

Chapter 1. Interim Fix 0001 overview

Interim Fix 0001 is an interim fix for IBM® Tivoli® OMEGAMON® XE on z/VM® and Linux®, V4.1.2 Fix Pack 0001. This readme file provides details about installing the interim fix and information about the changes contained in this interim fix. OMEGAMON XE on z/VM and Linux, Fix Pack 0001, Interim Fix 0001 contains the components listed in Table 1.

Table 1. Interim Fix 0001 files

File name	Description
4.1.2.1-TIV-KVL-IF0001.PDF	Readme file for the monitoring agent.
4.1.2.1-TIV-KVL-IF0001.tar	Agent installation image. This file also contains the application support files to be installed on the Tivoli Enterprise 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, or UNIX®).
4.1.2.1-TIV-KVL-IF0001.zip	Windows application support installation 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: Interim Fix 0001 is a complete refresh of this monitoring agent. If you have a prior installation of this monitoring agent, any customized product provided situations will not be migrated to the new installation.

You can obtain the interim fix files from the Support Web page 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** list. You will be taken to the support page for this monitoring agent.

What's new in this Interim Fix

This interim fix contains a new Resource Constraint workspace. To access the Resource Constraint workspace right-click the Workload branch in the navigator tree, select Workspace and click Resource Constraint.

Support for the z/VM operating system

See the following "Supported versions of the z/VM operating system" section for a complete list of the supported versions of the z/VM operating system. Prior to z/VM v5.3, the support used by this monitoring agent was provided in the Performance Toolkit as a Web download. In z/VM v5.3, this method was replaced and this function was delivered as part of the base product. Updates to this function are now delivered as part of the normal service stream for Performance Toolkit for z/VM v5.2, z/VM v5.3 and z/VM v5.4.

For details on the relevant APARs and their corresponding PTFs for this monitoring agent, 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>

Supported versions of the z/VM operating system

Tivoli OMEGAMON XE on z/VM and Linux is supported on the following versions of the z/VM operating system.

Version of the monitoring agent	Version of the z/VM operating system and the Performance Toolkit for VM		
Version of OMEGAMON XE on z/VM and Linux	Version 5.2	Version 5.3	Version 5.4
Version 4.1.0 - Fix Pack 001	Supported	Not supported. You must install Version 4.1.0 - Fix Pack 003 or above of this monitoring agent.	Not supported. You must install Version 4.1.0 - Fix Pack 003 or above of this monitoring agent.
Version 4.1.0 - Fix Pack 002	Supported	Not supported. You must install Version 4.1.0 - Fix Pack 003 or above of this monitoring agent.	Not supported. You must install Version 4.1.0 - Fix Pack 003 or above of this monitoring agent.
Version 4.1.0 - Fix Pack 003	Supported	Supported - with the latest service level of the Performance Toolkit applied.	Supported - with the latest service level of the Performance Toolkit applied.
Version 4.1.1	Supported	Supported - with the latest service level of the Performance Toolkit applied.	Supported - with the latest service level of the Performance Toolkit applied.
Version 4.1.2	Supported, but with reduced functionality. See Note below.	Supported - with the latest service level of the Performance Toolkit applied.	Supported - with the latest service level of the Performance Toolkit applied.
Version 4.1.2 – Fix Pack 0001	Supported, but with reduced functionality. See Note below.	Supported - with the latest service level of the Performance Toolkit applied.	Supported - with the latest service level of the Performance Toolkit applied.
Version 4.1.2.1 – Interim Fix 0001	Supported, but with reduced functionality. See Note below.	Supported – with the latest service level of the Performance Toolkit applied.	Supported – with the latest service level of the Performance Toolkit applied.

Note: To take advantage of the most recent features implemented, install the latest version of the Performance Toolkit and the latest version of the OMEGAMON XE on z/VM and Linux monitoring agent. Reduced functionality results if you run a prior version of either the Performance Toolkit or the OMEGAMON XE on z/VM and Linux monitoring agent.

Support for SuSE Linux Enterprise Server and Red Hat Enterprise Linux

Version 4.1.2 Fix Pack 0001, Interim Fix 0001 provides support for the following versions of SuSE Linux Enterprise Server:

- SUSE Linux Enterprise Server 9 for zSeries, with Service Pack 3 or later, in 31-bit mode or in 64-bit mode
- SUSE Linux Enterprise Server 10 for zSeries, 64-bit mode
- SUSE Linux Enterprise Server 11 for zSeries, 64-bit mode

Version 4.1.2 Fix Pack 0001, Interim Fix 0001 provides support for the following versions of Red Hat Enterprise Linux:

- Red Hat Enterprise Linux 4 Update 6 or later in 31-bit mode or in 64-bit mode
- Red Hat Enterprise Linux 5 or later

See the *OMEGAMON XE on z/VM and Linux Planning and Configuration Guide* for further information on Linux requirements.

Addition of Resource Constraint Workspace

Version 4.1.2 Fix Pack 0001, Interim Fix 0001 adds the KVLUser_Wait attribute group. The KVLUser_Wait attribute group provides information about the impact of resource constraints on workloads.

The KVLUser Wait attribute group contains the following attributes:

Active Percent Percentage of samples where the user was active, either consuming CPU or waiting for some service.

Console Function Wait Percent Percentage of active samples where the user was in console function wait, that is, waiting for the central processor to execute one of the console function commands. By using these commands, a user can alter the state and configuration of the virtual machine (for example LINK, ATTACH, and DETACH).

Eligible List Percent Percentage of active measurements where the user was in the eligible list (any class).

I/O Wait Percent Percentage of active samples where the user was in I/O wait state.

Instruction Simulation Wait Percent Percentage of active samples where the user was in instruction simulation wait, that is, waiting for the central processor to complete simulation of a privileged instruction.

Limit List Wait Percent Percentage of active measurements where the user was in the limit list, that is in the dispatch list waiting for CPU, but prevented from running by a maximum share setting.

Loading Percent Percentage of active samples where the user was in loading state, that is with a high page read rate.

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

Other State Percent Percentage of active measurements where the user was found in other states.

Page Active Wait Percent Percentage of page active wait, that is the virtual machine has loaded a wait PSW while waiting for the completion of a page read operation. This state is to be expected for guest systems running with a PAGEX ON setting.

Page Wait Percent Percentage of active samples where the user was found in page wait state.

Q0 List Percent Percentage of active measurements where the user was in Q0 (in the dispatch list as class 0 user).

Q1 List Percent Percentage of active measurements where the user was in Q1 (in the dispatch list as class 1 user).

Q2 List Percent Percentage of active measurements where the user was in Q2 (in the dispatch list as class 2 user).

Q3 List Percent Percentage of active measurements where the user was in Q3 (in the dispatch list as class 3 user).

Running Percent Percentage of active samples where the user was running on a real processor.

Sum of Top 5 Wait States The sum of the I/O wait, instruction simulation wait, page wait, CPU wait, and loading wait percent values. This value has a range of 0 to 500.

SVM and Dormant Wait List Percent Percentage of active samples where the user was in both SVM wait and in the dormant list. This status is counted as active since the machine is actually waiting for something, and not idle.

SVM and Eligible List Wait Percent Percentage of active samples where the user was in both SVM wait and in the eligible list (resource wait).

SVM and Test Idle Wait Percent Percentage of active samples where the user was in both SVM wait and test idle wait. SVM wait state indicates that the user was waiting for the completion of a communication with a service virtual machine.

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.

Test Idle Wait Percent Percentage of active samples where the user was in test idle wait, that is waiting to be dropped from the dispatch list.

Time The date and time at the end of the CP Monitor sample interval. This attribute is intended for logging and reporting data collection times rather than for creating situations. See the Tivoli Enterprise Portal help for instructions on specifying timestamp attributes.

Wait While I/O Active Percent Percentage of active measurements where the user was found in a state other than the preceding states, while an I/O operation started by this machine had not yet completed.

Waiting Percent Percentage of active samples where the user was waiting to run on the real CPU.

Waiting User ID User ID.

New product-provided situations

The following table contains the new situations that are included in this version of the monitoring agent. sure

Navigator item	Situation name	Column name and initial conditional value	State	Runs at startup (Yes or No)
Workload	ZVM_User_Wait_CPU_Critical	CPU Wait Percent > 40.00	Critical	No
Workload	ZVM_User_Wait_CPU_High	CPU Wait Percent > 25.00 and CPU Wait Percent <= 40.00	High (Warning)	No
Workload	ZVM_User_Wait_Page_Critical	Page Wait Percent > 40.00	Critical	No
Workload	ZVM_User_Wait_Page_High	Page Wait Percent > 25.00 and Page Wait Percent <= 40.00	High (Warning)	No

ZVM_User_Wait_Page_High

Raises an alert when the percentage of samples during which the workload was found to be active and waiting for the completion of a page read operation is greater than 25 percent and less than or equal to 40 percent. This information is from the high frequency user state sampling facility of the CP Monitor facility. A workload enters page wait state when it references a page that is not present in host storage and must be brought in from auxiliary storage. This state reflects time waiting for page reads from DASD. Page writes and paging from expanded storage do not affect this state.

The triggering of this situation indicates that there are not enough free page frames to satisfy page requests for active workloads. This can result in greater page wait and possible thrashing of the paging subsystem. Consider adding real memory to the system. You can also reduce the paging demand by removing workload where possible.

If you used the SET RESERVED CP command to reserve pages for preferred virtual machines, consider reducing the amount reserved. SET RESERVED can be useful in a paging environment to ensure that virtual machines on which others are dependent do not wait for paging. For example, if a virtual machine acting as a file server for many other virtual machines must wait for paging, then all the dependent virtual machines must also wait. By minimizing page wait by the file server, you shorten the time the other virtual machines need to be active and to have their pages active. Be aware that abusing the SET RESERVED command can create memory constraints and excessive paging.

Virtual disks in storage (VDISKS) are located in the dynamic paging area. See the VDISK workspace to determine which virtual machines are using the VDISK feature. Look for VDISKS that are not being used to full capacity, and that can be removed from the system. For Linux on System z virtual machines, explore sharing memory between machines by using a named saved system (NSS) or a discontinuous saved segment (DCSS).

Note: Extensive use of VDISKS can result in increased paging subsystem load. Therefore, do not use VDISKS in memory-constrained or in high paging rate environments.

See the **Paging Log (PAGELOG)**, the **System Counters (SYSTRANS)**, the **CPU Load and Transactions (CPU)**, the **Storage Utilization Log (STORLOG)**, and the **User Page Data (UPAGE)** screens of the Performance Toolkit for additional information. See the *Performance Toolkit Reference* for information about the Performance Toolkit screens.

*IF *VALUE KVLUser_Wait.Page_Wait_Percent > 25 and KVLUser_Wait.Page_Wait_Percent <= 40

ZVM_User_Wait_Page_Critical

Raises an alert when the percentage of samples during which the workload was found to be active and waiting for the completion of a page read operation is greater than 40 percent. This information is from the high frequency user state sampling facility of the CP Monitor facility. A workload enters page wait state when it references a page that is not present in host storage and must be brought in from auxiliary storage. This state reflects time waiting for page reads from DASD. Page writes and paging from expanded storage do not affect this state.

The triggering of this situation indicates that there are not enough free page frames to satisfy page requests for active workloads. This can result in greater page wait and possible thrashing of the paging subsystem. Consider adding real memory to the system. You can also reduce the paging demand by removing workload where possible.

If you used the SET RESERVED CP command to reserve pages for preferred virtual machines, consider reducing the amount reserved. The SET RESERVED can be useful in a paging environment to ensure that virtual machines on which others are dependent do not wait for paging. For example, if a virtual machine acting as a file server for many other virtual machines must wait for paging, then all the dependent virtual machines must also wait. By minimizing page wait by the file server, you shorten the time the other virtual machines need to be active and to have their pages active. Be aware that abusing the SET RESERVED command can create memory constraints and excessive paging.

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Note: Extensive use of VDISKS can result in increased paging subsystem load. Therefore, do not use VDISKS in memory-constrained or in high paging rate environments.

See the **Paging Log (PAGELOG)**, the **System Counters (SYSTRANS)**, the **CPU Load and Transactions (CPU)**, the **Storage Utilization Log (STORLOG)**, and the **User Page Data (UPAGE)** screens of the Performance Toolkit for additional information. See the *Performance Toolkit Reference* for information on the Performance Toolkit screens.

*IF *VALUE KVLUser_Wait.Page_Wait_Percent > 40

ZVM_User_Wait_CPU_High

Raises an alert when the percentage of samples during which the workload was found to be active and waiting for the CPU is greater than 25 percent and less than or equal to 40 percent. This information is from the high frequency user state sampling facility of the CP Monitor facility. A workload is in this state when it is found waiting to run on a real processor. High CPU wait time

indicates a bottleneck in processor resources. The value does not exceed 100% even in a multi-processor configuration.

Review the data displayed in the All z/VM Workloads table in the Workload workspace of this monitoring agent. See also the %CPU value in the User Resource Usage (USER) screen of the Performance Toolkit. The User Resource Usage (USER) screen displays data for all of the virtual processors defined to the virtual machine. See the *Performance Toolkit Reference* for information on the User Resource Usage (USER) screen.

A monitoring product for the guest platform can provide additional information for virtual machines that are running guest operating systems. The high CPU utilization might be caused by a looping user application or process. The application in question might be examined for inefficient or defective code. The total CPU might be high because there is legitimate processing work to be performed that is causing high CPU utilization. A processor upgrade might be needed. You might modify the threshold for this situation if high CPU utilization is normal for this workload.

*IF *VALUE KVLUser_Wait.CPU_Wait_Percent > 25 and KVLUser_Wait.CPU_Wait_Percent <= 40

ZVM_User_Wait_CPU_Critical

Raises an alert when the percentage of samples during which the workload was found to be active and waiting for the CPU is greater than 25 percent and less than or equal to 40 percent. This information is from the high frequency user state sampling facility of the CP Monitor facility. A workload is in this state when it is found waiting to run on a real processor. High CPU wait time indicates a bottleneck in processor resources. The value does not exceed 100% even in a multi-processor configuration.

Review the data displayed in the All z/VM Workloads table in the Workload workspace of this monitoring agent. See also the %CPU value in the User Resource Usage (USER) screen of the Performance Toolkit. The User Resource Usage (USER) screen displays data for all of the virtual processors defined to the virtual machine. See the *Performance Toolkit Reference* for information on the User Resource Usage (USER) screen.

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*IF *VALUE KVLUser_Wait.CPU_Wait_Percent > 40

See the *IBM Tivoli OMEGAMON XE on z/VM and Linux User's Guide*, or the online help system for this monitoring agent for descriptions of the product-provided situations.

Chapter 2. Installation instructions

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

Table 2. Overall installation steps for Interim Fix 0001

Goal	Where to find information
Ensure that your monitoring environment is prepared for interim fix.	<i>IBM Tivoli OMEGAMON XE on z/VM and Linux Planning and Configuration Guide.</i>
Gather the information you need to perform the installation.	<i>IBM Tivoli OMEGAMON XE on z/VM and Linux Planning and Configuration Guide.</i>
Install IBM Tivoli Monitoring, V6.1.0, with Fix Pack 0007 or later.	<i>IBM Tivoli Monitoring Installation and Setup Guide and the IBM Tivoli Monitoring Fix Pack 007 Readme.</i>
Install the IBM Tivoli OMEGAMON XE on z/VM and Linux monitoring agent, V4.1.2, Fix Pack 0001 Interim Fix 0001.	<i>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" below.</i>
Install application support for the IBM Tivoli OMEGAMON XE on z/VM and Linux monitoring agent, V4.1.2, with Fix Pack 0001 Interim Fix 0001.	<i>IBM Tivoli Monitoring Installation and Setup Guide</i>
Install the IBM Tivoli Monitoring Agent on Linux OS, if you plan to use dynamic workspace linking. 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.	<i>IBM Tivoli Monitoring Installation and Setup Guide and the IBM Tivoli OMEGAMON XE on z/VM and Linux Planning and Configuration Guide.</i>
Install language support (optional) on each computer where the Tivoli Enterprise Portal Server is located.	See "Installing Language Support (optional)" below.
Install the Command Processor. This step is optional and required only if you intend to use the Take Action command feature.	<i>Program Directory</i> for this monitoring agent, and the <i>IBM Tivoli OMEGAMON XE on z/VM and Linux Planning and Configuration Guide.</i>

Before you install the interim fix

Before you install this interim fix, install IBM Tivoli Monitoring, Version 6.1.0, with Fix Pack 0007 or later if that product at that level is not already installed.

Note: All base monitoring components must be at the same fix pack level. For example, you cannot have a Fix Pack 0003 portal server and a Fix Pack 0007 monitoring server.

If you are installing fix packs on Linux or UNIX computers, and you installed the IBM Tivoli Monitoring components (both the base monitoring components such as 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. If the *user_id* was NOT root, then follow steps 1-4 below if installing on Unix.

1. Log in to 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 interim fix for IBM Tivoli OMEGAMON XE on z/VM and Linux

√	Installation step
	<p>1. Gather information about the monitoring components in your environment. See the <i>IBM Tivoli OMEGAMON XE on z/VM and Linux Planning and Configuration Guide</i>.</p> <p>2. Select one of the following methods to install the monitoring agent:</p> <p>If you are installing the monitoring agent from the Support Web page for this product, perform the following steps:</p> <p>Download and install the 4.1.2.1-TIV-KVL-IF0001 interim fix files from the Support Web page. This step assumes that IBM Tivoli Monitoring, Version 6.1, with Fix Pack 0007, or later, is already installed.</p> <p>On Windows computers, download and extract the 4.1.2.1-TIV-KVL-IF0001.zip file into a temporary installation directory, and run the following commands:</p> <pre>cd install_dir\WINDOWS</pre> <p>where <i>install_dir</i> is the directory where you extracted the interim fix files.</p> <p>setup.exe</p> <p>On UNIX or Linux computers, download and extract the 4.1.2.1-TIV-KVL-IF0001.tar file into a temporary installation directory, and run the following commands from the command line:</p> <pre>cd install_dir</pre> <p>./install.sh</p> <p>where <i>install_dir</i> is the directory where you extracted the interim fix files.</p> <p>For any of these platforms, continue with the installation and configuration of the monitoring agent by following the instructions outlined in the <i>IBM Tivoli Monitoring Installation and Setup Guide</i>. See also the <i>IBM Tivoli OMEGAMON XE on z/VM and Linux Planning and Configuration Guide</i>.</p>
	<p>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 and UNIX platforms, use the 4.1.2.1-TIV-KVL-IF0001.tar file to install the application support on the appropriate platform for each component. For the Windows platform, use the 4.1.2.1-TIV-KVL-IF0001.zip file to install application support for the monitoring server, the portal server, and the desktop client.</p> <p>See the <i>IBM Tivoli Monitoring Installation and Setup Guide</i> for details on installing the application support for these components.</p> <p>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 must also install the application support for the IBM Tivoli Monitoring: Linux OS agent. Using application support, you can link to specific IBM Tivoli Monitoring: Linux OS workspaces from some of the Tivoli OMEGAMON XE on z/VM and Linux monitoring agent workspaces. See the <i>IBM Tivoli Monitoring Installation and Setup Guide</i> for details on installing this monitoring agent and on installing the application support for this agent.</p>

Installing Language Support (optional)

If you want the 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.

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.

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 starts 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 for 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. 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 and the Eclipse Help Server.

8. Click **Next**, and then click **Finish**.

9. Stop and restart the following components:

- Tivoli Enterprise Portal Server
- Eclipse Help 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. Documentation changes

The following documentation changes were made in support of this interim fix:

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

- Added a description of new Resource Constraint Workspace
- Added a description of new KVLUser_Wait attribute group
- Added a description of new product provided Situations

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