

IBM Tivoli Monitoring for Virtual Environments Agent for
Citrix XenServer
Version 7.2

User's Guide



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Note

Before using this information and the product it supports, read the information in “Notices” on page 243.

This edition applies to version 7.2 of IBM Tivoli Monitoring for Virtual Environments 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 agent

The IBM Tivoli Monitoring for Virtual Environments Agent for Citrix XenServer (product code XI) provides you with the capability to monitor Citrix XenServer. You can also use the agent to take basic actions with the Citrix XenServer.

IBM® Tivoli® Monitoring is the base software for the Citrix XenServer agent.

IBM Tivoli Monitoring

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

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

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

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

See the IBM Tivoli Monitoring publications listed in “Prerequisite publications” on page 241 for complete information about IBM Tivoli Monitoring and the Tivoli Enterprise Portal.

Functions of the monitoring agent

Monitors the availability, health and performance of key Citrix XenServer resources: pools, hypervisors, virtual machines, storage repositories, and XenTools.

New in this release

For version 7.2 of the Citrix XenServer agent, the following enhancements were made since version 7.1:

- Added both integrated and stand-alone support for the IBM Prerequisite Scanner. The IBM Prerequisite Scanner is a prerequisite checking tool that analyzes system environments before the installation or upgrade of a Tivoli product or IBM solution.
- The self-describing agent capability is enabled. For more information, see Chapter 2, “Agent installation and configuration,” on page 5.
- Changes to Tivoli Common Reporting Citrix XenServer reports package:
 - The package now supports Tivoli Common Reporting version 3.1.
 - The reports Cognos data model is reworked to use attribute captions instead of the database column name.
 - Prerequisite checker reports are added to the reports package.

For more information about the Tivoli Common Reporting Citrix XenServer reports package, see Chapter 8, “Tivoli Common Reporting for Citrix XenServer agent,” on page 151.

- Updated `kxi.baroc` file to support IBM Tivoli Enterprise Console® event mapping changes.

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 Tivoli Monitoring.

This Tivoli Monitoring environment contains the following components:

Tivoli Enterprise Portal client

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

Tivoli Enterprise Portal Server

The portal server is placed between the client and the Tivoli Enterprise Monitoring Server and enables retrieval, manipulation, and analysis of data from the monitoring agents. The Tivoli Enterprise Portal Server is the central repository for all user data.

Tivoli Enterprise Monitoring Server

The monitoring server acts as a collection and control point for alerts received from the monitoring agents, and collects their performance and availability data. The Tivoli Enterprise Monitoring Server is also a repository for historical data.

Tivoli Enterprise Monitoring Agent, Citrix XenServer agent

This monitoring agent collects data and distributes the data to the Tivoli Enterprise Monitoring Server, Tivoli Enterprise Portal Server, Tivoli Enterprise Portal, Tivoli Data Warehouse, and IBM Dashboard Application Services Hub.

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

IBM Tivoli Netcool/OMNIBus

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

IBM Tivoli Enterprise Console

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

IBM Tivoli Common Reporting

Tivoli Common Reporting is a separately installable feature available to users of Tivoli software that provides a consistent approach to generating and customizing reports. Some individual products provide reports that are designed for use with Tivoli Common Reporting and have a consistent look and feel.

IBM Tivoli Application Dependency Discovery Manager (TADDM)

TADDM delivers automated discovery and configuration tracking capabilities to build application maps that provide real-time visibility into application complexity.

IBM Tivoli Business Service Manager

The Tivoli Business Service Manager component delivers real-time information to help you respond to alerts effectively based on business requirements. Optionally, you can use this component to meet service-level agreements (SLAs). Use the Tivoli Business Service Manager

tools to help build a service model that you can integrate with Tivoli Netcool/OMNIBus alerts or optionally integrate with data from an SQL data source. Optional components provide access to data from other IBM Tivoli applications such as Tivoli Monitoring and TADDM.

IBM Dashboard Application Services Hub

The Dashboard Application Services Hub has a core set of components that provide such administrative essentials as network security and database management. This component replaces the Tivoli Integrated Portal component after version 2.2.

Agent Management Services

You can use IBM Tivoli Monitoring Agent Management Services to manage the Citrix XenServer agent.

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

User interface options

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

The following interfaces are available:

Tivoli Enterprise Portal user interface

You can run the Tivoli Enterprise Portal as a desktop application or a browser application. The client interface is a graphical user interface (GUI) based on Java on a Windows or Linux workstation. The browser application is automatically installed with the Tivoli Enterprise Portal Server. The desktop application is installed by using the Tivoli Monitoring installation media or with a Java Web Start application. To start the Tivoli Enterprise Portal browser client in your Internet browser, enter the URL for a specific Tivoli Enterprise Portal browser client installed on your Web server.

Command-line interface

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

Manage Tivoli Enterprise Monitoring Services window

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

IBM Tivoli Netcool/OMNIBus event list

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

IBM Tivoli Enterprise Console

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

IBM Tivoli Common Reporting

Use the Tivoli Common Reporting web user interface for specifying report parameters and other report properties, generating formatted reports, scheduling reports, and viewing reports. This user interface is based on the Dashboard Application Services Hub.

IBM Tivoli Application Dependency Discovery Manager

The Discovery Management Console is the TADDM client user interface for managing discoveries.

IBM Tivoli Business Service Manager

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

IBM Dashboard Application Services Hub

The Dashboard Application Services Hub provides an administrative console for applications that use this framework. It is a web-based console that provides common task navigation for products, aggregation of data from multiple products into a single view, and the passing of messages between views from different products. This interface replaces the Tivoli Integrated Portal component after version 2.2.

Data sources

Monitoring agents collect data from specific data sources.

The Citrix XenServer agent collects data from the following sources:

Log files

The agent uses the file system to monitor application log files or other data files to gather metrics.

Chapter 2. Agent installation and configuration

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

To install and configure the Citrix XenServer agent, use the *Installing monitoring agents* procedures in the *IBM Tivoli Monitoring Installation and Setup Guide* along with the agent-specific installation and configuration information.

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

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

Requirements

Before installing and configuring the agent, make sure your environment meets the requirements for the IBM Tivoli Monitoring for Virtual Environments Agent for Citrix XenServer.

For information about system requirements, see the Software product compatibility reports (<http://publib.boulder.ibm.com/infocenter/prodguid/v1r0/clarify/index.html>). Search for the Tivoli Monitoring for Virtual Environments product.

Language pack installation

The steps for installing language packs depend on which operating system and mode of installation you are using.

To install a language pack for the agent support files on the Tivoli Enterprise Monitoring Server, the Tivoli Enterprise Monitoring Agent, and the Tivoli Enterprise Portal Server, make sure that you installed the product in the English language. Then use the steps for the operating system or mode of installation you are using:

- “Installing language packs on Windows systems”
- “Installing language packs on UNIX or Linux systems” on page 6
- “Silent installation of language packs on Windows, UNIX, or Linux systems” on page 6

Installing language packs on Windows systems

You can install the language packs on a Windows system.

Before you begin

First, make sure that you installed the product in the English language.

Procedure

1. On the language pack CD, double-click the `lpinstaller.bat` file to start the installation program.
2. Select the language of the installer and click **OK**.
3. In the Introduction panel, click **Next**

4. Click **Add/Update** and click **Next**.
5. Select the folder where the National Language Support package (NLSPackage) files are located. Typically, the NLSPackage files are located in the `nlspackage` folder where the installer executable file is located.
6. Select the language support for the agent of your choice and click **Next**. To make multiple selections, press Ctrl and select the language that you want.
7. Select the languages that you want to install and click **Next**.
8. Examine the installation summary page and click **Next** to begin installation.
9. After installation completes, click **Finish** to exit the installer.
10. Restart the Tivoli Enterprise Portal, Tivoli Enterprise Portal Server, and Eclipse Help Server if any of these components are installed.

Installing language packs on UNIX or Linux systems

You can install the language packs on a UNIX or Linux system.

Before you begin

First, make sure that you installed the product in the English language.

Procedure

1. Enter the `mkdir` command to create a temporary directory on the computer, for example, `mkdir dir_name`. Make sure that the full path of the directory does not contain any spaces.
2. Mount the language pack CD to the temporary directory that you created.
3. Enter the following command to start the installation program: `cd dir_name lpinstaller.sh -c install_dir` where `install_dir` is where you installed IBM Tivoli Monitoring. Typically, the directory name is `/opt/IBM/ITM` for UNIX and Linux systems.
4. Select the language of the installer and click **OK**.
5. In the Introduction panel, click **Next**.
6. Click **Add/Update** and click **Next**.
7. Select the folder where the National Language Support package (NLSPackage) files are located. Typically, the NLSPackage files are located in the `nlspackage` folder where the installer executable file is located.
8. Select the language support for the agent of your choice and click **Next**. To make multiple selections, press Ctrl and select the language that you want.
9. Select the languages that you want to install and click **Next**.
10. Examine the installation summary page and click **Next** to begin installation.
11. After installation completes, click **Finish** to exit the installer.
12. Restart the Tivoli Enterprise Portal, Tivoli Enterprise Portal Server, and Eclipse Help Server if any of these components are installed.

Silent installation of language packs on Windows, UNIX, or Linux systems

You can use the silent-mode installation method to install the language packs. In silent mode, the installation process obtains the installation settings from a predefined response file. It does not prompt you for any information.

Before you begin

First, make sure that you installed the product in the English language.

Procedure

1. Copy and paste the ITM_Agent_LP_silent.rsp response file template as shown in “Response file example.”
2. Change the following parameter settings:

NLS_PACKAGE_FOLDER

Folder where the National Language Support package (NLSPackage) files are located. Typically, the NLSPackage files are located in the nlspackage folder, for example:
NLS_PACKAGE_FOLDER = //tmp//LP//nlspackage.

PROD_SELECTION_PKG

Name of the language pack to install. Several product components can be included in one language package. You might want to install only some of the available components in a language pack.

BASE_AGENT_FOUND_PKG_LIST

Agent for which you are installing language support. This value is usually the same as *PROD_SELECTION_PKG*.

LANG_SELECTION_LIST

Language you want to install.

3. Enter the command to install the language pack with a response file (silent installation):

- For Windows systems:
lpinstaller.bat -f *path_to_response_file*
- For UNIX or Linux systems:
lpinstaller.sh -c *candle_home* -f *path_to_response_file*

where *candle_home* is the IBM Tivoli Monitoring base directory.

Response file example

```
# IBM Tivoli Monitoring Agent Language Pack Silent Installation Operation
#
#This is a sample response file for silent installation mode for the IBM Tivoli
#Monitoring Common Language Pack Installer.
#
#This file uses the IBM Tivoli Monitoring Common Agent Language Pack with the
#install package as an example.
#Note:
#This response file is for the INSTALLATION of language packs only.
#This file does not support UNINSTALLATION of language packs in silent mode.
#-----
#-----
#To successfully complete a silent installation of the the example of Common Agent
#localization pack, complete the following steps:
#
#1.Copy ITM_Agent_LP_silent.rsp to the directory where lpinstaller.bat or
#lpinstaller.sh is located (IBM Tivoli Monitoring Agent Language Pack build
#location).
#
#2.Modify the response file so that it is customized correctly and completely for
#your site.
# Complete all of the following steps in the response file.
#
#3.After customizing the response file, invoke the silent installation using the
#following command:
#For Windows:
# lpinstaller.bat -f <path_to_response_file>
#For UNIX and Linux:
# lpinstaller.sh -c <candle_home> -f <path_to_response_file>
#Note:<candle_home> is the IBM Tivoli Monitoring base directory.
#-----
```

```

#-----
#Force silent install mode.
#-----
INSTALLER_UI=silent
#-----
#Run add and update actions.
#-----
CHOSEN_INSTALL_SET=ADDUPD_SET
#-----
#NLS Package Folder, where the NLS Packages exist.
#For Windows:
#   Use the backslash-backslash(\\) as a file separator (for example,
#C:\\zosgm\\LCD7-3583-01\\nlspackage).
#For UNIX and Linux:
#   Use the slash-slash (//) as a file separator (for example,
#//installtivolii//lpsilenttest//nlspackage).
#-----
#NLS_PACKAGE_FOLDER=C:\\zosgm\\LCD7-3583-01\\nlspackage
NLS_PACKAGE_FOLDER=//tmp//LP//nlspackage
#-----
#List the packages to process; both variables are required.
#Each variable requires that full paths are specified.
#Separate multiple entries with a semicolon (;).
#For Windows:
#       Use the backslash-backslash(\\) as a file separator.
#For Unix and Linux:
#       Use the slash-slash (//) as a file separator.
#-----
#PROD_SELECTION_PKG=C:\\zosgm\\LCD7-3583-01\\nlspackage\\KIP_NLS.nlspkg
#BASE_AGENT_FOUND_PKG_LIST=C:\\zosgm\\LCD7-3583-01\\nlspackage\\KIP_NLS.nlspkg
PROD_SELECTION_PKG=//tmp//LP//nlspackage//kex_nls.nlspkg;//tmp//LP//nlspackage//
koq_nls.nlspkg
BASE_AGENT_FOUND_PKG_LIST=//tmp//LP//nlspackage//kex_nls.nlspkg;//
tmp//LP//nlspackage//koq_nls.nlspkg
#-----
#List the languages to process.
#Separate multiple entries with semicolons.
#-----
LANG_SELECTION_LIST=pt_BR;fr;de;it;ja;ko;zh_CN;es;zh_TW

```

Agent-specific installation and configuration

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

Before you begin

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

- To monitor a single stand-alone XenServer host that is not a member of a XenServer pool, 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 (host name, username, and password) for each XenServer host in the XenServer pool must be entered for the agent to 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. 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.

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-6.0.0-1 version from the Citrix website.

The SDK kit can be downloaded from the Download SDKs page of the Citrix Developer website (<http://community.citrix.com/display/xs/XenServer+SDK+Archive>).

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

- ws-commons-util-1.0.2.jar
- xenserver-6.0.0-1.jar

Place these files in the following locations:

- Windows: %CANDLE_HOME%\TMAITM6
- Windows 64: %CANDLE_HOME%\TMAITM6_x64
- Linux: \$CANDLEHOME/platform_code/xi/bin

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, and network disk) data for that virtual machine to be correctly collected and reported by the Citrix XenServer agent.

About this task

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

Restriction: Silent configuration is not supported for the Citrix XenServer agent.

Procedure

1. 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.

2. Enabling SSL communication with Citrix XenServer agent data sources (Optional)

The Citrix XenServer agent can be configured to securely communicate with its XenServer data sources by 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 you need not 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 custom generated for the XenServer host and then 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:

- a. Copy the SSL certificate that was loaded into the XenServer agent to the computer where the agent is installed.
- b. 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.
- c. 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 for the XenServer data source certificate being added to the truststore.

Truststore

The complete path and file name for 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 Environment documentation for information about the tools to use.

Note: To use the keytool command, the Java Runtime Environment 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): `set PATH="$PATH":install_dir/JRE/li6263/bin`
 - Linux (64-bit): `set PATH="$PATH":install_dir/JRE/lx8266/bin`
- d. 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 protocol, you must add the SSL certificates for each of the 16 XenServer hosts to the XenServer agent instance truststore file.

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

Configuration values

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

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

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

Validate SSL Certificates (DISABLE_CERT_VERIFICATION)

Enables SSL certificate validation for SSL connections.

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

This group defines information that applies to the entire agent.

Validate SSL Certificates (KXI_VALIDATE_SSL_CERT)

This allows you to enable or disable SSL Certificate validation when SSL connections are specified.

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

This value is required.

Default value: NO

Basic Agent Configuration (AGENT_CONFIGURATION)

Configuration settings for the agent itself

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

This group defines information that applies to the entire agent.

Max Log File Amount (KXI_LOGGING_MAX_FILE_COUNT)

The maximum amount of files before the log roll resets.

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

This value is required.

Default value: 5

Max Log File Size (Megabytes) (KXI_LOGGING_MAX_FILE_SIZE_MB)

The maximum size of the log files before the file rolls.

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

This value is required.

Default value: 1

Agent Logging Level (KXI_LOG_LEVEL)

Log level of the agent. Fatal is minimal logging, debug is maximum.

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

This value is required.

Default value: WARN

Default Credentials (DEFAULT_CREDENTIALS)

Credentials used as defaults for all XenServer host connections if host-specific credentials are not entered

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

This group defines information that applies to the entire agent.

Password (PASSWORD)

The password used to log on to the XenServer host.

The type is password.

This value is required.

Default value: None

Username (USERNAME)

The username used to log on to the XenServer host.

The type is string.

This value is required.

Default value: None

Use SSL (USE_SSL)

Enable SSL for connection to XenServer host.

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

This value is required.

Default value: NO

Citrix XenServer Hypervisors (XENSERVICES_HOSTS_CONNECTIONS)

The XenServer physical hosts. Each agent instance is configured to monitor a single pool of XenServer hosts only. Mixing hosts from separate XenServer Pools within a single agent instance is not supported.

Note:

- From 1 to 16 XenServer hosts are located in a XenServer pool. Each XenServer host must be configured using this repeatable configuration panel, or the agent instance cannot collect data. See Figure 1 on page 13
- Default credentials fail to get carried over to subsequent configuration panels when the Tivoli Enterprise Monitoring Agent Framework is at version 6.2.3 Fix Pack 2. In the configuration panel in Figure 1 on page 13, the **Username** and **Password** fields are empty. Although the default credentials are not visible, the configuration uses the defaults on the previous page. Continue configuration by entering the **Hostname** value and leaving the **Username** and **Password** fields empty.

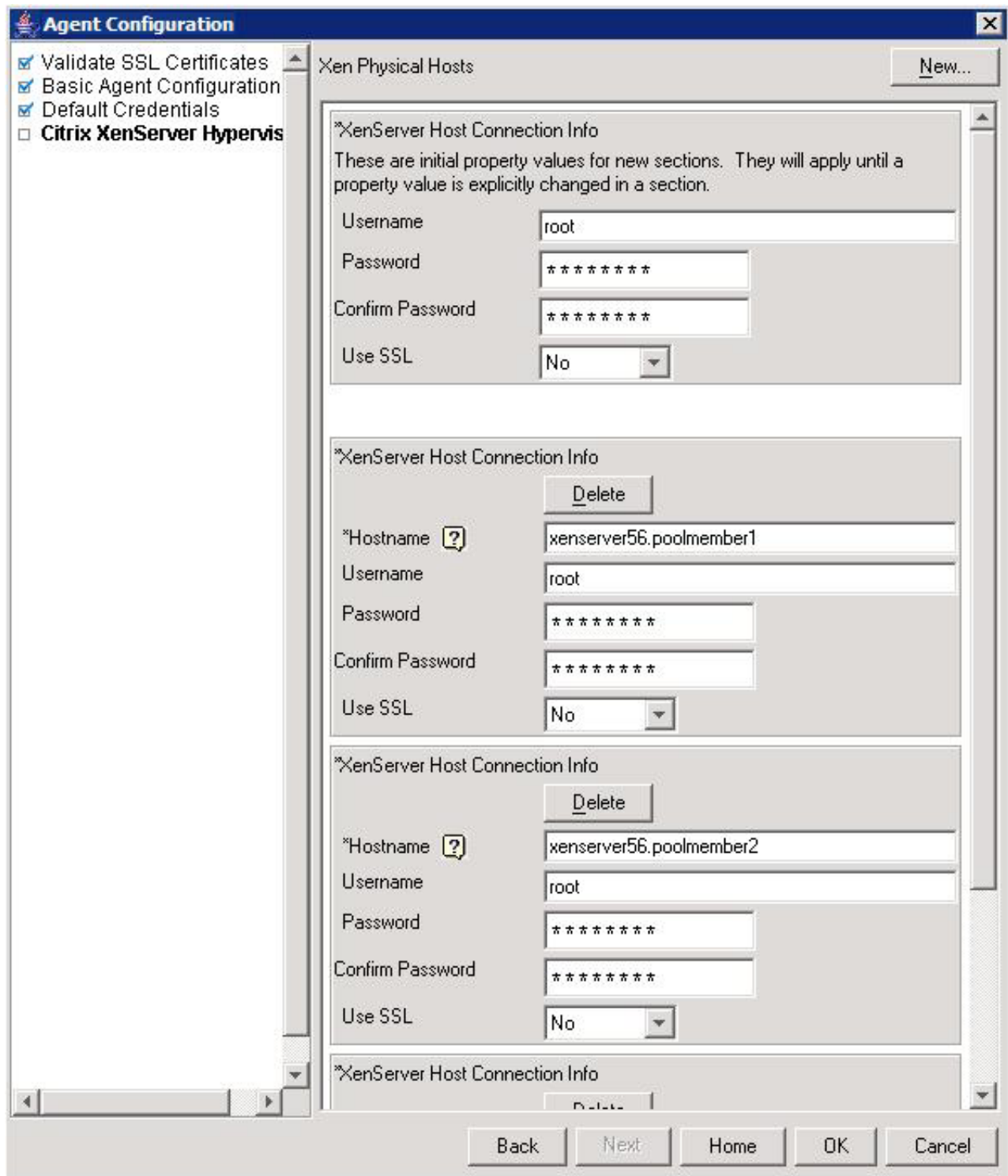


Figure 1. Example Citrix XenServer agent instance configuration of a XenServer pool containing three XenServer hosts within the pool

The configuration elements defined in this group are always present in the agent's configuration. Use the information in this group to create additional subnodes.

Advanced (Advanced)

Allows the user to override values specified in previous sections.

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

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

Default value: None

Hostname (Hostname)

Hostname of XenServer host (hypervisor). Note: If SSL is enabled, this hostname must be same as the fully qualified domain name listed in the imported X.509 certificate for this server.

The type is string.

This value is required.

Default value: None

Password (PASSWORD)

The password used to log on to the XenServer host.

The type is password.

This value is optional.

Default value: None

Username (USERNAME)

The username used to log on to the XenServer host.

The type is string.

This value is optional.

Default value: None

Use SSL (USE_SSL)

Enable SSL for connection to XenServer host.

The type is one of the following values: No, Yes, Use default.

This value is optional.

Default value: 3

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, and network disk) data for that virtual machine to be correctly collected and reported by the Citrix XenServer Agent.

Remote installation and configuration

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

When installing the agent remotely, you must provide the configuration values for the agent to operate. See "Configuration values" on page 10.

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

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

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

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

```
tacmd addSystem -t XI -n Primary:sample.node.name:NT
-p INSTANCE="inst1"
DISABLE_CERT_VERIFICATION.KXI_VALIDATE_SSL_CERT=NO
AGENT_CONFIGURATION.KXI_LOGGING_MAX_FILE_COUNT=5
AGENT_CONFIGURATION.KXI_LOGGING_MAX_FILE_SIZE_MB=1
AGENT_CONFIGURATION.KXI_LOG_LEVEL=WARN
DEFAULT_CREDENTIALS.USERNAME=value
DEFAULT_CREDENTIALS.PASSWORD=value
DEFAULT_CREDENTIALS.USE_SSL=NO
XENSERVER_HOSTS_CONNECTIONS:xenserver.poolmember1.USE_SSL=NO
XENSERVER_HOSTS_CONNECTIONS:xenserver.poolmember2.USE_SSL=NO
XENSERVER_HOSTS_CONNECTIONS:xenserver.poolmember3.USE_SSL=NO
```

Note:

- Each repeatable XenServer host configuration section parameter requires the host name to be specified with a colon and before the section parameter.
Example: :xenserver.poolmember1 in
XENSERVER_HOSTS_CONNECTIONS:xenserver.poolmember1.USE_SSL=NO
- Each repeatable XenServer host configuration section must have at least one parameter set, even if it uses the same value set in the default credentials section.

Importing the logical navigator

The Citrix XenServer agent provides a Tivoli Enterprise Portal-based logical navigator that can be used to provide an enhanced view of multiple monitored XenServer Pool Instances. The logical navigator also provides a single location to view the status of all monitored XenServer hypervisors within the environment.

About this task

From the command line, navigate to the Logical_Navigator directory in the root of the agent installation media and install the logical navigator using the following commands:

Procedure

1. `tacmd importnavigator -x kxi_logicalnav.xml -s hostname -u userid -p password` where
 - -s is the server host or the host name
 - -u is the **TEPS_USERID**
 - -p is the password
2. `tacmd edituser -u TEPS_USERID -w TEPS_PASSWORD -i TEPS_USERID -p NavigatorViews=physical,logical,XenServer_Details` where *XenServer_Details* is the display name of the logical navigator being imported.

Results

After running these commands, refresh the Tivoli Enterprise Portal Desktop or Tivoli Enterprise Portal Browser and the logical navigator appears.

Chapter 3. Workspaces reference

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

About workspaces

Use the Navigator tree to select the workspace you want to see. As part of the application window, the status bar shows the Tivoli Enterprise Portal Server name and port number to which the displayed information applies and the ID of the current user.

When you select an item in the Navigator tree, a default workspace is displayed. When you right-click a Navigator item, a menu that includes a Workspace item is displayed. The Workspace item contains a list of workspaces for that Navigator item. Each workspace has at least one view. Some views have links to other workspaces. You can also use the Workspace Gallery tool as described in the *Tivoli Enterprise Portal User's Guide* to open workspaces.

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

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

The IBM Tivoli Monitoring for Virtual Environments Agent for Citrix XenServer provides various default workspaces. These workspaces are displayed in the Navigator tree under the following nodes and subnodes for this monitoring agent:

Citrix XenServer

Corresponds to a Citrix XenServer instance and contains agent instance-level workspaces.

Citrix XenServer Hypervisors

Xen 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 node for each instance is created called *Instance::XI*. A workspace that is called *Instance::XI* is associated with the instance node. This workspace is comparable to the Citrix XenServer workspace.

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

Additional information about workspaces

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

For a list of the predefined workspaces for this monitoring agent and a description of each workspace, see Predefined workspaces and the information about each individual workspace.

Some attribute groups for this monitoring agent might not be represented in the predefined workspaces or views for this agent. For a full list of the attribute groups, see "Attribute groups for the monitoring agent" on page 25.

Predefined workspaces

The Citrix XenServer agent provides 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 Agent Diagnostics workspace
 - XenServer Agent Output Log workspace
 - XenServer Agent Trace Log workspace
- Hosts Navigator item
 - Hosts workspace
 - XenServer Hosts - VM Workload 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 - SR workspace
 - Physical Block Devices - PBD workspace
 - Storage workspace
 - Virtual Block Devices - VBD workspace
 - Virtual Disk Images - VDI workspace

Citrix XenServer Hypervisors (XHV) subnode

- Citrix XenServer Hypervisors Navigator item
 - Citrix XenServer 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

Workspace descriptions

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

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

Citrix XenServer Navigator item

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

Citrix XenServer workspace

The XenServer 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 Agent Connection Status

Connection status information for the XenServer 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 used 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 used (CPU) XenServer hosts.

Top 10 Most Utilized - Memory - XenServer Hosts workspace

The top 10 most used 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 used (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

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

Events workspace

This workspace contains detailed information on the events and notifications generated by the XenServer hosts across the XenServer pool.

This workspace contains the following views:

Pool Master Transition Events

This view contains a detailed listing of the pool master transitions occurring in the XenServer pool.

XenServer Pool System Alerts

This view contains a detailed listing of the XenServer events.

XenServer Agent Connection Status

This view shows detailed connection status of the XenServer agent.

XenServer Agent Diagnostics workspace

This workspace contains views showing performance object status and thread pool status for the XenServer agent.

This workspace contains the following views:

Performance Object Status

This view shows the detailed status of each attribute group in the XenServer agent.

Thread Pool Status

This view provides a summary of the thread pool status of the XenServer agent.

XenServer Agent Output Log workspace

This workspace displays entries from the XenServer agent output log.

This workspace contains the following view:

Agent Output Log

This view shows a detailed list of the XenServer agent output log entries.

XenServer Agent Trace Log workspace

This workspace displays entries from the XenServer agent trace log.

This workspace contains the following view:

Agent Trace Log

This view shows a detailed list of the XenServer agent trace log entries.

Hosts Navigator item

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

Hosts workspace

This workspace contains detailed information about all hosts in the XenServer pool.

This workspace contains the following views:

XenServer CPU Utilization - Pool Wide

This view provides a graphical overview of the CPU utilization for each physical host in the XenServer pool.

XenServer Memory Utilization - Pool Wide

This view provides a graphical overview of the memory utilization for each physical host in the XenServer pool.

XenServer Hosts

This view shows detailed information for each XenServer host in the XenServer pool.

XenServer Hosts - VM Workload workspace

This workspace provides views containing XenServer host virtual machine workload information for all hosts within the XenServer pool.

This workspace contains the following views:

XenServer Host - VM Workload

This view shows a breakdown of the XenServer host virtual machine workload.

XenServer Hosts Overview

This view provides an overview of the XenServer host virtual machines.

XenServer Hosts Uptime and License Expiration - Pool Wide workspace

This workspace provides views containing uptime and license expiration information for all hosts in the XenServer pool

This workspace contains the following views:

Days Until License Expires

This view shows the number of days until the license of the host expires.

Uptimes in Minutes

This view shows uptime, in minutes, of all hosts in the XenServer pool.

Pool Navigator item

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

Network Summary workspace

This workspace provides views containing a summary of the networks across the XenServer pool.

This workspace contains the following view:

Network Summary

This view shows a summary of the networks across the XenServer pool.

Pool workspace

This workspace provides a high-level summary of XenServer pool status.

This workspace contains the following views:

Virtual Machines Status

This view contains a graphical overview of the current runstate of all VMs in the pool.

XenServer Hosts Status

This view contains a graphical overview of the status of all XenServer hosts in the pool.

XenServer Pool Overview

This view shows a high-level summary of the hosts and VM status for the XenServer pool.

XenServer Pool Details

This view contains a detailed summary of the hosts and VMs in the XenServer pool.

XenServer Pool Configuration

This view contains details of the current configuration of the XenServer pool with an emphasis on High-Availability configuration.

VIFs workspace

This workspace provides view that display a summary of the virtual network interfaces (VIF) across the XenServer pool.

This workspace contains the following view:

Network Summary - Pool Wide

This view shows a summary of the virtual network interfaces (VIF) across the XenServer pool.

XenServer Updates and Patches workspace

This workspace provides views on update and patch information for the XenServer pool.

This workspace contains the following view:

Patches and Updates Available within Pool

This view shows a detailed list of patches and updates available across the XenServer pool.

Storage Navigator item

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

All Storage Repositories - SR workspace

This workspace shows detailed information about all the storage repositories in the XenServer pool.

This workspace contains the following views:

Storage Repositories - Utilization

This view shows the utilization of all shared repositories in the XenServer pool.

Storage Repositories - SR

This view contains a list of all the storage repositories in the XenServer pool.

Physical Block Devices - PBD workspace

This workspace shows detailed information about all physical block devices in the XenServer pool.

This workspace contains the following view:

Physical Block Devices - Pool Wide

This view contains a detailed list of all the physical block devices in the XenServer pool.

Storage workspace

This workspace contains views that display information about shared storage repositories within the XenServer pool.

This workspace contains the following views:

Shared Storage Repositories - Utilization

This view shows the utilization of all shared repositories in the XenServer pool.

Shared Storage Repositories - SR

This view contains a detailed list of the of all shared repositories in the XenServer pool.

Virtual Block Devices - VBD workspace

This workspace shows detailed information about all virtual block devices in the XenServer pool.

This workspace contains the following view:

Virtual Block Devices - Pool Wide

This view contains a detailed list of all the virtual block devices in the XenServer pool.

Virtual Disk Images - VDI workspace

This workspace shows detailed information about all virtual disk images in the XenServer pool.

This workspace contains the following view:

Virtual Disk Images - Pool Wide

This view contains a detailed list of all virtual disk images in the XenServer pool.

Citrix XenServer Hypervisors subnode

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

Citrix XenServer Hypervisors Navigator item

Citrix XenServer 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.

XenServer Host - VM Workload.

A graphical view of the virtual machine workload on this host.

Overall CPU Utilization

A graphical view of the aggregate processor utilization for this host.

Overall Memory Utilization

A graphical view of the memory utilization for this host.

CPU Navigator item

CPU workspace

This workspace contains views showing detailed information about the processors, cores, or hyperthreads for this XenServer host.

This workspace contains the following views:

Physical Processor Utilization

This view shows the utilization for each processor within the XenServer host.

Physical Processor Details

This view contains detailed information for each processor within the XenServer host.

Disk Navigator item

All Disks workspace

This workspace contains views showing information about the various storage objects associated with this XenServer host.

This workspace contains the following views:

SR Utilization

This view shows the utilization of all storage repositories for this XenServer host.

Storage Repositories - SRs

This view provides a detailed list of all storage repositories on this XenServer host.

Disk workspace

This workspace contains views showing information about the non-ISO storage repositories associated with this host.

This workspace contains the following views:

SR Utilization

This view shows the utilization of all non-ISO storage repositories on this XenServer host.

Non-ISO Storage Repositories - SR

This view contains a detailed list of all non-ISO storage repositories on this XenServer host.

Network Navigator item

Network workspace

This workspace contains views showing detailed networking information for this XenServer host.

This workspace contains the following views:

PIFs This view contains a detailed list of the physical network interfaces on this XenServer host.

PIF Read / Write IO

This view shows network I/O for this XenServer host.

Patch Navigator item

Patch workspace

This workspace contains a view showing information about the patches and updates applied for this XenServer host.

This workspace contains the following view:

Patches and Updates Applied to this XenServer host

This view contains a detailed list of the patches and updates applied to this XenServer host.

Virtual Machines Navigator item

Virtual Machines workspace

This workspace contains views showing information about the virtual machines located on this XenServer host.

This workspace contains the following views:

Virtual Machines Status

This view shows the overall status of all virtual machines located on this host.

Virtual Machine Metrics

This view contains a detailed list of all virtual machines on this XenServer host along with detailed metrics for each virtual machine.

XenServer Navigator item

XenServer workspace

This workspace contains views that show various key metrics that provide health, status, and availability information for the XenServer host.

This workspace contains the following views:

Dom0 - Control Domain - Summary

This view provides a detailed summary of the control domain for this XenServer host.

Overall CPU Utilization

This view shows the CPU utilization of this XenServer host.

Overall Memory Utilization

This view shows the memory utilization of this XenServer host.

XenServer Host Summary

This view provides key metrics for this XenServer host.

XenServer Host Parameters

This view shows configuration details for this XenServer host.

Chapter 4. Attributes reference

Attributes are the application properties that are being measured and reported by the IBM Tivoli Monitoring for Virtual Environments Agent for Citrix XenServer.

About attributes

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

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

- Chart or table views

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

- Situations

You use attributes to create situations that monitor the state of your operating system, database, or application. A situation describes a condition you want to test. When you start a situation, the values you assign to the situation attributes are compared with the values collected by the 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.

Additional information about attributes

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

For a list of the attribute groups, a list of the attributes in each attribute group, and descriptions of the attributes for this monitoring agent, see “Attribute groups for the monitoring agent” and “Attributes in each attribute group” on page 27.

Attribute groups for the monitoring agent

The Citrix XenServer 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, 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 output log
 - Table name: KXIOUTLOG
- Attribute group name: agent trace log
 - Table name: KXITRCELOG
- Attribute group name: control domain
 - Table name: KXIHCTRLDM
 - Warehouse table name: KXI_CONTROL_DOMAIN or KXIHCTRLDM

- Attribute group name: host cpu
 - Table name: KXIIHCPUSN
 - Warehouse table name: KXI_HOST_CPU or KXIIHCPUSN
- Attribute group name: host details
 - Table name: KXIHVHODET
 - Warehouse table name: KXI_HOST_DETAILS or KXIHVHODET
- Attribute group name: host discovery
 - Table name: KXIXHVDS
 - Warehouse table name: KXI_HOST_DISCOVERY or KXIXHVDS
- 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
 - Table name: KXIATTRI21
 - Warehouse table name: KXI_POOL_NETWORK or KXIATTRI21
- 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: Thread Pool Status
 - Table name: KXITHPLST
 - Warehouse table name: KXI_THREAD_POOL_STATUS or KXITHPLST
- Attribute group name: xenserver notification events
 - Table name: KXIXENEVTS
 - Warehouse table name: KXI_XENSER_NOTIFICATION_EVENTS or KXIXENEVTS
- Attribute group name: XHV Performance Object Status
 - Table name: KXIXHVPOS
 - Warehouse table name: KXI_XHV_PERFORMANCE_OBJECT_STATUS or KXIXHVPOS

Attributes in each attribute group

Attributes in each Citrix XenServer agent attribute group collect data that the agent uses for monitoring.

The descriptions of the attribute groups contain the following information:

Historical group

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

Attribute descriptions

Information such as description, type, source, and warehouse name, as 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.

The Source information sometimes uses C programming code syntax for if-then-else clauses to describe how an attribute is derived, for example:

```
(CPU_Pct < 0 ) || (Memory_Pct < 0 )? 0 : 1
```

This example means that if the CPU_Pct attribute is less than 0 or if the Memory_Pct attribute is less than 0, then the attribute is set to 0. Otherwise, the attribute is set to 1.

agent connection status attribute group

This attribute group indicates whether the monitoring agent for Citrix XenServer connected to the xapi (XenServer API) service of the pool master.

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

Source

The source for this attribute is the agent.

Warehouse name

NODE

Timestamp attribute

Description

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

Type

String

Source

The source for this attribute is the agent.

Warehouse name

TIMESTAMP

Connected to Pool Master attribute

Description

Indicates whether the monitoring agent can 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 that are shown in parentheses. The following values are defined:

- True (1)
- False (0)

Any other value is the value that is 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 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 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 successfully connected).

Type	String
Warehouse name	POOLMASTER_PORT or XMFPOR

agent output log attribute group

This attribute group displays the output.log file of the XenServer agent.

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 output log attribute group:

Node attribute: This attribute is a key attribute.

Description

The managed system name of the agent.

Type

String

Source

The source for this attribute is the agent.

Timestamp attribute

Description

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

Type

String

Source

The source for this attribute is the agent.

Log Text attribute

Description

Log entry text

Type

String

Source

The source for this attribute is Log File Data.

agent trace log attribute group

This attribute group displays the trace.log file of the XenServer agent.

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

Source

The source for this attribute is the agent.

Timestamp attribute

Description

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

Type

String

Source

The source for this attribute is the agent.

Date attribute

Description	
	Date of the log message.
Type	
	String
Source	
	The source for this attribute is Log File Data.
<u>Time attribute</u>	
Description	
	Time of the log message.
Type	
	String
Source	
	The source for this attribute is Log File Data.
<u>Severity attribute</u>	
Description	
	Severity of the log message.
Type	
	String
Source	
	The source for this attribute is Log File Data.
<u>Server Name attribute</u>	
Description	
	Name of the server that generated the log message.
Type	
	String
Source	
	The source for this attribute is Log File Data.
<u>Thread attribute</u>	
Description	
	Name of the thread that generated the log message.
Type	
	String
Source	
	The source for this attribute is Log File Data.
<u>Class attribute</u>	
Description	
	Name of the class that generated the log message.
Type	
	String
Source	
	The source for this attribute is Log File Data.
<u>Method attribute</u>	
Description	
	Name of the method that generated the log message.
Type	
	String
Source	
	The source for this attribute is Log File Data.
<u>Log Entry Text attribute</u>	
Description	
	Log entry text.
Type	
	String
Source	
	The source for this attribute is Log File Data.
<u>Log File Name attribute</u>	

Description	Log file name.
Type	String
Source	The source for this attribute is Log File Data.

control domain attribute group

This attribute group displays information that is collected from the control domain 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 control domain attribute group:

Node attribute: This attribute is a key attribute.

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

Timestamp attribute

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

Hostname attribute: This attribute is a key attribute.

Description	The hostname of this XenServer host.
Type	String
Warehouse name	HOSTNAME

Memory Used (MB) attribute

Description	The memory that is used by the control domain in MB.
Type	Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined: • Unavailable (-1) Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.
Warehouse name	MEMORY_USED or MEMUSED

CPU % Util attribute

Description	The CPU utilization that is used by the control domain.
--------------------	---

Type

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

- Unavailable (-1)

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

Warehouse name

CPU_UTILIZATION or CPUUTIL

vCPUs attribute**Description**

Total number of virtual CPUs for the control domain.

Type

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

- Unavailable (-1)

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

Warehouse name

VCPU_AMOUNT or NUMVCPU

Disk Read (Kib) attribute**Description**

The disk reads (in Kb) by the control domain.

Type

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

- Unavailable (-1)

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

Warehouse name

DISK_READ_KIB or DSKREAD

Disk Write (Kib) attribute**Description**

The disk writes (in Kb) by the control domain.

Type

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

- Unavailable (-1)

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

Warehouse name

DISK_WRITE_KIB or DSKWRITE

Memory Overhead (MB) attribute**Description**

Virtualization memory overhead in MB on the host.

Type

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

- Unavailable (-1)

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

Warehouse name

MEMORY_OVERHEAD_MB or MEMOVRH

host cpu attribute group

This attribute group displays details for each physical processor, core, or hyperthead that the XenServer host detects.

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

Source

The source for this attribute is the agent.

Warehouse name

NODE

Timestamp attribute

Description

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

Type

String

Source

The source for this attribute is the agent.

Warehouse name

TIMESTAMP

UUID attribute: This attribute is a key attribute.

Description

The universal unique identifier of the host CPU.

Type

String

Warehouse name

UUID or CPUUUID

CPU Family attribute

Description

The family (number) of the physical processor.

Type

String

Warehouse name

CPU_FAMILY or CPUFAM

CPU Host (UUID) attribute

Description

The universal unique identifier of the XenServer host where the CPU is located.

Type

String

Warehouse name

CPU_HOST_UUID or HOSTUUID

CPU Host (Name Label) attribute

Description

The name of the XenServer host where the CPU is located.

Type	String
Warehouse name	CPU_HOST_NAME_LABEL or HOSTNAME
<u>CPU Model Number attribute</u>	
Description	The model number of the physical processor.
Type	String
Warehouse name	CPU_MODEL_NUMBER or MODELNUM
<u>CPU Model Name attribute</u>	
Description	The model name of the physical processor.
Type	String
Warehouse name	CPU_MODEL_NAME or MODELNAME
<u>CPU Number attribute</u>	
Description	The number of the core within the host.
Type	String
Warehouse name	CPU_NUMBER or CPUNUM
<u>CPU Speed attribute</u>	
Description	The speed of the physical processor in Megahertz.
Type	String
Warehouse name	CPU_SPEED or CPUSPEED
<u>CPU Stepping attribute</u>	
Description	The stepping of the physical processor.
Type	String
Warehouse name	CPU_STEPPING or STEPPING
<u>CPU % Util attribute</u>	
Description	The utilization of this processor.
Type	Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined: • Unavailable (-1) Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.
Warehouse name	CPU_PERCENT_USED or CPUUTIL
<u>CPU Vendor attribute</u>	
Description	The vendor of the physical processor.

Type	String
Warehouse name	CPU_VENDOR or CPUVENDOR
<u>CPU % Free attribute</u>	
Description	The percentage of the physical processor that is free.
Type	Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined: • Unavailable (101) Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.
Source	The source for this attribute is derived: 100 - CPU_Percent_Used.
Warehouse name	CPU_PERCENT_FREE or CPUFREE

host details attribute group

This attribute group, displays summarized 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

Source
The source for this attribute is the agent.

Warehouse name
NODE

Timestamp attribute

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

Type
String

Source
The source for this attribute is the agent.

Warehouse name
TIMESTAMP

Last Updated attribute

Description
Time at which this information was last updated.

Type
Timestamp

Warehouse name
LAST_UPDATED or LSTUPDATE

Live attribute

Description
Indicates 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 that are shown in parentheses. The following values are defined: • Yes (1) • No (0) Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.
Warehouse name	LIVE
<u>Free Memory (MB) attribute</u>	
Description	The amount of physical memory that is free in MB.
Type	Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined: • Unavailable (-1) Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.
Warehouse name	MEMORY_FREE or MEMFREE
<u>Physical Memory (MB) attribute</u>	
Description	The amount of physical memory in MB on this XenServer host
Type	Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined: • Unavailable (-1) Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.
Warehouse name	MEMORY_TOTAL or MEMPHYS
<u>Overall CPU % Util attribute</u>	
Description	The overall CPU utilization of the XenServer host.
Type	Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined: • Unavailable (-1) Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.
Warehouse name	AGGREGATE_CPU_UTILIZATION or CPUUTIL
<u>UUID attribute: This attribute is a key attribute.</u>	
Description	The universal unique identifier of the host.
Type	String
Warehouse name	UUID or HOSTUUID
<u>IP Address attribute</u>	

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	
Integer (64-bit numeric property) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:	
• Unavailable (-1)	
Any other value is the value that is 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	
Integer (64-bit numeric property) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:	
• Unavailable (-1)	
Any other value is the value that is 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 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	
Indicates whether this XenServer host is enabled to run VMs (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 that are shown in parentheses. The following values are defined:	
• Yes (1)	

- No (0)

Any other value is the value that is 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
The description of this XenServer host.

Type
String

Warehouse name
NAME_DESCRIPTION or XSRVRDESC

XenServer Name attribute

Description
The name of 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 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 that are shown in parentheses. The following values are defined:

- Yes (1)
- No (0)

Any other value is the value that is 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 in KB/sec across all of the physical adapters of this XenServer host.

Type

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

- Unavailable (-1)

Any other value is the value that is 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 in KB/sec across all of the physical adapters of this XenServer host.

Type

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

- Unavailable (-1)

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

Warehouse name

NETWORK_OUT or NETOUT

Uptime attribute**Description**

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

Type

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

- Unavailable (-1)

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

- Unavailable (-1)

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

Warehouse name	
DAYS_UNTIL_EXPIRATION or DAYSEXP	
<u>Host Product Version attribute</u>	
Description	The software product version of this XenServer host.
Type	String
Warehouse name	
HOST_PRODUCT_VERSION or PRODVER	
<u>Host Build Number attribute</u>	
Description	The software build number of this XenServer host.
Type	String
Warehouse name	
HOST_BUILD_NUMBER or BUILDNUM	
<u>Host Logging Multipathing attribute</u>	
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 that are shown in parentheses. The following values are defined: • Yes (1) • No (0) Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.
Warehouse name	
HOST_MULTIPATHING or MULTIPATH	
<u>XAPI Memory Usage (KiB) attribute</u>	
Description	The memory used by the XAPI process in KB
Type	Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined: • Unavailable (-1) Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.
Warehouse name	
XAPI_MEMORY_USAGE_KIB or XMEMUSED	
<u>XAPI Memory Free (KiB) attribute</u>	
Description	The memory free for the XAPI process in KB
Type	Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined: • Unavailable (-1) Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.
Warehouse name	
XAPI_MEMORY_FREE_KIB or XMEMFREE	
<u>XAPI Live Memory (KiB) attribute</u>	

Description

The live memory for the XAPI process in KB

Type

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

- Unavailable (-1)

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

Warehouse name

XAPI_LIVE_MEMORY_KIB or XMEMLIVE

XAPI Allocation (KiB) attribute**Description**

The allocation of the XAPI process in KB

Type

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

- Unavailable (-1)

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

- Unavailable (-1)

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

- Unavailable (-1)

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

- Unavailable (-1)

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

- Unavailable (-1)

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

Warehouse name

AGGREGATE_CPU_FREE or CPUFREE

Pool Name attribute

Description

The name of the current pool.

Type

String

Warehouse name

POOL_NAME or POLNAME

Total VMs attribute

Description

The total number of VMs on the host.

Type

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

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

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

Warehouse name

TOTAL_VIRTUAL_MACHINES or TTLVMS

Running VMs attribute

Description

The number of running VMs on the host.

Type

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

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

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

Warehouse name

RUNNING_VIRTUAL_MACHINES or RUNVMS

Halted VMs attribute

Description

The number of halted VMs on the host.

Type	Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined: • Value Exceeds Maximum (2147483647) • Value Exceeds Minimum (-2147483648) Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.
Warehouse name	HALTED_VIRTUAL_MACHINES or HLTVMS
<u>Suspended VMs attribute</u>	
Description	The number of suspended VMs on the host.
Type	Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined: • Value Exceeds Maximum (2147483647) • Value Exceeds Minimum (-2147483648) Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.
Warehouse name	SUSPENDED_VIRTUAL_MACHINES or SUSVMS
<u>Paused VMs attribute</u>	
Description	The number of paused VMs on the host.
Type	Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined: • Value Exceeds Maximum (2147483647) • Value Exceeds Minimum (-2147483648) Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.
Warehouse name	PAUSED_VIRTUAL_MACHINES or PSDVMS
<u>Unknown VMs attribute</u>	
Description	The number of VMs in an unknown state on the host.
Type	Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined: • Value Exceeds Maximum (2147483647) • Value Exceeds Minimum (-2147483648) Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.
Warehouse name	UNKNOWN_VIRTUAL_MACHINES or UNKVMS
<u>Processor Amount attribute</u>	
Description	The number of processors on the host.
Type	Integer (32-bit gauge) with enumerated values. The strings are displayed in the

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

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

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

Warehouse name

PROCESSOR_AMOUNT or PRCAMT

Physical Network Interface Amount attribute

Description

The number of physical network interfaces on the host.

Type

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

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

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

Warehouse name

PIF_AMOUNT or PHYNET

host discovery attribute group

This attribute group returns the list of each XenServer host discovered by the agent.

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 discovery attribute group:

Node attribute: This attribute is a key attribute.

Description

The managed system name of the agent.

Type

String

Source

The source for this attribute is the agent.

Warehouse name

NODE

Timestamp attribute

Description

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

Type

String

Source

The source for this attribute is the agent.

Warehouse name

TIMESTAMP

Subnode MSN attribute: This attribute is a key attribute.

Description

The Managed System Name of the subnode agent.

Type

String

Warehouse name

SUBNODE_MSN or SN_MSN

Subnode Affinity attribute

Description	The affinity for the subnode agent.
Type	String
Warehouse name	SUBNODE_AFFINITY or SN_AFFIN
<u>Subnode Type attribute: This attribute is a key attribute.</u>	
Description	The Node Type of this subnode.
Type	String
Warehouse name	SUBNODE_TYPE or SN_TYPE
<u>Subnode Resource Name attribute</u>	
Description	The Resource Name of the subnode agent.
Type	String
Warehouse name	SUBNODE_RESOURCE_NAME or SN_RES
<u>Subnode Version attribute</u>	
Description	The Version of the subnode agent.
Type	String
Warehouse name	SUBNODE_VERSION or SN_VER

host patches attribute group

This attribute group displays information about patches and updates that are available, installed 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 patches attribute group:

Node attribute: This attribute is a key attribute.

Description	The managed system name of the agent.
Type	String
Source	The source for this attribute is the agent.
Warehouse name	NODE
<u>Timestamp attribute</u>	
Description	The local time at the agent when the data was collected.
Type	String
Source	The source for this attribute is the agent.
Warehouse name	TIMESTAMP
<u>Host Patch UUID attribute: This attribute is a key attribute.</u>	

Description	The universal unique identifier of the patch.
Type	String
Warehouse name	PATCH_UUID or PATHCUUID
<u>Applied attribute</u>	
Description	Indicates whether the patch has been applied.
Type	String
Warehouse name	PATCH_APPLIED or APPLIED
<u>Host UUID attribute</u>	
Description	The universal unique identifier of the host.
Type	String
Warehouse name	PATCH_HOST_UUID or HOSTUUID
<u>Hostname attribute</u>	
Description	The hostname of the XenServer host.
Type	String
Warehouse name	PATCH_HOST_NAME or HOSTNAME
<u>Patch Description attribute</u>	
Description	The description of the patch.
Type	String
Warehouse name	PATCH_DESCRIPTION or PATCHDESC
<u>Patch Label attribute</u>	
Description	The Citrix-provided label for the patch.
Type	String
Warehouse name	PATCH_LABEL or PATCHNAME
<u>Pool Patch UUID attribute</u>	
Description	The universal unique identifier of the pool patch.
Type	String
Warehouse name	PATCH_POOL_PATCH_UUID or PPATCHUUID
<u>Pool Patch Name Label attribute</u>	
Description	The name of the pool patch.
Type	String
Warehouse name	PATCH_POOL_PATCH_NAME_LABEL or PPATCHNAME
<u>Size attribute</u>	

Description

Indicates the size 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 that are shown in parentheses. The following values are defined:

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

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

Warehouse name

PATCH_SIZE or SIZE

Application Date attribute**Description**

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

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

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

Warehouse name

PATCH_VERSION or VERSION

host pbd attribute group

This attribute group displays physical block devices (PBD) 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

Source

The source for this attribute is the agent.

Warehouse name

NODE

Timestamp attribute**Description**

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

Type

String

Source

The source for this attribute is the agent.

Warehouse name

TIMESTAMP

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**

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

- True (true)
- False (false)

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

Warehouse name

CURRENTLY_ATTACHED or CURATTCH

PBD's Host UUID attribute**Description**

The 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**

The 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

This attribute group displays physical network interfaces (PIF) 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

Source

The source for this attribute is the agent.

Warehouse name

NODE

Timestamp attribute

Description

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

Type

String

Source

The source for this attribute is the agent.

Warehouse name

TIMESTAMP

Physical Network Interface UUID attribute: This attribute is a key attribute.

Description

The universal unique identifier of the physical interface.

Type

String

Warehouse name

UUID or PIFUUID

Currently Attached attribute

Description

Indicates 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

Indicates 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
<u>Gateway attribute</u>	
Description	The IP address of the gateway of this physical network interface.
Type	String
Warehouse name	GATEWAY or GTWYIP
<u>Host (UUID) attribute</u>	
Description	The Host (UUID) associated with this physical network interface.
Type	String
Warehouse name	HOST_UUID or HOSTUUID
<u>Host (Name) attribute</u>	
Description	The name of the host associated with this physical network interface.
Type	String
Warehouse name	HOST_NAME or HOSTNAME
<u>IP Address attribute</u>	
Description	IP address of this physical network interface.
Type	String
Warehouse name	IP or PIFIP
<u>IP Config Mode attribute</u>	
Description	Indicates whether the physical network interface is configured to use a static or DHCP-provided address.
Type	String
Warehouse name	CONFIG or IPCNFG
<u>MAC attribute</u>	
Description	MAC address of this physical network interface.
Type	String
Warehouse name	MAC
<u>Management attribute</u>	
Description	Indicates whether the control software is listening for connections on this interface.
Type	String
Warehouse name	MANAGEMENT or MNGMT
<u>Carrier attribute</u>	

Description	Indicates whether this physical network interface is a carrier.
Type	String
Warehouse name	CARRIER
<u>Device ID attribute</u>	
Description	Device ID.
Type	String
Warehouse name	DEVICE_ID or DEVID
<u>Device Name attribute</u>	
Description	Device Name.
Type	String
Warehouse name	DEVICE_NAME or DEVNAME
<u>Duplex attribute</u>	
Description	Indicates whether this device is duplex.
Type	String
Warehouse name	DUPLEX
<u>Read IO (Kbps) attribute</u>	
Description	The read bandwidth of the device.
Type	Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined: • Unavailable (-1) Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.
Warehouse name	READ or READIO
<u>Write IO (Kbps) attribute</u>	
Description	The write bandwidth of the device.
Type	Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined: • Unavailable (-1) Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.
Warehouse name	WRITE or WRITEIO
<u>Last Updated attribute</u>	
Description	The last update time of the physical network interface Metrics.

Type	Timestamp
Warehouse name	LAST_UPDATE or LSTUPDT
<u>PCI Bus Path attribute</u>	
Description	PCI bus path.
Type	String
Warehouse name	PCI_BUS or PCIBUS
<u>Speed attribute</u>	
Description	Metrics speed.
Type	Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined: • Unavailable (-1) Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.
Warehouse name	SPEED
<u>Vendor ID attribute</u>	
Description	Vendor ID of the physical network interface.
Type	String
Warehouse name	VENDOR or VENDORID
<u>Vendor Name attribute</u>	
Description	Vendor name of the physical network interface.
Type	String
Warehouse name	VENDOR_NAME or VENDORNAME
<u>MTU attribute</u>	
Description	Maximum transmission units of the physical network interface.
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 that are shown in parentheses. The following values are defined: • Unavailable (-1) Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.
Warehouse name	MTU
<u>Netmask attribute</u>	
Description	The netmask of the physical network interface.
Type	String

Warehouse name	NETMASK
<u>Network UUID attribute</u>	
Description	The universal unique identifier of the network of the physical network interface.
Type	String
Warehouse name	NETWORK_UUID or NETUUID
<u>Network Name attribute</u>	
Description	The name of the network associated with the physical network interface.
Type	String
Warehouse name	NETWORK_NAME or NETNAME
<u>Physical PIF attribute</u>	
Description	Indicates whether the network interface is physical.
Type	String
Warehouse name	PHYSICAL or PHYS
<u>VLAN attribute</u>	
Description	The VLAN to which the physical network interface for this host is attached.
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 that are shown in parentheses. The following values are defined: • Unavailable (-1) Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.
Warehouse name	VLAN

host vms attribute group

This attribute group displays information on the VMs that are located 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
Source	The source for this attribute is the agent.
Warehouse name	NODE
<u>Timestamp attribute</u>	
Description	The local time at the agent when the data was collected.

Type	String
Source	The source for this attribute is the agent.
Warehouse name	TIMESTAMP
<u>UUID attribute: This attribute is a key attribute.</u>	
Description	The universal unique identifier of the VM.
Type	String
Warehouse name	UUID or VMUUID
<u>Blocked Operations attribute</u>	
Description	Operations that are blocked until current ones are finished.
Type	String
Warehouse name	BLOCKED_OPERATIONS or BLCKOPS
<u>Always Running attribute</u>	
Description	If true then the system attempts to keep the VM 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 that are shown in parentheses. The following values are defined: • False (false) • True (true) Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.
Warehouse name	HA_ALWAYS_RUN or ALWYSRUN
<u>Restart Priority attribute</u>	
Description	If ha_always_run is set, this describes the restart priority.
Type	String
Warehouse name	HA_RESTART_PRIORITY or RSTRTPRIOR
<u>Snapshot attribute</u>	
Description	Indicates 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 that are shown in parentheses. The following values are defined: • Yes (1) • No (0) Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.
Warehouse name	IS_A_SNAPSHOT or SNAPSHOT
<u>VM Description attribute</u>	

Description	
The description of the VM.	
Type	
String	
Warehouse name	
NAME_DESCRIPTION or VMDESC	
<u>VM Name attribute</u>	
Description	
The name of the VM.	
Type	
String	
Warehouse name	
NAME_LABEL or VMNAME	
<u>Power State attribute</u>	
Description	
Current power state of the VM.	
Type	
String with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:	
• Running (RUNNING) • Halted (HALTED) • Suspended (SUSPENDED) • Paused (PAUSED) • Unknown (UNKNOWN)	
Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.	
Warehouse name	
POWER_STATE or PWRSTATE	
<u>Snapshot Of UUID attribute</u>	
Description	
The universal unique identifier of the VM of which this is a snapshot.	
Type	
String	
Warehouse name	
SNAPSHOT_OF_UUID or SNPSHTUUID	
<u>Snapshot Of attribute</u>	
Description	
The name of the VM of which this is a snapshot.	
Type	
String	
Warehouse name	
SNAPSHOT_OF_NAME_LABEL or SNPSHTOF	
<u>Creation Time attribute</u>	
Description	
Date/time when this snapshot was created.	
Type	
Timestamp	
Warehouse name	
SNAPSHOT_TIME or CRTTIME	
<u>Transportable Snapshot ID attribute</u>	
Description	
Transportable ID of the snapshot VM.	
Type	
String	

Warehouse name	
TRANSPORTABLE_SNAPSHOT_ID or TRNSPRTID	
<u>User Version attribute</u>	
Description	A user version number for this machine.
Type	String
Warehouse name	
USER_VERSION or USERVER	
<u>NIC Send (KBps) attribute</u>	
Description	Aggregate network traffic sent for the VM in KB/sec.
Type	Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined: • Unavailable (-1) Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.
Warehouse name	
NIC_SEND or NICSEND	
<u>NIC Receive (KBps) attribute</u>	
Description	Aggregate network traffic received for the VM in KB/sec.
Type	Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined: • Unavailable (-1) Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.
Warehouse name	
NIC_RECEIVE or NICREC	
<u>XenTools Status attribute</u>	
Description	The Status of XenTools on the VM.
Type	String
Warehouse name	
XENTOOLS_STATUS or XTSTATUS	
<u>XenTools Version attribute</u>	
Description	XenTools Version Number.
Type	String
Warehouse name	
XENTOOLS_VERSION or XTVER	
<u>XenTools Build # attribute</u>	
Description	XenTools Build Number.
Type	String
Warehouse name	
XENTOOLS_BUILD or XTBUILD	
<u>Distro attribute</u>	

Description	
Operating System of the VM.	
Type	
String	
Warehouse name	
DISTRO	
<u>Architecture attribute</u>	
Description	
Architecture of the VM.	
Type	
String	
Warehouse name	
ARCHITECTURE or ARCH	
<u>Resident On (Host) attribute</u>	
Description	
Name of the XenServer host where the virtual machine is located.	
Type	
String	
Warehouse name	
HOST_RESIDENT_ON or RESIDENTON	
<u>Overall CPU % Util attribute</u>	
Description	
The aggregate virtual processor utilization across all the virtual CPUs of the virtual machine.	
Type	
Integer (64-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:	
• Unavailable (-1) • Value Exceeds Maximum (9223372036854775807) • Value Exceeds Minimum (-9223372036854775808)	
Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.	
Warehouse name	
METRIC_VCPU_UTILIZATION or CPUUTIL	
<u># of vCPUs attribute</u>	
Description	
The number of virtual processors.	
Type	
Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:	
• Unavailable (-1)	
Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.	
Warehouse name	
METRIC_VCPU_PROCESSOR_AMOUNT or NUMVCPU	
<u>Disk Reads (KB) attribute</u>	
Description	
The disk reads in KB of the VM.	
Type	
Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:	
• Unavailable (-1)	

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

Warehouse name

DISK_READS_BYTES or DSKREAD

Disk Writes (KB) attribute

Description

The disk writes in KB of the VM.

Type

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

- Unavailable (-1)

Any other value is the value that is 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 VM.

Type

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

- Unavailable (-1)

Any other value is the value that is 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 VM.

Type

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

- Unavailable (-1)

Any other value is the value that is 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 VM.

Type

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

- Unavailable (-1)

Any other value is the value that is 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 VM.

Type

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

- Unavailable (-1)

Any other value is the value that is 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 VM.

Type

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

- Unavailable (-1)

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

Warehouse name

MEMORY_PERCENT_FREE or PCTMEMFREE

Overall CPU % Free attribute**Description**

The aggregate virtual processor percent free across all the virtual CPUs of the VM.

Type

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

- Unavailable (-1)

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

Warehouse name

METRIC_VCPU_FREE or CPUFREE

Memory Overhead (MB) attribute**Description**

Virtualization memory overhead in MB on the VM.

Type

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

- Unavailable (-1)

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

Warehouse name

MEMORY_OVERHEAD_MB or MEMOVRH

Live attribute**Description**

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

- Yes (1)
- No (0)

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

Warehouse name
LIVE

pbid sr join attribute group

This attribute group displays information on storage repositories (SR) that the XenServer host is configured to have access 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 pbid sr join attribute group:

Node attribute: This attribute is a key attribute.

Description

The managed system name of the agent.

Type

String

Source

The source for this attribute is the agent.

Warehouse name

NODE

Timestamp attribute

Description

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

Type

String

Source

The source for this attribute is the agent.

Warehouse name

TIMESTAMP

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

Description

The 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 CONTENTTYPE

SR Description attribute

Description

The description of the storage repository.

Type

String

Warehouse name

NAME_DESCRIPTION or SRDESC

SR Name attribute**Description**

The name of the storage repository.

Type

String

Warehouse name

NAME_LABEL or SRNAME

Shared attribute**Description**

Indicates whether this storage repository is (capable of being) shared between multiple hosts.

Type

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

- False (false)
- True (true)

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

Warehouse name

SHARED

Type attribute**Description**

The type of the storage repository.

Type

String

Warehouse name

TYPE

Capacity (MB) attribute**Description**

The total physical size of the repository in MB.

Type

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

- Unavailable (-1)

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

Source

The source for this attribute is derived: `physical_size / 1048576`.

Warehouse name

PHYSICAL_SIZE_MB or CPCTYMB

Used Space (MB) attribute**Description**

The amount of space used in MB.

Type

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

- Unavailable (-1)

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

Source

The source for this attribute is derived: `physical_utilization / 1048576`.

Warehouse name	
PHYSICAL_UTILIZATION_MB or PHYSUTLMB	
<u>Capacity (GB) attribute</u>	
Description	The total physical size of the repository in GB.
Type	Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined: • Unavailable (-1) Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.
Source	The source for this attribute is derived: <code>physical_size / 1073741824</code> .
Warehouse name	
PHYSICAL_SIZE_GB or CPCTYGB	
<u>Used Space (GB) attribute</u>	
Description	The amount of space used in GB.
Type	Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined: • Unavailable (-1) Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.
Source	The source for this attribute is derived: <code>physical_utilization / 1073741824</code> .
Warehouse name	
PHYSICAL_UTILIZATION_GB or PHYSUTLGB	
<u>Virtual Allocation (MB) attribute</u>	
Description	The sum of <code>virtual_sizes</code> of all virtual disk images in this storage repository in MB.
Type	Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined: • Unavailable (-1) Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.
Source	The source for this attribute is derived: <code>virtual_allocation / 1048576</code> .
Warehouse name	
VIRTUAL_ALLOCATION_MB or VIRTALLCMB	
<u>Virtual Allocation (GB) attribute</u>	
Description	The sum of <code>virtual_sizes</code> of all virtual disk images in this storage repository in GB.
Type	Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined: • Unavailable (-1)

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

Source

The source for this attribute is derived: `virtual_allocation / 1073741824`.

Warehouse name

`VIRTUAL_ALLOCATION_GB` or `VIRTALLCGB`

Free Space (MB) attribute

Description

The amount of free space on the storage repository in MB.

Type

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

- Unavailable (-1)

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

Source

The source for this attribute is derived: `(physical_size - physical_utilization) / 1048576`.

Warehouse name

`FREE_SPACE_MB` or `FREESPCMB`

Free Space (GB) attribute

Description

The amount of free space on the storage repository in GB.

Type

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

- Unavailable (-1)

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

Source

The source for this attribute is derived: `(physical_size - physical_utilization) / 1073741824`.

Warehouse name

`FREE_SPACE_GB` or `FREESPCGB`

Percent Used attribute

Description

The percentage of this storage repository that is in use.

Type

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

- Unavailable (-1)

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

Source

The source for this attribute is derived: `(physical_utilization * 100) / physical_size`.

Warehouse name

`PHYSICAL_UTILIZATION_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 that are shown in parentheses. The following values are defined: • Yes (1) • No (0) Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.
Warehouse name	MULTIPATH_CAPABLE or MULTIPATH
<u>Percent Free attribute</u>	
Description	The percentage of this storage repository that is free.
Type	Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined: • Unavailable (-1) Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.
Source	The source for this attribute is derived: free_space % physical_size.
Warehouse name	PHYSICAL_FREE_PERCENT or PCTFREE
<u>PBD UUID attribute</u>	
Description	The universal unique identifier of the physical block device.
Type	String
Warehouse name	PBD_UUID or PBDUUID
<u>PBD Currently Attached attribute</u>	
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 that are shown in parentheses. The following values are defined: • True (true) • False (false) Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.
Warehouse name	CURRENTLY_ATTACHED or CURATTCH
<u>PBD's Host UUID attribute</u>	
Description	The universal unique identifier of the host to which the physical block device is attached.
Type	String
Warehouse name	HOST_UUID or HOSTUUID
<u>PBD's Host attribute</u>	

Description

The 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**

The universal unique identifier of the storage repository to which the physical block device is attached.

Type

String

Warehouse name

SR_UUID or SRUUIDS

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 SRNAMES

Performance Object Status attribute group

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

Historical group

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

Attribute descriptions

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

Node attribute: This attribute is a key attribute.

Description

The managed system name of the agent.

Type

String

Source

The source for this attribute is the agent.

Warehouse name

NODE

Timestamp attribute**Description**

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

Type

String

Source

The source for this attribute is the agent.

Warehouse name

TIMESTAMP

Query Name attribute: This attribute is a key attribute.

Description

The name of the attribute group.

Type

String

Warehouse name

QUERY_NAME or ATTRGRP

Object Name attribute**Description**

The name of the performance object.

Type

String

Warehouse name

OBJECT_NAME or OBJNAME

Object Type attribute**Description**

The type of the performance object.

Type

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

- WMI (0)
- PERFMON (1)
- WMI ASSOCIATION GROUP (2)
- JMX (3)
- SNMP (4)
- SHELL COMMAND (5)
- JOINED GROUPS (6)
- CIMOM (7)
- CUSTOM (8)
- ROLLUP DATA (9)
- WMI REMOTE DATA (10)
- LOG FILE (11)
- JDBC (12)
- CONFIG DISCOVERY (13)
- NT EVENT LOG (14)
- FILTER (15)
- SNMP EVENT (16)
- PING (17)
- DIRECTOR DATA (18)
- DIRECTOR EVENT (19)
- SSH REMOTE SHELL COMMAND (20)

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

Warehouse name

OBJECT_TYPE or OBJTYPE

Object Status attribute**Description**

The status of the performance object.

Type

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

- ACTIVE (0)
- INACTIVE (1)

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

Warehouse name

OBJECT_STATUS or OBJSTTS

Error Code attribute

Description

The error code that is associated with the query.

Type

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

- NO ERROR (0)
- GENERAL ERROR (1)
- OBJECT NOT FOUND (2)
- COUNTER NOT FOUND (3)
- NAMESPACE ERROR (4)
- OBJECT CURRENTLY UNAVAILABLE (5)
- COM LIBRARY INIT FAILURE (6)
- SECURITY INIT FAILURE (7)
- PROXY SECURITY FAILURE (9)
- NO INSTANCES RETURNED (10)
- ASSOCIATOR QUERY FAILED (11)
- REFERENCE QUERY FAILED (12)
- NO RESPONSE RECEIVED (13)
- CANNOT FIND JOINED QUERY (14)
- CANNOT FIND JOIN ATTRIBUTE IN QUERY 1 RESULTS (15)
- CANNOT FIND JOIN ATTRIBUTE IN QUERY 2 RESULTS (16)
- QUERY 1 NOT A SINGLETON (17)
- QUERY 2 NOT A SINGLETON (18)
- NO INSTANCES RETURNED IN QUERY 1 (19)
- NO INSTANCES RETURNED IN QUERY 2 (20)
- CANNOT FIND ROLLUP QUERY (21)
- CANNOT FIND ROLLUP ATTRIBUTE (22)
- FILE OFFLINE (23)
- NO HOSTNAME (24)
- MISSING LIBRARY (25)
- ATTRIBUTE COUNT MISMATCH (26)
- ATTRIBUTE NAME MISMATCH (27)
- COMMON DATA PROVIDER NOT STARTED (28)
- CALLBACK REGISTRATION ERROR (29)
- MDL LOAD ERROR (30)
- AUTHENTICATION FAILED (31)
- CANNOT RESOLVE HOST NAME (32)
- SUBNODE UNAVAILABLE (33)
- SUBNODE NOT FOUND IN CONFIG (34)
- ATTRIBUTE ERROR (35)
- CLASSPATH ERROR (36)
- CONNECTION FAILURE (37)
- FILTER SYNTAX ERROR (38)
- FILE NAME MISSING (39)
- SQL QUERY ERROR (40)
- SQL FILTER QUERY ERROR (41)
- SQL DB QUERY ERROR (42)
- SQL DB FILTER QUERY ERROR (43)
- PORT OPEN FAILED (44)
- ACCESS DENIED (45)

- TIMEOUT (46)
- NOT IMPLEMENTED (47)
- REQUESTED A BAD VALUE (48)
- RESPONSE TOO BIG (49)
- GENERAL RESPONSE ERROR (50)
- SCRIPT NONZERO RETURN (51)
- SCRIPT NOT FOUND (52)
- SCRIPT LAUNCH ERROR (53)
- CONF FILE DOES NOT EXIST (54)
- CONF FILE ACCESS DENIED (55)
- INVALID CONF FILE (56)
- EIF INITIALIZATION FAILED (57)
- CANNOT OPEN FORMAT FILE (58)
- FORMAT FILE SYNTAX ERROR (59)
- REMOTE HOST UNAVAILABLE (60)
- EVENT LOG DOES NOT EXIST (61)
- PING FILE DOES NOT EXIST (62)
- NO PING DEVICE FILES (63)
- PING DEVICE LIST FILE MISSING (64)
- SNMP MISSING PASSWORD (65)
- DISABLED (66)
- URLS FILE NOT FOUND (67)
- XML PARSE ERROR (68)
- NOT INITIALIZED (69)
- ICMP SOCKETS FAILED (70)
- DUPLICATE CONF FILE (71)

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

Warehouse name

ERROR_CODE or ERRCODE

Last Collection Start attribute

Description

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

Type

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

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

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

Warehouse name

LAST_COLLECTION_START or COLSTR

Last Collection Finished attribute

Description

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

Type

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

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

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

Warehouse name	
LAST_COLLECTION_FINISHED or COLFINI	
<u>Last Collection Duration attribute</u>	
Description	The duration of the most recently completed data collection of this group in seconds.
Type	Real number (32-bit counter) with two decimal places of precision
Warehouse name	
LAST_COLLECTION_DURATION or COLDURA	
<u>Average Collection Duration attribute</u>	
Description	The average duration of all data collections of this group in seconds.
Type	Real number (32-bit counter) with two decimal places of precision with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined: • NO DATA (-100) Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.
Warehouse name	
AVERAGE_COLLECTION_DURATION or COLAVGD	
<u>Refresh Interval attribute</u>	
Description	The interval at which this group is refreshed in seconds.
Type	Integer (32-bit counter)
Warehouse name	
REFRESH_INTERVAL or REFRINT	
<u>Number of Collections attribute</u>	
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	
<u>Cache Hits attribute</u>	
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	
<u>Cache Misses attribute</u>	
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	
<u>Cache Hit Percent attribute</u>	

Description

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

Type

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

Warehouse name

CACHE_HIT_PERCENT or CACHPCT

Intervals Skipped attribute**Description**

The number of times a background data collection for this group was skipped because the previous collection was still running when the next one was due to start.

Type

Integer (32-bit counter)

Warehouse name

INTERVALS_SKIPPED or INTSKIP

pool host member details attribute group

This attribute group displays details for each XenServer host that is a member of the XenServer 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

Source

The source for this attribute is the agent.

Warehouse name

NODE

Timestamp attribute**Description**

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

Type

String

Source

The source for this attribute is the agent.

Warehouse name

TIMESTAMP

Last Updated attribute**Description**

The time when this information was last updated.

Type

Timestamp

Warehouse name

LAST_UPDATED or LASTUPDT

Live attribute**Description**

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

- Yes (1)
- No (0)

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

Warehouse name

LIVE

Free Memory (MB) attribute

Description

The amount of physical memory that is free in MB.

Type

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

- Unavailable (-1)

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

- Unavailable (-1)

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

- Unavailable (-1)

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

Warehouse name

AGGREGATE_CPU_UTILIZATION 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	
Integer (64-bit numeric property) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:	
• Unavailable (-1)	
Any other value is the value that is 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	
Integer (64-bit numeric property) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:	
• Unavailable (-1)	
Any other value is the value that is 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 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	
Indicates 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 that are shown in parentheses. The following values are defined:	
• Yes (1)	

	• No (0) Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.
Warehouse name	ENABLED or HOSTENBL
<u>Hostname attribute</u>	
Description	The hostname of this XenServer host.
Type	String
Warehouse name	HOSTNAME
<u>XenServer Description attribute</u>	
Description	The description of the XenServer host.
Type	String
Warehouse name	NAME_DESCRIPTION or SRVRDESC
<u>XenServer Name attribute</u>	
Description	The name of the XenServer host.
Type	String
Warehouse name	NAME_LABEL or SRVRNAME
<u>Scheduler Policy attribute</u>	
Description	Scheduler policy that is currently enforced on this XenServer host.
Type	String
Warehouse name	SCHED_POLICY or SCHDPOL
<u>Suspend Image SR Name Label attribute</u>	
Description	The 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
<u>Is Pool Master attribute</u>	
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 that are shown in parentheses. The following values are defined: • Yes (1) • No (0) Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.
Warehouse name	POOL_MASTER or ISPLMSTR
<u>Network In (KBps) attribute</u>	

Description

The network traffic in, measured in KB/sec across all of the physical adapters of this XenServer host.

Type

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

- Unavailable (-1)

Any other value is the value that is 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 in KB/sec across all of the physical adapters of this XenServer host.

Type

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

- Unavailable (-1)

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

- Unavailable (-1)

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

- Unavailable (-1)

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

Warehouse name	
DAYS_UNTIL_EXPIRATION or DAYSEXP	
<u>Host Product Version attribute</u>	
Description	The software product version of this XenServer host.
Type	String
Warehouse name	
HOST_PRODUCT_VERSION or PRODVER	
<u>Host Build Number attribute</u>	
Description	The software build number of this XenServer host.
Type	String
Warehouse name	
HOST_BUILD_NUMBER or BLDNMBR	
<u>Host Logging Multipathing attribute</u>	
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 that are shown in parentheses. The following values are defined: • Yes (1) • No (0) Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.
Warehouse name	
HOST_MULTIPATHING or MLTIPATH	
<u>XAPI Memory Usage (KiB) attribute</u>	
Description	The memory that is used by the XAPI process in KB
Type	Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined: • Unavailable (-1) Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.
Warehouse name	
XAPI_MEMORY_USAGE_KIB or XMEMUSED	
<u>XAPI Memory Free (KiB) attribute</u>	
Description	The memory free for the XAPI process in KB
Type	Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined: • Unavailable (-1) Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.
Warehouse name	
XAPI_MEMORY_FREE_KIB or XMEMFREE	
<u>XAPI Live Memory (KiB) attribute</u>	

Description

The live memory for the XAPI process in KB

Type

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

- Unavailable (-1)

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

Warehouse name

XAPI_LIVE_MEMORY_KIB or XMEMLIVE

XAPI Allocation (KiB) attribute**Description**

The allocation of the XAPI in KB

Type

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

- Unavailable (-1)

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

- Unavailable (-1)

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

- Unavailable (-1)

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

- Unavailable (-1)

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

- Unavailable (-1)

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

Warehouse name

AGGREGATE_CPU_FREE or PCTCPUFREE

Pool Name attribute

Description

The name of the current pool.

Type

String

Warehouse name

POOL_NAME or POLNAME

Total VMs attribute

Description

The total number of VMs on the host.

Type

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

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

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

Warehouse name

TOTAL_VIRTUAL_MACHINES or TTLVMS

Running VMs attribute

Description

The number of running VMs on the host.

Type

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

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

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

Warehouse name

RUNNING_VIRTUAL_MACHINES or RUNVMS

Halted VMs attribute

Description

The number of halted VMs on the host.

Type

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

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

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

Warehouse name

HALTED_VIRTUAL_MACHINES or HLTVMS

Suspended VMs attribute**Description**

The number of suspended VMs on the host.

Type

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

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

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

Warehouse name

SUSPENDED_VIRTUAL_MACHINES or SUSVMS

Paused VMs attribute**Description**

The number of paused VMs on the host.

Type

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

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

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

Warehouse name

PAUSED_VIRTUAL_MACHINES or PSDVMS

Unknown VMs attribute**Description**

The number of VMs in an unknown state on the host.

Type

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

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

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

Warehouse name

UNKNOWN_VIRTUAL_MACHINES or UNKVMS

Processor Amount attribute**Description**

The number of processors on the host.

Type

Integer (32-bit gauge) with enumerated values. The strings are displayed in the

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

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

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

Warehouse name

PROCESSOR_AMOUNT or PRCAMT

Physical Network Interface Amount attribute

Description

The number of physical network interfaces on the host.

Type

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

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

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

Warehouse name

PIF_AMOUNT or PHYNET

Memory Overhead (MB) attribute

Description

Virtualization memory overhead in MB on the host.

Type

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

- Unavailable (-1)

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

Warehouse name

MEMORY_OVERHEAD_MB or MEMOVRH

pool master events attribute group

This attribute group displays information about pool master transition events that are occurring in the XenServer 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 master events attribute group:

Node attribute: This attribute is a key attribute.

Description

The managed system name of the agent.

Type

String

Source

The source for this attribute is the agent.

Warehouse name

NODE

Timestamp attribute

Description

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

Type	String
Source	The source for this attribute is the agent.
Warehouse name	TIMESTAMP
<u>Previous Pool Master IP attribute</u>	
Description	The IP address of the previous XenServer pool master.
Type	String
Warehouse name	EVENT_PREVIOUS_IP or PREVPLMSTR
<u>Previous Pool Master Hostname attribute</u>	
Description	The host name of the previous XenServer pool master.
Type	String
Warehouse name	EVENT_PREVIOUS_HOST or PRVHSTNAME
<u>New Pool Master IP attribute</u>	
Description	The IP address of the new XenServer pool master.
Type	String
Warehouse name	EVENT_NEW_IP or NEWIP
<u>New Pool Master Hostname attribute</u>	
Description	The host name of the new XenServer pool master.
Type	String
Warehouse name	EVENT_NEW_HOST or NEWHSTNAME
<u>Event Time attribute</u>	
Description	The time at which the XenServer pool master changed.
Type	Timestamp
Warehouse name	EVENT_TIMESTAMP or EVENTTIME

pool network attribute group

This attribute group describes the networks available across the XenServer 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 network attribute group:

Node attribute: This attribute is a key attribute.

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

Warehouse name	NODE
<u>Timestamp attribute</u>	
Description	The local time at the agent when the data was collected.
Type	String
Source	The source for this attribute is the agent.
Warehouse name	TIMESTAMP
<u>UUID attribute: This attribute is a key attribute.</u>	
Description	The universal unique identifier of the network.
Type	String
Warehouse name	UUID or ATTRIBUTE_
<u>Network Name attribute</u>	
Description	The name of the network.
Type	String
Warehouse name	NAME_LABEL or ATTRIBUTE0
<u>Network Description attribute</u>	
Description	The description of the network.
Type	String
Warehouse name	NAME_DESCRIPTION or ATTRIBUTE1
<u>Bridge attribute</u>	
Description	Name of the bridge corresponding to this network on the local host.
Type	String
Warehouse name	BRIDGE or ATTRIBUTE4

pool patch attribute group

This attribute group describes XenServer-specific patches and updates that are available or are applied to XenServer hosts across 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
Source	The source for this attribute is the agent.

Warehouse name	
NODE	
<u>Timestamp attribute</u>	
Description	The local time at the agent when the data was collected.
Type	String
Source	The source for this attribute is the agent.
Warehouse name	
TIMESTAMP	
<u>Patch UUID attribute: This attribute is a key attribute.</u>	
Description	The universal unique identifier of the pool patch.
Type	String
Warehouse name	
PATCH_UUID or PATCHUUID	
<u>Patch Name attribute</u>	
Description	The name of the pool patch.
Type	String
Warehouse name	
PATCH_NAME_LABEL or PATCHNAME	
<u>Patch Description attribute</u>	
Description	The description of the pool patch.
Type	String
Warehouse name	
PATCH_NAME_DESCRIPTION or PATCHDESC	
<u>After Apply Guidance attribute</u>	
Description	What you must do after this patch is applied.
Type	String
Warehouse name	
PATCH_AFTER_APPLY_GUIDANCE or APLYGUID	
<u>Entire Pool attribute</u>	
Description	Indicates whether this patch must be applied across the entire XenServer pool.
Type	String
Warehouse name	
PATCH_APPLIED or ENTIREPOOL	
<u>Size attribute</u>	
Description	Indicates the size 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 that are shown in parentheses. The following values are defined: • Unavailable (-1)

Any other value is the value that is 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

This attribute group displays information about the physical block devices (PBD) in the XenServer 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

Source

The source for this attribute is the agent.

Warehouse name

NODE

Timestamp attribute

Description

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

Type

String

Source

The source for this attribute is the agent.

Warehouse name

TIMESTAMP

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

Indicates whether the physical block device is attached on this host.

Type

String

Warehouse name

CURRENTLY_ATTACHED or CURATTCHED

Host UUID attribute

Description

The universal unique identifier of the host where the physical block device is available.

Type	String
Warehouse name	HOST_UUID or HOSTUUID
<u>Hostname Label attribute</u>	
Description	The name of the physical machine where the physical block device is available.
Type	String
Warehouse name	HOST_NAME_LABEL or HOSTNAMELB
<u>Storage Repository UUID attribute</u>	
Description	The universal unique identifier of the storage repository that the physical block device realizes.
Type	String
Warehouse name	SR_UUID or SRUUID
<u>Storage Repository Name Label attribute</u>	
Description	The name of the storage repository that the physical block device realizes.
Type	String
Warehouse name	SR_NAME_LABEL or SRNAME

pool pif attribute group

This attribute group describes the physical network interfaces that exist across the XenServer 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 pif attribute group:

Node attribute: This attribute is a key attribute.

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

Timestamp attribute

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

UUID attribute: This attribute is a key attribute.

Description	The universal unique identifier of the physical network interface.
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Type	String
Warehouse name	UUID or ATTRIBUTE_
<u>Bond Slave Of attribute</u>	
Description	Indicates which bond this interface is part of.
Type	String
Warehouse name	BOND_SLAVE_OF or ATTRIBUTE1
<u>Currently Attached attribute</u>	
Description	Indicates whether this interface is online.
Type	String
Warehouse name	CURRENTLY_ATTACHED or ATTRIBUTE2
<u>Device attribute</u>	
Description	Machine-readable name of the interface (for example pif2).
Type	String
Warehouse name	DEVICE or ATTRIBUTE3
<u>Disallow Unplug attribute</u>	
Description	Indicates whether the physical network interface is prevented from being unplugged.
Type	String
Warehouse name	DISALLOW_UNPLUG or ATTRIBUTE4
<u>DNS attribute</u>	
Description	IP address of DNS servers to use.
Type	String
Warehouse name	DNS or ATTRIBUTE5
<u>Gateway attribute</u>	
Description	IP gateway.
Type	String
Warehouse name	GATEWAY or ATTRIBUTE6
<u>XenServer Host attribute</u>	
Description	The name of the host to which this physical network interface is connected.
Type	String
Warehouse name	HOST_NAME_LABEL or ATTRIBUTE8
<u>IP attribute</u>	

Description	IP address of the physical network interface.
Type	String
Warehouse name	IP or ATTRIBUTE9
<u>IP Config Mode attribute</u>	
Description	Sets if and how this interface gets an IP address.
Type	String
Warehouse name	IP_CONFIGURATION_MODE or ATTRIBUT10
<u>MAC attribute</u>	
Description	Ethernet MAC address of physical interface.
Type	String
Warehouse name	MAC or ATTRIBUT11
<u>Management attribute</u>	
Description	Indicates whether the control software is listening for connections on this interface.
Type	String
Warehouse name	MANAGEMENT or ATTRIBUT12
<u>MTU attribute</u>	
Description	Maximum transmission units of the physical network interface in octets.
Type	String
Warehouse name	MTU or ATTRIBUT13
<u>Netmask attribute</u>	
Description	IP netmask of the physical network interface.
Type	String
Warehouse name	NETMASK or ATTRIBUT14
<u>Network Name Label attribute</u>	
Description	The name of the virtual network to which this physical network interface is connected.
Type	String
Warehouse name	NETWORK_NAME_LABEL or ATTRIBUT16
<u>Physical attribute</u>	
Description	Indicates whether this value represents a physical network interface.
Type	String

Warehouse name	PHYSICAL or ATTRIBUT18
<u>VLAN attribute</u>	
Description	VLAN tag for all traffic that passes through this interface.
Type	String
Warehouse name	VLAN or ATTRIBUT19
<u>VLAN Master Of attribute</u>	
Description	Indicates which VLAN this interface receives untagged traffic from.
Type	String
Warehouse name	VLAN_MASTER_OF or ATTRIBUT20

pool sr attribute group

This attribute group displays information about the storage repositories (SR) that the host members of the XenServer pool have available.

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
Source	The source for this attribute is the agent.
Warehouse name	NODE

Timestamp attribute

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

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

Description	The 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	
<u>SR Description attribute</u>	
Description	The description of the storage repository.
Type	String
Warehouse name	
NAME_DESCRIPTION or SRDESC	
<u>SR Name attribute</u>	
Description	The name of the storage repository.
Type	String
Warehouse name	
NAME_LABEL or SRNAME	
<u>Shared attribute</u>	
Description	Indicates whether this storage repository is (capable of being) shared between multiple hosts.
Type	String with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined: • False (false) • True (true) Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.
Warehouse name	
SHARED	
<u>Type attribute</u>	
Description	Indicates the type of the storage repository.
Type	String
Warehouse name	
TYPE	
<u>Capacity (MB) attribute</u>	
Description	Total physical size of the repository in MB.
Type	Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined: • Unavailable (-1) Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.
Source	The source for this attribute is derived: $\text{physical_size} / 1048576$.
Warehouse name	
PHYSICAL_SIZE_MB or CPCTYMB	
<u>Used Space (MB) attribute</u>	
Description	The amount of space that is used in MB.

Type	Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined: • Unavailable (-1) Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.
Source	The source for this attribute is derived: <code>physical_utilization / 1048576</code> .
Warehouse name	PHYSICAL_UTILIZATION_MB or PHYSUTLMB
<u>Capacity (GB) attribute</u>	
Description	Total physical size of the repository in GB.
Type	Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined: • Unavailable (-1) Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.
Source	The source for this attribute is derived: <code>physical_size / 1073741824</code> .
Warehouse name	PHYSICAL_SIZE_GB or CPCTYGB
<u>Used Space (GB) attribute</u>	
Description	The amount of space that is used in GB.
Type	Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined: • Unavailable (-1) Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.
Source	The source for this attribute is derived: <code>physical_utilization / 1073741824</code> .
Warehouse name	PHYSICAL_UTILIZATION_GB or PHYSUTLGB
<u>Virtual Allocation (MB) attribute</u>	
Description	Sum of <code>virtual_sizes</code> of all virtual disk images in this storage repository (MB).
Type	Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined: • Unavailable (-1) Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.
Source	The source for this attribute is derived: <code>virtual_allocation / 1048576</code> .
Warehouse name	VIRTUAL_ALLOCATION_MB or VIRTALLCMB
<u>Virtual Allocation (GB) attribute</u>	

Description

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

Type

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

- Unavailable (-1)

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

Source

The source for this attribute is derived: virtual_allocation / 1073741824.

Warehouse name

VIRTUAL_ALLOCATION_GB or VIRTALLCGB

Free Space (MB) attribute**Description**

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

Type

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

- Unavailable (-1)

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

Source

The source for this attribute is derived: (physical_size - physical_utilization) / 1048576.

Warehouse name

FREE_SPACE_MB or FREESPCMB

Free Space (GB) attribute**Description**

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

Type

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

- Unavailable (-1)

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

Source

The source for this attribute is derived: (physical_size - physical_utilization) / 1073741824.

Warehouse name

FREE_SPACE_GB or FREESPCGB

Percent Used attribute**Description**

Percentage of this storage repository that is in use.

Type

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

- Unavailable (-1)

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

Source	The source for this attribute is derived: (physical_utilization * 100) / physical_size.
Warehouse name	PHYSICAL_UTILIZATION_PERCENT or PCTUTIL
<u>Multipath Capable attribute</u>	
Description	Indicates 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 that are shown in parentheses. The following values are defined: • Yes (1) • No (0) Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.
Warehouse name	MULTIPATH_CAPABLE or MULTIPATH
<u>Percent Free attribute</u>	
Description	Percentage of this storage repository that is free.
Type	Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined: • Unavailable (-1) Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.
Source	The source for this attribute is derived: free_space % physical_size.
Warehouse name	PHYSICAL_FREE_PERCENT or PCTFREE

pool summary attribute group

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

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
Source	The source for this attribute is the agent.
Warehouse name	NODE
<u>Timestamp attribute</u>	
Description	The local time at the agent when the data was collected.

Type	String
Source	The source for this attribute is the agent.
Warehouse name	TIMESTAMP
<u>Pool Master attribute</u>	
Description	The name of the pool master.
Type	String
Warehouse name	POOL_MASTER or POOLMSTR
<u>Pool Name attribute: This attribute is a key attribute.</u>	
Description	The name of the pool.
Type	String
Warehouse name	POOL_NAME or POOLNAME
<u>Name Description attribute</u>	
Description	The description of the pool.
Type	String
Warehouse name	NAME_DESCRIPTION or NAMEDESC
<u>Total Hosts attribute</u>	
Description	The total number of XenServer hosts in the pool.
Type	Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined: • Unavailable (-1) Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.
Warehouse name	TOTAL_HOSTS or TOTHOST
<u>Hosts Enabled attribute</u>	
Description	The total number of XenServer hosts enabled in the pool.
Type	Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined: • Unavailable (-1) Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.
Warehouse name	TOTAL_HOSTS_ENABLED or HOSTENBL
<u>Hosts Disabled attribute</u>	
Description	The total number of XenServer hosts disabled in the pool.

Type	Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined: • Unavailable (-1) Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.
Warehouse name	TOTAL_HOSTS_DISABLED or HOSTDISABL
<u>High Availability Enabled attribute</u>	
Description	Indicates 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 that are shown in parentheses. The following values are defined: • Yes (1) • No (0) Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.
Warehouse name	HA_ENABLED or HAENBL
<u>High Availability Overcommit Enabled attribute</u>	
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 that are shown in parentheses. The following values are defined: • Yes (1) • No (0) Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.
Warehouse name	HA_OVERCOMMIT_ENABLED or HAOCENBL
<u>Workload Balancing Enabled attribute</u>	
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 that are shown in parentheses. The following values are defined: • Yes (1) • No (0) Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.
Warehouse name	WLB_ENABLED or WRKBALENBL
<u>Total VMs attribute</u>	
Description	The total number of VMs in the XenServer pool.
Type	Integer (32-bit gauge) with enumerated values. The strings are displayed in the

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

- Unavailable (-1)

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

Warehouse name

TOTAL_VMS or TOTVM

VMs Running attribute

Description

The total number of VMs in the XenServer pool that are running.

Type

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

- Unavailable (-1)

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

Warehouse name

TOTAL_VMS_RUNNING or VMRUN

VMs Halted attribute

Description

The total number of VMs in the XenServer pool that are halted.

Type

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

- Unavailable (-1)

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

Warehouse name

TOTAL_VMS_HALTED or VMHALT

VMs Suspended attribute

Description

The total number of VMs in the XenServer pool that are suspended.

Type

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

- Unavailable (-1)

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

Warehouse name

TOTAL_VMS_SUSPENDED or VMSUS

VMs Paused attribute

Description

The total number of VMs in the XenServer pool that are paused.

Type

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

- Unavailable (-1)

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

Warehouse name	
TOTAL_VMS_PAUSED or VMPAUS	
<u>VMs Unknown attribute</u>	
Description	The total number of VMs in the XenServer pool that are in an unknown state.
Type	Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined: • Unavailable (-1) Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.
Warehouse name	
TOTAL_VMS_UNKNOWN or VMUNKWN	
<u>Pool Average % CPU Util attribute</u>	
Description	The average CPU utilization of all hosts pool-wide.
Type	Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined: • Value Exceeds Maximum (2147483647) • Value Exceeds Minimum (-2147483648) Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.
Warehouse name	
POOL_CPU_AVERAGE or PLCPUAV	
<u>Pool Average % CPU Util Per CPU Core attribute</u>	
Description	The average CPU utilization per CPU core pool-wide
Type	Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined: • Value Exceeds Maximum (2147483647) • Value Exceeds Minimum (-2147483648) Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.
Warehouse name	
POOL_CPU_AVERAGE_PER_CORE or PLCPUCO	
<u>Pool CPU Core Amount attribute</u>	
Description	The number of CPU cores that are found within all hosts in the pool.
Type	Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined: • Value Exceeds Maximum (2147483647) • Value Exceeds Minimum (-2147483648) Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.
Warehouse name	
POOL_CPU_CORE_AMOUNT or PLCPUCR	
<u>Pool Average % Memory Util attribute</u>	

Description

The average memory utilization of all hosts pool-wide.

Type

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

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

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

Warehouse name

POOL_MEMORY_AVERAGE or PLMEMAV

Number of Pool NICs attribute**Description**

The total number of physical network interfaces in the pool.

Type

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

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

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

Warehouse name

POOL_PIF_AMOUNT or PLPIFAM

Pool Average % CPU Free attribute**Description**

The average % CPU free for all hosts pool-wide.

Type

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

- Unavailable (-1)

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

Source

The source for this attribute is derived: 100 - pool_cpu_average.

Warehouse name

POOL_CPU_FREE or PLCPUFR

Pool Average % Memory Free attribute**Description**

The average % memory free for all hosts pool-wide.

Type

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

- Unavailable (-1)

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

Source

The source for this attribute is derived: 100 - pool_memory_average.

Warehouse name

POOL_MEMORY_FREE or PLMEMFR

Host Failures to Tolerate attribute

Description

Number of host failures to tolerate before the Pool is declared to be overcommitted.

Type

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

- Unavailable (-1)

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

Warehouse name

FAILURES_TO_TOLERATE or HSTFAIL

VSwitch Controller Address attribute**Description**

Address of the VSwitch controller.

Type

String

Warehouse name

VSITCH_CONTROLLER_ADDRESS or SWCTLAD

pool vbd attribute group

This attribute group displays information about virtual block devices (VBD) within the XenServer 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

Source

The source for this attribute is the agent.

Warehouse name

NODE

Timestamp attribute**Description**

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

Type

String

Source

The source for this attribute is the agent.

Warehouse name

TIMESTAMP

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

Description

The universal unique identifier of the virtual block device.

Type

String

Warehouse name

UUID or VBDUUID

Bootable attribute**Description**

Indicates whether this virtual block device is startable.

Type	String
Warehouse name	BOOTABLE
<u>Currently Attached attribute</u>	
Description	Indicates whether the device is attached (erased on restart).
Type	String
Warehouse name	CURRENTLY_ATTACHED or CURATTACH
<u>Device attribute</u>	
Description	Device that is seen by the guest.
Type	String
Warehouse name	DEVICE
<u>Empty attribute</u>	
Description	Indicates whether this device is an empty drive.
Type	String
Warehouse name	EMPTY
<u>Mode attribute</u>	
Description	The mode the virtual block device must be mounted with.
Type	String
Warehouse name	MODE
<u>QoS Alg. Type attribute</u>	
Description	Displays the QoS algorithm that is used by the virtual block device.
Type	String
Warehouse name	QOS_ALGORITHM_TYPE or QOSALG
<u>Status Code attribute</u>	
Description	Error/success code that is associated with last attach-operation (erased on restart).
Type	String
Warehouse name	STATUS_CODE or STATUSCODE
<u>Status Detail attribute</u>	
Description	Error/success information that is associated with last attach-operation status (erased on restart).
Type	String
Warehouse name	STATUS_DETAIL or STATUSDET
<u>Storage Lock attribute</u>	

Description	Indicates whether a storage level lock was acquired.
Type	String
Warehouse name	STORAGE_LOCK or STRGELOCK
<u>VBD Type attribute</u>	
Description	How the virtual block device appears to the guest.
Type	String
Warehouse name	TYPE or VBDTYPE
<u>Unpluggable attribute</u>	
Description	Indicates whether this virtual block device supports hot-unplug.
Type	String
Warehouse name	UNPLUGGABLE or UNPLUGBLE
<u>User Device attribute</u>	
Description	The device name.
Type	String
Warehouse name	USERDEVICE or USERDEV
<u>VDI (UUID) attribute</u>	
Description	The universal unique identifier of the virtual disk.
Type	String
Warehouse name	VIRTUAL_DISK_UUID or VDIUUID
<u>VDI (Name Label) attribute</u>	
Description	The name of the virtual disk.
Type	String
Warehouse name	NAME_LABEL or VDINAME
<u>VM (UUID) attribute</u>	
Description	The universal unique identifier of the VM.
Type	String
Warehouse name	VM_UUID or VMUUID
<u>VM (Name Label) attribute</u>	
Description	The name of the VM.
Type	String
Warehouse name	VM_NAME_LABEL or VMNAME

pool vdi attribute group

This attribute group displays information about virtual disk images (VDI) within the XenServer 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 vdi attribute group:

Node attribute: This attribute is a key attribute.

Description

The managed system name of the agent.

Type

String

Source

The source for this attribute is the agent.

Warehouse name

NODE

Timestamp attribute

Description

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

Type

String

Source

The source for this attribute is the agent.

Warehouse name

TIMESTAMP

VDI UUID attribute: This attribute is a key attribute.

Description

The universal unique identifier of the virtual disk image.

Type

String

Warehouse name

UUID or VDIUUID

VDI Name attribute

Description

The name of the virtual disk image.

Type

String

Warehouse name

NAME_LABEL or VDINAME

VDI Description attribute

Description

The description of the virtual disk image.

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

Indicates whether the virtual disk image is a managed disk image.

Type	String
Warehouse name	MANAGED
<u>Missing attribute</u>	
Description	Indicates whether a storage repository scan operation reported this virtual disk image as not present on disk.
Type	String
Warehouse name	MISSING
<u>Parent UUID attribute</u>	
Description	The 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
<u>Parent Name Label attribute</u>	
Description	The name of the parent disk, if this virtual disk image is part of a chain.
Type	String
Warehouse name	PARENT_NAME_LABEL or PARENTNAME
<u>Read Only attribute</u>	
Description	Indicates whether this disk can be mounted only as read-only.
Type	String
Warehouse name	READ_ONLY or READONLY
<u>Sharable attribute</u>	
Description	Indicates whether this disk can be shared.
Type	String
Warehouse name	SHARABLE
<u>Storage Repository (UUID) attribute</u>	
Description	The universal unique identifier of the storage repository where the virtual disk image is located.
Type	String
Warehouse name	SR_UUID or SRUUID
<u>Storage Repository (Name Label) attribute</u>	
Description	The name of the storage repository where the virtual disk image is located.
Type	String
Warehouse name	SR_NAME_LABEL or SRNAME

Storage Lock attribute**Description**

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

- Unavailable (-1)

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

Source

The source for this attribute is derived: physical_utilization / 1048576.

Warehouse name

PHYSICAL_UTILIZATION_MB or PHYSUTILMB

Physical Utilization GB attribute**Description**

Physical utilization of this virtual disk image (GB).

Type

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

- Unavailable (-1)

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

Source

The source for this attribute is derived: physical_utilization / 1073741824.

Warehouse name

PHYSICAL_UTILIZATION_GB or PHYSUTILGB

Virtual Size MB attribute**Description**

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

Type

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

- Unavailable (-1)

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

Source

The source for this attribute is derived: virtual_size / 1048576.

Warehouse name	VIRTUAL_SIZE_MB or VIRTSIZE_MB
Virtual Size GB attribute	
Description	Size of disk as presented to the guest (GB).
Type	Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined: • Unavailable (-1) Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.
Source	The source for this attribute is derived: virtual_size / 1073741824.
Warehouse name	VIRTUAL_SIZE_GB or VIRTSIZE_GB

pool vif attribute group

This attribute group describes the virtual network interface within the XenServer 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 vif attribute group:

Node attribute: This attribute is a key attribute.

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

UUID attribute: This attribute is a key attribute.

Description	The universal unique identifier of the virtual network interface.
Type	String
Warehouse name	UUID or ATTRIBUTE_

Currently Attached attribute

Description	Indicates whether the device is 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 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/success code that is associated with last attach-operation for this virtual network interface (erased on restart).

Type

String

Warehouse name

STATUS_CODE or ATTRIBUT14

Status Detail attribute**Description**

Error/success information that is associated with last attach-operation status for this virtual network interface (erased on restart).

Type

String

Warehouse name

STATUS_DETAIL or ATTRIBUT15

VM Name attribute

Description

The name of the virtual machine to which this virtual network interface is connected.

Type

String

Warehouse name

VM_NAME_LABEL or ATTRIBUT18

IO Read (KB/s) attribute**Description**

The read bandwidth (in KB/s) of the virtual machine to which this virtual network interface is connected.

Type

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

- Unavailable (-1)

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

Warehouse name

IO_READ_KBS or IOREAD

IO Write (KB/s) attribute**Description**

The write bandwidth (in KB/s) of the virtual machine to which this virtual network interface is connected.

Type

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

- Unavailable (-1)

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

Warehouse name

IO_WRITE_KBS or IOWRITE

Thread Pool Status attribute group

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

Historical group

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

Attribute descriptions

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

Node attribute: This attribute is a key attribute.

Description

The managed system name of the agent.

Type

String

Source

The source for this attribute is the agent.

Warehouse name

NODE

Timestamp attribute**Description**

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

Type	String
Source	The source for this attribute is the agent.
Warehouse name	TIMESTAMP
<u>Thread Pool Size attribute</u>	
Description	The number of threads currently existing in the thread pool.
Type	Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined: • NO DATA (-1) • NO DATA (-100) Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.
Warehouse name	THREAD_POOL_SIZE or THPSIZE
<u>Thread Pool Max Size attribute</u>	
Description	The maximum number of threads allowed to exist in the thread pool.
Type	Integer (32-bit numeric property) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined: • NO DATA (-1) • NO DATA (-100) Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.
Warehouse name	THREAD_POOL_MAX_SIZE or TPMAXSZ
<u>Thread Pool Active Threads attribute</u>	
Description	The number of threads in the thread pool currently active doing work.
Type	Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined: • NO DATA (-1) • NO DATA (-100) Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.
Warehouse name	THREAD_POOL_ACTIVE_THREADS or TPACTTH
<u>Thread Pool Avg Active Threads attribute</u>	
Description	The average number of threads in the thread pool simultaneously active doing work.
Type	Real number (32-bit gauge) with two decimal places of precision with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:

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

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

Warehouse name

THREAD_POOL_AVG_ACTIVE_THREADS or TPAVGAT

Thread Pool Min Active Threads attribute

Description

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

Type

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

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

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

Warehouse name

THREAD_POOL_MIN_ACTIVE_THREADS or TPMINAT

Thread Pool Max Active Threads attribute

Description

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

Type

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

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

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

Warehouse name

THREAD_POOL_MAX_ACTIVE_THREADS or TPMAXAT

Thread Pool Queue Length attribute

Description

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

Type

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

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

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

Warehouse name

THREAD_POOL_QUEUE_LENGTH or TPQLGTH

Thread Pool Avg Queue Length attribute

Description

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

Type

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

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

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

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

Warehouse name

THREAD_POOL_AVG_QUEUE_LENGTH or TPAVGQL

Thread Pool Min Queue Length attribute

Description

The minimum length the thread pool queue has reached.

Type

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

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

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

Warehouse name

THREAD_POOL_MIN_QUEUE_LENGTH or TPMINQL

Thread Pool Max Queue Length attribute

Description

The peak length the thread pool queue has reached.

Type

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

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

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

Warehouse name

THREAD_POOL_MAX_QUEUE_LENGTH or TPMAXQL

Thread Pool Avg Job Wait attribute

Description

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

Type

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

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

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

Warehouse name

THREAD_POOL_AVG_JOB_WAIT or TPAVJBW

Thread Pool Total Jobs attribute

Description

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

Type

Integer (32-bit counter) with enumerated values. The strings are displayed in the

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

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

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

Warehouse name

THREAD_POOL_TOTAL_JOBS or TPTJOBS

xenserver notification events attribute group

This attribute group displays event notifications generated by the hosts in the XenServer 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 xenserver notification events attribute group:

Node attribute: This attribute is a key attribute.

Description

The managed system name of the agent.

Type

String

Source

The source for this attribute is the agent.

Warehouse name

NODE

Timestamp attribute

Description

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

Type

String

Source

The source for this attribute is the agent.

Warehouse name

TIMESTAMP

Event Name attribute

Description

The name of the XenServer event.

Type

String

Warehouse name

EVENT_NAME

Event Message attribute

Description

The message for the XenServer event.

Type

String

Warehouse name

EVENT_MESSAGE or EVENT_MSG

Event Time attribute

Description

The time when the event occurred.

Type

Timestamp

Warehouse name

EVENT_TIME

Event Type attribute**Description**

The type of XenServer event.

Type

String

Warehouse name

EVENT_TYPE

Uuid attribute**Description**

The universal unique identifier of the transitioning object.

Type

String

Warehouse name

UUID

Target attribute**Description**

The name of the XenServer Hypervisor host that the event pertains to.

Type

String

Warehouse name

TARGET or TRGT

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

Source

The source for this attribute is the agent.

Warehouse name

NODE

Timestamp attribute**Description**

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

Type

String

Source

The source for this attribute is the agent.

Warehouse name

TIMESTAMP

Query Name attribute: This attribute is a key attribute.

Description	
The name of the attribute group.	
Type	
String	
Warehouse name	
QUERY_NAME or ATTRGRP	
Object Name attribute	
Description	
The name of the performance object.	
Type	
String	
Warehouse name	
OBJECT_NAME or OBJNAME	
Object Type attribute	
Description	
The type of the performance object.	
Type	
Integer with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:	
• WMI (0) • PERFMON (1) • WMI ASSOCIATION GROUP (2) • JMX (3) • SNMP (4) • SHELL COMMAND (5) • JOINED GROUPS (6) • CIMOM (7) • CUSTOM (8) • ROLLUP DATA (9) • WMI REMOTE DATA (10) • LOG FILE (11) • JDBC (12) • CONFIG DISCOVERY (13) • NT EVENT LOG (14) • FILTER (15) • SNMP EVENT (16) • PING (17) • DIRECTOR DATA (18) • DIRECTOR EVENT (19) • SSH REMOTE SHELL COMMAND (20)	
Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.	
Warehouse name	
OBJECT_TYPE or OBJTYPE	
Object Status attribute	
Description	
The status of the performance object.	
Type	
Integer with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:	
• ACTIVE (0) • INACTIVE (1)	

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

Warehouse name

OBJECT_STATUS or OBJSTTS

Error Code attribute

Description

The error code that is associated with the query.

Type

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

- NO ERROR (0)
- GENERAL ERROR (1)
- OBJECT NOT FOUND (2)
- COUNTER NOT FOUND (3)
- NAMESPACE ERROR (4)
- OBJECT CURRENTLY UNAVAILABLE (5)
- COM LIBRARY INIT FAILURE (6)
- SECURITY INIT FAILURE (7)
- PROXY SECURITY FAILURE (9)
- NO INSTANCES RETURNED (10)
- ASSOCIATOR QUERY FAILED (11)
- REFERENCE QUERY FAILED (12)
- NO RESPONSE RECEIVED (13)
- CANNOT FIND JOINED QUERY (14)
- CANNOT FIND JOIN ATTRIBUTE IN QUERY 1 RESULTS (15)
- CANNOT FIND JOIN ATTRIBUTE IN QUERY 2 RESULTS (16)
- QUERY 1 NOT A SINGLETON (17)
- QUERY 2 NOT A SINGLETON (18)
- NO INSTANCES RETURNED IN QUERY 1 (19)
- NO INSTANCES RETURNED IN QUERY 2 (20)
- CANNOT FIND ROLLUP QUERY (21)
- CANNOT FIND ROLLUP ATTRIBUTE (22)
- FILE OFFLINE (23)
- NO HOSTNAME (24)
- MISSING LIBRARY (25)
- ATTRIBUTE COUNT MISMATCH (26)
- ATTRIBUTE NAME MISMATCH (27)
- COMMON DATA PROVIDER NOT STARTED (28)
- CALLBACK REGISTRATION ERROR (29)
- MDL LOAD ERROR (30)
- AUTHENTICATION FAILED (31)
- CANNOT RESOLVE HOST NAME (32)
- SUBNODE UNAVAILABLE (33)
- SUBNODE NOT FOUND IN CONFIG (34)
- ATTRIBUTE ERROR (35)
- CLASSPATH ERROR (36)
- CONNECTION FAILURE (37)
- FILTER SYNTAX ERROR (38)
- FILE NAME MISSING (39)
- SQL QUERY ERROR (40)
- SQL FILTER QUERY ERROR (41)
- SQL DB QUERY ERROR (42)
- SQL DB FILTER QUERY ERROR (43)
- PORT OPEN FAILED (44)
- ACCESS DENIED (45)

- TIMEOUT (46)
- NOT IMPLEMENTED (47)
- REQUESTED A BAD VALUE (48)
- RESPONSE TOO BIG (49)
- GENERAL RESPONSE ERROR (50)
- SCRIPT NONZERO RETURN (51)
- SCRIPT NOT FOUND (52)
- SCRIPT LAUNCH ERROR (53)
- CONF FILE DOES NOT EXIST (54)
- CONF FILE ACCESS DENIED (55)
- INVALID CONF FILE (56)
- EIF INITIALIZATION FAILED (57)
- CANNOT OPEN FORMAT FILE (58)
- FORMAT FILE SYNTAX ERROR (59)
- REMOTE HOST UNAVAILABLE (60)
- EVENT LOG DOES NOT EXIST (61)
- PING FILE DOES NOT EXIST (62)
- NO PING DEVICE FILES (63)
- PING DEVICE LIST FILE MISSING (64)
- SNMP MISSING PASSWORD (65)
- DISABLED (66)
- URLS FILE NOT FOUND (67)
- XML PARSE ERROR (68)
- NOT INITIALIZED (69)
- ICMP SOCKETS FAILED (70)
- DUPLICATE CONF FILE (71)

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

Warehouse name

ERROR_CODE or ERRCODE

Last Collection Start attribute

Description

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

Type

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

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

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

Warehouse name

LAST_COLLECTION_START or COLSTR

Last Collection Finished attribute

Description

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

Type

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

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

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

Warehouse name	
LAST_COLLECTION_FINISHED or COLFINI	
<u>Last Collection Duration attribute</u>	
Description	The duration of the most recently completed data collection of this group in seconds.
Type	Real number (32-bit counter) with two decimal places of precision
Warehouse name	
LAST_COLLECTION_DURATION or COLDURA	
<u>Average Collection Duration attribute</u>	
Description	The average duration of all data collections of this group in seconds.
Type	Real number (32-bit counter) with two decimal places of precision with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined: • NO DATA (-100) Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.
Warehouse name	
AVERAGE_COLLECTION_DURATION or COLAVGD	
<u>Refresh Interval attribute</u>	
Description	The interval at which this group is refreshed in seconds.
Type	Integer (32-bit counter)
Warehouse name	
REFRESH_INTERVAL or REFRINT	
<u>Number of Collections attribute</u>	
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	
<u>Cache Hits attribute</u>	
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	
<u>Cache Misses attribute</u>	
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	
<u>Cache Hit Percent attribute</u>	

Description

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

Type

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

Warehouse name

CACHE_HIT_PERCENT or CACHPCT

Intervals Skipped attribute**Description**

The number of times a background data collection for this group was skipped because the previous collection was still running when the next one was due to start.

Type

Integer (32-bit counter)

Warehouse name

INTERVALS_SKIPPED or INTSKIP

Disk capacity planning for historical data

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

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

Table Table name as it is displayed in the warehouse database, if the attribute group is configured to be written to the warehouse. The table name listed here corresponds to the table name in “Attribute groups for the monitoring agent” on page 25.

Attribute group

Name of the attribute group that is used to create the table in the warehouse database if it is short enough to fit in the table naming constraints of the database that is being used for the warehouse. The attribute group name listed here corresponds to the Warehouse table name in “Attribute groups for the monitoring agent” on page 25.

Bytes per row (agent)

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

Database bytes per row (warehouse)

Estimate of the record length for detailed records that are written to the warehouse database, if the attribute group is configured to be written to the warehouse. Detailed records are records that have been uploaded from the agent for long-term historical data collection. This estimate can be used for warehouse disk-space planning purposes.

Aggregate bytes per row (warehouse)

Estimate of the record length for aggregate records that are written to the warehouse database, if the attribute group is configured to be written to the warehouse. Aggregate records are created by the Summarization agent for attribute groups that have been configured for summarization. This estimate can be used for warehouse disk-space planning purposes.

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

Table 1. Capacity planning for historical data logged by the Citrix XenServer agent

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
KXIOUTLOG	KXI_AGENT_OUTPUT_LOG	332	333	370
KXITRCELOG	KXI_AGENT_TRACE_LOG	1646	1655	1692
KXIHCTRLDM	KXI_CONTROL_DOMAIN	360	366	598
KXIIHCPUSN	KXI_HOST_CPU	668	676	791
KXIHVHODET	KXI_HOST_DETAILS	1861	1916	2850
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	1337	1366	1914
KXISRHJOIN	KXI_PBD_SR_JOIN	618	637	1064
KXIPOBJST	KXI_PERFORMANCE_OBJECT_STATUS	352	399	664
KXIHOSTDETA	KXI_POOL_HOST_MEMBER_DETAILS	1865	1921	2894
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	648	672	1372
KXIVBD	KXI_POOL_VBD	1144	1157	1194
KXIVDI	KXI_POOL_VDI	940	954	1147
KXIATTRI34	KXI_POOL_VIF	760	768	883
KXITHPLST	KXI_THREAD_POOL_STATUS	124	168	550
KXIXENEVTS	KXI_XENSERVER_NOTIFICATION_EVENTS	1308	1322	1359
KXIXHVPOS	KXI_XHV_PERFORMANCE_OBJECT_STATUS	352	399	664

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

Chapter 5. Situations reference

A situation is a logical expression involving one or more system conditions. Situations are used to monitor the condition of systems in your network. You can manage situations from the Tivoli Enterprise Portal by using the Situation Editor or from the command-line interface using the `tacmd` commands for situations. You can manage private situations in the private configuration XML file.

About situations

The monitoring agents that you use to monitor your system environment include a set of predefined situations that you can use as-is. You can also create new situations to meet your requirements.

Predefined situations contain attributes that check for system conditions common to many enterprises. Using predefined situations can improve the speed with which you can begin using the IBM Tivoli Monitoring for Virtual Environments Agent for Citrix XenServer. You can change the conditions or values being monitored by a predefined situation to the conditions or values best suited to your enterprise.

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

Formula

Formula describing the condition being tested.

Distribution

List of managed systems (operating systems, subsystems, or applications) to which the situation can be distributed. All the 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.

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

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

Additional information about situations

The *Tivoli Enterprise Portal User's Guide* contains more information about predefined and custom situations and how to use them to respond to alerts.

For a list of the predefined situations and information about each individual situation for this monitoring agent, see "Predefined situations."

Predefined situations

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

Agent level Navigator items

- Citrix XenServer
 - Not applicable
- Events

- KXI_VM_Shutdown
- KXI_VM_Started
- KXI_VM_Rebooted
- KXI_VM_Suspended
- KXI_VM_Resume
- KXI_VM_Clone
- KXI_VM_Crash
- KXI_HA_Host_Failed
- KXI_HA_Host_Was_Fenced
- KXI_HA_Network_Bonding_Error
- KXI_HA_Pool_Drop_In_Plan_Exist
- KXI_HA_Pool_Overcommitted
- KXI_Host_Clock_Skew_Detected
- KXI_Host_Sync_Data_Failed
- KXI_Pbd_Plug_Fail_Server_Start
- KXI_HA_Protect_VM_Restr_Fail
- KXI_HA_Statefile_Lost
- KXI_Invalid_Host_Configured
- KXI_Host_Match_Made
- KXI_Unconfigured_Host
- KXI_Missing_Dependency_Jar
- KXI_Pool_Master_Changed
- KXI_Connection_Failure
- Hosts
 - Not applicable
- Pool
 - Not applicable
- Storage
 - Not applicable

Citrix XenServer Hypervisors (XHV) subnode

- Citrix XenServer 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

Situation descriptions

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

The situation descriptions provide the following information:

Description

Information about the conditions that the situation tests.

Formula

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

Distribution

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

Run at startup

Whether the situation starts monitoring when the agent starts.

Sampling interval

Number of seconds that elapse between one sample of data that the monitoring agent collects for the server and the next sample.

Situation persistence

Whether the conditions specified in the situation evaluate to "true" for the defined number of occurrences in a row before the situation is raised. The default of one means that no persistence-checking takes place.

Severity

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

Clearing conditions

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

Citrix XenServer Navigator item

No predefined situations are included for this Navigator item.

Events Navigator item

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

KXI_VM_Shutdown situation

Description

A virtual machine was shut down.

The situation is evaluated for the table.

Formula

```
*IF *VALUE KXI_XENSERVER_NOTIFICATION_EVENTS.Event_Name *EQ 'VM_SHUTDOWN'
```

See “Attributes in each attribute group” on page 27 for descriptions of the attributes in this formula.

Distribution

This situation is available for distribution.

Run at startup

No

Sampling interval

None. Data is analyzed when it becomes available.

Situation persistence

Not Applicable

Error conditions

Informational

Clearing conditions

The situation does not clear automatically.

KXI_VM_Started situation

Description

A virtual machine was started.

The situation is evaluated for the table.

Formula

*IF *VALUE KXI_XENSERVER_NOTIFICATION_EVENTS.Event_Name *EQ 'VM_STARTED'

See “Attributes in each attribute group” on page 27 for descriptions of the attributes in this formula.

Distribution

This situation is available for distribution.

Run at startup

No

Sampling interval

None. Data is analyzed when it becomes available.

Situation persistence

Not Applicable

Error conditions

Informational

Clearing conditions

The situation does not clear automatically.

KXI_VM_Rebooted situation

Description

A virtual machine was restarted.

The situation is evaluated for the table.

Formula

*IF *VALUE KXI_XENSERVER_NOTIFICATION_EVENTS.Event_Name *EQ 'VM_REBOOTED'

See “Attributes in each attribute group” on page 27 for descriptions of the attributes in this formula.

Distribution

This situation is available for distribution.

Run at startup

No

Sampling interval

None. Data is analyzed when it becomes available.

Situation persistence

Not Applicable

Error conditions

Informational

Clearing conditions

The situation does not clear automatically.

KXI_VM_Suspended situation

Description

A virtual machine was suspended.

The situation is evaluated for the table.

Formula

*IF *VALUE KXI_XENSERVENOTIFICATIONEVENTS.Event_Name *EQ 'VM_SUSPENDED'

See “Attributes in each attribute group” on page 27 for descriptions of the attributes in this formula.

Distribution

This situation is available for distribution.

Run at startup

No

Sampling interval

None. Data is analyzed when it becomes available.

Situation persistence

Not Applicable

Error conditions

Informational

Clearing conditions

The situation does not clear automatically.

KXI_VM_Resume situation

Description

A virtual machine was resumed.

The situation is evaluated for the table.

Formula

*IF *VALUE KXI_XENSERVENOTIFICATIONEVENTS.Event_Name *EQ 'VM_RESUMED'

See “Attributes in each attribute group” on page 27 for descriptions of the attributes in this formula.

Distribution

This situation is available for distribution.

Run at startup

No

Sampling interval

None. Data is analyzed when it becomes available.

Situation persistence

Not Applicable

Error conditions

Informational

Clearing conditions

The situation does not clear automatically.

KXI_VM_Clone situation

Description

A virtual machine was cloned.

The situation is evaluated for the table.

Formula

*IF *VALUE KXI_XENSERVENOTIFICATIONEVENTS.Event_Name *EQ 'VM_CLONED'

See “Attributes in each attribute group” on page 27 for descriptions of the attributes in this formula.

Distribution

This situation is available for distribution.

Run at startup

No

Sampling interval

None. Data is analyzed when it becomes available.

Situation persistence

Not Applicable

Error conditions

Informational

Clearing conditions

The situation does not clear automatically.

KXI_VM_Crashed situation**Description**

A virtual machine crashed.

The situation is evaluated for the table.

Formula

*IF *VALUE KXI_XENSERVER_NOTIFICATION_EVENTS.Event_Name *EQ 'VM_CRASHED'

See “Attributes in each attribute group” on page 27 for descriptions of the attributes in this formula.

Distribution

This situation is available for distribution.

Run at startup

No

Sampling interval

None. Data is analyzed when it becomes available.

Situation persistence

Not Applicable

Error conditions

Informational

Clearing conditions

The situation does not clear automatically.

KXI_HA_Host_Failed situation**Description**

XenServer host failure for High Availability.

The situation is evaluated for the table.

Formula

*IF *VALUE KXI_XENSERVER_NOTIFICATION_EVENTS.Event_Name *EQ 'HA_HOST_FAILED'

See “Attributes in each attribute group” on page 27 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

Error conditions

Critical

Clearing conditions

The situation does not clear automatically.

KXI_HA_Host_Was_Fenced situation**Description**

An HA Sync error caused the host to be fenced.

The situation is evaluated for the table.

Formula

*IF *VALUE KXI_XENSERVER_NOTIFICATION_EVENTS.Event_Name *EQ 'HA_HOST_WAS_FENCED'

See “Attributes in each attribute group” on page 27 for descriptions of the attributes in this formula.

Distribution

This situation is available for distribution.

Run at startup

No

Sampling interval

None. Data is analyzed when it becomes available.

Situation persistence

Not Applicable

Error conditions

Informational

Clearing conditions

The situation does not clear automatically.

KXI_HA_Network_Bonding_Error situation**Description**

An HA Network bonding error occurred.

The situation is evaluated for the table.

Formula

*IF *VALUE KXI_XENSERVER_NOTIFICATION_EVENTS.Event_Name *EQ
'HA_NETWORK_BONDING_ERROR'

See “Attributes in each attribute group” on page 27 for descriptions of the attributes in this formula.

Distribution

This situation is available for distribution.

Run at startup

No

Sampling interval

None. Data is analyzed when it becomes available.

Situation persistence

Not Applicable

Error conditions

Informational

Clearing conditions

The situation does not clear automatically.

KXI_HA_Pool_Drop_In_Plan_Exist situation**Description**

A host in the HA pool is reported unavailable.

The situation is evaluated for the table.

Formula

*IF *VALUE KXI_XENSERVER_NOTIFICATION_EVENTS.Event_Name *EQ
'HA_POOL_DROP_IN_PLAN_EXISTS_FOR'

See “Attributes in each attribute group” on page 27 for descriptions of the attributes in this formula.

Distribution

This situation is available for distribution.

Run at startup

No

Sampling interval

None. Data is analyzed when it becomes available.

Situation persistence

Not Applicable

Error conditions

Informational

Clearing conditions

The situation does not clear automatically.

KXI_HA_Pool_Overcommitted situation**Description**

There are not enough resources to service VMs in the pool.

The situation is evaluated for the table.

Formula

```
*IF *VALUE KXI_XENSERVER_NOTIFICATION_EVENTS.Event_Name *EQ  
'HA_POOL_OVERCOMMITTED'
```

See “Attributes in each attribute group” on page 27 for descriptions of the attributes in this formula.

Distribution

This situation is available for distribution.

Run at startup

No

Sampling interval

None. Data is analyzed when it becomes available.

Situation persistence

Not Applicable

Error conditions

Warning

Clearing conditions

The situation does not clear automatically.

KXI_Host_Clock_Skew_Detected situation**Description**

A time drift between the pool master and a host was detected.

The situation is evaluated for the table.

Formula

```
*IF *VALUE KXI_XENSERVER_NOTIFICATION_EVENTS.Event_Name *EQ  
'HOST_CLOCK_SKEW_DETECTED'
```

See “Attributes in each attribute group” on page 27 for descriptions of the attributes in this formula.

Distribution

This situation is available for distribution.

Run at startup

No

Sampling interval

None. Data is analyzed when it becomes available.

Situation persistence

Not Applicable

Error conditions

Informational

Clearing conditions

The situation does not clear automatically.

KXI_Host_Sync_Data_Failed situation**Description**

Data synchronization with the pool master failed.

The situation is evaluated for the table.

Formula

```
*IF *VALUE KXI_XENSERVER_NOTIFICATION_EVENTS.Event_Name *EQ
'HOST_SYNC_DATA_FAILED'
```

See “Attributes in each attribute group” on page 27 for descriptions of the attributes in this formula.

Distribution

This situation is available for distribution.

Run at startup

No

Sampling interval

None. Data is analyzed when it becomes available.

Situation persistence

Not Applicable

Error conditions

Warning

Clearing conditions

The situation does not clear automatically.

KXI_Pbd_Plug_Fail_Server_Start situation**Description**

A host failed to connect to the physical block device (PBD).

The situation is evaluated for the table.

Formula

```
*IF *VALUE KXI_XENSERVER_NOTIFICATION_EVENTS.Event_Name *EQ
'PBD_PLUG_FAILED_ON_SERVER_START'
```

See “Attributes in each attribute group” on page 27 for descriptions of the attributes in this formula.

Distribution

This situation is available for distribution.

Run at startup

No

Sampling interval

None. Data is analyzed when it becomes available.

Situation persistence

Not Applicable

Error conditions

Informational

Clearing conditions

The situation does not clear automatically.

KXI_HA_Protect_VM_Restr Fail situation**Description**

A virtual machine restart with High Availability failed.

The situation is evaluated for the table.

Formula

```
*IF *VALUE KXI_XENSERVER_NOTIFICATION_EVENTS.Event_Name *EQ
'HA_PROTECTED_VM_RESTART_FAILED'
```

See “Attributes in each attribute group” on page 27 for descriptions of the attributes in this formula.

Distribution

This situation is available for distribution.

Run at startup

No

Sampling interval

None. Data is analyzed when it becomes available.

Situation persistence

Not Applicable

Error conditions

Informational

Clearing conditions

The situation does not clear automatically.

KXI_HA_Statefile_Lost situation**Description**

The High Availability statefile was lost.

The situation is evaluated for the table.

Formula

*IF *VALUE KXI_XENSERVER_NOTIFICATION_EVENTS.Event_Name *EQ 'HA_STATEFILE_LOST'

See “Attributes in each attribute group” on page 27 for descriptions of the attributes in this formula.

Distribution

This situation is available for distribution.

Run at startup

No

Sampling interval

None. Data is analyzed when it becomes available.

Situation persistence

Not Applicable

Error conditions

Critical

Clearing conditions

The situation does not clear automatically.

KXI_Invalid_Host_Configured situation**Description**

The agent was configured with a host 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 “Attributes in each attribute group” on page 27 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

Error conditions

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 “Attributes in each attribute group” on page 27 for descriptions of the attributes in this formula.

Distribution

This situation is available for distribution.

Run at startup

No

Sampling interval

None. Data is analyzed when it becomes available.

Situation persistence

Not Applicable

Error conditions

Informational

Clearing conditions

The situation does not clear automatically.

KXI_Unconfigured_Host situation

Description

A host was discovered in the pool that was not 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 “Attributes in each attribute group” on page 27 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

Error conditions

Critical

Clearing conditions

The situation does not clear automatically.

KXI_Missing_Dependency_Jar situation

Description

A required independent library is missing.

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

Formula

```
*IF *SCAN KXI_AGENT_OUTPUT_LOG.Log_Text *EQ 'KXI5101I'
```

See “Attributes in each attribute group” on page 27 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

Error conditions

Fatal

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 “Attributes in each attribute group” on page 27 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

Error conditions

Critical

Clearing conditions

The situation does not clear automatically.

KXI_Connection_Failure situation**Description**

A problem exists with the XenServer pool master connection.

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

Formula

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

See “Attributes in each attribute group” on page 27 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

30 seconds

Situation persistence

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

Error conditions

Fatal

Clearing conditions

The situation clears when the condition becomes false.

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.

Citrix XenServer Hypervisors subnode

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

Citrix XenServer Hypervisors Navigator item

No predefined situations are included for this Navigator item.

CPU Navigator item

No predefined situations are included for this Navigator item.

Disk Navigator item

No predefined situations are included for this Navigator item.

Network Navigator item

No predefined situations are included for this Navigator item.

Patch Navigator item

No predefined situations are included 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 is evaluated for each distinct value of name_label.

Formula

*IF *VALUE KXI_HOST_VMS.metric_vcpu_utilization *GE 90

See “Attributes in each attribute group” on page 27 for descriptions of the attributes in this formula.

Distribution

This situation is available for distribution.

Run at startup

No

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.

Error conditions

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 is evaluated for each distinct value of name_label.

Formula

*IF *VALUE KXI_HOST_VMS.memory_percent_used *GE 90

See “Attributes in each attribute group” on page 27 for descriptions of the attributes in this formula.

Distribution

This situation is available for distribution.

Run at startup

No

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.

Error conditions

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 is evaluated for each distinct value of name_label.

Formula

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

See “Attributes in each attribute group” on page 27 for descriptions of the attributes in this formula.

Distribution

This situation is available for distribution.

Run at startup

No

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.

Error conditions

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 is evaluated for each distinct value of name_label.

Formula

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

See “Attributes in each attribute group” on page 27 for descriptions of the attributes in this formula.

Distribution

This situation is available for distribution.

Run at startup

No

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.

Error conditions

Warning

Clearing conditions

The situation clears when the condition becomes false.

XenServer Navigator item**KXI_XenServer_Host_Disabled situation****Description**

The XenServer host is disabled.

The situation is 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 “Attributes in each attribute group” on page 27 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.

Error conditions

Warning

Clearing conditions

The situation clears when the condition becomes false.

KXI_XenServer_Host_Unreachable situation**Description**

The XenServer host is unreachable.

The situation is evaluated for each distinct value of hostname.

Formula

*IF *VALUE KXI_HOST_DETAILS.live *EQ No

See “Attributes in each attribute group” on page 27 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.

Error conditions

Critical

Clearing conditions

The situation clears when the condition becomes false.

KXI_Host_CPU_Util_High situation**Description**

XenServer host CPU util is high.

The situation is evaluated for each distinct value of hostname.

Formula

*IF *VALUE KXI_HOST_DETAILS.aggregate_cpu_utilization *GE 90

See “Attributes in each attribute group” on page 27 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.

Error conditions

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 is evaluated for each distinct value of hostname.

Formula

*IF *VALUE KXI_HOST_DETAILS.memory_percent_used *GE 90

See “Attributes in each attribute group” on page 27 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.

Error conditions

Warning

Clearing conditions

The situation clears when the condition becomes false.

KXI_Host_License_Expired situation

Description

The XenServer host license expired.

The situation is evaluated for each distinct value of hostname.

Formula

*IF *VALUE KXI_HOST_DETAILS.days_until_expiration *LE 0

See “Attributes in each attribute group” on page 27 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.

Error conditions

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 is 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 “Attributes in each attribute group” on page 27 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.

Error conditions

Warning

Clearing conditions

The situation clears when the condition becomes false.

Chapter 6. Take Action commands reference

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

About Take Action commands

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

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

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

Additional information about Take Action commands

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

For a list of the Take Action commands for this monitoring agent and a description of each command, see "Predefined Take Action commands" and the information for each individual command.

Predefined Take Action commands

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

This monitoring agent contains the following Take Action commands:

- Force_Restart_VM
- Force_Start_VM
- Force_Stop_VM
- Pause_VM
- Restart_VM
- Resume_VM
- Start_VM
- Stop_VM
- Suspend_VM
- Unpause_VM

Take Action command descriptions

Each Take Action command description provides information you can use to decide whether to run the Take Action command or whether to include the Take Action command in a situation or a policy.

The descriptions of the Take Action commands provide the following information:

Description

Actions the command performs on the system to which it is sent, and the permissions required for the Take Action command to function.

Return codes

Information that the Take Action command returns.

Force_Restart_VM action

Forcibly restarts the selected virtual machine.

System command

To include the Take Action command in a situation or workflow policy, use the following syntax for the system command:

```
FORCE_RESTART_VM \  
  
[KXI_HOST_VMS.uuid]
```

You can use attribute substitution to supply the Take Action command arguments from the situation, for example:

```
FORCE_RESTART_VM \  
  
[&{KXI_HOST_VMS.uuid}]
```

You can also use attribute substitution in a workflow policy though the format is slightly different:

```
FORCE_RESTART_VM \  
  
[&WaitOnSituation:KXI_HOST_VMS.uuid]
```

Command arguments

- **Name:** KXI_HOST_VMS.uuid
 - **Description:** The universal unique identifier of the virtual machine.
 - **Default:** ""

Destination systems

_EnDDESTINATIONS_NONE_OR_LIST_EnD

Return codes

- Return Code: 2
 - Return Code Type: GENERAL_ERROR
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
 - Message ID: KXI1002
 - Message: General error executing take action.
- Return Code: 8
 - Return Code Type: TIMED_OUT
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
 - Message ID: KXI1003
 - Message: The requested take action timed out.
- Return Code: 12
 - Return Code Type: INSUFFICIENT_USER_AUTHORITY
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
 - Message ID: KXI1004
 - Message: Insufficient user authority to execute the take action.
- Return Code: 0

- Return Code Type: OK
- Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
- Message ID: KXI9023
- Message: The request to force restart the VM was successful.
- Return Code: 1
 - Return Code Type: GENERAL_ERROR
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
 - Message ID: KXI9024
 - Message: The request to force restart the VM was unsuccessful.
- Return Code: 10
 - Return Code Type: GENERAL_ERROR
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
 - Message ID: KXI9033
 - Message: The UUID supplied was improper.
- Return Code: 11
 - Return Code Type: GENERAL_ERROR
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
 - Message ID: KXI9034
 - Message: The arguments supplied were improper.

Force_Start_VM action

Forcibly starts the selected virtual machine.

System command

To include the Take Action command in a situation or workflow policy, use the following syntax for the system command:

```
FORCE_START_VM \
    [KXI_HOST_VMS.uuid]
```

You can use attribute substitution to supply the Take Action command arguments from the situation, for example:

```
FORCE_START_VM \
    [&{KXI_HOST_VMS.uuid}]
```

You can also use attribute substitution in a workflow policy though the format is slightly different:

```
FORCE_START_VM \
    [&WaitOnSituation:KXI_HOST_VMS.uuid]
```

Command arguments

- **Name:** KXI_HOST_VMS.uuid
 - **Description:** The universal unique identifier of the virtual machine.
 - **Default:** ""

Destination systems

_EnDDESTINATIONS_NONE_OR_LIST_EnD

Return codes

- Return Code: 2
 - Return Code Type: GENERAL_ERROR
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
 - Message ID: KXI1002
 - Message: General error executing take action.
- Return Code: 8
 - Return Code Type: TIMED_OUT
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
 - Message ID: KXI1003

- Message: The requested take action timed out.
- Return Code: 12
 - Return Code Type: INSUFFICIENT_USER_AUTHORITY
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
 - Message ID: KXI1004
 - Message: Insufficient user authority to execute the take action.
- Return Code: 0
 - Return Code Type: OK
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
 - Message ID: KXI9013
 - Message: The request to Force Start the VM was successful.
- Return Code: 1
 - Return Code Type: GENERAL_ERROR
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
 - Message ID: KXI9014
 - Message: The request to force start the VM was unsuccessful.
- Return Code: 10
 - Return Code Type: GENERAL_ERROR
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
 - Message ID: KXI9033
 - Message: The UUID supplied was improper.
- Return Code: 11
 - Return Code Type: GENERAL_ERROR
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
 - Message ID: KXI9034
 - Message: The arguments supplied were improper.

Force_Stop_VM action

Forcibly stops the selected virtual machine.

System command

To include the Take Action command in a situation or workflow policy, use the following syntax for the system command:

```
FORCE_STOP_VM \
    [KXI_HOST_VMS.uuid]
```

You can use attribute substitution to supply the Take Action command arguments from the situation, for example:

```
FORCE_STOP_VM \
    [{KXI_HOST_VMS.uuid}]
```

You can also use attribute substitution in a workflow policy though the format is slightly different:

```
FORCE_STOP_VM \
    [&WaitOnSituation:KXI_HOST_VMS.uuid]
```

Command arguments

- **Name:** KXI_HOST_VMS.uuid
 - **Description:** The universal unique identifier of the virtual machine.
 - **Default:** ""

Destination systems

_EnDDESTINATIONS_NONE_OR_LIST_EnD

Return codes

- Return Code: 2
 - Return Code Type: GENERAL_ERROR

- Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
- Message ID: KXI1002
- Message: General error executing take action.
- Return Code: 8
 - Return Code Type: TIMED_OUT
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
 - Message ID: KXI1003
 - Message: The requested take action timed out.
- Return Code: 12
 - Return Code Type: INSUFFICIENT_USER_AUTHORITY
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
 - Message ID: KXI1004
 - Message: Insufficient user authority to execute the take action.
- Return Code: 0
 - Return Code Type: OK
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
 - Message ID: KXI9015
 - Message: The request to force stop the VM was successful.
- Return Code: 1
 - Return Code Type: GENERAL_ERROR
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
 - Message ID: KXI9016
 - Message: The request to force stop the VM was unsuccessful.
- Return Code: 10
 - Return Code Type: GENERAL_ERROR
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
 - Message ID: KXI9033
 - Message: The UUID supplied was improper.
- Return Code: 11
 - Return Code Type: GENERAL_ERROR
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
 - Message ID: KXI9034
 - Message: The arguments supplied were improper.

Pause_VM action

Pauses the selected virtual machine.

System command

To include the Take Action command in a situation or workflow policy, use the following syntax for the system command:

```
PAUSE_VM \
    [KXI_HOST_VMS.uuid]
```

You can use attribute substitution to supply the Take Action command arguments from the situation, for example:

```
PAUSE_VM \
    [{KXI_HOST_VMS.uuid}]
```

You can also use attribute substitution in a workflow policy though the format is slightly different:

```
PAUSE_VM \
    [&WaitOnSituation:KXI_HOST_VMS.uuid]
```

Command arguments

- **Name:** KXI_HOST_VMS.uuid

- **Description:** The universal unique identifier of the virtual machine.
- **Default:** ""

Destination systems

_EnDDESTINATIONS_NONE_OR_LIST_EnD

Return codes

- Return Code: 2
 - Return Code Type: GENERAL_ERROR
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
 - Message ID: KXI1002
 - Message: General error executing take action.
- Return Code: 8
 - Return Code Type: TIMED_OUT
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
 - Message ID: KXI1003
 - Message: The requested take action timed out.
- Return Code: 12
 - Return Code Type: INSUFFICIENT_USER_AUTHORITY
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
 - Message ID: KXI1004
 - Message: Insufficient user authority to execute the take action.
- Return Code: 0
 - Return Code Type: OK
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
 - Message ID: KXI9005
 - Message: The request to pause the VM succeeded.
- Return Code: 1
 - Return Code Type: GENERAL_ERROR
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
 - Message ID: KXI9006
 - Message: The request to pause the VM was unsuccessful.
- Return Code: 10
 - Return Code Type: GENERAL_ERROR
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
 - Message ID: KXI9033
 - Message: The UUID supplied was improper.
- Return Code: 11
 - Return Code Type: GENERAL_ERROR
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
 - Message ID: KXI9034
 - Message: The arguments supplied were improper.

Restart_VM action

Restarts the selected virtual machine.

System command

To include the Take Action command in a situation or workflow policy, use the following syntax for the system command:

```
RESTART_VM \
```

```
[KXI_HOST_VMS.uuid]
```

You can use attribute substitution to supply the Take Action command arguments from the situation, for example:

```
RESTART_VM \
```

```
[&{KXI_HOST_VMS.uuid}]
```

You can also use attribute substitution in a workflow policy though the format is slightly different:

```
RESTART_VM \
```

```
[&WaitOnSituation:KXI_HOST_VMS.uuid]
```

Command arguments

- **Name:** KXI_HOST_VMS.uuid
 - **Description:** The universal unique identifier of the virtual machine.
 - **Default:** ""

Destination systems

```
_EnDDESTINATIONS_NONE_OR_LIST_EnD
```

Return codes

- Return Code: 2
 - Return Code Type: GENERAL_ERROR
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
 - Message ID: KXI1002
 - Message: General error executing take action.
- Return Code: 8
 - Return Code Type: TIMED_OUT
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
 - Message ID: KXI1003
 - Message: The requested take action timed out.
- Return Code: 12
 - Return Code Type: INSUFFICIENT_USER_AUTHORITY
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
 - Message ID: KXI1004
 - Message: Insufficient user authority to execute the take action.
- Return Code: 0
 - Return Code Type: OK
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
 - Message ID: KXI9021
 - Message: The request to restart the VM was successful.
- Return Code: 1
 - Return Code Type: GENERAL_ERROR
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
 - Message ID: KXI9022
 - Message: The request to restart the VM was unsuccessful.
- Return Code: 10
 - Return Code Type: GENERAL_ERROR
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
 - Message ID: KXI9033
 - Message: The UUID supplied was improper.
- Return Code: 11
 - Return Code Type: GENERAL_ERROR
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
 - Message ID: KXI9034
 - Message: The arguments supplied were improper.

Resume_VM action

Resumes the selected virtual machine.

System command

To include the Take Action command in a situation or workflow policy, use the following syntax for the system command:

```
RESUME_VM \
```

```
[KXI_HOST_VMS.uuid]
```

You can use attribute substitution to supply the Take Action command arguments from the situation, for example:

```
RESUME_VM \
```

```
[&{KXI_HOST_VMS.uuid}]
```

You can also use attribute substitution in a workflow policy though the format is slightly different:

```
RESUME_VM \
```

```
[&WaitOnSituation:KXI_HOST_VMS.uuid]
```

Command arguments

- **Name:** KXI_HOST_VMS.uuid
 - **Description:** The universal unique identifier of the virtual machine.
 - **Default:** ""

Destination systems

_EnDDESTINATIONS_NONE_OR_LIST_EnD

Return codes

- Return Code: 2
 - Return Code Type: GENERAL_ERROR
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
 - Message ID: KXI1002
 - Message: General error executing take action.
- Return Code: 8
 - Return Code Type: TIMED_OUT
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
 - Message ID: KXI1003
 - Message: The requested take action timed out.
- Return Code: 12
 - Return Code Type: INSUFFICIENT_USER_AUTHORITY
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
 - Message ID: KXI1004
 - Message: Insufficient user authority to execute the take action.
- Return Code: 0
 - Return Code Type: OK
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
 - Message ID: KXI9019
 - Message: The request to resume the VM was successful.
- Return Code: 1
 - Return Code Type: GENERAL_ERROR
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
 - Message ID: KXI9020
 - Message: The request to resume the VM was unsuccessful.
- Return Code: 10
 - Return Code Type: GENERAL_ERROR
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
 - Message ID: KXI9033
 - Message: The UUID supplied was improper.
- Return Code: 11
 - Return Code Type: GENERAL_ERROR
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
 - Message ID: KXI9034
 - Message: The arguments supplied were improper.

Start_VM action

Starts the selected virtual machine.

System command

To include the Take Action command in a situation or workflow policy, use the following syntax for the system command:

```
START_VM \  
  
    [KXI_HOST_VMS.uuid]
```

You can use attribute substitution to supply the Take Action command arguments from the situation, for example:

```
START_VM \  
  
    [&{KXI_HOST_VMS.uuid}]
```

You can also use attribute substitution in a workflow policy though the format is slightly different:

```
START_VM \  
  
    [&WaitOnSituation:KXI_HOST_VMS.uuid]
```

Command arguments

- **Name:** KXI_HOST_VMS.uuid
 - **Description:** The universal unique identifier of the virtual machine.
 - **Default:** ""

Destination systems

_EnDDESTINATIONS_NONE_OR_LIST_EnD

Return codes

- Return Code: 2
 - Return Code Type: GENERAL_ERROR
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
 - Message ID: KXI1002
 - Message: General error executing take action.
- Return Code: 8
 - Return Code Type: TIMED_OUT
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
 - Message ID: KXI1003
 - Message: The requested take action timed out.
- Return Code: 12
 - Return Code Type: INSUFFICIENT_USER_AUTHORITY
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
 - Message ID: KXI1004
 - Message: Insufficient user authority to execute the take action.
- Return Code: 0
 - Return Code Type: OK
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
 - Message ID: KXI9001
 - Message: The request to start the VM succeeded.
- Return Code: 1
 - Return Code Type: GENERAL_ERROR
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
 - Message ID: KXI9002
 - Message: The request to start the VM was unsuccessful.
- Return Code: 10
 - Return Code Type: GENERAL_ERROR
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
 - Message ID: KXI9033
 - Message: The UUID supplied was improper.
- Return Code: 11
 - Return Code Type: GENERAL_ERROR

- Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
- Message ID: KXI9034
- Message: The arguments supplied were improper.

Stop_VM action

Stops the selected virtual machine.

System command

To include the Take Action command in a situation or workflow policy, use the following syntax for the system command:

```
STOP_VM \
```

```
[KXI_HOST_VMS.uuid]
```

You can use attribute substitution to supply the Take Action command arguments from the situation, for example:

```
STOP_VM \
```

```
[&{KXI_HOST_VMS.uuid}]
```

You can also use attribute substitution in a workflow policy though the format is slightly different:

```
STOP_VM \
```

```
[&WaitOnSituation:KXI_HOST_VMS.uuid]
```

Command arguments

- **Name:** KXI_HOST_VMS.uuid
 - **Description:** The universal unique identifier of the virtual machine.
 - **Default:** ""

Destination systems

_EnDDESTINATIONS_NONE_OR_LIST_EnD

Return codes

- Return Code: 2
 - Return Code Type: GENERAL_ERROR
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
 - Message ID: KXI1002
 - Message: General error executing take action.
- Return Code: 8
 - Return Code Type: TIMED_OUT
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
 - Message ID: KXI1003
 - Message: The requested take action timed out.
- Return Code: 12
 - Return Code Type: INSUFFICIENT_USER_AUTHORITY
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
 - Message ID: KXI1004
 - Message: Insufficient user authority to execute the take action.
- Return Code: 0
 - Return Code Type: OK
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
 - Message ID: KXI9003
 - Message: The request to stop the VM succeeded.
- Return Code: 1
 - Return Code Type: GENERAL_ERROR
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
 - Message ID: KXI9004
 - Message: The request to stop the VM was unsuccessful.

- Return Code: 10
 - Return Code Type: GENERAL_ERROR
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
 - Message ID: KXI9033
 - Message: The UUID supplied was improper.
- Return Code: 11
 - Return Code Type: GENERAL_ERROR
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
 - Message ID: KXI9034
 - Message: The arguments supplied were improper.

Suspend_VM action

Suspends the selected virtual machine.

System command

To include the Take Action command in a situation or workflow policy, use the following syntax for the system command:

```
SUSPEND_VM \
```

```
[KXI_HOST_VMS.uuid]
```

You can use attribute substitution to supply the Take Action command arguments from the situation, for example:

```
SUSPEND_VM \
```

```
[&{KXI_HOST_VMS.uuid}]
```

You can also use attribute substitution in a workflow policy though the format is slightly different:

```
SUSPEND_VM \
```

```
[&WaitOnSituation:KXI_HOST_VMS.uuid]
```

Command arguments

- **Name:** KXI_HOST_VMS.uuid
 - **Description:** The universal unique identifier of the virtual machine.
 - **Default:** ""

Destination systems

```
_EnDDESTINATIONS_NONE_OR_LIST_EnD
```

Return codes

- Return Code: 2
 - Return Code Type: GENERAL_ERROR
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
 - Message ID: KXI1002
 - Message: General error executing take action.
- Return Code: 8
 - Return Code Type: TIMED_OUT
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
 - Message ID: KXI1003
 - Message: The requested take action timed out.
- Return Code: 12
 - Return Code Type: INSUFFICIENT_USER_AUTHORITY
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
 - Message ID: KXI1004
 - Message: Insufficient user authority to execute the take action.
- Return Code: 0
 - Return Code Type: OK
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)

- Message ID: KXI9017
- Message: The request to suspend the VM was successful.
- Return Code: 1
 - Return Code Type: GENERAL_ERROR
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
 - Message ID: KXI9018
 - Message: The request to suspend the VM was unsuccessful.
- Return Code: 10
 - Return Code Type: GENERAL_ERROR
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
 - Message ID: KXI9033
 - Message: The UUID supplied was improper.
- Return Code: 11
 - Return Code Type: GENERAL_ERROR
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
 - Message ID: KXI9034
 - Message: The arguments supplied were improper.

Unpause_VM action

Unpauses the selected virtual machine.

System command

To include the Take Action command in a situation or workflow policy, use the following syntax for the system command:

```
UNPAUSE_VM \

    [KXI_HOST_VMS.uuid]
```

You can use attribute substitution to supply the Take Action command arguments from the situation, for example:

```
UNPAUSE_VM \

    [{KXI_HOST_VMS.uuid}]
```

You can also use attribute substitution in a workflow policy though the format is slightly different:

```
UNPAUSE_VM \

    [&WaitOnSituation:KXI_HOST_VMS.uuid]
```

Command arguments

- **Name:** KXI_HOST_VMS.uuid
 - **Description:** The universal unique identifier of the virtual machine.
 - **Default:** ""

Destination systems

_EnDDESTINATIONS_NONE_OR_LIST_EnD

Return codes

- Return Code: 2
 - Return Code Type: GENERAL_ERROR
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
 - Message ID: KXI1002
 - Message: General error executing take action.
- Return Code: 8
 - Return Code Type: TIMED_OUT
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
 - Message ID: KXI1003
 - Message: The requested take action timed out.
- Return Code: 12

- Return Code Type: INSUFFICIENT_USER_AUTHORITY
- Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
- Message ID: KXI1004
- Message: Insufficient user authority to execute the take action.
- Return Code: 0
 - Return Code Type: OK
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
 - Message ID: KXI9011
 - Message: The request to Unpause the VM was successful.
- Return Code: 1
 - Return Code Type: GENERAL_ERROR
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
 - Message ID: KXI9012
 - Message: The request to unpause the VM was unsuccessful.
- Return Code: 10
 - Return Code Type: GENERAL_ERROR
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
 - Message ID: KXI9033
 - Message: The UUID supplied was improper.
- Return Code: 11
 - Return Code Type: GENERAL_ERROR
 - Operating systems: Linux 2.6 (Intel), Linux (64-bit x86), Windows, Windows (64-bit)
 - Message ID: KXI9034
 - Message: The arguments supplied were improper.

Chapter 7. Policies reference

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

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

For more information about working with policies, see *Automation with policies* in the *Tivoli Enterprise Portal User's Guide*.

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

Predefined policies

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

The IBM Tivoli Monitoring for Virtual Environments Agent for Citrix XenServer does not provide predefined policies.

Chapter 8. Tivoli Common Reporting for Citrix XenServer agent

You can find complete information about prerequisites, importing reports, and running reports by taking the agent-specific information together with the Tivoli Common Reporting information in the IBM Tivoli Monitoring Administrator's Guide.

Cognos data model and reports to be used in Tivoli Common Reporting were introduced with IBM Tivoli Monitoring V6.2.2 Fix Pack 2.

The reports in this package are historical reports, that use summarized data that is collected in Tivoli Data Warehouse V6.2.2. These reports are built to run only with the IBM Tivoli Monitoring for Virtual Environments Agent for Citrix XenServer.

The DB2[®], Oracle, and SQL Server databases are supported for running all reports.

The Cognos[®] reports can be administered, run, and edited by using Tivoli Common Reporting V2.1 or V3.1 software that is included with IBM Tivoli Monitoring V6.2.2 Fix Pack 2 or later. For more information about Tivoli Common Reporting, see the Tivoli Common Reporting Community.

This version of Tivoli Common Reporting includes Cognos Business Intelligence and Reporting V8.4.

More information about Tivoli Common Reporting

You can find information about Tivoli Common Reporting at the Tivoli Common Reporting documentation Information Center and the Tivoli Common Reporting website.

For complete documentation for the Tivoli Common Reporting tool, see the Tivoli Common Reporting documentation Information Center (http://publib.boulder.ibm.com/infocenter/tivihelp/v3r1/topic/com.ibm.tivoli.tcr.doc/tcr_welcome.html).

The Tivoli Common Reporting website contains information and how-to videos about subjects such as how to create IBM Tivoli Monitoring reports by dragging, import Tivoli Common Reporting and Cognos reports, and set up Cognos and Tivoli Common Reporting data connections. You can find a report catalog and information about reporting across Tivoli products at the Tivoli Common Reporting Community.

Prerequisites

The Cognos reports require the completion of prerequisite steps for the reports to run.

All of the following prerequisite steps must be completed before you run the reports:

1. Install Tivoli Common Reporting V2.1 or V3.1.
2. Obtain the reports from the product media.
3. Configure historical collection for the Citrix XenServer agent.
4. Connect to Tivoli Data Warehouse by using the database client over ODBC.

Install Tivoli Common Reporting V2.1 or V3.1

You can use the Tivoli Common Reporting Information Center documentation to install and run Tivoli Common Reporting V2.1 or V3.1.

Procedure

1. To install and configure Tivoli Common Reporting, see the documentation in the Information Center for the version that you are using:
 - Tivoli Common Reporting V2.1 Information Center (http://pic.dhe.ibm.com/infocenter/tivihelp/v3r1/topic/com.ibm.tivoli.tcr.doc_21/ic-home.html)
 - Tivoli Common Reporting V3.1 Information Center (http://pic.dhe.ibm.com/infocenter/tivihelp/v3r1/topic/com.ibm.tivoli.tcr.doc_31/ic-home.html)
2. To ensure that Tivoli Common Reporting is running, go to https://machine_name:16311/ibm/console/.

Obtain the reports from the product media

The reports must be on the same computer as the Tivoli Common Reporting server.

Procedure

1. Locate the Cognos reports in the following directory: *Product Media root/ITMfVE_XenServer_Reports*.
2. Copy these files to any location on the same computer on which the Tivoli Common Reporting server is installed.

Configure historical collection for the Capacity Reports for Citrix XenServer

Historical collection must be configured for the Citrix XenServer agent.

Before you begin

Install and configure IBM Tivoli Monitoring V6.2.2 Fix Pack 2 and install and configure the Citrix XenServer agent, then configure historical collection.

Also, configure the Warehouse Summarization and Pruning agent with or without shifts enabled.

For more information about how to enable historical collection and configure the Warehouse Summarization and Pruning agent in IBM Tivoli Monitoring, see *Managing historical data* in the *IBM Tivoli Monitoring Administrator's Guide*.

About this task

Provided with the Citrix XenServer reports installation media are scripts to configure historical data collection and summarization and pruning. The scripts do this configuration for all the attribute groups that are referenced by the Tivoli Common Reporting Performance and Capacity Management Reports. These scripts include best practice recommendations for data collection used for reporting and capacity planning.

The `kxi_hist_config` script uses the command-line interface **tacmd** commands to set up the historical collections. When running the script, you pass in some parameters. The commands and parameters are listed in the procedure.

Procedure

1. Locate the following scripts on the installation media and copy them to a temporary directory on the computer on which a Tivoli Enterprise Monitoring Agent, a Tivoli Enterprise Monitoring Server, or Tivoli Enterprise Portal Server is installed:

Operating System	Configuration file name
Linux or UNIX	<code>kxi_hist_config.sh</code> and <code>kxi_check_hist_config.sh</code>

Operating System	Configuration file name
Windows	kxi_hist_config.cmd

2. Change to the directory to which you copied the scripts and enter the following command:

Operating System	Command
Linux or UNIX	<code>./kxi_hist_config.sh TEPS hostname username password [ITM installation path]</code>
Windows	<code>kxi_hist_config.cmd TEPS hostname username password [ITM installation path]</code>

By default, the script uses the default Tivoli Monitoring path:

- Linux and UNIX: /opt/IBM/ITM
 - Windows: C:\IBM\ITM
3. To specify a different path, type the relative path after the password. If you want to modify any of the settings, edit the script. Comments at the beginning of the script describe the parameters. Each attribute group has one entry for configuring the historical collection interval and upload times and the summarization and pruning intervals.

Example

Linux and UNIX:

In the following example, the `-i` parameter specifies that data must be uploaded to the data warehouse every hour. The `-c` parameter specifies that historical data must be collected every 15 minutes.

```
$CANDLEHOME/bin/tacmd histcreatecollection -a "KXI_HOST_CPU" -t "kxi" -o "KXI HOST CPU" -i 1h -l
TEMA -c 5m -e "historical collection for Citrix XenServer Host CPU metrics"
```

A statement for each attribute group defines the summarization and pruning intervals. The `-d` parameter specifies which summarization intervals to configure. In the following example, `D` specifies Daily Summarization. To configure Hourly and Daily summarization, specify `DH`. The `-p` flag specifies the pruning intervals. In our example, `D=30d,R=3d` indicates that the Daily Summarization data is pruned after 30 days and the Raw (detailed) data is pruned after three days. Each pruning interval must be specified in a comma-separated list with no spaces between the pruning intervals.

```
$CANDLEHOME/bin/tacmd histconfiguregroups -t "kxi" -o "KXI HOST CPU" -m -d DH -p D=30d,H=14d,R=3d
```

Windows

In the following example, the first parameter is the attribute group. The `-d` parameter specifies which summarization intervals to configure. In the following example, `D` specifies Daily Summarization. To configure Hourly and Daily summarization, specify `DH`. The `-p` flag specifies the pruning intervals. In our example, `D=30d,R=3d` indicates that the Daily Summarization data is pruned after 30 days and the Raw (detailed) data is pruned after three days. Each pruning interval must be specified in a comma-separated list with no spaces between the pruning intervals.

```
// "KXI HOST CPU": [" -m -d D -p D=30d,R=3d",
"*IBM_KXI"], //
```

Connect to the Tivoli Data Warehouse

Connect to Tivoli Data Warehouse by using the database client over ODBC. Cognos uses ODBC to connect to the database. Therefore, it is important to first install a database client on the Tivoli Common Reporting server and connect the database client to Tivoli Data Warehouse.

Procedure

1. Make sure that you deployed a DB2, Oracle, or MS SQL Server database client on the computer on which the Cognos-based Tivoli Common Reporting engine is installed. For DB2, the client must be the same version as the database that Tivoli Data Warehouse is using.
2. Connect the DB2, Oracle, or MS SQL Server database client to the database server:

Database	How to connect
DB2	Connect by running the Configuration Assistant, configuring the local net service name configuration, and restarting your system.
Oracle	Connect by running the Oracle Net Configuration Assistant, configuring the local net service name configuration, and restarting your system.
MS SQL Server	Connect by running the MS SQL Management Studio Express®, configuring the local net service name configuration, and restarting your system.

Important: Note the name of the connection you created, because it is used in Tivoli Common Reporting by the report installer as described in “Importing and running Cognos reports.”

See *Connecting to the Tivoli Data Warehouse using the database client over ODBC* in the *IBM Tivoli Monitoring Administrator's Guide V6.2.2 Fix Pack 2*.

Importing and running Cognos reports

You must import the IBM Tivoli Monitoring for Citrix XenServer Cognos reports to run any report from the Citrix XenServer Reports package.

Before you begin

All prerequisites must be met before importing and running the reports, or the reports cannot run. See “Prerequisites” on page 151 for the steps.

Note: With this release, the reports package name does not contain the release version, such as 7.2, and so on. When the package name does not have a version number, the name is the same across releases, so different versions of the packages cannot co-exist in the Dashboard Application Services Hub. Before you install the reports, back up the existing reports package if the name is *IBM Tivoli Monitoring for Citrix XenServer Reports*.

About this task

The IBM Tivoli Monitoring for Citrix XenServer Reports package contains an installer that performs the following tasks:

- Importing the reports and data model into Tivoli Common Reporting
- Configuring a data source to connect to Tivoli Data Warehouse
- Running scripts to create and populate the common dimensions in Tivoli Data Warehouse

After you complete the steps for importing and running Cognos reports, you can run any report from the IBM Tivoli Monitoring for Citrix XenServer Reports package.

Procedure

1. You might need to point to Java 1.5+ through your system PATH. Make sure that your system PATH contains a valid path to a Java virtual machine, for example: # PATH=\$PATH:/ibmjre50/ibm-java-i386-50/jre/bin
2. From the directory from which you extracted the reports package, run the file in Table 2 on page 155 depending on your operating system.

Table 2. Setup files

Operating system	File
AIX®	setup_aix.bin
HP-UX	setup_hpux.bin
Linux	setup_linux.bin
Solaris	setup_solaris.bin
Windows	setup_windows.exe

- To run the installer in console mode, use the following syntax:
`setup_platform.exe/.bin -i console`
- To run the installer in silent mode, use the following syntax:
`setup_platform.exe/.bin -i silent -f path_to_response_file`
 Use the *silent_installer.properties* response file for the silent installation.
- To run the installer in GUI mode, run the following executable:
`setup_platform.exe/.bin`

3. Select the language that you want.

4. Accept the license agreement.

5. Select the location where the Tivoli Common Reporting server is installed (not the location where the reports are to be installed). The path must end with /TCRComponent folder. By default, the path for Tivoli Common Reporting V2.1 is C:\IBM\tivoli\tipv2Components\TCRComponent or /opt/IBM/tivoli/tipv2Components/TCRComponent. For Tivoli Common Reporting V3.1, the default path is C:\Program Files\IBM\JazzSM\reporting or /opt/IBM/JazzSM/reporting.

Note: If Tivoli Common Reporting installation is distributed, reports must be installed on the dispatcher site only.

6. Select the report sets for installation by selecting the **IBM Tivoli Monitoring for Citrix XenServer** reports check box.

7. Provide Tivoli Common Reporting credentials: user name and password.

8. Configure Cognos data sources to connect to Tivoli Data Warehouse by using one of the following choices:

- If you have a Tivoli Data Warehouse connection defined in Tivoli Common Reporting (from a previous installation of reports), select **Skip this panel** and go to the next step. To test whether you have Tivoli Data Warehouse defined, go to **TCR > Launch Administration > Configuration > Data Source Connections** and see whether there is an entry called TDW.
- If you do not have a Tivoli Data Warehouse connection defined in Tivoli Common Reporting, you must configure the data source in Tivoli Common Reporting. Configure the data source through the administration panel as described in Configuring database connection (http://publib.boulder.ibm.com/infocenter/tivihelp/v3r1/topic/com.ibm.tivoli.tcr.doc_21/ttcr_config_db.html). You must enter the database alias name or the ODBC name for the database name input field.

9. Define common dimensions on the Tivoli Data Warehouse by using one of the following choices:

- If you have common dimensions (Time Dimension, Weekday Lookup, Month Lookup, and Computer System under IBM_TRAM schema) in your Tivoli Data Warehouse from a previous installation and you want to modify those dimensions to define a different time granularity, you can run the scripts manually as described in *Creating shared dimension tables and populating the time dimensions table* in the *IBM Tivoli Monitoring Administrator's Guide V6.2.2 Fix Pack 2*.
- If you do not have common dimensions in your Tivoli Data Warehouse, in the next panel, enter the JDBC credentials. Provide the database admin (db2admin, system, and so on) user name and password in the Configure data script window for JDBC User Credentials. You use the JDBC connection to run the Common Dimensions scripts on Tivoli Data Warehouse. Admin privileges

are required in this step to create the IBM_TRAM schema and required tables. If you are using an Oracle database and you do not have the USERS and TEMP tablespaces in your database, you must create them in your Tivoli Data Warehouse before you can run these scripts.

- Click the **JDBC Database Credentials** tab, and select **database type**. Edit the JDBC URL, JDBC driver file names, and JDBC driver class for the selected database type.

Database	Required driver file name
DB2	db2jcc.jar and db2jcc_license_cu.jar Note: JDBC credentials must have db2admin privileges.
Oracle	oraclethin.jar
SQL Server	sqljdbc.jar

On the pre-installation summary panel, all reports selected for installation are displayed.

- Click **Install**, and wait for the installer to finish. The Installation results panel shows the status of all installation actions for every item or report.

One log file and one trace file are included. Both files are in the user home directory, with the following names:

- Report_Installer_for_Tivoli_Common_Reporting_InstallLog.log (Log)
- Report_Installer_For_TCR_Output.txt (Trace)

- On Windows systems in the Run window, type %USERPROFILE% to open the file explorer to the directory where the log and trace files are created. If you skipped running the database scripts or a script failed, you can run the script manually by using the instructions in *Creating shared dimension tables and populating the time dimensions table* in the *IBM Tivoli Monitoring Administrator's Guide V6.2.2 Fix Pack 2*.

Results

At the end of the installation, you see one to three messages, always one for the status of importing reports, one for the status of defining the data source if you didn't skip this step, and one for the status of running database scripts if you didn't skip this step. If any of these messages indicate a failure, look at the Report_Installer_For_TCR_Output.txt and Report_Installer_InstallLog.log file. On Windows systems, this file is located in C:\Documents and Settings\Administrator.

What to do next

Use the following steps to make sure that your installation was successful:

- Go to Tivoli Common Reporting and see whether **IBM Tivoli Monitoring for Citrix XenServer Reports** is displayed in the Public Folders.
- Go to **TCR > Launch Administration > Configuration > Data Source Connections** and see whether Tivoli Data Warehouse was defined. Click **Tivoli Data Warehouse**.
- On the next page, Tivoli Data Warehouse has a **Test Connection** icon next to it. Click **Test** to see a connection test status of Succeeded.
- Go to **TCR > Launch Query Studio**. Select **IBM Tivoli Monitoring for Citrix XenServer Reports**. In the navigation panel, you see a tree of the Citrix XenServer agent data model.
- Browse to **IBM Tivoli Monitoring for Citrix XenServer Reports > Citrix XenServer > TRAM Shared Dimensions > Time**.
- Drag **Date** into the space. If no data is displayed, the Time Dimension was not correctly configured.

Uninstalling Cognos reports

Uninstallation of reports is not supported by the reports installer. You can however manually delete the reports package on the Tivoli Integration Portal for Tivoli Common Reporting version 2.1 or later, or on the Dashboard Application Services Hub for Tivoli Common Reporting version 3.1.

Procedure

1. Log in to the Tivoli Common Reporting interface and go to **Common Reporting**.
2. In the **Public Folders** tab of the Work with reports window, select the reports package that you want to delete.

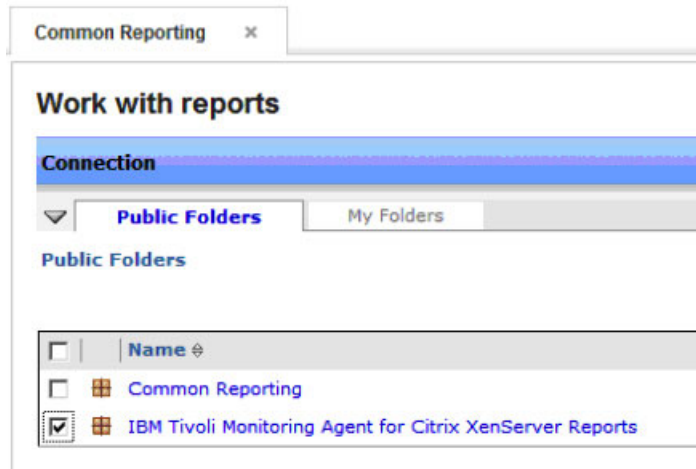


Figure 2. Work with reports: Select the reports package that you want to delete.

3. Click the **Delete** icon on the toolbar.



Figure 3. Delete icon

Results

The selected reports package is uninstalled.

Predefined Cognos reports

The Citrix XenServer agent provides five categories of Cognos reports: Prerequisites Checking, Accounting, Performance trends and resource forecasts, What if analysis for workload placement, and Workload right-sizing and balancing.

The following Cognos reports are available:

- **Prerequisites Checking**
 - Citrix XenServer Report Prerequisite Scanner DB2
 - Citrix XenServer Report Prerequisite Scanner MS SQL server

- Citrix XenServer Report Prerequisite Scanner Oracle
- **Accounting**
 - Citrix XenServer Server Count Report
- **Performance trends and resource forecasts**
 - XenServer Hypervisor CPU Performance Report
 - XenServer Hypervisor Daily CPU Trend
 - XenServer Hypervisor Forecast Alerts
 - XenServer Hypervisor Heat Chart
 - XenServer Hypervisor Hourly CPU Trend
 - XenServer Hypervisor Memory Allocation Report
 - XenServer Hypervisor Memory Performance Report
 - XenServer Hypervisor Performance Trends
 - XenServer Hypervisor Weekly Comparison
 - XenServer Hypervisor Workload Trend and Forecast
 - XenServer Pool Forecast Alerts
 - XenServer Pool Performance Trends
 - XenServer Pool Workload Trend and Forecast
 - XenServer Pool Workload Trends
 - XenServer Virtual Machine Heat Chart
 - XenServer Virtual Machine Performance Trends
 - XenServer VM CPU Utilization Daily Trend
 - XenServer VM CPU Utilization Hourly Trend
- **What if analysis for workload placement**
 - XenServer Number Of Workloads For Hypervisor
 -
- **Workload right-sizing and balancing**
 - XenServer Bottom N VM CPU Utilization Report
 - XenServer Hypervisor Bottom CPU Utilization Report
 - XenServer Hypervisor License Expiration Report
 - XenServer Hypervisor Top CPU Utilization Report
 - XenServer Hypervisor Top or Bottom Workload Consumers
 - XenServer Pool Top or Bottom Workload Consumers
 - XenServer Top N VM CPU Utilization Report
 - XenServer VM XenTools Status Report

Attribute groups

The Cognos reports use the following attribute groups:

- HOST DETAILS Daily
- HOST CPU Daily
- POOL SUMMARY Daily
- HOST VMS Daily
- HOST VMS Hourly
- HOST DETAILS Hourly
- CONTROL DOMAIN Hourly
- KXI_HYPERVISOR_CPU_Utilization_FCAST_DV

- KXI_HYPERVISOR_MEM_Utilization_FCAST_DV
- KXI_HYPERVISOR_NUMBER_OF_VMs_FCAST_DV
- KXI_POOL_CPU_Utilization_FCAST_DV
- KXI_POOL_MEM_Utilization_FCAST_DV
- KXI_POOL_NUMBER_OF_VMs_FCAST_DV

Prerequisites Checking report

You can use prerequisites checking to create a prerequisite scanner report for the Citrix XenServer agent by using predefined reports.

The following reports are available for prerequisites checking:

- Citrix XenServer Report Prerequisite Scanner DB2
- Citrix XenServer Report Prerequisite Scanner MS SQL server
- Citrix XenServer Report Prerequisite Scanner Oracle

Citrix XenServer agent Report Prerequisite Scanner DB2

This report runs on DB2 databases. The report shows you if all the prerequisite tables and views are present to successfully run Citrix XenServer agent reports, either all or on a per-report basis.

Report element	Details
Parameters	To run the prerequisite scanner, ensure that you defined and tested a DB2 database connection to the Tivoli Data Warehouse. Also ensure that you choose the appropriate connection to generate Prerequisite Scanner Report. Database Type DB2 Display Options Check all reports or a specific report by choosing from a category within the reports package.
Tables or views used	DB2: SYSCAT.VIEWS SYSCAT.TABLES
Output	This report will run on the DB2 database and show you if all the prerequisite tables and views are present.

Citrix XenServer agent Report Prerequisite Scanner MS SQL Server

This report runs on MS SQL databases. The report shows you if all the prerequisite tables and views are present to successfully run Citrix XenServer agent reports, either all or on a per-report basis.

Report element	Details
Parameters	To run the prerequisite scanner, ensure that you defined and tested a MS SQL Server database connection to the Tivoli Data Warehouse. Also ensure that you choose the appropriate connection to generate Prerequisite Scanner Report. Database Type MS SQL server Display Options Check all reports or a specific report by choosing from a category within the reports package.
Tables or views used	MS SQL Server: INFORMATION_SCHEMA.VIEWS INFORMATION_SCHEMA.TABLES

Report element	Details
Output	This report will run on the MS SQL Server database and show you if all the prerequisite tables and views are present.

Citrix XenServer agent Report Prerequisite Scanner Oracle

This report runs on Oracle databases. The report shows you if all the prerequisite tables and views are present to successfully run Citrix XenServer agent reports, either all or on a per-report basis.

Report element	Details
Parameters	To run the prerequisite scanner, ensure that you defined and tested an Oracle database connection to the Tivoli Data Warehouse. Also ensure that you choose the appropriate connection to generate Prerequisite Scanner Report. Database Type Oracle Display Options Check all reports or a specific report by choosing from a category within the reports package.
Tables or views used	Oracle: SYS.ALL_VIEWS SYS.ALL_TABLES
Output	This report will run on the Oracle database and show you if all the prerequisite tables and views are present.

Accounting report

You can create an Accounting report for the Citrix XenServer agent using a predefined report. The report shows information about the numbers of hosts and VMs that are monitored.

The following report is available for Accounting:

- Citrix XenServer Server Count Report

Citrix XenServer Server Count Report

This report shows, for a given day, the number of servers registered within the Citrix XenServer environment.

Report element	Details
Parameters	Date You can choose from a predefined date range such as Last Week, Current Month, Last 30 Days. Data filtering Shift Periods Select the shift period value. Vacation Periods Select the vacation period value.
Tables or views used	HOST DETAILS Daily HOST CPU Daily
Output	This report shows, for a given day, the number of servers registered within the Citrix XenServer environment. It shows a list of the servers by pool, and processor details by server.

Performance trends and resource forecasts

You can create performance trends and resource forecasts reports using predefined reports. These reports show information about processor utilization and storage pool capacity and performance.

The following reports are available for performance trends and resource forecasts:

- XenServer Hypervisor CPU Performance Report
- XenServer Hypervisor Daily CPU Trend
- XenServer Hypervisor Forecast Alerts
- XenServer Hypervisor Heat Chart
- XenServer Hypervisor Hourly CPU Trend
- XenServer Hypervisor Memory Allocation Report
- XenServer Hypervisor Memory Performance Report
- XenServer Hypervisor Performance Trends
- XenServer Hypervisor Weekly Comparison
- XenServer Hypervisor Workload Trend and Forecast
- XenServer Pool Forecast Alerts
- XenServer Pool Performance Trends
- XenServer Pool Workload Trend and Forecast
- XenServer Pool Workload Trends
- XenServer Virtual Machine Heat Chart
- XenServer Virtual Machine Performance Trends
- XenServer VM CPU Utilization Daily Trend
- XenServer VM CPU Utilization Hourly Trend

XenServer Hypervisor CPU Performance Report

This report shows the CPU utilization and the number of virtual machines on a specific hypervisor.

Report element	Details
Parameters	Date Range Report Period You can choose from a predefined date range such as Last Week, Current Month, Last 30 Days. Alternatively, you can enter a start and end date and time for the reporting period by choosing the Date Range (below) option. Start Date You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected. End Date You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected. Resource Selection Pool Name Select one or more XenServer Pools. Hypervisor Select one or more XenServer hypervisor. Display Options Include Shift Periods Select Peak Hours Only, Off-Peak Hours Only, or All hours. Include Vacation Periods Select Peak Hours Only, Off-Peak Hours Only, or All hours.
Tables or views used	HOST DETAILS Daily
Output	This report shows the CPU utilization and the number of virtual machines on a specific hypervisor.

XenServer Hypervisor Daily CPU Trend

This report shows the average CPU Utilization for a specified Hypervisor on a daily trend.

Report element	Details
Parameters	Date Range Report Period You can choose from a predefined date range such as Last Week, Current Month, Last 30 Days. Alternatively, you can enter a start and end date and time for the reporting period by choosing the Date Range (below) option. Start Date You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected. End Date You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected. Resource Selection Pool Name Select one or more XenServer Pools. Hypervisor Select one or more XenServer hypervisors. Display Options Include Shift Periods Select Peak Hours Only, Off-Peak Hours Only, or All hours. Include Vacation Periods Select Peak Hours Only, Off-Peak Hours Only, or All hours.
Tables or views used	HOST DETAILS Daily
Output	This report shows the average CPU Utilization for a specified Hypervisor on a daily trend. The report can be run as a single report, or it can be drilled through from the XenServer Hypervisor Top CPU Utilization Report or XenServer Hypervisor Bottom CPU Utilization Report reports. This report drills through to an hourly trend of a specified Hypervisor by clicking a date.

XenServer Hypervisor Forecast Alerts

This report shows a daily historical trend and forecast for resource (CPU and Memory) utilization for a Hypervisor or a group of Hypervisors.

Report element	Details
Parameters	Date Range Report Period You can choose from a predefined date range such as Last Week, Current Month, Last 30 Days. Alternatively, you can enter a start and end date and time for the reporting period by choosing the Date Range (below) option. Start Date You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected. End Date You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected. Resource Selection Pool Name Select one or more XenServer Pools. Hypervisor Select one or more XenServer hypervisor. Display Options Include Shift Periods Select Peak Hours Only, Off-Peak Hours Only, or All hours. Include Vacation Periods Select Peak Hours Only, Off-Peak Hours Only, or All hours. Forecast Period Days Enter the number of days to generate forecast data for. Thresholds CPU (%) Enter the CPU percent threshold. Memory (%) Enter the memory percent threshold.
Tables or views used	HOST DETAILS Daily KXI_HYPERVISOR_CPU_Utilization_FCAST_DV KXI_HYPERVISOR_MEM_Utilization_FCAST_DV
Output	This report shows a daily historical trend and forecast for resource (CPU and Memory) utilization for a Hypervisor or a group of Hypervisors. The list shows which Hypervisors have maximum resource utilization over the threshold designated.

XenServer Hypervisor Heat Chart

This report shows patterns of CPU or hypervisor memory utilization over a period for selected VM on a specific hypervisor.

Report element	Details
Parameters	Date Range Report Period You can choose from a predefined date range such as Last Week, Current Month, Last 30 Days. Alternatively, you can enter a start and end date and time for the reporting period by choosing the Date Range (below) option. Start Date You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected. End Date You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected. Pool Pool Name Select one or more XenServer Pools. Hypervisor Select Hypervisor Select one or more XenServer hypervisor. Display Options Include Shift Periods Select Peak Hours Only, Off-Peak Hours Only, or All hours. Include Vacation Periods Select Peak Hours Only, Off-Peak Hours Only, or All hours. Thresholds Upper Limit for Good Status Enter the threshold. Values that are equal to or lower than the threshold are considered good. Upper Limit for Fair Status Enter the threshold. Values that are equal to or lower than the threshold, but are greater than the Upper Limit for Good Status setting, are considered fair. Upper Limit for Warning Status Enter the threshold. Values that are equal to or lower than the threshold, but are greater than the Upper Limit for Fair Status setting, are considered to indicate a warning condition. Upper Limit for Bad Status and Lower Limit for Critical Status Enter the threshold. Values that are equal to or lower than the threshold, but are greater than the Upper Limit for Warning Status setting, are considered to indicate a bad condition. This threshold is also used to indicate a critical condition for values that are greater than this setting.
Tables or views used	HOST DETAILS Hourly
Output	This report shows patterns of CPU or hypervisor memory utilization over a period for selected VM on a specific hypervisor. The second column shows dates, and each column represents a particular hour of the day. The threshold values for the colors can also be modified by the user.

XenServer Hypervisor Hourly CPU Trend

This report shows the average CPU Utilization for a specified Hypervisor on a Hourly trend.

Report element	Details
Parameters	Date Range Report Period You can choose from a predefined date range such as Last Week, Current Month, Last 30 Days. Alternatively, you can enter a start and end date and time for the reporting period by choosing the Date Range (below) option. Start Date You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected. End Date You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected. Resource Selection Pool Name Select one or more XenServer Pools. Hypervisor Select one or more XenServer hypervisors. Display Options Include Shift Periods Select Peak Hours Only, Off-Peak Hours Only, or All hours. Include Vacation Periods Select Peak Hours Only, Off-Peak Hours Only, or All hours.
Tables or views used	HOST DETAILS Hourly
Output	This report shows the average CPU Utilization for a specified Hypervisor on a Hourly trend. The report can be run as a single report, or it can be drilled through from the XenServer Hypervisor Top CPU Utilization Report or XenServer Hypervisor Bottom CPU Utilization Report reports. This report drills through to an hourly trend of a specified Hypervisor by clicking a date.

XenServer Hypervisor Memory Allocation Report

This chart shows the total physical memory on a hypervisor which is compared with the total memory allocated to VMs on that hypervisor.

Report element	Details
Parameters	Date Range Report Period You can choose from a predefined date range such as Last Week, Current Month, Last 30 Days. Alternatively, you can enter a start and end date and time for the reporting period by choosing the Date Range (below) option. Start Date You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected. End Date You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected. Resource Selection Pool Name Select one or more XenServer Pools. Hypervisor Select one or more XenServer hypervisors. Display Options Include Shift Periods Select Peak Hours Only, Off-Peak Hours Only, or All hours. Include Vacation Periods Select Peak Hours Only, Off-Peak Hours Only, or All hours.
Tables or views used	CONTROL DOMAIN Hourly HOST DETAILS Hourly
Output	This chart shows the total physical memory on a hypervisor which is compared with the total memory allocated to VMs on that hypervisor. Total Memory that is allocated to VMs on a host must not exceed the total physical memory of the host server.

XenServer Hypervisor Memory Performance Report

This report shows the Memory used and the number of Virtual Machines on a given hypervisor.

Report element	Details
Parameters	Date Range Report Period You can choose from a predefined date range such as Last Week, Current Month, Last 30 Days. Alternatively, you can enter a start and end date and time for the reporting period by choosing the Date Range (below) option. Start Date You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected. End Date You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected. Resource Selection Pool Name Select one or more XenServer Pools. Hypervisor Select one or more XenServer hypervisors. Display Options Include Shift Periods Select Peak Hours Only, Off-Peak Hours Only, or All hours. Include Vacation Periods Select Peak Hours Only, Off-Peak Hours Only, or All hours.
Tables or views used	HOST DETAILS Daily
Output	This report shows the Memory used and the number of Virtual Machines on a given hypervisor.

XenServer Hypervisor Performance Trends

This report shows trends for multiple performance metrics of multiple hypervisors in a matrix.

Report element	Details
Parameters	Date Range Report Period You can choose from a predefined date range such as Last Week, Current Month, Last 30 Days. Alternatively, you can enter a start and end date and time for the reporting period by choosing the Date Range (below) option. Start Date You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected. End Date You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected. Resource Selection Pool Name Select one or more XenServer Pools. Hypervisor Select one or more XenServer hypervisors. Display Options Include Shift Periods Select Peak Hours Only, Off-Peak Hours Only, or All hours. Include Vacation Periods Select Peak Hours Only, Off-Peak Hours Only, or All hours.
Tables or views used	HOST DETAILS Daily
Output	This report shows trends for multiple performance metrics of multiple hypervisors in a matrix. For percentages (CPU, Memory) the scales are 0-100 and the yellow line indicates maximum utilization while blue line indicates average utilization. Datastore usage (solid line) is plotted against the total capacity (shown in dashed line). Number of VMs that are in ON state (solid line) is plotted against the total number of VMs on the cluster (shown in dashed line). Network I/O is plotted in KBps and its scale is relative to the maximum value for all the servers. The red dots show the peaks and the green dots indicate the crests or minimum value.

XenServer Hypervisor Weekly Comparison

This report compares key metrics of host servers from week to week.

Report element	Details
Parameters	Date Range Report Period You can choose from a predefined date range such as Last Week, Current Month, Last 30 Days. Alternatively, you can enter a start and end date and time for the reporting period by choosing the Date Range (below) option. Start Date You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected. End Date You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected. Resource Selection Pool Name Select one or more XenServer Pools. Hypervisor Select one or more XenServer hypervisors. Display Options Include Shift Periods Select Peak Hours Only, Off-Peak Hours Only, or All hours. Include Vacation Periods Select Peak Hours Only, Off-Peak Hours Only, or All hours.
Tables or views used	HOST DETAILS Daily
Output	This report compares key metrics of host servers from week to week. If there is a significant change in value from one week to another, that field is highlighted.

XenServer Hypervisor Workload Trend and Forecast

This report shows a daily historical trend and forecast for resource utilization for a Hypervisor or a group of Hypervisors.

Report element	Details
Parameters	Date Range Report Period You can choose from a predefined date range such as Last Week, Current Month, Last 30 Days. Alternatively, you can enter a start and end date and time for the reporting period by choosing the Date Range (below) option. Start Date You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected. End Date You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected. Resource Selection Pool Name Select one or more XenServer Pools. Hypervisor Select one or more XenServer hypervisors. Display Options Include Shift Periods Select Peak Hours Only, Off-Peak Hours Only, or All hours. Include Vacation Periods Select Peak Hours Only, Off-Peak Hours Only, or All hours. Forecast Period Days Enter the number of days to generate forecast data for.
Tables or views used	HOST DETAILS Daily KXI_HYPERVISOR_CPU_Utilization_FCAST_DV KXI_HYPERVISOR_MEM_Utilization_FCAST_DV KXI_HYPERVISOR_NUMBER_OF_VMs_FCAST_DV
Output	This report shows a daily historical trend and forecast for resource utilization for a Hypervisor or a group of Hypervisors. The resources are CPU, Memory, Storage, and average total VM's.

XenServer Pool Forecast Alerts

This report shows a daily historical trend and forecast for resource (CPU and Memory) utilization for a Citrix XenServer pool or a group of pools.

Report element	Details
Parameters	Date Range Report Period You can choose from a predefined date range such as Last Week, Current Month, Last 30 Days. Alternatively, you can enter a start and end date and time for the reporting period by choosing the Date Range (below) option. Start Date You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected. End Date You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected. Resource Selection Pool Name Select one or more XenServer Pools. Display Options Include Shift Periods Select Peak Hours Only, Off-Peak Hours Only, or All hours. Include Vacation Periods Select Peak Hours Only, Off-Peak Hours Only, or All hours. Forecast Period Days Enter the number of days to generate forecast data for. Thresholds CPU (%) Enter the CPU percent threshold. Memory (%) Enter the memory percent threshold.
Tables or views used	HOST DETAILS Daily KXI_POOL_CPU_Utilization_FCAST_DV KXI_POOL_MEM_Utilization_FCAST_DV
Output	This report shows a daily historical trend and forecast for resource (CPU and Memory) utilization for a Citrix XenServer pool or a group of pools. The list shows which pools have maximum resource utilization over the threshold designated.

XenServer Pool Performance Trends

This report shows trends for multiple performance metrics of multiple pools in a matrix.

Report element	Details
Parameters	Date Range Report Period You can choose from a predefined date range such as Last Week, Current Month, Last 30 Days. Alternatively, you can enter a start and end date and time for the reporting period by choosing the Date Range (below) option. Start Date You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected. End Date You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected. Resource Selection Pool Name Select one or more XenServer Pools. Display Options Include Shift Periods Select Peak Hours Only, Off-Peak Hours Only, or All hours. Include Vacation Periods Select Peak Hours Only, Off-Peak Hours Only, or All hours.
Tables or views used	POOL SUMMARY Daily
Output	This report shows trends for multiple performance metrics of multiple pools in a matrix. For percentages (CPU, Memory) the scales are 0-100 and the yellow line indicates maximum utilization while blue line indicates average utilization. Number of VMs that are in ON state (solid line) is plotted against the total number of VMs on the cluster (shown in dashed line). The red dots show the peaks and the green dots indicate the crests or minimum value.

XenServer Pool Workload Trend and Forecast

This report shows a daily historical trend and forecast for resource utilization for a Pool or a group of Pools.

Report element	Details
Parameters	Date Range Report Period You can choose from a predefined date range such as Last Week, Current Month, Last 30 Days. Alternatively, you can enter a start and end date and time for the reporting period by choosing the Date Range (below) option. Start Date You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected. End Date You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected. Resource Selection Pool Name Select one or more XenServer Pools. Display Options Include Shift Periods Select Peak Hours Only, Off-Peak Hours Only, or All hours. Include Vacation Periods Select Peak Hours Only, Off-Peak Hours Only, or All hours. Forecast Period Days Enter the number of days to generate forecast data for.
Tables or views used	POOL SUMMARY Daily KXI_POOL_CPU_Utilization_FCAST_DV KXI_POOL_MEM_Utilization_FCAST_DV KXI_POOL_NUMBER_OF_VMs_FCAST_DV
Output	This report shows a daily historical trend and forecast for resource utilization for a Pool or a group of Pools. The resources are CPU, Memory, Storage, and Number of VMs per Hypervisor.

XenServer Pool Workload Trends

This report shows the workload trend specifics for XenServer Pools.

Report element	Details
Parameters	Date Range Report Period You can choose from a predefined date range such as Last Week, Current Month, Last 30 Days. Alternatively, you can enter a start and end date and time for the reporting period by choosing the Date Range (below) option. Resource Selection XenServer Pool Name Select one or more XenServer Pools.
Tables or views used	POOL SUMMARY Daily
Output	This report shows the workload trend specifics for XenServer Pools. For example, VM Statuses, CPU Utilization.

XenServer Virtual Machine Heat Chart

This report shows patterns of CPU or memory utilization over a period for a selected server or servers.

Report element	Details
Parameters	Date Range Report Period You can choose from a predefined date range such as Last Week, Current Month, Last 30 Days. Alternatively, you can enter a start and end date and time for the reporting period by choosing the Date Range (below) option. Start Date You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected. End Date You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected. Pools Select Pool Select one or more XenServer Pools. Hypervisors Select Hypervisor Select one or more XenServer hypervisor. VM Machine Select VM Name Select one or more XenServer virtual machines. Display Options Include Shift Periods Select Peak Hours Only, Off-Peak Hours Only, or All hours. Include Vacation Periods Select Peak Hours Only, Off-Peak Hours Only, or All hours. Thresholds Upper Limit for Good Status Enter the threshold. Values that are equal to or lower than the threshold are considered good. Upper Limit for Fair Status Enter the threshold. Values that are equal to or lower than the threshold, but are greater than the Upper Limit for Good Status setting, are considered fair. Upper Limit for Warning Status Enter the threshold. Values that are equal to or lower than the threshold, but are greater than the Upper Limit for Fair Status setting, are considered to indicate a warning condition. Upper Limit for Bad Status and Lower Limit for Critical Status Enter the threshold. Values that are equal to or lower than the threshold, but are greater than the Upper Limit for Warning Status setting, are considered to indicate a bad condition. This threshold is also used to indicate a critical condition for values that are greater than this setting.
Tables or views used	HOST VMS Hourly HOST DETAILS Hourly

Report element	Details
Output	This report shows patterns of CPU or memory utilization over a period for a selected server or servers. The first column shows dates, and each column represents a particular hour of the day. The user can modify the threshold values for the colors and drill through to a details report by clicking a specific date.

XenServer Virtual Machine Performance Trends

This report shows key performance metric trends for a specific VM belonging to a hypervisor.

Report element	Details
Parameters	Date Range Report Period You can choose from a predefined date range such as Last Week, Current Month, Last 30 Days. Alternatively, you can enter a start and end date and time for the reporting period by choosing the Date Range (below) option. Start Date You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected. End Date You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected. Resource Selection Pool Name Select one or more XenServer Pools. Hypervisor Select one or more XenServer hypervisors. Virtual Machines Select one or more XenServer virtual machines. Display Options Include Shift Periods Select Peak Hours Only, Off-Peak Hours Only, or All hours. Include Vacation Periods Select Peak Hours Only, Off-Peak Hours Only, or All hours.
Tables or views used	HOST DETAILS Daily HOST VMS Daily
Output	This report shows key performance metric trends for a specific VM belonging to a hypervisor. For percentages (CPU, Memory) the scales are 0-100 and the yellow line indicates maximum utilization while blue line indicates average utilization. Datastore usage committed (solid line) is plotted against the total provisioned space for that VM (shown in dashed line). Network I/O is plotted in KBps and its scale is relative to the maximum value for all the servers. The red dots show the peaks and the green dots indicate the crests or minimum value.

XenServer VM CPU Utilization Daily Trend

This report shows the average CPU Utilization for a specified Virtual Machine on a daily trend.

Report element	Details
Parameters	Date Range Report Period You can choose from a predefined date range such as Last Week, Current Month, Last 30 Days. Alternatively, you can enter a start and end date and time for the reporting period by choosing the Date Range (below) option. Start Date You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected. End Date You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected. Resource Selection Pool Name Select one or more XenServer Pools. Hypervisors Select one or more XenServer hypervisors. VM Name Select one or more XenServer virtual machines. Display Options Include Shift Periods Select Peak Hours Only, Off-Peak Hours Only, or All hours. Include Vacation Periods Select Peak Hours Only, Off-Peak Hours Only, or All hours.
Tables or views used	HOST DETAILS Daily HOST VMS Daily
Output	This report shows the average CPU Utilization for a specified Virtual Machine on a daily trend. This may be run as a single report, or it can be drilled through from the XenServer Top N VM CPU Utilization Report or XenServer Bottom N VM CPU Utilization Report reports. This report drills through to an hourly trend of a specified Virtual Machine by clicking on a date in the cross-tab.

XenServer VM CPU Utilization Hourly Trend

This report shows an hourly trend of average CPU utilization by Virtual Machine.

Report element	Details
Parameters	Date Range Report Period You can choose from a predefined date range such as Last Week, Current Month, Last 30 Days. Alternatively, you can enter a start and end date and time for the reporting period by choosing the Date Range (below) option. Start Date You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected. End Date You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected. Resource Selection Pool Name Select one or more XenServer Pools. Hypervisors Select one or more XenServer hypervisors. VM Name Select one or more XenServer virtual machines. Display Options Include Shift Periods Select Peak Hours Only, Off-Peak Hours Only, or All hours. Include Vacation Periods Select Peak Hours Only, Off-Peak Hours Only, or All hours.
Tables or views used	HOST DETAILS Hourly HOST VMS Hourly
Output	This report shows an hourly trend of average CPU utilization by Virtual Machine. This report can be filtered by Pool and Hypervisor. This report is drilled-through from XenServer VM CPU Daily Trend .

What-if analysis for workload placement reports

You can use what-if analysis to create a workload placement report for the agent for Citrix XenServer by using predefined reports.

The following reports are available for what-if analysis for workload placement:

- XenServer Number Of Workloads For Hypervisor

XenServer Number Of Workloads For Hypervisor

You can use this report to do what-if analysis to determine the number of additional virtual machines that can be placed on a Hypervisor. The analysis is based on the average historical usage and other user inputs.

Report element	Details
Parameters	Date Range Report Period You can choose from a predefined date range such as Last Week, Current Month, Last 30 Days. Alternatively, you can enter a start and end date and time for the reporting period by choosing the Date Range (below) option. Start Date You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected. End Date You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected. User-Defined Variables CPU Enter the CPU usage value. Memory Usage Enter the memory usage value. Pool Name Enter the XenServer pool name. Hypervisor Enter the XenServer hypervisor name. Buffer CPU Enter the CPU buffer value. Memory Usage Enter the memory usage buffer value. Display Options Include Shift Periods Select Peak Hours Only, Off-Peak Hours Only, or All hours. Include Vacation Periods Select Peak Hours Only, Off-Peak Hours Only, or All hours.
Tables or views used	HOST DETAILS Daily HOST VMS Daily HOST CPU Daily
Output	You can use this report to do what-if analysis to determine the number of additional virtual machines that can be placed on a Hypervisor. The analysis is based on the average historical usage and other user inputs. VM Profile is the amount of resources that are used by all the deployed VMs in the Hypervisor. Available Capacity is the amount of resources available for allocation on that Hypervisor. Buffer is the amount of resources that the user does not want to allocate. Number of VMs = Available Capacity / VM Profile. Number of VMs that can be added to this Hypervisor is the minimum of the values that are calculated for each resource.

Workload right-sizing and balancing report

You can use the predefined workload right-sizing and balancing report to determine the overall performance of the environment for the agent for Citrix XenServer.

The following reports are available for workload right-sizing and balancing:

- XenServer Bottom N VM CPU Utilization Report
- XenServer Hypervisor Bottom CPU Utilization Report
- XenServer Hypervisor License Expiration Report
- XenServer Hypervisor Top CPU Utilization Report
- XenServer Hypervisor Top or Bottom Workload Consumers
- XenServer Pool Top or Bottom Workload Consumers
- XenServer Top N VM CPU Utilization Report
- XenServer VM XenTools Status Report

XenServer Bottom N VM CPU Utilization Report

This report displays average CPU Utilization for all VMs deployed on the selected host during the report period, with bar charts that show the top and bottom n VMs based on CPU utilization.

Report element	Details
Parameters	Date Range Report Period You can choose from a predefined date range such as Last Week, Current Month, Last 30 Days. Alternatively, you can enter a start and end date and time for the reporting period by choosing the Date Range (below) option. Start Date You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected. End Date You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected. Resource Selection Bottom N Enter the number of XenServer virtual machines you would like included in the report. Pool Name Select one or more XenServer pools. Hypervisors Select one or more XenServer hypervisors. VM Name Select one or more XenServer virtual machines. Display Options Include Shift Period Select Peak Hours Only, Off-Peak Hours Only, or All hours. Include Vacation Period Select Peak Hours Only, Off-Peak Hours Only, or All hours.
Tables or views used	HOST DETAILS Daily HOST VMS Daily
Output	This report shows the bottom number <i>N</i> of Virtual Machines for specified Hypervisors by CPU utilization. This is computed using the average of all hourly summarizations of CPU utilization. Clicking on a VM Name in the list will drill through to the XenServer VM CPU Utilization Daily Trend report.

XenServer Hypervisor Bottom CPU Utilization Report

This report shows the bottom number *N* Hypervisors by CPU utilization.

Report element	Details
Parameters	Date Range Report Period You can choose from a predefined date range such as Last Week, Current Month, Last 30 Days. Alternatively, you can enter a start and end date and time for the reporting period by choosing the Date Range (below) option. Start Date You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected. End Date You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected. Resource Selection Bottom N Enter the number of XenServer hypervisors you would like included in the report. Pool Name Select one or more XenServer pools. Hypervisors Select one or more XenServer hypervisors. Display Options Include Shift Period Select Peak Hours Only, Off-Peak Hours Only, or All hours. Include Vacation Period Select Peak Hours Only, Off-Peak Hours Only, or All hours.
Tables or views used	HOST DETAILS Daily
Output	This report shows the bottom number <i>N</i> Hypervisors by CPU utilization. A user may drill through to a daily trend by clicking on a specific Hypervisor in the table.

XenServer Hypervisor License Expiration Report

This report shows the date and the number of days until a given hypervisor's license expires.

Report element	Details
Parameters	Date Range Report Period You can choose from a predefined date range such as Last Week, Current Month, Last 30 Days. Alternatively, you can enter a start and end date and time for the reporting period by choosing the Date Range (below) option. Start Date You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected. End Date You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected. Resource Selection Pool Name Select one or more XenServer pools. Hypervisors Select one or more XenServer hypervisors. Thresholds Lower Limit for Good Status Enter the lower limit values for a good status of the hypervisor license. Upper Limit for Warning Status Enter the upper limit values for a warning status of the hypervisor license. Display Options Include Shift Period Select Peak Hours Only, Off-Peak Hours Only, or All hours. Include Vacation Period Select Peak Hours Only, Off-Peak Hours Only, or All hours.
Tables or views used	HOST DETAILS Daily
Output	This report shows the date and the number of days until a given hypervisor's license expires.

XenServer Hypervisor Top CPU Utilization Report

This report shows the top number *N* Hypervisors by CPU utilization.

Report element	Details
Parameters	Date Range Report Period You can choose from a predefined date range such as Last Week, Current Month, Last 30 Days. Alternatively, you can enter a start and end date and time for the reporting period by choosing the Date Range (below) option. Start Date You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected. End Date You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected. Resource Selection Top N Enter the number of XenServer hypervisors you would like included in the report. Pool Name Select one or more XenServer pools. Hypervisors Select one or more XenServer hypervisors. Display Options Include Shift Period Select Peak Hours Only, Off-Peak Hours Only, or All hours. Include Vacation Period Select Peak Hours Only, Off-Peak Hours Only, or All hours.
Tables or views used	HOST DETAILS Daily
Output	This report shows the top number <i>N</i> Hypervisors by CPU utilization. A user may drill through to a daily trend by clicking on a specific Hypervisor in the table.

XenServer Hypervisor Top or Bottom Workload Consumers

This report shows the Top or Bottom Resource consuming Hypervisors. The resources analyzed are CPU, Memory, Storage, and Network.

Report element	Details
Parameters	Date Range You can choose from a predefined date range such as Last Week, Current Month, Last 30 Days. Resource Selection Pool Name Select one or more XenServer pools. Hypervisors Select one or more XenServer hypervisors. Display Options Top/Bottom Select top or bottom display of XenServer hypervisor workload consumers. Unit Select the unit in which you want the results displayed. Number of Resources Enter the number of resources that should be taken into account while calculating the workload consumers.
Tables or views used	HOST DETAILS Daily
Output	This report shows the Top or Bottom Resource consuming Hypervisors. The resources analyzed are CPU, Memory, Storage, and Network.

XenServer Pool Top or Bottom Workload Consumers

This report shows the Top or Bottom Resources in terms of CPU Utilization and Memory Utilization for XenServer Pools.

Report element	Details
Parameters	Date Range You can choose from a predefined date range such as Last Week, Current Month, Last 30 Days. Resource Selection Pool Name Select the XenServer pool for which workload consumers should be calculated. Display Options Top/Bottom Select top or bottom display of XenServer Pool workload consumers. Unit Select the unit in which you want the results displayed. Number of Resources Enter the number of resources that should be taken into account while calculating the workload consumers.
Tables or views used	POOL SUMMARY Daily
Output	This report shows the Top or Bottom Resources in terms of CPU Utilization and Memory Utilization for XenServer Pools.

XenServer Top N VM CPU Utilization Report

This report shows the top number *N* of Virtual Machines for specified Hypervisors by CPU utilization.

Report element	Details
Parameters	Date Range Report Period You can choose from a predefined date range such as Last Week, Current Month, Last 30 Days. Alternatively, you can enter a start and end date and time for the reporting period by choosing the Date Range (below) option. Start Date You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected. End Date You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected. Resource Selection Top N Enter the number of XenServer hypervisors you would like included in the report. Pool Name Select one or more XenServer pools. Hypervisors Select one or more XenServer hypervisors. Virtual Machine Select one or more XenServer virtual machines. Display Options Include Shift Period Select Peak Hours Only, Off-Peak Hours Only, or All hours. Include Vacation Period Select Peak Hours Only, Off-Peak Hours Only, or All hours.
Tables or views used	HOST VMS Hourly HOST DETAILS Hourly
Output	This report shows the top number <i>N</i> of Virtual Machines for specified Hypervisors by CPU utilization. A user may drill through to a daily trend by clicking on a specific Virtual Machine in the table.

XenServer VM XenTools Status Report

This report shows a list of the number of VM's on a hypervisor for each XenTool status.

Report element	Details
Parameters	Date Range Report Period You can choose from a predefined date range such as Last Week, Current Month, Last 30 Days. Alternatively, you can enter a start and end date and time for the reporting period by choosing the Date Range (below) option. Start Date You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected. End Date You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected. User-Defined Variables Pool Name Select one or more XenServer pools. Hypervisor Select one or more XenServer hypervisors. VM Name Select one or more XenServer virtual machines. Display Options Include Shift Period Select Peak Hours Only, Off-Peak Hours Only, or All hours. Include Vacation Period Select Peak Hours Only, Off-Peak Hours Only, or All hours.
Tables or views used	HOST VMS Daily HOST DETAILS Daily
Output	This report shows a list of the number of VM's on a hypervisor for each XenTool status. A list (if applicable) shows all VMs (by name) that do not have XenTools installed or do not have the latest version of XenTools installed.

Chapter 9. Troubleshooting

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

For general troubleshooting information, see the *IBM Tivoli Monitoring Troubleshooting Guide*. For other problem-solving options, see “Support information” on page 215.

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

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

- “Gathering product information for IBM Software Support”
- “Using logging” on page 188
- “Consulting the lists of identified problems and workarounds” on page 188

Gathering product information for IBM Software Support

Before contacting IBM Software Support about a problem you are experiencing with this product, gather the information shown in Table 3.

Table 3. Information to gather before contacting IBM Software Support

Information type	Description
Log files	Collect trace log files from failing systems. Most logs are located in a logs subdirectory on the host computer. See “Principal trace log files” on page 189 for lists of all trace log files and their locations. For general information about the IBM Tivoli Monitoring environment, see the <i>Tivoli Enterprise Portal User's Guide</i> .
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 Environments Agent for Citrix XenServer
Screen captures	Screen captures of incorrect output, if any
(UNIX systems only) Core dump files	If the system stops on UNIX systems, collect the core dump file from the <i>install_dir/bin</i> directory, where <i>install_dir</i> is the directory where you installed the monitoring agent.

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

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

Using logging

Logging is the primary troubleshooting feature in the Citrix XenServer agent. *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.

Consulting the lists of identified problems and workarounds

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

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

Information about symptoms and detailed workarounds for these types of problems is located in “Problems and workarounds” on page 198.

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

Trace logging

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

The principal log type is the RAS (Reliability, Availability, and Serviceability) trace log. These logs are in the English language only. The RAS trace log mechanism is available for all components of IBM Tivoli Monitoring. Most logs are located in a logs subdirectory on the host computer. See the following information to learn how to configure and use trace logging:

- “Principal trace log files” on page 189
- “Examples: Using trace logs” on page 192
- “Setting RAS trace parameters by using the GUI” on page 193

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

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

Overview of log file management

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

Agent log file naming conventions

Table 4 provides the names, locations, and descriptions of IBM Tivoli Monitoring general RAS1 log files. The log file names for the Citrix XenServer agent adhere to the following naming convention:

Windows systems

hostname_productcode_instance-name_program_HEXtimestamp-nn.log

Linux and UNIX systems

hostname_productcode_instance-name_program_HEXtimestamp-nn.log

Where:

hostname

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

productcode

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

instance-name

Instance name of the agent.

program

Name of the program being run.

HEXtimestamp

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

nn

Rolling log suffix.

Principal trace log files

Trace log files are located on various systems.

Table 4 contains locations, file names, and descriptions of trace logs that can help determine the source of problems with agents.

Table 4. 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 IBM Tivoli Monitoring <i>timestamp.log</i> in the <i>install_dir\InstallITM</i> path • UNIX: The <i>candle_installation.log</i> file in the <i>install_dir/logs</i> path • Linux: The <i>candle_installation.log</i> file in the <i>install_dir/logs</i> 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: <i>install_dir\InstallITM</i>	Provides details about the configuration of data warehousing for historical reporting.

Table 4. Trace log files for troubleshooting agents (continued)

System where log is located	File name and path	Description
On the Tivoli Enterprise Monitoring Server	The name of the RAS log file is as follows: • Windows: <i>install_dir\logs\hostname_ms_timestamp-nn.log</i> • UNIX: <i>install_dir/logs/hostname_ms_timestamp-nn.log</i> • Linux: <i>install_dir/logs/hostname_ms_timestamp-nn.log</i> Note: File names for RAS1 logs include a hexadecimal time stamp. Also on UNIX systems, a log with a decimal time stamp is provided: <i>hostname_productcode_timestamp.log</i> and <i>hostname_productcode_timestamp.pid nnnnn</i> in the <i>install_dir/logs</i> path, where <i>nnnnn</i> is the process ID number.	Traces activity on the monitoring server.
On the Tivoli Enterprise Portal Server	The name of the RAS log file is as follows: • Windows: <i>install_dir\logs\hostname_cq_HEXtimestamp-nn.log</i> • UNIX: <i>install_dir/logs/hostname_cq_HEXtimestamp-nn.log</i> • Linux: <i>install_dir/logs/hostname_cq_HEXtimestamp-nn.log</i> Note: File names for RAS1 logs include a hexadecimal time stamp. Also on UNIX systems, a log with a decimal time stamp is provided: <i>hostname_productcode_timestamp.log</i> and <i>hostname_productcode_timestamp.pidnnnnn</i> in the <i>install_dir/logs</i> path, where <i>nnnnn</i> 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: <i>install_dir\Install\ITM</i> • UNIX: <i>install_dir/logs</i> • Linux: <i>install_dir/logs</i>	When you enable historical reporting, this log file traces the status of the warehouse proxy agent.

Table 4. Trace log files for troubleshooting agents (continued)

System where log is located	File name and path	Description
On the computer that hosts the monitoring agent	The RAS1 log files are as follows: • Windows: <i>hostname_xi_instance_name_kxiagent_HEXtimestamp-nn.log</i> in the <i>install_dir\tmaitm6\logs</i> directory • UNIX: <i>hostname_xi_instance_name_kxiagent_HEXtimestamp-nn.log</i> in the <i>install_dir/logs</i> directory • Linux: <i>hostname_xi_instance_name_kxiagent_HEXtimestamp-nn.log</i> in the <i>install_dir/logs</i> directory These logs are in the following directories: • Windows: <i>install_dir\tmaitm6\logs</i> • UNIX: <i>install_dir/logs</i> • Linux: <i>install_dir/logs</i> On Linux systems, the following additional logs are provided: – <i>hostname_xi_timestamp.log</i> – <i>hostname_xi_timestamp.pidnnnnn</i> in the <i>install_dir/logs</i> path, where <i>nnnnn</i> is the process ID number	Traces activity of the monitoring agent.
On the computer that hosts the monitoring agent	The agent operations log files are as follows: <i>instance_hostnameXI.LG0</i> is the current log created when the agent was started. <i>instance_hostname_XI.LG1</i> is the backup of the previous log. These logs are in the following directory depending on the operating system that you are using: • Windows: <i>install_dir\tmaitm6\logs</i> • Linux: <i>install_dir/logs</i> • UNIX: <i>install_dir/logs</i>	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 <i>previous</i> monitoring session: • Status of connectivity with the monitoring server • Situations that were running • The success or failure status of Take Action commands

Table 4. Trace log files for troubleshooting agents (continued)

System where log is located	File name and path	Description
Definitions of variables: • <i>timestamp</i> is a time stamp with a format that includes year (y), month (m), day (d), hour (h), and minute (m), as follows: yyyymmdd hhmm • <i>HEXtimestamp</i> is a hexadecimal representation of the time at which the process was started. • <i>install_dir</i> represents the directory path where you installed the IBM Tivoli Monitoring component. <i>install_dir</i> can represent a path on the computer that hosts the monitoring system, the monitoring agent, or the portal. • <i>instance</i> refers to the name of the database instance that you are monitoring. • <i>instance_name</i> refers to the name of the agent instance. • <i>hostname</i> refers to the name of the computer on which the IBM Tivoli Monitoring component runs. • <i>nn</i> represents the circular sequence in which logs are rotated. this value includes a range from 1 - 5, by default. The first is always retained because it includes configuration parameters. • <i>productcode</i> specifies the product code, for example, um for Universal Agent or nt for Windows systems.		

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

Examples: Using trace logs

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

IBM Software Support applies specialized knowledge to analyze trace logs to determine the source of problems. The following examples are from the Tivoli Enterprise Monitoring Server log.

Example one

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

```
(Thursday, August 11, 2005, 08:21:30-{94C}kdc10cl.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.
```

See the following key points about the preceding excerpts:

- The monitoring server appends the **XI** product code to the server name to form a unique name (SERVER5B:XI) for this instance of the IBM Tivoli Monitoring for Virtual Environments Agent for Citrix XenServer. By using this unique name, you can distinguish multiple monitoring products that might be running on **SERVER5B**.
- The log shows when the agent started (ON-LINE) and later stopped (OFF-LINE) in the environment.
- For the sake of brevity, an ellipsis (...) represents the series of trace log entries that were generated while the agent was running.
- Between the ON-LINE and OFF-LINE log entries, the agent was communicating with the monitoring server.

- The ON-LINE and OFF-LINE log entries are always available in the trace log. All trace levels that are described in “Setting RAS trace parameters by using the GUI” provide these entries.

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

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

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

RAS trace parameters

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

See “Overview of log file management” on page 188 to ensure that you understand log rolling and can reference the correct log files when you manage log file generation.

Setting RAS trace parameters by using the GUI

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

About this task

The IBM Tivoli Monitoring for Virtual Environments Agent for Citrix XenServer uses RAS1 tracing and generates the logs described in Table 4 on page 189. The default RAS1 trace level is ERROR.

Procedure

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

Note: As this example shows, you can set multiple RAS tracing options in a single statement.

4. Modify the value for Maximum Log Size Per File (MB) to change the log file size (changes LIMIT value).
5. Modify the value for Maximum Number of Log Files Per Session to change the number of log files per startup of a program (changes COUNT value).
6. Modify the value for Maximum Number of Log Files Total to change the number of log files for all startups of a program (changes MAXFILES value).
7. Optional: Click Y (Yes) in the **KDC_DEBUG Setting** menu to log information that can help you diagnose communications and connectivity problems between the monitoring agent and the monitoring server. The **KDC_DEBUG** setting and the **Maximum error tracing** setting can generate a large amount of trace logging. Use these settings only temporarily, while you are troubleshooting problems. Otherwise, the logs can occupy excessive amounts of hard disk space.

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

What to do next

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

Regularly prune log files other than the RAS1 log files in the logs directory. Unlike the RAS1 log files that are pruned automatically, other log types can grow indefinitely, for example, the logs in Table 4 on page 189 that include a process ID number (PID).

Use collector trace logs as an additional source of troubleshooting information.

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

Manually setting RAS trace parameters

You can manually edit the RAS1 trace logging parameters.

About this task

The Citrix XenServer agent uses RAS1 tracing and generates the logs described in Table 4 on page 189. The default RAS1 trace level is ERROR.

Procedure

1. Open the trace options file:
 - **Windows systems:**
`install_dir\tmaitm6\KXIENV_instance name`
 - **UNIX systems:**
`install_dir /config/xi_instance name.config`
2. Edit the line that begins with **KBB_RAS1=** to set trace logging preferences. For example, if you want detailed trace logging, set the **Maximum Tracing** option: **KBB_RAS1=ERROR (UNIT:kxi ALL) (UNIT:kra ALL)**
3. Edit the line that begins with **KBB_RAS1_LOG=** to manage the generation of log files:
 - **MAXFILES:** The total number of files that are to be kept for all startups of a specific program. When this value is exceeded, the oldest log files are discarded. The default value is 9.
 - **LIMIT:** The maximum size, in megabytes (MB) of a RAS1 log file. The default value is 5.
 - IBM Software Support might guide you to modify the following parameters:
 - **COUNT:** The number of log files to keep in the rolling cycle of one program startup. The default is 3.
 - **PRESERVE:** The number of files that are not to be reused in the rolling cycle of one program startup. The default value is 1.

Note: The **KBB_RAS1_LOG** parameter also provides for the specification of the log file directory, log file name, and the inventory control file directory and name. Do not modify these values or log information can be lost.

4. Restart the monitoring agent so that your changes take effect.

What to do next

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

Regularly prune log files other than the RAS1 log files in the logs directory. Unlike the RAS1 log files that are pruned automatically, other log types can grow indefinitely, for example, the logs in Table 4 on page 189 that include a process ID number (PID).

Use collector trace logs as an additional source of troubleshooting information.

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

Dynamic modification of trace settings

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

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

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

ras1

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

The syntax is as follows:

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

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

Command options

set

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

list

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

Parameters

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

COMP: *class_name*

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

UNIT: *class_name*

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

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

ALL

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

ANY

Turns off tracing.

Detail

Displays detailed information about each function.

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

ERROR

Logs internal error conditions.

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

Flow

Displays control flow data for each function entry and exit.

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

INPUT

Displays input data for each function.

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

Metrics

Displays metrics on each function.

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

OUTPUT

Displays output data for each function.

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

State

Displays the status for each function.

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

Example

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

```
kbbcre1.c, 400, May 29 2007, 12:54:43, 1.1, *
kbbcrn1.c, 400, May 29 2007, 12:54:42, 1.1, *
kdhb1de.c, 400, May 29 2007, 12:59:34, 1.1, KDH
kdh0med.c, 400, May 29 2007, 12:59:24, 1.1, KDH
kdhsrej.c, 400, May 29 2007, 13:00:06, 1.5, KDH
kdhb1fh.c, 400, May 29 2007, 12:59:33, 1.1, KDH
kdhb1oe.c, 400, May 29 2007, 12:59:38, 1.2, KDH
kdhs1ns.c, 400, May 29 2007, 13:00:08, 1.3, KDH
kbbacd1.c, 400, May 29 2007, 12:54:27, 1.2, ACF1
kbbac1c.c, 400, May 29 2007, 12:54:27, 1.4, ACF1
```

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

Turning on tracing

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

About this task

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

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

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

Procedure

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

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

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

2. Click the hyperlink associated with the component for which you want to modify its trace settings.

Note: In the previous view, if you want to modify tracing for the Tivoli Enterprise Monitoring Server, select **IBM Tivoli Monitoring Service Console** under **Service Point: system.your host name.ms**.

3. Enter a user ID and password to access the system. This ID is any valid user that has access to the system.
4. Enter the command to turn on the required level of trace for the specified component classes or units.

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

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

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

Turning off tracing

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

Procedure

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

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

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

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

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

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

```
rasl set (UNIT:kbbcrd ANY)
```

Setting trace parameters for the Tivoli Enterprise Console server

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

About this task

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

Procedure

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

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

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

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

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

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

Problems and workarounds

The known problems and workarounds are organized into types of problems that might occur with the Citrix XenServer agent, for example installation and configuration problems and workspace problems.

Note: You can resolve some problems by ensuring that your system matches the system requirements listed in the Prerequisites topic for the agent in the IBM Tivoli Monitoring for Virtual Environments Information Center.

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

Installation and configuration troubleshooting

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

The problems and solutions in Table 5 can occur during installation, configuration, and uninstallation of the agent.

Table 5. 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, restart 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.

Table 5. Problems and solutions for installation and configuration (continued)

Problem	Solution
The configuration panel is blank on 64-bit Windows systems where the Tivoli Enterprise Monitoring Agent Framework (component GL) is version 06.23.00.00 or 06.23.01.00.	Check the GL component version by running <code>kincinfo -t GL</code> from a Windows command line. Example: <pre>%CANDLE_HOME%\Install\ITM\kincinfo -t GL</pre> If the GL component version is 06.23.00.00 or 06.23.01.00, take one of the following actions: • Preferred action: Upgrade the Windows OS Agent to Version 6.2.3 Fix Pack 2. • Alternate action: Install the Agent Compatibility (AC) component from the IBM Tivoli Monitoring V6.2.3 Fix Pack 1 media. See Installing the Agent Compatibility (AC) component (http://pic.dhe.ibm.com/infocenter/tivihelp/v15r1/topic/com.ibm.itm.doc_6.2.3fp1/itm623FP1_install199.htm#acpinstall).

Table 6. General problems and solutions for uninstallation

Problem	Solution
On Windows systems, uninstallation of IBM Tivoli Monitoring fails to uninstall the entire environment.	Be sure that you follow the general uninstallation process described in the <i>IBM Tivoli Monitoring Installation and Setup Guide</i>: 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 <i>IBM Tivoli Monitoring Installation and Setup Guide</i>.

Table 6. 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 (<i>subsystem_name:hostname:KXI</i>). 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 <i>hostname</i> portion of the name as follows: 1. Open the configuration file for the monitoring agent, which is located in the following path: • On Windows: <i>install_dir\tmaitm6\Kproduct_codeCMA.INI</i>. For example, the product code for the Monitoring Agent for Windows OS is NT. The file name is KNTCMA.INI. • On UNIX and Linux: <i>itm_home/config/product_code.ini</i> and <i>product_code.config</i>. For example, the file names for the Monitoring Agent for UNIX OS is <i>ux.ini</i> and <i>ux.config</i>. 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 <i>full name of agent.cmptag</i> from the <i>\$CANDLEHOME/properties/version/</i> directory.

Table 6. General problems and solutions for uninstallation (continued)

Problem	Solution
When the agent is installed using group deployment, deploygroup was run multiple times. The group deployment starts and completes successfully, but there were multiple entries in the Deploy Status Summary workspace on the Tivoli Enterprise Portal. When the command tried to install multiple times, the additional installations were queued and then were in failed state though the agent was deployed successfully. Note: - When the bundle group contains a single bundle and the deployment group contains more than one member (managed system of the same type as AIX or Linux), the deployment is successful on both systems. - When the bundle group contains more than one bundle and the deploy group contains single or multiple members, the deployment will be executed on each group member (managed system) depending on the members present in the bundle group and deploy group. - The command creates a transaction for each XX bundle for each target system; the bundle matching the operating system for the deployment member is processed successfully; and remaining transactions were in a queued or failed state.	There is no solution at this time.
You install the agent on a computer where IBM Tivoli Monitoring: Windows OS Agent V6.2.2 Fix Pack 6 is installed. When you try to configure agent instances, the following error message appears: KCICF8038E Agent configuration aborted due to user action or errors encountered	Reinstall IBM Tivoli Monitoring: Windows OS Agent V6.2.2 Fix Pack 6.
Default credentials fail to get carried over to subsequent configuration panels when the Tivoli Enterprise Monitoring Agent Framework is at 6.2.3 Fix Pack 2. In the configuration panel named Citrix XenServer Hypervisors, the Username and Password fields are empty.	Although the default credentials are not visible, the configuration uses the defaults on the previous page. Continue configuration by entering the Hostname value and leaving the Username and Password fields empty.
The configuration panel does not read in previously defined configuration variables during reconfiguration when the Tivoli Enterprise Monitoring Agent Framework is at 6.2.3 or 6.2.3 Fix Pack 1.	Update the Windows OS agent to version 6.2.3 Fix Pack 2, which includes APAR IV15379.

Remote deployment troubleshooting

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

Table 7 on page 203 contains problems and solutions related to remote deployment.

Table 7. Remote deployment problems and solutions

Problem	Solution
While you are using the remote deployment feature to install the IBM Tivoli Monitoring for Virtual Environments Agent for Citrix XenServer, an empty command window is displayed on the target computer. This problem occurs when the target of remote deployment is a Windows computer. (For more information about the remote deployment feature, see the <i>IBM Tivoli Monitoring Installation and Setup Guide</i> .)	Do not close or modify this window. It is part of the installation process and is dismissed automatically.
The removal of a monitoring agent fails when you use the remote removal process in the Tivoli Enterprise Portal desktop or browser.	This problem might occur when you attempt the remote removal process immediately after you restart the Tivoli Enterprise Monitoring Server. You must allow time for the monitoring agent to refresh its connection with the Tivoli Enterprise Monitoring Server before you begin the remote removal process.

Agent troubleshooting

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

Table 8 contains problems and solutions that can occur with the agent after it is installed.

Table 8. Agent problems and solutions

Problem	Solution
Log data accumulates too rapidly.	Check the RAS trace option settings, which are described in “Setting RAS trace parameters by using the GUI” on page 193. The trace option 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: MKCIIN0201E Specified product is not configured.	Include the command option -o to specify the instance to start or stop. The instance name must match the name used for configuring the agent. For example: <code>./itmcmd agent -o Test1 start xi</code> For more information about using the itmcmd commands, see the <i>IBM Tivoli Monitoring Command Reference</i> .

Table 8. Agent problems and solutions (continued)

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

Table 8. Agent problems and solutions (continued)

Problem	Solution
Continued from previous row.	This limitation can be circumvented (at current maintenance levels, IBM Tivoli Monitoring V6.1, Fix Pack 4 and later) if the Tivoli Enterprise Monitoring Agent process is configured to use the EPHEMERAL IP.PIPE process. (This process is IP.PIPE configured with the 'EPHEMERAL:Y' keyword in the KDC_FAMILIES / KDE_TRANSPORT environment variable). The number of ephemeral IP.PIPE connections per system image has no limitation. If ephemeral endpoints are used, the Warehouse Proxy agent is accessible from the Tivoli Enterprise Monitoring Server associated with the agents using ephemeral connections either by running the Warehouse Proxy agent on the same computer or by using the Firewall Gateway feature. (The Firewall Gateway feature relays the Warehouse Proxy agent connection from the Tivoli Enterprise Monitoring Server computer to the Warehouse Proxy agent computer if the Warehouse Proxy agent cannot coexist on the same computer.)
I cannot find my queries.	Agents that include subnodes display their queries within the element in the Query Editor list that represents the location of the attribute group. The queries are most often found under the name of the subnode, not the name of the agent.
The Xensource.log file gives debug messages.	In a large environment with many XenServers in a pool, with a large amount of virtual machines, or both, the /var/log/xensource.log file grows with debug messages. These messages are created during the normal data collection of the monitoring agent and the number can grow to be very large. Disabling the debug output of these messages in the xensource log file prevents the file from growing to a point where it can harm the XenServer environment. To disable the debug messages in the xensource.log file, edit the /etc/xensource/log.conf file and comment the entry relating to debug, as follows: <pre>vi /etc/xensource/log.conf ~ # debug;;file:/var/log/xensource.log info;;file:/var/log/xensource.log warn;;file:/var/log/xensource.log error;;file:/var/log/xensource.log</pre> After completing the modification of the file, restart the Xen toolstack so the changes can take effect: <pre>[root@xen55p1 ~]# xe-toolstack-restart Stopping xapi: . [OK] Starting xapi: ...start-of-day complete. [OK]</pre>

Table 8. Agent problems and solutions (continued)

Problem	Solution
Virtual Machine metrics, Host metrics, or both, are returned as Unavailable.	- The server where the XenServer agent is installed must be time-synced with all of the XenServer hosts being monitored by the agent instance. See IBM Technote #1500889. - If a particular virtual machine does not have XenTools installed, or the virtual machine is not powered-on, many of the Virtual Machine metrics (CPU, Memory, Disk, Network, and so on) are not returned. The KXI_XenTools_Not_Installed situation can help you isolate those virtual machines. - The agent instance might be misconfigured with incorrect host names for the XenServer hosts, missing XenServer hosts that must be in the configuration, or both, or XenServer hosts that are incorrectly included in the configuration. (See the notes about verifying the configuration of the agent in the solution to the problem titled <i>Data is not displaying in workspaces</i> in "Workspace troubleshooting"). - Install Interim Fix 6.2.3-TIV-ITM_CTXS-IF0001.

Workspace troubleshooting

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

Table 9 contains problems and solutions related to workspaces.

Table 9. Workspace problems and solutions

Problem	Solution
The process application components are available, but the Availability status shows PROCESS_DATA_NOT_AVAILABLE.	This problem occurs because the PerfProc performance object is disabled. When this condition exists, IBM Tivoli Monitoring cannot collect performance data for this process. Use the following steps to confirm that this problem exists and to resolve it: - In the Windows Start menu, click Run. - Type perfmon.exe in the Open field of the Run window. The Performance window is displayed. - Click the plus sign (+) in the toolbar. The Add Counters window is displayed. - Look for Process in the Performance object menu. - Complete one of the following actions: - If you see Process in the menu, the PerfProc performance object is enabled and the problem is coming from a different source. You might need to contact IBM Software Support. - If you do not see Process in the menu, use the Microsoft utility from the Microsoft.com Operations website to enable the PerfProc performance object. The Process performance object becomes visible in the Performance object menu of the Add Counters windows, and IBM Tivoli Monitoring is able to detect Availability data. - Restart the monitoring agent.

Table 9. Workspace problems and solutions (continued)

Problem	Solution
The name of the attribute does not display in a bar chart or graph view.	When a chart or graph view that includes the attribute is scaled to a small size, a blank space is displayed instead of a truncated name. To see the name of the attribute, expand the view of the chart until sufficient space is available to display all characters of the attribute name.
At the end 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. For information about managing this feature including how to set the interval at which data is collected, see <i>Managing historical data</i> in the <i>IBM Tivoli Monitoring Administrator's Guide</i>. By setting a more frequent interval for data collection, you reduce the load on the system incurred every time data is uploaded. • Use the Summarization and Pruning agent to collect specific amounts and types of historical data. Historical data is not displayed until the Summarization and Pruning monitoring agent begins collecting the data. By default, this agent begins collection at 2 a.m. daily. At that point, data is visible in the workspace view. For information about how to modify the default collection settings, see <i>Managing historical data</i> in the <i>IBM Tivoli Monitoring Administrator's Guide</i>.
Historical data collection is unavailable because of incorrect queries in the Tivoli Enterprise Portal.	The Sort By, Group By, and First/Last functions column are not compatible with the historical data collection feature. Use of these advanced functions makes a query ineligible for historical data collection. Even if data collection has started, you cannot use the time span feature if the query for the chart or table includes column functions or advanced query options (Sort By, Group By, First / Last). To ensure support of historical data collection, do not use the Sort By, Group By, or First/Last functions in your queries. For information about the historical data collection function, See <i>Managing historical data</i> in the <i>IBM Tivoli Monitoring Administrator's Guide</i> or the Tivoli Enterprise Portal online help .
When you use a long process name in the situation, the process name is truncated.	Truncation of process or service names for situations in the Availability table in the portal display is the expected behavior. The maximum name length is 100 bytes.
Regular (non-historical) monitoring data fails to be displayed.	Check the formation of the queries you use to gather data. For example, look for invalid SQL statements.

Table 9. Workspace problems and solutions (continued)

Problem	Solution
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 <i>Installing and enabling application support in the IBM Tivoli Monitoring Installation and Setup Guide</i>.
Data is not displaying in workspaces.	1. Ensure that the application support files are installed. 2. Verify the configuration of the agent. Review the following requirements when configuring the XenServer agent: • Each XenServer agent instance must be configured to monitor either a single stand-alone XenServer host (that is not a member of a pool) or a XenServer pool that contains from 2 - 16 XenServer hosts. • You cannot mix XenServer Hosts that are members of multiple pools and multiple stand-alone XenServer hosts (that are not members of a XenServer pool) within a single agent instance. To verify which hosts are contained in the pool the agent is configured to monitor, open a XenServer xsconsole CLI to any XenServer host in the pool and run the xe host-list command. • The host name entered for each XenServer host in the pool (or for the stand-alone XenServer host if you are not monitoring a pool) must be entered into the agent Configuration exactly as it is returned by the XenServer xsconsole CLI for the hostname command. • IP addresses are not accepted in place of host names in a valid agent configuration.
No data appear in any workspaces. The subnodes are not discovered. The <code>kxi_instance_output.log</code> file contains an error message similar to the following: The java class could not be loaded. <code>java.lang.UnsupportedClassVersionError:(com/ibm/tivoli/agent/bmpa/itm_core/Main) bad major version at offset=6</code>	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 displays 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 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.

Table 9. Workspace problems and solutions (continued)

Problem	Solution
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 <code>kxi_instance_trace.log</code> file by searching for the phrase Could not connect to host.	If a XenServer host is not configured, metric information cannot be collected. Reconfigure the agent, ensuring that you configure all hosts in the XenServer pool.
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.

Situation troubleshooting

Problems can occur with situations and situation configuration.

Table 10 contains problems and solutions for situations.

Table 10. Situation problems and solutions

Problem	Solution
Monitoring activity requires too much disk space.	Check the RAS trace logging settings that are described in “Setting RAS trace parameters by using the GUI” on page 193. 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 115 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: <code>LT #'Linux_VM_Stats.Total_Memory' / 10</code>	This formula is incorrect because situation predicates support only logical operators. Your formulas cannot have mathematical operators. Note: The Situation Editor provides alternatives to math operators. In the example, you can select the % Memory Free attribute and avoid the need for math operators.
You want to change the appearance of situations when they are displayed in the navigation tree.	1. Right-click an item in the navigation tree. 2. Click Situations in the menu. The Situation Editor window is displayed. 3. Select the situation that you want to modify. 4. Use the State menu to set the status and appearance of the Situation when it triggers. Note: The State setting is not related to severity settings in the Tivoli Enterprise Console.
When a situation is triggered in the Event Log attribute group, it remains in the Situation Event Console as long as the event ID entry is present in the Event Log workspace. When this event ID entry is removed from the Event Log workspace on the Tivoli Enterprise Portal, the situation is also cleared even if the actual problem that caused the event is not resolved, and the event ID entry is also present in the Windows Event Viewer.	A timeout occurs on the cache of events for the NT Event Log group. Increase the cache time of Event Log collection to meet your requirements by adding the following variable and timeout value to the <code>KpcENV</code> file for the agent (where <i>pc</i> is the two-letter product code): <code>CDP_NT_EVENT_LOG_CACHE_TIMEOUT=3600</code> This variable determines how long events from the NT Event Log are kept.

Table 10. Situation problems and solutions (continued)

Problem	Solution
For a situation that uses the 'MISSING' operator and is distributed to a remote agentless monitoring subnode, no indication is displayed in the Tivoli Enterprise Portal or in the Situation Event Console when the situation becomes true.	The MISSING predicate is currently not supported on subnodes. If a situation with a MISSING predicate is distributed to a subnode, the agent cannot tell which subnode or node the event is occurring on. It inserts the system name as the origin node for the event and returns. When the event reaches the Tivoli Enterprise Portal Server, the origin node does not match the system name of the subnode where the situation is associated, so the event is dropped.
The situation for a specific agent is not visible in the Tivoli Enterprise Portal.	Open the Situation Editor. Access the All managed servers view. If the situation is not displayed, confirm that the monitoring server has been seeded for the agent. If not, seed the server, as described in the <i>IBM Tivoli Monitoring Installation and Setup Guide</i> .
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. Situation problems and solutions (continued)

Problem	Solution
The situation does not fire.	This problem can be caused when incorrect predicates are present in the formula that defines the situation. For example, the managed object shows a state that normally triggers a monitoring event, but the situation is not true because the wrong attribute is specified in the formula. In the Formula tab, analyze predicates as follows: - Click the fx icon in the Formula area. The Show formula window is displayed. - Confirm the following details in the Formula area of the window: - The attributes that you intend to monitor are specified in the formula. - The situations that you intend to monitor are specified in the formula. - The logical operators in the formula match your monitoring goal. - The numeric values in the formula match your monitoring goal. (Optional) Select the Show detailed formula check box to see the original names of attributes in the application or operating system that you are monitoring. - Click OK to dismiss the Show formula window. (Optional) In the Formula area of the Formula tab, temporarily assign numeric values that immediately trigger a monitoring event. The triggering of the event confirms that other predicates in the formula are valid. Note: After you complete this test, you must restore the numeric values to valid levels so that you do not generate excessive monitoring data based on your temporary settings. For additional information about situations that do not fire, see <i>Situations are not firing</i> in the <i>IBM Tivoli Monitoring Troubleshooting Guide</i>.
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. - Click Edit > Administer Users to access the Administer Users window. - In the Users area, select the user whose privileges you want to modify. - In the Permissions tab, Applications tab, and Navigator Views tab, select the permissions or privileges that correspond to the user role. - Click OK.

Table 10. Situation problems and solutions (continued)

Problem	Solution
A managed system seems to be offline.	1. Select Physical View and click the Enterprise Level of the navigator tree. 2. Click View > Workspace > Managed System Status to see a list of managed systems and their status. 3. If a system is offline, check network connectivity and the status of the specific system or application.
The KXI_Invalid_Host_Configured situation occurs. The error can also be found in the <code>kxi_instance_trace.log</code> 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.

Take Action commands troubleshooting

Problems can occur with Take Action commands.

Table 11 contains problems and solutions that can occur with Take Action commands.

When each Take Action command runs, it generates a log file listed in Table 4 on page 189.

Table 11. 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 209. If the Take Action command fails, for general information about troubleshooting Take Action commands, see the <i>IBM Tivoli Monitoring Troubleshooting Guide</i> .

Tivoli Common Reporting troubleshooting

Problems can occur with the Tivoli Common Reporting predefined reports for the Citrix XenServer agent.

Table 12 on page 213 contains problems and solutions that can occur with the Tivoli Common Reporting predefined reports for IBM Tivoli Monitoring for Virtual Environments Agent for Citrix XenServer. See the Tivoli Common Reporting Information Center (http://publib.boulder.ibm.com/infocenter/tivihelp/v3r1/topic/com.ibm.tivoli.tcr.doc/tcr_welcome.html) for more information about troubleshooting for the Tivoli Common Reporting tool.

Some problems and solutions for those problems have been identified in the following areas: installation and configuration, timeout and memory and Cognos Reports for the Citrix XenServer agent.

- Installation and configuration problems

Use Table 12 on page 213 to troubleshoot errors you might encounter while installing and configuring the Performance and Capacity Management Reports for Citrix XenServer.

- Timeout and memory problems

If the default timeout values for the Tivoli Common Reporting or Cognos console login are too short, you can change the settings. If your Java Virtual Machine runs out of memory, you can increase the heap size.

- Citrix XenServer Cognos Reports problems

Use the Cognos report description tables in the Tivoli Common Reporting documentation (Chapter 8, “Tivoli Common Reporting for Citrix XenServer agent,” on page 151) to troubleshoot any errors you encounter while viewing the Cognos reports.

Table 12. Tivoli Common Reporting for Citrix XenServer agent problems and solutions

Problem	Solution
During installation, the Citrix XenServer Agent TCR Reports step fails. The following message (or similar) appears in the Report_Installer_For_TCR_Output.txt file: <pre>DB2 SQL Error: SQLCODE=-552, SQLSTATE=42502, SQLERRMC=ITMUSER;CREATE SCHEMA, DRIVER=3.57.82</pre>	If you are using the DB2 V9.7 or higher, you might encounter this error. Run the following commands on your Tivoli Data Warehouse database, where <i>dbName</i> is the name of the database and <i>db2admin</i> is the database administrator ID: <pre>db2 connect to \$DBNAME db2 grant dbadm on dbName to db2admin db2 disconnect \$DBNAME</pre> For more information about the DB2 V9.7 requirement, see Schemas in the DB2 Database Administration information (Schemas).
Report installation fails on Linux with the following error found in the logs: The <fileset> type doesn't support the "erroronmissingdir" attribute.	The Linux environment has another version of ANT earlier than 1.8.1 configured as the default. Set the following environment variables and run the installer again: <pre>export PATH=Install_dir\reports\lib\ apache-ant-1.8.1\bin:\$PATH export ANT_HOME=Install_dir\reports\lib\ apache-ant-1.8.1 export CLASSPATH=Install_dir\reports\lib\ apache-ant-1.8.1\bin:\$CLASSPATH</pre> Before starting the installer again, run ant -version to check that the returned results show ant 1.8.1 compiled.
You get errors while running the reports installer.	The report installer performs three steps: 1. Imports reports 2. Defines the Tivoli Data Warehouse data source in Cognos 3. Makes schema updates by running scripts against the Tivoli Data Warehouse (adding and populating Time Dimension tables, creating indexes if history is enabled on the attribute groups). Check the following logs on Windows at C:\Documents and Settings\Administrator or on Linux or UNIX at \$HOME: • Report_Installer_InstallLog.log • Report_Installer_For_TCR_Output.txt For more information about analyzing the report installer log, see “Analyzing the report installer log” on page 214.

Table 12. Tivoli Common Reporting for Citrix XenServer agent problems and solutions (continued)

Problem	Solution
When you install reports, the installer fails with error messages similar to the following: JVMDUMP006I Processing dump event "systhrow", detail "java/lang/OutOfMemoryError" - please wait. JVMDUMP013I Processed dump event "systhrow", detail "java/lang/OutOfMemoryError". CTGTRQ010E Processing has ended because of an unexpected error.	This is a known problem with Tivoli Common Reporting. For more information, see the Tivoli Common Reporting tech note (OutOfMemoryError exception occurs when issuing trcmd command).
You choose to view the reports in Portuguese (Brazilian), but the change in locale is not reflected in the report prompt page or the output. You still see English strings instead of Portuguese (Brazilian).	For this release, when you choose to view the reports in Portuguese (Brazilian) with Tivoli Common Reporting 3.1, the text is displayed in English. This is a known issue with Cognos 10.2. However, the reports can be viewed in Portuguese (Brazilian) using Tivoli Common Reporting 2.1.1.

Analyzing the report installer log

For installation problems, use the report installer log to identify the step where installation failed.

Review the Report_Installer_For_TCR_Output.txt file (on Windows under C:\Documents and Settings\Administrator; on Linux and UNIX under \$HOME.) to identify the step on which the installer failed.

Sample log output

```
=====
INSTALLATION COMPLETED.
=====
The status of installation steps:
TCRRunDBScripts(runDbScript): FAILED
INFORMATION: /tmp/450480.tmp/reports/itmfv/build.xml:31:
The <fileset> type doesn't support the "erroronmissingdir" attribute.
InstallReportsAction(IBM Tivoli Monitoring for
Virtual Environments Reports v7.1): SUCCESS
CognosDataSource(TDW): SUCCESS
=====
```

Analysis

In the sample log, the success or failure of each step is evident:

1. InstallReportsAction (Step 1 - Importing Reports) succeeded.
2. CognosDataSource(TDW) (Step 2 - Defining the Tivoli Data Warehouse data source in Cognos) succeeded.
3. RunDBScripts (Step 3 - Updating schema by running scripts against the Tivoli Data Warehouse) failed.

Step 2: Define the Tivoli Data Warehouse data source in Cognos.

Possible causes of the failure:

- The database alias that is specified during installation did not match the cataloged DB2 database alias, the Oracle local TNS service name, or the MS SQL Server ODBC data source name.
- The credentials are incorrect for connecting to the Tivoli Data Warehouse.

Solution:

- Ensure that you installed the database client on the same server as Tivoli Common Reporting and cataloged the database. If you are using Oracle, the TNS service name must be defined in the `tnsnames.ora` file. If you are using MS SQL server, the ODBC data source must be defined. See Connecting to the Tivoli Data Warehouse using the database client over ODBC in the *IBM Tivoli Monitoring Administrator's Guide* (http://publib.boulder.ibm.com/infocenter/tivihelp/v15r1/topic/com.ibm.itm.doc_6.2.3/tcr_tdwconnect.htm). If you already have a Tivoli Data Warehouse data source that is defined, adding another one overwrites the existing data source.

Step 3: Make schema updates

Possible causes of failure:

- Database administrative privileges (such as `db2admin` or `sys`) are required for this step; if user is specified as `ITMUSER`, the schema cannot be updated.
- Database issues such as connectivity problems, full logs, space issues, or any other performance problems that prevent writing to the database.

Solution:

- An error at Step 3 is accompanied by an informational message that contains SQL errors with SQL codes. You can search on the SQL code to determine the problem.
- If Time Dimension tables are present in the database, you can choose to skip the schema update (JDBC) step while you are running the dashboard installer. If you want to create time dimension with a different granularity, you must edit the following sql file:
 1. Go to `reports package\reports\cognos_reports\itmfv\db_scripts`.
 2. Open `call_proc_DB2.sql`, `call_proc_MSSQL.sql`, or `call_proc_ORACLE.sql` depending on the database that is used.
 3. Edit the last parameter in the call to `IBM_TRAM.CREATE_TIME_DIMENSION`.

Notes

- Connections under the Tivoli Data Warehouse are overwritten by the report installer. Overwriting these connections is a limitation of the current installer.
- The privileges that are required while you are running the installer are `ITMUSER` (database user) for the Tivoli Data Warehouse creation step and `ADMIN` (database administrator) for the schema update step. The Database Test connection for the schema update panel does not check for privileges of the database user. Installation fails at the schema update step if the database user does not have administrative privileges.

Support information

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

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

Online

The following websites contain troubleshooting information:

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

IBM Support Assistant

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

Informational, warning, and error messages overview

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

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

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

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

Message format

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

IBM Tivoli Monitoring for Virtual Environments Agent for Citrix XenServer messages have the following format:

Message ID and text
Explanation
Operator Response

The message ID has the following format:

`CCC###severity`

where:

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

KXI General Citrix XenServer agent messages

Number of the message

severity

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

- I** Informational messages provide feedback about something that happened in the product or system that might be important. These messages can provide guidance when you are requesting a specific action from the product.
- W** Warning messages call your attention to an exception condition. The condition might not be an error but can cause problems if not resolved.
- E** Error messages indicate that an action cannot be completed because of a user or system error. These messages require user response.

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

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

Agent messages

The following messages apply to IBM Tivoli Monitoring for Virtual Environments Agent for Citrix XenServer.

KXI00001

The collection of data from the XenServer service was unsuccessful.

Explanation:

The collection of data from the XenServer service was unsuccessful. Verify that the XenServer service is running, and the correct authentication credentials were used.

Operator response:

None.

KXI00002

The collection of data from the XenServer service was successful but no data was returned.

Explanation:

The collection of data from the XenServer service was successful but no data was returned.

Operator response:

None.

KXI9001

The request to start the VM succeeded.

Explanation:

The virtual machine was successfully started.

Operator response:

None.

KXI9002

The request to start the VM was unsuccessful.

Explanation:

The virtual machine was not started or is starting. Check the Availability node to confirm that the request succeeded.

Operator response:

None.

KXI9003

The request to stop the VM succeeded.

Explanation:

The virtual machine was stopped successfully.

Operator response:

None.

KXI9004

The request to stop the VM was unsuccessful.

Explanation:

The virtual machine was not stopped or is stopping. Check the Availability node to confirm that the request succeeded.

Operator response:

None.

KXI9005

The request to pause the VM succeeded.

Explanation:

The virtual machine was paused successfully.

Operator response:

None.

KXI9006

The request to pause the VM was unsuccessful.

Explanation:

The virtual machine was not paused or is pausing. Check the Availability node to confirm that the request succeeded.

Operator response:

None.

KXI9009

The request to promote host to pool master was successful.

Explanation:

The promotion of the Xen Hypervisor was successful.

Operator response:

None.

KXI9010

The request to promote the pool master was unsuccessful.

Explanation:

The Xen Hypervisor was already the pool master or was in the process of promotion. Check the Availability node to confirm that the request succeeded.

Operator response:

None.

KXI9011

The request to Unpause the VM was successful.

Explanation:

The virtual machine was unpaused successfully.

Operator response:

None.

KXI9012

The request to unpause the VM was unsuccessful.

Explanation:

The virtual machine was not unpaused or is unpausing. Check the Availability node to confirm that the request succeeded.

Operator response:

None.

KXI9013

The request to Force Start the VM was successful.

Explanation:

The virtual machine was forcibly started successfully.

Operator response:

None.

KXI9014

The request to force start the VM was unsuccessful.

Explanation:

The virtual machine was not started or is being forcibly started. Check the Availability node to confirm that the request succeeded.

Operator response:

None.

KXI9015

The request to force stop the VM was successful.

Explanation:

The virtual machine was forcibly stopped successfully.

Operator response:

None.

KXI9016

The request to force stop the VM was unsuccessful.

Explanation:

The virtual machine was not stopped or is being forcibly stopped. Check the Availability node to confirm that the request succeeded.

Operator response:

None.

KXI9017

The request to suspend the VM was successful.

Explanation:

The virtual machine was suspended successfully.

Operator response:

None.

KXI9018

The request to suspend the VM was unsuccessful.

Explanation:

The virtual machine was not suspended or is suspending. Check the Availability node to confirm that the request succeeded.

Operator response:

None.

KXI9019

The request to resume the VM was successful.

Explanation:

The virtual machine was resumed successfully.

Operator response:

None.

KXI9020

The request to resume the VM was unsuccessful.

Explanation:

The virtual machine was not resumed or is resuming. Check the Availability node to confirm that the request succeeded.

Operator response:

None.

KXI9021

The request to restart the VM was successful.

Explanation:

The virtual machine was restarted successfully.

Operator response:

None.

KXI9022

The request to restart the VM was unsuccessful.

Explanation:

The VM was not restarted or is restarting. Check the Availability node to confirm that the request succeeded.

Operator response:

None.

KXI9023

The request to force restart the VM was successful.

Explanation:

The virtual machine was forcibly restarted successfully.

Operator response:

None.

KXI9024

The request to force restart the VM was unsuccessful.

Explanation:

The virtual machine was not restarted or is being forcibly restarted. Check the Availability node to confirm that the request succeeded.

Operator response:

None.

KXI9025

The request to start the host was successful.

Explanation:

The host was started successfully.

Operator response:

None.

KXI9026

The request to start the host was unsuccessful.

Explanation:

The host was not started or is starting. Check the Availability node to confirm that the request succeeded.

Operator response:

None.

KXI9027

The request to shutdown the host was successful.

Explanation:

The host was shut down successfully.

Operator response:

None.

KXI9028

The request to shutdown the host was unsuccessful.

Explanation:

The host was not shut down or is shutting down. Check the Availability node to confirm that the request succeeded.

Operator response:

None.

KXI9029

The request to stop all the VMs on the host was successful.

Explanation:

All virtual machines on the host were stopped successfully.

Operator response:

None.

KXI9030

The request to stop all VMs on the host was unsuccessful.

Explanation:

Not all virtual machines on the host were stopped, or all virtual machines on the host are stopping. Check the Availability node to confirm that the request succeeded.

Operator response:

None.

KXI9031

The request to start all the VMs on the host was successful.

Explanation:

All virtual machines on the host were started successfully.

Operator response:

None.

KXI9032

The request to start all VMs on the host was unsuccessful.

Explanation:

Not all virtual machines on the host were started, or all virtual machines on the host are starting. Check the Availability node to confirm that the request succeeded.

Operator response:

None.

KXI9033

The UUID supplied was improper.

Explanation:

The take action could not be completed because the wrong UUID was supplied.

Operator response:

None.

KXI9034

The arguments supplied were improper.

Explanation:

The take action could not be completed because the wrong arguments were supplied.

Operator response:

None.

KXI51000

Java not found in path.

Explanation:

During startup of the agent, the correct version of Java was not found in the path. Check that Java has been installed and rerun the agent.

Operator response:

None.

KXI5101I

A required library is not found.

Explanation:

During startup of the agent, a required library was not found in the path. Validate that all of the required libraries are in the bin path of the agent.

Operator response:

None.

KXI1002

General error executing take action.

Explanation:

A general error occurred while executing the take action command.

Operator response:

None.

KXI1003

The requested take action timed out.

Explanation:

The requested take action command timed out.

Operator response:

None.

KXI1004

Insufficient user authority to execute the take action.

Explanation:

The user has insufficient authority to execute the take action command.

Operator response:

None.

Appendix A. Event mapping

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

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

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

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

Each of the event classes is a child of KXI_Base and is defined in the `kxi.baroc` (version 07.20.00) file. The KXI_Base event class can be used for generic rules processing for any event from the IBM Tivoli Monitoring for Virtual Environments Agent for Citrix XenServer.

For events that are generated by situations in the agent connection status attribute group, events are sent by using the ITM_KXI_AGENT_CONNECTION_STATUS event class. This event 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 that are generated by situations in the agent output log attribute group, events are sent by using the ITM_KXI_AGENT_OUTPUT_LOG event class. This event class contains the following slots:

- node: STRING
- timestamp: STRING
- log_text: STRING

For events that are generated by situations in the agent trace log attribute group, events are sent by using the ITM_KXI_AGENT_TRACE_LOG event class. This event class contains the following slots:

- node: STRING
- timestamp: STRING

- kxi_date: STRING
- time: STRING
- kxi_severity: STRING
- server_name: STRING
- thread: STRING
- kxi_class: STRING
- method: STRING
- text: STRING
- log_file_name: STRING

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

- node: STRING
- timestamp: STRING
- kxi_hostname: STRING
- memory_used: INTEGER
- memory_used_enum: STRING
- cpu_utilization: INTEGER
- cpu_utilization_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 that are generated by situations in the host cpu attribute group, events are sent by using the ITM_KXI_HOST_CPU event class. This event 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 that are generated by situations in the host details attribute group, events are sent by using the ITM_KXI_HOST_DETAILS event class. This event 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_utilization: INTEGER
- aggregate_cpu_utilization_enum: STRING
- uuid: STRING
- address: STRING
- api_version_major: REAL
- api_version_major_enum: STRING
- api_version_minor: REAL
- 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
- pool_name: STRING
- total_virtual_machines: INTEGER
- total_virtual_machines_enum: STRING
- running_virtual_machines: INTEGER
- running_virtual_machines_enum: STRING
- halted_virtual_machines: INTEGER
- halted_virtual_machines_enum: STRING
- suspended_virtual_machines: INTEGER
- suspended_virtual_machines_enum: STRING
- paused_virtual_machines: INTEGER
- paused_virtual_machines_enum: STRING
- unknown_virtual_machines: INTEGER
- unknown_virtual_machines_enum: STRING
- processor_amount: INTEGER
- processor_amount_enum: STRING
- pif_amount: INTEGER
- pif_amount_enum: STRING

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

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

For events that are generated by situations in the host patches attribute group, events are sent by using the ITM_KXI_HOST_PATCHES event class. This event 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 that are generated by situations in the host pbd attribute group, events are sent by using the ITM_KXI_HOST_PBD event class. This event 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 that are generated by situations in the host pif attribute group, events are sent by using the ITM_KXI_HOST_PIF event class. This event 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: REAL
- mtu_enum: STRING
- netmask: STRING
- network_uuid: STRING
- network_name: STRING
- physical: STRING
- vlan: REAL
- vlan_enum: STRING

For events that are generated by situations in the host vms attribute group, events are sent by using the ITM_KXI_HOST_VMS event class. This event 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_receive: INTEGER
- nic_receive_enum: STRING
- xentools_status: STRING
- xentools_version: STRING
- xentools_build: STRING
- distro: STRING

- architecture: STRING
- host_resident_on: STRING
- metric_vcpu_utilization: REAL
- 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
- memory_overhead_mb: INTEGER
- memory_overhead_mb_enum: STRING
- live: INTEGER
- live_enum: STRING

For events that are generated by situations in the pbd sr join attribute group, events are sent by using the ITM_KXI_PBD_SR_JOIN event class. This event 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_utilization_mb: INTEGER
- physical_utilization_mb_enum: STRING
- physical_size_gb: INTEGER
- physical_size_gb_enum: STRING
- physical_utilization_gb: INTEGER

- physical_utilization_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_utilization_percent: INTEGER
- physical_utilization_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 that are generated by situations in the Performance Object Status attribute group, events are sent by using the ITM_KXI_PERFORMANCE_OBJECT_STATUS event class. This event class contains the following slots:

- node: STRING
- timestamp: STRING
- query_name: STRING
- object_name: STRING
- object_type: INTEGER
- object_type_enum: STRING
- object_status: INTEGER
- object_status_enum: STRING
- error_code: INTEGER
- error_code_enum: STRING
- last_collection_start: STRING
- last_collection_start_enum: STRING
- last_collection_finished: STRING
- last_collection_finished_enum: STRING
- last_collection_duration: REAL
- average_collection_duration: REAL
- average_collection_duration_enum: STRING
- refresh_interval: INTEGER
- number_of_collections: INTEGER
- cache_hits: INTEGER

- cache_misses: INTEGER
- cache_hit_percent: REAL
- intervals_skipped: INTEGER

For events that are generated by situations in the pool host member details attribute group, events are sent by using the ITM_KXI_POOL_HOST_MEMBER_DETAILS event class. This event 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_utilization: INTEGER
- aggregate_cpu_utilization_enum: STRING
- uuid: STRING
- address: STRING
- api_version_major: REAL
- api_version_major_enum: STRING
- api_version_minor: REAL
- 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
- pool_name: STRING
- total_virtual_machines: INTEGER
- total_virtual_machines_enum: STRING
- running_virtual_machines: INTEGER
- running_virtual_machines_enum: STRING
- halted_virtual_machines: INTEGER
- halted_virtual_machines_enum: STRING
- suspended_virtual_machines: INTEGER
- suspended_virtual_machines_enum: STRING
- paused_virtual_machines: INTEGER
- paused_virtual_machines_enum: STRING
- unknown_virtual_machines: INTEGER
- unknown_virtual_machines_enum: STRING
- processor_amount: INTEGER
- processor_amount_enum: STRING
- pif_amount: INTEGER
- pif_amount_enum: STRING
- memory_overhead_mb: INTEGER
- memory_overhead_mb_enum: STRING

For events that are generated by situations in the pool master events attribute group, events are sent by using the ITM_KXI_POOL_MASTER_EVENTS event class. This event 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 that are generated by situations in the pool network attribute group, events are sent by using the ITM_KXI_POOL_NETWORK event class. This event class contains the following slots:

- node: STRING
- timestamp: STRING
- uuid: STRING
- name_label: STRING
- name_description: STRING
- bridge: STRING

For events that are generated by situations in the pool patch attribute group, events are sent by using the ITM_KXI_POOL_PATCH event class. This event 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: REAL
- patch_size_enum: STRING
- patch_version: STRING

For events that are generated by situations in the pool pbd attribute group, events are sent by using the ITM_KXI_POOL_PBD event class. This event 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 that are generated by situations in the pool pif attribute group, events are sent by using the ITM_KXI_POOL_PIF event class. This event 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 that are generated by situations in the pool sr attribute group, events are sent by using the ITM_KXI_POOL_SR event class. This event 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_utilization_mb: INTEGER
- physical_utilization_mb_enum: STRING
- physical_size_gb: INTEGER
- physical_size_gb_enum: STRING
- physical_utilization_gb: INTEGER
- physical_utilization_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_utilization_percent: INTEGER
- physical_utilization_percent_enum: STRING
- multipath_capable: INTEGER
- multipath_capable_enum: STRING
- physical_free_percent: INTEGER
- physical_free_percent_enum: STRING

For events that are generated by situations in the pool summary attribute group, events are sent by using the ITM_KXI_POOL_SUMMARY event class. This event 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
- pool_cpu_average: INTEGER
- pool_cpu_average_enum: STRING
- pool_cpu_average_per_core: INTEGER
- pool_cpu_average_per_core_enum: STRING
- pool_cpu_core_amount: INTEGER
- pool_cpu_core_amount_enum: STRING
- pool_memory_average: INTEGER
- pool_memory_average_enum: STRING
- pool_pif_amount: INTEGER
- pool_pif_amount_enum: STRING
- pool_cpu_free: INTEGER
- pool_cpu_free_enum: STRING
- pool_memory_free: INTEGER
- pool_memory_free_enum: STRING

- failures_to_tolerate: INTEGER
- failures_to_tolerate_enum: STRING
- vswitch_controller_address: STRING

For events that are generated by situations in the pool vbd attribute group, events are sent by using the ITM_KXI_POOL_VBD event class. This event 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
- virtual_disk_uuid: STRING
- name_label: STRING
- vm_uuid: STRING
- vm_name_label: STRING

For events that are generated by situations in the pool vdi attribute group, events are sent by using the ITM_KXI_POOL_VDI event class. This event 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_utilization_mb: INTEGER
- physical_utilization_mb_enum: STRING

- physical_utilization_gb: INTEGER
- physical_utilization_gb_enum: STRING
- virtual_size_mb: INTEGER
- virtual_size_mb_enum: STRING
- virtual_size_gb: INTEGER
- virtual_size_gb_enum: STRING

For events that are generated by situations in the pool vif attribute group, events are sent by using the ITM_KXI_POOL_VIF event class. This event 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
- io_read_kbs: INTEGER
- io_read_kbs_enum: STRING
- io_write_kbs: INTEGER
- io_write_kbs_enum: STRING

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

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

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

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

- node: STRING
- timestamp: STRING
- event_name: STRING
- event_message: STRING
- event_time: STRING
- event_type: STRING
- uuid: STRING
- target: STRING

For events that are generated by situations in the XHV Performance Object Status attribute group, events are sent by using the ITM_KXI_XHV_PERFORMANCE_OBJECT_STATUS event class. This event class contains the following slots:

- node: STRING
- timestamp: STRING
- query_name: STRING
- object_name: STRING
- object_type: INTEGER
- object_type_enum: STRING
- object_status: INTEGER
- object_status_enum: STRING
- error_code: INTEGER
- error_code_enum: STRING
- last_collection_start: STRING
- last_collection_start_enum: STRING
- last_collection_finished: STRING
- last_collection_finished_enum: STRING
- last_collection_duration: REAL
- average_collection_duration: REAL
- average_collection_duration_enum: STRING
- refresh_interval: INTEGER
- number_of_collections: INTEGER
- cache_hits: INTEGER
- cache_misses: INTEGER
- cache_hit_percent: REAL

- intervals_skipped: INTEGER

Appendix B. Documentation library

Various publications are relevant to the use of the IBM Tivoli Monitoring for Virtual Environments Agent for Citrix XenServer.

For information about how to access and use the publications, see *Using the publications* (http://pic.dhe.ibm.com/infocenter/tivihelp/v61r1/topic/com.ibm.itm.doc_6.3/common/using_publications.htm).

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

IBM Tivoli Monitoring for Virtual Environments Agent for Citrix XenServer library

The documentation for this agent and other product components is in the IBM Tivoli Monitoring for Virtual Environments Information Center (http://pic.dhe.ibm.com/infocenter/tivihelp/v61r1/topic/com.ibm.tivoli.itmvs.doc_7.2/welcome_ve72.htm).

One document is specific to the Citrix XenServer agent. The IBM Tivoli Monitoring for Virtual Environments Agent for Citrix XenServer User's Guide provides agent-specific information for configuring, using, and troubleshooting the Citrix XenServer agent.

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

Use the information in the user's guide for the agent with the *Tivoli Enterprise Portal User's Guide* to monitor Citrix XenServer resources.

Prerequisite publications

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

See the following publications to gain the required prerequisite knowledge:

- *IBM Tivoli Monitoring Administrator's Guide*
- *IBM Tivoli Monitoring Agent Builder User's Guide*
- *IBM Tivoli Monitoring Command Reference*
- *IBM Tivoli Monitoring Installation and Setup Guide*
- *IBM Tivoli Monitoring High Availability Guide for Distributed Systems*
- *IBM Tivoli Monitoring: Messages*
- *IBM Tivoli Monitoring Troubleshooting Guide*
- *IBMTivoli Monitoring: IBM i OS Agent User's Guide*
- *IBM Tivoli Monitoring: Linux OS Agent User's Guide*
- *IBM Tivoli Monitoring: UNIX OS Agent User's Guide*
- *IBM Tivoli Monitoring: Windows OS Agent User's Guide*
- *Tivoli Enterprise Portal User's Guide*
- *IBM Tivoli Performance Analyzer User's Guide*
- *IBM Tivoli Warehouse Proxy Agent User's Guide*
- *IBM Tivoli Warehouse Summarization and Pruning Agent User's Guide*

Related publications

The publications in related information centers provide useful information.

See the following information centers, which you can find by accessing Tivoli Documentation Central (<http://www.ibm.com/tivoli/documentation>):

- Tivoli Monitoring
- Tivoli Application Dependency Discovery Manager
- Tivoli Business Service Manager
- Tivoli Common Reporting
- Tivoli Enterprise Console

Other sources of documentation

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

See the following sources of technical documentation about monitoring products:

- Service Management Connect (SMC)

For introductory information about SMC, see IBM Service Management Connect (<http://www.ibm.com/developerworks/servicemanagement/>).

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

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

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