Tivoli® Tivoli OMEGAMON XE on z/VM and Linux

IBM

Version 4.1.0, Fix Pack 0003

Readme and Documentation Addendum

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Contents

Chapter 1. Fix Pack 0003 overview

Fix Pack 0003 is a fix pack for the IBM® Tivoli® OMEGAMON® XE on z/VM® and Linux®, V4.1.0 monitoring agent. This readme provides details about installing the fix pack and information about changes to this release.

Tivoli OMEGAMON XE on z/VM and Linux, Fix Pack 0003, contains the fix pack components listed in Table 1.

Table 1. Fix Pack 0003 component fix packs

Fix pack name	Description
4.1.0-TIV-KVL-FP0003.pdf	Readme for the monitoring agent.
4.1.0-TIV-KVL-FP0003.tar	Linux on z/VM install image. This fix pack also contains the application support files to be installed on the Tivoli Enterprise™ Portal Monitoring Server, on the Tivoli Enterprise Portal Server, and on the Tivoli Enterprise Portal desktop client for the platform appropriate to that component (Windows®, Linux, and/or UNIX®).
4.1.0-TIV-KVL-FP0003.zip	Windows application support install image. Use this zip file to install the application support files for the monitoring server, for the portal server, and for the desktop client on the Windows platform.

Important: If you installed the V4.1.0 GA version of this monitoring agent, any situations that were customized or historical data that was collected will not be migrated to the Fix Pack 0003 installation. If you installed Fix Pack 0001 or Fix Pack 0002 of this monitoring agent, your customized situations and collected historical data will be migrated to the Fix Pack 0003 installation.

You install this fix pack from the fix pack files on the Support Web page for this product, located at the following address:

http://www.ibm.com/software/sysmgmt/products/support

Select **IBM® Tivoli® OMEGAMON XE on z/VM and Linux** from the **Support for specific Tivoli products** drop-down list. You will be taken to the support page for this monitoring agent.

What's new in this fix pack

The following changes have been made to Tivoli OMEGAMON XE on z/VM and Linux in this fix pack:

- Support for z/VM, version 5 release 3.

   Important: To view data for the specialty engine support and for the changes to existing attribute groups provided with Fix Pack 0003, z/VM 5.3 is required, with the latest service level of the Performance Toolkit for z/VM installed. APAR VM64299 will have a corresponding PTF for the changes necessitated by this fix pack.

   If you have z/VM 5.2 installed with the latest Performance Toolkit maintenance, you will be able to view the data collected for the specialty engine support. APAR VM64299 will have a corresponding PTF containing the latest service level for the Performance Toolkit for z/VM 5.2.

   For details on this APAR and its corresponding PTFs, see the support page documenting the formatted output collectors of the Performance Toolkit, located at the following address:

   http://www.vm.ibm.com/related/perfkit/pksegout.html

If z/VM 5.2 is installed without the latest Performance Toolkit maintenance, the fields on the new **Processor** workspace do not display any data. Existing workspaces, such as the LPAR workspace, that contain new fields, display either of the following, depending on the type of data being collected:

– Integer - Integer fields contain zeros.

– Character - Alphanumeric fields do not display any data.

An exception to the above is the **LPAR Capped** attribute. This column displays **Unknown** when data are not available for those systems. This can occur when the logical partition is inactive. That is, no processors are assigned to the logical partition. This field also displays **Yes** or **No**, depending on whether capping is active in the partition.

- Support for Red Hat Enterprise Linux 5.

  Note: The IBM JRE for Linux on System z™ depends on shared libraries that are not installed by default for Red Hat Enterprise Linux 5. The installation of this monitoring agent and of the Linux OS Monitoring agent (as well as Tivoli Enterprise Portal Server and Tivoli Enterprise Monitoring Server) may require that certain shared libraries be installed. In RedHat 5, the package managers (RPMs) that contain these libraries are:

  – libXp-1.0.0-8 (All platforms)

  – compat-libstdc++-33-3.2.3 (Platforms other than zSeries®)

  – compat-libstdc++-296-2.95.3 (zSeries)

  For instructions on including the shared libraries during Red Hat Enterprise Linux 5 installation, refer to the *IBM Runtime Environment for Linux platforms, Java™ 2 Technology Edition, Version 1.4.2 User Guide*.

- Addition of the KVLProcessor Data attribute group. Use the KVLProcessor Data attribute group to create situations that monitor CPU usage across all defined LPARs. See "KVLProcessor Data attributes" on page 15 for a description of each of the attributes in this group.

- Addition of the Processor workspace, accessed from the LPAR workspace. This workspace provides data for specialty engines within a logical partition (LPAR). The new workspace reports the CPU utilization by processor type for all defined LPARs. See "Processor workspace" on page 18 for details.

- Addition of the LPAR by Processor Name workspace. This workspace, also accessed from the LPAR workspace, displays data on the logical partition for which you elected to view additional information. See "Processor by LPAR Name workspace" on page 17 for details.

- The existing LPAR Info attribute group contains four new attributes. Columns corresponding to these attributes display in the LPAR workspace. The new attributes are:

  – LPAR Partition ID - The user partition ID number for the logical partition.

  – LPAR Capped - Indicates whether or not capping is set for the logical partition. If capping is set, CPU cycles are allocated up to the specified maximum. Possible options are:

  Yes - Capping has been set for the logical partition.

  No - Capping is not active.

  Unknown - Data are not available for those systems. This can occur when the logical partition is inactive. That is, no processors are assigned to the logical partition.

  – Logical CPU Load - The total logical CPU load calculated based on the sum of wait time plus processor busy time. This value is calculated only for VM systems running in an LPAR. The resulting value depends not only on the actual activity of the guest system (the processor time used), but also on the activity of systems in other logical partitions on the same physical system. The 'suspended' time will increase if there is more contention for the real processors, thus causing less voluntary wait time (see the LPAR Suspend Time value). Less voluntary wait time in turn will result in a higher 'Logical CPU load' being calculated, even if the actual CPU time used by a processor did not change. This field is a good indicator of CPU bottlenecks.

  – VM CPU Load - The average processor load as seen by the guest VM system, based on the sum of processor busy time plus elapsed time. This value is calculated only for VM systems running in an LPAR.

- The KVLUser ApplData attribute group contains new attributes. Columns corresponding to these attributes display in the ApplData workspace. The new attributes are:
  - Percent Stolen - This attribute displays the percentage of time that the hypervisor is in control of the processor and its resources. If you are running with z/VM 5.2, the value that displays in this field is 0.
  - Linux Kernel Product ID - The identifier for the Linux kernel product

    The following is an example of the type of information that displays in this field:

    `LINUXKRNL 260100`

    where:
    - LINUXKRNL - Linux kernel.
    - 26 - Version 2.6 of the Linux kernel.
    - 01 - Release 01.
    - 00 - APPLDATA record modification level.

  Additionally, the **Time** field for this attribute group now displays the date and time that the summary Linux performance information (APPLDATA) was written by the Linux guest.
- Prior to Linux kernel V2.6.16 (for S/390®), CPU utilization metrics for Linux guests reflected utilization based on a specific sampling method. Fix Pack 0003 implements the normalization of data to offer different metrics for processor utilization within the context of Linux guests running in the z/VM environment. That is, the CPU percent utilization metrics are adjusted based on the virtual CPU percent reported for the Linux guest.

  Normalization of data is provided for the following KVLUser ApplData attributes:
  - Kernel CPU - The percentage of CPU used by the Linux virtual machine, running in kernel mode.
  - Nice CPU - The percentage of CPU time in 'nice' mode. A process runs in 'nice' mode if the scheduling priority is lower than normal. If the superuser has increased the scheduling priority of some processes to values higher than normal, this is not considered 'nice' mode.
  - Total CPU - The percentage of CPU total active time.
  - User CPU - The percentage of CPU time in user mode, that is, executing ordinary user code. If a user program calls a system routine like open(), the execution time needed for the open() system routine is counted as kernel mode, while the normal processing of the user program is counted as user mode.

  The value format for the above listed attributes in the range of 0.00 - 100.00. For example, the value 12.00 represents 12.00%.

  The Appldata Flag field is added to the KVLUser ApplData group of attributes. This flag is an internal field that indicates the CPU utilization attributes for a sample were normalized. Possible values are:
  - x'01' - Normalization has occurred.
  - x'00' - Normalization was not performed.
- Documentation changes in support of this fix pack. See Chapter 4, "Documentation addendum," on page 15 for details.
- Fix Pack 0005 of IBM Tivoli Monitoring V6.1 adds support to the shared technology components for additional platforms. See the *IBM Tivoli Monitoring Fix Pack 0005 Readme and Documentation Addendum* for the complete list of supported platforms.

Note: The changes implemented by Fix Pack 0003 of this monitoring agent are available in all languages, although they are displayed in English only. The interface names will be translated in the next release of Tivoli OMEGAMON XE on z/VM and Linux.

Important for US Customers only: All Tivoli products that utilize the IBM Tivoli Monitoring V6.1 components are impacted by Daylight Savings Time (DST). If you have not done so already, adapt your system and the product set to DST changes. The switch to Daylight Savings Time occurred three weeks earlier (March 11, 2007) this year in the United States than it did last year. DST also ends one week later

on November 4, 2007. For more information, refer to *URGENT Actions Required: Changes to Daylight Saving Time will affect IBM Tivoli Monitoring 6.1 and IBM Tivoli OMEGAMON 350/360 and their associated Operating Systems*, found at the following URL address:http://www-1.ibm.com/support/docview.wss?uid=swg21254621.

Chapter 2. Installation instructions

The following table outlines the steps required to install the fix pack in your environment.

Table 2. Overall installation steps for Fix Pack 0003

Goal	Where to find information
Ensure that your monitoring environment is prepared for fix pack installation.	*Program Directory* for this monitoring agent.
Gather the information you need to perform the installation.	*IBM Tivoli OMEGAMON XE on z/VM and Linux Planning and Configuration Guide.*
Install IBM Tivoli Monitoring, V6.1.0, with Fix Pack 0005.	*IBM Tivoli Monitoring Installation and Setup Guide* and the *IBM Tivoli Monitoring Fix Pack 005 Readme and Documentation Addendum.*
Install the IBM Tivoli OMEGAMON XE on z/VM and Linux monitoring agent, V4.1.0, with Fix Pack 0003.	*IBM Tivoli Monitoring Installation and Setup Guide*, the *IBM Tivoli OMEGAMON XE on z/VM and Linux Planning and Configuration Guide*, and "Monitoring agent checklist" on page 6.
Install application support for the IBM Tivoli OMEGAMON XE on z/VM and Linux monitoring agent, V4.1.0, with Fix Pack 0003.	*IBM Tivoli Monitoring Installation and Setup Guide*
If you plan to use dynamic workspace linking, install the IBM Tivoli Monitoring Agent on Linux OS, Also install application support for this agent. **Note:** Dynamic workspace linking between the IBM Tivoli OMEGAMON XE on z/VM and Linux monitoring agent and the IBM Tivoli Monitoring Agent on Linux OS is not supported when the Linux system defined for the Linux OS agent is running as a guest under a second-level z/VM system. For additional information on dynamic workspace linking, see "Enabling Dynamic Workspace Linking" on page 7.	*IBM Tivoli Monitoring Installation and Setup Guide*
Install language support (optional) on each computer where the Tivoli Enterprise Portal Server is located.	See "Installing Language Support (optional)" on page 8.
Install the Command Processor (optional). This is required only if you intend to use the Take Action command feature. If you install the Command Processor, you must apply APAR OA20837 with its corresponding PTF UA34008. This APAR corrects two problems that cause the Command Processor to abend.	*Program Directory* for this monitoring agent, and the *IBM Tivoli OMEGAMON XE on z/VM and Linux Planning and Configuration Guide.*

Before you install the fix pack

Do the following before you install this fix pack:

- Install IBM Tivoli Monitoring, Version 6.1.0, with Fix Pack 0005.

  Note: All base monitoring components must be at the same fix pack level. For example, you cannot have a Fix Pack 0001 portal server and a Fix Pack 0004 monitoring server.
- **Important:** If you have the GA Version 4.1.0 installation of the Tivoli OMEGAMON XE on z/VM and Linux monitoring agent, be sure to uninstall Tivoli OMEGAMON XE on z/VM and Linux. Additionally, if you are running the GA version, you must perform a complete re-installation of this monitoring agent. See "Monitoring agent checklist" on page 6 for details.

  To uninstall the Tivoli OMEGAMON XE on z/VM and Linux monitoring agent:

1. From a command prompt, run the following command to change to the appropriate /bin directory:

    cd *ITMinstall_dir*/bin

    where *ITMinstall_dir* is the path for the home directory for IBM Tivoli Monitoring.
2. Run the following command:

    `./uninstall.sh`

    A numbered list of product codes, architecture codes, version and release numbers, and product titles displays for all installed products.
3. Type the product code for this monitoring agent (**vl**).

- If you are installing fix packs on Linux or UNIX computers, and you installed the IBM Tivoli Monitoring components (both the base monitoring components like the monitoring server and any monitoring agents) as a non-root user, you must perform the following steps to ensure that the user who installs the fix packs has the appropriate permissions:

    Note: *ITMinstall_dir* is the installation location for IBM Tivoli Monitoring and *user_id* is the ID that was used to install the IBM Tivoli Monitoring components.
    1. Log into the computer as *user_id*.
    2. Run the following command to change ownership of any root owned files to *user_id*:

        su - root -c *"ITMinstall_dir*/bin/UnSetRoot *user_id"*
    3. Install the fix pack components on the computer, following the steps outlined in both the IBM Tivoli Monitoring and in the agent checklists.
    4. Run the following command to reset the file permissions and file ownership as required:

        su - root -c *"ITMinstall_dir*/bin/SetPerm -a*"*

Monitoring agent checklist

The following checklist provides the high-level local installation steps for this monitoring agent.

Table 3. Checklist for locally installing the fix pack for Tivoli OMEGAMON XE on z/VM and Linux

√	Installation step
	1. Gather information about the monitoring components in your environment. See the *IBM Tivoli OMEGAMON XE on z/VM and Linux Planning and Configuration Guide*.

√	Installation step
	2. **Installation from the Support Web Page** To install the monitoring agent from the Support Web page for this product, perform the following steps: Download and install the 4.1.0-TIV-KVL-FP0003 fix pack image from the Support Web page. This step assumes that IBM Tivoli Monitoring, Version 6.1, with Fix Pack 0005, is already installed. On Windows, download and extract the 4.1.0-TIV-KVL-FP0003.zip file into a temporary installation directory, and run the following commands: cd *install_dir*\WINDOWS where *install_dir* is the directory where you extracted the fix pack files. **setup.exe** On Linux or UNIX, download and extract the 4.1.0-TIV-KVL-FP0003.tar file into a temporary installation directory, and run the following commands from the command line: cd *install_dir* **./install.sh** where *install_dir* is the directory where you extracted the fix pack files. For any of these platforms, continue with the installation and configuration of the monitoring agent by following the instructions outlined in the *IBM Tivoli Monitoring Installation and Setup Guide*. See also the *IBM Tivoli OMEGAMON XE on z/VM and Linux Planning and Configuration Guide*.
	3. Be sure to install the application support for this monitoring agent on the monitoring server, on the portal server, and on the desktop client on the appropriate platform. For the Linux or UNIX platforms, use the 4.1.0-TIV-KVL-FP0003.tar file to install the application support on the appropriate platform for each component. For the Windows platform, use the 4.1.0-TIV-KVL-FP0003.zip file to install application support for the monitoring server, the portal server, and the desktop client. Refer to the *IBM Tivoli Monitoring Installation and Setup Guide* for details on installing the application support for these components. **Note:** If you plan to use dynamic workspace linking, an important feature of this product, be sure to install the IBM Tivoli Monitoring: Linux OS agent. You will also need to install the application support for the IBM Tivoli Monitoring: Linux OS agent. This will enable you to link to specific IBM Tivoli Monitoring: Linux OS workspaces from some of the Tivoli OMEGAMON XE on z/VM and Linux monitoring agent workspaces. Refer to the *IBM Tivoli Monitoring Installation and Setup Guide* for details on installing this monitoring agent and on installing the application support for this agent.

Enabling Dynamic Workspace Linking

If you would like to link from the Tivoli OMEGAMON XE on z/VM and Linux monitoring agent workspaces to the Tivoli Monitoring Agent for Linux OS workspaces, you must add an environment variable to the Tivoli Monitoring Agent for Linux OS configuration file (lz.ini). This step assumes that the Tivoli Monitoring Agent for Linux OS is installed and configured.

Important: If the Tivoli Monitoring Agent for Linux OS is started prior to adding the environment variable to the configuration file, a duplicate branch for the Linux OS agent may display in Tivoli Enterprise Portal. The original node will be dimmed in the Navigator. To clear the original node, right-click the Navigator item and click **Clear offline entry**. The original node will be deleted.

To add the environment variable that enables dynamic workspace linking between these two monitoring agents, perform the following steps:

1. Modify the **lz.ini** file. This file is located in the *ITMinstall_dir*/config directory, where: *ITMinstall_dir* is the directory where you installed IBM Tivoli Monitoring.

2. Add the statement KLZ_SETLPARVMID=Y to the **lz.ini** file.
3. Start the Tivoli Monitoring Agent for Linux OS.

After setting this variable, the agent will register with the Tivoli Enterprise Monitoring Server.

Important: You must enable data collection for the KVLUser ApplData attribute group at each Linux guest system that is to be monitored. Enabling data collection for this attribute group defines the workgroup as a Linux workgroup. This is important because the links are displayed on a table that queries the systems in the Linux workgroup.

Additionally, you must enable the CP Monitor domain for this type of data on the z/VM system where the Performance Toolkit is running. For complete details on enabling the collection of Linux data, see the *IBM Tivoli OMEGAMON XE on z/VM and Linux Planning and Configuration Guide*.

Make sure that your Tivoli Enterprise Portal user ID is authorized to access the Tivoli Monitoring Agent for Linux OS. Otherwise, links to workspaces in the Tivoli Monitoring Agent for Linux OS will not be included in the list of linked workspaces. See the online help system for Tivoli Enterprise Portal for information on assigning access privileges.

Note: Dynamic workspace linking between the Tivoli OMEGAMON XE on z/VM and Linux monitoring agent and the Tivoli Monitoring Agent on Linux OS is not supported when the Linux system defined for the Linux OS agent is running as a guest under a second-level z/VM system.

Choose a workspace from the list to navigate to that workspace. By linking to the target workspace in context, you receive additional information that is related to the system, subsystem, or resource you are currently viewing. If you choose a workspace from the list and the target workspace is not available, you receive message KFWITM081E. Refer to the *IBM Tivoli OMEGAMON XE on z/VM and Linux Problem Determination Guide* for more information. See also the user's guides for both monitoring agents for descriptions of the workspaces provided with each monitoring agent.

Installing Language Support (optional)

If you want the Tivoli OMEGAMON XE monitoring agents' workspaces, online help, and expert advice to be displayed in a language other than English, you can install language support for each monitoring agent on all workstations where a Tivoli Enterprise Portal Server is located and where IBM Tivoli Monitoring language support has already been installed. Additionally, for best results, after you apply an IBM Tivoli Monitoring fix pack and reconfigure any of the base components, re-install the base IBM Tivoli Monitoring language packs and any agent language packs.

If IBM Tivoli Monitoring language support has not yet been installed, you must install it before installing monitoring agent language support. Language support is available only on the platforms that were supported for IBM Tivoli Monitoring V6.1 GA. See the *IBM Tivoli Monitoring: Installation and Setup Guide* for instructions.

Important: If you already have IBM Tivoli Monitoring language support installed, you will need to upgrade your monitoring agent language support files to ensure you are running with the same level of language support as Tivoli OMEGAMON XE on z/VM and Linux, Fix Pack 0003. To run with the same level of language support as Tivoli OMEGAMON XE on z/VM and Linux, Fix Pack 0003, install the latest IBM Tivoli Monitoring language support before installing the monitoring agent language support.

To install monitoring agent language support, complete the following steps:
1. Insert the monitoring agent language pack CD into the CD-ROM drive of a workstation where the Tivoli Enterprise Portal Server is located. For Linux systems, mount the CD if necessary.
2. Launch the installation program.

- **Windows**: The installation program should start automatically. If it does not, go to the Windows directory on your CD-ROM drive and double-click the **setup.exe** file.
- **Linux for Intel®**: Run the `./setupLinux.bin` command.
- **Linux on System z**: Run the `./setupLinux390.bin` command.

3. Select the language to be used during the installation, and click **OK**.
4. Read the text that welcomes you to the installation, and click **Next** to continue.
5. Read the software license agreement, select **I accept the terms of this license agreement**, and click **Next**.
6. Under **Language Pack Installation**, expand the **Supported Languages** node and select one or more languages from the list, then click **Next**.
7. Review the installation summary and click **Next**.

   Language support files are installed, and a message instructs you to restart the Tivoli Enterprise Portal desktop client.

8. Click **Next**, then click **Finish**.
9. Stop and restart the following components:
   - Tivoli Enterprise Portal Server
   - Tivoli Enterprise Portal desktop or browser client

For instructions on specifying the language to be displayed for users, see *IBM Tivoli Monitoring: Administrator's Guide*.

Chapter 3. Known issues and limitations

The following sections identify problems that might occur during the use of this fix pack. Workaround solutions are provided for the problems.

No data in Time field and Linux Kernel Product ID field

The KVLUser ApplData attribute group provides information about Linux workload activity and storage utilization. Data collection for this attribute group must be enabled at each Linux guest system that is to be monitored.

To start data collection for this attribute group, type the following commands on the Linux guest:

modprobe appldata_os

modprobe appldata_mem

modprobe appldata_net_sum

echo 1 > /proc/sys/appldata/timer

echo 1 > /proc/sys/appldata/mem

echo 1 > /proc/sys/appldata/os

echo 1 > /proc/sys/appldata/net_sum

echo 10000 > /proc/sys/appldata/interval

Important: You *must* issue the above commands for all Linux guests that you want to monitor. Omitting any of one of these commands may lead to unpredictable display results on the Tivoli Enterprise Portal. Additionally, the metrics displayed may not include the timestamp or the Linux Kernel Product ID.

You will also need to enable data collection on the z/VM system where the Performance Toolkit is running. Review the *IBM Tivoli OMEGAMON XE on z/VM and Linux Planning and Configuration Guide* for complete details on enabling data collection for KVLUser ApplData.

Take Action command not being sent to the Command Processor

You use the Take Action feature in Tivoli Enterprise Portal to issue CP commands, CMS commands, and REXX™ executables on the z/VM operating system. The CMS guest defined for Take Action operates as a dedicated, unattended, disconnected virtual machine that waits to process messages containing Take Action commands sent from the monitoring agent.

`sudo`, the superuser do utility for Linux-based systems, is required for the monitoring agent to run with temporary root authority to send Take Action commands to the Command Processor virtual machine. The `sudo` utility must be available and configured on the Linux guest on which the monitoring agent is running. The `sudo` utility is generally pre-installed and available as part of the Linux operating system. Any working version is sufficient. Root users have elevated privileges and are able to run `vmcp` without having to modify any files. Review the sections that follow if you are running on the Linux guest as a non-root user.

Running the Linux guest as a non-root user

If you are running as a non-root Linux guest user, please review the man pages for `sudo`, `visudo`, and for *sudoers* to make sure you understand their usage. In the following sections, we assume that the non-root user is named **candle**. If your non-root user is named otherwise, please edit the commands accordingly.

On SUSE Linux Enterprise Server V9 for zSeries

On the Linux system where you installed this monitoring agent, modify the file called */etc/sudoers*. You do this by adding an entry for the Linux guest user specifying the command that this Linux guest user is allowed to run as root. Use only `visudo` to edit the */etc/sudoers* file by adding the following command:

```
candle ALL=NOPASSWD:/usr/bin/vmcp
```

On SUSE Linux Enterprise Server V10 for zSeries

Perform the following steps on the Linux system where you installed this monitoring agent:

1. If installing and running as a non-root user, modify the **vl.ini** file. This file is located in the *ITMinstall_dir*/config directory, where: *ITMinstall_dir* is the directory where you installed IBM Tivoli Monitoring. Locate the PATH= environment variable for the non-root user and add the following statement:

   ```
   :/sbin
   ```

2. Modify the file called */etc/sudoers* by adding an entry for the Linux guest user specifying the command that this Linux guest user is allowed to run as root. Use only `visudo` to edit the */etc/sudoers* file by adding the following command:

   ```
   candle ALL=NOPASSWD:/sbin/vmcp
   ```

On Red Hat Enterprise Linux 5

Perform the following steps on the Linux system where you installed this monitoring agent:

1. If installing and running as a non-root user, modify the **vl.ini** file. This file is located in the *ITMinstall_dir*/config directory, where: *ITMinstall_dir* is the directory where you installed IBM Tivoli Monitoring. Locate the PATH= environment variable for the non-root user and add the following statement:

   ```
   :/sbin
   ```

2. Modify the file called */etc/sudoers* by adding an entry for the Linux guest user specifying the command that this Linux guest user is allowed to run as root. Use only `visudo` to edit the */etc/sudoers* file by adding the following command:

   ```
   candle ALL=NOPASSWD:/sbin/vmcp
   ```

Review the *IBM Tivoli OMEGAMON XE on z/VM and Linux Planning and Configuration Guide* for details on enabling Take Action commands.

Note: If you install the Command Processor, you must apply APAR OA20837 with its corresponding PTF UA34008. This APAR corrects two problems that cause the Command Processor to abend.

Verifying that Take Action commands are being issued

To verify that the monitoring agent is sending commands to the Command Processor, issue this command:

```
sudo vmcp smsg <userID> <TEP userID> cmd=<name of the command>
```

Where:

- userID = the user ID of the CMS guest where the Command Processor is running.
- TEP user ID = the user ID of the person authorized to issue Take Action commands in the Tivoli Enterprise Portal. Review the Tivoli Enterprise Portal online help to find out how to assign permissions.
- name of the command = the identifier for the command you want the Command Processor to execute.

Note: The format of this command varies depending on whether you are using `smsg` or `msg`.

Header in primary workspace carries over to secondary workspace

If a link assigns a value to a header or footer of a target workspace view and then a peer workspace of the target is selected from the Navigator, the value set by the original link appears in views of the selected workspace. This problem will be addressed in an interim fix for IBM Tivoli Monitoring and is documented in APAR IY99711.

In this monitoring agent, this problem impacts the LPAR workspace and the Processor workspace that is linked from the LPAR workspace. The following is an example of what you might see in the interface:

1. Open the LPAR workspace.
2. Click the link icon on a row in the LPAR Utilization table. The Processor by LPAR Name workspace displays. The view headings are correct at this point.
3. Right mouse click on the navigation tree over **LPAR** and select the **Processor** workspace. The headings on the lower views are not correctly displayed. That is, the header titles do not match the LPAR for which data are now being viewed. The headings are correct if the LPAR name on the row you linked from matches the ACTIVE* processor you are now seeing by default. To intentionally see the problem, click the link icon on a row with an LPAR status of INACTIVE. When you get to the Processor workspace, the headings will not display correctly.

Workaround: Switch to any workspace not associated with the node that owns the workspace targeted by the link. Switch to the desired workspace.

Extending the Linux address range

You can enable Linux to handle real memory addresses that are beyond the guest storage (considered as real memory by Linux) to cover a DCSS that is located above the guest storage. If your guest storage is sufficiently low, your entire DCSS address range might be above the guest storage. You can then modify the */etc/zipl.conf* file to make the DCSS accessible to the Linux guest. See the *IBM Tivoli OMEGAMON XE on z/VM and Linux Planning and Configuration Guide* for instructions on extending the Linux address range.

Note: For installations that use SuSE Linux Enterprise Server V10 for zSeries or that use Red Hat Enterprise Linux 5, specify two additional megabytes to the *mem=<address>* command.

Chapter 4. Documentation addendum

The following sections describe the impact to the Tivoli OMEGAMON XE on z/VM and Linux documentation for Fix Pack 0003.

Help System changes

The online help system was updated in support of this fix pack. See "What's new in this fix pack" on page 1 for details. The online help system is accessed from the **Help** pull-down menu on the monitoring agent interface. To view the help system on the Tivoli Enterprise Portal desktop client, use any browser installed on your system. To view the help system from the Tivoli Enterprise Portal browser client, use Internet Explorer Version 6.0 and above.

Note: The changes made to the online help system for this fix pack are available in English only. The online help system and the publications will be translated in the next release of Tivoli OMEGAMON XE on z/VM and Linux.

Publications

The publications that are affected by Fix Pack 0003 will be updated and available in the next release of this monitoring agent. The sections that follow describe the changes that will be made to these publications.

IBM Tivoli OMEGAMON XE on z/VM and Linux User's Guide

The following changes will be made to the user's guide to reflect the changes made for Fix Pack 0003:

- The new KVLProcessor Data table will be added to the Attributes reference chapter. See "KVLProcessor Data attributes" for details.
- The Workspaces section will describe the new LPAR by Processor Name workspace that displays data on the logical partition for which you elected to view additional information. See "Processor by LPAR Name workspace" on page 17 for details.
- The Workspaces section will describe the new Processor workspace. The Processor workspace provides data for specialty engines within a logical partition (LPAR). The new workspace reports the CPU utilization by processor type for each defined LPAR. See "Processor workspace" on page 18 for details.
- The LPAR Info table in the Attibutes reference chapter will be updated with four new attributes. These attributes are LPAR Processor ID, LPAR Capped, Logical CPU Load, and VM CPU Load.
- The KVLUser ApplData attribute table in the Attributes reference chapter will be updated with the new attributes. These attributes are Percent Stolen, Linux Kernel Product ID, and Appldata Flag field. Additionally, the four attributes to which normalization of data is applied will be updated with the relevant information. These attributes are Kernel CPU, Nice CPU, Total CPU, and User CPU.

KVLProcessor Data attributes

The KVLProcessor Data attribute group provides information about the CPU utilization of processors across all defined LPARs. Use the KVLProcessor Data attributes to create situations that monitor CPU utilization by processor type.

LPAR Busy The percentage of time that the logical processor was busy, defined as the percentage of elapsed time during which a real processor was assigned to the logical processor. The value will also include wait time in the system that is running in the logical partition if 'wait completion' has been enabled for the logical processor. The value format is in the range of 0.00 - 100.00. For example, the value 12.00 represents 12.00%.

LPAR CPU The number of logical processors defined for this logical partition. The value format is an integer.

LPAR Capped Indicates whether or not capping has been defined and has been turned on for the partition. If capping is turned on, CPU cycles are allocated up to the specified maximum. Possible options are:

- Yes - Capping has been set for the logical partition.
- No - Capping is not active.
- Unknown - Data are not available for those systems. This can occur when the logical partition is inactive. That is, no processors are assigned to the logical partition.

LPAR Load The relative load of the partition on the whole processor complex. This is expressed as the relation of the total time that logical processors were dispatched for this partition, compared to the total amount of available processor time. A load value will display only for those partitions with normal processors (non-IFL or ICF). The value format is in the range of 0.00 - 100.00. For example, the value 12.00 represents 12.00%.

LPAR Name The name assigned to the logical partition. The value format is an alphanumeric text string with a maximum of 8 characters.

LPAR Number The assigned logical partition number. The value format is an integer.

LPAR Overhead Percent The average percentage of elapsed time that the logical processor spent to manage LPARs. This information is available only on systems with the LPAR management time facility. The value format is in the range of 0.00 - 100.00. For example, the value 12.00 represents 12.00%.

LPAR Overhead Time The general LPAR management time, expressed as a percentage of the available CPU time (elapsed time multiplied by the number of physical processors). This does not include LPAR management overhead for specific logical processors. The information is available only on systems with the LPAR management time facility. The value format is in the range of 0.00 - 100.00. For example, the value 12.00 represents 12.00%.

LPAR Partition ID The user partition ID number for the logical partition. The value format is an alphanumeric text string with a maximum of 4 characters.

LPAR Status Indicates whether or not this logical partition retrieved the performance data for the LPAR. The logical partition that was used to collect the LPAR data will display with an asterisk, for example, ACTIVE*. Possible options are:
- Inactive
- Active
- Active* - this specific partition requested data

LPAR Suspend Time The percentage of elapsed time that a logical processor was suspended, that is, it could not provide service to the guest system due to LPAR management time and contention for real processors. The ″suspended″ time is calculated as the difference between the elapsed time and the sum of processor busy time and voluntary wait time for the same processor, as seen by the z/VM system that is active in the partition. The value format is in the range of 0.00 - 100.00. For example, the value 12.00 represents 12.00%.

LPAR Wait The wait completion definition for the logical processor. It can contain one of the following values:
- YES - displays if the wait completion flag is turned on. The logical processor continues to run on a real processor until its time slice is up, even though it is waiting.
- NO - displays if the wait completion flag is turned off.

LPAR Weight The weight defined for the logical processor. Weight values for dedicated processors range from 1 to 999. The string 'DED' is inserted when processors are dedicated. The value format is an integer.

Logical CPU Load The logical CPU load calculated based on the sum of processor wait time plus processor busy time. Note that the resulting value depends not only on the actual activity of the guest system (the processor time used), but also on the activity of systems in other logical partitions on the same physical system. The 'suspended' time (see LPAR Suspend Time) will increase if there is more contention for the real processors, thus causing less voluntary wait time. Less voluntary wait time results in a higher logical CPU load being calculated, even if the actual CPU time used by a processor is the same.

Physical CPU Busy The sum of the %Load values for all active logical partitions with normal processors, plus the general LPAR management overhead, if available. That is, this field displays the overall load for normal processors in the processor complex. This does not include the load of partitions with IFL or ICF processors.

Processor Number The CPU identification number allocated to each of the logical processors that were defined. The value format is an integer.

Processor Type The CPU type of the logical processors defined for the partition. Possible values are the following:
- CP - Central Processor.
- ICF - Internal Coupling Facility Processor.
- IFL - Integrated Facility for Linux Processor.
- ZIIP - IBM System z9™ Integrated Information Processor.
- ZAAP - IBM zSeries Application Assist Processor.
- Special - Other type of processor.
- Unknown - No processor is assigned to this logical partition.

System ID The name that uniquely identifies the active z/VM system. The value format is an alphanumeric text string with a maximum of 8 characters.

System Name The host name of the system on which the agent is running. The value format is an alphanumeric text string no longer than 64 characters.

Time The date and time when the monitoring agent retrieved the data. This attribute is intended for logging and reporting data collection times rather than for creating situations. To specify a time of day for monitoring, use attributes from the Universal Time or Local Time groups. See the Tivoli Enterprise Portal help for instructions on specifying timestamp attributes in situations and queries.

VM CPU Load The CPU load for the z/VM guest system, calculated based on the sum of processor busy time plus elapsed time.

Processor by LPAR Name workspace

The Processor by LPAR Name workspace, accessed from the LPAR Utilization table of the LPAR workspace, displays data on the logical partition for which you elected to view additional information. Use this workspace to determine the resource usage by specific logical partitions.

This predefined workspace contains the following views:
- The **LPAR Weight** bar chart that provides the average weight of the logical processors defined for each logical partition. Weight values for dedicated processors range from 1 to 999. The string 'DED' displays when processors are dedicated.
- The **LPAR Load** bar chart that displays data on the relative load of the requesting partition. This is expressed as the relation of the total time that logical processors were dispatched for this partition, compared to the total amount of available processor time.

- The **LPAR Processor Busy** bar chart displays the percentage of time that the logical processor was busy, defined as the percentage of elapsed time during which a real processor was assigned to the logical processor. The value will also include wait time in the system that is running in the logical partition if 'wait completion' has been enabled for the logical processor.

- The **LPAR Processor Utilization** table that provides data on the system utilization by the selected defined logical partition. The table shows data such as the relative load of the partition on the whole processor complex. This is expressed as the relation of the total time that logical processors were dispatched for this partition, compared to the total amount of available processor time.

  This table also displays the total logical CPU load calculated based on the sum of wait time plus processor busy time, and it displays the average processor load as seen by the guest VM system, calculated based on the sum of processor busy time plus elapsed time. Additionally, the table displays identifying information for the LPAR, such as its name, the CPU type of logical processor defined for the LPAR, and whether the LPAR is active.

See the "KVLProcessor Data attributes" on page 15 for more details on the data displayed in this view.

Processor workspace

The Processor workspace, accessed from the LPAR workspace, displays data on system utilization by the different types of processors assigned to the defined logical partitions. The default view for this workspace is to display data for processors with an LPAR Status of ACTIVE*.

This predefined workspace contains the following views:

- The **LPAR Weight** bar chart that provides the average weight of the logical processors assigned to each logical partition. Weight values for dedicated processors range from 1 to 999. The string 'DED' displays when processors are dedicated.

- The **LPAR Load** bar chart that displays data on the relative load of the partition on the whole processor complex, during the collection interval. This is expressed as the relation of the total time that logical processors were dispatched for a partition, compared to the total amount of available processor time. A load value displays only for those partitions with normal processors (non-IFL or ICF). This bar chart also displays the total logical CPU load calculated based on the sum of wait time plus processor busy time, and it displays the average processor load as seen by the guest VM system, calculated based on the sum of processor busy time plus elapsed time. Additionally, it shows the status of the LPAR.

- The **LPAR Processor Busy** bar chart that displays, for each assigned logical partition, the percentage of time that the logical processor was busy, defined as the percentage of elapsed time during which a real processor was assigned to the logical processor. The value will also include wait time in the system that is running in the logical partition if 'wait completion' has been enabled for the logical processor. This bar chart also provides data on the average percentage of elapsed time that the logical processor spent to manage LPARs. This information is available only on systems with the LPAR management time facility.

- The **LPAR Processor Utilization** table that provides data on overall system utilization by each of the defined logical partitions. The table shows data such as the total amount of time that all of the logical processors for a logical partition were busy during the collection interval, the percentage of elapsed time that a logical processor spent to manage LPARs, and the utilization of the system based on the number of logical processors available. Use this table to determine how well each logical partition is able to obtain CPU resources.

See the "KVLProcessor Data attributes" on page 15 for more details on the data displayed in this view.

IBM Tivoli OMEGAMON XE on z/VM and Linux Planning and Configuration Guide

The following changes will be made to the planning and configuration guide to reflect the changes made for Fix Pack 0003:

- Support for z/VM, Version 5.3 will be added to the list of supported platforms.

- Support for Red Hat Enterprise Linux 5 will be added to the list of supported platforms.
- Relevant sections will be updated with new configuration information.

IBM Tivoli OMEGAMON XE on z/VM and Linux Problem Determination Guide

The problem determination guide will be updated to expand the following Troubleshooting sections:

- Data collection.
- Installation and configuration.
- Dynamic workspace linking.

Accessing the publications

You can access the publications for this agent, from the Tivoli Information Center Web site at the following Web address:

http://publib.boulder.ibm.com/infocenter/tivihelp/v15r1/topic/com.ibm.omegamon_xezvm.doc/welcome.htm

You can view the publications for this and all other Tivoli products at the following Web address:

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

In the Tivoli software information center window, click the letter that matches the first letter of your product name to access your product library. For example, click **M** to access the IBM Tivoli Monitoring library or click **O** to access the IBM Tivoli OMEGAMON library.

Support information

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

- "Using IBM Support Assistant"
- "Obtaining fixes"
- "Receiving weekly support updates" on page 22
- "Contacting IBM Software Support" on page 22

Using IBM Support Assistant

The IBM Support Assistant is a free, stand-alone application that you can install on any workstation. You can then enhance the application by installing product-specific plug-in modules for the IBM products you use.

The IBM Support Assistant saves you time searching product, support, and educational resources. The IBM Support Assistant helps you gather support information when you need to open a problem management record (PMR), which you can then use to track the problem.

The product-specific plug-in modules provide you with the following resources:

- Support links
- Education links
- Ability to submit problem management reports

For more information, see the IBM Support Assistant Web site at http://www.ibm.com/software/support/isa/.

If your product does not use IBM Support Assistant, use the links to support topics in your information center. In the navigation frame, check the links for resources listed in the **ibm.com® and related resources** section where you can search the following resources:

- Support and assistance (includes search capability of IBM technotes and IBM downloads for interim fixes and workarounds)
- Training and certification
- IBM developerWorks®
- IBM Redbooks®
- General product information

If you cannot find the solution to your problem in the information center, search the following Internet resources for the latest information that might help you resolve your problem:

- Forums and newsgroups
- Google.com

Obtaining fixes

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

1. Go to the IBM Software Support Web site at http://www.ibm.com/software/support.
2. Under **Find product support**, click All IBM software (A-Z). This opens the software product list.
3. In the software product list, click **IBM Tivoli OMEGAMON XE on z/VM and Linux**. This opens the IBM Tivoli OMEGAMON XE on z/VM and Linux support site.

4. Under **Solve a problem**, click **APARs** to go to a list of fixes, fix packs, and other service updates for Tivoli OMEGAMON XE on z/VM and Linux.

5. Click the name of a fix to read the description and optionally download the fix. You can also search for a specific fix; for tips on refining your search, click **Search tips**.

6. In the **Find downloads and drivers by product** section, select one software category from the **Category** list.

7. Select one product from the **Sub-category** list.

8. Type more search terms in the **Search within results** if you want to refine your search.

9. Click **Search**.

10. From the list of downloads returned by your search, click the name of a fix to read the description of the fix and to optionally download the fix.

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

Receiving weekly support updates

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

1. Go to the IBM Software Support Web site at http://www.ibm.com/software/support.

2. Click **My support** in the far upper-right corner of the page under **Personalized support**.

3. If you have already registered for **My support**, sign in and skip to the next step. If you have not registered, click **register now**. Complete the registration form using your e-mail address as your IBM ID and click **Submit**.

4. Click **Edit profile**.

5. In the **Products** list, select **Software**. A second list is displayed.

6. In the second list, select a product segment, for example, **Systems management**. A third list is displayed.

7. In the third list, select a product sub-segment, for example, **System Performance**. A list of applicable products is displayed.

8. Select the products for which you want to receive updates. For example, IBM Tivoli OMEGAMON XE on z/VM and Linux.

9. Click **Add products**.

10. After selecting all products that are of interest to you, click **Subscribe to email** on the **Edit profile** tab.

11. Select **Please send these documents by weekly email**.

12. Update your e-mail address as needed.

13. In the **Documents** list, select **Software**.

14. Select the types of documents that you want to receive information about.

15. Click **Update**.

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

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

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

Contacting IBM Software Support

IBM Software Support provides assistance with product defects.

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

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

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

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

* For customers with Subscription and Support (S & S) contracts, go to the Software Service Request Web site at https://techsupport.services.ibm.com/ssr/login.

* For customers with IBMLink™, CATIA, Linux, OS/390®, iSeries™, pSeries®, zSeries, and other support agreements, go to the IBM Support Line Web site at http://www.ibm.com/services/us/index.wss/so/its/ a1000030/dt006.

* For IBM eServer™ software products (including, but not limited to, DB2 and WebSphere products that run in zSeries, pSeries, and iSeries environments), you can purchase a software maintenance agreement by working directly with an IBM sales representative or an IBM Business Partner. For more information about support for eServer software products, go to the IBM Technical Support Advantage Web site at http://www.ibm.com/servers/eserver/techsupport.html.

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

To contact IBM Software support, follow these steps:

1. "Determining the business impact"
2. "Describing problems and gathering information" on page 24
3. "Submitting problems" on page 24

Determining the business impact

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

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

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

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

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

Describing problems and gathering information

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

* What software versions were you running when the problem occurred?
* Do you have logs, traces, and messages that are related to the problem symptoms? IBM Software Support is likely to ask for this information.
* Can you re-create the problem? If so, what steps were performed to re-create the problem?
* Did you make any changes to the system? For example, did you make changes to the hardware, operating system, networking software, and so on.
* Are you currently using a workaround for the problem? If so, be prepared to explain the workaround when you report the problem.

Submitting problems

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

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

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

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

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Index

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