this describes the restart priority.

Type

String

Warehouse name
HA_RESTART_PRIORITY or RSTRTPRIOR

Snapshot attribute

Description
Whether this virtual disk image is a snapshot.

Type

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

- Yes (1)
- No (0)

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

Warehouse name
IS_A_SNAPSHOT or SNAPSHOT

VM Description attribute

Description
Human-readable description of the virtual machine.

Type

String

Warehouse name
NAME_DESCRIPTION or VMDESC

VM Name attribute

Description
A human-readable name for the virtual machine.

Type

String

Warehouse name
NAME_LABEL or VMNAME

Power State attribute

Description
Current power state of the virtual machine.

Type

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

- Running (RUNNING)
- Halted (HALTED)
- Suspended (SUSPENDED)
- Paused (PAUSED)
- Unknown (UNKNOWN)

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

Warehouse name
POWER_STATE or PWRSTATE

Snapshot Of UUID attribute

Description
The Universal unique identifier of the virtual machine of which this is a snapshot.

Type

String

Warehouse name
SNAPSHOT_OF_UUID or SNPSHTUUID

Snapshot Of attribute

Description
The human-readable name of the virtual machine of which this is a snapshot.

Type

String

Warehouse name
SNAPSHOT_OF_NAME_LABEL or SNPSHTOF

Creation Time attribute

Description
Date and time when this snapshot was created.

Type

Timestamp

Warehouse name
SNAPSHOT_TIME or CRTTIME

Transportable Snapshot ID attribute

Description
Transportable ID of the snapshot virtual machine.

Type

String

Warehouse name
TRANSPORTABLE_SNAPSHOT_ID or TRNSPRTID

User Version attribute

Description
A user version number for this machine.

Type

String

Warehouse name
USER_VERSION or USERVER

NIC Send (KBps) attribute

Description
Aggregate network traffic sent for the virtual machine in KB per second.

Type

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

- Unavailable (-1)

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

Warehouse name
NIC_SEND or NICSEND

NIC Receive (KBps) attribute

Description
Aggregate network traffic received for the virtual machine in KB per second.

Type

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

- Unavailable (-1)

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

Warehouse name
NIC_RECIEVE or NICREC

XenTools Status attribute

Description
The status of XenTools on the virtual machine.

Type

String

Warehouse name
XENTOOLS_STATUS or XTSTATUS

XenTools Version attribute

Description
XenTools version number.

Type

String

Warehouse name
XENTOOLS_VERSION or XTVER

XenTools Build # attribute

Description
XenTools build number.

Type

String

Warehouse name
XENTOOLS_BUILD or XTBUILD

Distro attribute

Description
Operating system of the virtual machine.

Type

String

Warehouse name
DISTRO

Architecture attribute

Description
Architecture of the virtual machine.

Type

String

Warehouse name
ARCHITECTURE or ARCH

Resident On (Host) attribute

Description
Name of the XenServer host where the virtual machine is located.

Type

String

Warehouse name
HOST_RESIDENT_ON or RESIDENTON

Overall CPU % Util attribute

Description
The aggregate virtual CPU utilization across all the virtual CPUs of the virtual machine.

Type

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

- Unavailable (-1)
- Value Exceeds Maximum (9223372036854775807)
- Value Exceeds Minimum (-9223372036854775808)

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

Warehouse name
METRIC_VCPU_UTILIZATION or CPUUTIL

Number of vCPUs attribute

Description
The number of virtual CPUs.

Type

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

- Unavailable (-1)

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

Warehouse name
METRIC_VCPU_PROCESSOR_AMOUNT or NUMVCPU

Disk Reads (Bytes) attribute

Description
The disk reads in bytes of the virtual machine.

Type

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

- Unavailable (-1)

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

Warehouse name
DISK_READS_BYTES or DSKREAD

Disk Writes (Bytes) attribute

Description
The disk writes in bytes of the virtual machine.

Type

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

- Unavailable (-1)

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

Warehouse name
DISK_WRITES_BYTES or DSKWRITE

Memory Free (MB) attribute

Description
The available memory in MB for the virtual machine.

Type

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

- Unavailable (-1)

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

Warehouse name
MEMORY_FREE_MB or MEMFREE

Memory Total (MB) attribute

Description
The total memory in MB for the virtual machine.

Type

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

- Unavailable (-1)

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

Warehouse name
MEMORY_TOTAL_MB or MEMTOTAL

Memory Used (MB) attribute

Description
The used memory in MB for the virtual machine.

Type

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

- Unavailable (-1)

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

Warehouse name
MEMORY_USED_MB or MEMUSED

Memory % Used attribute

Description
The percentage of memory used for the virtual machine.

Type

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

- Unavailable (-1)

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

Warehouse name
MEMORY_PERCENT_USED or PCTMEMUSED

Memory % Free attribute

Description
The percentage of memory free for the virtual machine.

Type

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

- Unavailable (-1)

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

Warehouse name
MEMORY_PERCENT_FREE or PCTMEMFREE

Overall CPU % Free attribute

Description
The aggregate CPU percent free across all the virtual CPUs of the virtual machine.

Type

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

- Unavailable (-1)

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

Warehouse name
METRIC_VCPU_FREE or CPUFREE

PBD SR Join attribute group

Information on storage that is resident on the XenServer host or that the XenServer host is connected to

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 PBD SR Join attribute group:

Node attribute - This attribute is a key attribute.

Description
The managed system name of the agent.

Type

String

Warehouse name
NODE

Timestamp attribute

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

Type

String

Warehouse name
TIMESTAMP

Storage Repository UUID attribute - This attribute is a key attribute.

Description
Universal unique identifier of the Storage Repository.

Type

String

Warehouse name
UUID or SRUUID

Content Type attribute

Description
The type of content of the storage repository.

Type

String

Warehouse name
CONTENT_TYPE or CNTENTTYPE

SR Description attribute

Description
A notes field containing human-readable description.

Type

String

Warehouse name
NAME_DESCRIPTION or SRDESC

SR Name attribute

Description
A human-readable name for the storage repository.

Type

String

Warehouse name
NAME_LABEL or SRNAME

Shared attribute

Description
Whether this storage repository is (capable of being) shared among multiple hosts.

Type

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

- False (false)
- True (true)

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

Warehouse name
SHARED

Type attribute

Description
Type of the storage repository.

Type

String

Warehouse name
TYPE

Capacity (MB) attribute

Description
Total physical size of the repository in MB.

Type

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

- Unavailable (-1)

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

Warehouse name
PHYSICAL_SIZE_MB or CPCTYMB

Used Space (MB) attribute

Description
The amount of space used in MB.

Type

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

- Unavailable (-1)

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

Warehouse name
PHYSICAL_UTILISATION_MB or PHYSUTLMB

Capacity (GB) attribute

Description
Total physical size of the repository in GB.

Type

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

- Unavailable (-1)

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

Warehouse name
PHYSICAL_SIZE_GB or CPCTYGB

Used Space (GB) attribute

Description
The amount of space used in GB.

Type

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

- Unavailable (-1)

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

Warehouse name
PHYSICAL_UTILISATION_GB or PHYSUTLGB

Virtual Allocation (MB) attribute

Description
Sum of virtual_sizes of all virtual disk images in this storage repository (MB).

Type

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

- Unavailable (-1)

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

Warehouse name
VIRTUAL_ALLOCATION_MB or VIRTALLCMB

Virtual Allocation (GB) attribute

Description
Sum of virtual_sizes of all virtual disk images in this storage repository (GB).

Type

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

- Unavailable (-1)

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

Warehouse name
VIRTUAL_ALLOCATION_GB or VIRTALLCGB

Free Space (MB) attribute

Description
The amount of free space on the storage repository (MB).

Type

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

- Unavailable (-1)

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

Warehouse name
FREE_SPACE_MB or FREESPCMB

Free Space (GB) attribute

Description
The amount of free space on the storage repository (GB).

Type

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

- Unavailable (-1)

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

Warehouse name
FREE_SPACE_GB or FREESPCGB

Percent Used attribute

Description
Percentage of this storage repository that is in use.

Type

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

- Unavailable (-1)

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

Warehouse name
PHYSICAL_UTILISATION_PERCENT or PCTUTIL

Multipath Capable attribute

Description
Whether the storage repository is multipath capable.

Type

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

- Yes (1)
- No (0)

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

Warehouse name
MULTIPATH_CAPABLE or MULTIPATH

Percent Free attribute

Description
Percentage of this storage repository that is free.

Type

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

- Unavailable (-1)

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

Warehouse name
PHYSICAL_FREE_PERCENT or PCTFREE

PBD UUID attribute - This attribute is a key attribute.

Description
The universal unique identifier of the physical block device.

Type

String

Warehouse name
PBD_UUID or PBDUUID

PBD Currently Attached attribute

Description
Whether the physical block device is currently attached.

Type

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

- True (true)
- False (false)

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

Warehouse name
CURRENTLY_ATTACHED or CURATTCH

PBD's Host UUID attribute

Description
Universal unique identifier of the host to which the physical block device is attached.

Type

String

Warehouse name
HOST_UUID or HOSTUUID

PBD's Host attribute

Description
Name of the host to which the physical block device is attached.

Type

String

Warehouse name
HOST_NAME_LABEL or HOSTNAME

PBD's SR UUID attribute

Description
Universal unique identifier of the storage repository to which the physical block device is attached.

Type

String

Warehouse name
SR_UUID or SRUUID0

PDB's SR attribute

Description
Name of the storage repository to which the physical block device is attached.

Type

String

Warehouse name
PBD_NAME_LABEL or SRNAME0

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

Warehouse name
NODE

Timestamp attribute

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

Type

String

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 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 values display the actual value 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 shown in parentheses. The following values are defined:

- ACTIVE (0)
- INACTIVE (1)

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

Warehouse name
OBJECT_STATUS or OBJSTTS

Error Code attribute

Description
The error code associated with the query.

Type

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

- NO ERROR (0)
- GENERAL ERROR (1)
- OBJECT NOT FOUND (2)
- COUNTER NOT FOUND (3)
- NAMESPACE ERROR (4)
- OBJECT CURRENTLY UNAVAILABLE (5)
- COM LIBRARY INIT FAILURE (6)
- SECURITY INIT FAILURE (7)
- PROXY SECURITY FAILURE (9)
- NO INSTANCES RETURNED (10)
- ASSOCIATOR QUERY FAILED (11)
- REFERENCE QUERY FAILED (12)
- NO RESPONSE RECEIVED (13)
- CANNOT FIND JOINED QUERY (14)
- CANNOT FIND JOIN ATTRIBUTE IN QUERY 1 RESULTS (15)
- CANNOT FIND JOIN ATTRIBUTE IN QUERY 2 RESULTS (16)
- QUERY 1 NOT A SINGLETON (17)
- QUERY 2 NOT A SINGLETON (18)
- NO INSTANCES RETURNED IN QUERY 1 (19)
- NO INSTANCES RETURNED IN QUERY 2 (20)
- CANNOT FIND ROLLUP QUERY (21)
- CANNOT FIND ROLLUP ATTRIBUTE (22)
- FILE OFFLINE (23)

- NO HOSTNAME (24)
- MISSING LIBRARY (25)
- ATTRIBUTE COUNT MISMATCH (26)
- ATTRIBUTE NAME MISMATCH (27)
- COMMON DATA PROVIDER NOT STARTED (28)
- CALLBACK REGISTRATION ERROR (29)
- MDL LOAD ERROR (30)
- AUTHENTICATION FAILED (31)
- CANNOT RESOLVE HOST NAME (32)
- SUBNODE UNAVAILABLE (33)
- SUBNODE NOT FOUND IN CONFIG (34)
- ATTRIBUTE ERROR (35)
- CLASSPATH ERROR (36)
- CONNECTION FAILURE (37)
- FILTER SYNTAX ERROR (38)
- FILE NAME MISSING (39)
- SQL QUERY ERROR (40)
- SQL FILTER QUERY ERROR (41)
- SQL DB QUERY ERROR (42)
- SQL DB FILTER QUERY ERROR (43)
- PORT OPEN FAILED (44)
- ACCESS DENIED (45)
- TIMEOUT (46)
- NOT IMPLEMENTED (47)
- 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)

Any other values display the actual value 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 shown in parentheses. The following values are defined:

- NOT COLLECTED (0691231190000000)

Any other values display the actual value 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 shown in parentheses. The following values are defined:

- NOT COLLECTED (0691231190000000)

Any other values display the actual value 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 2 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 2 decimal places of precision with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values shown in parentheses. The following values are defined:

- NO DATA (-100)

Any other values display the actual value 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 2 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

Pool Host Member Details attribute group

Details about each physical XenServer host in the pool

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 Pool Host Member Details attribute group:

Node attribute - This attribute is a key attribute.

Description
The managed system name of the agent.

Type

String

Warehouse name
NODE

Timestamp attribute

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

Type

String

Warehouse name
TIMESTAMP

Last Updated attribute

Description
Time when this information was last updated.

Type

Timestamp

Warehouse name
LAST_UPDATED or LASTUPDT

Live attribute

Description
Whether the pool master sees this XenServer host as powered on and responding.

Type

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

- Yes (1)
- No (0)

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

Warehouse name
LIVE

Free Memory (MB) attribute

Description
The amount of physical memory that is currently free in MB.

Type

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

- Unavailable (-1)

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

Warehouse name
MEMORY_FREE or MEMFREE

Physical Memory (MB) attribute

Description
The amount of physical memory in MB on this XenServer host.

Type

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

- Unavailable (-1)

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

Warehouse name
MEMORY_TOTAL or MEMPHYS

Overall CPU % Util attribute

Description
The overall CPU utilization of the XenServer host.

Type

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

- Unavailable (-1)

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

Warehouse name
AGGREGATE_CPU_UTILISATION or CPUUTIL

UUID attribute - This attribute is a key attribute.

Description
Universal unique identifier of the host.

Type

String

Warehouse name
UUID or HOSTUUID

IP Address attribute

Description
The IP address by which this XenServer host can be contacted from any other XenServer host in the pool.

Type

String

Warehouse name
ADDRESS or HOSTIP

Major Version attribute

Description
Major version number of the API of this host.

Type

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

- Unavailable (-1)

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

Warehouse name
API_VERSION_MAJOR or MAJVER

Minor Version attribute

Description
Minor version number of the API of this host.

Type

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

- Unavailable (-1)

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

Warehouse name
API_VERSION_MINOR or MINVER

CPU Configuration attribute

Description
The CPU configuration on this XenServer host.

Type

String

Warehouse name
CPU_CONFIGURATION or CPUCONFIG

Crashdump SR attribute

Description
The human-readable name of the storage repository where virtual disk images for crash dumps are created.

Type

String

Warehouse name
CRASHDUMP_SR_NAME_LABEL or CRSHDMP

Enabled attribute

Description
Whether this XenServer host is currently enabled to run virtual machines (not in maintenance mode).

Type

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

- Yes (1)
- No (0)

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

Warehouse name
ENABLED or HOSTENBL

Hostname attribute

Description
The host name of this XenServer host.

Type

String

Warehouse name
HOSTNAME

XenServer Description attribute

Description
A notes field containing a human-readable description of this XenServer host.

Type

String

Warehouse name
NAME_DESCRIPTION or SRVRDESC

XenServer Name attribute

Description
A human-readable name for the XenServer host.

Type

String

Warehouse name
NAME_LABEL or SRVRNAME

Scheduler Policy attribute

Description
Scheduler policy currently enforced on this XenServer host.

Type

String

Warehouse name
SCHED_POLICY or SCHDPOL

Suspend Image SR Name Label attribute

Description
The human-readable name of the storage repository where virtual disk images for suspend images are created.

Type

String

Warehouse name
SUSPEND_IMAGE_SR_NAME_LABEL or SUSPNDNAME

Is Pool Master attribute

Description
Indicates whether this XenServer host is designated as a pool master.

Type

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

- Yes (1)
- No (0)

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

Warehouse name
POOL_MASTER or ISPLMSTR

Network In (KBps) attribute

Description
The network traffic in, measured by KB per second across all of the physical adapters of this XenServer host.

Type

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

- Unavailable (-1)

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

Warehouse name
NETWORK_IN or NETIN

Network Out (KBps) attribute

Description
The network traffic out, measured by KB per second across all of the physical adapters of this XenServer host.

Type

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

- Unavailable (-1)

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

Warehouse name
NETWORK_OUT or NETOUT

Uptime in Minutes attribute

Description
The duration in minutes that this XenServer host has been available.

Type

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

- Unavailable (-1)

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

Warehouse name
UPTIME

License Expiration Date attribute

Description
The expiration date of the license for this XenServer host.

Type

Timestamp

Warehouse name
LICENSE_EXPIRATION_DATE or LICEXP

Days Until License Expiration attribute

Description
The days until the license expires for this XenServer host.

Type

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

- Unavailable (-1)

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

Warehouse name
DAYS_UNTIL_EXPIRATION or DAYSEXP

Host Product Version attribute

Description
The software product version of this XenServer host.

Type

String

Warehouse name
HOST_PRODUCT_VERSION or PRODVER

Host Build Number attribute

Description
The software build number of this XenServer host.

Type

String

Warehouse name
HOST_BUILD_NUMBER or BLDNMBR

Host Logging Multipathing attribute

Description
Indicates whether host multipathing is enabled for this XenServer host.

Type

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

- Yes (1)
- No (0)

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

Warehouse name
HOST_MULTIPATHING or MLTIPATH

XAPI Memory Usage (KB) attribute

Description
The memory used by the XAPI process in KB.

Type

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

- Unavailable (-1)

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

Warehouse name
XAPI_MEMORY_USAGE_KIB or XMEMUSED

XAPI Memory Free (KB) attribute

Description
The memory free for the XAPI process in KB.

Type

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

- Unavailable (-1)

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

Warehouse name
XAPI_MEMORY_FREE_KIB or XMEMFREE

XAPI Live Memory (KB) attribute

Description
The live memory for the XAPI process in KB.

Type

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

- Unavailable (-1)

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

Warehouse name
XAPI_LIVE_MEMORY_KIB or XMEMLIVE

XAPI Allocation (KB) attribute

Description
The allocation of the XAPI in KB.

Type

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

- Unavailable (-1)

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

Warehouse name
XAPI_ALLOCATION_KIB or XALLOC

Memory Usage(MB) attribute

Description
The amount of physical memory in use in MB.

Type

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

- Unavailable (-1)

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

Warehouse name
MEMORY_USED or MEMUSED

Overall Memory % Free attribute

Description
The percentage of the memory of the XenServer host that is free.

Type

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

- Unavailable (-1)

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

Warehouse name
MEMORY_PERCENT_FREE or PCTMEMFREE

Overall Memory % Util attribute

Description
The overall memory utilization of the XenServer host.

Type

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

- Unavailable (-1)

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

Warehouse name
MEMORY_PERCENT_USED or PCTMEMUTIL

Overall CPU % Free attribute

Description
The percentage of the aggregate CPU of the XenServer host that is free.

Type

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

- Unavailable (-1)

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

Warehouse name
AGGREGATE_CPU_FREE or PCTCPUFREE

Pool Master Events attribute group

Information on Citrix XenServer Pool Master transitions

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 Pool Master Events attribute group:

Node attribute - This attribute is a key attribute.

Description
The managed system name of the agent.

Type

String

Warehouse name
NODE

Timestamp attribute

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

Type

String

Warehouse name
TIMESTAMP

Previous Pool Master IP attribute

Description
The IP address of the previous XenServer Pool Master.

Type

String

Warehouse name
EVENT_PREVIOUS_IP or PREVPLMSTR

Previous Pool Master Hostname attribute

Description
The host name of the previous XenServer Pool Master.

Type

String

Warehouse name
EVENT_PREVIOUS_HOST or PRVHSTNAME

New Pool Master IP attribute

Description
The IP address of the new XenServer Pool Master.

Type

String

Warehouse name
EVENT_NEW_IP or NEWIP

New Pool Master Hostname attribute

Description
The host name of the new XenServer Pool Master.

Type

String

Warehouse name
EVENT_NEW_HOST or NEWHSTNAME

Event Time attribute

Description
The time at which the XenServer Pool Master changed.

Type

Timestamp

Warehouse name
EVENT_TIMESTAMP or EVENTTIME

Pool Network attribute group

Networks on the pool.

Historical group

This attribute group is not eligible for use with Tivoli Data Warehouse.

Attribute descriptions

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

Node attribute - This attribute is a key attribute.

Description
The managed system name of the agent.

Type

String

Timestamp attribute

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

Type

String

UUID attribute - This attribute is a key attribute.

Description
Universal unique identifier of the network.

Type

String

Network Name attribute

Description
A human-readable name for the network.

Type

String

Network Description attribute

Description
A notes field containing human-readable description.

Type

String

Bridge attribute

Description
Name of the bridge corresponding to this network on the local host.

Type

String

Pool Patch attribute group

Information about Citrix XenServer patches and updates that are available or have been applied to XenServer hosts in the pool

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 Pool Patch attribute group:

Node attribute - This attribute is a key attribute.

Description
The managed system name of the agent.

Type

String

Warehouse name
NODE

Timestamp attribute

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

Type

String

Warehouse name
TIMESTAMP

Patch UUID attribute - This attribute is a key attribute.

Description
Universal unique identifier of the pool patch.

Type

String

Warehouse name
PATCH_UUID or PATCHUUID

Patch Name attribute

Description
A human-readable name for the pool patch.

Type

String

Warehouse name
PATCH_NAME_LABEL or PATCHNAME

Patch Description attribute

Description
A notes field containing human-readable description.

Type

String

Warehouse name
PATCH_NAME_DESCRIPTION or PATCHDESC

After Apply Guidance attribute

Description
What you must do after this patch has been applied.

Type

String

Warehouse name
PATCH_AFTER_APPLY_GUIDANCE or APLYGUID

Entire Pool attribute

Description
Whether this patch must be applied across the entire XenServer pool.

Type

String

Warehouse name
PATCH_APPLIED or ENTIREPOOL

Size attribute

Description
Size of the patch.

Type

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

- Unavailable (-1)

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

Warehouse name
PATCH_SIZE or PATCHSIZE

Version attribute

Description
Patch version number.

Type

String

Warehouse name
PATCH_VERSION or PATCHVER

Pool PBD attribute group

Information on physical block device (PBDs) within the pool

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 Pool PBD attribute group:

Node attribute - This attribute is a key attribute.

Description
The managed system name of the agent.

Type

String

Warehouse name
NODE

Timestamp attribute

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

Type

String

Warehouse name
TIMESTAMP

PBD UUID attribute - This attribute is a key attribute.

Description
Universal unique identifier of the physical block device.

Type

String

Warehouse name
UUID or PBDUUID

Currently Attached attribute

Description
Whether the physical block device is currently attached on this host.

Type

String

Warehouse name
CURRENTLY_ATTACHED or CURATTCHED

Host UUID attribute

Description
Universal unique identifier of the host where the physical block device is available.

Type

String

Warehouse name
HOST_UUID or HOSTUUID

Host Name Label attribute

Description
A human-readable name of the physical machine where the physical block device is available.

Type

String

Warehouse name
HOST_NAME_LABEL or HOSTNAMELB

Storage Repository UUID attribute

Description
The Universal unique identifier of the storage repository that the physical block device realizes.

Type

String

Warehouse name
SR_UUID or SRUUID

Storage Repository Name Label attribute

Description
A human-readable name of the storage repository that the physical block device realizes.

Type

String

Warehouse name
SR_NAME_LABEL or SRNAME

Pool PIF attribute group

Physical network interfaces that exist on the host hypervisor

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 Pool PIF attribute group:

Node attribute - This attribute is a key attribute.

Description
The managed system name of the agent.

Type

String

Warehouse name
NODE

Timestamp attribute

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

Type

String

Warehouse name
TIMESTAMP

UUID attribute - This attribute is a key attribute.

Description
Universal unique identifier of the physical network interface.

Type

String

Warehouse name
UUID or ATTRIBUTE_

Bond Slave Of attribute

Description
Indicates which bond this interface is part of.

Type

String

Warehouse name
BOND_SLAVE_OF or ATTRIBUTE1

Currently Attached attribute

Description
Whether this interface is online.

Type

String

Warehouse name
CURRENTLY_ATTACHED or ATTRIBUTE2

Device attribute

Description
Machine-readable name of the interface (for example `pif2`).

Type

String

Warehouse name
DEVICE or ATTRIBUTE3

Disallow Unplug attribute

Description
Whether the physical network interface is prevented from being unplugged.

Type

String

Warehouse name
DISALLOW_UNPLUG or ATTRIBUTE4

DNS attribute

Description
IP address of DNS servers to use.

Type

String

Warehouse name
DNS or ATTRIBUTE5

Gateway attribute

Description
IP gateway.

Type

String

Warehouse name
GATEWAY or ATTRIBUTE6

XenServer Host attribute

Description
Human-readable name of the host to which this physical network interface is connected.

Type

String

Warehouse name
HOST_NAME_LABEL or ATTRIBUTE8

IP attribute

Description
IP address of the physical network interface.

Type

String

Warehouse name
IP or ATTRIBUTE9

IP Config Mode attribute

Description
Sets whether and how this interface gets an IP address.

Type

String

Warehouse name
IP_CONFIGURATION_MODE or ATTRIBUT10

MAC attribute

Description
Ethernet MAC address of physical interface.

Type

String

Warehouse name
MAC or ATTRIBUT11

Management attribute

Description
Indicates whether the control software is listening for connections on this interface.

Type

String

Warehouse name
MANAGEMENT or ATTRIBUT12

MTU attribute

Description
Maximum transmission units of the physical network interface in octets.

Type

String

Warehouse name
MTU or ATTRIBUT13

Netmask attribute

Description
IP netmask of the physical network interface.

Type

String

Warehouse name
NETMASK or ATTRIBUT14

Network Name Label attribute

Description
The human-readable name of the virtual network to which this physical network interface is connected.

Type

String

Warehouse name
NETWORK_NAME_LABEL or ATTRIBUT16

Physical attribute

Description
Whether this represents a physical network interface.

Type

String

Warehouse name
PHYSICAL or ATTRIBUT18

VLAN attribute

Description
VLAN tag for all traffic passing through this interface.

Type

String

Warehouse name
VLAN or ATTRIBUT19

VLAN Master Of attribute

Description
Indicates which VLAN this interface receives untagged traffic from.

Type

String

Warehouse name
VLAN_MASTER_OF or ATTRIBUT20

Pool SR attribute group

Information on storage repositories (SRs) in the pool

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 Pool SR attribute group:

Node attribute - This attribute is a key attribute.

Description
The managed system name of the agent.

Type

String

Warehouse name
NODE

Timestamp attribute

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

Type

String

Warehouse name
TIMESTAMP

Storage Repository UUID attribute - This attribute is a key attribute.

Description
Universal unique identifier of the storage repository.

Type

String

Warehouse name
UUID or SRUUID

Content Type attribute

Description
The type of content of the storage repository.

Type

String

Warehouse name
CONTENT_TYPE or CNTENTTYPE

SR Description attribute

Description
A notes field containing human-readable description.

Type

String

Warehouse name
NAME_DESCRIPTION or SRDESC

SR Name attribute

Description
A human-readable name for the storage repository.

Type

String

Warehouse name
NAME_LABEL or SRNAME

Shared attribute

Description
Whether this storage repository is (capable of being) shared among multiple hosts.

Type

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

- False (false)
- True (true)

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

Warehouse name
SHARED

Type attribute

Description
Type of the storage repository.

Type

String

Warehouse name
TYPE

Capacity (MB) attribute

Description
Total physical size of the repository in MB.

Type

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

- Unavailable (-1)

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

Warehouse name
PHYSICAL_SIZE_MB or CPCTYMB

Used Space (MB) attribute

Description
The amount of space used in MB.

Type

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

- Unavailable (-1)

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

Warehouse name
PHYSICAL_UTILISATION_MB or PHYSUTLMB

Capacity (GB) attribute

Description
Total physical size of the repository in GB.

Type

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

- Unavailable (-1)

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

Warehouse name
PHYSICAL_SIZE_GB or CPCTYGB

Used Space (GB) attribute

Description
The amount of space used in GB.

Type

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

- Unavailable (-1)

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

Warehouse name
PHYSICAL_UTILISATION_GB or PHYSUTLGB

Virtual Allocation (MB) attribute

Description
Sum of virtual sizes of all virtual disk images in this storage repository (MB).

Type

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

- Unavailable (-1)

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

Warehouse name
VIRTUAL_ALLOCATION_MB or VIRTALLCMB

Virtual Allocation (GB) attribute

Description
Sum of virtual sizes of all virtual disk images in this storage repository (GB).

Type

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

- Unavailable (-1)

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

Warehouse name
VIRTUAL_ALLOCATION_GB or VIRTALLCGB

Free Space (MB) attribute

Description
The amount of free space on the storage repository (MB).

Type

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

- Unavailable (-1)

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

Warehouse name
FREE_SPACE_MB or FREESPCMB

Free Space (GB) attribute

Description
The amount of free space on the storage repository (GB).

Type

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

- Unavailable (-1)

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

Warehouse name
FREE_SPACE_GB or FREESPCGB

Percent Used attribute

Description
Percentage of this storage repository that is in use.

Type

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

- Unavailable (-1)

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

Warehouse name
PHYSICAL_UTILISATION_PERCENT or PCTUTIL

Multipath Capable attribute

Description
Whether the storage repository is multipath capable.

Type

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

- Yes (1)
- No (0)

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

Warehouse name
MULTIPATH_CAPABLE or MULTIPATH

Percent Free attribute

Description
Percentage of this storage repository that is free.

Type

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

- Unavailable (-1)

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

Warehouse name
PHYSICAL_FREE_PERCENT or PCTFREE

Pool Summary attribute group

If the agent is connected to a XenServer Pool, this attribute group contains information about the XenServer Pool. If the agent is connected to a stand-alone XenServer host, this attribute contains high-level summary information about that host.

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 pool summary attribute group:

Node attribute - This attribute is a key attribute.

Description
The managed system name of the agent.

Type

String

Warehouse name
NODE

Timestamp attribute

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

Type

String

Warehouse name
TIMESTAMP

Pool Master attribute

Description
Name of the pool master.

Type

String

Warehouse name
POOL_MASTER or POOLMSTR

Pool Name attribute - This attribute is a key attribute.

Description
The name of the pool.

Type

String

Warehouse name
POOL_NAME or POOLNAME

Name Description attribute

Description
A human-readable description of the pool.

Type

String

Warehouse name
NAME_DESCRIPTION or NAMEDESC

Total Hosts attribute

Description
The total number of XenServer hosts in the pool.

Type

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

- Unavailable (-1)

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

Warehouse name
TOTAL_HOSTS or TOTHOST

Hosts Enabled attribute

Description
The total number of XenServer hosts enabled in the pool.

Type

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

- Unavailable (-1)

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

Warehouse name
TOTAL_HOSTS_ENABLED or HOSTENBL

Hosts Disabled attribute

Description
The total number of XenServer hosts disabled in the pool.

Type

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

- Unavailable (-1)

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

Warehouse name
TOTAL_HOSTS_DISABLED or HOSTDISABL

High Availability Enabled attribute

Description
Whether high availability is enabled for the pool.

Type

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

- Yes (1)
- No (0)

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

Warehouse name
HA_ENABLED or HAENBL

High Availability Overcommit Enabled attribute

Description
High availability overcommit configuration for the pool.

Type

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

- Yes (1)
- No (0)

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

Warehouse name
HA_OVERCOMMIT_ENABLED or HAOCENBL

Workload Balancing Enabled attribute

Description
Workload balancing configuration for the pool.

Type

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

- Yes (1)
- No (0)

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

Warehouse name
WLB_ENABLED or WRKBALENBL

Total VMs attribute

Description
The total number of virtual machines in the XenServer pool.

Type

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

- Unavailable (-1)

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

Warehouse name
TOTAL_VMS or TOTVM

VMs Running attribute

Description
The total number of virtual machines in the XenServer pool that are running.

Type

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

- Unavailable (-1)

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

Warehouse name
TOTAL_VMS_RUNNING or VMRUN

VMs Halted attribute

Description
The total number of virtual machines in the XenServer pool that are halted.

Type

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

- Unavailable (-1)

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

Warehouse name
TOTAL_VMS_HALTED or VMHALT

VMs Suspended attribute

Description
The total number of virtual machines in the XenServer pool that are suspended.

Type

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

- Unavailable (-1)

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

Warehouse name
TOTAL_VMS_SUSPENDED or VMSUS

VMs Paused attribute

Description
The total number of virtual machines in the XenServer pool that are paused.

Type

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

- Unavailable (-1)

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

Warehouse name
TOTAL_VMS_PAUSED or VMPAUS

VMs Unknown attribute

Description
The total number of virtual machines in the XenServer pool that are in an unknown state.

Type

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

- Unavailable (-1)

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

Warehouse name
TOTAL_VMS_UNKNOWN or VMUNKWN

Pool VBD attribute group

Data about virtual block devices (VBDs) in the pool

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 Pool VBD attribute group:

Node attribute - This attribute is a key attribute.

Description
The managed system name of the agent.

Type

String

Warehouse name
NODE

Timestamp attribute

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

Type

String

Warehouse name
TIMESTAMP

Virtual Block Device UUID attribute - This attribute is a key attribute.

Description
Universal unique identifier of the virtual block device.

Type

String

Warehouse name
UUID or VBDUUID

Bootable attribute

Description
Whether this virtual block device can be started.

Type

String

Warehouse name
BOOTABLE

Currently Attached attribute

Description
Whether the device is currently attached (erased on restart).

Type

String

Warehouse name
CURRENTLY_ATTACHED or CURATTACH

Device attribute

Description
Device seen by the guest.

Type

String

Warehouse name
DEVICE

Empty attribute

Description
Whether this device is an empty drive.

Type

String

Warehouse name
EMPTY

Mode attribute

Description
The mode the virtual block device must be mounted with.

Type

String

Warehouse name
MODE

QoS Alg. Type attribute

Description
QoS algorithm to use.

Type

String

Warehouse name
QOS_ALGORITHM_TYPE or QOSALG

Status Code attribute

Description
Error or success code associated with the last attach operation (erased on restart).

Type

String

Warehouse name
STATUS_CODE or STATUSCODE

Status Detail attribute

Description
Error or success information associated with the last attach operation status (erased on restart).

Type

String

Warehouse name
STATUS_DETAIL or STATUSDET

Storage Lock attribute

Description
Whether a storage level lock was acquired.

Type

String

Warehouse name
STORAGE_LOCK or STRGELOCK

VBD Type attribute

Description
How the virtual block device appears to the guest.

Type

String

Warehouse name
TYPE or VBDTYPE

Unpluggable attribute

Description
Whether this virtual block device supports hot-unplug.

Type

String

Warehouse name
UNPLUGGABLE or UNPLUGBLE

User Device attribute

Description
Descriptive device name.

Type

String

Warehouse name
USERDEVICE or USERDEV

VDI (UUID) attribute

Description
The Universal unique identifier of the virtual disk.

Type

String

Warehouse name
VIRTUL_DISK_UUID or VDIUUID

VDI (Name Label) attribute

Description
Human-readable name of the virtual disk.

Type

String

Warehouse name
NAME_LABEL or VDINAME

VM (UUID) attribute

Description
The Universal unique identifier of the virtual machine.

Type

String

Warehouse name
VM_UUID or VMUUID

VM (Name Label) attribute

Description
Human-readable name of the virtual machine.

Type

String

Warehouse name
VM_NAME_LABEL or VMNAME

Pool VDI attribute group

Information about virtual disk images (VDIs) within the pool: files in the storage repository seen as actual disks to an operating system.

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 Pool VDI attribute group:

Node attribute - This attribute is a key attribute.

Description
The managed system name of the agent.

Type

String

Warehouse name
NODE

Timestamp attribute

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

Type

String

Warehouse name
TIMESTAMP

VDI UUID attribute - This attribute is a key attribute.

Description
Universal unique identifier of the virtual disk image.

Type

String

Warehouse name
UUID or VDIUUID

VDI Name attribute

Description
A human-readable name for the virtual disk image.

Type

String

Warehouse name
NAME_LABEL or VDINAME

VDI Description attribute

Description
A notes field containing human-readable description.

Type

String

Warehouse name
NAME_DESCRIPTION or VDIDESC

Location attribute

Description
Location information of the virtual disk image.

Type

String

Warehouse name
LOCATION or VDILOC

Managed attribute

Description
Whether the virtual disk image is a managed disk image.

Type

String

Warehouse name
MANAGED

Missing attribute

Description
Whether a storage repository scan operation reported this virtual disk image as not present on disk.

Type

String

Warehouse name
MISSING

Parent UUID attribute

Description
Universal unique identifier of the parent disk, if this virtual disk image is part of a chain.

Type

String

Warehouse name
PARENT_UUID or PARENTUUID

Parent Name Label attribute

Description
Human-readable name of the parent disk, if this virtual disk image is part of a chain.

Type

String

Warehouse name
PARENT_NAME_LABEL or PARENTNAME

Read Only attribute

Description
Whether this disk can only be mounted as read-only.

Type

String

Warehouse name
READ_ONLY or READONLY

Sharable attribute

Description
Whether this disk can be shared.

Type

String

Warehouse name
SHARABLE

Storage Repository (UUID) attribute

Description
The Universal unique identifier of the storage repository in which the virtual disk image is located.

Type

String

Warehouse name
SR_UUID or SRUUID

Storage Repository (Name Label) attribute

Description
The human-readable name of the storage repository in which the virtual disk image is located.

Type

String

Warehouse name
SR_NAME_LABEL or SRNAME

Storage Lock attribute

Description
Whether this disk is locked at the storage level.

Type

String

Warehouse name
STORAGE_LOCK or STRGELOCK

Type attribute

Description
Type of the virtual disk image.

Type

String

Warehouse name
TYPE or VDITYPE

Physical Utilization MB attribute

Description
Physical utilization of this virtual disk image (MB).

Type

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

- Unavailable (-1)

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

Warehouse name
PHYSICAL_UTILISATION_MB or PHYSUTILMB

Physical Utilization GB attribute

Description
Physical utilization of this virtual disk image (GB).

Type

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

- Unavailable (-1)

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

Warehouse name
PHYSICAL_UTILISATION_GB or PHYSUTILGB

Virtual Size MB attribute

Description
Size of disk as it is presented to the guest (MB).

Type

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

- Unavailable (-1)

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

Warehouse name
VIRTUAL_SIZE_MB or VIRTSIZEMB

Virtual Size GB attribute

Description
Size of disk as it is presented to the guest (GB).

Type

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

- Unavailable (-1)

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

Warehouse name
VIRTUAL_SIZE_GB or VIRTSIZEGB

Percent Used attribute

Description
Percent of disk used.

Type

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

- Unavailable (-1)

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

Warehouse name
PERCENT_USED or PCTUSED

Percent Free attribute

Description
Percent of disk free.

Type

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

- Unavailable (-1)

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

Warehouse name
PERCENT_FREE or PCTFREE

Pool VIF attribute group

Virtual network interface settings

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 Pool VIF attribute group:

Node attribute - This attribute is a key attribute.

Description
The managed system name of the agent.

Type

String

Warehouse name
NODE

Timestamp attribute

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

Type

String

Warehouse name
TIMESTAMP

UUID attribute - This attribute is a key attribute.

Description
Universal unique identifier of the virtual network interface.

Type

String

Warehouse name
UUID or ATTRIBUTE_

Currently Attached attribute

Description
Whether the device is currently attached (erased on restart).

Type

String

Warehouse name
CURRENTLY_ATTACHED or ATTRIBUTE1

Device attribute

Description
Order in which virtual network interface backends are created by the XAPI process.

Type

String

Warehouse name
DEVICE or ATTRIBUTE3

MAC attribute

Description
Ethernet MAC address of virtual interface, as exposed to guest.

Type

String

Warehouse name
MAC or ATTRIBUTE4

MTU attribute

Description
Maximum transmission units of the virtual network interface in octets.

Type

String

Warehouse name
MTU or ATTRIBUTE7

Network (Name Label) attribute

Description
The human-readable name of the virtual network to which this virtual network interface is connected.

Type

String

Warehouse name
NETWORK_NAME_LABEL or ATTRIBUT17

QoS Alg. Type attribute

Description
QoS algorithm the virtual network interface uses.

Type

String

Warehouse name
QOS_ALGORITHM_TYPE or ATTRIBUT11

Status Code attribute

Description
Error or success code associated with the last attach operation for this virtual network interface (erased on restart).

Type

String

Warehouse name
STATUS_CODE or ATTRIBUT14

Status Detail attribute

Description
Error or success information associated with the last attach operation status for this virtual network interface (erased on restart).

Type

String

Warehouse name
STATUS_DETAIL or ATTRIBUT15

VM Name attribute

Description
Human-readable name of the virtual machine to which this virtual network interface is connected.

Type

String

Warehouse name
VM_NAME_LABEL or ATTRIBUT18

Take Action Status attribute group

The Take Action Status attribute group contains information about the results of actions this agent has executed.

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 Take Action Status attribute group:

Node attribute - This attribute is a key attribute.

Description
The managed system name of the agent.

Type

String

Warehouse name
NODE

Timestamp attribute

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

Type

String

Warehouse name
TIMESTAMP

Action Name attribute

Description
The name of the action that was run.

Type

String

Warehouse name
ACTION_NAME or TSKNAME

Action Status attribute

Description
The return code from the **Action Status** window, which is the return code category defined for the application return code.

Type

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

- OK (0)
- NOT APPLICABLE (1)
- GENERAL ERROR (2)
- WARNING (3)
- NOT RUNNING (4)
- DEPENDENT NOT RUNNING (5)
- ALREADY RUNNING (6)
- PREREQ NOT RUNNING (7)
- TIMED OUT (8)
- DOESNT EXIST (9)

- UNKNOWN (10)
- DEPENDENT STILL RUNNING (11)
- INSUFFICIENT USER AUTHORITY (12)

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

Warehouse name
ACTION_STATUS or TSKSTAT

Action App Return Code attribute

Description
The actual return code of the command that is executed.

Type

Integer (32-bit gauge)

Warehouse name
ACTION_APP_RETURN_CODE or TSKAPRC

Action Message attribute

Description
The message associated with the return code of the action.

Type

String

Warehouse name
ACTION_MESSAGE or TSKMSGE

Action Instance attribute

Description
The instance associated with the output produced by running the action.

Type

String

Warehouse name
ACTION_INSTANCE or TSKINST

Action Results attribute

Description
The output produced by running the action.

Type

String

Warehouse name
ACTION_RESULTS or TSKOUTP

Action Command attribute

Description
The command that was run by the action.

Type

String

Warehouse name
ACTION_COMMAND or TSKCMND

Action Node attribute

Description
The node where the action ran.

Type

String

Warehouse name
ACTION_NODE or TSKORGN

Action Subnode attribute

Description
The subnode where the action ran.

Type

String

Warehouse name
ACTION_SUBNODE or TSKSBND

Action ID attribute

Description
The ID of the action.

Type

Integer (32-bit gauge)

Warehouse name
ACTION_ID or TSKID

Action Type attribute

Description
The type of the action.

Type

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

- UNKNOWN (0)
- AUTOMATION (1)

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

Warehouse name
ACTION_TYPE or TSKTYPE

Action Owner attribute

Description
The name of the situation or user that initiated the action.

Type

String

Warehouse name
ACTION_OWNER or TSKOWNR

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

Warehouse name
NODE

Timestamp attribute

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

Type

String

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 shown in parentheses. The following values are defined:

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

Any other values display the actual value 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 that can 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 shown in parentheses. The following values are defined:

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

Any other values display the actual value 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 shown in parentheses. The following values are defined:

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

Any other values display the actual value 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 2 decimal places of precision with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values shown in parentheses. The following values are defined:

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

Any other values display the actual value 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 shown in parentheses. The following values are defined:

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

Any other values display the actual value 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 shown in parentheses. The following values are defined:

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

Any other values display the actual value 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 shown in parentheses. The following values are defined:

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

Any other values display the actual value 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 2 decimal places of precision with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values shown in parentheses. The following values are defined:

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

Any other values display the actual value 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 shown in parentheses. The following values are defined:

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

Any other values display the actual value 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 shown in parentheses. The following values are defined:

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

Any other values display the actual value 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 2 decimal places of precision with enumerated values. The strings are displayed in the Tivoli

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

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

Any other values display the actual value 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 shown in parentheses. The following values are defined:

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

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

Warehouse name
THREAD_POOL_TOTAL_JOBS or TPTJOBS

XHV 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 XHV Performance Object Status attribute group:

Node attribute - This attribute is a key attribute.

Description
The managed system name of the agent.

Type

String

Warehouse name
NODE

Timestamp attribute

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

Type

String

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 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 values display the actual value 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 shown in parentheses. The following values are defined:

- ACTIVE (0)
- INACTIVE (1)

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

Warehouse name
OBJECT_STATUS or OBJSTTS

Error Code attribute

Description
The error code associated with the query.

Type

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

- NO ERROR (0)
- GENERAL ERROR (1)
- OBJECT NOT FOUND (2)
- COUNTER NOT FOUND (3)
- NAMESPACE ERROR (4)
- OBJECT CURRENTLY UNAVAILABLE (5)
- COM LIBRARY INIT FAILURE (6)
- SECURITY INIT FAILURE (7)
- PROXY SECURITY FAILURE (9)
- NO INSTANCES RETURNED (10)
- ASSOCIATOR QUERY FAILED (11)

- REFERENCE QUERY FAILED (12)
- NO RESPONSE RECEIVED (13)
- CANNOT FIND JOINED QUERY (14)
- CANNOT FIND JOIN ATTRIBUTE IN QUERY 1 RESULTS (15)
- CANNOT FIND JOIN ATTRIBUTE IN QUERY 2 RESULTS (16)
- QUERY 1 NOT A SINGLETON (17)
- QUERY 2 NOT A SINGLETON (18)
- NO INSTANCES RETURNED IN QUERY 1 (19)
- NO INSTANCES RETURNED IN QUERY 2 (20)
- CANNOT FIND ROLLUP QUERY (21)
- CANNOT FIND ROLLUP ATTRIBUTE (22)
- FILE OFFLINE (23)
- NO HOSTNAME (24)
- MISSING LIBRARY (25)
- ATTRIBUTE COUNT MISMATCH (26)
- ATTRIBUTE NAME MISMATCH (27)
- COMMON DATA PROVIDER NOT STARTED (28)
- CALLBACK REGISTRATION ERROR (29)
- MDL LOAD ERROR (30)
- AUTHENTICATION FAILED (31)
- CANNOT RESOLVE HOST NAME (32)
- SUBNODE UNAVAILABLE (33)
- SUBNODE NOT FOUND IN CONFIG (34)
- ATTRIBUTE ERROR (35)
- CLASSPATH ERROR (36)
- CONNECTION FAILURE (37)
- FILTER SYNTAX ERROR (38)
- FILE NAME MISSING (39)
- SQL QUERY ERROR (40)
- SQL FILTER QUERY ERROR (41)
- SQL DB QUERY ERROR (42)
- SQL DB FILTER QUERY ERROR (43)
- PORT OPEN FAILED (44)
- ACCESS DENIED (45)
- TIMEOUT (46)
- NOT IMPLEMENTED (47)
- 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)

Any other values display the actual value 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 shown in parentheses. The following values are defined:

- NOT COLLECTED (0691231190000000)

Any other values display the actual value 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 shown in parentheses. The following values are defined:

- NOT COLLECTED (0691231190000000)

Any other values display the actual value 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 2 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 2 decimal places of precision with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values shown in parentheses. The following values are defined:

- NO DATA (-100)

Any other values display the actual value 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 2 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

Disk capacity planning for historical data

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

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

- *Table* is the table name as it is displayed in the warehouse database, if the attribute group is configured to be written to the warehouse. The table name listed here corresponds to the table name in "Attribute groups and attributes for the Citrix XenServer agent" on page 19
- *Attribute group* is the name of the attribute group used to create the table in the warehouse database if it is short enough to fit in the table naming constraints of the database being used for the warehouse. The attribute group name listed here corresponds to the Warehouse table name in "Attribute groups and attributes for the Citrix XenServer agent" on page 19.
- *Bytes per row (agent)* is an estimate of the record length for each row or instance written to the agent disk for historical data collection. This estimate can be used for agent disk space planning purposes.
- *Database bytes per row (warehouse)* is an estimate of the record length for detailed records written to the warehouse database, if the attribute group is configured to be written to the warehouse. Detailed records are 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)* is an estimate of the record length for aggregate records written to the warehouse database, if the attribute group is

configured to be written to the warehouse. Aggregate records are created by the Summarization agent for attribute groups that have been configured for summarization. This estimate can be used for warehouse disk space planning purposes.

In addition to the information in the tables, you must know the number of 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 is monitoring each processor in your computer and you have a dual processor computer, the number of rows is two.

The following table contains capacity planning information about the data logged by the IBM Tivoli Monitoring for Virtual Servers Agent for Citrix XenServer component software.

Table 1. Capacity planning for historical data logged by component IBM Tivoli Monitoring for Virtual Servers Agent for Citrix XenServer

Table	Attribute group	Bytes per row (agent)	Database bytes per row (warehouse)	Aggregate bytes per row (warehouse)
KXIXENMFND	KXI_AGENT_CONNECTION_STATUS	381	381	418
KXITRCELOG	KXI_AGENT_TRACE_LOG	1646	1655	1692
KXIHCTRLDM	KXI_CONTROL_DOMAIN	360	366	598
KXIHHCPUSN	KXI_HOST_CPU	668	676	791
KXIHVHODET	KXI_HOST_DETAILS	1701	1747	2369
KXIXHVDS	KXI_HOST_DISCOVERY	197	198	235
KXIHOSTPCH	KXI_HOST_PATCHES	473	480	517
KXIHOSTPBD	KXI_HOST_PBD	373	375	412
KXIHOSTPIF	KXI_HOST_PIF	917	942	1096
KXIHVVMSUB	KXI_HOST_VMS	1329	1356	1865
KXISRHJOIN	KXI_PBD_SR_JOIN	618	637	1064
KXIPOBJST	KXI_PERFORMANCE_OBJECT_STATUS	352	399	664
KXIHSTDETA	KXI_POOL_HOST_MEMBER_DETAILS	1701	1747	2369
KXIPMCHANG	KXI_POOL_MASTER_EVENTS	348	349	386
KXIATTRI21	KXI_POOL_NETWORK	304	304	341
KXIPPATCH	KXI_POOL_PATCH	440	443	480
KXIPBD	KXI_POOL_PBD	404	406	443
KXIATTRIB4	KXI_POOL_PIF	842	856	893
KXISRS	KXI_POOL_SR	321	334	761
KXIPOOL	KXI_POOL_SUMMARY	580	595	983
KXIVBD	KXI_POOL_VBD	1144	1157	1194
KXIVDI	KXI_POOL_VDI	948	964	1235
KXIATTRI34	KXI_POOL_VIF	752	758	795
KXITACTST	KXI_TAKE_ACTION_STATUS	3480	3512	3705
KXITHPLST	KXI_THREAD_POOL_STATUS	124	168	550
KXIXHVPOS	KXI_XHV_PERFORMANCE_OBJECT_STATUS	352	399	664

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

Chapter 5. Situations reference

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

About situations

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

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 Citrix XenServer agent. 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 left frame of the Situation editor initially lists the situations associated with the Navigator item that you selected. When you click a situation name or create a situation, the right frame opens with the following tabs:

Formula
Formula describing condition being tested.

Distribution
List of managed systems (operating systems, subsystems, or applications) to which the situation can be distributed. All the Citrix XenServer agent managed systems are assigned by default.

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

Action
Command to be sent to the system.

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

More information about situations

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 for this monitoring agent and a description of each situation, see the Predefined situations section in this chapter and the information in that section for each individual situation.

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Predefined situations

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

Agent level Navigator items

- Citrix XenServer
  - Not applicable
- Events
  - KXI_Invalid_Host_Configured
  - KXI_Host_Match_Made
  - KXI_Unconfigured_Host
  - KXI_Pool_Master_Changed
  - KXI_Connection_Failure
- Hosts
  - Not applicable
- Pool
  - Not applicable
- Storage
  - Not applicable

Hypervisors (XHV) subnode

- Hypervisors
  - Not applicable
- CPU
  - Not applicable
- Disk
  - Not applicable
- Network
  - Not applicable
- Patch
  - Not applicable
- Virtual Machines
  - KXI_VM_CPU_Util_High
  - KXI_VM_Memory_Util_High
  - KXI_VM_XenTools_Not_Installed
  - KXI_VM_XenTools_Out_of_Date
- XenServer
  - KXI_XenServer_Host_Disabled
  - KXI_XenServer_Host_Unreachable
  - KXI_Host_CPU_Util_High
  - KXI_Host_Memory_Util_High
  - KXI_Host_License_Expired
  - KXI_Host_License_Expired_Warn

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

Description
Information about the conditions that the situation tests.

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

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 elapses between one sample of data that the monitoring agent collects for the server and the next sample.

Situation persistence
Whether the conditions specified in the situation evaluate to "true" for the defined number of occurrences in a row before the situation is raised. The default of 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 of time, when another situation is true, or whichever occurs first if both are selected.

Citrix XenServer Navigator item

No predefined situations are included for this Navigator item.

Events Navigator item

KXI_Invalid_Host_Configured situation

Description
Agent configured with the host that is not in the XenServer pool.

The situation is evaluated for each distinct value of the DATE attribute.

Formula
```
*IF *SCAN KXI_AGENT_TRACE_LOG.Text *EQ 'is not reported as a pool member by
the pool master.'
```

See “Attribute groups and attributes for the Citrix XenServer agent” on page 19 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
None. Data is analyzed when it becomes available.

Situation persistence
Not Applicable

Severity
Warning

Clearing conditions
The situation does not clear automatically.

KXI_Host_Match_Made situation

Description
The Host was not recognized, but a possible match was made.

The situation is evaluated for each distinct value of the DATE attribute.

Formula
```
*IF *SCAN KXI_AGENT_TRACE_LOG.Text *EQ 'Used possible match of'
```

See “Attribute groups and attributes for the Citrix XenServer agent” on page 19 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
None. Data is analyzed when it becomes available.

Situation persistence
Not Applicable

Severity
Informational

Clearing conditions
The situation does not clear automatically.

KXI_Unconfigured_Host situation

Description
A host was discovered in a pool that has not been configured.

The situation is evaluated for each distinct value of the DATE attribute.

Formula
```
*IF *SCAN KXI_AGENT_TRACE_LOG.Text *EQ 'Verify host has been defined in the
agent configuration'
```

See “Attribute groups and attributes for the Citrix XenServer agent” on page 19 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
None. Data is analyzed when it becomes available.

Situation persistence
Not Applicable

Severity
Critical

Clearing conditions
The situation does not clear automatically.

KXI_Pool_Master_Changed situation

Description
The XenServer Pool Master has transitioned to a different host.

The situation is evaluated for each distinct value of the PREVPLMSTR attribute.

Formula
```
*IF *VALUE KXI_POOL_MASTER_EVENTS.event_new_host *NE 'A_NEW_VALUE'
```

See "Attribute groups and attributes for the Citrix XenServer agent" on page 19 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
None. Data is analyzed when it becomes available.

Situation persistence
Not Applicable

Severity
Critical

Clearing conditions
The situation does not clear automatically.

KXI_Connection_Failure situation

Description
A problem exists with the connection the XenServer Pool Master.

The situation is evaluated for each distinct value of the XMFFOUND attribute.

Formula

```
*IF *VALUE KXI_AGENT_CONNECTION_STATUS.poolmaster_found *EQ 'False'
```

See "Attribute groups and attributes for the Citrix XenServer agent" on page 19 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

None. Data is analyzed when it becomes available.

Situation persistence

Not Applicable

Severity

Fatal

Clearing conditions

The situation does not clear automatically.

Hosts Navigator item

No predefined situations are included for this Navigator item.

Pool Navigator item

No predefined situations are included for this Navigator item.

Storage Navigator item

No predefined situations are included for this Navigator item.

Hypervisors subnode

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

Hypervisors Navigator item

There are no predefined situations for this Navigator item.

CPU Navigator item

There are no predefined situations for this Navigator item.

Disk Navigator item

There are no predefined situations for this Navigator item.

Network Navigator item

There are no predefined situations for this Navigator item.

Patch Navigator item

There are no predefined situations for this Navigator item.

Virtual Machines Navigator item

KXI_VM_CPU_Util_High situation

Description: CPU utilization of the virtual machine is high.

The situation will be evaluated for each distinct value of name_label.

Formula: `*IF *VALUE KXI_HOST_VMS.metric_vcpu_utilization *GE 90`

See "Attribute groups and attributes for the Citrix XenServer agent" on page 19 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: 1 minute

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

Severity: Warning

Clearing conditions: The situation clears when the condition becomes false.

KXI_VM_Memory_Util_High situation

Description: Memory utilization of the virtual machine is high.

The situation will be evaluated for each distinct value of name_label.

Formula: `*IF *VALUE KXI_HOST_VMS.memory_percent_used *GE 90`

See "Attribute groups and attributes for the Citrix XenServer agent" on page 19 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: 1 minute

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

Severity: Warning

Clearing conditions: The situation clears when the condition becomes false.

KXI_VM_XenTools_Not_Installed situation

Description: XenTools are not installed on the virtual machine.

The situation will be evaluated for each distinct value of name_label.

Formula: `*IF *VALUE KXI_HOST_VMS.xentools_status *EQ 'Not Installed'`

See "Attribute groups and attributes for the Citrix XenServer agent" on page 19 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: 4 hours

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

Severity: Warning

Clearing conditions: The situation clears when the condition becomes false.

KXI_VM_XenTools_Out_of_Date situation

Description: XenTools on the virtual machine are not up-to-date.

The situation will be evaluated for each distinct value of name_label.

Formula: `*IF *VALUE KXI_HOST_VMS.xentools_status *EQ 'Out of Date'`

See "Attribute groups and attributes for the Citrix XenServer agent" on page 19 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: 4 hours

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

Severity: Warning

Clearing conditions: The situation clears when the condition becomes false.

XenServer Navigator item

KXI_XenServer_Host_Disabled situation

Description: A XenServer host is disabled.

The situation will be evaluated for each distinct value of hostname.

Formula: `*IF *VALUE KXI_HOST_DETAILS.enabled *EQ No *AND *VALUE KXI_HOST_DETAILS.live *EQ Yes`

See "Attribute groups and attributes for the Citrix XenServer agent" on page 19 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: 1 minute

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

Severity: Warning

Clearing conditions: The situation clears when the condition becomes false.

KXI_XenServer_Host_Unreachable situation

Description: A XenServer host is unreachable.

The situation will be evaluated for each distinct value of hostname.

Formula: `*IF *VALUE KXI_HOST_DETAILS.live *EQ No`

See "Attribute groups and attributes for the Citrix XenServer agent" on page 19 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: 1 minute

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

Severity: Critical

Clearing conditions: The situation clears when the condition becomes false.

KXI_Host_CPU_Util_High situation

Description: The XenServer host CPU utilization is high.

The situation will be evaluated for each distinct value of hostname.

Formula: `*IF *VALUE KXI_HOST_DETAILS.aggregate_cpu_utilisation *GE 90`

See "Attribute groups and attributes for the Citrix XenServer agent" on page 19 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: 5 minutes

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

Severity: Warning

Clearing conditions: The situation clears when the condition becomes false.

KXI_Host_Memory_Util_High situation

Description: The XenServer host memory utilization is High.

The situation will be evaluated for each distinct value of hostname.

Formula: `*IF *VALUE KXI_HOST_DETAILS.memory_percent_used *GE 90`

See "Attribute groups and attributes for the Citrix XenServer agent" on page 19 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: 5 minutes

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

Severity: Warning

Clearing conditions: The situation clears when the condition becomes false.

KXI_Host_License_Expired situation

Description: The XenServer host license has expired.

The situation will be evaluated for each distinct value of hostname.

Formula: `*IF *VALUE KXI_HOST_DETAILS.days_until_expiration *LE 0`

See "Attribute groups and attributes for the Citrix XenServer agent" on page 19 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: 12 hours

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

Severity: Critical

Clearing conditions: The situation clears when the condition becomes false.

KXI_Host_License_Expired_Warn situation

Description: The XenServer host license is near expiration.

The situation will be evaluated for each distinct value of hostname.

Formula: `*IF *VALUE KXI_HOST_DETAILS.days_until_expiration *LE 14 *AND *VALUE KXI_HOST_DETAILS.days_until_expiration *GT 0`

See "Attribute groups and attributes for the Citrix XenServer agent" on page 19 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: 12 hours

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

Severity: Warning

Clearing conditions: The situation clears when the condition becomes false.

Chapter 6. Take Action commands reference

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

About Take Action commands

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

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

Advanced automation uses policies to perform actions, schedule work, and automate manual tasks. A policy comprises a series of automated steps called activities that are connected to create a workflow. After an activity is completed, 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.

More information about Take Action commands

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

Predefined Take Action commands

The Citrix XenServer agent does not provide predefined Take Action commands.

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Chapter 7. Policies reference

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

About policies

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

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

More information about policies

This monitoring agent does not provide predefined policies. For more information about working with policies, see the *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

The Citrix XenServer agent does not provide predefined policies.

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Chapter 8. Troubleshooting

This chapter provides agent-specific troubleshooting information. See the *IBM Tivoli Monitoring Troubleshooting Guide* for general troubleshooting information. Also see "Support information" on page 159 for other problem-solving options.

Note: 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.

Note: You can resolve some problems by ensuring that your system matches the system requirements listed in Chapter 2, "Agent-specific installation and configuration information for the monitoring agent," on page 3.

Gathering product information for IBM Software Support

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

Table 2. Information to gather before contacting IBM Software Support

Information type	Description
Log files	Collect trace log files from failing systems. Most logs are located in a `logs` subdirectory on the host computer. See "Trace logging" on page 142 for lists of all trace log files and their locations. See the *Tivoli Enterprise Portal User's Guide* for general information about the IBM Tivoli Monitoring environment.
Citrix XenServer information	Version number and patch level
Operating system	Operating system version number and patch level
Messages	Messages and other information displayed on the screen
Version numbers for IBM Tivoli Monitoring	Version number of the following members of the monitoring environment: • IBM Tivoli Monitoring. Also provide the patch level, if available. • IBM Tivoli Monitoring for Virtual Servers Agent for Citrix XenServer
Screen captures	Screen captures of incorrect output, if any
(*UNIX only*) Core dump files	If the system stops on UNIX systems, collect the core dump file from 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. See the "pdcollect tool" section in the "Tools" chapter of the *IBM Tivoli Monitoring Troubleshooting Guide* for more information about using this tool.

See http://www.ibm.com/support/entry/portal/Open_service_request/Software/Software_support_(general) for information about working with IBM Software Support.

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Built-in troubleshooting features

The primary troubleshooting feature in the Citrix XenServer agent is logging. *Logging* refers to the text messages and trace data that is generated by the Citrix XenServer agent. 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.

Problem classification

The following types of problems might occur with the Citrix XenServer agent:

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

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

Trace logging

Trace logs 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 sections to learn how to configure and use trace logging:

- "Principal trace log files" on page 143
- "Examples: using trace logs" on page 145
- "Setting RAS trace parameters" on page 146

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

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

Overview of log file management

Table 3 on page 143 provides the names, locations, and descriptions of RAS1 log files. The log file names adhere to the following naming convention:

Windows systems

hostname_productcode_program_HEXtimestamp-nn.log

Linux and UNIX systems

hostname_productcode_HEXtimestamp-nn.log

where:

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

productcode
Two-character product code. For IBM Tivoli Monitoring for Virtual Servers Agent for Citrix XenServer, the product code is xi.

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

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.
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.

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

System where log is located	File name and path	Description
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.
On the computer that hosts the monitoring agent	The RAS1 log files are as follows: • **Windows:** *hostname*_BegiN_SHORT_PRODUCT_CODE_ LOWER_EnD_kBegiN_ SHORT_PRODUCT_CODE_ LOWER_EnDagent _HEXtimestamp-nn.log in the *install_dir*\tmaitm6\logs directory • **UNIX:** *hostname*_BegiN_SHORT_PRODUCT_CODE_ LOWER_EnD_HEXtimestamp-nn.log in the *install_dir*/logs directory • **Linux:** *hostname*_BegiN_SHORT_PRODUCT_CODE_ LOWER_EnD_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*_xi_timestamp.log – *hostname*_xi_ timestamp.pidnnnnn in the *install_dir*/logs path, where *nnnnn* is the process ID number	Traces activity of the monitoring 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 agent operations log files are as follows: *instance_hostname*_XI.LG0 is the current log created when the agent was started. *instance_hostname*_XI.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
On the computer that hosts the monitoring agent	The Take Action command log files are as follows: • *host*_xi_*instance_takeactioncommand*.log The logs are in the following directories: • **Windows:** *install_dir*\tmaitm6\logs • **UNIX:** *install_dir*/logs • **Linux:** *install_dir*/logs	Traces activity each time a Take Action command runs. For example, when a hypothetical **start_command** Take Action command runs, IBM Tivoli Monitoring generates a start_command.log file.
On the computer that hosts the monitoring agent	The Take Action command log files are as follows: • xi_data_provider_actions_*instance_n*.log The logs are in the following directories: • **Windows**: *install_dir*\tmaitm6\logs • **UNIX**: *install_dir*/logs • **Linux**: *install_dir*/logs	Traces activity each time a Take Action command runs. For example, when a hypothetical start_command Take Action command runs, IBM Tivoli Monitoring generates a start_command.log file.

Definitions of variables:

timestamp is time stamp whose format includes year (y), month (m), day (d), hour (h), and minute (m), as follows: **yyyymmdd hhmm**

HEXtimestamp is a hexadecimal representation of the time at which the process was started.

install_dir represents the directory path where you installed the IBM Tivoli Monitoring component. *install_dir* can represent a path on the computer that hosts the monitoring system, the monitoring agent, or the portal.

instance refers to the name of the database instance that you are monitoring.

hostname refers to the name of the computer where the IBM Tivoli Monitoring component runs.

nn represents the circular sequence in which logs are rotated. Ranges from 1 - 5, by default. But, 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.

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

Examples: using trace logs

IBM Software Support applies specialized knowledge to analyze trace logs to determine the source of problems. You can open trace logs in a text editor to learn some basic facts about your IBM Tivoli Monitoring environment. The following examples are from the Tivoli Enterprise Monitoring Server log.

Example one

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

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

Example two

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

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

Key points regarding the preceding excerpt:

- The monitoring server appends the **XI** product code to the server name to form a unique name (`SERVER5B:XI`) for this instance of the Citrix XenServer agent. 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” 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 Citrix XenServer agent, 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.

Setting RAS trace parameters

Objective

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

Background Information

The Citrix XenServer agent uses RAS1 tracing and generates the logs described in Table 3 on page 143. The default RAS1 trace level is ERROR.

Before you begin

See “Overview of log file management” on page 142 to ensure that you understand log rolling and can reference the correct log files when you manage log file generation.

After you finish

Monitor the size of the `logs` directory. Default behavior can generate a total of 45 - 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 143 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.

Problems and workarounds

The following sections provide symptoms and workarounds for problems that might occur with the Citrix XenServer agent:

- “Installation and configuration troubleshooting” on page 147
- “Remote deployment troubleshooting” on page 150
- “Agent troubleshooting” on page 151
- “Workspace troubleshooting” on page 153
- “Situation troubleshooting” on page 155
- “Take Action commands troubleshooting” on page 158

Note: 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.

Note: You can resolve some problems by ensuring that your system matches the system requirements listed in Chapter 2, “Agent-specific installation and configuration information for the monitoring agent,” on page 3.

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

Installation and configuration troubleshooting

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

Table 4. Problems and solutions for installation and configuration

Problem	Solution
(*UNIX only*) During a command-line installation, you choose to install a component that is 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.
The system is experiencing high CPU usage.	**Agent process:** View the memory usage of the KXICMA process. If CPU usage seems to be excessive, recycle the monitoring agent. **Network Cards:** The network card configurations can decrease the performance of a system. Each 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.
When you run the installer, you encounter the error `You must specify a valid directory`.	The agent cannot be installed without another agent being installed. Install another agent on the computer (usually an operating system agent).

Table 5. General problems and solutions for uninstallation

Problem	Solution
On Windows, uninstallation of IBM Tivoli Monitoring fails to uninstall the entire environment.	Be sure that you follow the general uninstallation process described in the *IBM Tivoli Monitoring Installation and Setup Guide*: 1. Remove Tivoli Enterprise Monitoring Server Application support by completing the following steps: a. Use Manage Tivoli Enterprise Monitoring Services. b. Select **Tivoli Enterprise Monitoring Server**. c. Right-click and select **Advanced**. d. Select **Remove TEMS application support**. e. Select the agent to remove its application support. 2. Uninstall 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*:KXI). **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 KXI, 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.
The Java JRE version 1.6 that is bundled with the Citrix XenServer agent is not removed when the agent is uninstalled.	Manually remove the Java JRE version 1.6 directory from the following location: • Linux: $CANDLEHOME/platform_code/xi/jre6 • Windows: %CANDLE_HOME%/TMAITM6[_x64]/kxi_jre6

Remote deployment troubleshooting

Table 6 on page 151 lists problems that might occur with remote deployment. This section provides information about troubleshooting remote deployment of the monitoring agent. See the *IBM Tivoli Monitoring Troubleshooting Guide* for general troubleshooting information.

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

Table 6. Remote deployment problems and solutions

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

Agent troubleshooting

This section lists problems that might occur with agents.

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

General diagnosis procedure

- First, check the **XenServer ITM Agent Connection Status** workspace view. If the agent is not connected, configuration or SSL protocol setup is usually the issue.
- Examine the `kxi_instance_output.log` file. In most cases, this file is empty. Some errors (including starting the custom data provider) might print to this log.
- Examine the `kxi_instance_trace.log` file. Keywords to search for include:
  - Exception
  - Error

Logs are located in:

- Windows - `%CANDLE_HOME%\TMAITM6[_x64]`
- Linux - `$CANDLEHOME/logs`

Table 7. Agent problems and solutions

Problem	Solution
Log data accumulates too rapidly.	Check the RAS trace option settings, which are described in "Setting RAS trace parameters" on page 146. The trace options settings that you can set on the `KBB_RAS1=` and `KDC_DEBUG=` lines potentially generate large amounts of data.
When using the itmcmd agent commands to start or stop this monitoring agent, you receive the following error message: `KCIIN0201E 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 SNMP start xi** For information about using the itmcmd commands, see the *IBM Tivoli Monitoring Command Reference*.

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.	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, there is one Tivoli Enterprise Monitoring Server hub per monitoring enterprise, so this architecture limit has been simplified 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 above, this second limitation refers specifically to Tivoli Enterprise Monitoring Agent processes: no more than 15 agents per system image. 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). There is no limitation to the number of ephemeral IP.PIPE connections per system image. 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.)
When you open the **Virtual Machine Metrics** view, all attributes say **Unavailable**, except for **VM Name** and **VM Description**. **XenTools Status** appears as **Not Running**, **Not Installed**, or **Out of Date**.	The agent requires the XenTools package to poll metric data for the virtual machines. If the **XenTools Status** appears as **Not Running**, you must power on the virtual machine. If the **XenTools Status** appears as **Not Installed** or **Out of Date**, you must install or update the XenTools package.

Table 7. Agent problems and solutions (continued)

Problem	Solution
The **KXI_Invalid_Host_Configured** situation occurs. The error can also be found in the `kxi_instance_trace.log` file by searching for the phrase `is not reported as a Pool member`.	Removing a hypervisor from the XenServer pool does not remove the hypervisor from the agent configuration. Reconfigure the agent, removing any configured hosts that are no longer in the XenServer pool.
Metric data, such as the CPU utilization on the default workspace of the subnode, is incorrect or missing (most often it is -1). The **KXI_Unconfigured_Host** situation occurs. The error can also be found in the `kxi_instance_trace.log` file by searching for the phrase `Could not connect to host`.	When A XenServer host has not been configured, metric information cannot be collected. Reconfigure the agent, ensuring that you configure all hosts in the XenServer pool.
No data are returned in any workspaces. The subnodes are not discovered.	If the pool master is not configured, the agent cannot collect information about the XenServer pool. Reconfigure the agent, ensuring that you configure all hosts in the XenServer pool.
The agent shows no data and the **XenServer ITM Agent Connection Status** shows that the agent is not connected to the pool master. Virtual machine metrics data appears as **Unavailable**.	The agent cannot connect using the SSL process if the SSL certificates are not correctly loaded into the truststore of the XenServer agent. Ensure that the SSL certificates for all hypervisors are loaded into the truststore of the XenServer agent, or reconfigure the agent to not use an SSL connection.
No data appear in any workspaces. The subnodes are not discovered. The `kxi_instance_output.log` file contains an error message similar to the following: `The java class could not be loaded. java.lang. UnsupportedClassVersionError: (com/ibm/tivoli/agent/bmpa/ itm_core/Main) bad major version at offset=6`	The XenServer sdk JAR files are not installed. Download the XenServer sdk version `XenServerJava-5.6.100-1` and extract the following JAR files: • `ws-commons-util-1.0.2.jar` • `xenserver-5.6.100-1.jar` • `xmlrpc-client-3.1.jar` • `xmlrpc-common-3.1.jar` to the following folders: • Windows - `%CANDLE_HOME%\TMAITM6[_x64]` • Linux - `$CANDLEHOME/platform_code/xi/bin`
The agent bundled Java JRE 1.6 notices file is referenced in neither the license for IBM Tivoli Monitoring for Virtual Servers nor its notices file.	After running a configured agent instance for the first time, refer to the `notices.txt` file in one of the following locations: • Linux:`$CANDLEHOME/platform_code/xi/jre6/notices.txt` • Windows: `%CANDLE_HOME%/TMAITM6[_x64]/kxi_jre6/notices.txt`

Workspace troubleshooting

Table 8 on page 154 shows problems that might occur with workspaces. This chapter provides agent-specific troubleshooting information. See the *IBM Tivoli Monitoring Troubleshooting Guide* for general troubleshooting information.

Table 8. Workspace problems and solutions

Problem	Solution
The process application components are available, but the Availability status shows PROCESS_DATA_NOT_ AVAILABLE.	This problem occurs because the **PerfProc** performance object is disabled. When this condition exists, IBM Tivoli Monitoring cannot collect performance data for this process. complete the following steps to confirm that this problem exists and 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 located above the right pane. 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 following website to enable the **PerfProc** performance object: http://blogs.technet.com/mscom/archive/2008/12/18/the-mystery-of-the-missing-process-performance-counter-in-perfmon.aspx 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.
The name of the attribute does not display in a bar chart or graph view.	When a chart or graph view that includes the attribute is scaled to a small size, a blank space is displayed instead of a truncated name. To see the name of the attribute, expand the view of the chart until there is sufficient space to display all characters of the attribute name.
At the bottom of each view, you see the following Historical workspace KFWITM220E error: `Request failed during execution.`	Ensure that you configure all groups that supply data to the view. In the Historical Configuration view, ensure that data collection is started for all groups that supply data to the view.
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. See the *IBM Tivoli Monitoring Administrator's Guide* for information about managing this feature including how to set the interval at which data is collected. By setting a more frequent interval for data collection, you reduce the load on the system incurred every time data is uploaded. • You use the Summarization and Pruning 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. See the *IBM Tivoli Monitoring Administrator's Guide* to learn how to modify the default collection settings.

Table 8. Workspace problems and solutions (continued)

Problem	Solution
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 been started, you cannot use the time span feature if the query for the chart or table includes column functions or advanced query options (Sort By, Group By, First / Last). To ensure support of historical data collection, do not use the Sort By, Group By, or First/Last functions in your queries. See the *IBM Tivoli Monitoring Administrator's Guide* or the Tivoli Enterprise Portal online help for information about the Historical Data Collection function.
When you use a long process name in the situation, the process name is truncated.	Truncation of process or service names for situations in the Availability table in the portal display is the expected behavior. 100 bytes is the maximum name length.
Regular (non-historical) monitoring data fails to be displayed.	Check the formation of the queries you use to gather data. For example, look for invalid SQL statements.
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

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

General situation problems

Table 9 lists general problems that might occur with situations.

Table 9. General situation problems and solutions

Problem	Solution
Monitoring activity requires too much disk space.	Check the RAS trace logging settings that are described in "Setting RAS trace parameters" on page 146. 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 122 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. Regarding the example, you can select the **% Memory Free** attribute and avoid the need for math operators.

Table 9. General 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 in the lower right of the window to set the status and appearance of the Situation when it triggers. **Note:** The **State** setting is not related to severity settings in IBM Tivoli Enterprise Console.
When a situation is triggered in the Event Log attribute group, it remains in the Situation Event Console as long as the event ID entry is present in the Event Log workspace. When this event ID entry is removed from the Event Log workspace on the Tivoli Enterprise Portal, the situation is also cleared even if the actual problem that caused the event is not resolved, and the event ID entry is also present in the Windows Event Viewer.	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 `KXXENV` file for the agent: CDP_NT_EVENT_LOG_CACHE_TIMEOUT=3600 This variable determines how long events from the NT Event Log are kept.
For a situation that uses the 'MISSING' operator and is distributed to a remote agentless monitoring subnode, when the situation becomes true, you see no indication in the Tivoli Enterprise Portal or in the Situation Event Console.	The MISSING predicate is currently not supported on subnodes. If a situation with a MISSING predicate is distributed to a subnode, the IRA 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.
When a situation is triggered in the Event Log attribute group, it remains in the Situation Event Console as long as the event ID entry is present in the Event Log workspace. When this event ID entry is removed from the Event Log workspace on the Tivoli Enterprise Portal, the situation is also cleared even if the actual problem that caused the event is not resolved, and the event ID entry is also present in the Windows Event Viewer	There is a timeout on the cache of events for the NT Event Log group. Increase the cache time of Event Log collection to meet your requirements by adding the following variable and timeout value to the KXXENV file for the agent: CDP_NT_EVENT_LOG_CACHE_TIMEOUT=3600 This variable determines how long events from the NT Event Log are kept.
If the Expert Advice for a situation contains a hyperlink to an external website (for example, a Microsoft TechNet website) and you click the hyperlink, the website opens in an external window. However, the external window stops responding.	The external window responds after you close the Preview window and Situation Editor window.

Problems with configuration of situations

Table 10 on page 157 lists problems that might occur with configuring situations.

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

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

Problem	Solution
Note: To get started with the solutions in this section, complete these steps: 1. Start the Tivoli Enterprise Portal. 2. Click **Edit > Situation Editor**. 3. In the navigation tree, choose the agent whose situation you want to modify. 4. Choose the situation in the list. The Situation Editor view is displayed.	
The situation for a specific agent is not visible in the Tivoli Enterprise Portal.	Open the Situation Editor. Access the All managed servers view. If the situation is absent, confirm that the monitoring server has been seeded for the agent. If not, seed the server, as described in the *IBM Tivoli Monitoring Installation and Setup Guide.*
The monitoring interval is too long.	Access the Situation Editor view for the situation that you want to modify. Check the **Sampling interval** area in the **Formula** tab. Adjust the time interval as 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 10. Problems with configuring situations that you solve in the Situation Editor (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 upper-right corner of the Formula area. The Show formula window is displayed. a. Confirm the following details in the **Formula** area at the top of the window: • The attributes that you intend to monitor are specified in the formula. • The situations that you intend to monitor are specified in the formula. • The logical operators in the formula match your monitoring goal. • The numeric values in the formula match your monitoring goal. b. (Optional) Select the **Show detailed formula** check box in the lower left of the window to see the original names of attributes in the application or operating system that you are monitoring. c. Click **OK** to dismiss the Show formula window. 2. (Optional) In the Formula area of the **Formula** tab, temporarily assign 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. See the *IBM Tivoli Monitoring Troubleshooting Guide* for additional information about situations that do not fire.

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

Problem	Solution
Situation events are not displayed in the Events Console view of the workspace.	Associate the situation with a 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**.
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

Table 12 on page 159 lists general problems that might occur with Take Action commands. When each Take Action command runs it generates the log file listed in Table 3 on page 143. This chapter provides agent-specific troubleshooting information.

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

Table 12. Take Action commands problems and solutions

Problem	Solution
Take Action commands often require several minutes to complete.	Allow several minutes. If you do not see a 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 155. If the Take Action command fails, see *IBM Tivoli Monitoring Troubleshooting Guide* for general information about troubleshooting Take Action commands.

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 sites contain troubleshooting information:

- Go to the IBM Software Support site at http://www.ibm.com/support/entry/portal/software and follow the instructions.
- Go to the IBM Tivoli Distributed Monitoring and Application Management Wiki at http://www-10.lotus.com/ldd/tivmonitorwiki.nsf. 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 http://www.ibm.com/software/support/isa.

Informational, warning, and error messages

This chapter introduces message logging and explains how to gather information from those logs.

Message logging refers to the text and numeric messages created by the software. These 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:

- Follow the instructions listed in the Detail window of the message if this information is included there.
- Consult the message details listed in this chapter 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

Citrix XenServer agent 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 component is one of the following:

KXI General Citrix XenServer agent messages

Number of the message

severity
Severity of the message. There are three levels of severity:

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 what might have caused 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 chapter as symbols, such as "&1." Actual messages contain values for these variables.

This chapter includes the messages for the following software:

- Citrix XenServer agent

Citrix XenServer agent messages

KXI51000 Java not found in path.

Explanation: During start up of the agent the correct verison of java was not found in the path. Please validate that java has been installed and rerun the agent.

Operator response: None.

KXI5101I A required library is not found.

Explanation: During statup of the agent a required library was not found in the path. Please validate that all of the required libraries are in the `bin` path of the agent.

Operator response: None.

Appendix A. IBM Tivoli Enterprise Console event mapping

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

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

The Tivoli Enterprise Console Event Definition Generator (TEDGEN) tool provides an alternate method for generating a new XML file for EIF Slot Customization. See "Updating the XML used by the MCS Attribute Service" in the *IBM Tivoli Monitoring Version 6.2.2 Fix Pack 2 Administrator's Guide* for information about the TEDGEN tool.

Each of the event classes is a child of KXI_Base and is defined in the kxi.baroc (version 6.2.3) file. The KXI_Base event class can be used for generic rules processing for any event from the IBM Tivoli Monitoring for Virtual Servers Agent for Citrix XenServer.

For events generated by situations in the agent connection status attribute group, Tivoli Enterprise Console events are sent using the ITM_KXI_AGENT CONNECTION STATUS class. This class contains the following slots:

- node: STRING
- timestamp: STRING
- poolmaster_found: STRING
- poolmaster_found_enum: STRING
- poolmaster_host: STRING
- poolmaster_ip: STRING
- poolmaster_port: STRING

For events generated by situations in the agent trace log attribute group, Tivoli Enterprise Console events are sent using the ITM_KXI_AGENT TRACE LOG class. This class contains the following slots:

- node: STRING
- timestamp: STRING
- kxi_date: STRING
- time: STRING
- kxi_severity: STRING
- server_name: STRING

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- thread: STRING
- kxi_class: STRING
- method: STRING
- text: STRING
- log_file_name: STRING

For events generated by situations in the control domain attribute group, Tivoli Enterprise Console events are sent using the ITM_KXI_CONTROL DOMAIN class. This class contains the following slots:

- node: STRING
- timestamp: STRING
- kxi_hostname: STRING
- memory_used: INTEGER
- memory_used_enum: STRING
- cpu_utilsation: INTEGER
- cpu_utilsation_enum: STRING
- vcpu_amount: INTEGER
- vcpu_amount_enum: STRING
- disk_read_kib: INTEGER
- disk_read_kib_enum: STRING
- disk_write_kib: INTEGER
- disk_write_kib_enum: STRING

For events generated by situations in the host cpu attribute group, Tivoli Enterprise Console events are sent using the ITM_KXI_HOST CPU class. This class contains the following slots:

- node: STRING
- timestamp: STRING
- uuid: STRING
- cpu_family: STRING
- cpu_host_uuid: STRING
- cpu_host_name_label: STRING
- cpu_model_number: STRING
- cpu_model_name: STRING
- cpu_number: STRING
- cpu_speed: STRING
- cpu_stepping: STRING
- cpu_percent_used: INTEGER
- cpu_percent_used_enum: STRING
- cpu_vendor: STRING
- cpu_percent_free: INTEGER
- cpu_percent_free_enum: STRING

For events generated by situations in the host details attribute group, Tivoli Enterprise Console events are sent using the ITM_KXI_HOST DETAILS class. This class contains the following slots:

- node: STRING

- timestamp: STRING
- last_updated: STRING
- live: INTEGER
- live_enum: STRING
- memory_free: INTEGER
- memory_free_enum: STRING
- memory_total: INTEGER
- memory_total_enum: STRING
- aggregate_cpu_utilisation: INTEGER
- aggregate_cpu_utilisation_enum: STRING
- uuid: STRING
- address: STRING
- api_version_major: INTEGER
- api_version_major_enum: STRING
- api_version_minor: INTEGER
- api_version_minor_enum: STRING
- cpu_configuration: STRING
- crashdump_sr_name_label: STRING
- enabled: INTEGER
- enabled_enum: STRING
- kxi_hostname: STRING
- name_description: STRING
- name_label: STRING
- sched_policy: STRING
- suspend_image_sr_name_label: STRING
- pool_master: INTEGER
- pool_master_enum: STRING
- network_in: INTEGER
- network_in_enum: STRING
- network_out: INTEGER
- network_out_enum: STRING
- uptime: INTEGER
- uptime_enum: STRING
- license_expiration_date: STRING
- days_until_expiration: INTEGER
- days_until_expiration_enum: STRING
- host_product_version: STRING
- host_build_number: STRING
- host_multipathing: INTEGER
- host_multipathing_enum: STRING
- xapi_memory_usage_kib: INTEGER
- xapi_memory_usage_kib_enum: STRING
- xapi_memory_free_kib: INTEGER
- xapi_memory_free_kib_enum: STRING
- xapi_live_memory_kib: INTEGER

- xapi_live_memory_kib_enum: STRING
- xapi_allocation_kib: INTEGER
- xapi_allocation_kib_enum: STRING
- memory_used: INTEGER
- memory_used_enum: STRING
- memory_percent_free: INTEGER
- memory_percent_free_enum: STRING
- memory_percent_used: INTEGER
- memory_percent_used_enum: STRING
- aggregate_cpu_free: INTEGER
- aggregate_cpu_free_enum: STRING

For events generated by situations in the host discovery attribute group, Tivoli Enterprise Console events are sent using the ITM_KXI_HOST DISCOVERY class. This 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 generated by situations in the host patches attribute group, Tivoli Enterprise Console events are sent using the ITM_KXI_HOST PATCHES class. This class contains the following slots:

- node: STRING
- timestamp: STRING
- patch_uuid: STRING
- patch_applied: STRING
- patch_host_uuid: STRING
- patch_host_name: STRING
- patch_description: STRING
- patch_label: STRING
- patch_pool_patch_uuid: STRING
- patch_pool_patch_name_label: STRING
- patch_size: REAL
- patch_size_enum: STRING
- patch_application_date: STRING
- patch_version: REAL
- patch_version_enum: STRING

For events generated by situations in the host pbd attribute group, Tivoli Enterprise Console events are sent using the ITM_KXI_HOST PBD class. This class contains the following slots:

- node: STRING
- timestamp: STRING

- pbd_uuid: STRING
- currently_attached: STRING
- currently_attached_enum: STRING
- host_uuid: STRING
- host_name_label: STRING
- sr_uuid: STRING
- pbd_name_label: STRING

For events generated by situations in the host pif attribute group, Tivoli Enterprise Console events are sent using the ITM_KXI_HOST PIF class. This class contains the following slots:

- node: STRING
- timestamp: STRING
- uuid: STRING
- currently_attached: STRING
- device: STRING
- disallow_unplug: STRING
- dns: STRING
- gateway: STRING
- host_uuid: STRING
- host_name: STRING
- ip: STRING
- config: STRING
- mac: STRING
- management: STRING
- carrier: STRING
- device_id: STRING
- device_name: STRING
- duplex: STRING
- read: INTEGER
- read_enum: STRING
- write: INTEGER
- write_enum: STRING
- last_update: STRING
- pci_bus: STRING
- speed: INTEGER
- speed_enum: STRING
- vendor: STRING
- vendor_name: STRING
- mtu: INTEGER
- mtu_enum: STRING
- netmask: STRING
- network_uuid: STRING
- network_name: STRING
- physical: STRING
- vlan: INTEGER

- vlan_enum: STRING

For events generated by situations in the host vms attribute group, Tivoli Enterprise Console events are sent using the ITM_KXI_HOST VMS class. This class contains the following slots:

- node: STRING
- timestamp: STRING
- uuid: STRING
- blocked_operations: STRING
- ha_always_run: STRING
- ha_always_run_enum: STRING
- ha_restart_priority: STRING
- is_a_snapshot: INTEGER
- is_a_snapshot_enum: STRING
- name_description: STRING
- name_label: STRING
- power_state: STRING
- power_state_enum: STRING
- snapshot_of_uuid: STRING
- snapshot_of_name_label: STRING
- snapshot_time: STRING
- transportable_snapshot_id: STRING
- user_version: STRING
- nic_send: INTEGER
- nic_send_enum: STRING
- nic_recieve: INTEGER
- nic_recieve_enum: STRING
- xentools_status: STRING
- xentools_version: STRING
- xentools_build: STRING
- distro: STRING
- architecture: STRING
- host_resident_on: STRING
- metric_vcpu_utilization: INTEGER
- metric_vcpu_utilization_enum: STRING
- metric_vcpu_processor_amount: INTEGER
- metric_vcpu_processor_amount_enum: STRING
- disk_reads_bytes: INTEGER
- disk_reads_bytes_enum: STRING
- disk_writes_bytes: INTEGER
- disk_writes_bytes_enum: STRING
- memory_free_mb: INTEGER
- memory_free_mb_enum: STRING
- memory_total_mb: INTEGER
- memory_total_mb_enum: STRING
- memory_used_mb: INTEGER

- memory_used_mb_enum: STRING
- memory_percent_used: INTEGER
- memory_percent_used_enum: STRING
- memory_percent_free: INTEGER
- memory_percent_free_enum: STRING
- metric_vcpu_free: INTEGER
- metric_vcpu_free_enum: STRING

For events generated by situations in the pbd sr join attribute group, Tivoli Enterprise Console events are sent using the ITM_KXI_PBD SR JOIN class. This class contains the following slots:

- node: STRING
- timestamp: STRING
- uuid: STRING
- content_type: STRING
- name_description: STRING
- name_label: STRING
- shared: STRING
- shared_enum: STRING
- type: STRING
- physical_size_mb: INTEGER
- physical_size_mb_enum: STRING
- physical_utilisation_mb: INTEGER
- physical_utilisation_mb_enum: STRING
- physical_size_gb: INTEGER
- physical_size_gb_enum: STRING
- physical_utilisation_gb: INTEGER
- physical_utilisation_gb_enum: STRING
- virtual_allocation_mb: INTEGER
- virtual_allocation_mb_enum: STRING
- virtual_allocation_gb: INTEGER
- virtual_allocation_gb_enum: STRING
- free_space_mb: INTEGER
- free_space_mb_enum: STRING
- free_space_gb: INTEGER
- free_space_gb_enum: STRING
- physical_utilisation_percent: INTEGER
- physical_utilisation_percent_enum: STRING
- multipath_capable: INTEGER
- multipath_capable_enum: STRING
- physical_free_percent: INTEGER
- physical_free_percent_enum: STRING
- pbd_uuid: STRING
- currently_attached: STRING
- currently_attached_enum: STRING
- host_uuid: STRING

- host_name_label: STRING
- sr_uuid: STRING
- pbd_name_label: STRING

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

- node: STRING
- timestamp: STRING
- query_name: STRING
- object_name: STRING
- object_type: INTEGER
- object_type_enum: STRING
- object_status: INTEGER
- object_status_enum: STRING
- error_code: INTEGER
- error_code_enum: STRING
- 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 generated by situations in the pool host member details attribute group, Tivoli Enterprise Console events are sent using the ITM_KXI_POOL HOST MEMBER DETAILS class. This class contains the following slots:

- node: STRING
- timestamp: STRING
- last_updated: STRING
- live: INTEGER
- live_enum: STRING
- memory_free: INTEGER
- memory_free_enum: STRING
- memory_total: INTEGER
- memory_total_enum: STRING
- aggregate_cpu_utilisation: INTEGER
- aggregate_cpu_utilisation_enum: STRING
- uuid: STRING

- address: STRING
- api_version_major: INTEGER
- api_version_major_enum: STRING
- api_version_minor: INTEGER
- api_version_minor_enum: STRING
- cpu_configuration: STRING
- crashdump_sr_name_label: STRING
- enabled: INTEGER
- enabled_enum: STRING
- kxi_hostname: STRING
- name_description: STRING
- name_label: STRING
- sched_policy: STRING
- suspend_image_sr_name_label: STRING
- pool_master: INTEGER
- pool_master_enum: STRING
- network_in: INTEGER
- network_in_enum: STRING
- network_out: INTEGER
- network_out_enum: STRING
- uptime: INTEGER
- uptime_enum: STRING
- license_expiration_date: STRING
- days_until_expiration: INTEGER
- days_until_expiration_enum: STRING
- host_product_version: STRING
- host_build_number: STRING
- host_multipathing: INTEGER
- host_multipathing_enum: STRING
- xapi_memory_usage_kib: INTEGER
- xapi_memory_usage_kib_enum: STRING
- xapi_memory_free_kib: INTEGER
- xapi_memory_free_kib_enum: STRING
- xapi_live_memory_kib: INTEGER
- xapi_live_memory_kib_enum: STRING
- xapi_allocation_kib: INTEGER
- xapi_allocation_kib_enum: STRING
- memory_used: INTEGER
- memory_used_enum: STRING
- memory_percent_free: INTEGER
- memory_percent_free_enum: STRING
- memory_percent_used: INTEGER
- memory_percent_used_enum: STRING
- aggregate_cpu_free: INTEGER
- aggregate_cpu_free_enum: STRING

For events generated by situations in the pool master events attribute group, Tivoli Enterprise Console events are sent using the ITM_KXI_POOL MASTER EVENTS class. This class contains the following slots:

- node: STRING
- timestamp: STRING
- event_previous_ip: STRING
- event_previous_host: STRING
- event_new_ip: STRING
- event_new_host: STRING
- event_timestamp: STRING

For events generated by situations in the pool network attribute group, Tivoli Enterprise Console events are sent using the ITM_KXI_POOL NETWORK class. This class contains the following slots:

- node: STRING
- timestamp: STRING
- uuid: STRING
- name_label: STRING
- name_description: STRING
- bridge: STRING

For events generated by situations in the pool patch attribute group, Tivoli Enterprise Console events are sent using the ITM_KXI_POOL PATCH class. This class contains the following slots:

- node: STRING
- timestamp: STRING
- patch_uuid: STRING
- patch_name_label: STRING
- patch_name_description: STRING
- patch_after_apply_guidance: STRING
- patch_applied: STRING
- patch_size: INTEGER
- patch_size_enum: STRING
- patch_version: STRING

For events generated by situations in the pool pbd attribute group, Tivoli Enterprise Console events are sent using the ITM_KXI_POOL PBD class. This class contains the following slots:

- node: STRING
- timestamp: STRING
- uuid: STRING
- currently_attached: STRING
- host_uuid: STRING
- host_name_label: STRING
- sr_uuid: STRING
- sr_name_label: STRING

For events generated by situations in the pool pif attribute group, Tivoli Enterprise Console events are sent using the ITM_KXI_POOL PIF class. This class contains the following slots:

- node: STRING
- timestamp: STRING
- uuid: STRING
- bond_slave_of: STRING
- currently_attached: STRING
- device: STRING
- disallow_unplug: STRING
- dns: STRING
- gateway: STRING
- host_name_label: STRING
- ip: STRING
- ip_configuration_mode: STRING
- mac: STRING
- management: STRING
- mtu: STRING
- netmask: STRING
- network_name_label: STRING
- physical: STRING
- vlan: STRING
- vlan_master_of: STRING

For events generated by situations in the pool sr attribute group, Tivoli Enterprise Console events are sent using the ITM_KXI_POOL SR class. This class contains the following slots:

- node: STRING
- timestamp: STRING
- uuid: STRING
- content_type: STRING
- name_description: STRING
- name_label: STRING
- shared: STRING
- shared_enum: STRING
- type: STRING
- physical_size_mb: INTEGER
- physical_size_mb_enum: STRING
- physical_utilisation_mb: INTEGER
- physical_utilisation_mb_enum: STRING
- physical_size_gb: INTEGER
- physical_size_gb_enum: STRING
- physical_utilisation_gb: INTEGER
- physical_utilisation_gb_enum: STRING
- virtual_allocation_mb: INTEGER
- virtual_allocation_mb_enum: STRING

- virtual_allocation_gb: INTEGER
- virtual_allocation_gb_enum: STRING
- free_space_mb: INTEGER
- free_space_mb_enum: STRING
- free_space_gb: INTEGER
- free_space_gb_enum: STRING
- physical_utilisation_percent: INTEGER
- physical_utilisation_percent_enum: STRING
- multipath_capable: INTEGER
- multipath_capable_enum: STRING
- physical_free_percent: INTEGER
- physical_free_percent_enum: STRING

For events generated by situations in the pool summary attribute group, Tivoli Enterprise Console events are sent using the ITM_KXI_POOL SUMMARY class. This class contains the following slots:

- node: STRING
- timestamp: STRING
- pool_master: STRING
- pool_name: STRING
- name_description: STRING
- total_hosts: INTEGER
- total_hosts_enum: STRING
- total_hosts_enabled: INTEGER
- total_hosts_enabled_enum: STRING
- total_hosts_disabled: INTEGER
- total_hosts_disabled_enum: STRING
- ha_enabled: INTEGER
- ha_enabled_enum: STRING
- ha_overcommit_enabled: INTEGER
- ha_overcommit_enabled_enum: STRING
- wlb_enabled: INTEGER
- wlb_enabled_enum: STRING
- total_vms: INTEGER
- total_vms_enum: STRING
- total_vms_running: INTEGER
- total_vms_running_enum: STRING
- total_vms_halted: INTEGER
- total_vms_halted_enum: STRING
- total_vms_suspended: INTEGER
- total_vms_suspended_enum: STRING
- total_vms_paused: INTEGER
- total_vms_paused_enum: STRING
- total_vms_unknown: INTEGER
- total_vms_unknown_enum: STRING

For events generated by situations in the pool vbd attribute group, Tivoli Enterprise Console events are sent using the ITM_KXI_POOL VBD class. This class contains the following slots:

- node: STRING
- timestamp: STRING
- uuid: STRING
- bootable: STRING
- currently_attached: STRING
- device: STRING
- empty: STRING
- mode: STRING
- qos_algorithm_type: STRING
- status_code: STRING
- status_detail: STRING
- storage_lock: STRING
- type: STRING
- unpluggable: STRING
- userdevice: STRING
- virtul_disk_uuid: STRING
- name_label: STRING
- vm_uuid: STRING
- vm_name_label: STRING

For events generated by situations in the pool vdi attribute group, Tivoli Enterprise Console events are sent using the ITM_KXI_POOL VDI class. This class contains the following slots:

- node: STRING
- timestamp: STRING
- uuid: STRING
- name_label: STRING
- name_description: STRING
- location: STRING
- managed: STRING
- missing: STRING
- parent_uuid: STRING
- parent_name_label: STRING
- read_only: STRING
- sharable: STRING
- sr_uuid: STRING
- sr_name_label: STRING
- storage_lock: STRING
- type: STRING
- physical_utilisation_mb: INTEGER
- physical_utilisation_mb_enum: STRING
- physical_utilisation_gb: INTEGER
- physical_utilisation_gb_enum: STRING

- virtual_size_mb: INTEGER
- virtual_size_mb_enum: STRING
- virtual_size_gb: INTEGER
- virtual_size_gb_enum: STRING
- percent_used: INTEGER
- percent_used_enum: STRING
- percent_free: INTEGER
- percent_free_enum: STRING

For events generated by situations in the pool vif attribute group, Tivoli Enterprise Console events are sent using the ITM_KXI_POOL VIF class. This class contains the following slots:

- node: STRING
- timestamp: STRING
- uuid: STRING
- currently_attached: STRING
- device: STRING
- mac: STRING
- mtu: STRING
- network_name_label: STRING
- qos_algorithm_type: STRING
- status_code: STRING
- status_detail: STRING
- vm_name_label: STRING

For events generated by situations in the Take Action Status attribute group, Tivoli Enterprise Console events are sent using the ITM_KXI_TAKE ACTION STATUS class. This class contains the following slots:

- node: STRING
- timestamp: STRING
- action_name: STRING
- action_status: INTEGER
- action_status_enum: STRING
- action_app_return_code: INTEGER
- action_message: STRING
- action_instance: STRING
- action_results: STRING
- action_command: STRING
- action_node: STRING
- action_subnode: STRING
- action_id: INTEGER
- action_type: INTEGER
- action_type_enum: STRING
- action_owner: STRING

For events generated by situations in the Thread Pool Status attribute group, Tivoli Enterprise Console events are sent using the ITM_KXI_THREAD POOL STATUS class. This 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

For events generated by situations in the XHV Performance Object Status attribute group, Tivoli Enterprise Console events are sent using the ITM_KXI_XHV PERFORMANCE OBJECT STATUS class. This class contains the following slots:

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

Appendix B. Documentation library

This appendix contains information about the publications related to the IBM Tivoli Monitoring for Virtual Servers Agent for Citrix XenServer. These publications are listed in the following categories:

- Citrix XenServer agent library
- Prerequisite publications
- Related publications

See the *IBM Tivoli Monitoring, OMEGAMON XE, and Composite Application Manager products: Documentation Guide*, SC23-8816, for information about accessing and using publications. You can find the *Documentation Guide* in the following information centers:

- IBM Tivoli Monitoring and OMEGAMON® XE
- IBM Tivoli Composite Application Manager

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** 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.

Citrix XenServer agent library

One document is specific to the Citrix XenServer agent: *IBM Tivoli Monitoring for Virtual Servers Agent for Citrix XenServer User's Guide*. This publication provides agent-specific information about configuring, using, and troubleshooting the Citrix XenServer agent

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

Use the information in this guide with the *Tivoli Enterprise Portal User's Guide* to monitor Citrix XenServer resources.

Prerequisite publications

To use the information in this publication effectively, you must have some prerequisite knowledge, which you can obtain from the following IBM Tivoli Monitoring publications:

- *Exploring IBM Tivoli Monitoring*
- *IBM Tivoli Monitoring Administrator's Guide*
- *IBM Tivoli Monitoring Agent Builder User's Guide*
- *IBM Tivoli Monitoring Command Reference*
- *IBM Tivoli Monitoring: Configuring Tivoli Enterprise Monitoring Server on z/OS*
- *IBM Tivoli Monitoring Installation and Setup Guide*
- *IBM Tivoli Monitoring: Messages*
- *IBM Tivoli Monitoring Troubleshooting Guide*

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- *IBM Tivoli Monitoring: Upgrading from Tivoli Distributed Monitoring*
- *IBM Tivoli Monitoring: Upgrading from V5.1.2*
- *IBM Tivoli Monitoring: i5/OS® Agent User's Guide*
- *IBM Tivoli Monitoring: Linux OS Agent User's Guide*
- *IBM Tivoli Monitoring: UNIX Log OS Agent User's Guide*
- *IBM Tivoli Monitoring: UNIX OS Agent User's Guide*
- *IBM Tivoli Monitoring: Windows OS Agent User's Guide*
- *IBM Tivoli Monitoring Universal Agent User's Guide*
- *IBM Tivoli Monitoring Universal Agent API and Command Programming Reference Guide*
- *Tivoli Enterprise Portal User's Guide*

Related publications

The following documents also provide useful information:

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

Other sources of documentation

You can also obtain technical documentation about monitoring products from the following sources:

- Tivoli Integrated Service Management Library

  http://www-01.ibm.com/software/brandcatalog/ismlibrary/

  The Integrated Service Management Library is an online catalog that contains integration documentation as well as other downloadable product extensions.
- Redbook publications

  http://www.redbooks.ibm.com/

  IBM Redbooks®, Redpapers, and Redbooks Technotes provide information about products from platform and solution perspectives.
- Technotes

  Technotes provide the latest information about known product limitations and workarounds. You can find Technotes through the IBM Software Support website at http://www.ibm.com/support/entry/portal/software.
- Tivoli wikis on the IBM developerWorks website

  Tivoli Wiki Central at http://www.ibm.com/developerworks/wikis/display/tivoli/Home is the home for interactive wikis that offer best practices and scenarios for using Tivoli products. The wikis contain white papers contributed by IBM employees, and content created by customers and business partners.

Two of these wikis are of particular relevance to IBM Tivoli Monitoring:

- Tivoli Distributed Monitoring and Application Management Wiki at http://www-10.lotus.com/ldd/tivmonitorwiki.nsf provides information about IBM Tivoli Monitoring and related distributed products, including IBM Tivoli Composite Application Management products.
- Tivoli System z Monitoring and Application Management Wiki at http://www.ibm.com/developerworks/wikis/display/tivoliomegamon/Home provides information about the OMEGAMON XE products, Tivoli NetView for z/OS, Tivoli Monitoring Agent for z/TPF, and other System z monitoring and application management products.

Appendix C. Accessibility

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

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

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

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

Navigating the interface using the keyboard

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

Magnifying what is displayed on the screen

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

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