IBM Tivoli Monitoring: HMC Base Agent
Version 6.2.2 Interim Feature 3

User's Guide

IBM
Note

Before using this information and the product it supports, read the information in “Notices” on page 199.
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Chapter 1. Overview of the agent

The IBM® Tivoli® Monitoring: HMC Base Agent (product code PH) provides you with the capability to monitor the Hardware Management Console (HMC).

IBM Tivoli Monitoring is the base software for the HMC Base agent. The HMC Base agent monitors the availability and health of the HMC resources.

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 197 for complete information about IBM Tivoli Monitoring and the Tivoli Enterprise Portal.

Functions of the monitoring agent

HMC Availability and Health Resources Monitoring
Monitors the availability and health of the Hardware Management Console (HMC) resources: CPU, memory, storage, and network.

Inventory and Configuration of Power® servers, CPU pools, and LPARs
Reports on the HMC inventory and configuration of Power servers, CPU pools, and LPARs.

CPU Utilization Monitoring of Power servers, CPU pools, and LPARs
Monitors the CPU utilization of the Power servers, LPARs, and pools by using HMC performance sample data.

System p monitoring agents

The four System p® monitoring agents monitor the PowerVM® environment.

Figure 1 on page 2 shows the four System p monitoring agents in the PowerVM environment:
- AIX® Premium agent
- CEC Base agent
- HMC Base agent
- VIOS Premium agent
Each agent operates independently of each other and together, they provide a complete PowerVM monitoring offering.

- The AIX Premium agent runs on an AIX LPAR and provides monitoring of the AIX system for that LPAR. Each AIX LPAR to be monitored must run a dedicated AIX Premium agent. This agent is available on the installation package for the System p agents.

- The CEC Base agent runs on a single AIX or VIOS LPAR and provides Central Electronics Complex (CEC) frame-level monitoring of CPU and memory resources by aggregating information retrieved from the XMTOPAS daemon for each AIX/VIOS LPAR. LPARs not running AIX/VIOS or XMTOPAS cannot be monitored and therefore, impact the ability of the agent to provide accurate information. This agent uses a secure shell (SSH) connection to the hardware management console (HMC) to issue HMC commands for discovering the LPARs on the CEC. The agent does not rely on the AIX Premium agent data; however, this agent provides summaries of some of the same LPAR-specific information. For environments that are not managed by using the HMC, this agent must be run on the VIOS for discovery to be accomplished by using the Integrated Virtualization Manager (IVM). This agent is pre-installed with the VIOS operating system and is in the installation package for the System p agents.

- The HMC Base agent runs on a single AIX LPAR and provides monitoring of the health and performance of the HMC. This multi-instance agent uses a unique agent instance for monitoring each HMC. This agent sends HMC commands over an SSH connection to retrieve information from the HMC. The agent collects Power server, LPAR, and CPU Pool configuration data and monitors the CPU utilization of the Power servers, LPARs, and pools. The agent is available in the installation package for the System p agents.

- The VIOS Premium agent runs on the VIOS LPAR and provides monitoring the VIOS system, and the network and storage client mapping defined by the HMC. Each VIOS to be monitored must run a dedicated VIOS Premium agent. This agent uses an SSH connection to the HMC to issue HMC commands.
commands, and uses the VIOS command line for discovering network and storage mapping data. This agent is pre-installed with the VIOS system and is not included in the installation package for the System p agents.

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New in this release

For version 6.2.2 Interim Feature 3 of the HMC Base agent, the following enhancements have been made since version 6.2.2 Interim Feature 2:

- The HMC Base agent was updated to retrieve CPU usage sampling events using the `lslparutil` HMC command. The HMC must be configured to collect these samples by using the `chlparutil` HMC command. See the HMC documentation for more information about the `lslparutil` and `chlparutil` commands.
- In V6.2.2.3, the HMC Base agent represents each server as an IBM Tivoli Monitoring subnode. With these subnodes, each Server is represented by a separate node in the Tivoli Enterprise Portal navigation tree under the HMC Base agent node. When a situation affects an individual server or resources for the server, the affected server is immediately identifiable. Representing each server as a subnode also provides for the creation and association of server-specific situation threshold values.
- The HMC Base agent includes Self Describing Agent support when the agent is installed in the same CANDLEHOME as an IBM Tivoli Monitoring V6.2.3 Fix Pack 1 Tivoli Enterprise Monitoring Agent.
- New attribute groups and attributes were added to monitor CPU utilization for Servers, CPU_Pools, and LPARs.
- New workspaces that can be used to drill down from Servers to Pools to LPARs through IBM Tivoli Monitoring dynamic workspace links were added to the agent.
- The `kph.baroc` file was updated to support IBM Tivoli Enterprise Console® event mapping changes.
- Tivoli Common Reporting for the System p monitoring agents
  - A new Prerequisite Scanner Report helps in troubleshooting reports.
  - 14 new Cognos reports provide information about LPARs, CPU utilization, and trend and forecast for the Managed Server by using the HMC Base agent V 6.2.2.3. These reports include new what if analysis reports for the HMC Base agent.
  - One new report for the CEC Base agent provides information about the balanced and unbalanced CECs in your System p environment, for example significant variation in CPU or memory utilization between the CECs. This information can be used to improve utilization in the environments.
  - One new report for the VIOS Premium agent provides statistical information about the Physical Fibre Channel Adapters in your System p environment. The data model was updated to add the KVA_FC_STATS table.
  - Fixes for the CEC Base agent and VIOS Premium agent reports and data model improve performance.
  - Support is provided to run the reports against more summarization types: Weekly and Monthly.
  - The version number for the reports package is in the report titles instead of the package name.
  - The report names are prefixed with the agent name to help identify the reports easily.
  - New attribute groups for the HMC Base agent were added to the data model.
  - Raw data for VIOS Premium and AIX Premium agent attribute groups is exposed in the data model to allow custom reporting.
  - Index scripts are provided to allow database administrators to update the indexes of tables or views that are used in reports. These scripts improve the performance of reports that are running.
  - Tooltips provide descriptions of the data items in the data model when you hover over them in Query or Report Studio.
Components of the IBM Tivoli Monitoring environment

After you install and set up the HMC Base 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, HMC Base 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 Tivoli Integrated Portal.

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 console**

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.

**Tivoli Integrated Portal**

Web-based products that are built on the Tivoli Integrated Portal framework share a common user interface where you can launch applications and share information. After version 2.2, this interface is replaced by the Dashboard Application Services Hub.

### Agent Management Services

You can use IBM Tivoli Monitoring Agent Management Services to manage the HMC Base 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 HMC Base 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 for Tivoli Common Reporting 3.1 and on Tivoli Integrated Portal for earlier versions.

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 console
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.

Tivoli Integrated Portal
Web-based products that are built on the Tivoli Integrated Portal framework share a common user interface where you can launch applications and share information. After version 2.2, this interface is replaced by the Dashboard Application Services Hub.
Chapter 2. Requirements and agent installation and configuration

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

To install and configure IBM Tivoli Monitoring: HMC Base Agent, use the procedures for installing monitoring agents in the *IBM Tivoli Monitoring Installation and Setup Guide* along with the agent-specific installation and configuration information.

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

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

Requirements for the monitoring agent

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

The HMC Base agent has the following agent-specific requirements:

- The monitoring agent runs on supported versions of these operating systems:
  - AIX 6.1
  - AIX 7.1

  This agent monitors the following versions:
  - HMC Version 7 Release 7.3 or later

- A single computer that hosts the hub monitoring server, portal server, and a monitoring agent requires approximately 300 MB of space. A computer that hosts only the monitoring agent requires approximately 30 MB of space, including the specific enablement code for the monitoring agent. More space is required for each additional monitoring agent that you deploy on the monitoring computer.

- The monitoring agent must be connected to the following software:
  - IBM Tivoli Monitoring V6.2.2 or later
    - Installing the agent upgrades any previous version that exists in the same CANDLEHOME directory, and
    - the configuration is automatically migrated. The binary files are now in the $CANDLEHOME/aix526/bin directory.
  - A Secure Shell (SSH) client must also be installed and configured on the system where the agent runs.
  - OpenSSH is included with AIX and must be installed before installing the HMC Base agent.
  - Use OpenSSL Version 1.0.0j or later for all secure communication and key generation.

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”
- “Silent installation of language packs on Windows, UNIX, or Linux systems” on page 9

### 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.

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 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.

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:\zosgmv\LCD7-3583-01\nlspackage).
For UNIX and Linux:
   Use the slash-slash (/) as a file separator (for example,
   /installtivoli/|lpsilenttest/nlspackage).

NLS_PACKAGE_FOLDER=C:\zosgmv\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:\zosgmv\LCD7-3583-01\nlspackage\KIP_NLS.nlspkg
BASE_AGENT_FOUND_PKG_LIST=C:\zosgmv\LCD7-3583-01\nlspackage\KIP_NLS.nlspkg
PRD_SELECTION_PKG=/tmp/|LP/nlspackage/kex_nls.nlspkg;/tmp/|LP/nlspackage/kqoq_nls.nlspkg
BASE_AGENT_FOUND_PKG_LIST=/tmp/|LP/nlspackage/kex_nls.nlspkg;/tmp/|LP/nlspackage/kqoq_nls.nlspkg
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 HMC Base agent.

**Installation Procedure**

Install the HMC Base agent on an AIX operating system computer by using the *install_dir/install.sh* script.

**Configuration**

The HMC Base agent is a multi-instance agent that monitors the health of a Hardware Management Console through an SSH connection. Multiple HMCs can be monitored by configuring a separate agent instance for each one.

**About this task**

When an HMC Base agent is configured, the instance name must be specified. This name is required when the agent instance is started, stopped, or configured. Also, this name is displayed on the Tivoli Enterprise Portal client console. The HMC Base agent requires you to configure the parameters that are described in “Configuration values” on page 12.

**Procedure**

1. Use the following command to configure the HMC agent:

```
$CANDLEHOME/bin/itmcmd config -A ph
```

   When you configure the HMC agent interactively, do not specify the instance name by using the `itmcmd config -o` parameter. Instead, use the form indicated in the command in Step 1 and provide the HMC agent instance name when prompted.

   You can specify the `-o` parameter with the `itmcmd config` command when you configure the agent silently by using the following form:

```
./itmcmd config -p "/install-dir/samples/silent_config.txt"
-o instance_name -A ph
```

   Add the following variables to the `silent_config.txt` file as described in “Configuration values” on page 12:

   - HMC_HOSTNAME=
   - HMC_USERNAME=
   - KPH_LOG_LEVEL= (optional)
   - KPH_LOG_FILE_MAX_SIZE= (optional)
   - KPH_LOG_FILE_MAX_COUNT= (optional)

   Use Steps 2 - 6 to configure the authentication keys that are used between the system that is running the agent and the HMC. For more information about the generation of keys, see the man pages for the `ssh-keygen` utility.

   Instead of using Steps 2 - 6, you can use the `setup_hmc_key.pl` script to set up the SSH connection. The script is available in `install-dir/aix526/ph/bin`. This script prompts for the HMC host name and user name (with authority equivalent to hscviewer authority) and then sets up the connection on both sides.
After you create the shared key, test the connectivity by running a command such as "ssh hscroot@hmchost lshmc -V". If SSH is connecting to this HMC for the first time, add the HMC to the ssh known_hosts file by responding to the following message in the affirmative:

Warning: Permanently added 'hmchost,3.3.333.333' (RSA) to the list of known hosts.

The agent can now use SSH to collect data from the HMC.

2. Log on to the AIX system where the HMC Base agent is to be installed.

3. Use the ssh-keygen utility to generate public and private keys with no passphrase. For example, the following command generates a set of public and private keys:

```
ssh-keygen -t rsa -f /.ssh/id-rsa
```

Press enter when prompted for a passphrase. The public key that is generated is stored in the /.ssh/id-rsa.pub file. The private key is stored in the /.ssh/id-rsa file.

4. Transfer the file that contains the public key to the HMC computer by using utilities such as scp.

5. On the HMC computer, append the public key file to the collection of keys that are stored on the HMC. The stored keys are in the /.ssh/authorized_keys2 file.

6. Add the host name and key for the HMC in the known_hosts file. This file is in the /.ssh directory.
   a. Run the following command: ssh "user"@"hmc_hostname" -i "private_keyfile" date
   b. Enter yes when prompted to cache the keys. The successful completion of this command adds the entry to the known_hosts file for future connections.

7. Run the following command: ssh "user"@"hmc_hostname" date If the date is returned with no password prompt, the SSH keys were successfully set up.

**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 that you type are not displayed to help maintain the security of these values.

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

**HMC Information (HMC Information)**

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

This group defines information that applies to the entire agent.

**HMC Hostname (HMC_HOSTNAME)**

The IP address or host name of the HMC.

The type is string.

This value is required.

Default value: None

**HMC Username (HMC_USERNAME)**

The logon user name for the HMC. The name must have at least hscviewer access.

The type is string.

This value is required.
Data Provider (Data_Provider)

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

This group defines information that applies to the entire agent.

Maximum Number of Data Provider Log Files (KPH_LOG_FILE_MAX_COUNT)

The maximum number of data provider log files that are created.

The type is numeric.

This value is required.

Default value: 10

Maximum Size in KB of Each Data Provider Log (KPH_LOG_FILE_MAX_SIZE)

The maximum size in KB that a data provider log file might reach before a new log file is created.

The type is numeric.

This value is required.

Default value: 5190

Level of Detail in Data Provider Log (KPH_LOG_LEVEL)

The amount of detail that the data provider includes in the data provider log files.

The type is one of the following values: "OFF", "SEVERE", "WARNING", "INFO", "FINE", "FINER", "FINEST", "ALL". See HMC agent data provider logs for information about supported levels.

This value is required.

Default value: INFO

Remote installation and configuration

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

Note: The HMC Base agent can be remotely installed and configured, but you cannot configure SSH remotely. SSH must be configured on the system, either manually or by running the setup_hmc_key.pl script on the system.

When installing the agent remotely, you must provide the configuration values for the agent to operate. See “Configuration values” on page 12

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 UNIX operating systems:
Collecting data from the HMC
The HMC agent uses the agent data provider to collect data from the HMC.

The agent data provider collects data from the management console by running CLI commands over SSH. By default, the data provider waits up to 1 minute for a CLI command to finish running. After this time, the data provider closes the SSH session in which the CLI command is running, and none of the data for that command is available in agent attribute groups until the command is successfully executed. The number of seconds that a CLI command can run before timing out can be configured by using the KPH_SSH_COMMAND_EXECUTION_TIMEOUT environment variable in the ph_instance_name.config file for the agent.

The agent data provider collects inventory data from the HMC 2 minutes after the completion of the last collection. This collection includes the configuration data for the servers, LPARs, and CPU pools. The collection also includes attributes that make up the HMC health workspaces. The default interval for collecting the data can be adjusted by modifying the KPH_INVENTORY_COLLECTION_INTERVAL environment variable.

The HMC can be configured to collect CPU usage sampling events by using the chlparutil HMC CLI command. These events can be retrieved by using the lslparutil command. The events contain data from the Managed System for shared CPU pools and shared LPARs. Support for dedicated LPARs was added in the HMC V7R7.3.0 release. The agent queries the HMC for the CPU sample data for each server at the sampling interval that is configured on the HMC. Using this sampling interval keeps the agent from querying the HMC for redundant information. The agent computes CPU usage information by comparing the latest sampling event to the last one it collected.

The default path for the ssh command is /usr/bin/ssh. If you installed SSH in a different location, you must indicate the path by using the KPH_SSH_PATH environment variable.
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: HMC Base Agent provides various default workspaces. These workspaces are displayed in the Navigator tree under the following nodes and subnodes for this monitoring agent:

HMC Base
Corresponds to an HMC Base instance and contains agent instance-level workspaces.

HMC Base Servers
Each subnode is a managed server.

When multiple instances of the monitoring agent are defined on a system, the top-level node becomes HMC Base. The HMC Base workspace is undefined at this node. A node for each instance is created called Instance::PH. A workspace that is called Instance::PH is associated with the instance node. This workspace is comparable to the HMC Base 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 21.
Predefined workspaces

The HMC Base agent provides predefined workspaces, which are organized by Navigator item.

Agent-level navigator items

- HMC Base Navigator item
  - HMC Summary workspace
  - Performance Object Status workspace
- Managed Environment Navigator item
  - Events workspace
  - Logical Partitions (superseded) workspace
  - Managed CECs (superseded) workspace
  - Managed Servers workspace
- System Navigator item
  - System workspace
  - System Details workspace

HMC Base Servers (SVR) subnode

- HMC Base Servers Navigator item
  - HMC Base Servers workspace
  - Top 10 By CPU Used workspace
- CPU Pools Navigator item
  - CPU Pool Utilization and LPARs workspace
  - CPU Pools workspace
- LPARs Navigator item
  - LPAR Details workspace
  - LPARs workspace
- Server Navigator item
  - Server Details workspace

Workspace descriptions

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

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

HMC Base Navigator item

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

HMC Summary workspace

This workspace shows a summary of management console version, CPU, and memory information.

This workspace contains the following views:

- Management Console Version Information
  - This view displays the management console version, release, and build information.
- CPU Utilization
  - This view displays the HMC CPU utilization percentages.
Memory Utilization
This view displays the HMC free and used memory percentages.

Performance Object Status workspace
This view shows a table of the attribute groups that are associated with the Monitoring Agent for HMC Base.

This workspace contains the following view:
Performance Object Status
This view displays a table of the attribute groups that are associated with the Monitoring Agent for HMC Base.

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

Events workspace
This workspace shows events that were collected from the HMC.

This workspace contains the following view:
Lifecycle Events
This view displays LPAR and managed server lifecycle events. These types of events include managed server add and delete, and LPAR creation, deletion, and migration.

Logical Partitions (superseded) workspace
This workspace shows logical partitions within a CEC.

This workspace contains the following views:
Logical Partitions
This view displays logical partitions within a CEC.
CEC navigator
This view displays a list of CEC names that are managed by this HMC.

Managed CECs (superseded) workspace
This workspace provides an overview of the CECs managed by this management console.

This workspace contains the following views:
Managed CECs
This view displays CECs managed by this HMC.
Migration events
This view displays migration events that the HMC collected.

Managed Servers workspace
This workspace provides an overview of the CPU usage of all servers that are managed by this management console. The management console sample timestamp and interval are provided to show the age of the utilization data.

This workspace contains the following views:
Managed Servers Summary
This view displays basic performance metrics for a server. From each row in this table, you can select a link to navigate to a more detailed view of LPARs for this server, CPU pools, and server details.
Server CPU Utilization
This view plots CPU units that are used for all active servers that are managed by this management console.
CPU Used Percent
This view displays the CPU usage of each server as a percentage. Thresholds are defined at 75 and 90 percent.

System Navigator item
The workspace descriptions are organized by the Navigator item to which the workspaces are relevant.
System workspace
This workspace shows HMC system information such as CPU, memory, file systems, and paging space usage.

This workspace contains the following views:
CPU This view displays the CPU percentages for User, System, IO Wait, and Idle.
Memory This view displays the amount of used and free memory in MB.
File Systems This view displays the percentage of memory that is used and free for each file system.
Paging Space This view displays the amount of paging space that is used and free in MB.

System Details workspace
This workspace shows the HMC file system and process details.

This workspace contains the following views:
File Systems This view displays the HMC file systems and their memory usage.
Processes This view displays the CPU and memory usage of the HMC processes.

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

HMC Base Servers Navigator item
HMC Base Servers workspace
This workspace provides a quick overview of all servers and LPARs that are visible to the management console. For more information, see the corresponding workspace for that resource.

This workspace contains the following views:
All Servers This view shows all managed servers that are visible. Configuration information is primarily shown in this view. Consult additional workspaces to view performance metrics.

All LPARs This view shows all LPARs across all managed servers. Configuration information is primarily shown in this view. Consult additional workspaces to view performance metrics for LPARs.

Top 10 By CPU Used workspace
This workspace shows separated views for LPARs, servers, and CPU pools. It is helpful in determining which resource is using the most CPU as seen across the HMC.

This workspace contains the following views:
Top 10 LPARs by CPU Used This view displays the 10 LPARs that are using the most CPU across all managed servers.

Top 10 Servers by CPU Used This view displays the 10 servers that have the highest CPU utilization across all servers that are managed by the HMC.

Top 10 CPU Pools by CPU Used This view displays the 10 CPU pools that are using the most CPU across all of the managed servers.

CPU Pools Navigator item
CPU Pool Utilization and LPARs workspace
This workspace shows basic utilization of the CPU resources that are defined to this pool and which LPARs are using them.
This workspace contains the following views:

**CPU Pool Utilization**
This view displays performance for a single CPU pool. The view contains a plot of the CPU units that are used against maximum pool capacity and pools entitled capacity. This plot helps identifying when a pool is borrowing from donated and unallocated resources.

**CPU Pool LPARs**
This view displays a table of the LPARs that are members of this pool.

**CPU Pools workspace**
This workspace shows basic performance metrics and configuration information for CPU pools that are defined on this server. The HMC sample timestamp and interval are provided to show the age of the utilization data.

This workspace contains the following views:

**CPU Pool Utilization**
This view displays a bar chart that shows the CPU units that are used compared to the entitled pool capacity and maximum pool capacity for each pool that is defined on the server.

**CPU Pools**
This view shows a table of the pools that are configured, pool configuration and usage information, and the Monitoring Console timestamp of the most recent sample. Each row contains a link that you can use to navigate to the CPU Pool Utilization workspace.

**LPARs Navigator item**

**LPAR Details workspace**
This workspace shows LPAR performance and configuration details.

This workspace contains the following views:

**CPU Units Used**
This view plots the CPU usage for the LPAR against the LPAR entitlement and maximum CPU capacity.

**Details**
This view displays the configuration details, CPU usage, and state for the LPAR.

**LPARs workspace**
This workspace shows the dedicated and shared LPARs defined on a given managed server.

This workspace contains the following views:

**Shared LPARs**
This view shows a table of the shared LPARs defined on this managed server. The table contains the relevant pieces of information for showing the current LPAR CPU usage and how that usage relates to the maximum capacity that is defined for the LPAR. For capped LPARs, this information is seen by comparing CPU usage with the entitlement for the LPAR. For uncapped LPARs, this information is seen by comparing CPU usage with the number of virtual CPUs that are used by the LPAR.

**Dedicated LPARs**
This view shows a table of the dedicated LPARs defined on this managed server. The table contains the relevant pieces of information for showing the current LPAR CPU usage and how that usage relates to the maximum capacity that is defined for the LPAR. This information is seen by comparing CPU usage to the number of CPUs defined to the LPAR.

**Unconfigured LPARs**
This view shows a table of the unconfigured LPARs defined on this server. The table contains the LPARs that were never activated or that were configured to use resources that are not available.

**Server Navigator item**

**Server Details workspace**
This workspace displays performance details of a specific server.
This workspace contains the following views:

**CPU Units Used**

This view plots the CPU usage against the total CPU units in the server.

**Server Utilization**

This view displays the state and CPU utilization information of the server. The management console sample timestamp and interval are provided to show the age of the utilization data.

**Server Summary**

This view displays much of the current configuration for the server. A visible threshold is defined to alert you that the number of unallocated CPUs is zero, which means that no extra unused capacity for uncapped LPARs exists.
Chapter 4. Attributes reference

Attributes are the application properties that are being measured and reported by the IBM Tivoli Monitoring: HMC Base Agent.

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 HMC Base 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 22.

Attribute groups for the monitoring agent

The HMC Base 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: CPU Summary
  - Table name: KPH03CPUSU
  - Warehouse table name: KPH_CPU_SUMMARY or KPH03CPUSU
- Attribute group name: Events
  - Table name: KPH11CLPEV
  - Warehouse table name: KPH_EVENTS or KPH11CLPEV
- Attribute group name: File Systems
  - Table name: KPH06FILES
  - Warehouse table name: KPH_FILE_SYSTEMS or KPH06FILES
- Attribute group name: Managed CECs
  - Table name: KPH09MANAC
Attributes in each attribute group

Attributes in each HMC Base 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:

\[(\text{CPU\_Pct} < 0) \text{ || } (\text{Memory\_Pct} < 0) ? 0 : 1\]

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.

CPU Summary attribute group
This attribute group contains CPU utilization information.

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 CPU 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

Timestamp attribute

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

User CPU Pct attribute

- **Description**: The percentage of time this processor spent operating in CPU user mode.
- **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:
  - Not Collected (-1)
  - Value Exceeds Minimum (-2147483648)
  - Value Exceeds Maximum (2147483647)
  - Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.
- **Warehouse name**: USER_CPU_PCT or UCP

System CPU Pct attribute

- **Description**: The percentage of time this processor spent operating in CPU kernel mode.
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:
  - Not Collected (-1)
  - Value Exceeds Minimum (-2147483648)
  - Value Exceeds Maximum (2147483647)

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

Warehouse name
- SYSTEM_CPU_PCT or SCP

IO Wait CPU Pct attribute
Description
The percentage of time this processor spent operating in CPU wait mode.

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:
  - Not Collected (-1)
  - Value Exceeds Minimum (-2147483648)
  - Value Exceeds Maximum (2147483647)

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

Warehouse name
- IO_WAIT_CPU_PCT or IWCP

Idle CPU Pct attribute
Description
The percentage of time this processor spent operating in CPU idle mode.

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:
  - Not Collected (-1)
  - Value Exceeds Minimum (-2147483648)
  - Value Exceeds Maximum (2147483647)

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

Warehouse name
- IDLE_CPU_PCT or ICP

CPU Name attribute: This attribute is a key attribute.
Description
The name that identifies the CPU.

Type
- String

Warehouse name
- CPU_NAME

Include Data In Summarization attribute
Description
Indicates whether to include User_CPU_Pct, System_CPU_Pct, IO_Wait_CPU_Pct, and Idle_CPU_Pct from TDW summarization (0 = exclude, 1 = include).

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

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

Source
The source for this attribute is derived: (User_CPU_Pct < 0) || (System_CPU_Pct < 0) || (IO_Wait_CPU_Pct < 0) || (Idle_CPU_Pct < 0)? 0 : 1.

Warehouse name
INCLUDE_DATA_IN_SUMMARIZATION or IDIS

Events attribute group
This attribute group contains information about migration events that are collected by the HMC.

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 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

Time attribute: This attribute is a key attribute.

Description
The approximate time the event occurred.

Type
String

Warehouse name
TIME

Event attribute

Description
The type of event that occurred (Migration begun, Migration completed, Migration aborted, LPAR created, LPAR deleted, CEC added to HMC, CEC deleted from HMC).

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:
• Migration begun (0)
• Migration completed (1)
• Migration aborted (2)
• LPAR created (3)
• LPAR deleted (4)
- CEC added to HMC (5)
- CEC deleted from HMC (6)

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

**Warehouse name**

**EVENT**

**LPAR Name attribute**

**Description**
The name of the migrating logical partition.

**Type**
String

**Warehouse name**

**LPAR_NAME**

**LPAR Num attribute: This attribute is a key attribute.**

**Description**
The logical partition number that is related to the event.

**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:
- Not Collected (-1)
- Value Exceeds Minimum (-2147483648)
- Value Exceeds Maximum (2147483647)

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

**Warehouse name**

**LPAR_NUM**

**Server Name attribute**

**Description**
The name of the managed server that is affected by the event.

**Type**
String

**Warehouse name**

**CEC_NAME**

**Src CEC Mfg attribute**

**Description**
The manufacturer of the managed server from which the LPAR is migrating.

**Type**
String

**Warehouse name**

**SRC_CEC_MFG or SCM**

**Src CEC Model attribute**

**Description**
The model of the managed server from which the LPAR is migrating.

**Type**
String

**Warehouse name**

**SRC_CEC_MODEL or SCM0**

**Src CEC SN attribute**

**Description**
The serial number of the managed server from which the LPAR is migrating.

**Type**
String

**Warehouse name**

**SRC_CEC_SN**
**Dest CEC Name attribute**

Description
The name of the managed server to which the LPAR is migrating.

Type
String

Warehouse name
DEST_CEC_NAME or DCN

**Dest CEC Mfg attribute**

Description
The manufacturer of the managed server to which the LPAR is migrating.

Type
String

Warehouse name
DEST_CEC_MFG or DCM

**Dest CEC Model attribute**

Description
The model of the managed server to which the LPAR is migrating.

Type
String

Warehouse name
DEST_CEC_MODEL or DCM0

**Dest CEC SN attribute**

Description
The serial number of the managed server to which the LPAR is migrating.

Type
String

Warehouse name
DEST_CEC_SN or DCS

**Dest LPAR Num attribute: This attribute is a key attribute.**

Description
The new LPAR number on the destination managed server.

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:
- Not Collected (-1)
- Value Exceeds Minimum (-2147483648)
- Value Exceeds Maximum (2147483647)

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

Warehouse name
DEST_LPAR_NUM or DLN

**File Systems attribute group**

This attribute group contains HMC file system information.

**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 File Systems attribute group:

**Node attribute: This attribute is a key attribute.**

Description
The managed system name of the agent.

Type
String
Source
The source for this attribute is the agent.

Warehouse name
NODE

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

Warehouse name
TIMESTAMP

Name attribute: This attribute is a key attribute.
Description
The name of the file system.
Type
String

Warehouse name
NAME

Size MB attribute
Description
The size of the file system in MB.
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:
• Not Collected (-1)
• Value Exceeds Minimum (-2147483648)
• Value Exceeds Maximum (2147483647)
Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Warehouse name
SIZE_MB

Free MB attribute
Description
The amount of file system space available 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:
• Not Collected (-1)
• Value Exceeds Minimum (-2147483648)
• Value Exceeds Maximum (2147483647)
Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Warehouse name
FREE_MB

Used MB attribute
Description
The amount of file system space that is 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:
- Not Collected (-1)
- Value Exceeds Minimum (-2147483648)
- Value Exceeds Maximum (2147483647)

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

**Warehouse name**  
USED_MB

**Free Pct attribute**

**Description**  
The percentage of file system space 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:
- Not Collected (-1)
- Value Exceeds Minimum (-2147483648)
- Value Exceeds Maximum (2147483647)

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

**Warehouse name**  
FREE_PCT

**Used Pct attribute**

**Description**  
The percentage of file system space that is used.

**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:
- Not Collected (-1)
- Value Exceeds Minimum (-2147483648)
- Value Exceeds Maximum (2147483647)

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

**Warehouse name**  
USED_PCT

**Mount Point attribute:** This attribute is a key attribute.

**Description**  
The mount point of the file system.

**Type**  
String

**Warehouse name**  
MOUNT_POINT or MP

**Include Data In Summarization attribute**

**Description**  
Indicates whether to include Free_MB, Used_MB, Free_Pct, and Used_Pct from TDW summarization (0 = exclude, 1 = include).

**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.
Managed CECs attribute group

This attribute group displays a list of CECs managed by the HMC.

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

Attribute descriptions
The following list contains information about each attribute in the Managed CECs 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

**Server Name attribute:** This attribute is a key attribute.

- **Description:** The name of the managed server as known by the HMC.
- **Type:** String
- **Warehouse name:** CEC_NAME

**CEC Mfg attribute**

- **Description:** The manufacturer of the managed server.
- **Type:** String
- **Warehouse name:** CEC_MFG

**CEC Model attribute**

- **Description:** The model of the managed server.
- **Type:** String
- **Warehouse name:** CEC_MODEL

**CEC SN attribute**

- **Description:** The serial number of the managed server.
Type

String

Warehouse name

CEC_SN

State attribute

Description
The status of the managed server.

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:
- Not Collected (-1)
- Operating (0)
- Power Off (1)
- Standby (2)
- Initializing (3)
- No Connection (4)
- Error (5)
- Incomplete (6)
- Recovery (7)

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

Warehouse name
STATE

Active Partitions attribute

Description
The number of active partitions on the managed server.

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:
- Not Collected (-1)

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

Warehouse name
NUM_PARTITIONS or NP

CPU Total attribute

Description
The total number of CPUs in the managed server.

Type
Real number (32-bit gauge) with one 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:
- Not Collected (-10)

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

Warehouse name
CPU_TOTAL

CPU allocated attribute

Description
The number of CPUs allocated to logical partitions.

Type
Real number (32-bit gauge) with one decimal places of precision with enumerated values.
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 (-10)

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

**Warehouse name**

CPU_ALLOCATED or CA

**CPU unallocated attribute**

**Description**
The number of CPUs unallocated in the managed server.

**Type**
Real number (32-bit gauge) with one 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:

- Not Collected (-10)

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

**Warehouse name**

CPU_UNALLOCATED or CU

**Total Shared CPUs attribute**

**Description**
The number of CPUs in the shared pool.

**Type**
Real number (32-bit gauge) with one 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:

- Not Collected (-10)

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

**Warehouse name**

TOTAL_SHARED_CPUS or TSC

**Total Mem MB attribute**

**Description**
The total amount of memory in the managed server.

**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:

- Not Collected (-1)

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

**Warehouse name**

TOTAL_MEM_MB or TMM

**Allocated Mem MB attribute**

**Description**
The amount of memory that is allocated to logical partitions.

**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:

- Not Collected (-1)
Unallocated Mem MB attribute

**Description**
The amount of memory that is unallocated on the managed server.

**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:
- Not Collected (-1)

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

**Warehouse name**
ALLOCATED_MEM_MB or AMM

Num proc pools attribute

**Description**
The number of shared processor pools that are allocated on the managed server.

**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:
- Not Collected (-1)

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

**Warehouse name**
NUM_PROC_POOLS or NPP

Num mem pools attribute

**Description**
The number of memory pools that are allocated on the managed server.

**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:
- Not Collected (-1)

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

**Warehouse name**
NUM_MEM_POOLS or NMP

CPU Units Used attribute

**Description**
The total number of CPU units that are used by the managed server.

**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:
- Not Collected (-100)

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

**Warehouse name**
CPU_UNITS_USED or CUU

CPU Used Pct attribute
Description
The percentage of the CPU capacity for the managed server that is used.

Type
Real number (32-bit gauge) with one 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:
  • Not Collected (-10)

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

Warehouse name
CPU_USED_PCT or CUP

Firmware Version attribute

Description
The firmware version of the managed server.

Type
String

Warehouse name
FIRMWARE_VERSION or FV

Dedicated CPU Units Used attribute

Description
The total number of CPU units that are used by dedicated logical partitions.

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:
  • Not Collected (-100)

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

Warehouse name
DEDICATED_CPU_UNITS_USED or DCUU

Dedicated CPU Used Pct attribute

Description
The percentage of the CPU capacity for the servers that is used by dedicated logical partitions.

Type
Real number (32-bit gauge) with one 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:
  • Not Collected (-10)

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

Warehouse name
DEDICATED_CPU_USED_PCT or DCUP

Shared CPU Units Used attribute

Description
The total number of CPU units that are used by shared logical partitions.

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:
• Not Collected (-100)
  Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

**Warehouse name**

SHARED_CPU_UNITS_USED or SCUU

**Shared CPU Used Pct attribute**

**Description**
The percentage of managed server CPU capacity that is used by shared logical partitions.

**Type**
Real number (32-bit gauge) with one 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:
• Not Collected (-10)
  Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

**Warehouse name**

SHARED_CPU_USED_PCT or SCUP

**Sample Timestamp attribute**

**Description**
The timestamp of the most recent management console utilization sample collected.

**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:
• Not Collected (NA)
• No Samples (NoSamples)
  Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

**Warehouse name**

SAMPLE_TIMESTAMP or ST

**Sample Interval Seconds attribute**

**Description**
The management console utilization sample interval in seconds.

**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:
• Not Collected (-1)
  Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

**Warehouse name**

SAMPLE_INTERVAL or SI

**Include CPU Data In Summarization attribute**

**Description**
Indicates whether the values for CPU_Total, CPU_allocated, and CPU_unallocated are included in TDW summarization (0 = exclude, 1 = include).

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

Source
The source for this attribute is derived: (CPU_Total < 0) || (CPU_allocated < 0) || (CPU_unallocated < 0) ? 0 : 1.

Warehouse name
INCLUDE_CPU_DATA_IN_SUMMARIZATION or ICDis

Include Memory Data In Summarization attribute
Description
Indicates whether the values for Total_Mem_MB, Allocated_Mem_MB, and Unallocated_Mem_MB are included in TDW summarization (0 = exclude, 1 = include).

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

Source
The source for this attribute is derived: (Total_Mem_MB < 0) || (Allocated_Mem_MB < 0) || (Unallocated_Mem_MB < 0) ? 0 : 1.

Warehouse name
INCLUDE_MEMORY_DATA_IN_SUMMARIZATION or IMDIs

Include Perf Data In Summarization attribute
Description
Indicates whether the values for CPU_Units_Used, CPU_Used_Pct, Dedicated_CPU_Units_Used, Dedicated_CPU_Used_Pct, Shared_CPU_Units_Used, and Shared_CPU_Used_Pct are included in TDW summarization (0 = exclude, 1 = include).

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

Source
The source for this attribute is derived: (CPU_Units_Used < 0) || (CPU_Used_Pct < 0) || (Dedicated_CPU_Units_Used < 0) || (Dedicated_CPU_Used_Pct < 0) || (Shared_CPU_Units_Used < 0) || (Shared_CPU_Used_Pct < 0) ? 0 : 1.

Warehouse name
INCLUDE_PERF_DATA_IN_SUMMARIZATION or IPDIS

Subnode MSN attribute
Description
The IBM Tivoli Monitoring managed system name for the subnode that represents this server.

Type
String
<table>
<thead>
<tr>
<th>Warehouse name</th>
<th>SUBNODE_MSN or SM</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total CPUs Installed attribute</strong></td>
<td>Description</td>
</tr>
<tr>
<td></td>
<td>The total number of CPU units that are installed on this managed server.</td>
</tr>
<tr>
<td><strong>Type</strong></td>
<td>Real number (32-bit numeric property) with one 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:</td>
</tr>
<tr>
<td></td>
<td>• Not Collected (-10)</td>
</tr>
<tr>
<td></td>
<td>Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.</td>
</tr>
<tr>
<td>Warehouse name</td>
<td>TOTAL_INSTALLED_CPUS or TIC</td>
</tr>
<tr>
<td><strong>Total Memory Installed attribute</strong></td>
<td>Description</td>
</tr>
<tr>
<td></td>
<td>The total amount of memory that is installed on this managed server (MB).</td>
</tr>
<tr>
<td><strong>Type</strong></td>
<td>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:</td>
</tr>
<tr>
<td></td>
<td>• Not Collected (-1)</td>
</tr>
<tr>
<td></td>
<td>Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.</td>
</tr>
<tr>
<td>Warehouse name</td>
<td>TOTAL_INSTALLED_MEMORY_MB or TIMM</td>
</tr>
</tbody>
</table>

**Managed LPARs attribute group**

This attribute group displays a list of logical partitions managed by the management console.

**Historical group**

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

**Attribute descriptions**

The following list contains information about each attribute in the Managed LPARs 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.

<table>
<thead>
<tr>
<th>Warehouse name</th>
<th>NODE</th>
</tr>
</thead>
</table>

**Timestamp attribute**

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

<table>
<thead>
<tr>
<th>Type</th>
<th>String</th>
</tr>
</thead>
</table>

- **Source**
  - The source for this attribute is the agent.

<table>
<thead>
<tr>
<th>Warehouse name</th>
<th>TIMESTAMP</th>
</tr>
</thead>
</table>

**LPAR Name attribute:** This attribute is a key attribute.
<table>
<thead>
<tr>
<th>Attribute</th>
<th>Description</th>
<th>Type</th>
<th>Warehouse Name</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Name</strong></td>
<td>The name of the logical partition.</td>
<td>String</td>
<td>LPAR_NAME</td>
</tr>
<tr>
<td><strong>Server Name attribute</strong></td>
<td>The name of the managed server on which the LPAR is located.</td>
<td>String</td>
<td>CEC_NAME</td>
</tr>
<tr>
<td><strong>Hostname attribute</strong></td>
<td>The host name of the LPAR.</td>
<td>String</td>
<td>HOSTNAME</td>
</tr>
</tbody>
</table>
| **Partition ID attribute** | The LPAR ID. | 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:  
  • Not Collected (-1)  
  Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal. | PARTITION_ID or PI |
| **CEC Mfg attribute** | The manufacturer of the managed server. | String | CEC_MFG        |
| **CEC Model attribute** | The model of the managed server. | String | CEC_MODEL      |
| **CEC SN attribute** | The serial number of the managed server. | String | CEC_SN         |
| **State attribute** | | | |
Description
The current runtime state of the LPAR.

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:
- Not Collected (-1)
- Ready (0)
- Starting (1)
- Running (2)
- Error (3)
- Not Activated (4)
- Open Firmware (5)
- Not Available (6)
- Shutting Down (7)
- Suspending (8)
- Suspected (9)
- Resuming (10)
- Hardware Discovery (11)
- Migrating - Running (12)
- Migrating - Not Activated (13)

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

Warehouse name
STATE

Environment attribute
Description
The operating environment of the LPAR.

Type
String

Warehouse name
ENVIRONMENT or E

OS Version attribute
Description
The version information for the operating system of the LPAR.

Type
String

Warehouse name
OS_VERSION

Capped Mode attribute
Description
Indicates whether the LPAR is operating in capped or uncapped mode.

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:
- Not Collected (NotCollected)
- capped (capped)
- uncapped (uncapped)

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

Warehouse name
CAPPED_MODE or CM

Shared Mode attribute
Description
Indicates whether the LPAR is running in shared or dedicated mode.

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:
- Not Collected (NotCollected)
- shared (shared)
- dedicated (dedicated)

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

Warehouse name
SHARED_MODE or SM

Managed Systems attribute group
This attribute group contains information about the HMC managed systems.

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

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

Node attribute: This attribute is a key attribute.
Description
The managed system name of the agent.

Type
String
Source
The source for this attribute is the agent.

Warehouse name
NODE

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

Type
String
Source
The source for this attribute is the agent.

Warehouse name
TIMESTAMP

Name attribute: This attribute is a key attribute.
Description
The monitored computer name.

Type
String

Warehouse name
NAME

Status attribute
Description
The current state of the computer that is being monitored.

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:
- Not Activated (0)
- Starting (1)
• Running (2)
• Shutting Down (3)
• Error (4)
• Open Firmware (5)
• Not Available (6)
• Ready (7)
• Suspending (8)
• Suspended (9)
• Resuming (10)
• Hardware Discovery (11)
• Migrating - Running (12)
• Migrating - Not Activated (13)

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

Warehouse name
STATUS

IP Address attribute

Description
The IP address of the computer that is being monitored.

Type
String

Warehouse name
IP_ADDRESS

Serial Number attribute

Description
The serial number of the computer that is being monitored.

Type
String

Warehouse name
SERIAL_NUMBER or SN

Firmware Version attribute

Description
The firmware version of the computer that is being monitored.

Type
String

Warehouse name
FIRMWARE_VERSION or FV

Paging Space attribute group
This attribute group contains HMC paging space information.

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 Paging Space 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

**Total Size MB attribute**

**Description**
The total size of the active paging space in MB.

**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:
- Not Collected (-1)
- Value Exceeds Minimum (-2147483648)
- Value Exceeds Maximum (2147483647)

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

**Warehouse name**
TOTAL_SIZE_MB or TSM

**Free MB attribute**

**Description**
The amount of system paging space 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:
- Not Collected (-1)
- Value Exceeds Minimum (-2147483648)
- Value Exceeds Maximum (2147483647)

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

**Warehouse name**
FREE_MB

**Used MB attribute**

**Description**
The amount of system paging 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:
- Not Collected (-1)
- Value Exceeds Minimum (-2147483648)
- Value Exceeds Maximum (2147483647)

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

**Warehouse name**
USED_MB

**Free Pct attribute**

**Description**
The percentage of system paging space 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:
- Not Collected (-1)
- Value Exceeds Minimum (-2147483648)
- Value Exceeds Maximum (2147483647)
Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Warehouse name
FREE_PCT

Used Pct attribute

Description
The percentage of system paging space 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:
- Not Collected (-1)
- Value Exceeds Minimum (-2147483648)
- Value Exceeds Maximum (2147483647)
Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

Warehouse name
USED_PCT

Include Data In Summarization attribute

Description
Indicates whether to include Free_Mb, Used_Mb, Free_Pct, and Used_Pct from TDW summarization (0 = exclude, 1 = include).

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

Source
The source for this attribute is derived: (Free_Mb < 0) || (Used_Mb < 0) || (Free_Pct < 0) || (Used_Pct < 0)? 0 : 1.

Warehouse name
INCLUDE_DATA_IN_SUMMARIZATION or IDIS

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)
• XMLPARSE 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

**Physical Memory attribute group**

This attribute group contains HMC physical memory information.
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 Physical Memory attribute group:

Node attribute: This attribute is a key attribute.

- **Description**
  The managed system name of the agent.

- **Type**
  String

- **Source**
  The source for this attribute is the agent.

- **Warehouse name**
  NODE

Timestamp attribute

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

- **Type**
  String

- **Source**
  The source for this attribute is the agent.

- **Warehouse name**
  TIMESTAMP

Total Size MB attribute

- **Description**
  The total amount of physical memory available to this system in MB.

- **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:
  - Not Collected (-1)
  - Value Exceeds Minimum (-2147483648)
  - Value Exceeds Maximum (2147483647)
  
  Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

- **Warehouse name**
  TOTAL_SIZE_MB or TSM

Free MB attribute

- **Description**
  The amount of free (unallocated) system memory in MB.

- **Type**
  Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:
  - Not Collected (-1)
  - Value Exceeds Minimum (-2147483648)
  - Value Exceeds Maximum (2147483647)
  
  Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

- **Warehouse name**
  FREE_MB

Used MB attribute

- **Description**
  The amount of used (allocated) system memory in MB.
Type
Integer (32-bit gauge) with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:
- Not Collected (-1)
- Value Exceeds Minimum (-2147483648)
- Value Exceeds Maximum (2147483647)

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

**Warehouse name**
USED_MB

**Free Pct attribute**

**Description**
The percentage of system memory that is free (unallocated).

**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:
- Not Collected (-1)
- Value Exceeds Minimum (-2147483648)
- Value Exceeds Maximum (2147483647)

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

**Warehouse name**
FREE_PCT

**Used Pct attribute**

**Description**
The percentage of system memory that is used (allocated).

**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:
- Not Collected (-1)
- Value Exceeds Minimum (-2147483648)
- Value Exceeds Maximum (2147483647)

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

**Warehouse name**
USED_PCT

**Include Data In Summarization attribute**

**Description**
Indicates whether to include Free_MB, Used_MB, Free_Pct, and Used_Pct from TDW summarization (0 = exclude, 1 = include).

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

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

**Source**
The source for this attribute is derived: (Free_MB < 0 ) || (Used_MB < 0 ) || (Free_Pct < 0 ) || (Used_Pct < 0 )? 0 : 1.
Processes Detail attribute group
This attribute group contains HMC process details.

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

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

Node attribute: This attribute is a key attribute.

<table>
<thead>
<tr>
<th>Description</th>
<th>The managed system name of the agent.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>String</td>
</tr>
<tr>
<td>Source</td>
<td>The source for this attribute is the agent.</td>
</tr>
</tbody>
</table>

Warehouse name

Timestamp attribute

<table>
<thead>
<tr>
<th>Description</th>
<th>The local time at the agent when the data was collected.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>String</td>
</tr>
<tr>
<td>Source</td>
<td>The source for this attribute is the agent.</td>
</tr>
</tbody>
</table>

Warehouse name

PID attribute: This attribute is a key attribute.

<table>
<thead>
<tr>
<th>Description</th>
<th>The process identification number.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>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:</td>
</tr>
<tr>
<td></td>
<td>• Not Collected (-1)</td>
</tr>
<tr>
<td></td>
<td>• Value Exceeds Minimum (-2147483648)</td>
</tr>
<tr>
<td></td>
<td>• Value Exceeds Maximum (2147483647)</td>
</tr>
<tr>
<td></td>
<td>Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.</td>
</tr>
</tbody>
</table>

Warehouse name

Name attribute

<table>
<thead>
<tr>
<th>Description</th>
<th>The process name.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>String</td>
</tr>
</tbody>
</table>

Warehouse name

CPU Pct attribute

<table>
<thead>
<tr>
<th>Description</th>
<th>The percentage of CPU used by the process.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type</td>
<td>Integer (32-bit gauge) with enumerated values. The strings are displayed in the</td>
</tr>
</tbody>
</table>
Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:

- Not Collected (-1)
- Value Exceeds Minimum (-2147483648)
- Value Exceeds Maximum (2147483647)

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

**Warehouse name**

**CPU_PCT**

**Memory Pct attribute**

**Description**
The percentage of system memory that is used by the process.

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

- Not Collected (-1)
- Value Exceeds Minimum (-2147483648)
- Value Exceeds Maximum (2147483647)

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

**Warehouse name**
MEMORY_PCT

**Include Data In Summarization attribute**

**Description**
Indicates whether to include CPU_Pct and Memory_Pct from TDW summarization (0 = exclude, 1 = include).

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

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

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

**Source**
The source for this attribute is derived: \((\text{CPU\_Pct} < 0) \lor (\text{Memory\_Pct} < 0)\) ? 0 : 1.

**Warehouse name**
INCLUDE_DATA_IN_SUMMARIZATION or IDIS

**Server CPU Pools attribute group**

This attribute group contains information about the shared CPU Pools that are defined by this management console.

**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 Server CPU Pools 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

Pool Name attribute
Description
The name of the CPU Pool.
Type
String

Warehouse name
POOL_NAME

Server Name attribute
Description
The name of the managed server that owns this pool.
Type
String

Warehouse name
CEC_NAME

CEC Mfg attribute: This attribute is a key attribute.
Description
The manufacturer of this managed server (IBM).
Type
String

Warehouse name
CEC_MFG

Model attribute: This attribute is a key attribute.
Description
The model number of this managed server.
Type
String

Warehouse name
CEC_MODEL

Serial No. attribute: This attribute is a key attribute.
Description
The serial number of this managed server.
Type
String

Warehouse name
CEC_SN

Pool ID attribute: This attribute is a key attribute.
Description
The ID number of the CPU 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:
• Not Collected (-1)
Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

**Warehouse name**
POOL_ID

**Entitled Pool Capacity attribute**

**Description**
The sum of the LPAR entitlements plus the reserve sizes that are configured for the virtual processor pools.

**Type**
Real number (32-bit numeric property) 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:
- Not Collected (-100)

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

**Warehouse name**
POOL_SIZE

**Max Pool Capacity attribute**

**Description**
The maximum size of the pool in CPU Units.

**Type**
Real number (32-bit numeric property) 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:
- Not Collected (-100)

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

**Warehouse name**
MAX_POOL_SIZE or MPS

**CPU Units Used attribute**

**Description**
The total number of CPU units that are used by the LPARs in the pool.

**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:
- Not Collected (-100)

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

**Warehouse name**
CPU_UNITS_USED or CUU

**CPU Used Pct attribute**

**Description**
The percentage of the pool CPUs that is used.

**Type**
Real number (32-bit gauge) with one 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:
- Not Collected (-10)
Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

**Warehouse name**

CPU_USED_PCT or CUP

### CPU Free Pct attribute

**Description**
The percentage of the pool CPUs that is free.

**Type**
Real number (32-bit gauge) with one 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:
- Not Collected (-10)

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: (CPU_Used_Pct < 0)?-10:(100.0 - CPU_Used_Pct).

**Warehouse name**

CPU_FREE_PCT or CFP

### Available Pool CPUs attribute

**Description**
The number of CPU units available for LPARs to use.

**Type**
Real number (32-bit gauge) with two decimal places of precision with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:
- Not Collected (-100)

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: ((Max_Pool_Size * CPU_Units_Used) < 0)?-100: (Max_Pool_Size - CPU_Units_Used).

**Warehouse name**

AVAILABLE_POOL_CPU_UNITS or APCU

### Sample Timestamp attribute

**Description**
The timestamp of the most recent management console utilization sample collected.

**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:
- Not Collected (NA)
- No Samples (NoSamples)

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

**Warehouse name**

SAMPLE_TIMESTAMP or ST

### Sample Interval Seconds attribute

**Description**
The management console utilization sample interval in seconds.
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:
- Not Collected (-1)

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

Warehouse name
SAMPLE_INTERVAL or SI

Reserve Size attribute
Description
The amount of CPU over the LPAR entitlements that are reserved for the virtual processor pool.

Type
Real number (32-bit numeric property) 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:
- Not Collected (-100)

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

Warehouse name
RESERVE

Virtual CPUs attribute
Description
The total number of virtual CPUs defined in the 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:
- Not Collected (-1)

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

Warehouse name
VIRTUAL_CPUS or VC

Include Data In Summarization attribute
Description
Indicates whether the values for CPU_Units_Used, CPU_Used_Pct, CPU_Free_Pct, and Available_Pool_CPU_Units are included in TDW summarization (0 = exclude, 1 = include).

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

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

Source
The source for this attribute is derived: (CPU_Units_Used < 0) || (CPU_Used_Pct < 0) || (CPU_Free_Pct < 0) || (Available_Pool_CPU_Units < 0) || (Borrowed_CPU_Units_Used < 0)? 0 : 1.

Warehouse name
INCLUDE_DATA_IN_SUMMARIZATION or IDIS
**Borrowed CPU Units Used attribute**

**Description**
The total number of CPUs units used that were not explicitly assigned to the pool.

**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:

- Not Collected (-100)
- Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

**Warehouse name**
BORROWED_CPU_UNITS_USED or BCUU

---

**Server DAG attribute group**

This attribute group is the current list of managed servers that are being monitored.

**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 Server DAG attribute group:

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

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

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

- **Subnode Affinity attribute**
  - **Description**
  The affinity for the subnode agent.
  - **Type**
  String
  - **Warehouse name**
  SUBNODE_AFFINITY or SN_AFFIN

- **Subnode Type attribute:** This attribute is a key attribute.
Description
The Node Type of this subnode.
Type
String
Warehouse name
SUBNODE_TYPE or SN_TYPE

Subnode Resource Name attribute
Description
The Resource Name of the subnode agent.
Type
String
Warehouse name
SUBNODE_RESOURCE_NAME or SN_RES

Subnode Version attribute
Description
The Version of the subnode agent.
Type
String
Warehouse name
SUBNODE_VERSION or SN_VER

Server Details attribute group
This attribute group displays the managed servers defined in the management console.
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 Server 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

Server Name attribute
Description
The name of the managed server as known by the HMC.
Type
String
Warehouse name
CEC_NAME

CEC Mfg attribute: This attribute is a key attribute.
Description
The manufacturer of the managed server.
Type
- String

Warehouse name
- CEC_MFG

**CEC Model attribute:** This attribute is a key attribute.

**Description**
The model of the managed server.

**Type**
- String

**Warehouse name**
- CEC_MODEL

**CEC SN attribute:** This attribute is a key attribute.

**Description**
The serial number of the managed server.

**Type**
- String

**Warehouse name**
- CEC_SN

**State attribute**

**Description**
The status of the managed server.

**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:
  - Not Collected (-1)
  - Operating (0)
  - Power Off (1)
  - Standby (2)
  - Initializing (3)
  - No Connection (4)
  - Error (5)
  - Incomplete (6)
  - Recovery (7)

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

**Warehouse name**
- STATE

**Active Partitions attribute**

**Description**
The number of active logical partitions in the managed server.

**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:
  - Not Collected (-1)

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

**Warehouse name**
- NUM_PARTITIONS or NP

**CPU Total attribute**

**Description**
The total number of CPUs in the managed server.

**Type**
- Real number (32-bit gauge) with one 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:
  • Not Collected (-10)

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

**Warehouse name**
CPU_TOTAL

**CPU allocated attribute**

**Description**
The number of CPUs that are allocated to logical partitions.

**Type**
Real number (32-bit gauge) with one 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:
  • Not Collected (-10)

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

**Warehouse name**
CPU_ALLOCATED or CA

**CPU unallocated attribute**

**Description**
The number of CPUs that are unallocated in the managed server.

**Type**
Real number (32-bit gauge) with one 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:
  • Not Collected (-10)

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

**Warehouse name**
CPU_UNALLOCATED or CU

**Total Shared CPUs attribute**

**Description**
The number of CPUs in the shared pool.

**Type**
Real number (32-bit gauge) with one 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:
  • Not Collected (-10)

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

**Warehouse name**
TOTAL_SHARED_CPUS or TSC

**Total Mem MB attribute**

**Description**
The total amount of memory in the managed server.

**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:
• Not Collected (-1)

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

**Warehouse name**
TOTAL_MEM_MB or TMM

**Allocated Mem MB attribute**

**Description**
The amount of memory that is allocated to logical partitions.

**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:
• Not Collected (-1)

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

**Warehouse name**
ALLOCATED_MEM_MB or AMM

**Unallocated Mem MB attribute**

**Description**
The amount of memory that is not allocated on the managed server.

**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:
• Not Collected (-1)

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

**Warehouse name**
UNALLOCATED_MEM_MB or UMM

**Num proc pools attribute**

**Description**
The number of shared processor pools that are defined on the managed server.

**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:
• Not Collected (-1)

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

**Warehouse name**
NUM_PROC_POOLS or NPP

**Num mem pools attribute**

**Description**
The size of the shared memory pool that is defined on the managed server.

**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:
• Not Collected (-1)

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

**Warehouse name**
NUM_MEM_POOLS or NMP
**CPU Units Used attribute**
Description  
The total number of CPU units that are used by the managed server.

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:
• Not Collected (-100)

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

Warehouse name  
CPU_UNITS_USED or CUU

**CPU Used Pct attribute**
Description  
The percentage of managed server CPU capacity that is used.

Type  
Real number (32-bit gauge) with one 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:
• Not Collected (-10)

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

Warehouse name  
CPU_USED_PCT or CUP

**Firmware Version attribute**
Description  
The firmware version of the managed server.

Type  
String

Warehouse name  
FIRMWARE_VERSION or FV

**Dedicated CPU Units Used attribute**
Description  
The total number of CPU units that are used by dedicated LPARs.

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:
• Not Collected (-100)

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

Warehouse name  
DEDICATED_CPU_UNITS_USED or DCUU

**Dedicated CPU Used Pct attribute**
Description  
The percentage of CPU capacity for the managed server that is used by dedicated LPARs.

Type  
Real number (32-bit gauge) with one 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:

- Not Collected (-10)

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

**Warehouse name**

DEDICATED_CPU_USED_PCT or DCUP

**Shared CPU Units Used attribute**

**Description**
The total number of CPU units that are used by shared LPARs.

**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:

- Not Collected (-100)

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

**Warehouse name**

SHARED_CPU_UNITS_USED or SCUU

**Shared CPU Used Pct attribute**

**Description**
The percentage of server CPU capacity that is used by shared LPARs.

**Type**
Real number (32-bit gauge) with one 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:

- Not Collected (-10)

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

**Warehouse name**

SHARED_CPU_USED_PCT or SCUP

**Sample Timestamp attribute**

**Description**
The timestamp of the most recent management console utilization sample collected.

**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:

- Not Collected (NA)
- No Samples (NoSamples)

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

**Warehouse name**

SAMPLE_TIMESTAMP or ST

**Sample Interval Seconds attribute**

**Description**
The management console utilization sample interval in seconds.

**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:

- Not Collected (-1)

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

**Warehouse name**

SAMPLE_INTERVAL or SI

**Include CPU Data In Summarization attribute**

**Description**
Indicates whether the values for CPU_Total, CPU_allocated, and CPU_unallocated are included in TDW summarization (0 = exclude, 1 = include).

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

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

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

**Source**
The source for this attribute is derived: (CPU_Total < 0) || (CPU_allocated < 0) || (CPU_unallocated < 0) ? 0 : 1.

**Warehouse name**
INCLUDE_CPU_DATA_IN_SUMMARIZATION or ICDIS

**Include Memory Data In Summarization attribute**

**Description**
Indicates whether the values for Total_Mem_MB, Allocated_Mem_MB, and Unallocated_Mem_MB are included in TDW summarization (0 = exclude, 1 = include).

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

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

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

**Source**
The source for this attribute is derived: (Total_Mem_MB < 0) || (Allocated_Mem_MB < 0) || (Unallocated_Mem_MB < 0) ? 0 : 1.

**Warehouse name**
INCLUDE_MEMORY_DATA_IN_SUMMARIZATION or IMDIS

**Include Perf Data In Summarization attribute**

**Description**
Indicates whether the values for CPU_Units_Used, CPU_Used_Pct, Dedicated_CPU_Units_Used, Dedicated_CPU_Used_Pct, Shared_CPU_Units_Used, and Shared_CPU_Used_Pct are included in TDW summarization (0 = exclude, 1 = include).

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

- Value Exceeds Maximum (2147483647)
- Value Exceeds Minimum (-2147483648)
Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.

**Source**
The source for this attribute is derived: (CPU_Units_Used < 0) || (CPU_Used_Pct < 0) || (Dedicated_CPU_Units_Used < 0) || (Dedicated_CPU_Used_Pct < 0) || (Shared_CPU_Units_Used < 0) || (Shared_CPU_Used_Pct < 0)? 0 : 1.

**Warehouse name**
INCLUDE_PERF_DATA_IN_SUMMARIZATION or IPDIS

**Total CPUs Installed attribute**

**Description**
The total number of CPU units that are installed on this managed server.

**Type**
Real number (32-bit numeric property) with one 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:
- Not Collected (-10)

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

**Warehouse name**
TOTAL_INSTALLED_CPUS or TIC

**Total Memory Installed attribute**

**Description**
The total amount of memory that is installed on this managed server (MB).

**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:
- Not Collected (-1)

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

**Warehouse name**
TOTAL_INSTALLED_MEMORY_MB or TIMM

**Server LPARs attribute group**
This attribute group displays a list of LPARs managed by the management console.

**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 Server LPARs 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

**LPAR Name attribute**

**Description**
  The name of the logical partition.
**Type**
  String
**Warehouse name**
  LPAR_NAME

**Server Name attribute**

**Description**
  The name of the managed system on which the LPAR is located.
**Type**
  String
**Warehouse name**
  CEC_NAME

**Hostname attribute**

**Description**
  The host name of the LPAR.
**Type**
  String
**Warehouse name**
  HOSTNAME

**Partition ID attribute:** This attribute is a key attribute.

**Description**
  The LPAR ID.
**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:
  • Not Collected (-1)
  • Any other value is the value that is returned by the agent in the Tivoli Enterprise Portal.
**Warehouse name**
  PARTITION_ID or PI

**CEC Mfg attribute:** This attribute is a key attribute.

**Description**
  The manufacturer of the managed server.
**Type**
  String
**Warehouse name**
  CEC_MFG

**CEC Model attribute:** This attribute is a key attribute.

**Description**
  The model of the managed server.
**Type**
  String
**Warehouse name**
  CEC_MODEL

**CEC SN attribute:** This attribute is a key attribute.
Description
The serial number of the managed server.

Type
String

Warehouse name
CEC_SN

State attribute
Description
The current runtime state of the LPAR.

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:
- Not Collected (-1)
- Ready (0)
- Starting (1)
- Running (2)
- Error (3)
- Not Activated (4)
- Open Firmware (5)
- Not Available (6)
- Shutting Down (7)
- Suspending (8)
- Suspended (9)
- Resuming (10)
- Hardware Discovery (11)
- Migrating - Running (12)
- Migrating - Not Activated (13)

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

Warehouse name
STATE

Environment attribute
Description
The operating environment of the LPAR.

Type
String

Warehouse name
ENVIRONMENT or E

OS Version attribute
Description
The version information for the operating system of the LPAR.

Type
String

Warehouse name
OS_VERSION

Capped Mode attribute
Description
Indicates whether the LPAR is operating in capped or uncapped mode.

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:
- Not Collected (NotCollected)
- capped (capped)
• uncapped (uncapped)

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

Warehouse name
CAPPED_MODE or CM

Shared Mode attribute
Description
Indicates whether the LPAR is running in shared or dedicated mode.

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:
• Not Collected (NotCollected)
• shared (shared)
• dedicated (dedicated)

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

Warehouse name
SHARED_MODE or SM

Entitled Capacity attribute
Description
The amount of physical CPU, in CPU units, that the LPAR is entitled to use.

Type
Real number (32-bit numeric property) 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:
• Not Collected (-100)

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

Warehouse name
ENTITLED_CAPACITY or EC

CPU Pool Name attribute
Description
The name of the shared CPU pool that is used by the LPAR.

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:
• Not Collected (NotCollected)

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

Warehouse name
CPU_POOL_NAME or CPN

Donation Mode attribute
Description
Indicates whether the dedicated LPAR is donating idle CPU cycles, and if so, when.

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:
• Not Collected (-1)
• (0)
• None (1)
• Inactive (2)
• Active (3)
• Always (4)

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

Warehouse name  
DONATION_MODE or DM

**Number of CPUs attribute**

**Description**
The number of virtual CPUs (shared) or physical CPUs (dedicated) that the LPAR has.

**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:

- Not Collected (-1)

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

Warehouse name  
CPU_COUNT

**Uncapped Weight attribute**

**Description**
The uncapped weight for the shared uncapped LPAR.

**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:

- Not Collected (-1)

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

Warehouse name  
UNCAPPED_WEIGHT or UW

**CPU Units Used attribute**

**Description**
The total number of CPU units that are used by the LPAR.

**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:

- Not Collected (-100)

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

Warehouse name  
CPU_UNITS_USED or CUU

**Entitled Capacity Used Pct attribute**

**Description**
The percentage of the LPAR entitled capacity that is used.

**Type**
Real number (32-bit gauge) with one 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:
- Not Collected (-10)

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

**Warehouse name**

ENTITLED_CAPACITY_USED_PCT or ECUP

**CPU Capacity Used Pct attribute**

**Description**
The percentage of the LPAR maximum CPU capacity that is used.

**Type**
Real number (32-bit gauge) with one 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:
- Not Collected (-10)

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

**Warehouse name**

MAX_CPU_CAPACITY_USED_PCT or MCCUP

**Sample Timestamp attribute**

**Description**
The timestamp of the most recent management console utilization sample collected.

**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:
- Not Collected (NA)
- No Samples (NoSamples)

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

**Warehouse name**

SAMPLE_TIMESTAMP or ST

**Sample Interval Seconds attribute**

**Description**
The management console sample interval in seconds.

**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:
- Not Collected (-1)

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

**Warehouse name**

SAMPLE_INTERVAL or SI

**Include Data In Summarization attribute**

**Description**
Indicates whether the values for CPU_Units_Used, Entitled_Capacity_Used_Pct, and Max_CPU_Capacity_Used_Pct are included in TDW summarization (0 = exclude, 1 = include).

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

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

**Source**
The source for this attribute is derived: (CPU_Units_Used < 0) || (Entitled_Capacity_Used_Pct < 0) || (Max_CPU_Capacity_Used_Pct < 0) || (Available_Pool_CPU_Units < 0) ? 0 : 1.

**Warehouse name**
INCLUDE_DATA_IN_SUMMARIZATION or IDIS

**Available Pool CPUs attribute**

**Description**
The number of CPU units available for LPARs to use.

**Type**
Real number (32-bit gauge) with two decimal places of precision with enumerated values. The strings are displayed in the Tivoli Enterprise Portal. The warehouse and queries return the values that are shown in parentheses. The following values are defined:
- Not Collected (-100)

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

**Warehouse name**
AVAILABLE_POOL_CPU_UNITS or APCU

**Resource Configuration attribute**

**Description**
Indicates whether all the resources that are necessary to activate the LPAR are available. If an LPAR was never activated, resources for it are not available.

**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:
- Not Collected (-1)
- Not Configured (0)
- Configured (1)

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

**Warehouse name**
RESOURCE_CONFIGURATION or RC

**SVR 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 SVR 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

Version Information attribute group
This attribute group contains HMC version information.

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 Version Information 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

Version attribute

Description
The HMC version.

Type
String

Warehouse name
VERSION

Release attribute

Description
The HMC release level.

Type
String

Warehouse name
RELEASE

Base Version attribute

Description
The HMC Base version.

Type
String

Warehouse name
BASE_VERSION or BV

Build Level attribute

Description
The HMC build level.

Type
String

Warehouse name
BUILD_LEVEL or BL

OS Version attribute

Description
The operating system version.

Type
String

Warehouse name
OS_VERSION

hostname attribute

Description
The host name of the HMC.
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 21.

**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 21.

**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 HMC Base agent

<table>
<thead>
<tr>
<th>Table</th>
<th>Attribute group</th>
<th>Bytes per row (agent)</th>
<th>Database bytes per row (warehouse)</th>
<th>Aggregate bytes per row (warehouse)</th>
</tr>
</thead>
<tbody>
<tr>
<td>KPH03CPUSU</td>
<td>KPH_CPU_SUMMARY</td>
<td>120</td>
<td>122</td>
<td>327</td>
</tr>
<tr>
<td>KPH11CLPEV</td>
<td>KPH_EVENTS</td>
<td>588</td>
<td>597</td>
<td>634</td>
</tr>
<tr>
<td>KPH06FILES</td>
<td>KPH_FILE_SYSTEMS</td>
<td>580</td>
<td>584</td>
<td>789</td>
</tr>
<tr>
<td>KPH09MANAC</td>
<td>KPH_MANAGED_CECS</td>
<td>472</td>
<td>630</td>
<td>1447</td>
</tr>
<tr>
<td>KPH10MANAL</td>
<td>KPH_MANAGED_LPARS</td>
<td>744</td>
<td>752</td>
<td>789</td>
</tr>
<tr>
<td>KPH08MANAG</td>
<td>KPH_MANAGED_SYSTEMS</td>
<td>440</td>
<td>441</td>
<td>478</td>
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</table>

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: HMC Base Agent. You can change the conditions or values being monitored by a predefined situation to the conditions or values best suited to your enterprise.

You can display predefined situations and create your own situations using the Situation editor. The 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 HMC Base 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

- HMC Base
  - Not applicable
- Managed Environment
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.

HMC Base Navigator item

No predefined situations are included for this Navigator item.

Managed Environment Navigator item

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

KPH_LPAR_Migration_Info situation

Description

An LPAR Migration completed.
The situation is evaluated for each distinct value of LPAR_Name.

Formula

*IF *VALUE KPH_EVENTS.Event *EQ 'Migration_completed' *UNTIL ( *TTL 0:00:15:00 )

See "Attributes in each attribute group" on page 22 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

This situation clears after 0:00:15:00.

KPH_CEC_Added_Info situation

Description

A server was added to the list of managed servers for the HMC.
The situation is evaluated for each distinct value of CEC_Name.

Formula

*IF *VALUE KPH_EVENTS.Event *EQ 'CEC_added_to_HMC' *UNTIL ( *TTL 0:00:15:00 )

See "Attributes in each attribute group" on page 22 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
This situation clears after 0:00:15:00.

KPH_CEC_Deleted_Info situation

Description
A previously managed server is no longer managed by this HMC.
The situation is evaluated for each distinct value of CEC_Name.

Formula
*IF *VALUE KPH_EVENTS.Event *EQ 'CEC_deleted_from_HMC' *UNTIL ( *TTL 0:00:15:00 )

See “Attributes in each attribute group” on page 22 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
This situation clears after 0:00:15:00.

KPH_LPAR_Created_Info situation

Description
A logical partition was created on this managed server.
The situation is evaluated for each distinct value of LPAR_Name.

Formula
*IF *VALUE KPH_EVENTS.Event *EQ 'LPAR_created' *UNTIL ( *TTL 0:00:15:00 )

See “Attributes in each attribute group” on page 22 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
This situation clears after 0:00:15:00.

KPH_LPAR_Deleted_Info situation

Description
A logical partition was deleted from this managed server.
The situation is evaluated for each distinct value of LPAR_Name.

Formula
*IF *VALUE KPH_EVENTS.Event *EQ 'LPAR_deleted' *UNTIL ( *TTL 0:00:15:00 )

See “Attributes in each attribute group” on page 22 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**

This situation clears after 0:00:15:00.

**System Navigator item**

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

**KPH_Busy_CPU_Info situation**

**Description**

The percentage of idle time on the CPU is low.

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

**Formula**

\[ \text{IF } \text{VALUE KPH_CPU_SUMMARY.Idle_CPU_Pct } \lt 2 \]

See “Attributes in each attribute group” on page 22 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 minutes

**Situation persistence**

The number of times the conditions of the situation must occur for the situation to be true is 2.

**Error conditions**

Informational

**Clearing conditions**

The situation clears when the condition becomes false.

**KPH_Paging_Space_Full_Info situation**

**Description**

The percentage of used paging space is high.

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

**Formula**

\[ \text{IF } \text{VALUE KPH_PAGING_SPACE.Used_Pct } \gt 98 \]

See “Attributes in each attribute group” on page 22 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 minutes

**Situation persistence**

The number of times the conditions of the situation must occur for the situation to be true is 2.
KPH_Disk_Full_Warn situation

Description
The percentage of used space on the disk is high.
The situation is evaluated for each distinct value of the NAME attribute.

Formula
\[ \text{IF } \text{VALUE KPH_FILE_SYSTEMS.Used_Pct } \gt 98 \]

See "Attributes in each attribute group" on page 22 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 hour

Situation persistence
The number of times the conditions of the situation must occur for the situation to be true is 2.

Error conditions
Warning

Clearing conditions
The situation clears when the condition becomes false.

KPH_Runaway_Process_Info situation

Description
The CPU usage of a single process is higher than normal.
The situation is evaluated for each distinct value of the PID attribute.

Formula
\[ \text{IF } \text{VALUE KPH_PROCESSES_DETAIL.CPU_Pct } \gt 90 \]

See "Attributes in each attribute group" on page 22 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 minutes

Situation persistence
The number of times the conditions of the situation must occur for the situation to be true is 2.

Error conditions
Informational

Clearing conditions
The situation clears when the condition becomes false.

HMC Base Servers subnode
The situation descriptions are organized by the Navigator item to which the situations are relevant.

HMC Base Servers Navigator item
No predefined situations are included for this Navigator item.
CPU Pools Navigator item
KPH_CPU_Pool_High_Usage_Crit situation
Description
The CPU pool usage reached a critical threshold.
The situation is evaluated for each distinct value of the POOL_NAME attribute.

Formula
*IF *VALUE KPH_SERVER_CPU_POOLS.CPU_Used_Pct *GE 95
See ‘Attributes in each attribute group’ on page 22 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
Critical
Clearing conditions
The situation clears when the condition becomes false.

KPH_CPU_Pool_High_Usage_Warn situation
Description
The CPU pool usage reached a warning threshold.
The situation is evaluated for each distinct value of the POOL_NAME attribute.

Formula
*IF *VALUE KPH_SERVER_CPU_POOLS.CPU_Used_Pct *GE 85 *AND *VALUE KPH_SERVER_CPU_POOLS.CPU_Used_Pct *LT 95
See ‘Attributes in each attribute group’ on page 22 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 3.
Error conditions
Warning
Clearing conditions
The situation clears when the condition becomes false.

KPH_CPU_Pool_Borrowed_CPU_Warn situation
Description
The CPU pool is using borrowed CPU resources.
The situation is evaluated for each distinct value of the POOL_NAME attribute.

Formula
*IF *VALUE KPH_SERVER_CPU_POOLS.Borrowed_CPU_Units_Used *GT 0
See ‘Attributes in each attribute group’ on page 22 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 3.

Error conditions
Warning

Clearing conditions
The situation clears when the condition becomes false.

**LPARs Navigator item**

**KPH_LPAR_High_CPU_Usage_Crit situation**

Description
This CPU usage for the LPAR reached a critical threshold.
The situation is evaluated for each distinct value of the LPAR_NAME attribute.

Formula
*IF *VALUE KPH_SERVER_LPARS.Max_CPU_Capacity_Used_Pct *GE 95.0

See "Attributes in each attribute group" on page 22 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 3.

Error conditions
Critical

Clearing conditions
The situation clears when the condition becomes false.

**KPH_LPAR_High_CPU_Usage_Warn situation**

Description
This CPU usage for this LPAR reached a warning threshold.
The situation is evaluated for each distinct value of the LPAR_NAME attribute.

Formula
*IF *VALUE KPH_SERVER_LPARS.Max_CPU_Capacity_Used_Pct *GE 85.0 *AND *VALUE KPH_SERVER_LPARS.Max_CPU_Capacity_Used_Pct *LT 95.0

See "Attributes in each attribute group" on page 22 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 3.
**Error conditions**
- Warning

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

**KPH_LPAR_Limited_By_Pool_Warn situation**

**Description**
This LPAR is limited by the lack of available pool resources.

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

**Formula**

\[
\text{IF VALUE KPH_SERVER_LPARS.Capped_Mode EQ 'uncapped'} \text{ AND VALUE KPH_SERVER_LPARS.Available_Pool_CPU_Units EQ 0.00} \text{ AND VALUE KPH_SERVER_LPARS.Entitled_Capacity_Used_Pct GE 100.0} \text{ AND VALUE KPH_SERVER_LPARS.Max_CPU_Capacity_Used_Pct LT 100.0}
\]

See “Attributes in each attribute group” on page 22 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 3.

**Error conditions**
- Warning

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

**Server Navigator item**

**KPH_Server_High_CPU_Util_Crit situation**

**Description**
The CPU usage for the server reached a critical threshold.

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

**Formula**

\[
\text{IF VALUE KPH_SERVER_DETAILS.CPU_Used_Pct GE 90}
\]

See “Attributes in each attribute group” on page 22 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**
- Critical

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

**KPH_Server_High_CPU_Util_Warn situation**

**Description**
The CPU usage of the server reached a warning threshold.
The situation is evaluated for each distinct value of the CEC_NAME attribute.

**Formula**

\[
*IF \ \text{VALUE KPH SERVER DETAILS.CPU Used Pct} \ \text{GE 75 AND VALUE KPH SERVER DETAILS.CPU Used Pct} \ \text{LT 90}
\]

See “Attributes in each attribute group” on page 22 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 3.

**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.

Predefined Take Action commands

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

The IBM Tivoli Monitoring: HMC Base Agent does not provide predefined Take Action commands.
Chapter 7. Policies reference

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

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

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

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

### Predefined policies

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

The IBM Tivoli Monitoring: HMC Base Agent does not provide predefined policies.
Chapter 8. Tivoli Common Reporting for the System p monitoring agents

Use the agent-specific information with the Tivoli Common Reporting information in the *IBM Tivoli Monitoring Administrator’s Guide* for complete information about prerequisites, importing reports, and running reports.

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

The reports in this package are historical reports, reporting against summarized data collected in Tivoli Data Warehouse V6.2.2. These reports are built to run against only the IBM Tivoli Monitoring VIOS Premium, CEC Base, and HMC Base agents.

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

The Cognos reports can be administered, run, and edited by Tivoli Common Reporting V2.1.1 or later. For more information about Tivoli Common Reporting, see the Tivoli Common Reporting Community (https://www.ibm.com/developerworks/mydeveloperworks/groups/service/html/communityview?communityUuid=9caf63c9-15a1-4a03-96b3-8fc700f3a364).

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

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://pic.dhe.ibm.com/infocenter/tivihelp/v3r1/topic/com.ibm.tivoli.tcr.doc_211/ic-home.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 (https://www.ibm.com/developerworks/mydeveloperworks/groups/service/html/communityview?communityUuid=9caf63c9-15a1-4a03-96b3-8fc700f3a364).

Prerequisites

The Cognos reports require the completion of prerequisite steps for the reports to run.

All of the following prerequisite steps must be completed or the reports cannot run:

- Install Tivoli Common Reporting V2.1.1 or V3.1.
- Obtain the reports from the product media.
- Enable historical collection and configure summarization and pruning for CEC Base, VIOS Premium, and HMC Base agents.
- Connect to Tivoli Data Warehouse by using the database client over ODBC.
Install Tivoli Common Reporting V2.1.1 or V3.1

Tivoli Common Reporting V2.1.1 or V3.1 must be installed and running.

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 V2.1.1 Information Center](http://pic.dhe.ibm.com/infocenter/tivihelp/v3r1/topic/com.ibm.tivoli.tcr.doc_211/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.

About this task

Procedure

1. Locate the Cognos reports in the following directory: `Product Media root/REPORTS`.

   **Important**: See the [IBM Tivoli Monitoring Download instructions](http://pic.dhe.ibm.com/infocenter/tivihelp/v6r1/topic/com.ibm.itm.doc_6.3/dld_itm63.htm) for the part numbers for the IBM Tivoli Monitoring for System p V6.2.2 Interim Feature 3. The new package has the new reports.

2. Copy these files to any location on the same computer where the Tivoli Common Reporting server is installed.

Configure historical collection

Historical collection must be enabled and summarization and pruning configured for the CEC Base, VIOS Premium, and HMC Base agents

Before you begin

Install and configure IBM Tivoli Monitoring V6.2.2 Fix Pack 2 and install and configure the CEC, VIOS, and HMC Base agents, 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 warehouse summarization and pruning in IBM Tivoli Monitoring, see “Managing historical data” in the *IBM Tivoli Monitoring Administrator’s Guide*.

Procedure

1. Enable daily and hourly summarization for the tables listed in Table 2 on page 93

   **Note**: Some reports support additional summarization types such as Weekly and Monthly. Best practice is not to turn on these summarizations unless you want to run the reports against these summarization types. Running the prerequisite scanner report on a per-report basis provides you with the list of attribute groups (and summarizations) that are used for each report.
### Table 2. Tables for daily and hourly summarization

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Table 2. Tables for daily and hourly summarization (continued)

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<td></td>
<td>• KVA_INTERNET_PROTOCOL_SUMMARY</td>
</tr>
<tr>
<td></td>
<td>• KVA_LOGICAL_PARTITION</td>
</tr>
<tr>
<td></td>
<td>• KVA_LOGICAL_VOLUMES</td>
</tr>
<tr>
<td></td>
<td>• KVA_MPIO_ATTRIBUTES</td>
</tr>
<tr>
<td></td>
<td>• KVA_MPIO_STATUS</td>
</tr>
<tr>
<td></td>
<td>• KVA_NETWORK_ADAPTERS_RATES</td>
</tr>
<tr>
<td></td>
<td>• KVA_NETWORK_MAPPINGS</td>
</tr>
<tr>
<td></td>
<td>• KVA_PAGING_SPACE</td>
</tr>
<tr>
<td></td>
<td>• KVA_PHYSICAL_MEMORY</td>
</tr>
<tr>
<td></td>
<td>• KVA_PHYSICAL_VOLUMES</td>
</tr>
<tr>
<td></td>
<td>• KVA_PROCESSES_DETAIL</td>
</tr>
<tr>
<td></td>
<td>• KVA_PROCESSES_SUMMARY</td>
</tr>
<tr>
<td></td>
<td>• KVA_SYSTEM_CALL</td>
</tr>
<tr>
<td></td>
<td>• KVA_SYSTEM_IO</td>
</tr>
<tr>
<td></td>
<td>• KVA_STORAGE_MAPPINGS</td>
</tr>
<tr>
<td></td>
<td>• KVA_TCP</td>
</tr>
<tr>
<td></td>
<td>• KVA_VIRTUAL_MEMORY_MANAGEMENT</td>
</tr>
<tr>
<td></td>
<td>• KVA_VOLUME_GROUPS</td>
</tr>
<tr>
<td></td>
<td>• KVA_FC_STATS</td>
</tr>
</tbody>
</table>

2. To ensure that the required views are present, run the query in Table 3 for the applicable database against Tivoli Data Warehouse.

Table 3. Queries for databases

<table>
<thead>
<tr>
<th>Database</th>
<th>Query</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB2</td>
<td>select distinct &quot;VIEWNAME&quot; from SYSCAT.VIEWS where &quot;VIEWNAME&quot; like '%V'</td>
</tr>
<tr>
<td>Oracle</td>
<td>select distinct &quot;VIEW_NAME&quot; from USER_VIEWS where &quot;VIEW_NAME&quot; like '%V'</td>
</tr>
<tr>
<td>MS SQL Server</td>
<td>select distinct &quot;NAME&quot; from SYS.VIEWS where &quot;NAME&quot; like '%V'</td>
</tr>
</tbody>
</table>

The result set contains the following views:

- **CEC Base agent**
  - KPK_AMS_POOLS_HV, KPK_AMS_POOLS_DV
  - KPK_CPU_POOLS_HV, KPK_CPU_POOLS_DV
  - KPK_DIRECTOR_HV, KPK_DIRECTOR_DV
  - KPK_GLOBAL_CEC_HV, KPK_GLOBAL_CEC_DV
  - KPK_MON_LPARS_HV, KPK_MON_LPARS_DV
  - KPK_MON_UNMON_ALLOC_HV, KPK_MON_UNMON_ALLOC_DV
  - KPKPOBJST_HV, KPKPOBJST_DV
  - KPK_PER_LPAR_HV, KPK_PER_LPAR_DV

- **HMC Base agent**
  - KPH_CPU_SUMMARY_HV, KPH_CPU_SUMMARY_DV
Create indexes

Database scripts are provided in the scripts folder to create indexes for enhanced reporting performance in the Tivoli Data Warehouse. If your data warehouse is not prepared with history before installation, the scripts cause errors. Before you run the scripts to create indexes, ensure that historical collection is enabled for the tables that are required to run the reports. You can manually run one the following scripts, depending on your database type:

- scripts/db2/create_index.db2
- scripts/mssql/create_index.sql
- scripts/oracle/create_index.sql

Note: If you are using a schema other than ITMUSER, update the create_index scripts by replacing all instances of ITMUSER with your schema name before you run the scripts.
For example, change ITMUSER in the following script:

```
CREATE INDEX ITMUSER.
KPK_RPT_GLOBAL_CEC_H ON ITMUSER.KPK_GLOBAL_CEC_H
("LAT_Machine_ID" ASC, WRITETIME ASC, SHIFTPERIOD ASC, VACATIONPERIOD ASC)
PCTFREE 10 MINPCTUSED 10 ALLOW REVERSE SCANS
PAGE SPLIT SYMMETRIC COLLECT SAMPLED DETAILED
STATISTICS ;
```

The following script is the corrected version where ITMUSER is replaced with your schema name:

```
CREATE INDEX Schema_Name.
KPK_RPT_GLOBAL_CEC_H ON Schema_Name.KPK_GLOBAL_CEC_H
("LAT_Machine_ID" ASC, WRITETIME ASC, SHIFTPERIOD ASC, VACATIONPERIOD ASC)
PCTFREE 10 MINPCTUSED 10 ALLOW REVERSE SCANS
PAGE SPLIT SYMMETRIC COLLECT SAMPLED DETAILED STATISTICS ;
```


Although indexes help in enhancing report performance, some limitations apply: Use indexes only when you have large tables with thousands of rows, because indexes degrade the performance of insert, update, and delete operations on a table. You can run a script to drop these indexes if you have performance issues:

- scripts/db2/drop_index.db2
- scripts/mssql/drop_index.sql
- scripts/oracle/drop_index.sql

These index scripts were tested with Tivoli Common Reporting 2.1.1 and Tivoli Common Reporting 3.1. In general, the reports perform better in Tivoli Common Reporting 3.1 with or without the indexes. The following reports showed significant performance improvements on using indexes (50% or higher reduction in run time):

- CEC Base Agent LPAR Physical CPU Utilization Details
- CEC Base Agent LPAR Physical Memory Utilization Details
- HMC Base Agent CPU Pool Usage Details
- HMC Base Agent LPAR Physical CPU Usage Details
- VIOS Premium Agent Disk Capacity Details
- VIOS Premium Agent Physical Fibre Channel Adapter Utilization
- CEC Base Agent Top or Bottom CECs by Physical Memory Utilization
- CEC Base Agent Top or Bottom LPARs by Physical CPU Utilization
- CEC Base Agent Top or Bottom LPARs by Physical Memory Utilization
- HMC Base Agent Top or Bottom LPARs by Physical CPU Usage

The results were obtained by testing the index scripts against a DB2 warehouse by using Tivoli Common Reporting 3.1 on a Windows Server 2008 R2 operating system. The warehouse had historical data that was collected for 15 managed servers and 213 LPARs for seven days.

**Connect to the Tivoli Data Warehouse**

Connect to Tivoli Data Warehouse by using the database client over ODBC.

**About this task**

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 where 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:

<table>
<thead>
<tr>
<th>Database</th>
<th>How to connect</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB2</td>
<td>Connect by running the Configuration Assistant, configuring the local net service name configuration, and restarting your system.</td>
</tr>
<tr>
<td>Oracle</td>
<td>Connect by running the Oracle Net Configuration Assistant, configuring the local net service name configuration, and restarting your system.</td>
</tr>
<tr>
<td>MS SQL Server</td>
<td>Connect by running the MS SQL Management Studio Express®, configuring the local net service name configuration, and restarting your system.</td>
</tr>
</tbody>
</table>

**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 System p Cognos reports to run any report from the System p 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 91 for the steps.

Note: With this release, the reports package name does not contain the release version such as 6.2.2, 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 Tivoli Integrated Portal. Before installing the reports, be sure you back up the existing reports package if the name is IBM Tivoli Monitoring for System P Reports.

About this task

The IBM Tivoli Monitoring for System p 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 completing the steps for importing and running Cognos reports, you can run any report from the IBM Tivoli Monitoring for System p 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 where you extracted the reports package, run the file in Table 4 on page 98 depending on your operating system.
Table 4. Setup files

<table>
<thead>
<tr>
<th>Operating system</th>
<th>File</th>
</tr>
</thead>
<tbody>
<tr>
<td>AIX</td>
<td>setup_aix.bin</td>
</tr>
<tr>
<td>HP-UX</td>
<td>setup_hpux.bin</td>
</tr>
<tr>
<td>Linux</td>
<td>setup_linux.bin</td>
</tr>
<tr>
<td>Solaris</td>
<td>setup_solaris.bin</td>
</tr>
<tr>
<td>Windows</td>
<td>setup_windows.exe</td>
</tr>
</tbody>
</table>

- 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
  ```

  **Note:** 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). Use the following paths:
   - For Tivoli Common Reporting V2.1.1, the default path is `C:\IBM\tivoli\tipv2Components\TCRComponent` or `/opt/IBM/tivoli/tipv2Components/TCRComponent`. The path must end with the `/TCRComponent` folder.
   - For Tivoli Common Reporting V3.1, the default path is `C:\Program Files\IBM\JazzSM\reporting` or `/opt/IBM/JazzSM/reporting`. The path must end with the `/reporting` folder.

  **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 System P Cognos Reports** check box.
7. Provide Tivoli Common Reporting credentials: user name and password.
8. Configure Cognos data sources to connect to Tivoli Data Warehouse.

  **Note:** If you have a Tivoli Data Warehouse connection already defined in Tivoli Common Reporting (from a previous installation of reports), skip this 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 yes, then skip this step in the installation. You must manually configure the data source in Tivoli Common Reporting through this administration panel as described in [Configuring database connection](http://publib.boulder.ibm.com/infocenter/tivihelp/v3r1/topic/com.ibm.tivoli.tcr.doc_21/tcr_config_db.html). If you did not define a data source in Tivoli Common Reporting, do not skip this option. You must enter the database alias name or the ODBC name for the database name input field.
9. In the next panel, enter the JDBC credentials. The JDBC connection is used to run the Common Dimensions scripts against Tivoli Data Warehouse. Provide the database admin (db2admin, system, and so on) user name and password in the Configure data script window for JDBC User Credentials. 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 table spaces in your database, you must create them in your Tivoli Data Warehouse before you can run these scripts.
Note: If you already have these 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 time granularity that is different from what is in the Tivoli Data Warehouse, you can skip this step and 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.

10. Select 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.

<table>
<thead>
<tr>
<th>Database</th>
<th>Required driver file name</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB2</td>
<td>db2jcc.jar and db2jcc_license_cu.jar</td>
</tr>
<tr>
<td>Oracle</td>
<td>oraclethin.jar</td>
</tr>
<tr>
<td>SQL Server</td>
<td>sqljdbc.jar</td>
</tr>
</tbody>
</table>

11. On the pre-installation summary panel, all reports selected for installation are displayed.

12. 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 3 messages. One for the status of importing reports, one for the status of defining the data source, and one for the status of running database scripts. 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:

1. Go to Tivoli Common Reporting and see whether IBM Tivoli Monitoring for System P Reports is displayed in the Public Folders.
2. Go to TCR > Launch Administration > Configuration > Data Source Connections and see whether Tivoli Data Warehouse was defined. Click Tivoli Data Warehouse.
3. On the next page, Tivoli Data Warehouse has a Test Connection icon next to it. Click the Test connection icon to make sure that you are connected to the database.
4. Go to TCR > Launch Query Studio. Select IBM Tivoli Monitoring for System P Reports. In the left navigation, all the data is displayed.
5. Browse to IBM Tivoli Monitoring for System P Reports > ITM for System P Agents (Query) > TCR Shared Dimensions (Query) > Time.
6. Drag Date into the space on the left. If no data is displayed, Time Dimension was not defined correctly.
Uninstalling reports

The reports installer does not support uninstalling reports. However, you can manually delete the reports packages by using the Tivoli Integrated Portal.

About this task

To delete the reports manually, use the Tivoli Integrated Portal for Tivoli Common Reporting 2.1.1 or later or the Dashboard Application Services Hub for Tivoli Common Reporting 3.1.

Procedure

Use the following procedure to uninstall reports manually:
1. Log in to the Tivoli Common Reporting interface, and go to Common Reporting.
2. In the Work with reports window, click the check box for the reports package that you want to delete.
3. Click the Delete icon.

Predefined Cognos reports

The System p agents provide five categories of Cognos reports: What if analysis for workload placement, Performance trends and resource forecasts, Workload right-sizing and balancing, Accounting, and Prerequisites checking.

The following predefined reports are available:
• **Prerequisites checking**
  – System p Report Prerequisite Scanner

• **Accounting**
  – HMC Base Agent Number of Managed Servers and LPARs monitored

• **Performance trends and resource forecasts**
  – CEC Base Agent CPU Pools Utilization Details
  – CEC Base Agent Frame Workload Trend and Forecast
  – CEC Base Agent LPAR Physical CPU Utilization Details
  – CEC Base Agent LPAR Physical Memory Utilization Details
  – CEC Base Agent LPAR Workload Trend and Forecast
  – HMC Base Agent CPU Pools Utilization Details
  – HMC Base Agent LPAR CPU Trend and Forecast
  – HMC Base Agent LPAR Heat Chart
  – HMC Base Agent LPAR Physical CPU Usage Details
  – HMC Base Agent Managed Server CPU Trend and Forecast
  – HMC Base Agent Managed Server Forecast Alerts
  – HMC Base Agent Managed Server Heat Chart
  – HMC Base Agent Managed Server Performance Trends
  – HMC Base Agent Managed Server Weekly Comparison
  – VIOS Premium Agent Disk Capacity Details
  – VIOS Premium Agent Physical Fibre Channel Adapter Utilization
  – VIOS Premium Agent Shared Ethernet Adapter Utilization

• **What if analysis for workload placement**
  – CEC Base Agent Number of LPARs for CEC
  – CEC Base Agent Resources Needed for Additional LPARS on CEC
  – HMC Base Agent Number of LPARs for Managed Server
  – HMC Base Agent Resources Needed For Additional LPARs on Managed Server

• **Workload right-sizing and balancing**
  – CEC Base Agent Balanced and Unbalanced CECs
  – CEC Base Agent Top or Bottom CECs by Physical CPU Utilization
  – CEC Base Agent Top or Bottom CECs by Physical Memory Utilization
  – CEC Base Agent Top or Bottom LPARs by Physical CPU Utilization
  – CEC Base Agent Top or Bottom LPARs by Physical Memory Utilization
  – HMC Base Agent Top or Bottom LPARs by Physical CPU Usage
  – HMC Base Agent Top or Bottom Managed Servers by Physical CPU Utilization
  – VIOS Premium Agent Top or Bottom VIOSs by Disk Capacity

**Attribute groups**

The Cognos reports use the following attribute groups (agent codes: KPH for the HMC Base agent, KPK for the CEC Base agent, KVA for the VIOS Premium agent):

• KPH_MANAGED_CECS
• KPH_SERVER_DETAILS_HV
• KPH_SERVER_DETAILS_DV
• KPH_SERVER_DETAILS_WV
• KPH_SERVER_DETAILS_MV
Prerequisites Checking reports
One predefined report is available for prerequisites checking for the System p agents.

The following report is available for prerequisites checking: System p Report Prerequisite Scanner

**System p Report Prerequisite Scanner report**
This report runs against DB2, Oracle, or MS SQL Server databases and determines whether all prerequisite tables and views are present to successfully run System p reports (all reports or on a per-report basis).

<table>
<thead>
<tr>
<th>Report element</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Parameters</strong></td>
<td>To run the Prerequisite Scanner, ensure that you defined and tested a database (DB2, MS SQL Server, or Oracle) connection to the Tivoli Data Warehouse and choose the appropriate connection to generate the Prerequisite Scanner Report.</td>
</tr>
<tr>
<td><strong>Database Type</strong></td>
<td>DB2, MS SQL Server, or Oracle</td>
</tr>
<tr>
<td><strong>Display Options</strong></td>
<td>Check all reports or a specific report by choosing from a category within the reports package.</td>
</tr>
<tr>
<td>Report element</td>
<td>Details</td>
</tr>
<tr>
<td>------------------------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Tables or views used</td>
<td><strong>DB2</strong></td>
</tr>
<tr>
<td></td>
<td>SYSCAT.VIEWS</td>
</tr>
<tr>
<td></td>
<td>SYSCAT.TABLES</td>
</tr>
<tr>
<td></td>
<td><strong>Oracle</strong></td>
</tr>
<tr>
<td></td>
<td>SYS.ALL_VIEWS</td>
</tr>
<tr>
<td></td>
<td>SYS.ALL_TABLES</td>
</tr>
<tr>
<td></td>
<td><strong>MS SQL Server</strong></td>
</tr>
<tr>
<td></td>
<td>INFORMATION_SCHEMA.VIEWS</td>
</tr>
<tr>
<td></td>
<td>INFORMATION_SCHEMA.TABLES</td>
</tr>
</tbody>
</table>

**Output**

A legend is displayed at the beginning of the report that shows the meaning of the symbols that are displayed under the Status column. A red cross and a yellow exclamation point (!) indicate error conditions. When an error is indicated, a corrective action is suggested that includes links to the appropriate documentation. The table contains two columns:

- **Missing Tables/Views from IBM Tivoli Monitoring for System p agent**
  In the first column, missing tables and views are listed in order, showing status with a red cross or a yellow exclamation point (!). Available tables and views are shown with a green check mark.

- **Missing Table/Views for Shared Dimensions**
  In the second column, the IBM_TRAM schema followed by TIME_DIMENSION, WEEKDAY_LOOKUP, MONTH_LOOKUP and ComputerSystem under the IBM_TRAM schema are checked for availability.

If all the tables and views are available in the warehouse, a report might not run because of inadequately generated timestamps. In this case, run the appropriate database scripts to populate the TIME_DIMENSION table. When you run the prerequisite scanner to check a specific report, the IBM Tivoli Monitoring tables that are used for implementation are checked for availability and a status is displayed for each of the tables that are used. Since the TIME_DIMENSION table is used by most predefined reports, you can check availability by clicking a hyperlink that is provided in the report.

**Note:** While configuring historical collection, see “Attributes in each attribute group” on page 22 for information about the attribute groups.

### Accounting reports

One predefined accounting report is available for the System p agents.

The following report is available for accounting: HMC Base Agent Number of Managed Servers and LPARs monitored.

**HMC Base Agent Number of Managed Servers and LPARs monitored report**

This report provides the number of managed servers, logical partitions, and processor cores that are monitored by the HMC Base agent for the Power Hypervisor.

<table>
<thead>
<tr>
<th>Report element</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parameters</td>
<td>None</td>
</tr>
<tr>
<td>Tables or views used</td>
<td>KPH_MANAGED_CECs</td>
</tr>
</tbody>
</table>
This report contains a table that provides the following information:

- Number of managed servers, logical partitions, and processor cores that are running against each server in the environment
- Total number of managed servers, logical partitions, and processor cores that are monitored for the Power hypervisor

### Performance trends and resource forecasts reports

You can generate performance trends and forecasts for resources like CPU and memory for the System p environment using these predefined reports.

The following reports are available for performance trends and resource forecasts:

- CEC Base Agent CPU Pools Utilization Details
- CEC Base Agent Frame Workload Trend and Forecast
- CEC Base Agent LPAR Physical CPU Utilization Details
- CEC Base Agent LPAR Physical Memory Utilization Details
- CEC Base Agent LPAR Workload Trend and Forecast
- HMC Base Agent CPU Pools Utilization Details
- HMC Base Agent LPAR CPU Trend and Forecast
- HMC Base Agent LPAR Heat Chart
- HMC Base Agent LPAR Physical CPU Usage Details
- HMC Base Agent Managed Server CPU Trend and Forecast
- HMC Base Agent Managed Server Forecast Alerts
- HMC Base Agent Managed Server Heat Chart
- HMC Base Agent Managed Server Performance Trends
- HMC Base Agent Managed Server Weekly Comparison
- VIOS Premium Agent Disk Capacity Details
- VIOS Premium Agent Physical Fibre Channel Adapter Utilization
- VIOS Premium Agent Shared Ethernet Adapter Utilization
**CEC Base Agent CPU Pools Utilization Details report**

This report shows the CPU usage of all pools that are stacked up in a CEC or Frame over time.

<table>
<thead>
<tr>
<th>Report element</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Parameters</strong></td>
<td><strong>Date Range</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Report Period</strong></td>
</tr>
<tr>
<td></td>
<td>You can choose from a predefined date range such as Last Week, Current Month, and Last 30 Days. Alternatively, you can enter a start and end date and time for the reporting period by choosing the <strong>Date Range (below)</strong> option.</td>
</tr>
<tr>
<td></td>
<td><strong>Start Date</strong></td>
</tr>
<tr>
<td></td>
<td>You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected.</td>
</tr>
<tr>
<td></td>
<td><strong>End Date</strong></td>
</tr>
<tr>
<td></td>
<td>You can choose an end date from a calendar and an end time from the time widget. Both date and time must be selected.</td>
</tr>
<tr>
<td><strong>Resource Selection</strong></td>
<td><strong>CEC</strong></td>
</tr>
<tr>
<td></td>
<td>Select the CEC you want from the environment.</td>
</tr>
<tr>
<td><strong>Display Option</strong></td>
<td><strong>Summarization Type</strong></td>
</tr>
<tr>
<td></td>
<td>Choose the summarization type from the drop-down list. The options are Hourly, Daily (the default value), Weekly, and Monthly.</td>
</tr>
<tr>
<td></td>
<td><strong>Shift Period</strong></td>
</tr>
<tr>
<td></td>
<td>If shifts are enabled, the hourly tables have a value for SHIFTPERIOD of 1 or 2, based on off-peak and peak hours that are configured in the data warehouse. The daily tables have values of 1 for off-peak hours, 2 for peak hours, and -1 for the summarized value for that day. If the shifts are not enabled, the default value is -1.</td>
</tr>
<tr>
<td></td>
<td><strong>Vacation Period</strong></td>
</tr>
<tr>
<td></td>
<td>If the Vacation Period option is not enabled, the default value is -1. Otherwise, enter 0 for work days or 1 for vacation days.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tables or views used</th>
<th>KPK_CPU_POOLS_DV</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>KPK_CPU_POOLS_HV</td>
</tr>
<tr>
<td></td>
<td>KPK_CPU_POOLS_WV</td>
</tr>
<tr>
<td></td>
<td>KPK_CPU_POOLS_MV</td>
</tr>
<tr>
<td></td>
<td>KPK_GLOBAL_CEC_DV</td>
</tr>
<tr>
<td></td>
<td>KPK_GLOBAL_CEC_HV</td>
</tr>
<tr>
<td></td>
<td>KPK_GLOBAL_CEC_WV</td>
</tr>
<tr>
<td></td>
<td>KPK_GLOBAL_CEC_MV</td>
</tr>
<tr>
<td></td>
<td>KPK_MON_LPARS_DV</td>
</tr>
</tbody>
</table>

**Note:** Although the report supports Weekly and Monthly summarization types, if you do not plan to run the report for these summarizations, do not configure these summarizations for the attribute groups on the Tivoli Enterprise Portal Server.
**Report element** | **Details**
--- | ---
**Output** | This report contains an area chart that shows the total CPU units that are used by CPU Pools over a selected period. The table shows various CPU attributes such as Average CPU Pool Units Consumed, Average Maximum CPU Pool Capacity, Allocated CEC CPU Units, and Total CEC CPU Units.

---

**CEC Base Agent Frame Workload Trend and Forecast report**
This report shows a linear forecast of CPU and memory utilization for the frame.

<table>
<thead>
<tr>
<th>Report element</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Parameters</strong></td>
<td><strong>Resource</strong></td>
</tr>
<tr>
<td></td>
<td><strong>CEC</strong></td>
</tr>
<tr>
<td></td>
<td>Select the CEC you want from the environment.</td>
</tr>
<tr>
<td><strong>Date Range</strong></td>
<td><strong>Report Period</strong></td>
</tr>
<tr>
<td></td>
<td>You can choose from a predefined date range such as Last Week, Current Month, and Last 30 Days. Alternatively, you can enter a start and end date and time for the reporting period by choosing the <strong>Date Range (below)</strong> option.</td>
</tr>
<tr>
<td></td>
<td><strong>Forecast Period (Days)</strong></td>
</tr>
<tr>
<td></td>
<td>The number of days to forecast.</td>
</tr>
<tr>
<td><strong>Display Options</strong></td>
<td><strong>Shift Period</strong></td>
</tr>
<tr>
<td></td>
<td>If shifts are enabled, the hourly tables have a value for SHIFTPERIOD of 1 or 2, based on off-peak and peak hours that are configured in the data warehouse. The daily tables have values of 1 for off-peak hours, 2 for peak hours, and -1 for the summarized value for that day. If the shifts are not enabled, the default value is -1.</td>
</tr>
<tr>
<td></td>
<td><strong>Vacation Period</strong></td>
</tr>
<tr>
<td></td>
<td>If the Vacation Period option is not enabled, the default value is -1. Otherwise, enter 0 for work days or 1 for vacation days.</td>
</tr>
<tr>
<td></td>
<td><strong>Thresholds (%)</strong></td>
</tr>
<tr>
<td></td>
<td>CPU and memory thresholds to compare against the forecasted values.</td>
</tr>
<tr>
<td><strong>Tables or views used</strong></td>
<td><strong>KPK_MON_UNMON_ALLOC_DV</strong></td>
</tr>
<tr>
<td></td>
<td><strong>KPK_GLOBAL_CEC_DV</strong></td>
</tr>
<tr>
<td><strong>Output</strong></td>
<td>This report contains line charts for CEC CPU and memory usage and the forecasted usage values.</td>
</tr>
</tbody>
</table>

---

**CEC Base Agent LPAR Physical CPU Utilization Details report**
This report shows the CPU usage for all LPARs in all the CPU pools in a CEC or Frame over time as compared to the maximum capacity of the pools.
<table>
<thead>
<tr>
<th>Report element</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parameters</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Date Range</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Report Period</strong></td>
</tr>
<tr>
<td></td>
<td>You can choose from a predefined date range such as Last Week, Current Month, and Last 30 Days. Alternatively, you can enter a start and end date and time for the reporting period by choosing the <strong>Date Range (below)</strong> option.</td>
</tr>
<tr>
<td></td>
<td><strong>Start Date</strong></td>
</tr>
<tr>
<td></td>
<td>You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected.</td>
</tr>
<tr>
<td></td>
<td><strong>End Date</strong></td>
</tr>
<tr>
<td></td>
<td>You can choose an end date from a calendar and an end time from the time widget. Both date and time must be selected.</td>
</tr>
<tr>
<td>Display Options</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>CEC</strong></td>
</tr>
<tr>
<td></td>
<td>Select the CEC you want from the environment.</td>
</tr>
<tr>
<td></td>
<td><strong>LPAR</strong></td>
</tr>
<tr>
<td></td>
<td>Select the LPAR you want (one or many) from the specified CEC.</td>
</tr>
<tr>
<td></td>
<td><strong>Summarization Type</strong></td>
</tr>
<tr>
<td></td>
<td>Choose the summarization type from the drop-down list. The options are Hourly, Daily (the default value), Weekly, and Monthly.</td>
</tr>
<tr>
<td>Shift and Vacation Periods</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Shift Period</strong></td>
</tr>
<tr>
<td></td>
<td>If shifts are enabled, the hourly tables have a value for SHIFTPERIOD of 1 or 2, based on off-peak and peak hours that are configured in the data warehouse. The daily tables have values of 1 for off-peak hours, 2 for peak hours, and -1 for the summarized value for that day. If the shifts are not enabled, the default value is -1.</td>
</tr>
<tr>
<td></td>
<td><strong>Vacation Period</strong></td>
</tr>
<tr>
<td></td>
<td>If the Vacation Period option is not enabled, the default value is -1. Otherwise, enter 0 for work days or 1 for vacation days.</td>
</tr>
<tr>
<td>Tables or views used</td>
<td>KPK_GLOBAL_CEC_DV</td>
</tr>
<tr>
<td></td>
<td>KPK_MON_LPARS_HV</td>
</tr>
<tr>
<td></td>
<td>KPK_MON_LPARS_DV</td>
</tr>
<tr>
<td></td>
<td>KPK_MON_LPARS_WV</td>
</tr>
<tr>
<td></td>
<td>KPK_MON_LPARS_MV</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> Although the report supports Weekly and Monthly summarization types, if you do not plan to run the report for these summarizations, do not configure these summarizations for the attribute groups on the Tivoli Enterprise Portal Server.</td>
</tr>
<tr>
<td>Output</td>
<td>This report shows an area chart that displays the total CPU units that are used over a selected period for the selected LPARs or for all the LPARs in a CEC. A table view below the chart shows various CPU attributes such as Total and Maximum Physical CPU Units Used, Average and Maximum CPU Entitlement Used (%), Average, Maximum and Total CPU Allocated, and Maximum CPU Cap Used (%).</td>
</tr>
</tbody>
</table>
CEC Base Agent LPAR Physical Memory Utilization Details report
This report shows current, average, and maximum memory utilization for one or more LPARs.

<table>
<thead>
<tr>
<th>Report element</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Parameters</strong></td>
<td></td>
</tr>
<tr>
<td>Date Range</td>
<td></td>
</tr>
<tr>
<td><strong>Report Period</strong></td>
<td></td>
</tr>
<tr>
<td>You can choose from a predefined date range such as Last Week, Current Month, and 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.</td>
<td></td>
</tr>
<tr>
<td><strong>Start Date</strong></td>
<td></td>
</tr>
<tr>
<td>You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected.</td>
<td></td>
</tr>
<tr>
<td><strong>End Date</strong></td>
<td></td>
</tr>
<tr>
<td>You can choose an end date from a calendar and an end time from the time widget. Both date and time must be selected.</td>
<td></td>
</tr>
<tr>
<td><strong>Display Options</strong></td>
<td></td>
</tr>
<tr>
<td>CEC</td>
<td></td>
</tr>
<tr>
<td>Select the CEC you want from the environment.</td>
<td></td>
</tr>
<tr>
<td>LPAR</td>
<td></td>
</tr>
<tr>
<td>Select the LPAR you want (one or many) from the specified CEC.</td>
<td></td>
</tr>
<tr>
<td><strong>Summarization Type</strong></td>
<td></td>
</tr>
<tr>
<td>Choose the summarization type from the drop-down list. The options are Hourly, Daily (the default value), Weekly, and Monthly.</td>
<td></td>
</tr>
<tr>
<td><strong>Shift and Vacation Periods</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Shift Period</strong></td>
<td></td>
</tr>
<tr>
<td>If shifts are enabled, the hourly tables have a value for SHIFTPERIOD of 1 or 2, based on off-peak and peak hours that are configured in the data warehouse. The daily tables have values of 1 for off-peak hours, 2 for peak hours, and -1 for the summarized value for that day. If the shifts are not enabled, the default value is -1.</td>
<td></td>
</tr>
<tr>
<td><strong>Vacation Period</strong></td>
<td></td>
</tr>
<tr>
<td>If the Vacation Period option is not enabled, the default value is -1. Otherwise, enter 0 for work days or 1 for vacation days.</td>
<td></td>
</tr>
<tr>
<td><strong>Tables or views used</strong></td>
<td></td>
</tr>
<tr>
<td>KPK_MON_LPARS_HV</td>
<td></td>
</tr>
<tr>
<td>KPK_GLOBAL_CEC_DV</td>
<td></td>
</tr>
<tr>
<td>KPK_MON_LPARS_DV</td>
<td></td>
</tr>
<tr>
<td>KPK_MON_LPARS_WV</td>
<td></td>
</tr>
<tr>
<td>KPK_MON_LPARS_MV</td>
<td></td>
</tr>
<tr>
<td><strong>Note:</strong> Although the report supports Weekly and Monthly summarization types, if you do not plan to run the report for these summarizations, do not configure these summarizations for the attribute groups on the Tivoli Enterprise Portal Server.</td>
<td></td>
</tr>
<tr>
<td><strong>Output</strong></td>
<td></td>
</tr>
<tr>
<td>This report is an overlaid line chart that shows the average and maximum memory utilization for one or more LPARs over a selected period. A table shows detailed values such as average and maximum physical memory in both percentage and megabytes.</td>
<td></td>
</tr>
</tbody>
</table>
# CEC Base Agent LPAR Workload Trend and Forecast report

This report shows a linear forecast of CPU and memory for one or more LPARs.

<table>
<thead>
<tr>
<th>Report element</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Parameters</strong></td>
<td>Date Range</td>
</tr>
<tr>
<td>Report Period</td>
<td>You can choose from a predefined date range such as Last Week, Current Month, and 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.</td>
</tr>
<tr>
<td>Forecast Period (Days)</td>
<td>The number of days to forecast.</td>
</tr>
<tr>
<td><strong>Display Options</strong></td>
<td></td>
</tr>
<tr>
<td>Shift Period</td>
<td>If shifts are enabled, the hourly tables have a value for SHIFTPERIOD of 1 or 2, based on off-peak and peak hours that are configured in the data warehouse. The daily tables have values of 1 for off-peak hours, 2 for peak hours, and -1 for the summarized value for that day. If the shifts are not enabled, the default value is -1.</td>
</tr>
<tr>
<td>Vacation Period</td>
<td>If the Vacation Period option is not enabled, the default value is -1. Otherwise, enter 0 for work days or 1 for vacation days.</td>
</tr>
<tr>
<td>Thresholds (%)</td>
<td>CPU and memory thresholds to compare against the forecasted values.</td>
</tr>
<tr>
<td><strong>Tables or views used</strong></td>
<td>KPK_MON_LPARS_DV</td>
</tr>
<tr>
<td></td>
<td>KPK_GLOBAL_CEC_DV</td>
</tr>
<tr>
<td><strong>Output</strong></td>
<td>This report contains line charts for CPU and memory usage and the forecasted usage values for the selected LPARs.</td>
</tr>
</tbody>
</table>
HMC Base Agent CPU Pools Utilization Details report
This report shows the CPU Pool usage of a managed server over time.

<table>
<thead>
<tr>
<th>Report element</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Parameters</strong></td>
<td>Date Range</td>
</tr>
<tr>
<td><strong>Report Period</strong></td>
<td>You can choose from a predefined date range such as Last Week, Current Month, and 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.</td>
</tr>
<tr>
<td><strong>Start Date</strong></td>
<td>You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected.</td>
</tr>
<tr>
<td><strong>End Date</strong></td>
<td>You can choose an end date from a calendar and an end time from the time widget. Both date and time must be selected.</td>
</tr>
<tr>
<td><strong>Resource Selection</strong></td>
<td>Managed Server</td>
</tr>
<tr>
<td></td>
<td>Select the managed server that you want from the environment.</td>
</tr>
<tr>
<td></td>
<td>CPU Pool ID</td>
</tr>
<tr>
<td></td>
<td>Select the CPU Pool ID whose usage is shown over time.</td>
</tr>
<tr>
<td><strong>Display Option</strong></td>
<td>Summarization Type</td>
</tr>
<tr>
<td></td>
<td>Choose the summarization type from the drop-down list. The options are Hourly, Daily (the default value), Weekly, and Monthly.</td>
</tr>
<tr>
<td></td>
<td>Shift Period</td>
</tr>
<tr>
<td></td>
<td>If shifts are enabled, the hourly tables have a value for SHIFTPERIOD of 1 or 2, based on off-peak and peak hours that are configured in the data warehouse. The daily tables have values of 1 for off-peak hours, 2 for peak hours, and -1 for the summarized value for that day. If the shifts are not enabled, the default value is -1.</td>
</tr>
<tr>
<td></td>
<td>Vacation Period</td>
</tr>
<tr>
<td></td>
<td>If the Vacation Period option is not enabled, the default value is -1. Otherwise, enter 0 for work days or 1 for vacation days.</td>
</tr>
</tbody>
</table>

| Tables or views used     | KPH_SERVERDETAILS_HV |
|                         | KPH_SERVERDETAILS_DV |
|                         | KPH_SERVERDETAILS_WV |
|                         | KPH_SERVERDETAILS_MV |
|                         | KPH_SERVER_CPU_POOLS_HV |
|                         | KPH_SERVER_CPU_POOLS_DV |
|                         | KPH_SERVER_CPU_POOLS_WV |
|                         | KPH_SERVER_CPU_POOLS_MV |

**Note:** Although the report supports Weekly and Monthly summarization types, if you do not plan to run the report for these summarizations, do not configure these summarizations for the attribute groups on the Tivoli Enterprise Portal Server.
<table>
<thead>
<tr>
<th>Report element</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output</td>
<td>This report contains an area chart that shows the total CPU Units that are used by the chosen CPU Pool over a selected period. The table shows various CPU attributes such as Average CPU Pool Units Consumed, Maximum CPU Pool Capacity, Allocated Managed Server Capacity, and the Total Managed Server Capacity.</td>
</tr>
</tbody>
</table>

**HMC Base Agent LPAR CPU Trend and Forecast report**

This report shows a linear forecast of CPU for one or more LPARs.

<table>
<thead>
<tr>
<th>Report element</th>
<th>Details</th>
</tr>
</thead>
</table>
| Parameters     | Date Range  
|                | Report Period  
|                | You can choose from a predefined date range such as Last Week, Current Month, and 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  
|                | Managed Server  
|                | Select the managed server that you want from the environment  
|                | LPARs  
|                | Select one or more LPARs from the environment.  
|                | Display Options  
|                | Shift Period  
|                | If shifts are enabled, the hourly tables have a value for SHIFTPERIOD of 1 or 2, based on off-peak and peak hours that are configured in the data warehouse. The daily tables have values of 1 for off-peak hours, 2 for peak hours, and -1 for the summarized value for that day. If the shifts are not enabled, the default value is -1.  
|                | Vacation Period  
|                | If the Vacation Period option is not enabled, the default value is -1. Otherwise, enter 0 for work days or 1 for vacation days.  
|                | CPU Threshold (%)  
|                | The CPU threshold to compare against the forecasted values. |
| Tables or views used | KPH_SERVERDETAILS_DV  
|                    | KPH_SERVERLPARSDV |
| Output            | This report contains an area chart for CPU usage and the forecasted usage values for the selected LPARs. |

**HMC Base Agent LPAR Heat Chart report**

This report shows the CPU utilization pattern over a period for selected LPARs within a set of managed servers in your environment.
<table>
<thead>
<tr>
<th>Report element</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parameters</td>
<td>Resources</td>
</tr>
</tbody>
</table>
|                | **Managed Servers**  
|                | Select one or more of the managed servers that you want from the environment. |
|                | **LPARs**  
|                | Select one or more of the LPARs that you want from the chosen list of managed servers in your environment. |
| Date Range     | **Report Period**  
|                | You can choose from a predefined date range such as Last Week, Current Month, and 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 an end date from a calendar and an end time from the time widget. Both date and time must be selected. |
| User Inputs for Analysis | **Upper Limit for Good Status**  
|                | Specify the upper limit for the CPU percentage utilization value to determine the range of values that is considered good. |
|                | **Upper Limit for Fair Status**  
|                | Specify the upper limit for the CPU percentage utilization value to determine the range of values that is considered fair. |
|                | **Upper Limit for Warning Status**  
|                | Specify the upper limit for the CPU percentage utilization value to determine the range of values that indicates a warning status. |
|                | **Upper Limit for Bad Status and Lower Limit for Critical Status**  
|                | Specify the upper limit for the CPU percentage utilization value to determine the range of values that indicates a bad status. This limit is also the lower limit to consider a utilization value as critical |
|                | **Shift Period**  
|                | If shifts are enabled, the hourly tables have a value for SHIFTPERIOD of 1 or 2, based on off-peak and peak hours that are configured in the data warehouse. The daily tables have values of 1 for off-peak hours, 2 for peak hours, and -1 for the summarized value for that day. If the shifts are not enabled, the default value is -1. |
|                | **Vacation Period**  
|                | If the Vacation Period option is not enabled, the default value is -1. Otherwise, enter 0 for work days or 1 for vacation days. |
| Tables or views used | KPH_SERVER_LPARS_HV |
### HMC Base Agent LPAR Physical CPU Usage Details report

This report shows the CPU usage of one or more selected LPARs from the CPU pools of a managed server over time.

<table>
<thead>
<tr>
<th>Report element</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Output</strong></td>
<td>This report presents a different visualization for observing patterns in hourly processor utilization. This chart is called a heat chart. In a heat chart, the X-axis shows the hours during the day and the Y-axis shows the dates. For each LPAR within a managed server, hourly averages for the metric are shown. This chart helps in identifying patterns, such as times of day when the LPAR becomes busy. The chart is useful for determining maintenance schedules. Different colors on the heat chart represent different percentage bands. You can modify the threshold values for these bands.</td>
</tr>
</tbody>
</table>

### HMC Base Agent LPAR Physical CPU Usage Details report

This report shows the CPU usage of one or more selected LPARs from the CPU pools of a managed server over time.

<table>
<thead>
<tr>
<th>Report element</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Parameters</strong></td>
<td><strong>Date Range</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Report Period</strong></td>
</tr>
<tr>
<td></td>
<td>You can choose from a predefined date range such as Last Week, Current Month, and 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.</td>
</tr>
<tr>
<td></td>
<td><strong>Start Date</strong></td>
</tr>
<tr>
<td></td>
<td>You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected.</td>
</tr>
<tr>
<td></td>
<td><strong>End Date</strong></td>
</tr>
<tr>
<td></td>
<td>You can choose an end date from a calendar and an end time from the time widget. Both date and time must be selected.</td>
</tr>
<tr>
<td><strong>Resource Selection</strong></td>
<td><strong>Managed Server</strong></td>
</tr>
<tr>
<td></td>
<td>Select the managed server that you want from the environment.</td>
</tr>
<tr>
<td></td>
<td><strong>CPU Pool(s)</strong></td>
</tr>
<tr>
<td></td>
<td>Select one or more CPU Pools for which usage by LPARs is shown over time</td>
</tr>
<tr>
<td></td>
<td><strong>LPAR(s)</strong></td>
</tr>
<tr>
<td></td>
<td>Select one or more LPARs for which CPU usage is shown over time</td>
</tr>
<tr>
<td><strong>Display Options</strong></td>
<td><strong>Summarization Type</strong></td>
</tr>
<tr>
<td></td>
<td>Choose the summarization type from the drop-down list. The options are Hourly, Daily (the default value), Weekly, and Monthly.</td>
</tr>
<tr>
<td></td>
<td><strong>Shift Period</strong></td>
</tr>
<tr>
<td></td>
<td>If shifts are enabled, the hourly tables have a value for SHIFTPERIOD of 1 or 2, based on off-peak and peak hours that are configured in the data warehouse. The daily tables have values of 1 for off-peak hours, 2 for peak hours, and -1 for the summarized value for that day. If the shifts are not enabled, the default value is -1.</td>
</tr>
<tr>
<td></td>
<td><strong>Vacation Period</strong></td>
</tr>
<tr>
<td></td>
<td>If the Vacation Period option is not enabled, the default value is -1. Otherwise, enter 0 for work days or 1 for vacation days.</td>
</tr>
</tbody>
</table>
## Report element Details

### Tables or views used

- KPH_SERVER_LPARS_HV
- KPH_SERVER_LPARS_DV
- KPH_SERVER_LPARS_WV
- KPH_SERVER_LPARS_MV
- KPH_SERVER_CPU_POOLS_HV
- KPH_SERVER_CPU_POOLS_DV
- KPH_SERVER_CPU_POOLS_WV
- KPH_SERVER_CPU_POOLS_MV

**Note:** Although the report supports Weekly and Monthly summarization types, if you do not plan to run the report for these summarizations, do not configure these summarizations for the attribute groups on the Tivoli Enterprise Portal Server.

### Output

This report contains a stacked area chart that shows the total CPU Units that are used by the selected LPARs from the chosen CPU Pools over a selected period. The table contains various CPU attributes such as Average CPU Units Consumed by LPARs, Maximum CPU Units Consumed by LPARs, Entitled Capacity, and the Average CPU Entitlement Used (%).

---

### HMC Base Agent Managed Server CPU Trend and Forecast report

This report shows a linear forecast for the CPU Utilization of the managed server.

### Report element Details

#### Parameters

**Date Range**

**Report Period**

You can choose from a predefined date range such as Last Week, Current Month, and 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**

**Managed Server**

Select the managed server that you want from the environment

**Display Options**

**Shift Period**

If shifts are enabled, the hourly tables have a value for $SHIFTPERIOD$ of 1 or 2, based on off-peak and peak hours that are configured in the data warehouse. The daily tables have values of 1 for off-peak hours, 2 for peak hours, and -1 for the summarized value for that day. If the shifts are not enabled, the default value is -1.

**Vacation Period**

If the Vacation Period option is not enabled, the default value is -1. Otherwise, enter 0 for work days or 1 for vacation days.

**CPU Threshold (%)**

The CPU threshold to compare against the forecasted values.

#### Tables or views used

- KPH_SERVER_DETAILS_DV

#### Output

This report contains a line chart for managed server CPU usage and the forecasted usage values.
HMC Base Agent Managed Server Forecast Alerts report
This report alerts you when a managed server or group of managed servers reaches its capacity limitations. The report calculates a linear trend for the next few days, depending on the forecast period and determines whether any of the managed servers exceed the user-defined threshold for the CPU for the server. The threshold (%) applies to the total capacity available in the managed server.

<table>
<thead>
<tr>
<th>Report element</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parameters</td>
<td>Date Range</td>
</tr>
<tr>
<td></td>
<td>Report Period</td>
</tr>
<tr>
<td></td>
<td>You can choose from a predefined date range such as Last Week, Current Month, and 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.</td>
</tr>
<tr>
<td></td>
<td>Forecast Period (Days)</td>
</tr>
<tr>
<td></td>
<td>The number of days to forecast.</td>
</tr>
<tr>
<td>Resource Selection</td>
<td>Managed Server</td>
</tr>
<tr>
<td></td>
<td>Select the managed server that you want from the environment</td>
</tr>
<tr>
<td>Display Options</td>
<td>Shift Period</td>
</tr>
<tr>
<td></td>
<td>If shifts are enabled, the hourly tables have a value for SHIFTPERIOD of 1 or 2, based on off-peak and peak hours that are configured in the data warehouse. The daily tables have values of 1 for off-peak hours, 2 for peak hours, and -1 for the summarized value for that day. If the shifts are not enabled, the default value is -1.</td>
</tr>
<tr>
<td></td>
<td>Vacation Period</td>
</tr>
<tr>
<td></td>
<td>If the Vacation Period option is not enabled, the default value is -1. Otherwise, enter 0 for work days or 1 for vacation days.</td>
</tr>
<tr>
<td></td>
<td>CPU Threshold (%)</td>
</tr>
<tr>
<td></td>
<td>The CPU threshold to compare against the forecasted values.</td>
</tr>
<tr>
<td>Tables or views used</td>
<td>KPH_SERVER_DETAILS_DV</td>
</tr>
<tr>
<td>Output</td>
<td>This report contains a table with values of Average CPU Units Used (including the historical average and forecasted values for the selected time period) and the total capacity against the chosen list of managed servers. Alerts are indicated with a green color for the CPU usage values if they fall below the threshold and a red color for the alerts that exceed the CPU threshold (which is set to 80% by default).</td>
</tr>
</tbody>
</table>

HMC Base Agent Managed Server Heat Chart report
This report shows the CPU utilization pattern over a period for selected managed servers in your environment.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Report element</strong></td>
<td>Details</td>
</tr>
<tr>
<td>Parameters</td>
<td>Date Range</td>
</tr>
<tr>
<td></td>
<td><strong>Report Period</strong></td>
</tr>
<tr>
<td></td>
<td>You can choose from a predefined date range such as Last Week, Current Month, and Last 30 Days. Alternatively, you can enter a start and end date and time for the reporting period by choosing the <strong>Date Range (below)</strong> option.</td>
</tr>
<tr>
<td></td>
<td><strong>Start Date</strong></td>
</tr>
<tr>
<td></td>
<td>You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected.</td>
</tr>
<tr>
<td></td>
<td><strong>End Date</strong></td>
</tr>
<tr>
<td></td>
<td>You can choose an end date from a calendar and an end time from the time widget. Both date and time must be selected.</td>
</tr>
<tr>
<td>Resources</td>
<td>Managed Servers</td>
</tr>
<tr>
<td></td>
<td>Select one or more of the managed servers that you want from the environment.</td>
</tr>
<tr>
<td>User Inputs for Analysis</td>
<td><strong>Upper Limit for Good Status</strong></td>
</tr>
<tr>
<td></td>
<td>Specify the upper limit for the CPU percentage utilization value to determine the range of values that is considered good.</td>
</tr>
<tr>
<td></td>
<td><strong>Upper Limit for Fair Status</strong></td>
</tr>
<tr>
<td></td>
<td>Specify the upper limit for the CPU percentage utilization value to determine the range of values that is considered fair.</td>
</tr>
<tr>
<td></td>
<td><strong>Upper Limit for Warning Status</strong></td>
</tr>
<tr>
<td></td>
<td>Specify the upper limit for the CPU percentage utilization value to determine the range of values that indicates a warning status.</td>
</tr>
<tr>
<td></td>
<td><strong>Upper Limit for Bad Status and Lower Limit for Critical Status</strong></td>
</tr>
<tr>
<td></td>
<td>Specify the upper limit for the CPU percentage utilization value to determine the range of values that indicates a bad status. This limit is also the lower limit to consider a utilization value as critical</td>
</tr>
<tr>
<td></td>
<td><strong>Shift Period</strong></td>
</tr>
<tr>
<td></td>
<td>If shifts are enabled, the hourly tables have a value for SHIFTPERIOD of 1 or 2, based on off-peak and peak hours that are configured in the data warehouse. The daily tables have values of 1 for off-peak hours, 2 for peak hours, and -1 for the summarized value for that day. If the shifts are not enabled, the default value is -1.</td>
</tr>
<tr>
<td></td>
<td><strong>Vacation Period</strong></td>
</tr>
<tr>
<td></td>
<td>If the Vacation Period option is not enabled, the default value is -1. Otherwise, enter 0 for work days or 1 for vacation days.</td>
</tr>
<tr>
<td>Tables or views used</td>
<td>KPH_SERVER_DETAILS_HV</td>
</tr>
<tr>
<td>Output</td>
<td>This report presents a different type of visualization for observing patterns in hourly processor utilization. This chart is called a heat chart. In a heat chart, the X-axis shows the hours during the day and the Y-axis shows the dates. For each managed server, hourly averages for the metric are shown. This chart helps in identifying patterns, such as the times of day when the server becomes busy. The chart is useful for determining maintenance schedules or observing whether the pattern of the LPAR matches the pattern of its target host during LPAR placement exercises.</td>
</tr>
<tr>
<td></td>
<td>Different colors on the heat chart represent different percentage bands. You can modify the threshold values for these bands.</td>
</tr>
</tbody>
</table>
**HMC Base Agent Managed Server Performance Trends report**
This report shows trends for multiple performance metrics such as CPU units used and number of LPARs for multiple managed servers in a matrix.

<table>
<thead>
<tr>
<th>Report element</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parameters</td>
<td></td>
</tr>
<tr>
<td>Date Range</td>
<td></td>
</tr>
<tr>
<td><strong>Report Period</strong></td>
<td>You can choose from a predefined date range such as Last Week, Current Month, and Last 30 Days. Alternatively, you can enter a start and end date and time for the reporting period by choosing the <strong>Date Range (below)</strong> option.</td>
</tr>
<tr>
<td><strong>Start Date</strong></td>
<td>You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected.</td>
</tr>
<tr>
<td><strong>End Date</strong></td>
<td>You can choose an end date from a calendar and an end time from the time widget. Both date and time must be selected.</td>
</tr>
<tr>
<td>Resources</td>
<td></td>
</tr>
<tr>
<td>Managed Server</td>
<td>Select the managed server that you want from the environment.</td>
</tr>
<tr>
<td>User Inputs for Analysis</td>
<td></td>
</tr>
<tr>
<td><strong>Summarization Type</strong></td>
<td>Choose the summarization type from the drop-down list. The options are Hourly, Daily (the default value), Weekly, and Monthly.</td>
</tr>
<tr>
<td><strong>Display Option</strong></td>
<td>You can choose to view the detailed values in a table by choosing the <strong>Summary Table</strong> option or view only the trend charts in a table by choosing the <strong>Trend Charts</strong> option. For both options, the entire table can be sorted by clicking a column.</td>
</tr>
<tr>
<td><strong>Shift Period</strong></td>
<td>If shifts are enabled, the hourly tables have a value for SHIFTPERIOD of 1 or 2, based on off-peak and peak hours that are configured in the data warehouse. The daily tables have values of 1 for off-peak hours, 2 for peak hours, and -1 for the summarized value for that day. If the shifts are not enabled, the default value is -1.</td>
</tr>
<tr>
<td><strong>Vacation Period</strong></td>
<td>If the <strong>Vacation Period</strong> option is not enabled, the default value is -1. Otherwise, enter 0 for work days or 1 for vacation days.</td>
</tr>
<tr>
<td>Report element</td>
<td>Details</td>
</tr>
<tr>
<td>--------------------</td>
<td>-------------------------------------------------------------------------</td>
</tr>
</tbody>
</table>
| Tables or views used | KPH_SERVER_LPARS_HV  
                         | KPH_SERVER_LPARS_DV  
                         | KPH_SERVER_LPARS_WV  
                         | KPH_SERVER_LPARS_MV  
                         | KPH_SERVER_DETAILS_HV  
                         | KPH_SERVER_DETAILS_DV  
                         | KPH_SERVER_DETAILS_WV  
                         | KPH_SERVER_DETAILS_MV  |
| Note:              | Although the report supports Weekly and Monthly summarization types, if you do not plan to run the report for these summarizations, do not configure these summarizations for the attribute groups on the Tivoli Enterprise Portal Server. |
| Output             | This report shows trends for multiple performance metrics for multiple managed servers in a matrix. Maximum CPU usage is plotted against the average CPU usage. Number of LPARs that are in running state is plotted against the total number of LPARs on the managed server. The report can be displayed in hourly, daily, weekly, and monthly format. Choose the Summary Table option while you are running the report if you want to see only the numbers and not the charts. |

**HMC Base Agent Managed Server Weekly Comparison report**

This report alerts you if the values of the key metrics for managed servers change significantly based on a weekly comparison by highlighting the corresponding field.
<table>
<thead>
<tr>
<th>Report element</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parameters</td>
<td>Resources</td>
</tr>
</tbody>
</table>
|               | **Managed Servers**  
|               | Select one or more of the managed servers that you want from the environment. |
|               | **Date Range**  
|               | You can choose from a predefined date range such as Last Week, Current Month, and Last 30 Days. Alternatively, you can enter a start date, end date, and time for the reporting period by choosing the one of the Date Range 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 an end date from a calendar and an end time from the time widget. Both date and time must be selected. |
|               | **Start Year and End Year, Start Week and End Week**  
|               | If you did not select a date range, you can choose a start and end year and a start and end week to run the report. |
|               | **User Inputs for Analysis** |
|               | **Percent Change**  
|               | Specify a percentage to highlight the rows when there is a significant change in values between consecutive weeks. By default, a change of 20% is used for highlighting. |
|               | **Shift Period**  
|               | If shifts are enabled, the hourly tables have a value for SHIFTPERIOD of 1 or 2, based on off-peak and peak hours that are configured in the data warehouse. The daily tables have values of 1 for off-peak hours, 2 for peak hours, and -1 for the summarized value for that day. If the shifts are not enabled, the default value is -1. |
|               | **Vacation Period**  
|               | If the Vacation Period option is not enabled, the default value is -1. Otherwise, enter 0 for work days or 1 for vacation days. |
| Tables or views used | KPH_SERVERDETAILS_DV |
|               | KPH_SERVER_LPARS_DV |
| Output | This report compares the key metrics for managed servers from week to week. If there is a significant change in value from one week to another, that field is highlighted. |
### VIOS Premium Agent Disk Capacity Details report

This report shows average megabytes used and free on the disk over a selected period.

<table>
<thead>
<tr>
<th>Report element</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Parameters</strong></td>
<td></td>
</tr>
<tr>
<td>Date Range</td>
<td></td>
</tr>
<tr>
<td><strong>Report Period</strong></td>
<td>You can choose from a predefined date range such as Last Week, Current Month, and Last 30 Days. Alternatively, you can enter a start and end date and time for the reporting period by choosing the <strong>Date Range (below)</strong> option.</td>
</tr>
<tr>
<td><strong>Start Date</strong></td>
<td>You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected.</td>
</tr>
<tr>
<td><strong>End Date</strong></td>
<td>You can choose an end date from a calendar and an end time from the time widget. Both date and time must be selected.</td>
</tr>
<tr>
<td><strong>Display Options</strong></td>
<td></td>
</tr>
<tr>
<td>VIOS</td>
<td>Select the VIOS you want from the environment.</td>
</tr>
<tr>
<td><strong>Summarization Type</strong></td>
<td>Choose the summarization type from the drop-down list. The options are Hourly, Daily (the default value), Weekly, and Monthly.</td>
</tr>
<tr>
<td><strong>Shift and Vacation Periods</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Shift Period</strong></td>
<td>If shifts are enabled, the hourly tables have a value for SHIFTPERIOD of 1 or 2, based on off-peak and peak hours that are configured in the data warehouse. The daily tables have values of 1 for off-peak hours, 2 for peak hours, and -1 for the summarized value for that day. If the shifts are not enabled, the default value is -1.</td>
</tr>
<tr>
<td><strong>Vacation Period</strong></td>
<td>If the Vacation Period option is not enabled, the default value is -1. Otherwise, enter 0 for work days or 1 for vacation days.</td>
</tr>
<tr>
<td><strong>Tables or views used</strong></td>
<td>KVA_STORAGE_MAPPINGS_DV</td>
</tr>
<tr>
<td></td>
<td>KVA_VOLUME_GROUPS_DV</td>
</tr>
<tr>
<td></td>
<td>KVA_PHYSICAL_VOLUMES_HV</td>
</tr>
<tr>
<td></td>
<td>KVA_PHYSICAL_VOLUMES_WV</td>
</tr>
<tr>
<td></td>
<td>KVA_PHYSICAL_VOLUMES_MV</td>
</tr>
<tr>
<td></td>
<td>KVA_PHYSICAL_VOLUMES_DV</td>
</tr>
<tr>
<td><strong>Note</strong></td>
<td>Although the report supports Weekly and Monthly summarization types, if you do not plan to run the report for these summarizations, do not configure these summarizations for the attribute groups on the Tivoli Enterprise Portal Server.</td>
</tr>
<tr>
<td><strong>Output</strong></td>
<td>This report shows a stacked area chart for each disk in the VIOS. The lower area of the chart shows the average megabytes used on the disk over a selected period. The upper area shows average free megabytes on the disk over the selected period. A table shows detailed values for all disks.</td>
</tr>
</tbody>
</table>
VIOS Premium Agent Physical Fibre Channel Adapter Utilization report

The report shows the average bandwidth utilization details for each fibre channel adapter port over the specified time period.

<table>
<thead>
<tr>
<th>Report element</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parameters</td>
<td>Date Range</td>
</tr>
<tr>
<td></td>
<td><strong>Report Period</strong></td>
</tr>
<tr>
<td></td>
<td>You can choose from a predefined date range such as Last Week, Current Month, and Last 30 Days. Alternatively, you can enter a start and end date and time for the reporting period by choosing the <strong>Date Range (below)</strong> option.</td>
</tr>
<tr>
<td></td>
<td><strong>Start Date</strong></td>
</tr>
<tr>
<td></td>
<td>You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected.</td>
</tr>
<tr>
<td></td>
<td><strong>End Date</strong></td>
</tr>
<tr>
<td></td>
<td>You can choose an end date from a calendar and an end time from the time widget. Both date and time must be selected.</td>
</tr>
<tr>
<td>Display Options</td>
<td><strong>Shift Period</strong></td>
</tr>
<tr>
<td></td>
<td>If shifts are enabled, the hourly tables have a value for SHIFTPERIOD of 1 or 2, based on off-peak and peak hours that are configured in the data warehouse. The daily tables have values of 1 for off-peak hours, 2 for peak hours, and -1 for the summarized value for that day. If the shifts are not enabled, the default value is -1.</td>
</tr>
<tr>
<td></td>
<td><strong>Vacation Period</strong></td>
</tr>
<tr>
<td></td>
<td>If the Vacation Period option is not enabled, the default value is -1. Otherwise, enter 0 for work days or 1 for vacation days.</td>
</tr>
<tr>
<td></td>
<td><strong>Aggregation</strong></td>
</tr>
<tr>
<td></td>
<td>Select the aggregation type that is used to aggregate the data over time. You can choose Maximum or Average.</td>
</tr>
<tr>
<td>Tables or views used</td>
<td>KVA_FC_STATS_DV</td>
</tr>
<tr>
<td>Output</td>
<td>The report displays the average bandwidth utilization details for each fibre channel adapter port over the specified time period. The table shows different metrics that are related to the bandwidth used by each fibre channel adapter port.</td>
</tr>
</tbody>
</table>

VIOS Premium Agent Shared Ethernet Adapter Utilization report

This report shows average used megabytes and average free megabytes over the selected period of time for the disk.
### Parameters

**Date Range**
- **Report Period**
  - You can choose from a predefined date range such as Last Week, Current Month, and 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 an end date from a calendar and an end time from the time widget. Both date and time must be selected.

**Shift and Vacation Periods**
- **Shift Period**
  - If shifts are enabled, the hourly tables have a value for SHIFTPERIOD of 1 or 2, based on off-peak and peak hours configured in the data warehouse. The daily tables have values of 1 for off-peak hours, 2 for peak hours, and -1 for the summarized value for that day. If the shifts are not enabled, the default value is -1.
- **Vacation Period**
  - If the Vacation Period option is not enabled, the default value is -1. Otherwise, enter 0 for work days or 1 for vacation days.

### Tables or views used

**KVA_NETWORK_ADAPTERS_RATES_DV**

### Output

This report contains a stacked area chart that is generated for each disk in the VIOS. The lower area of the chart is the average used megabytes over a selected period for the disk. The upper area is the average free megabytes over the selected period for the disk. The table shows detailed values for all disks.

### What if analysis for workload placement reports

You can use what if analysis to create a workload placement report for the System p agents by using predefined reports.

The following reports are available for what if analysis for workload placement:

- CEC Base Agent Number of LPARs for CEC
- CEC Base Agent Resources Needed for Additional LPARS on CEC
- HMC Base Agent Number of LPARs for Managed Server
- HMC Base Agent Resources Needed For Additional LPARs on Managed Server

**CEC Base Agent Number of LPARs for CEC report**

This report provides an estimate of how many more LPARs can be placed on a CEC or Frame. The estimate is based on the historical usage and allocation of the LPARs on that CEC or Frame.
### Report element Details

#### Parameters

**Date Range**
- **Report Period**
  You can choose from a predefined date range such as Last Week, Current Month, and 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 an end date from a calendar and an end time from the time widget. Both date and time must be selected.

**Display Options**
- **CEC**
  Select the CEC you want from the environment.
- **Profile**
  Select the profile that you want to run the report against. The options are Average (default), Peak, and User-defined.
- **Resource criteria**
  Reports can be seen based on two different criteria: Resource Usage (default) or Resource Allocation.
- **Buffer**
  The buffer is to indicate the resources that the user does not want to allocate.
- **User-defined Resource Usage**
  Enter user-defined values to be used alongside the User-defined profile.

**Shift and Vacation Periods**
- **Shift Period**
  If shifts are enabled, the hourly tables have a value for SHIFTPERIOD of 1 or 2, based on off-peak and peak hours that are configured in the data warehouse. The daily tables have values of 1 for off-peak hours, 2 for peak hours, and -1 for the summarized value for that day. If the shifts are not enabled, the default value is -1.
- **Vacation Period**
  If the Vacation Period option is not enabled, the default value is -1. Otherwise, enter 0 for work days or 1 for vacation days.

### Tables or views used

- KPK_GLOBAL_CEC_DV
- KPK_GLOBAL_CEC_HV
- KPK_MON_LPARS_DV
- KPK_MON_UNMON_ALLOC_HV
- KPK_MON_UNMON_ALLOC_DV
This report contains a table that shows the number of LPARs that can be added to a CEC, based on the resource usage or allocation (defined by the user) of the monitored LPARs and the available resource capacity on the CEC after allowing for user-defined buffers. The table shows information that is related to different resources (CPU and memory) on the selected CEC and how these resources affect the total number of LPARs that can be added. The average resources that are allocated or used is the historical average of all the deployed LPARs on the CEC. The available resource capacity is the current resources not allocated. The number of LPARs that can be deployed is the Available Resource Capacity/Average Resource Usage per LPAR.

CEC Base Agent Resources Needed for Additional LPARS on CEC report
This report provides an estimate of how much more resources (CPU and memory) are needed to add more LPARs to the CEC or Frame.

<table>
<thead>
<tr>
<th>Report element</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output</td>
<td>This report contains a table that shows the number of LPARs that can be added to a CEC, based on the resource usage or allocation (defined by the user) of the monitored LPARs and the available resource capacity on the CEC after allowing for user-defined buffers. The table shows information that is related to different resources (CPU and memory) on the selected CEC and how these resources affect the total number of LPARs that can be added. The average resources that are allocated or used is the historical average of all the deployed LPARs on the CEC. The available resource capacity is the current resources not allocated. The number of LPARs that can be deployed is the Available Resource Capacity/Average Resource Usage per LPAR.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Report element</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parameters</td>
<td></td>
</tr>
<tr>
<td>Date Range</td>
<td></td>
</tr>
<tr>
<td>Report Period</td>
<td>You can choose from a predefined date range such as Last Week, Current Month, and 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.</td>
</tr>
<tr>
<td>Start Date</td>
<td>You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected.</td>
</tr>
<tr>
<td>End Date</td>
<td>You can choose an end date from a calendar and an end time from the time widget. Both date and time must be selected.</td>
</tr>
<tr>
<td>Display Options</td>
<td></td>
</tr>
<tr>
<td>CEC</td>
<td>Select the CEC you want from the environment.</td>
</tr>
<tr>
<td>Profile</td>
<td>Select the profile that you want to run the report against. The options are Average (default), Peak, and User-defined.</td>
</tr>
<tr>
<td>Number of LPARs to add</td>
<td>The numbers of LPARs you want to add to the selected CEC.</td>
</tr>
<tr>
<td>Buffer</td>
<td>The buffer is to indicate the resources that the user does not want to allocate.</td>
</tr>
<tr>
<td>User-defined Resource Usage</td>
<td>Enter user-defined values to be used alongside the User-defined profile.</td>
</tr>
<tr>
<td>Shift and Vacation Periods</td>
<td></td>
</tr>
<tr>
<td>Shift Period</td>
<td>If shifts are enabled, the hourly tables have a value for SHIFTPERIOD of 1 or 2, based on off-peak and peak hours that are configured in the data warehouse. The daily tables have values of 1 for off-peak hours, 2 for peak hours, and -1 for the summarized value for that day. If the shifts are not enabled, the default value is -1.</td>
</tr>
<tr>
<td>Vacation Period</td>
<td>If the Vacation Period option is not enabled, the default value is -1. Otherwise, enter 0 for work days or 1 for vacation days.</td>
</tr>
<tr>
<td>Report element</td>
<td>Details</td>
</tr>
<tr>
<td>----------------</td>
<td>---------</td>
</tr>
</tbody>
</table>
| Tables or views used | KPK_GLOBAL_CEC_DV  
KPK_GLOBAL_CEC_HV  
KPK_MON_LPARS_DV  
KPK_MON_UNMON_ALLOC_HV  
KPK_MON_UNMON_ALLOC_DV |
| Output | This report contains a table that shows the resources that are required to successfully add the additional LPARs to the selected CEC, based on the current resource usage of the monitored partitions. The table shows information that is related to different resources (CPU and memory) on the selected CEC and how much of these resources is required to add the number of LPARs that you want to add. A value of 0 for a particular resource means that no additional capacity is required for this resource to accommodate the new LPARs. The average resources usage per LPAR is the historical average of all the deployed LPARs on the CEC. Resources that are required by more LPARs to be added to the CEC is the Average Resource Usage per LPAR * Number of LPARs to be added. The available resource capacity is the current resources not allocated. Additional capacity that is required for new LPARs is the Available Resource Capacity – Resources Required by Additional LPARs. If more resources are required, the row is highlighted in red. |

**HMC Base Agent Number of LPARs for Managed Server report**

This report provides an estimate of how many more LPARs can be placed on a Managed Server. The estimate is based on the historical usage and allocation of LPARs on that Managed Server.
<table>
<thead>
<tr>
<th>Report element</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parameters</td>
<td>Date Range</td>
</tr>
<tr>
<td></td>
<td><strong>Report Period</strong></td>
</tr>
<tr>
<td></td>
<td>You can choose from a predefined date range such as Last Week, Current Month, and Last 30 Days. Alternatively, you can enter a start and end date and time for the reporting period by choosing the <strong>Date Range (below)</strong> option.</td>
</tr>
<tr>
<td></td>
<td><strong>Start Date</strong></td>
</tr>
<tr>
<td></td>
<td>You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected.</td>
</tr>
<tr>
<td></td>
<td><strong>End Date</strong></td>
</tr>
<tr>
<td></td>
<td>You can choose an end date from a calendar and an end time from the time widget. Both date and time must be selected.</td>
</tr>
<tr>
<td></td>
<td><strong>Resource Selection</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Managed Server</strong></td>
</tr>
<tr>
<td></td>
<td>Select the managed server that you want from the environment.</td>
</tr>
<tr>
<td></td>
<td><strong>User Inputs for Analysis</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Profile</strong></td>
</tr>
<tr>
<td></td>
<td>Select the profile that you want to run the report against. The options are Average (default), Peak, and User-defined.</td>
</tr>
<tr>
<td></td>
<td><strong>Resource Criteria</strong></td>
</tr>
<tr>
<td></td>
<td>Reports can be run based on two different criteria: Resource Usage (default) or Resource Allocation. This criterion is not applicable to a user-defined profile.</td>
</tr>
<tr>
<td></td>
<td><strong>Buffer</strong></td>
</tr>
<tr>
<td></td>
<td>The buffer indicates the CPU that the user does not want to allocate.</td>
</tr>
<tr>
<td></td>
<td><strong>User-defined CPU Usage per LPAR</strong></td>
</tr>
<tr>
<td></td>
<td>Enter user-defined values in CPU units to be used with the User-defined profile. This input is used only for the user-defined profile.</td>
</tr>
<tr>
<td></td>
<td><strong>Display Options</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Shift Period</strong></td>
</tr>
<tr>
<td></td>
<td>If shifts are enabled, the hourly tables have a value for SHIFTPERIOD of 1 or 2, based on off-peak and peak hours that are configured in the data warehouse. The daily tables have values of 1 for off-peak hours, 2 for peak hours, and -1 for the summarized value for that day. If the shifts are not enabled, the default value is -1.</td>
</tr>
<tr>
<td></td>
<td><strong>Vacation Period</strong></td>
</tr>
<tr>
<td></td>
<td>If the Vacation Period option is not enabled, the default value is -1. Otherwise, enter 0 for work days or 1 for vacation days.</td>
</tr>
<tr>
<td></td>
<td><strong>Peak Hours - Start and End</strong></td>
</tr>
<tr>
<td></td>
<td>Select the start and end values for the peak hour to calculate the usage only for those hours while the report is running. This filter is not applicable for the user-defined profile.</td>
</tr>
<tr>
<td>Tables or views used</td>
<td>KPH_SERVER_DETAILS_HV</td>
</tr>
<tr>
<td></td>
<td>KPH_SERVER_DETAILS_DV</td>
</tr>
</tbody>
</table>
This report contains a table to indicate the number of additional LPARs that can be placed on a managed server. The number is based on the average, peak, user-defined historical usage of CPU on active partitions and other user inputs. Available CPU capacity is the current capacity the Managed Server is ready to use after considering any buffer that is defined by the user. A value of 999,999,999 for the number of LPARs indicates that no limit exists for the number of LPARs that can be added to the Managed Server. This value is displayed if Average CPU Units Used per LPAR is 0.

<table>
<thead>
<tr>
<th>Report element</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output</td>
<td>This report contains a table to indicate the number of additional LPARs that can be placed on a managed server. The number is based on the average, peak, user-defined historical usage of CPU on active partitions and other user inputs. Available CPU capacity is the current capacity the Managed Server is ready to use after considering any buffer that is defined by the user. A value of 999,999,999 for the number of LPARs indicates that no limit exists for the number of LPARs that can be added to the Managed Server. This value is displayed if Average CPU Units Used per LPAR is 0.</td>
</tr>
</tbody>
</table>

**HMC Base Agent Resources Needed For Additional LPARs on Managed Server report**

This report provides an estimate of how much more CPU is required to add more LPARs to the managed server.
<table>
<thead>
<tr>
<th>Report element</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Parameters</strong></td>
<td><strong>Date Range</strong></td>
</tr>
</tbody>
</table>
| | **Report Period**  
  You can choose from a predefined date range such as Last Week, Current Month, and 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 an end date from a calendar and an end time from the time widget. Both date and time must be selected.  
| | **Resource Selection** |
| | **Managed Server**  
  Select the managed server that you want from the environment.  
| | **User Inputs for Analysis** |
| | **Profile**  
  Select the profile that you want to run the report against. The options are Average (default), Peak, and User-defined.  
| | **Number of LPARs to add to Managed Server**  
  The number of LPARs you want to add to the selected managed server.  
| | **Buffer**  
  The buffer indicates the CPU that the user does not want to allocate.  
| | **User-defined CPU Usage per LPAR**  
  Enter user-defined values in CPU units to be used with the User-defined profile. This input is used only for the user-defined profile.  
| | **Display Options** |
| | **Shift Period**  
  If shifts are enabled, the hourly tables have a value for SHIFTPERIOD of 1 or 2, based on off-peak and peak hours configured in the data warehouse. The daily tables have values of 1 for off-peak hours, 2 for peak hours, and -1 for the summarized value for that day. If the shifts are not enabled, the default value is -1.  
| | **Vacation Period**  
  If the Vacation Period option is not enabled, the default value is -1. Otherwise, enter 0 for work days or 1 for vacation days.  
| | **Peak Hours - Start and End**  
  Select the start and end values for the peak hour to calculate the usage only for those hours while the report is running. This filter is not applicable for the user-defined profile.  
| **Tables or views used** | KPH_SERVER_DETAILS_HV  
KPH_SERVER_DETAILS_DV |
### Workload right-sizing and balancing reports

You can use the predefined workload right-sizing and balancing reports to determine the overall performance of the environment for the System p agents.

The following reports are available for workload right-sizing and balancing:
- CEC Base Agent Balanced and Unbalanced CECs
- CEC Base Agent Top or Bottom CECs by Physical CPU Utilization
- CEC Base Agent Top or Bottom CECs by Physical Memory Utilization
- CEC Base Agent Top or Bottom LPARs by Physical CPU Utilization
- CEC Base Agent Top or Bottom LPARs by Physical Memory Utilization
- HMC Base Agent Top or Bottom LPARs by Physical CPU Usage
- HMC Base Agent Top or Bottom Managed Servers by Physical CPU Utilization
- VIOS Premium Agent Top or Bottom VIOSs by Disk Capacity

**CEC Base Agent Balanced and Unbalanced CECs report**

This report shows the CECs that are balanced or unbalanced in the virtualized environment.

If there is a significant variation in CPU or memory utilization between the CECs, there are opportunities to improve utilization in the environment. For example, one CEC can have high CPU utilization while another CEC has low utilization. It is important to analyze all key metrics to ensure that by balancing the CPU workload, you do not introduce other problems into the environment, such as memory constraints.
<table>
<thead>
<tr>
<th>Report element</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Parameters</strong></td>
<td><strong>Resources</strong></td>
</tr>
<tr>
<td><strong>CECs</strong></td>
<td>Select one or more CECs from the environment.</td>
</tr>
<tr>
<td><strong>Date Range</strong></td>
<td><strong>Report Period</strong></td>
</tr>
<tr>
<td></td>
<td>You can choose from a predefined date range such as Last Week, Current Month, and Last 30 Days. Alternatively, you can enter a start and end date and time for the reporting period by choosing the <strong>Date Range</strong> (below) option.</td>
</tr>
<tr>
<td></td>
<td><strong>Start Date</strong></td>
</tr>
<tr>
<td></td>
<td>You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected.</td>
</tr>
<tr>
<td></td>
<td><strong>End Date</strong></td>
</tr>
<tr>
<td></td>
<td>You can choose an end date from a calendar and an end time from the time widget. Both date and time must be selected.</td>
</tr>
<tr>
<td></td>
<td><strong>Display Options</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Metric</strong></td>
</tr>
<tr>
<td></td>
<td>Select the metric you want to see in the report. The options are CPU, Memory, or both.</td>
</tr>
<tr>
<td><strong>Tables or views used</strong></td>
<td>KPK_GLOBAL_CEC_DV</td>
</tr>
<tr>
<td></td>
<td>KPK_MON_UNMON_ALLOC_DV</td>
</tr>
<tr>
<td><strong>Output</strong></td>
<td>There are three reference lines to determine how balanced the CEC is.</td>
</tr>
<tr>
<td></td>
<td>• One line is the Mean, which is the average of all CECs in the environment.</td>
</tr>
<tr>
<td></td>
<td>• The second line is the Statistical Maximum, which is determined by the following expression: 75th percentile value + 1.5 * (75th percentile value - 25th percentile value). For example, if 2.5 is the 25th percentile and 7.5 is the 75th percentile, the statistical maximum is 15 [7.5 +1.5(5) = 15]. Statistical Maximum uses percentiles to determine values and might not always be displayed in the chart if the values are off the axis.</td>
</tr>
<tr>
<td></td>
<td>• The third line is the Statistical Minimum, which is determined by the following expression: 25th percentile value - 1.5 * (75th percentile value - 25th percentile value). For example, if 2.5 is the 25th percentile and 7.5 is the 75th percentile, the statistical minimum is -5 [2.5 -1.5(5) = -5]. Statistical Minimum uses percentiles to determine values and might not always be displayed in the chart if the values are off the axis.</td>
</tr>
</tbody>
</table>

**CEC Base Agent Top or Bottom CECs by Physical CPU Utilization report**

This report shows average CPU Utilization for all CECs in the environment during the report period, with bar charts that show the top and bottom n CECs based on CPU utilization.
<table>
<thead>
<tr>
<th>Report element</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Parameters</strong></td>
<td><strong>Date Range</strong></td>
</tr>
</tbody>
</table>
|                     | **Report Period**  
|                     | You can choose from a predefined date range such as Last Week, Current Month, and 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 an end date from a calendar and an end time from the time widget. Both date and time must be selected.                                                                       |
| **Display Options** | **Top/Bottom n CECs**  
|                     | You can choose any integer to filter the number of top CECs visible in the bar charts.                                                                                                     |
|                     | **Units**  
|                     | You can choose to view the report by using real values or percentages.                                                                                                                      |
| **Shift and Vacation Periods** | **Shift Period**  
|                     | If shifts are enabled, the hourly tables have a value for SHIFTPERIOD of 1 or 2, based on off-peak and peak hours that are configured in the data warehouse. The daily tables have values of 1 for off-peak hours, 2 for peak hours, and -1 for the summarized value for that day. If the shifts are not enabled, the default value is -1. |
|                     | **Vacation Period**  
|                     | If the Vacation Period option is not enabled, the default value is -1. Otherwise, enter 0 for work days or 1 for vacation days.                                                             |
| **Tables or views used** | **KPK_MON_UNMON_ALLOC_DV**  
|                     | **KPK_GLOBAL_CEC_DV**                                                                                                               |
| **Output**          | This report shows two bar charts. One chart shows the top n CECs based on average CPU Utilization. The other chart shows the bottom n CECs. A table below these charts shows CPU attributes for all CECs in the environment during the report period. Use the CEC names in the table to drill down to the CPU Utilization across all LPARs in a CEC report. **Note:** This measurement of CPU utilization for the frame is accurate only if all of the LPARs are "Monitored." |
CEC Base Agent Top or Bottom CECs by Physical Memory Utilization report

This report shows average and maximum memory usage over a specified period for the selected LPARs.

<table>
<thead>
<tr>
<th>Report element</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parameters</td>
<td>Date Range</td>
</tr>
<tr>
<td></td>
<td>Report Period</td>
</tr>
<tr>
<td></td>
<td>You can choose from a predefined date range such as Last Week, Current Month, and 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.</td>
</tr>
<tr>
<td></td>
<td>Start Date</td>
</tr>
<tr>
<td></td>
<td>You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected.</td>
</tr>
<tr>
<td></td>
<td>End Date</td>
</tr>
<tr>
<td></td>
<td>You can choose an end date from a calendar and an end time from the time widget. Both date and time must be selected.</td>
</tr>
<tr>
<td>Display Options</td>
<td>Top/Bottom N CECs</td>
</tr>
<tr>
<td></td>
<td>You can choose any integer to filter the number of top or bottom CECs visible in the bar charts.</td>
</tr>
<tr>
<td></td>
<td>Units</td>
</tr>
<tr>
<td></td>
<td>You can choose to view the report by using real values or percentages.</td>
</tr>
<tr>
<td>Shift and Vacation Periods</td>
<td>Shift Period</td>
</tr>
<tr>
<td></td>
<td>If shifts are enabled, the hourly tables have a value for SHIFTPERIOD of 1 or 2, based on off-peak and peak hours that are configured in the data warehouse. The daily tables have values of 1 for off-peak hours, 2 for peak hours, and -1 for the summarized value for that day. If the shifts are not enabled, the default value is -1.</td>
</tr>
<tr>
<td></td>
<td>Vacation Period</td>
</tr>
<tr>
<td></td>
<td>If the Vacation Period option is not enabled, the default value is -1. Otherwise, enter 0 for work days or 1 for vacation days.</td>
</tr>
</tbody>
</table>

| Tables or views used | KPK_GLOBAL_CEC_DV |
|                     | KPK_MON_UNMON_ALLOC_DV |

| Output | This report shows two bar charts. One chart shows the top n CECs based on average Memory Utilization; the other chart shows the bottom n CECs. A table below these charts shows memory attributes such as Average and Maximum Allocated Memory Used in MB and % for all CECs. For each CEC agent in the table, you can drill through to the Memory Utilization across all LPARs in a CEC report. |
### CEC Base Agent Top or Bottom LPARs by Physical CPU Utilization report

This report shows CPU Utilization for all LPARs in the environment.

<table>
<thead>
<tr>
<th>Report element</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Parameters</strong></td>
<td>Date Range</td>
</tr>
<tr>
<td><strong>Report Period</strong></td>
<td>You can choose from a predefined date range such as Last Week, Current Month, and 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.</td>
</tr>
<tr>
<td><strong>Start Date</strong></td>
<td>You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected.</td>
</tr>
<tr>
<td><strong>End Date</strong></td>
<td>You can choose an end date from a calendar and an end time from the time widget. Both date and time must be selected.</td>
</tr>
<tr>
<td><strong>Display Options</strong></td>
<td>CEC</td>
</tr>
<tr>
<td></td>
<td>Select the CEC you want from the environment or select % to view the top and bottom LPARs from all CECs in the environment.</td>
</tr>
<tr>
<td><strong>Top/Bottom ％ LPARs</strong></td>
<td>You can choose any integer to filter the number of top or bottom LPARs visible in the bar charts.</td>
</tr>
<tr>
<td><strong>Units</strong></td>
<td>You can choose to view the report by using real values or percentages.</td>
</tr>
<tr>
<td><strong>Shift and Vacation Periods</strong></td>
<td>Shift Period</td>
</tr>
<tr>
<td></td>
<td>If shifts are enabled, the hourly tables have a value for SHIFTPERIOD of 1 or 2, based on off-peak and peak hours that are configured in the data warehouse. The daily tables have values of 1 for off-peak hours, 2 for peak hours, and -1 for the summarized value for that day. If the shifts are not enabled, the default value is -1.</td>
</tr>
<tr>
<td><strong>Vacation Period</strong></td>
<td>If the Vacation Period option is not enabled, the default value is -1. Otherwise, enter 0 for work days or 1 for vacation days.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tables or views used</th>
<th>KPK_MON_LPARS_DV</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>KPK_GLOBAL_CEC_DV</td>
</tr>
</tbody>
</table>

**Output**

This report shows two bar charts. One bar shows the top n LPARs based on average CPU Utilization; the other bar shows the bottom n LPARs for the selected CEC. A table below these charts shows various CPU attributes for all LPARs in the environment, such as Total and Maximum Physical CPU that is used, Average LPAR CPU Utilization (%), Total CPU Units Allocated, and Average Physical CPU Entitlement (%). Use the LPAR names in the table to drill down to the CPU Utilization over time for that LPAR.

---

### CEC Base Agent Top or Bottom LPARs by Physical Memory Utilization report

This report shows average and maximum memory utilization and physical memory that is allocated in megabytes for all LPARs in the environment.
<table>
<thead>
<tr>
<th>Report element</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Parameters</strong></td>
<td><strong>Date Range</strong></td>
</tr>
<tr>
<td><strong>Report Period</strong></td>
<td>You can choose from a predefined date range such as Last Week, Current Month, and Last 30 Days. Alternatively, you can enter a start and end date and time for the reporting period by choosing the <strong>Date Range (below)</strong> option.</td>
</tr>
<tr>
<td><strong>Start Date</strong></td>
<td>You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected.</td>
</tr>
<tr>
<td><strong>End Date</strong></td>
<td>You can choose an end date from a calendar and an end time from the time widget. Both date and time must be selected.</td>
</tr>
<tr>
<td><strong>Display Options</strong></td>
<td><strong>CEC</strong></td>
</tr>
<tr>
<td></td>
<td>Select the CEC you want from the environment or select % to view the top and bottom LPARs from all CECs in the environment.</td>
</tr>
<tr>
<td></td>
<td><strong>Top/Bottom N LPARs</strong></td>
</tr>
<tr>
<td></td>
<td>You can choose any integer to filter the number of top or bottom LPARs visible in the bar charts.</td>
</tr>
<tr>
<td></td>
<td><strong>Units</strong></td>
</tr>
<tr>
<td></td>
<td>You can choose to view the report by using real values or percentages.</td>
</tr>
<tr>
<td><strong>Shift and Vacation Periods</strong></td>
<td><strong>Shift Period</strong></td>
</tr>
<tr>
<td></td>
<td>If shifts are enabled, the hourly tables have a value for SHIFTPERIOD of 1 or 2, based on off-peak and peak hours that are configured in the data warehouse. The daily tables have values of 1 for off-peak hours, 2 for peak hours, and -1 for the summarized value for that day. If the shifts are not enabled, the default value is -1.</td>
</tr>
<tr>
<td></td>
<td><strong>Vacation Period</strong></td>
</tr>
<tr>
<td></td>
<td>If the Vacation Period option is not enabled, the default value is -1. Otherwise, enter 0 for work days or 1 for vacation days.</td>
</tr>
<tr>
<td><strong>Tables or views used</strong></td>
<td>KPK_MON_LPARS_DV</td>
</tr>
<tr>
<td></td>
<td>KPK_GLOBAL_CEC_DV</td>
</tr>
<tr>
<td><strong>Output</strong></td>
<td>This report shows two bar charts. One chart shows the top N LPARs based on average memory utilization, and the other chart shows the bottom N LPARs. A table below these charts shows various memory attributes for all LPARs in the environment. Use the LPAR names in the table to drill down to the Memory Utilization over time report for that LPAR.</td>
</tr>
</tbody>
</table>
HMC Base Agent Top or Bottom LPARs by Physical CPU Usage report
This report shows the top or bottom LPARs in the environment by Physical CPU Utilization.

<table>
<thead>
<tr>
<th>Report element</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parameters</td>
<td>Date Range</td>
</tr>
<tr>
<td></td>
<td>Report Period</td>
</tr>
<tr>
<td></td>
<td>You can choose from a predefined date range such as Last Week, Current Month, and 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.</td>
</tr>
<tr>
<td></td>
<td>Start Date</td>
</tr>
<tr>
<td></td>
<td>You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected.</td>
</tr>
<tr>
<td></td>
<td>End Date</td>
</tr>
<tr>
<td></td>
<td>You can choose an end date from a calendar and an end time from the time widget. Both date and time must be selected.</td>
</tr>
<tr>
<td>Resource Selection</td>
<td>Managed Server</td>
</tr>
<tr>
<td></td>
<td>Select the managed server that you want from the environment.</td>
</tr>
<tr>
<td>Display Options</td>
<td>Top/Bottom N LPARs</td>
</tr>
<tr>
<td></td>
<td>You can choose any integer to filter the number of top or bottom LPARs visible in the bar charts.</td>
</tr>
<tr>
<td>Shift and Vacation Periods</td>
<td>Shift Period</td>
</tr>
<tr>
<td></td>
<td>If shifts are enabled, the hourly tables have a value for SHIFTPERIOD of 1 or 2, based on off-peak and peak hours that are configured in the data warehouse. The daily tables have values of 1 for off-peak hours, 2 for peak hours, and -1 for the summarized value for that day. If the shifts are not enabled, the default value is -1.</td>
</tr>
<tr>
<td></td>
<td>Vacation Period</td>
</tr>
<tr>
<td></td>
<td>If the Vacation Period option is not enabled, the default value is -1. Otherwise, enter 0 for work days or 1 for vacation days.</td>
</tr>
</tbody>
</table>

| Tables or views used | KPH_SERVER_LPARS_DV |
| Output               | This report shows two bar charts. One bar shows the top n LPARs based on average CPU Utilization; the other shows the bottom n LPARs for the selected Managed Server. A table below these charts shows various CPU attributes for all LPARs in the environment, such as Average Physical CPU Units used and Average Physical CPU Entitlement. |
### HMC Base Agent Top or Bottom Managed Servers by Physical CPU Utilization report

This report shows the top or bottom managed servers in the environment by Physical CPU Utilization.

<table>
<thead>
<tr>
<th>Report element</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Parameters</strong></td>
<td><strong>Date Range</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Report Period</strong></td>
</tr>
<tr>
<td></td>
<td>You can choose from a predefined date range such as Last Week, Current Month, and 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.</td>
</tr>
<tr>
<td></td>
<td><strong>Start Date</strong></td>
</tr>
<tr>
<td></td>
<td>You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected.</td>
</tr>
<tr>
<td></td>
<td><strong>End Date</strong></td>
</tr>
<tr>
<td></td>
<td>You can choose an end date from a calendar and an end time from the time widget. Both date and time must be selected.</td>
</tr>
<tr>
<td><strong>Display Options</strong></td>
<td><strong>Top/Bottom N Managed Servers</strong></td>
</tr>
<tr>
<td></td>
<td>You can choose any integer to filter the number of top or bottom managed servers visible in the bar charts.</td>
</tr>
<tr>
<td></td>
<td><strong>Units</strong></td>
</tr>
<tr>
<td></td>
<td>You can choose to view the report by using real values or percentages.</td>
</tr>
<tr>
<td><strong>Shift and Vacation Periods</strong></td>
<td><strong>Vacation Period</strong></td>
</tr>
<tr>
<td></td>
<td>If the Vacation Period option is not enabled, the default value is -1.</td>
</tr>
<tr>
<td></td>
<td>Otherwise, enter 0 for work days or 1 for vacation days.</td>
</tr>
</tbody>
</table>

| Tables or views used | KPH_SERVER_DETAILS_DV |
| Output | This report shows two bar charts. One bar shows the top n Managed Servers that is based on average CPU Utilization; the other bar shows the bottom n managed servers. A table below these charts shows various CPU attributes for all Managed Servers in the environment, such as Total CPU Used, Total CPU Allocated, Unallocated CPU, and Average Physical CPU Utilization. |

### VIOS Premium Agent Top or Bottom VIOSs by Disk Capacity report

This report shows the top and bottom VIOSs based on average megabytes used and the disk capacity for all VIOSs in the environment.
<table>
<thead>
<tr>
<th>Report element</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parameters</td>
<td>Date Range</td>
</tr>
<tr>
<td></td>
<td><strong>Report Period</strong>&lt;br&gt;You can choose from a predefined date range such as Last Week, Current Month, and Last 30 Days. Alternatively, you can enter a start and end date and time for the reporting period by choosing the <strong>Date Range (below)</strong> option.</td>
</tr>
<tr>
<td></td>
<td><strong>Start Date</strong>&lt;br&gt;You can choose a start date from a calendar and start time from the time widget. Both date and time must be selected.</td>
</tr>
<tr>
<td></td>
<td><strong>End Date</strong>&lt;br&gt;You can choose an end date from a calendar and an end time from the time widget. Both date and time must be selected.</td>
</tr>
<tr>
<td>Display Options</td>
<td><strong>Top/Bottom % VIOSs</strong>&lt;br&gt;You can choose any integer to filter the number of top or bottom VIOSs visible in the bar charts.</td>
</tr>
<tr>
<td>Shift and Vacation Periods</td>
<td><strong>Shift Period</strong>&lt;br&gt;If shifts are enabled, the hourly tables have a value for SHIFTPERIOD of 1 or 2, based on off-peak and peak hours that are configured in the data warehouse. The daily tables have values of 1 for off-peak hours, 2 for peak hours, and -1 for the summarized value for that day. If the shifts are not enabled, the default value is -1.</td>
</tr>
<tr>
<td></td>
<td><strong>Vacation Period</strong>&lt;br&gt;If the Vacation Period option is not enabled, the default value is -1. Otherwise, enter 0 for work days or 1 for vacation days.</td>
</tr>
<tr>
<td>Tables or views used</td>
<td>KVA_PHYSICAL_VOLUMES_DV&lt;br&gt;KVA_STORAGE_MAPPINGS_DV&lt;br&gt;KVA_VOLUME_GROUPS_DV</td>
</tr>
<tr>
<td>Output</td>
<td>This report shows 2 stacked bar charts. One chart shows the top n VIOSs based on average megabytes used. The top part of each bar shows the average size in megabytes. The other report shows the bottom n VIOSs. A table below these charts shows disk capacity for all VIOSs in the environment. Each VIOS name in the table is a link that you can use to drill down to the disk capacity over time for that VIOS.</td>
</tr>
</tbody>
</table>
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 173.

You can resolve some problems by ensuring that your system matches the system requirements listed in “Requirements for the monitoring agent” on page 7.

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 140
- “Consulting the lists of identified problems and workarounds” on page 140

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 5.

<table>
<thead>
<tr>
<th>Information type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log files</td>
<td>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 141 for lists of all trace log files and their locations. For general information about the IBM Tivoli Monitoring environment, see the Tivoli Enterprise Portal User’s Guide.</td>
</tr>
<tr>
<td>HMC information</td>
<td>Version number and patch level</td>
</tr>
<tr>
<td>Operating system</td>
<td>Operating system version number and patch level</td>
</tr>
<tr>
<td>Messages</td>
<td>Messages and other information displayed on the screen</td>
</tr>
<tr>
<td>Version numbers for IBM Tivoli Monitoring</td>
<td>Version number of the following members of the monitoring environment:</td>
</tr>
<tr>
<td></td>
<td>• IBM Tivoli Monitoring. Also provide the patch level, if available.</td>
</tr>
<tr>
<td></td>
<td>• IBM Tivoli Monitoring: HMC Base Agent</td>
</tr>
<tr>
<td>Screen captures</td>
<td>Screen captures of incorrect output, if any</td>
</tr>
<tr>
<td>(UNIX systems only) Core dump files</td>
<td>If the system stops on UNIX systems, collect the core dump file from the install_dir/bin directory, where install_dir is the directory where you installed the monitoring agent.</td>
</tr>
</tbody>
</table>

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 “pdcollect tool” in the IBM Tivoli Monitoring Troubleshooting Guide.

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

Logging is the primary troubleshooting feature in the HMC Base agent. Logging refers to the text messages and trace data that is generated by the HMC Base 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 151.

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 141
- "Examples: Using trace logs” on page 144
- “Setting RAS trace parameters by using the GUI” on page 145

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 6 on page 141 provides the names, locations, and descriptions of IBM Tivoli Monitoring general RAS1 log files. The log file names for the HMC Base 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: HMC Base Agent, the product code is ph.

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

Table 6. Trace log files for troubleshooting agents

<table>
<thead>
<tr>
<th>System where log is located</th>
<th>File name and path</th>
<th>Description</th>
</tr>
</thead>
</table>
| On the Tivoli Enterprise Monitoring Server | • Windows: The IBM Tivoli Monitoring timestamp.log file in the install_dir\InstallITM path  
• UNIX: The candle_installation.log file in the install_dir/logs path  
• Linux: The candle_installation.log file in the install_dir/logs path | Provides details about products that are installed.  
Note: Trace logging is enabled by default. A configuration step is not required to enable this tracing. |
| On the Tivoli Enterprise Monitoring Server | The Warehouse_Configuration.log file is in the following location on Windows systems: install_dir\InstallITM | Provides details about the configuration of data warehousing for historical reporting. |
Table 6. Trace log files for troubleshooting agents (continued)

<table>
<thead>
<tr>
<th>System where log is located</th>
<th>File name and path</th>
<th>Description</th>
</tr>
</thead>
</table>
| On the Tivoli Enterprise Monitoring Server | The name of the RAS log file is as follows:  
  - **Windows**: `install_dir\logs\hostname_ms_timestamp-nn.log`  
  - **UNIX**: `install_dir/logs/hostname_ms_timestamp-nn.log`  
  - **Linux**: `install_dir/logs/hostname_ms_timestamp-nn.log` | Traces activity on the monitoring server. |
| Note: File names for RAS1 logs include a hexadecimal time stamp. Also on UNIX systems, a log with a decimal time stamp is provided:  
  `hostname_productcode_timestamp.log` and `hostname_productcode_time stamp.pid nnnnnnnn in the install_dir/logs path, where nnnnnn is the process ID number.` | |
| On the Tivoli Enterprise Portal Server | The name of the RAS log file is as follows:  
  - **Windows**: `install_dir\logs\hostname_cq_HEXtimestamp-nn.log`  
  - **UNIX**: `install_dir/logs/hostname_cq_HEXtimestamp-nn.log`  
  - **Linux**: `install_dir/logs/hostname_cq_HEXtimestamp-nn.log` | Traces activity on the portal server. |
| Note: File names for RAS1 logs include a hexadecimal time stamp. Also on UNIX systems, a log with a decimal time stamp is provided:  
  `hostname_productcode_timestamp.log` and `hostname_productcode_timestamp.pid nnnnnn in the install_dir/logs path, where nnnnnn is the process ID number.` | |
| On the Tivoli Enterprise Portal Server | The `teps_odbc.log` file is located in the following path:  
  - **Windows**: `install_dir\InstallITM\logs\teps_odbc.log`  
  - **UNIX**: `install_dir/logs/teps_odbc.log`  
  - **Linux**: `install_dir/logs/teps_odbc.log` | When you enable historical reporting, this log file traces the status of the warehouse proxy agent. |
Table 6. Trace log files for troubleshooting agents (continued)

<table>
<thead>
<tr>
<th>System where log is located</th>
<th>File name and path</th>
<th>Description</th>
</tr>
</thead>
</table>
| On the computer that hosts the monitoring agent | The RAS1 log files are as follows:  
- **UNIX:**  
  hostname_ph_instance_name_kphagent_HEXtimestamp-nn.log in the install_dir/logs directory  
These logs are in the following directories:  
- **UNIX:** install_dir/logs  
HMC agent data provider logs:  
- kph_data_provider_instance_name_startup.log  
- kph_data_provider_instance_name_.log | Traces activity of the monitoring agent.  
HMC agent data provider logs: To enable the HMC Base agent data provider traces, reconfigure the agent with the required Level of Detail in Data Provider Log (KPH_LOG_LEVEL). Use the following supported levels:  
- OFF: No messages are logged.  
- SEVERE: Only errors are logged.  
- WARNING: Everything that is logged at the Severe level and potential errors that might result in undesirable behavior.  
- INFO: Everything that is logged at the Warning level and high-level informational messages that describe the state of the data provider as it executes.  
- FINE: Everything that is logged at the Info level and low-level informational messages that describe the state of the data provider as it executes.  
- FINER: Everything that is logged at the Fine level and highly detailed informational messages, such as performance profiling information and debug data. Choosing this option can adversely affect the performance of the agent. This setting is intended only as a tool for problem determination when you are consulting with IBM support staff.  
- FINEST: Everything that is logged at the Fine level and the most detailed informational purposes, including low-level programming messages and data. Choosing this option can adversely affect the performance of the agent. This setting is intended only as a tool for problem determination when you are consulting with IBM support staff.  
- ALL: All messages are logged. |
### Table 6. Trace log files for troubleshooting agents (continued)

<table>
<thead>
<tr>
<th>System where log is located</th>
<th>File name and path</th>
<th>Description</th>
</tr>
</thead>
</table>
| On the computer that hosts the monitoring agent | The agent operations log files are as follows:  
*instance_hostname*.PH.LG0 is the current log created when the agent was started.  
*instance_hostname*.PH.LG1 is the backup of the previous log.  
These logs are in the following directory depending on the operating system that you are using:  
- UNIX: *install_dir/logs* | Shows whether the agent could connect to the monitoring server. Shows which situations are started and stopped, and shows other events while the agent is running. A new version of this file is generated every time the agent is restarted. IBM Tivoli Monitoring generates one backup copy of the *.LG0 file with the tag .LG1. View the .LG1 tag to learn the following details regarding the previous monitoring session:  
  - Status of connectivity with the monitoring server  
  - Situations that were running  
  - The success or failure status of Take Action commands |

**Definitions of variables:**
- `timestamp` is a time stamp with a format that includes year (y), month (m), day (d), hour (h), and minute (m), as follows: `yyyymmdd hhmm`
- `HEXtimestamp` is a hexadecimal representation of the time at which the process was started.
- `install_dir` represents the directory path where you installed the IBM Tivoli Monitoring component. `install_dir` can represent a path on the computer that hosts the monitoring system, the monitoring agent, or the portal.
- `instance` refers to the name of the database instance that you are monitoring.
- `instance_name` refers to the name of the agent instance.
- `hostname` refers to the name of the computer on which the IBM Tivoli Monitoring component runs.
- `nn` represents the circular sequence in which logs are rotated. This value includes a range from 1-5, by default. The first is always retained because it includes configuration parameters.
- `productcode` specifies the product code, for example, um for Universal Agent or nt for Windows systems.

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

**Examples: Using trace logs**

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

IBM Software Support applies specialized knowledge to analyze trace logs to determine the source of problems. The following examples are from the Tivoli Enterprise Monitoring Server log.

**Example one**

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

(Thursday, August 11, 2005, 08:21:30-{94C}kdc10c1c.c.105,"KDC10_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:$serverla>
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:PH is ON-LINE.

(42C3079B.0000-6A4:kpxreqhb.cpp,644,"HeartbeatInserter") Remote node SERVER5B:PH is OFF-LINE.

See the following key points about the preceding excerpts:

- The monitoring server appends the PH product code to the server name to form a unique name (SERVER5B:PH) for this instance of the IBM Tivoli Monitoring: HMC Base Agent. By using this unique name, you can distinguish multiple monitoring products that might be running on SERVER5B.
- The log shows when the agent started (ON-LINE) and later stopped (OFF-LINE) in the environment.
- For the sake of brevity, an ellipsis (...) represents the series of trace log entries that were generated while the agent was running.
- Between the ON-LINE and OFF-LINE log entries, the agent was communicating with the monitoring server.
- The ON-LINE and OFF-LINE log entries are always available in the trace log. All trace levels that are described in "Setting RAS trace parameters 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: HMC Base Agent, right-click the name of that agent in the window. You can also use the viewer to access remote logs.

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

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 140 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: HMC Base Agent uses RAS1 tracing and generates the logs described in Table 6 on page 141. The default RAS1 trace level is ERROR.

Procedure

1. Open the Manage Tivoli Enterprise Monitoring Services window.
2. Select Advanced > Edit TraceParms. 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:kph ALL)
• Maximum error tracing. KBB_RAS1=ERROR (UNIT:kph 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 6 on page 141 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 HMC Base agent uses RAS1 tracing and generates the logs described in Table 6 on page 141. The default RAS1 trace level is ERROR.

Procedure
1. Open the trace options file:
   • UNIX systems:
     ```
     install_dir /config/ph_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:kph 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 6 on page 141 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)
```

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

*set*

Turning 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, *
kbbcrni.c, 400, May 29 2007, 12:54:42, 1.1, *
kdhbide.c, 400, May 29 2007, 12:59:34, 1.1, KDH
kdh0med.c, 400, May 29 2007, 12:59:24, 1.1, KDH
kdhrej.c, 400, May 29 2007, 13:00:06, 1.5, KDH
kdhbfh.c, 400, May 29 2007, 12:59:33, 1.1, KDH
kdhbloe.c, 400, May 29 2007, 12:59:38, 1.2, KDH
kdhbins.c, 400, May 29 2007, 13:00:08, 1.3, KDH
kbbacdl.c, 400, May 29 2007, 12:54:27, 1.2, ACF1
kbbaclc.c, 400, May 29 2007, 12:54:27, 1.4, ACF1
kbbac1i.c, 400, May 29 2007, 12:54:28, 1.11, ACF1
vkdhsfcn.c, 400, May 29 2007, 13:00:11, 1.1, KDH
kdhserq.c, 400, May 29 2007, 12:59:53, 1.1, KDH
kdhstpr.c, 400, May 29 2007, 12:59:39, 1.1, KDH
kdhsgnh.c, 400, May 29 2007, 12:59:49, 1.1, KDH
kdhouts.c, 400, May 29 2007, 12:59:23, 1.1, KDH
kdhsrcp.c, 400, May 29 2007, 13:00:13, 1.2, KDH
kdhstlp.c, 400, May 29 2007, 13:00:12, 1.1, KDH
kdhscsv.c, 400, May 29 2007, 12:59:58, 1.9, KDH
kdebbac.c, 400, May 29 2007, 12:56:50, 1.10, KDE
```

**Turning on tracing**

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

**About this task**

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

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

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

**Procedure**

1. Open a web browser and enter the URL to access the Service Console.
   
   `http://hostname:1920`

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

2. Click the hyperlink associated with the component for which you want to modify its trace settings.

   **Note:** In the previous view, if you want to modify tracing for the Tivoli Enterprise Monitoring Server, select **IBM Tivoli Monitoring Service Console** under **Service Point: system.your host name_ms**.

3. Enter a user ID and password to access the system. This ID is any valid user that has access to the system.

4. Enter the command to turn on the required level of trace for the specified component classes or units.
ras1 set (UNIT|COMP: class_name ALL|Flow|ERROR|Detail|INPUT|Metrics|OUTPUT|STATE)
((UNIT|COMP: class_name ALL|Flow|ERROR|Detail|INPUT|Metrics|OUTPUT|STATE))

For example, to turn on the control flow trace for the KDE, the command is:
ras1 (COMP:KDE Flow)

**Turning off tracing**

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

**Procedure**

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

   `http://hostname:1920`

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

2. Click the hyperlink associated with the component for which you want to modify its trace settings.

3. Enter a user ID and password to access the system. This ID is any valid user that has access to the system.

4. Enter the command to turn off the required level of trace for the specified component classes or units.

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

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

   `ras1 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 HMC Base 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 "Requirements for the monitoring agent" on page 7.

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

<table>
<thead>
<tr>
<th>Table 7. Problems and solutions for installation and configuration</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Problem</strong></td>
</tr>
<tr>
<td>(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 &quot;component_name&quot; where component_name is the name of the component that you are attempting to install. <strong>Note:</strong> 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.</td>
</tr>
</tbody>
</table>
| A message similar to "Unable to find running CMS on CT_OMSLIST" in the log file is displayed. | If a message similar to "Unable to find running CMS on CT_OMSLIST" 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 KPHCMA 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>
<thead>
<tr>
<th>Problem</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>The artwork in the installation panels in the Japanese environment are missing, and some panels have a truncation problem.</td>
<td>No solution is available for this problem at this time.</td>
</tr>
<tr>
<td>In the <strong>Install Prerequisites</strong> panel during agent installation, the following extra string displays in Russian: \r</td>
<td>No solution is available for this problem at this time.</td>
</tr>
<tr>
<td>In the <strong>Select Features</strong> panel during agent installation, the <strong>Description</strong> of each feature is in English only.</td>
<td>No solution is available for this problem at this time.</td>
</tr>
<tr>
<td>The following warning message is displayed during application support installation <strong>KCIIN1421W WARNING - unable to copy eclipse agent plug-in file</strong></td>
<td>Manually rename or delete the agent plug-in file and run the application support installation again.</td>
</tr>
<tr>
<td>$CANDLEHOME/$ITM_BINARCH/cw/iehs/kpc/eclipse/plugins/com.ibm.kpc.doc</td>
<td></td>
</tr>
<tr>
<td>where, pc is your two character product code.</td>
<td></td>
</tr>
<tr>
<td>When you configure the HMC Base agent using the following command: $CANDLEHOME/bin/itmcmd config -o instance_name-A-ph</td>
<td>Configure the HMC Base agent by using the following format for the <strong>itmcmd config</strong> command: $CANDLEHOME/bin/itmcmd config -A ph</td>
</tr>
<tr>
<td>and then start the agent using this command: $CANDLEHOME/bin/itmcmd agent -o instance_name\ start ph</td>
<td>When configuring the HMC Base agent interactively, do not specify the instance name using the <strong>itmcmd config -o</strong> parameter. Instead, use the preceding format and provide the HMC Base agent instance name when prompted. You can specify the -o parameter with the <strong>itmcmd config</strong> command when configuring the agent in silent mode using the following format: ./itmcmd config -p &quot;/path_to_silent_cfg_file\ silent_config.txt&quot; -o instance_name\ -A ph</td>
</tr>
<tr>
<td>you see the following message: Starting Base Monitoring Agent for HMC ... KCIIN0204E Unable to perform I/O due to system error, unknown path or file not existing : java.io.FileNotFoundException: /opt/hmc_silent/config/ph_inst5.config (No such file or directory)</td>
<td>Support files for all IBM Tivoli Monitoring supported operating systems are located on the support file image. Support files for the AIX operating system are located on the agent image.</td>
</tr>
<tr>
<td>Cannot find the agent support files for the Linux operating system.</td>
<td></td>
</tr>
<tr>
<td>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.</td>
<td>Check the GL component version by running kincinfo -t GL from a Windows command line. Example: %CANDLE_HOME%\InstallITM\kincinfo -t GL</td>
</tr>
<tr>
<td>If the GL component version is 06.23.00.00 or 06.23.01.00, take one of the following actions:</td>
<td></td>
</tr>
<tr>
<td><strong>Preferred action</strong>: Upgrade the Windows OS Agent to Version 6.2.3 Fix Pack 2.</td>
<td></td>
</tr>
<tr>
<td><strong>Alternate action</strong>: Install the Agent Compatibility (AC) component from the IBM Tivoli Monitoring V6.2.3 Fix Pack 1 media. <strong><a href="http://pic.dhe.ibm.com/infocenter/tivihelp/v15r1/topic/com.ibm.itm.doc_6.2.3fp1/itm623FP1_install199.htm#acpinstall">Installing the Agent Compatibility (AC) component</a></strong>.</td>
<td></td>
</tr>
</tbody>
</table>
Table 7. Problems and solutions for installation and configuration (continued)

<table>
<thead>
<tr>
<th>Problem</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>The 6.2.2.3 version of the HMC Base agent can be back-leveled by installing a previous version of the agent in the same installation directory as the 6.2.2.3 version. There is no warning during the installation.</td>
<td>The 6.2.2.3 HMC Base agent is a 64-bit agent that installs as an IBM Tivoli Monitoring aix526 agent. Previous versions of the agent are 32 bit and are installed by using their own installer. The IBM Tivoli Monitoring installer sees aix526 and aix523 as different agents and allows for them to be installed at the same time. If the 6.2.2.3 agent is back-leveled, the agent must be reinstalled.</td>
</tr>
</tbody>
</table>

Table 8. General problems and solutions for uninstallation

<table>
<thead>
<tr>
<th>Problem</th>
<th>Solution</th>
</tr>
</thead>
</table>
| The way to remove inactive managed systems (systems whose status is OFFLINE) from the Navigator tree in the portal is not obvious. | Use the following steps to remove, but not uninstall, an offline managed system from the Navigator tree:  
1. Click the Enterprise icon in the Navigator tree.  
2. Right-click, and then click Workspace > Managed System Status.  
3. Right-click the offline managed system, and select Clear offline entry.  
To uninstall the monitoring agent, use the procedure described in the IBM Tivoli Monitoring Installation and Setup Guide. |
<table>
<thead>
<tr>
<th>Problem</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>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.</td>
<td>If the agent supports multiple instances, IBM Tivoli Monitoring automatically creates a name for each monitoring component by concatenating the subsystem name, host name, and product code separated by colons ($subsystem_name$:$hostname$:KPH). <strong>Note:</strong> When you monitor a multinode system, such as a database, IBM Tivoli Monitoring adds a subsystem name to the concatenated name, typically a database instance name. The length of the name that IBM Tivoli Monitoring generates is limited to 32 characters. Truncation can result in multiple components having the same 32-character name. If this problem happens, shorten the $hostname$ portion of the name as follows: 1. Open the configuration file for the monitoring agent, which is located in the following path:  - <strong>On UNIX and Linux:</strong> <code>itm_home/config/product_code.ini</code> and <code>product_code.config</code>. For example, the file names for the Monitoring Agent for UNIX OS is <code>ux.ini</code> and <code>ux.config</code>. 2. Find the line that begins with <code>CTIRA_HOSTNAME=</code>. 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 KPH, cannot be longer than 32 characters. <strong>Note:</strong> 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.</td>
</tr>
<tr>
<td>While running <code>./uninstall.sh</code> to uninstall the agent, one of its components, or both, you receive the following error message and the uninstallation does not complete: <code>uninstall.sh failure: KCI0766E could not find arch &quot;aix536&quot; in a JRE version file.</code></td>
<td>Use the following separate, manual procedure for uninstalling the system monitor agent that monitors the Linux or UNIX operating system: 1. Stop the agent by running the following command:  - <code>InstDir/bin/itmcmd agent stop all</code> 2. Stop any other agents running from the same <code>InstDir</code> directory. 3. Issue the following command: <code>InstDir/bin/uninstall.sh REMOVE EVERYTHING</code> <strong>Note:</strong> Running the <code>uninstall.sh</code> script with REMOVE EVERYTHING removes all agent files and deletes the installation subdirectory tree.</td>
</tr>
<tr>
<td>The software inventory tag for the agent on UNIX and Linux systems is not removed during uninstallation of the agent.</td>
<td>After uninstalling the agent, manually remove the file named <code>full name of agent.cmptag</code> from the <code>$CANDLEHOME/properties/version/</code> directory.</td>
</tr>
</tbody>
</table>

**Remote deployment troubleshooting**

Problems can occur with remote deployment and removal of agent software using the Agent Remote Deploy process.
Table 9 contains problems and solutions related to remote deployment.

Table 9. Remote deployment problems and solutions

<table>
<thead>
<tr>
<th>Problem</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>While you are using the remote deployment feature to install the IBM Tivoli Monitoring: HMC Base Agent, an empty command window is displayed on the target computer. This problem occurs when the target of remote deployment is a Windows computer. (For more information about the remote deployment feature, see the IBM Tivoli Monitoring Installation and Setup Guide.)</td>
<td>Do not close or modify this window. It is part of the installation process and is dismissed automatically.</td>
</tr>
<tr>
<td>The removal of a monitoring agent fails when you use the remote removal process in the Tivoli Enterprise Portal desktop or browser.</td>
<td>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.</td>
</tr>
</tbody>
</table>

Agent troubleshooting

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

Table 10 contains problems and solutions that can occur with the agent after it is installed.

Table 10. Agent problems and solutions

<table>
<thead>
<tr>
<th>Problem</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log data accumulates too rapidly.</td>
<td>Check the RAS trace option settings, which are described in &quot;Setting RAS trace parameters by using the GUI&quot; on page 145. The trace option settings that you can set on the <code>KBB_RAS1=</code> and <code>KDC_DEBUG=</code> lines potentially generate large amounts of data.</td>
</tr>
<tr>
<td>Only the Version attribute group is displayed.</td>
<td>HMC must be running version 6 release 1.2 or later to see all attribute groups.</td>
</tr>
<tr>
<td>Prompt for password is displayed when the agent is started.</td>
<td>Ensure that non-prompted SSH access to the HMC is configured correctly with the SSH keys.</td>
</tr>
<tr>
<td>No data is displayed in the Tivoli Enterprise Portal for all attribute groups.</td>
<td>Inspect the data in the Performance Object Status attribute group and restart the agent. OR Ensure that non-prompted SSH access to the HMC is configured correctly with the SSH keys. If SSH is correctly configured and attempts to SSH into the HMC result in a <code>ssh_exchange_identification: Connection closed by remote host</code> error message, reboot the HMC.</td>
</tr>
<tr>
<td>When using the <code>itmcmd agent</code> commands to start or stop this monitoring agent, you receive the following error message: MKCIIN0201E Specified product is not configured.</td>
<td>Include the command option <code>-o</code> 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 ph</code> For more information about using the <code>itmcmd</code> commands, see the IBM Tivoli Monitoring Command Reference.</td>
</tr>
</tbody>
</table>
Table 10. Agent problems and solutions  (continued)

<table>
<thead>
<tr>
<th>Problem</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Historical Configuration window displays the following parameters</td>
<td>These parameters are no longer required and have been removed. However, if historical configuration was configured before upgrading the agent, they are still present. Reconfiguring the Historical Configuration for the attribute group removes these parameters. The parameters do not affect the operation of historical collection.</td>
</tr>
</tbody>
</table>
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 $(BASE_{PORT} + 4096\times N)$, where $N=0$ for a Tivoli Enterprise Monitoring Server process and $N\in\{1, 2, ..., 15\}$ 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>
<thead>
<tr>
<th>Problem</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continued from previous row.</td>
<td>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.)</td>
</tr>
<tr>
<td>I cannot find my queries.</td>
<td>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.</td>
</tr>
<tr>
<td>The CPU units for a capped LPAR match the entitled capacity for the LPAR, however, both the Entitled_Capacity_Used_Pct and MAX_CPU_Capacity_Used_Pct are 99.9 % and not 100 %.</td>
<td>The HMC Base agent arithmetic uses the greatest precision possible. The CPU units that are used and the percentage attributes have different precisions; therefore, rounding anomalies can occur. The HMC GUI exhibits this same behavior when reporting utilization attributes.</td>
</tr>
</tbody>
</table>

**Workspace troubleshooting**

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

Table 11 on page 159 contains problems and solutions related to workspaces.
### Table 11. Workspace problems and solutions

<table>
<thead>
<tr>
<th>Problem</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>The process application components are available, but the Availability status shows PROCESS_DATA_NOTAVAILABLE.</td>
<td>This problem occurs because the PerfProc performance object is disabled. When this condition exists, IBM Tivoli Monitoring cannot collect performance data for this process. Use the following steps to confirm that this problem exists and to resolve it: 1. In the Windows Start menu, click Run. 2. Type perfmon.exe in the Open field of the Run window. The Performance window is displayed. 3. Click the plus sign (+) in the toolbar. The Add Counters window is displayed. 4. Look for Process in the Performance object menu. 5. Complete one of the following actions: • If you see Process in the menu, the PerfProc performance object is enabled and the problem is coming from a different source. You might need to contact IBM Software Support. • If you do not see Process in the menu, use the Microsoft utility from the Microsoft.com Operations website to enable the PerfProc performance object. The Process performance object becomes visible in the Performance object menu of the Add Counters windows, and IBM Tivoli Monitoring is able to detect Availability data. 6. Restart the monitoring agent.</td>
</tr>
<tr>
<td>The name of the attribute does not display in a bar chart or graph view.</td>
<td>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.</td>
</tr>
<tr>
<td>At the end of each view, you see the following Historical workspace KFWITM220E error: Request failed during execution.</td>
<td>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.</td>
</tr>
</tbody>
</table>
### Table 11. Workspace problems and solutions (continued)

<table>
<thead>
<tr>
<th>Problem</th>
<th>Solution</th>
</tr>
</thead>
</table>
| You start collection of historical data but the data cannot be seen. | Use the following managing options for historical data collection:  
   - Basic historical data collection populates the Warehouse with raw data. This type of data collection is turned off by default. For information about managing this feature including how to set the interval at which data is collected, see “Managing historical data” in the *IBM Tivoli Monitoring Administrator’s Guide*. By setting a more frequent interval for data collection, you reduce the load on the system incurred every time data is uploaded.  
   - Use the Summarization and Pruning agent to collect specific amounts and types of historical data. Historical data is not displayed until the Summarization and Pruning monitoring agent begins collecting the data. By default, this agent begins collection at 2 a.m. daily. At that point, data is visible in the workspace view. For information about how to modify the default collection settings, see “Managing historical data” in the *IBM Tivoli Monitoring Administrator’s Guide*. |
| Historical data collection is unavailable because of incorrect queries in the Tivoli Enterprise Portal. | The Sort By, Group By, and First/Last functions column are not compatible with the historical data collection feature. Use of these advanced functions makes a query ineligible for historical data collection.  
   Even if data collection has started, you cannot use the time span feature if the query for the chart or table includes column functions or advanced query options (Sort By, Group By, First / Last).  
   To ensure support of historical data collection, do not use the Sort By, Group By, or First/Last functions in your queries.  
   For information about the historical data collection function, See “Managing historical data” in the *IBM Tivoli Monitoring Administrator’s Guide* or the Tivoli Enterprise Portal online help. |
| When you use a long process name in the situation, the process name is truncated. | Truncation of process or service names for situations in the Availability table in the portal display is the expected behavior. The maximum name length is 100 bytes. |
| Regular (non-historical) monitoring data fails to be displayed. | Check the formation of the queries you use to gather data. For example, look for invalid SQL statements. |
| Navigator items and workspace titles are labeled with internal names such as Kxx:KXX0000 instead of the correct names (such as Disk), where XX and xx represent the two-character agent code. | Ensure that application support has been added on the monitoring server, portal server, and portal client.  
   For more information about installing application support, see “Installing and enabling application support” in the *IBM Tivoli Monitoring Installation and Setup Guide*. |
Situation troubleshooting

Problems can occur with situations and situation configuration.

Table 12 contains problems and solutions for situations.

<table>
<thead>
<tr>
<th>Problem</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monitoring activity requires too much disk space.</td>
<td>Check the RAS trace logging settings that are described in “Setting RAS trace parameters by using the GUI” on page 145. For example, trace logs grow rapidly when you apply the ALL logging option.</td>
</tr>
<tr>
<td>Monitoring activity requires too many system resources.</td>
<td>“Disk capacity planning for historical data” on page 74 describes the performance impact of specific attribute groups. If possible, decrease your use of the attribute groups that require greater system resources.</td>
</tr>
<tr>
<td>A formula that uses mathematical operators appears to be incorrect.</td>
<td>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.</td>
</tr>
</tbody>
</table>
| 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 $pcENV file for the agent (where $pc is the two-letter product code): CDP_NT_EVENT_LOG_CACHE_TIMEOUT=3600  
This variable determines how long events from the NT Event Log are kept. |
<p>| For a situation that uses the 'MISSING' operator and is distributed to a remote agentless monitoring subnode, no indication is displayed in the Tivoli Enterprise Portal or in the Situation Event Console when the situation becomes true. | The MISSING predicate is currently not supported on subnodes. If a situation with a MISSING predicate is distributed to a subnode, the agent cannot tell which subnode or node the event is occurring on. It inserts the system name as the origin node for the event and returns. When the event reaches the Tivoli Enterprise Portal Server, the origin node does not match the system name of the subnode where the situation is associated, so the event is dropped. |
| The situation for a specific agent is not visible in the Tivoli Enterprise Portal. | Open the Situation Editor. Access the All managed servers view. If the situation is not displayed, confirm that the monitoring server has been seeded for the agent. If not, seed the server, as described in the IBM Tivoli Monitoring Installation and Setup Guide. |
| The monitoring interval is too long.                                     | Access the Situation Editor view for the situation that you want to modify. Check the Sampling interval area in the Formula tab. Adjust the time interval as required. |</p>
<table>
<thead>
<tr>
<th>Problem</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>The situation did not activate at startup.</td>
<td>Manually recycle the situation as follows:</td>
</tr>
<tr>
<td></td>
<td>1. Right-click the situation and select <strong>Stop Situation</strong>.</td>
</tr>
<tr>
<td></td>
<td>2. Right-click the situation and select <strong>Start Situation</strong>.</td>
</tr>
<tr>
<td></td>
<td>Note: You can permanently avoid this problem by selecting the <strong>Run at Startup</strong> check box of the Situation Editor view for a specific situation.</td>
</tr>
<tr>
<td>The situation is not displayed.</td>
<td>Click the <strong>Action</strong> 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.</td>
</tr>
<tr>
<td>An Alert event did not occur even though the predicate was correctly specified.</td>
<td>Check the logs, reports, and workspaces.</td>
</tr>
<tr>
<td>A situation fires on an unexpected managed object.</td>
<td>Confirm that you distributed and started the situation on the correct managed system.</td>
</tr>
<tr>
<td>The product did not distribute the situation to a managed system.</td>
<td>Click the <strong>Distribution</strong> tab and check the distribution settings for the situation.</td>
</tr>
</tbody>
</table>
Table 12. Situation problems and solutions (continued)

<table>
<thead>
<tr>
<th>Problem</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>The situation does not fire.</td>
<td>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.</td>
</tr>
<tr>
<td></td>
<td>In the Formula tab, analyze predicates as follows:</td>
</tr>
<tr>
<td></td>
<td>1. Click the fx icon in the Formula area. The Show formula window is displayed.</td>
</tr>
<tr>
<td></td>
<td>a. Confirm the following details in the Formula area of the window:</td>
</tr>
<tr>
<td></td>
<td>• The attributes that you intend to monitor are specified in the formula.</td>
</tr>
<tr>
<td></td>
<td>• The situations that you intend to monitor are specified in the formula.</td>
</tr>
<tr>
<td></td>
<td>• The logical operators in the formula match your monitoring goal.</td>
</tr>
<tr>
<td></td>
<td>• The numeric values in the formula match your monitoring goal.</td>
</tr>
<tr>
<td></td>
<td>b. (Optional) Select the Show detailed formula check box to see the original names of attributes in the application or operating system that you are monitoring.</td>
</tr>
<tr>
<td></td>
<td>c. Click OK to dismiss the Show formula window.</td>
</tr>
<tr>
<td></td>
<td>2. (Optional) In the Formula area of the Formula tab, temporarily assign numeric values that immediately trigger a monitoring event. The triggering of the event confirms that other predicates in the formula are valid.</td>
</tr>
<tr>
<td></td>
<td><strong>Note:</strong> 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.</td>
</tr>
<tr>
<td></td>
<td>For additional information about situations that do not fire, see “Situations are not firing” in the IBM Tivoli Monitoring Troubleshooting Guide.</td>
</tr>
<tr>
<td>Situation events are not displayed in the Events Console view of the workspace.</td>
<td>Associate the situation with a Navigator item.</td>
</tr>
<tr>
<td>You do not have access to a situation.</td>
<td><strong>Note:</strong> You must have administrator privileges to complete these steps.</td>
</tr>
<tr>
<td></td>
<td>1. Click Edit &gt; Administer Users to access the Administer Users window.</td>
</tr>
<tr>
<td></td>
<td>2. In the Users area, select the user whose privileges you want to modify.</td>
</tr>
<tr>
<td></td>
<td>3. In the Permissions tab, Applications tab, and Navigator Views tab, select the permissions or privileges that correspond to the user role.</td>
</tr>
<tr>
<td></td>
<td>4. Click OK.</td>
</tr>
</tbody>
</table>
Table 12. Situation problems and solutions (continued)

<table>
<thead>
<tr>
<th>Problem</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>A managed system seems to be offline.</td>
<td>1. Select Physical View and click the Enterprise Level of the navigator tree.</td>
</tr>
<tr>
<td></td>
<td>2. Click View &gt; Workspace &gt; Managed System Status to see a list of managed systems and their status.</td>
</tr>
<tr>
<td></td>
<td>3. If a system is offline, check network connectivity and the status of the specific system or application.</td>
</tr>
</tbody>
</table>

Take Action commands troubleshooting

Problems can occur with Take Action commands.

Table 13 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 6 on page 141.

Table 13. Take Action commands problems and solutions

<table>
<thead>
<tr>
<th>Problem</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Take Action commands often require several minutes to complete.</td>
<td>Allow several minutes. If you do not see a message advising you of completion, try to run the command manually.</td>
</tr>
<tr>
<td>Situations fail to trigger Take Action commands.</td>
<td>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 161. If the Take Action command fails, for general information about troubleshooting Take Action commands, see the IBM Tivoli Monitoring Troubleshooting Guide.</td>
</tr>
</tbody>
</table>

Tivoli Common Reporting troubleshooting

You can troubleshoot problems that occur with installation and with using the Tivoli Common Reporting predefined reports for the HMC Base agent.

For installation problems, use the report installer log to identify the step where installation failed. Use the problems and solutions information to troubleshoot other problems.

Analyzing the report installer log

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/itmfvsvs/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
- The database scripts for creating indexes are provided for enhanced reporting performance in the Tivoli Data Warehouse. If your data warehouse is not prepared with history before installation, this step is skipped by the installer. You can manually run one the following scripts, depending on your database type:
  - create_index_DB2.sql
  - create_index_MSSQL.sql
  - create_index_ORACLE.sql
For more information, see Creating shared dimensions tables and populating the time dimensions table in the IBM Tivoli Monitoring Administrator's Guide (http://pic.dhe.ibm.com/infocenter/tivihelp/v15r1/topic/com.ibm.itm.doc_6.2.3fp1/adminuse/tcr_reports_dimensionsshared.htm).
- Although indexes help to enhance report performance, some limitations apply: Use indexes only on large tables with thousands of rows; because indexes degrade the performance of insert, update, and delete operations on a table.

You can run a script to drop these indexes if you run into either of these performance issues:
- drop_index_DB2.sql
- drop_index_MSSQL.sql
- drop_index_ORACLE.sql

- 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.

**Problems and solutions**

Table 14 contains problems and solutions that can occur with the Tivoli Common Reporting predefined reports for IBM Tivoli Monitoring: HMC Base Agent. See the Tivoli Common Reporting Information Center (http://pic.dhe.ibm.com/infocenter/tivihelp/v3r1/topic/com.ibm.tivoli.tcr.doc_211/ic-home.html) for more information about troubleshooting for the Tivoli Common Reporting tool.

For timeout problems, if the default timeout values for the Tivoli Common Reporting or the Cognos console login is too short, you can change the settings. If your Java virtual machine runs out of memory, you can increase the heap size.

**Table 14. Tivoli Common Reporting for HMC Base agent problems and solutions**

<table>
<thead>
<tr>
<th>Problem</th>
<th>Solution</th>
</tr>
</thead>
</table>
| You used database scripts that are provided in the scripts folder to create indexes for enhanced reporting performance in the Tivoli Data Warehouse, and you receive errors. | If your data warehouse is not prepared with history before installation, the scripts cause errors. Ensure that historical collection is enabled for the tables that are required to run the reports before you run the scripts to create indexes. You can manually run one the following scripts, depending on your database type:  
- scripts/db2/create_index.db2  
- scripts/mssql/create_index.sql  
- scripts/oracle/create_index.sql  

For more information, see Creating shared dimensions tables and populating the time dimensions table in the IBM Tivoli Monitoring Administrator’s Guide (http://pic.dhe.ibm.com/infocenter/tivihelp/v15r1/topic/com.ibm.itm.doc_6.2.3fp1/admindata/ tcr_reports_dimensionsshared.htm).  

Although indexes help in enhancing report performance, some limitations apply: Use indexes only when you have large tables with thousands of rows because indexes degrade the performance of insert, update, and delete operations on a table. You can run a script to drop these indexes if you have performance issues:  
- scripts/db2/drop_index.db2  
- scripts/db2/drop_index.sql  
- scripts/db2/drop_index.sql |
<table>
<thead>
<tr>
<th>Problem</th>
<th>Solution</th>
</tr>
</thead>
</table>
| You must log in to the Cognos server frequently because of automatic timeout (the default is 60 minutes). | 1. Edit the following file:  
   - Linux or operating systems such as UNIX:  
     `/opt/IBM/tivoli/tipv2Components/TCRComponent/cognos/configuration/cogstartup.xml`
   - Windows: `C:\IBM\tivoli\tipv2Components\TCRComponent\cognos\configuration\cogstartup.xml`

2. Locate the `mdmSessionTimeout` parameter.
3. Change the value from 60 minutes to a longer timeout interval. Do not set it to -1, which gives an unlimited timeout period, because connections to the Cognos server might be left open.
4. Save the file.
5. Restart the Tivoli Integrated Portal Server and the Cognos Report Server by using the `startTCRserver` script (Linux and operating systems such as UNIX, use `startTCRserver.sh`; Windows, use `startTCRserver.bat`). If you are also editing the Tivoli Integrated Portal timeout value, you can restart the server after you make the changes that are described next. |
<table>
<thead>
<tr>
<th>Problem</th>
<th>Solution</th>
</tr>
</thead>
</table>
| You are prompted to log in again to the Tivoli Integrated Portal after being logged in for a while, so you would like to increase the session timeout. | Use the WebSphere Administrative Console to set the session timeout and LTPA timeout values to larger values. To open the administrative console from within the Tivoli Integrated Portal, select Settings > WebSphere Administrative Console in the navigation tree and click Launch WebSphere administrative console.  
1. Set the session timeout for Tivoli Integrated Portal application (ISC):  
   a. In the left panel, expand Applications and Application Types, click Websphere Enterprise applications.  
   b. In the list of Enterprise Applications, select isc.  
   c. On the Configuration tab, click Session management.  
   d. For the Session timeout setting, specify the number of minutes you want for the timeout or specify No timeout.  
   e. Click OK; click Save to save the changes.  
2. Set the LTPA timeout:  
   a. In the left panel of the WebSphere Administrative Console, expand Security and click Global security.  
   b. In the Global security panel, Authentication section, click LTPA.  
   c. Enter the LTPA timeout value that you want in minutes.  
   d. Click OK; click Save to save the changes.  
**Important**: Use high or unlimited values for timeouts with caution because such values can lead to poor server performance or out of memory conditions. These timeouts are used by the server to release storage that is associated with sessions that are no longer active. Such sessions can occur when you close your browser without logging off or are disconnected from the server because of network disruptions. |
<table>
<thead>
<tr>
<th>Problem</th>
<th>Solution</th>
</tr>
</thead>
</table>
| You get Java core dumps when you are running out of Java virtual machine (JVM) memory. | If your JVM runs out of memory within the Tivoli Integrated Portal, you receive a Java core dump. The Java core files are in the /opt/IBM/tivoli/tipv2/profiles/TIPProfile directory on Linux and operating systems such as UNIX, and in C:\ibm\tivoli\tipv2\profiles\TIPProfile on Windows. This problem is common on AIX because the default maximum heap size for Java 1.6 on AIX is low. Set the maximum heap size to 512 MB or higher. Use the following steps to update the maximum heap size for the Tivoli Integrated Portal JVM:  
1. Edit the server.xml file in the following directory:  
   - Linux and operating systems such as UNIX: /data/IBM/tivoli/tipv2/profiles/TIPProfile/config/cells/TIPCell/nodes/TIPNode/servers/server1  
   - Windows: C:\IBM\tivoli\tipv2\profiles\TIPProfile\config\cells\TIPCell\nodes\TIPNode\servers\server1  
2. Locate the `genericJvmArguments` parameter near the end of the file. Notice that there are no default JVM heap settings.  
3. Add `-Xmx512m` or `-Xmx1024m` to the `genericJvmArguments`, depending on how much system memory you have on your server. For example, `genericJvmArguments="-Xmx1024m">`  
4. Restart the Tivoli Integrated Portal Server and the Cognos Report Server by using the `startTCRserver` script (Linux and operating systems such as UNIX, use `startTCRserver.sh`; Windows, use `startTCRserver.bat`).  

**Note:** The values that are given here are appropriate for typical cases, but be aware that the heap size might already be set for other applications. The heap size adjustment must be finely tuned. If set too high, the Java process can use too much memory and slow the system. See IBM developerWorks Roadmap for WebSphere Application Server - Tuning (http://www.ibm.com/developerworks/websphere/zones/was/roadmaps/roadmap_was70.html#Tuning) for more information. |
Table 14. Tivoli Common Reporting for HMC Base agent problems and solutions (continued)

<table>
<thead>
<tr>
<th>Problem</th>
<th>Solution</th>
</tr>
</thead>
</table>
| When you run Tivoli Common Reporting reports or test the database connection in Cognos, you get errors (such as The logon failed) that reference libdb2.a. | Ensure that you set up the correct library path environment variables. Complete the following steps. The example uses LD_LIBRARY_PATH, which might be LIBPATH on some operating systems.  
1. Stop Tivoli Common Reporting:  
   /opt/IBM/tivoli/tipv2Components/TCRComponent/bin/stopTCRserver.sh tipadmin tippass  
2. Open the /opt/IBM/tivoli/tipv2Components/TCRComponent/bin/startTCRserver.sh file in a text editor and add the following two lines at line 26 of the script (before WebSphere being started):  
   updated troubleshooting/home/db2inst1/sqlib/db2profile  
3. Start Tivoli Common Reporting:  
   /opt/IBM/tivoli/tipv2Components/TCRComponent/bin/startTCRserver.sh tipadmin tippass  
   Another option is to add these environment variables to your .bashrc/.profile so that the variables are set up every time you log in to the system. |
| The reports schema update fails. An SQL error message is in the Report_Installer_For_TCR_Output.txt log file. | The error message indicates that the transaction log file ran out of space. Set the following database parameters to increase the size of the transaction log file:  
  - LOGBUFFSIZE: 1024  
  - BUFFPAGE: 2000 or 3000  
  - Number of primary log files: 20  
  - Log file size: 8192  
  - Number of secondary log files: 10 |
Table 14. Tivoli Common Reporting for HMC Base agent problems and solutions (continued)

<table>
<thead>
<tr>
<th>Problem</th>
<th>Solution</th>
</tr>
</thead>
</table>
| You have trouble with the database connection.                         | The Tivoli Monitoring reports must connect to the Tivoli Data Warehouse to run. The data source that is called **TDW** is defined in Cognos. Test the Database Connection to the Tivoli Data Warehouse:  
  1. Depending on the database type, make sure the Tivoli Data Warehouse is cataloged locally in the database client (DB2), the local TNS service name is defined in `tnsnames.ora` (Oracle), or the ODBC data source was created (Microsoft SQL Server). The alias/tns service name or odbc data source name is used in the data source connection.  
  2. Test the connection to the data warehouse:  
     a. Select **TCR > Launch > Administration > Configuration > Data Sources > TDW**.  
     b. Click **TDW** to discover the data source connections (also called TDW).  
     c. Click the **test** icon next to **TDW** to test the connection.  
  3. If **TDW** is not defined, manually define the data source in Cognos:  
     a. Use the database client to catalog the Tivoli Data Warehouse database.  
     b. Log in to the Tivoli Integrated Portal.  
     c. In the navigation tree, select **Reporting > Common Reporting**.  
     d. Follow the instructions under [Configuring database connection](http://publib.boulder.ibm.com/infocenter/tivihelp/v3r1/topic/com.ibm.tivoli.tcr.doc_211/ttcr_config_db.html) in the Tivoli Common Reporting information center to create the data source in Cognos. Make sure that you call this data source **TDW**. |
| You are able to connect to Tivoli Data Warehouse by using the database client but, when you run a report, you are asked to enter your database credentials again. In the Work with reports page, you are prompted to **Type a user ID and password** and you get the following message: An attempt to connect to the data source failed. | If you get this prompt while you are attempting to run a report, the database connection under **TDW** is not configured properly. Some common causes might be that the connection is to an invalid DSN, or an incorrect user ID was given, or the database server might be down. Confirm that you created the correct database connection and configure the Tivoli Data Warehouse correctly before you run the report again. For details, see [Configuring database connection](http://pic.dhe.ibm.com/infocenter/tivihelp/v3r1/topic/com.ibm.tivoli.tcr.doc_211/ttcr_config_db.html). |
### Table 14. Tivoli Common Reporting for HMC Base agent problems and solutions (continued)

<table>
<thead>
<tr>
<th>Problem</th>
<th>Solution</th>
</tr>
</thead>
</table>
| You open a report, but it does not populate with data; it is empty. | Check for one or more of these possible causes:  
- The Tivoli Data Warehouse has the required historical tables for attributes but, does not have the dimension tables. Follow the instructions in Creating shared dimensions tables and populating the time dimensions table in the IBM Tivoli Monitoring Administrator’s Guide (http://pic.dhe.ibm.com/infocenter/tivihelp/v15r1/topic/com.ibm.itm.doc_6.2.3fp1/adminuse/tcr_reports_dimensionsshared.htm).  
- The historical data in the warehouse was not summarized and pruned. If you know that summarization and pruning was configured and enabled, wait until the process completes at least one time before you open a report. If you are not sure, see “Configure historical collection” on page 92.  
- The Tivoli Data Warehouse does not have data. Set summarization and pruning for at least hourly summarization and daily pruning for the required attribute groups See “Prerequisites” on page 91 in the and look for the queries to run to validate the required attribute groups. Prerequisite Scanner Reports are provided for these checks. If historical collection and summarization and pruning were configured and started, and you see missing tables or data for a monitoring agent, contact customer support. |
| While you are running a report, you encounter the following error or a similar error: RQP-DEF-0177 An error occurred while performing operation 'sqlPrepareWithOptions' status='-201'. UDA-SQL-0196 The table or view "TMUSER.KPH_SERVER_DETAILS_DV" was not found in the dictionary. | This message means that some of the tables or views (or both) are missing in the database. Or, it can indicate that the shared dimensions were not created.  
**For missing tables or views**  
Check whether historical collection and summarization and pruning are enabled for all the prerequisite attribute groups for the VMware agent. If any of them are missing, enable historical collection and Summarization and Pruning for that particular attribute group.  
After the historical data collection is configured and historical data is saved, run the report again. Follow the instructions in “Configure historical collection” on page 92.  
**For missing dimensions**  
The shared dimensions were not created and the appropriate database scripts must be run to create shared dimensions and populate them. For details, see Creating shared dimensions tables and populating the time dimensions table in the IBM Tivoli Monitoring Administrator’s Guide (http://pic.dhe.ibm.com/infocenter/tivihelp/v15r1/topic/com.ibm.itm.doc_6.2.3fp1/adminuse/tcr_reports_dimensionsshared.htm). |
| 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. |
Table 14. Tivoli Common Reporting for HMC Base agent problems and solutions (continued)

<table>
<thead>
<tr>
<th>Problem</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>In the Reports Installer, when you complete the following steps to install reports, you have some problems:</td>
<td>Restart the Reports Installer.</td>
</tr>
<tr>
<td>1. On the Choose the reports for the installation page, select all reports that you want to install, and then click Next. The Cognos Engine Configuration page is displayed.</td>
<td></td>
</tr>
<tr>
<td>2. On the Cognos Engine Configuration page, click Previous to return to the Choose the Installation Folder page.</td>
<td></td>
</tr>
<tr>
<td>3. On the Choose the Installation Folder page, click Next. Problem: The Choose the reports for the installation page that contains selected check boxes for all reports is displayed, and Next is disabled.</td>
<td></td>
</tr>
<tr>
<td>4. Clear all check boxes for the reports, and select the reports to install again. The Next button becomes available.</td>
<td></td>
</tr>
<tr>
<td>5. Click Next. Problem: The following message is displayed on the next page: THERE ARE NO ITEMS SELECTED FOR THE INSTALLATION.</td>
<td></td>
</tr>
<tr>
<td>Labels are not displayed on the installation panels or in the dialog boxes on an AIX operating system with Turkish locales when the Report Installer was run on Java 6.</td>
<td>This problem occurs because both the background color and the font color are white. Use one of the following workarounds:</td>
</tr>
<tr>
<td>· Change the style palette to defaultmono when the Report Installer is running (if it is not set to defaultmono by default). This solution works for Java 5 and Java 6 and is the solution that is preferred.</td>
<td></td>
</tr>
<tr>
<td>· Run the Report Installer by using Java 5. You can specify Java by using the following command: setup_aix.bin lax_vm /opt/ibm/java5/jre/bin/java</td>
<td></td>
</tr>
</tbody>
</table>

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).
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 HMC Base 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 KPH_Base and is defined in the kph.baroc (version 06.22.03) file. The KPH_Base event class can be used for generic rules processing for any event from the IBM Tivoli Monitoring: HMC Base Agent.

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

- node: STRING
- timestamp: STRING
- user_cpu_pct: INTEGER
- user_cpu_pct_enum: STRING
- system_cpu_pct: INTEGER
- system_cpu_pct_enum: STRING
- io_wait_cpu_pct: INTEGER
- io_wait_cpu_pct_enum: STRING
- idle_cpu_pct: INTEGER
- idle_cpu_pct_enum: STRING
- cpu_name: STRING
- include_data_in_summarization: INTEGER
- include_data_in_summarization_enum: STRING

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

- node: STRING
- timestamp: STRING
For events that are generated by situations in the File Systems attribute group, events are sent by using the ITM_KPH_FILE_SYSTEMS event class. This event class contains the following slots:

- node: STRING
- timestamp: STRING
- name: STRING
- size_mb: INTEGER
- size_mb_enum: STRING
- free_mb: INTEGER
- free_mb_enum: STRING
- used_mb: INTEGER
- used_mb_enum: STRING
- free_pct: INTEGER
- free_pct_enum: STRING
- used_pct: INTEGER
- used_pct_enum: STRING
- mount_point: STRING
- include_data_in_summarization: INTEGER
- include_data_in_summarization_enum: STRING

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

- node: STRING
- timestamp: STRING
- cec_name: STRING
- cec_mfg: STRING
- cec_model: STRING
- cec_sn: STRING
- state: INTEGER
- state_enum: STRING
• num_partitions: INTEGER
• num_partitions_enum: STRING
• cpu_total: REAL
• cpu_total_enum: STRING
• cpu_allocated: REAL
• cpu_allocated_enum: STRING
• cpu_unallocated: REAL
• cpu_unallocated_enum: STRING
• total_shared_cpus: REAL
• total_shared_cpus_enum: STRING
• total_mem_mb: INTEGER
• total_mem_mb_enum: STRING
• allocated_mem_mb: INTEGER
• allocated_mem_mb_enum: STRING
• unallocated_mem_mb: INTEGER
• unallocated_mem_mb_enum: STRING
• num_proc_pools: INTEGER
• num_proc_pools_enum: STRING
• num_mem_pools: INTEGER
• num_mem_pools_enum: STRING
• cpu_units_used: REAL
• cpu_units_used_enum: STRING
• cpu_used_pct: REAL
• cpu_used_pct_enum: STRING
• firmware_version: STRING
• dedicated_cpu_units_used: REAL
• dedicated_cpu_units_used_enum: STRING
• dedicated_cpu_used_pct: REAL
• dedicated_cpu_used_pct_enum: STRING
• shared_cpu_units_used: REAL
• shared_cpu_units_used_enum: STRING
• shared_cpu_used_pct: REAL
• shared_cpu_used_pct_enum: STRING
• sample_timestamp: STRING
• sample_timestamp_enum: STRING
• sample_interval: INTEGER
• sample_interval_enum: STRING
• include_cpu_data_in_summarization: INTEGER
• include_cpu_data_in_summarization_enum: STRING
• include_memory_data_in_summarization: INTEGER
• include_memory_data_in_summarization_enum: STRING
• include_perf_data_in_summarization: INTEGER
• include_perf_data_in_summarization_enum: STRING
• subnode_msn: STRING
• total_installed_cpus: REAL
- total_installed_cpus_enum: STRING
- total_installed_memory_mb: INTEGER
- total_installed_memory_mb_enum: STRING

For events that are generated by situations in the Managed LPARs attribute group, events are sent by using the ITM_KPH_MANAGED_LPARS event class. This event class contains the following slots:
- node: STRING
- timestamp: STRING
- lpar_name: STRING
- cec_name: STRING
- kph_hostname: STRING
- partition_id: INTEGER
- partition_id_enum: STRING
- cec_mfg: STRING
- cec_model: STRING
- cec_sn: STRING
- state: INTEGER
- state_enum: STRING
- environment: STRING
- os_version: STRING
- capped_mode: STRING
- capped_mode_enum: STRING
- shared_mode: STRING
- shared_mode_enum: STRING

For events that are generated by situations in the Managed Systems attribute group, events are sent by using the ITM_KPH_MANAGED_SYSTEMS event class. This event class contains the following slots:
- node: STRING
- timestamp: STRING
- name: STRING
- kph_status: INTEGER
- kph_status_enum: STRING
- ip_address: STRING
- serial_number: STRING
- firmware_version: STRING

For events that are generated by situations in the Paging Space attribute group, events are sent by using the ITM_KPH_PAGING_SPACE event class. This event class contains the following slots:
- node: STRING
- timestamp: STRING
- total_size_mb: INTEGER
- total_size_mb_enum: STRING
- free_mb: INTEGER
- free_mb_enum: STRING
- used_mb: INTEGER
- used_mb_enum: STRING
- free_pct: INTEGER
• free_pct_enum: STRING
• used_pct: INTEGER
• used_pct_enum: STRING
• include_data_in_summarization: INTEGER
• include_data_in_summarization_enum: STRING

For events that are generated by situations in the Performance Object Status attribute group, events are sent by using the ITM_KPH_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

For events that are generated by situations in the Physical Memory attribute group, events are sent by using the ITM_KPH_PHYSICAL_MEMORY event class. This event class contains the following slots:
• node: STRING
• timestamp: STRING
• total_size_mb: INTEGER
• total_size_mb_enum: STRING
• free_mb: INTEGER
• free_mb_enum: STRING
• used_mb: INTEGER
• used_mb_enum: STRING
• free_pct: INTEGER
• free_pct_enum: STRING
• used_pct: INTEGER
• used_pct_enum: STRING
• include_data_in_summarization: INTEGER
• include_data_in_summarization_enum: STRING

For events that are generated by situations in the Processes Detail attribute group, events are sent by using the ITM_KPH_PROCESSES_DETAIL event class. This event class contains the following slots:
• node: STRING
• timestamp: STRING
• pid: INTEGER
• pid_enum: STRING
• name: STRING
• cpu_pct: INTEGER
• cpu_pct_enum: STRING
• memory_pct: INTEGER
For events that are generated by situations in the Server CPU Pools attribute group, events are sent by using the ITM_KPH_SERVER_CPU_POOLS event class. This event class contains the following slots:

- **node**: STRING
- **timestamp**: STRING
- **pool_name**: STRING
- **cec_name**: STRING
- **cec_mfg**: STRING
- **cec_model**: STRING
- **cec_sn**: STRING
- **pool_id**: INTEGER
- **pool_id_enum**: STRING
- **pool_size**: REAL
- **pool_size_enum**: STRING
- **max_pool_size**: REAL
- **max_pool_size_enum**: STRING
- **cpu_units_used**: REAL
- **cpu_units_used_enum**: STRING
- **cpu_used_pct**: REAL
- **cpu_used_pct_enum**: STRING
- **cpu_free_pct**: REAL
- **cpu_free_pct_enum**: STRING
- **available_pool_cpu_units**: REAL
- **available_pool_cpu_units_enum**: STRING
- **sample_timestamp**: STRING
- **sample_timestamp_enum**: STRING
- **sample_interval**: INTEGER
- **sample_interval_enum**: STRING
- **reserve**: REAL
- **reserve_enum**: STRING
- **virtual_cpus**: INTEGER
- **virtual_cpus_enum**: STRING
- **memory_pct_enum**: STRING
- **include_data_in_summarization**: INTEGER
- **include_data_in_summarization_enum**: STRING
- **dedicated_cpu_units_used**: REAL
- **dedicated_cpu_units_used_enum**: STRING

For events that are generated by situations in the Server DAG attribute group, events are sent by using the ITM_KPH_SERVER_DAG 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 Server Details attribute group, events are sent by using the ITM_KPH_SERVERDETAILS event class. This event class contains the following slots:
• node: STRING
• timestamp: STRING
• cec_name: STRING
• cec_mfg: STRING
• cec_model: STRING
• cec_sn: STRING
• state: INTEGER
• state_enum: STRING
• num_partitions: INTEGER
• num_partitions_enum: STRING
• cpu_total: REAL
• cpu_total_enum: STRING
• cpu_allocated: REAL
• cpu_allocated_enum: STRING
• cpu_unallocated: REAL
• cpu_unallocated_enum: STRING
• total_shared_cpus: REAL
• total_shared_cpus_enum: STRING
• total_mem_mb: INTEGER
• total_mem_mb_enum: STRING
• allocated_mem_mb: INTEGER
• allocated_mem_mb_enum: STRING
• unallocated_mem_mb: INTEGER
• unallocated_mem_mb_enum: STRING
• num_proc_pools: INTEGER
• num_proc_pools_enum: STRING
• num_mem_pools: INTEGER
• num_mem_pools_enum: STRING
• cpu_units_used: REAL
• cpu_units_used_enum: STRING
• cpu_used_pct: REAL
• cpu_used_pct_enum: STRING
• firmware_version: STRING
• dedicated_cpu_units_used: REAL
• dedicated_cpu_units_used_enum: STRING
• dedicated_cpu_used_pct: REAL
• dedicated_cpu_used_pct_enum: STRING
• shared_cpu_units_used: REAL
• shared_cpu_units_used_enum: STRING
For events that are generated by situations in the Server LPARs attribute group, events are sent by using the ITM_KPH_SERVER_LPARS event class. This event class contains the following slots:

- node: STRING
- timestamp: STRING
- lpar_name: STRING
- cec_name: STRING
- kph_hostname: STRING
- partition_id: INTEGER
- partition_id_enum: STRING
- cec_mfg: STRING
- cec_model: STRING
- cec_sn: STRING
- state: INTEGER
- state_enum: STRING
- environment: STRING
- os_version: STRING
- capped_mode: STRING
- capped_mode_enum: STRING
- shared_mode: STRING
- shared_mode_enum: STRING
- entitled_capacity: REAL
- entitled_capacity_enum: STRING
- cpu_pool_name: STRING
- cpu_pool_name_enum: STRING
- donation_mode: INTEGER
- donation_mode_enum: STRING
- cpu_count: INTEGER
- cpu_count_enum: STRING
- uncapped_weight: INTEGER
- uncapped_weight_enum: STRING
- cpu_units_used: REAL
- cpu_units_used_enum: STRING
- entitled_capacity_used_pct: REAL
- entitled_capacity_used_pct_enum: STRING
- max_cpu_capacity_used_pct: REAL
- max_cpu_capacity_used_pct_enum: STRING
- sample_timestamp: STRING
- sample_timestamp_enum: STRING
- sample_interval: INTEGER
- sample_interval_enum: STRING
- include_data_in_summarization: INTEGER
- include_data_in_summarization_enum: STRING
- available_pool_cpu_units: REAL
- available_pool_cpu_units_enum: STRING
- resource_configuration: INTEGER
- resource_configuration_enum: STRING

For events that are generated by situations in the SVR Performance Object Status attribute group, events are sent by using the ITM_KPH_SVR_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

For events that are generated by situations in the Version Information attribute group, events are sent by using the ITM_KPH_VERSION_INFORMATION event class. This event class contains the following slots:
- node: STRING
- timestamp: STRING
- version: STRING
- release: STRING
- base_version: STRING
- build_level: STRING
- os_version: STRING
- kph_hostname: STRING
- hmc_mfg: STRING
- hmc_model: STRING
- hmc_sn: STRING
Appendix B. Discovery Library Adapter for the HMC Base agent

The Tivoli Management Services Discovery Library Adapter (DLA) discovers resources and relationships, and creates a Discovery Library Book file for the agent.

About the DLA

The Book file follows the Discovery Library IdML schema and is used to populate the Configuration Management Database (CMDB) and Tivoli Business Service Manager products. The Tivoli Management Services DLA discovers all HMC systems as well as their managed CECs and LPARs. It also discovers the operational system that is installed on the HMCs and LPARS (AIX or VIOS). For all systems with the HMC Base agent that are active and online at the Tivoli Enterprise Portal Server, information is included in the discovery book for those resources. The Tivoli Management Services DLA discovers active resources. It is run on demand and can be run periodically to discover resources that were not active during previous discoveries.

The DLA discovers HMC components.

More information about DLAs

The following sources contain more information about using the DLA program with all monitoring agents:

- The IBM Tivoli Monitoring Administrator’s Guide contains information about using the Tivoli Management Services Discovery Library Adapter.
- For information about using a DLA with Tivoli Application Dependency Discovery Manager (TADDM), see the [TADDM Information Center](http://publib.boulder.ibm.com/infocenter/tivihelp/v10r1/topic/com.ibm.taddm.doc_7.2/welcome_page/welcome.html).

DLA data model class types represented in CDM

The source application data objects map to classes in the Common Data Model (CDM) for the HMC Base agent.

The following information is provided for each class:

**CDM class name**
- Class name for which the agent is providing information

**Relationships**
- CDM relationships (hierarchical) between currently identified model objects

**CDM attributes, agent attributes, descriptions, and examples**
- CDM and agent attributes that are required to create an instance of a resource, descriptions of the attributes, and examples of the attributes

DLA data model classes for the HMC Base agent

Each agent that uses the Discovery Library Adapter has DLA data model classes defined for the agent.

The HMC Base agent has the following Discovery Library Adapter data model classes:
- HMC
- HMC ComputerSystem
The Hardware Management Console (HMC) is a hardware appliance (dedicated desktop PC workstation) that connects to the server firmware. You use the HMC to configure and manage the logical partitions on a System p server. An HMC can connect to, and manage, multiple System p servers.

**HMC class**

The Hardware Management Console (HMC) is a hardware appliance (dedicated desktop PC workstation) that connects to the server firmware. You use the HMC to configure and manage the logical partitions on a System p server. An HMC can connect to, and manage, multiple System p servers.

**CDM class name**

sys.HMC

**CDM attributes, agent attributes, descriptions, and examples**

- **CDM attribute: Name**
  - **Description:** The name for the computer system as it is commonly known in the data center. This attribute is used by internal mechanisms of IBM Tivoli Application Dependency Discovery Manager.
  - **Example:** HMC

**HMC ComputerSystem class**

Represents the physical HMC.

**CDM class name**

sys.ComputerSystem

**Relationships**

- **provides**
  - **Source:** KPH02VERSI.HOSTNAME-HMC-ComputerSystem
  - **Target:** KPH02VERSI.HOSTNAME-HMC
  - **Example:** provides source="ipv4-151.austin.ibm.com-HMC-ComputerSystem" target="ipv4-151.austin.ibm.com-HMC"

**CDM attributes, agent attributes, descriptions, and examples**

- **CDM attribute: Type**
  - **Description:** A string used to appropriately render the desired icon in the TADDM user interface.
  - **Example:** HMC

- **CDM attribute: ManagedSystemName**
  - **Agent attribute:** INODESTS.NODE
  - **Description:** The name of the IBM Tivoli Monitoring component that provides data for the management of the HMC Base agent instance.
  - **Example:** inst1:ipv4-241:PH

- **CDM attribute: ManagedSystemName**
  - **Agent attribute:** KPH02VERSI.HOSTNAME
  - **Description:** The managed system name that the HMC Base agent instance is managing.
  - **Example:** pv4-151.austin.ibm.com

- **CDM attribute: Label**
  - **Agent attribute:** KPH02VERSI.HOSTNAME

- **CDM attribute: Type**
  - **Agent attribute:** KPH02VERSI.HOSTNAME
  - **Description:** A string used to appropriately render the desired icon in the TADDM user interface.
  - **Example:** HMC

- **CDM attribute: ManagedSystemName**
  - **Agent attribute:** INODESTS.NODE
  - **Description:** The name of the IBM Tivoli Monitoring component that provides data for the management of the HMC Base agent instance.
  - **Example:** inst1:ipv4-241:PH
Description: The display name of the HMC.
Example: ipv4-151.austin.ibm.com

- CDM attribute: SerialNumber
  Agent attribute: KPH02VERSL.HMC_S
  Description: The serial number of the HMC system.
  Example: 106795B

- CDM attribute: Manufacturer
  Agent attribute: KPH02VERSL.HMC_MFG
  Description: The name of the HMC manufacturer (IBM).
  Example: IBM

- CDM attribute: Model
  Agent attribute: KPH02VERSL.HMC_MODEL
  Description: The model number of the HMC system.
  Example: 7042-CR4

- CDM attribute: Fqdn
  Agent attribute: KPH02VERSL.HOSTNAME
  Description: The fully-qualified host name of the HMC.
  Example: ipv4-151.austin.ibm.com

**HMC OS Version class**
Represents the version of the HMC system that is running.

**CDM class name**
sys.ControlSoftware

**Relationships**
- runsOn
  Source: KPH02VERSL.HOSTNAME-OSVersion
  Target: KPH02VERSL.HOSTNAME-HMC-ComputerSystem
  Example: runsOn source="ipv4-151.austin.ibm.com-OSVersion" target="ipv4-151.austin.ibm.com-HMC-ComputerSystem"

- installedOn
  Source: KPH02VERSL.HOSTNAME-HMC-ComputerSystem
  Target: KPH02VERSL.HOSTNAME-HMC-ComputerSystem
  Example: installedOn source="ipv4-151.austin.ibm.com-OSVersion" target="ipv4-151.austin.ibm.com-HMC-ComputerSystem"

**CDM attributes, agent attributes, descriptions, and examples**
- CDM attribute: Name
  Description: The name for the computer system as it is commonly known in the data center.
  This attribute is used by internal mechanisms of IBM Tivoli Application Dependency
  Discovery Manager.
  Example: HMC

- CDM attribute: VersionString
  Agent attribute: KPH02VERSL.BV
  Description: The complete version specification of the entity, expressed as a single string.
  Example: V7R3.4.0

- CDM attribute: MajorVersion
  Agent attribute: KPH02VERSL.VERSION
  Description: A major version of the product, and generally specified as the first number in a
  version string (for example, in WebSphere® 6.1, the '6' is the major version).
  Example: 7

- CDM attribute: BuildLevel
  Agent attribute: KPH02VERSL.BL
CEC class
The CEC class represents the System p Central Electronics Complex (CEC).

CDM class name
sys.SystemPComputerSystem

Relationships
- manages
  Source: KPH02VERSl.HOSTNAME-HMC-ComputerSystem
  Target: KPH02VERSl.HOSTNAME:KPH09MANAC.CEC_NAME-CEC
  Example: manages source="ipv4-151.austin.ibm.com-HMC" target="ipv4-151.austin.ibm.com:venus-CEC"

CDM attributes, agent attributes, descriptions, and examples
- CDM attribute: Type
  Description: A string used to appropriately render the desired icon in the TADDM User Interface.
  Example: ComputerSystem
- CDM attribute: Name
  Agent attribute: KPH09MANAC.CEC_NAME
  Description: The name for the computer system as it is commonly known in the data center. This attribute is used by internal mechanisms of IBM Tivoli Application Dependency Discovery Manager.
  Example: venus
- CDM attribute: Label
  Agent attribute: KPH09MANAC.CEC_NAME
  Description: A system-generated, descriptive string used for displaying the instance.
  Example: venus
- CDM attribute: SerialNumber
  Agent attribute: KPH09MANAC.CEC_SN
  Description: The serial number of the physical computer system, as it is provided by the manufacturer of the device.
  Example: 06E05C1
- CDM attribute: Manufacturer
  Agent attribute: KPH09MANAC.CEC_MFG
  Description: The name of the manufacturer of the physical computer system.
  Example: IBM
- CDM attribute: Model
  Agent attribute: KPH09MANAC.CEC_MODEL
  Description: The model number of the physical computer system, as it is provided by the manufacturer of the device.
  Example: 9117-MMA
- CDM attribute: HardwarePlatform
  Description: Identifies the server to be an IBM PowerVM server.
  Example: pSeries

LPAR class
An LPAR is a logical partition of the physical hardware where an operating system instance can run.

CDM class name
sys.ComputerSystem
Relationships

- virtualizes
  
  Source: KPH02VERSL.HOSTNAME:KPH10MANAL.CEC_NAME-KPH10MANAL.LPAR_NAME-LPAR
  Target: KPH02VERSL.HOSTNAME:KPH10MANAL.CEC_NAME-CEC
  Example: virtualizes source="ipv4-151.austin.ibm.com:venus:ipv4-241-LPAR"
  target="ipv4-151.austin.ibm.com:venus-CEC"

CDM attributes, agent attributes, descriptions, and examples

- CDM attribute: Type
  Description: A string used to appropriately render the desired icon in the TADDM User Interface.
  Example: ComputerSystem

- CDM attribute: Name
  Agent attribute: KPH10MANAL.LPAR_NAME
  Description: The name for the computer system as it is commonly known in the data center. This attribute is used by internal mechanisms of IBM Tivoli Application Dependency Discovery Manager.
  Example: ipv4-241

- CDM attribute: Label
  Agent attribute: KPH10MANAL.LPAR_NAME
  Description: A system-generated, descriptive string used for displaying the instance.
  Example: ipv4-241

- CDM attribute: SerialNumber
  Agent attribute: KPH10MANAL.CEC_SN
  Description: The serial number of the physical computer system, as it is provided by the manufacturer of the device.
  Example: 06E05C1

- CDM attribute: Manufacturer
  Agent attribute: KPH10MANAL.CEC_MFG
  Description: The name of the manufacturer of the physical computer system.
  Example: IBM

- CDM attribute: Model
  Agent attribute: KPH10MANAL.CEC_MODEL
  Description: The model number of the physical computer system, as it is provided by the manufacturer of the device.
  Example: 9117-MMA

- CDM attribute: LPARID
  Agent attribute: KPH10MANAL.PI
  Description: This attribute is being replaced by the VMID in the ComputerSystem class. Do not use.
  Example: 2

- CDM attribute: VMID
  - Agent attribute: KPH10MANAL.PI
  - Description: The unique identifier for a virtual machine. This attribute is the ID for the LPAR.
  - Example: 1

- CDM attribute: Virtual
  Description: Set to true because this is a virtual computer system.
  Example: true

- CDM attribute: IsVMDanLPAR
  Description: Set to true because this computer system is a logical partition.
  Example: true
• CDM attribute: Fqdn
  Agent attribute: KPH10MANAL.HOSTNAME
  Description: The fully-qualified host name of the HMC.
  Example: ipv4-241.austin.ibm.com

**VIOS class**
The VIOS (Virtual I/O Server) runs a customized version of the AIX operating system. VIOS provides the virtual storage and shared Ethernet resources to the other logical partitions on the server. VIOS is installed on a logical partition in the place of a general purpose operating system, and is used solely to provide virtual I/O resources to the other logical partitions.

**CDM class name**
sys.VIOS

**Relationships**
- provides
  Source: KPH02VERSI.HOSTNAME:KPH10MANAL.CEC_NAME-KPH10MANAL.LPAR_NAME-LPAR
  Target: KPH02VERSI.HOSTNAME:KPH10MANAL.CEC_NAME-KPH10MANAL.LPAR_NAME-VIOS
  Example: provides source="ipv4-151.austin.ibm.com:galileo:ipv4-176vios-LPAR"
  target="ipv4-151.austin.ibm.com:galileo:ipv4-176vios-VIOS"

**CDM attributes, agent attributes, descriptions, and examples**
- CDM attribute: Name
  Description: The name for the computer system as it is commonly known in the data center.
  This attribute is used by internal mechanisms of IBM Tivoli Application Dependency Discovery Manager.
  Example: VIOS
- CDM attribute: Label
  Agent attribute: KPH10MANAL.LPAR_NAME
  Description: A system-generated, descriptive string used for displaying the instance.
  Example: ipv4-176vios

**AIX class**
The IBM AIX class represents the operating system that is installed on each LPAR.

**CDM class name**
sys.aix.Aix

**Relationships**
- runsOn
  Source: KPH02VERSI.HOSTNAME:KPH10MANAL.HOSTNAME-OS
  Target: KPH02VERSI.HOSTNAME:KPH10MANAL.CEC_NAME-KPH10MANAL.LPAR_NAME-LPAR
  Example: runsOn source="ipv4-151.austin.ibm.com:ipv4-179.austin.ibm.com-OS"
  target="ipv4-151.austin.ibm.com:galileo:ipv4-179-LPAR"
- installedOn
  Source: KPH02VERSI.HOSTNAME:KPH10MANAL.HOSTNAME-OS
  Target: KPH02VERSI.HOSTNAME:KPH10MANAL.CEC_NAME-KPH10MANAL.LPAR_NAME-LPAR
  Example: installedOn source="ipv4-151.austin.ibm.com:ipv4-179.austin.ibm.com-OS"
  target="ipv4-151.austin.ibm.com:galileo:ipv4-179-LPAR"

**CDM attributes, agent attributes, descriptions, and examples**
- CDM attribute: Name
Description: The name for the computer system as it is commonly known in the data center. This attribute is used by internal mechanisms of IBM Tivoli Application Dependency Discovery Manager.
Example: AIX

- CDM attribute: OSName
  Description: The operating system name.
  Example: AIX

- CDM attribute: FQDN
  Agent attribute: KPH10MANAL.HOSTNAME
  Description: The fully-qualified host name of the LPAR.
  Example: ipv4-179.austin.ibm.com

- CDM attribute: OSVersion
  Agent attribute: KPH10MANAL.OS_VERSION
  Description: The operating system version.
  Example: AIX6.1

**VIOS OS class**
The IBM AIX class represents the operating system that is installed on each LPAR.

**CDM class name**
sys.ControlSoftware

**Relationships**
- runsOn
  Source: KPH02VERSI.HOSTNAME:KPH10MANAL.HOSTNAME-OS
  Target: KPH02VERSI.HOSTNAME:KPH10MANAL.CEC_NAME-KPH10MANAL.LPAR_NAME-LPAR

- installedOn
  Source: KPH02VERSI.HOSTNAME:KPH10MANAL.HOSTNAME-OS
  Target: KPH02VERSI.HOSTNAME:KPH10MANAL.CEC_NAME-KPH10MANAL.LPAR_NAME-LPAR

**CDM attributes, agent attributes, descriptions, and examples**
- CDM attribute: Name
  Description: Formed by the host name of the IBM AIX operating system.
  Example: VIOS

**TMSAgent class**
The TMSAgent class represents the Tivoli Monitoring Services Agent.

**CDM class name**
app.TMSAgent

**Relationships**
- monitors
  Source: INODESTS.NODE-TMSAgent
  Target: KPH02VERSI.HOSTNAME-HMC-ComputerSystem
  Example: monitors source="inst1:ipv4-241:PH-TMSAgent" target="ipv4-151.austin.ibm.com-HMC-ComputerSystem"

**CDM attributes, agent attributes, descriptions, and examples**
- CDM attribute: ManagedSystemName
Agent attribute: INODESTS.NODE
Description: The name of the IBM Tivoli Monitoring component that provides data for the management of the HMC Base agent instance.
Example: inst1:ipv4-241:PH

- CDM attribute: ManagedObjectName
  Agent attribute: INODESTS.NODE
  Description: The name of the IBM Tivoli Monitoring component that provides data for the management of the HMC Base agent instance.
  Example: p@inst1:ipv4-241:PH

- CDM attribute: SoftwareVersion
  Agent attribute: INODESTSVERSION
  Description: The version of the HMC Base agent.
  Example: 06.22.00

- CDM attribute: ProductCode
  Agent attribute: INODESTSPRODUCT
  Description: The product code of the HMC Base agent.
  Example: PH

- CDM attribute: Affinity
  Agent attribute: INODESTSAFFINITIES
  Description: The affinity of the HMC Base agent.
  Example: 0000000000000000000000000000000000G0000yw0a7

- CDM attribute: Label
  Agent attribute: INODESTSNODE-VIOS
  Description: The label of the HMC Base agent.
  Example: inst1:ipv4-241:PH - HMC

- CDM attribute: OSName
  Description: The operating system name.
  Example: VIOS

- CDM attribute: FQDN
  Agent attribute: KPH10MANAL.HOSTNAME
  Description: The fully-qualified host name of the LPAR.
  Example: ipv4-176.austin.ibm.com
Appendix C. Integration with Tivoli Business Service Manager

The HMC Base agent provides data to create, update the status of, and view IBM Tivoli Business Service Manager services.

The Tivoli Management Services Discovery Library Adapter (DLA) and Discovery Library Toolkit provides data for the Tivoli Business Service Manager service models. The Tivoli Integration Facility (EIF) probe updates the status of these services, and you use the Tivoli Enterprise Portal to view the data for the services. To implement the integration of the agent with Tivoli Business Service Manager, perform the integration tasks.

Components for integrating with Tivoli Business Service Manager

The data for integrating with Tivoli Business Service Manager is supplied through the following components: Tivoli Management Services Discovery Library Adapter (DLA) and Discovery Library Toolkit, Tivoli Integration Facility (EIF) probe, and Tivoli Enterprise Portal.

Tivoli Management Services Discovery Library Adapter (DLA) and Discovery Library Toolkit

By using data from the Tivoli Management Services Discovery Library Adapter, you can build Tivoli Business Service Manager service models that include resources monitored by the HMC Base agent.

The DLA files can be imported directly into Tivoli Business Service Manager using the Discovery Library Toolkit or they can be loaded into IBM Tivoli Application Dependency Discovery Manager (TADDM) and then fed into Tivoli Business Service Manager using the Discovery Library Toolkit.

See the following sources for more information about the DLA and Discovery Library Toolkit:
- Resources and relationships that are discovered by the HMC Base agent and included in Tivoli Management Services DLA files: Appendix B, “Discovery Library Adapter for the HMC Base agent,” on page 185
- Using the Tivoli Management Services DLA: IBM Tivoli Monitoring Administrator’s Guide
- Using the Discovery Library Toolkit: Tivoli Business Service Manager Customization Guide

Tivoli Integration Facility (EIF) probe

Situation events detected by the HMC Base agent can update the status of services in Tivoli Business Service Manager.

The situation events are forwarded from IBM Tivoli Monitoring to the Netcool/OMNIbus Probe for the Tivoli Event Integration Facility. The EIF probe then forwards the events to the Netcool/OMNIbus ObjectServer. Tivoli Business Service Manager monitors the Netcool/OMNIbus ObjectServer for new events and updates the status of affected services.

See the following sources for more information about event integration:
- Installation (using an existing EIF probe and Netcool/OMNIbus ObjectServer installation or using Tivoli Business Service Manager to install these components): Netcool/OMNIbus Information Center or the Tivoli Business Service Manager Installation Guide.
- Setting up event integration between IBM Tivoli Monitoring, the EIF probe, and the Netcool/OMNIbus ObjectServer: IBM Tivoli Monitoring Installation and Setup Guide.
Tivoli Enterprise Portal

You can use the integration of the Tivoli Enterprise Portal with Tivoli Business Service Manager to view the services in the Tivoli Business Service Manager console.

For more detailed examination and analysis, you can easily link from the Tivoli Business Service Manager console to the Tivoli Enterprise Portal to view the data within the HMC Base agent.

Tasks to integrate the agent with Tivoli Business Service Manager

To integrate the HMC Base agent with Tivoli Business Service Manager, you must install and configure the required components. Then, you can view the data in the Tivoli Integrated Portal.

To integrate the HMC Base agent with Tivoli Business Service Manager and view the data, complete the following tasks:

• Install the Discovery Library Toolkit on the Tivoli Business Service Manager server.
• Configure the Tivoli Event Integration Facility (EIF) probe to enrich HMC Base agent events.
• Create a service in the Tivoli Business Service Manager console that you want to monitor.
• Create a data source mapping for each data source that you want to access within the Tivoli Business Service Manager.
• Configure an additional IBM Tivoli Monitoring web service for each Tivoli Enterprise Portal Server.
• View data in the Tivoli Enterprise Portal for the services that you have created to monitor through Tivoli Business Service Manager.

Installing the Discovery Library Toolkit on the Tivoli Business Service Manager

You must install the Discovery Library Toolkit on the Tivoli Business Service Manager server.

The Discovery Library Toolkit imports data from the DLA files and TADDM, which includes information about the hardware and the applications that are discovered by the source.

See “Installing the Discovery Library Toolkit” in the Tivoli Business Service Manager Installation Guide.

Configuring the Tivoli Event Integration Facility (EIF) probe to enrich events

The Netcool/OMNIbus Probe for Tivoli Event Integration Facility (EIF) forwards the HMC Base agent events that are received from IBM Tivoli Monitoring to the Netcool/OMNIbus ObjectServer. Tivoli Business Service Manager monitors the Netcool/OMNIbus ObjectServer for new events, and updates the status of affected services.

Install and configure the Netcool/OMNIbus ObjectServer and EIF probe and set up event integration between IBM Tivoli Monitoring and Netcool/OMNIbus. The probe rules files provided with IBM Tivoli Monitoring enrich HMC Base agent events to identify the affected service.

Creating a service in Tivoli Business Service Manager

You must create a service in the Tivoli Business Service Manager console for each service that you want to monitor.

To create the services that you want to monitor in the Tivoli Business Service Manager console, see “Configuring services” in the IBM Tivoli Business Service Manager Service Configuration Guide.
Creating a data source mapping for each data source
You can create a data source mapping for each data source that you want to access within Tivoli Business Service Manager.

Also, you can create the data fetchers and use the data to create incoming status rules that are populated in your service templates.

For more information, see “Data sources” and “Data fetchers” in the IBM Tivoli Business Service Manager Service Configuration Guide.

Configuring additional IBM Tivoli Monitoring web services
You can configure additional IBM Tivoli Monitoring web services for each Tivoli Enterprise Portal Server.

To configure an additional IBM Tivoli Monitoring web service for each Tivoli Enterprise Portal server, see “Configure TBSM charts” in the IBM Tivoli Business Service Manager Scenarios Guide.

Viewing data in the Tivoli Enterprise Portal
From Tivoli Business Service Manager, you can open the Tivoli Enterprise Portal and view the HMC Base agent.

You can also launch Tivoli Business Service Manager from the Tivoli Enterprise Portal.

For more information about launching applications, see “Launching to and from applications” in the Tivoli Business Service Manager Customization Guide.
Appendix D. Documentation library

Various publications are relevant to the use of the IBM Tivoli Monitoring: HMC Base Agent.

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: HMC Base Agent library**


One document is specific to the HMC Base agent. The IBM Tivoli Monitoring: HMC Base Agent User’s Guide provides agent-specific information for configuring, using, and troubleshooting the HMC Base agent.

Use the information in the user’s guide for the agent with the Tivoli Enterprise Portal User’s Guide to monitor HMC 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
- IBM Tivoli Monitoring Universal Agent User’s Guide
- IBM Tivoli Universal Agent API and Command Programming Reference Guide
- IBM Tivoli Monitoring: i5/OS™ Agent User’s Guide
- IBM Tivoli Monitoring: Linux OS Agent User’s Guide
- IBM Tivoli Monitoring: UNIX OS Agent User’s Guide
- IBM Tivoli Monitoring: UNIX Logs OS Agent User’s 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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