OMEGAMON for Storage on z/OS Troubleshooting Guide

GC27-4381-04

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Contents

About this guide

OMEGAMON for Storage: Troubleshooting Guide provides problem determination and resolution information for the issues most commonly encountered with OMEGAMON for Storage. You can use this guide in conjunction with the other books in the IBM Tivoli Monitoring documentation library. To learn about this family of products, visit http://www-306.ibm.com/software/tivoli/solutions/availability/products.html.

Users of this book need to be familiar with the product and with performance monitoring concepts. If you use IBM Tivoli Data Warehouse, you need to be familiar with the operating system that hosts the warehouse.

Chapter 1. General troubleshooting for the OMEGAMON XE Monitoring Agent on z/OS

Service information about the distributed components of Tivoli Management Services and service tasks common to both distributed and z/OS environment is documented in *IBM Tivoli Monitoring Troubleshooting Guide*. That book also explains diagnostic tools and setting up tracing for the various distributed components of Tivoli® Management Services.

This section provides an overview of service information that you must collect about a z/OS monitoring agent and instructions for setting traces and collecting logs for your own use and to forward to IBM Software Support. These topics are covered:

- Troubleshooting flow for an OMEGAMON XE Monitoring Agent on z/OS
- Determining whether the problem was caused by an OMEGAMON XE Monitoring Agent on z/OS
- Setting up a trace for an OMEGAMON XE Monitoring Agent on z/OS
- Understanding and using RAS1 logs
- Capturing z/OS logs to send to IBM Software Support

Troubleshooting flow for an OMEGAMON XE Monitoring Agent on z/OS

When you encounter a problem with any component, the primary troubleshooting feature is logging. Logging refers to the writing of text messages and trace data generated by the software to an output destination, such as a console screen or a file. An OMEGAMON XE Monitoring Agent on z/OS does not display messages at the Tivoli Enterprise Portal. Instead, messages are sent to more typical z/OS output locations, such as sysout data sets or spool files or, more rarely, to the z/OS system console. Logging is enabled on all monitoring agents by default.

Tracing, on the other hand, creates a record of the processing of a computer program or transaction. Trace logs capture information about the operating environment when component software fails to operate as intended to help you diagnose problems. The principal log type is the reliability, availability, and serviceability (RAS1) trace log. When the Tivoli Management Services z/OS components are initialized, RAS1 service initialization is one of the first processes started. RAS logs are in the English language only. The RAS trace log mechanism is available on the Tivoli Enterprise Monitoring Server, the Tivoli Enterprise Portal Server, and the monitoring agents. Most logs are located in a logs subdirectory on the host computer.

By default, an OMEGAMON XE Monitoring Agent on z/OS has minimal tracing enabled. The setting `RAS1=ERROR` means that only error messages are captured. When you report a problem, IBM Software Support might ask you to enable a more in-depth and detailed form of tracing, such as one of those discussed under Syntax for RAS1 traces.

IBM Software Support uses the information captured by trace logging to trace a problem to its source or to determine why an error occurred. The default configuration for trace logging, such as the level of trace logging, depends on the source of the trace logging. Trace logging is always enabled.

Attention: There is CPU and I/O overhead associated with detailed RAS1 tracing that might degrade performance of the monitoring agent. You must restore RAS1 tracing to the minimal `KBB_RAS1=ERROR` after problem diagnosis is completed.

The specific process for troubleshooting the OMEGAMON®® XE for Storage on z/OS monitoring agent is described in How to troubleshoot problems in OMEGAMON for Storage.

Determining whether the problem was caused by an OMEGAMON XE Monitoring Agent on z/OS

This section describes how to identify problems caused by a specific OMEGAMON XE Monitoring Agent. Sometimes it is difficult to trace the origin of a problem. For example, a problem might first be displayed in a Tivoli Enterprise Portal client, but the client is reflecting a more basic problem with the Tivoli Enterprise Monitoring Server.

In any problem scenario, all documentation should be gathered at the time of the error. What appears to be a client problem could very well be a server problem, especially in the scenario where data is not showing up at the client. The following guidelines are for collecting the correct documentation for any problems reported.

As you collect logs, create an exact description of the problem. For reproducible problems, document the exact navigation path that produced the error. Screen prints might also help in the problem determination.

In your problem report, try to use the correct terminology when describing the problem (for example, workspaces, views, navigators, events, and links). Consistent use of the terminology helps IBM Software Support to understand the problem quickly.

The sections that follow discuss types of problems that you might see and how to capture information needed to diagnose those problems.

Reproducible problems reported as Tivoli Enterprise Portal client problems

If the problem is reproducible and is reported as a Tivoli Enterprise Portal client problem, send the client log. The location of the log depends on the client type and operating system the client is running on. You may be asked to set a trace in the client and then collect the log. This is a very likely scenario in the case where a problem is reproducible.

Note: Additional information about logs for distributed components is found in the *IBM Tivoli Monitoring Troubleshooting Guide*.

Tivoli Enterprise Portal

If a Tivoli Enterprise Portal client is being used, collect the logs shown in the following table:

About this task

Table 1. Log locations for the Tivoli Enterprise Portal

Component	Windows	UNIX-based systems
Tivoli Enterprise Portal client	By default, the log is located in the following sample path: `C:\Documents and Settings\Administrator\ Application Data\IBM\Java\Deployment\ log\plugin150.trace` where **Administrator** is the user account that is currently in use. The `plugin150.trace` file contains the RAS1 tracing for the Tivoli Enterprise Portal browser client and any Java™ exceptions. (The sample path indicates that OMEGAMON 1.5.0 of the Java software is currently installed.) The Tivoli Enterprise Portal client logs contain environmental information, such as the version and build level of the Tivoli Enterprise Portal client. The log also contains the host and port of the Tivoli Enterprise Monitoring Server that the client is connecting to. **Note:** See the information that follows this table to learn how to locate the Tivoli Enterprise Portal client log on a Windows computer.	None.

Table 1. Log locations for the Tivoli Enterprise Portal (continued)

Component	Windows	UNIX-based systems

Tivoli Enterprise Portal desktop client	`install_dir\CNP\kcjerror.log`
	
	`install_dir\CNP\kcjras1.log`
	
	When launched via Java Web Start:
	
	`%USERPROFILE%\Application Data\IBM\Java\Deployment\log\javaws`*nnnnn*`.trace`
	
	where *nnnnn* is a unique, randomly generated numeric suffix to support generational logs (in other words, the last generated log will not be overlayed by the most current execution of Tivoli Enterprise Portal using Java Web Start). This is in contrast to the Tivoli Enterprise Portal Browser client, which has a fixed name and is overlayed with each execution cycle.
		`install_dir/logs/hostname_PC_timestamp.log`
		
		where:
		
		install_dir
		
		Specifies the directory where Tivoli Enterprise Portal Server was installed.
		
		hostname
		
		Specifies the name of the system hosting the product.
		
		PC
		
		Specifies the product code. cq for the Tivoli Enterprise Portal Server.
		
		timestamp
		
		A decimal representation of the time at which the process was started.
		
		When launched via Java Web Start:
		
		`${user.home}/.java/deployment/log/javaws`*nnnnn*`.trace`
		
		where *nnnnn* is a unique, randomly generated numeric suffix to support generational logs (in other words, the last generated log is not overlayed by the most current execution of Tivoli Enterprise Portal using Java Web Start). This is in contrast to the Tivoli Enterprise Portal Browser client, which has a fixed name and is overlayed with each execution cycle.

You can locate the Tivoli Enterprise Portal client log on a Windows computer as follows:

Procedure

1. Access a Windows command prompt.

2. Enter the following command to identify the location of the application data for the currently active user account:

   echo %APPDATA%

   If you log on with the **UserXYZ** user account, the path for this data directory might be

   `C:\Documents and Settings\UserXYZ\Application Data`

3. Use the **cd** (change directory) command to navigate to the client log in the following path:

   `cd %APPDATA%\IBM\Java\Deployment\log`

   For example, if Version 1.5.0 of the Java software is installed, the log file is named `plugin150.trace`.

Tivoli Enterprise Portal Server

The Tivoli Enterprise Portal Server logs might also be useful, found in one of the locations in the following table:

Table 2. Log locations for Tivoli Enterprise Portal Server

Component	Windows	UNIX-based
Tivoli Enterprise Portal Server	`install_dir\logs`	`install_dir/logs/hostname_PC_timestamp.log` where: *install_dir* Specifies the directory where Tivoli Enterprise Portal Server was installed. *hostname* Specifies the name of the system hosting the product. *PC* Specifies the product code. cq for the Tivoli Enterprise Portal Server. *timestamp* A decimal representation of the time at which the process was started.

In addition to the client logs, collect the Tivoli Enterprise Monitoring Server and Tivoli Enterprise Portal Server logs. While this problem may be reported as a Tivoli Enterprise Portal client problem, the client might be having difficulties because of a server failure.

Tivoli Enterprise Monitoring Server

For the location of logs for a Tivoli Enterprise Monitoring Server on z/OS, see Problems reported as Tivoli Enterprise Portal Server problems.

The following table shows the location of logs for a Tivoli Enterprise Monitoring Server logs on distributed platforms:

Table 3. Log locations for Tivoli Enterprise Monitoring Server on distributed platforms

Component	Windows	UNIX-based
Tivoli Enterprise Monitoring Server	`install_dir\logs\ hostname_PC_ HEXtimestamp-nn.log` where: *install_dir* Specifies the directory where Tivoli Enterprise Monitoring Server was installed. *PC* Specifies the product code. ms for Tivoli Enterprise Monitoring Server. *HEXtimestamp* A hexadecimal representation of the time at which the process was started. *nn* Represents the circular sequence in which logs are rotated. Ranges from 1-5, by default, though the first is always retained, since it includes configuration parameters.	`install_dir/logs/ hostname_PC_ timestamp.log` where: *install_dir* Specifies the directory where Tivoli Enterprise Portal Server was installed. *hostname* Specifies the name of the system hosting the product. *PC* Specifies the product code. cq for the Tivoli Enterprise Portal Server. *timestamp* A decimal representation of the time at which the process was started.

Table 3. Log locations for Tivoli Enterprise Monitoring Server on distributed platforms (continued)

Component	Windows	UNIX-based

Tivoli Enterprise Monitoring Server operations logs	Use the operations logs to determine the cause of IBM Tivoli Monitoring problems. IBM Tivoli Monitoring operations logging replaces MSG2 logging. The new optional logs replace the Tivoli Enterprise Monitoring Server log files `\install_dir\cms\kdsmain.msg` on Windows systems and `install_dir/logs/hostname_ms_timestamp.log` on UNIX-based systems.
	
	To use the new logging facility for the Tivoli Enterprise Monitoring Server, modify the `\install_dir\cms\KBBENV` file on Windows systems or the `install_dir/config/hostname_ms_TEMS ID.config` file and `install_dir/config/kbbenv.ini` file on UNIX-based systems. Add the following line to the file:
	
	`MSG_MODE=kms`
	
	To disable the new logging facility and return to original logging, either remove this line in the file or change it to:
	
	`MSG_MODE=MSG2`
	
	For more information, refer to the *IBM Tivoli Monitoring Troubleshooting Guide*.	

Unreproducible problems reported as Tivoli Enterprise Portal client problems

If the problem is not reproducible and is reported as a Tivoli Enterprise Portal client problem, collect both the client and server logs. The logs may be the only indication of the real problem. Always try to get the logs at the time of the error. The Tivoli Enterprise Portal client has dynamic logging. Restarting the processes before collecting the logs results in a rewrite of the log, which means that any previous error messages might be lost.

Problems reported as Tivoli Enterprise Portal Server problems

If the problem is reported as a Tivoli Enterprise Portal Server problem, collect the server logs. The Tivoli Enterprise Portal Server is comprised of two processes, so there is a reliability, availability, and serviceability (RAS) (referred to in this document as a "RAS1 log") for each process. If this is a reproducible problem, you might be asked to set unit traces for the Tivoli Enterprise Portal Server and then asked to gather the logs. The location for Tivoli Enterprise Portal Server logs is found in Reproducible problems reported as Tivoli Enterprise Portal client problems. Both logs contain the Tivoli® RAS1 trace information. Also, collect the client log at the time of the error if it is available.

Problems affecting an OMEGAMON XE Monitoring Agent on z/OS

After you have ruled out problems with Tivoli Management Services components and the functionality for which you installed an OMEGAMON XE Monitoring Agent on z/OS is not available, then treat the problem as a monitoring agent

problem. As noted earlier, the fact that problems appear in the Tivoli Enterprise Portal does not mean that this component is the source of the failure. Most monitoring agent problem determination guides include chapters for these types of problems:

- Installation and configuration
- Data collection
- Performance
- Usage

A data collection problem with a monitoring agent manifests itself as the display of no data or incorrect data in the Tivoli Enterprise Portal.

Log files and trace information are provided in a common way across all OMEGAMON XE Monitoring Agents on z/OS and the z/OS components of the Tivoli Management Services. Table 4 explains the location of log and trace files for an OMEGAMON XE Monitoring Agent on z/OS and Tivoli Management Services z/OS components.

Table 4. Locations of log and trace information for z/OS components

Component	Description
An OMEGAMON XE Monitoring Agent on z/OS	RKLVLOG for the monitoring agent started task is the single most helpful piece of service information for an OMEGAMON XE Monitoring Agent on z/OS. The RKLVLOG (R = runtime, KLV = the prefix associated with IBM® Tivoli Monitoring Services:Engine or TMS: Engine) is the sysout data set or spool file that contains log and trace messages. Instructions on how to save the contents of this log to a data set are provided under Capturing z/OS logs to send to IBM Software Support. These additional zSeries log files (if available) are also useful: • The RKLVSNAP sysout data set or spool file contains formatted dump output. • The RKPDLOG sysout data set or spool file contains the information and error messages related to the handling of persistent data stores. Refer to your started procedures for the locations of these serviceability log files.
Tivoli Enterprise Monitoring Server on z/OS	Because the Tivoli Enterprise Monitoring Server on z/OS runs under TMS: Engine just as an OMEGAMON XE Monitoring Agent on z/OS does, all logging under TMS: Engine is handled the same way, that is log and trace data are written to RKLVLOGs and RKPDLOGs.

Table 4. Locations of log and trace information for z/OS components (continued)

Component	Description
IBM Tivoli Management Services:Engine (TMS: Engine)	TMS: Engine is a collection of basic operating system and communication service routines built specifically for z/OS. All address spaces used by OMEGAMON XE Monitoring Agent on z/OS load and use the services of TMS: Engine. Successful initialization of TMS: Engine is noted by this message: `KLVIN408 IBM OMEGAMON PLATFORM ENGINE VERSION 400 READY` For troubleshooting information about TMS: Engine problems, refer to the z/OS initialization section of *IBM Tivoli Monitoring Troubleshooting Guide*. Explanations for messages generated by TMS: Engine can be found in *IBM Tivoli Monitoring: z/OS Messages*. TMS: Engine writes messages to the same RKLVLOG as the product it is running. If you search the RKLVLOG for a OMEGAMON XE Monitoring Agent on z/OS, product-specific messages start with the product code (for example, KS3 for OMEGAMON for Storage) but messages for the TMS: Engine start with that component prefix, KLV.
OMEGAMON subsystem	The OMEGAMON subsystem does not allocate an RKLVLOG. This component issues messages directly to the z/OS system console (or SYSLOG).
Persistent data store	The RKPDLOG sysout data set or spool file contains the information and error messages related to the handling of persistent data stores. To dump this log, follow the procedures described for RKLVLOG in the sections that follow.

For locations of log files for all the components of Tivoli Management Services and information about enabling tracing for distributed components, refer to *IBM Tivoli Monitoring Troubleshooting Guide*.

Setting up a trace for an OMEGAMON XE Monitoring Agent on z/OS

The following two important debug variables can be set to debug problems with an OMEGAMON XE Monitoring Agent on z/OS:

- The KDC_DEBUG environment variable (see Using the KDC_DEBUG environment variable)
- RAS1 tracing

Using the KDC_DEBUG environment variable

Communications tracing during TCP/IP initialization is controlled by the *KDC_DEBUG* environment variable.

To obtain the level of tracing required to have these TCP/IP initialization messages echoed to RKLVLOG, the string *KDC_DEBUG=Y* must be added to member KDSENV of RKANPARU (or the appropriate initialization member named K*pp*ENV, where *pp* is the two-letter prefix associated with the monitoring agent, such as S3 for OMEGAMON for Storage).

Possible values for *KDC_DEBUG* are:

Value	Description

Y	When this variable is set to **Y**, then the data flow between the monitoring agent and Tivoli Management Services components (such as Tivoli Enterprise Monitoring Server and Tivoli Enterprise Portal Server) during TCP/IP initialization is recorded, including data packages send and received. When *KDC_DEBUG=Y* is active in the environment during initialization of TCP/IP services for this address space and any of the following messages are present, then TCP/IP initialization was successful. If *KDC_DEBUG* is set to **Y** and none of these messages appear in RKLVLOG, then initialization of the TCP/IP service failed:
	`"KDE1I_OpenTransportProvider") Transport opened: socket/ip.tcp`
	`"KDE1I_OpenTransportProvider") Transport opened: socket/ip.pipe`
	`"KDE1I_OpenTransportProvider") Transport opened: socket/ip.udp`

N	The data flow between the monitoring agent and Tivoli Management Services components during TCP/IP initialization is not recorded. This is the default and the recommended setting for normal operation.

For OMEGAMON monitoring agents on z/OS, this environment variable can be used during TCP/IP service initialization to diagnose connectivity problems with application layers such as telnet and FTP, and with the Tivoli Monitoring Server, Tivoli Enterprise Portal Server, and the Tivoli Enterprise Monitoring Agents.

The *KDC_DEBUG* environment variable controls all DCS communications tracing. Use the **KDC_DEBUG** parameter to track DCS errors or activity between the agent and the Tivoli Enterprise Monitoring Server. These usage notes apply:

- You cannot dynamically alter *KDC_DEBUG* tracing.
- Place the *KDC_DEBUG* environment variable statement immediately after the *KDC_FAMILIES* environment variable.

Setting up RAS1 tracing

RAS1 is the OMEGAMON component that provides trace and dump routines. RAS1 tracing provides runtime filtering of product messages and is the primary diagnostic tool for OMEGAMON. It is provided by the kbb library service and is set using either the IBM Tivoli Monitoring Service Console interface or some more

direct method of manually modifying the **KBB_RAS1** parameter. RAS1 messages are sent to stdout, so that one of the components in the configurator programs redirects that output to the files shown in Table 4.

Not all OMEGAMON products or functions support RAS1 tracing, and not all OMEGAMON products or functions use the filters and classes in the same way. For example, two monitoring agents might use the filters and classes specified in RAS1 tracing differently and with different frequencies.

Again, be aware that RAS1 tracing log files can grow very large with the wrong amount of filtering. There is no log management function or feature, so be careful with the levels of tracing that you specify. You may want to run error tracing for all components and then any additional levels depending on diagnostic needs.

Syntax for RAS1 traces

This syntax is used to specify an RAS1 trace in the K*pp*ENV file. After you add this command to the K*pp*ENV file, you must stop and restart the address space for it to take effect. After that, it remains in effect for the life of the address space. To end this RAS1 trace, you must edit the K*pp*ENV file again and reset the trace level and stop and start the address space.

The basic syntax of the RAS1 trace commands for error tracing is as follows:

Where:

Parameter	Description
global_class	Messages that display the data collected by the **TakeSample** method can be viewed by adding the RAS1 trace (UNIT:KRA OUTPUT) or (UNIT:KRA ALL) to the agent trace statement. • ERROR (ER): returns severe error messages only (this is the default for most applications). • STATE (ST): records the condition or current setting of flags and variables within the process. If state tracing is enabled, you can see the current state of particular variables or flags as the process is running. • FLOW (FL): causes a message to be generated at an entry or exit point of a function. • DETAIL (DE): produces a detailed, verbose level of tracing. • INPUT (IN): records data that is created in the execution of a particular API, function, or process. • ALL: causes all available messages to be recorded, a combination of all the other forms of tracing.
COMP	The keyword that indicates this trace will include a component type. The COMP keyword is used to trace groups of routines related by function (or component). Do not use this parameter unless requested to do so by IBM Software Support.
component_type	The identifier for a component type. If an IBM Software Support representative instructs you to perform a component trace, you are provided with a code for that component. Do not use this parameter unless requested to do so by IBM Software Support.

Parameter	Description
ENTRY	The keyword used to narrow a filtering routine to a specific ENTRY POINT. Since multiple entry points for a single routine are not common, this keyword is not commonly used and should only be used at the explicit request of an IBM Software Support representative.
entry_point	A variable representing the name of the entry point. If you are asked to specify a value for the ENTRY keyword, an IBM Software Support representative will tell you what value to specify for *entry_point*.
UNIT	The keyword that indicates this trace will include collecting information using the compilation unit, fully qualified or partially qualified. A match is performed between the compilation unit dispatched and the compilation unit specified on the RAS1 statement. A match results in a trace entry.
unit_name	A variable representing the name of the compilation unit. This name can be anything that is related to the object file name or unit compilation name. In most instances, this name defines the component that is being traced. This value might be one of the components in Table 5, but in practice will most likely be the three-character component identifier for the monitoring agent (for example, ks3 for OMEGAMON for Storage).
class	One of the same values specified for Global Class but, because of its position inside the parentheses, the class is narrowed in scope to apply only to the unit_name specified. The following are possible values. Valid abbreviations are in parentheses. • `ERROR` (ER): returns severe error messages only (this is the default for most applications. • `STATE` (ST): records the condition or current setting of flags and variables within the process. If state tracing is enabled, you can see the current state of particular variables or flags as the process is running. • `FLOW` (FL): causes a message to be generated at an entry or exit point of a function. • `DETAIL` (DE): produces a detailed, verbose level of tracing. • `INPUT` (IN): records data that is created in the execution of a particular API, function, or process. • `ALL`: causes all available messages to be recorded, a combination of all the other forms of tracing.

Note:

- The default setting for all components is *KBB_RAS1=ERROR*, meaning that only error tracing is enabled.
- You can specify any combination of UNIT, COMP, and ENTRY keywords. None of these keyword is required. However, the RAS1 value you set with the global class applies to all components.

Some examples of RAS1 trace syntax follow.

Example 1: Tracing requests to and answers from the Tivoli Enterprise Monitoring Server:

To show requests to and answers from the Tivoli Enterprise Monitoring Server, specify this trace:

```
KBB_RAS1=ERROR (UNIT:KRA ST ERR)
```

The unit values ST and ERR indicate that you are collecting state and error information for the agent framework component (KRA).

This type of agent trace is used only if you are trying to debug a specific problem, because it greatly increases the number of messages generated by agent. With this type of trace, messages include a detailed dump of all rows of agent data that have passed filtering, which includes attribute names and values, request names, table names, and collection interval. Remember to disable this resource-intensive form of tracing immediately after you have completed your trace.

Example 2: Tracing proxy controller and distributed agent issues:

From the Tivoli Enterprise Monitoring Server, to trace proxy controller and Tivoli Enterprise Monitoring Server distributed agent issues, issue this command:

```
KBB_RAS1=ERROR (COMP:KUX ST ER) (UNIT:KRA ALL) (UNIT:KDS FL)
```

In this example:

- KUX is a component identifier provided to you by a representative of IBM Software Support so that you can collect state and error information about this subcomponent.
- KRA is the unit name for the agent framework component. All trace information about this component is being captured.
- KDS is the Tivoli Enterprise Monitoring Server component and the flow (FL) of entry or exit points through this component are documented with records written to RKLVLOG.

Messages that display the data collected by the **TakeSample** method can be viewed by adding the RAS1 trace (UNIT:KRA OUTPUT) or (UNIT:KRA ALL) to the agent trace statement.

Setting RAS1 trace levels for an OMEGAMON XE Monitoring Agent on z/OS

For most OMEGAMON monitoring agents on z/OS, the trace level KBB_RAS1=ERROR is set by default. You can change this trace level a number of ways. Three of those ways are explained in the sections that follow.

Setting trace levels by editing RKANPARU::

One of the simplest ways to set trace levels for an OMEGAMON XE Monitoring Agent on z/OS is to edit the RKANPARU(K*pp*ENV) member, where *pp* is the product code.

The text in bold is an example of what an IBM service representative might ask you to add to this member.

```
File Edit Edit_Settings Menu Utilities Compilers Test Help
sssssssssssssssssssssssssssssssssssssssssssssssssssssssssssssssssssssssssssssssssssssssssssssssss
EDIT KAN.V4R1.RKANPARU(KS3ENV) - Columns 00001 00072
Command ===> Scroll ===> CSR
****** ***************************** Top of Data ******************************
==MSG> -Warning- The UNDO command is not available until you change
==MSG> your edit profile using the command RECOVERY ON.
000001 KDE_TRANSPORT=\
000002 SNA.PIPE PORT:135 USE:N\
000003 IP6.PIPE PORT:19184 USE:N\
000004 IP6.UDP PORT:19184 USE:N\
000005 IP.SPIPE PORT:3660 USE:N\
```

```
000006 IP6.SPIPE PORT:3660 USE:N\
000007 IP.PIPE PORT:1918 EPHEMERAL:Y\
000008 IP.UDP PORT:1918
000009 KBB_RAS1=ERROR (UNIT:KS3TN ALL) (UNIT:KS3IRAFT ALL)
000010 CT_CMSLIST=\
000011 IP.PIPE:x.xx.xxx.xx;\
000012 IP.UDP:x.xx.xxx.xx;
000013 CTIRA_STANDALONE=N
000014 CTIRA_IP_PORT=0
000015 LANG=en_US.ibm-037
****** *************************** Bottom of Data ***************************
```

Setting RAS1 trace levels dynamically from the IBM Tivoli Monitoring Service Console::

You can use the IBM Tivoli Monitoring Service Console to set trace levels for monitoring agents on z/OS, as well as for a Tivoli Enterprise Monitoring Server on z/OS or for distributed components. Using the service console, you can read logs and turn on traces for remote product diagnostics and configuration. If you use the Service Console, you can change trace levels without recycling the monitoring server.

The service console is uniquely identified by its service point name. All service consoles for a host are linked and presented on the IBM Tivoli Monitoring Service Index for that host. You can perform operations on a specific component process by selecting the service console associated with the service point name of the component.

Note: Enabling tracing may cause large amounts of trace data and degrade performance, so only turn on tracing for the minimal amount of time as required to do problem determination.

Starting the service console:

Use the following procedure to start the service console:

Procedure

1. Start Internet Explorer (version 5 or higher) or Mozilla Firefox.
2. In the Address field, type the URL for the Tivoli Enterprise Portal Browser client:

   http://hostname:1920

   where *hostname* specifies the system where the process (monitoring server, portal server, Warehouse Proxy Agent, Tivoli Data Warehouse, or Tivoli Enterprise Monitoring Agent) is installed. If the service console is not displayed, a system administrator might have blocked access to it. Refer to the *IBM Tivoli Monitoring Troubleshooting Guide* for information about blocking access to the service console.
3. On the IBM Tivoli Monitoring Service Console window, select the component process (service point name) you want.
4. Click **OK**.

What to do next

You need a valid user ID and password to proceed.

The IBM Tivoli Monitoring Service Console performs user authentication using the native OS security facility. If you use the IBM Tivoli Monitoring Service Console on z/OS systems, your user ID and password are checked by the z/OS security facility (RACF/SAF). If you use the IBM Tivoli Monitoring Service Console on Windows systems, then you must pass the Windows workstation user ID and password prompt. This is the rule except for instances of a NULL or BLANK password. The IBM Tivoli Monitoring Service Console never accepts a NULL or BLANK password.

A password is always required to access the service console. Blank passwords, even if correct, cannot access the service console. Even if a user ID is allowed to login to the operating system without a password, access to the service console is denied. Create a password for the user ID that is being used to login to the service console.

You can issue service console commands in the command input area. For a list of available commands, type a question mark (**?**) and click **Submit**.

Service Console commands for troubleshooting: ras1 and bss1:

The Service Console supports the following commands for troubleshooting: **ras1** and **bss1**.

ras1

The **ras1** command is useful for troubleshooting and is paired with one of the following subcommands:

Subcommand	Description
log	Display RAS1 log capture buffer.
list	List the RAS1 filters in effect.
ctbld	Display the resident CTBLD data.
set *serviceunit*	Control traces and filters for *serviceunit*.
units	Display the registered compilation units.

The **ras1** command is especially useful for dynamically enabling and disabling RAS1 traces. The documentation requests from IBM Software Support may conflict with your availability requirements. The **ras1** command can be used to alter **KBB_RAS1** tracing parameters dynamically without the need to recycle the product. For example, to enable the kpx trace, you can issue the following service console command:

```
ras1 set (UNIT:kpx ALL)
```

After you capture this trace, you can disable it with the following service console command:

```
ras1 set (UNIT:kpx ANY)
```

To see what tracing is already in effect, submit the following command:

```
ras1 list
```

Note:

- The information inside the parentheses may be case-sensitive. Use the values provided by IBM Software Support.
- The settings set by Service Console commands remain in effect for the current activation of the product. After the product is recycled, the original trace settings are restored.

bss1

The **bss1** command manages BSS1 (Basic System Services) and is paired with one of the following subcommands:

Subcommand	Description
listenv	Display the resident TMS: Engine variables.
getenv *envvar*	Display environment variable, where *envvar* is any variable that can be returned from **listenv**.
setenv *envvar*	Assign an environment variable where *envvar* is any variable that can be returned from **listenv**.
info	Display `BSS2_Info()` data.

config *debugenv*	Modifies the settings of the TMS: Engine debug environment variables: *RES1_DEBUG*, *KDH_DEBUG*, *KDC_DEBUG*, and *KDE_DEBUG*. The possible values, from most to least tracing messages, are: **M** (Max), **D** (Detail), **Y** (Yes) and **N** (Nominal). For example, the following **config** command alters the setting of *KDC_DEBUG*:
	
	`BSS1 CONFIG`
	`KDC_DEBUG=Y`

Setting trace levels dynamically from the IBM Tivoli Monitoring Service Console command line:

Dynamic RAS1 agent tracing allows the you to send commands to the monitoring agent to alter its RAS1 tracing dynamically while a process is running. This type of tracing tracks particular types of problems as they occur.

You cannot issue this command if RAS1 agent tracing is not enabled. Enable the RAS1 agent tracing first before attempting to dynamically alter RAS1 agent tracing with these commands documented here.

You can send these commands using the Tivoli Enterprise Portal Take Action facility.

Dynamic RAS1 agent tracing uses syntax similar to RAS1 agent tracing, but with several differences to keep in mind. The syntax is:

Where:

Keyword	Description
action	Can be one of the following: • *ADD*: Enables a specific filter. • *REMOVE*: Disables a specific filter. • *ENABLE*: Enables a global class. • *DISABLE*: Disables a global class.
FILTER ID	Is the keyword that identifies the filter. Signifies that the trace program should add, remove, enable, or disable a filter or class.
id	Is a unique key for each filter specified that commands act upon. The ID is usually a three-letter component identifier for the component to which the add, remove, enable, or disable action is being applied.
UNIT	Is the keyword that indicates this trace will include collecting information for a certain component. Units IDs are specific to a product or component.

Redirecting input of the RAS1 tracing parameters member

Nearly all diagnostic information for the Tivoli Management Services z/OS components is delivered using the RAS1 (trace) component. This component is configured in member KBBENV of RKANPARU using the *KBB_RAS1* environment variable.

Often, Tivoli users redirect the initialization member using the TMS: Engine INITLIST processing. INITLIST processing is always echoed to the RKLVLOG with the KLVIN411 message.

The following shows an example of a typical KBBENV override to a different member, KDSENV:

```
KLVIN410 INITLIST MEMBER KDSINIT BEING PROCESSED
KLVIN411 KLVINNAM=KDSINNAM
KLVIN411 KLVINTB=KDSINTB
KLVIN411 KLVINVLG=KDSINVLG
KLVIN411 KLVINNAF=KDSINNAF
KLVIN411 KLVINVPO=KDSINVPO
KLVIN411 KLVINSTG=KDSINSTG
KLVIN411 KLVINVAM=KDSINVAM
KLVIN411 KBBENV=KDSENV
```

In this instance, configuration of *KBB_RAS1* is displayed in member KDSENV of RKANPARU.

Understanding and using RAS1 logs

When you open a z/OS log such as RKLVLOG, you find a mix of status lines and numbered product messages.

Most messages with IDs are documented in the problem determination guides for each monitoring agent. You can also determine the meaning of a message by entering the message number into an Internet search engine such as Google. The information that follows help you interpret the messages and status lines in a z/OS log.

Determining which product or component generated a message

All components of Tivoli Management Service write messages to various log files for the components. All OMEGAMON XE Monitoring Agents also generate messages that are captured in message and trace files.

It is not always apparent what component has generated a message. To help you understand the messages, Table 5 shows the prefixes for the components of all Tivoli Management Services components and OMEGAMON XE Monitoring Agents that might be displayed in a log and trace file. The message begins with one of the three-letter prefixes documented in the following table.

Table 5. Prefixes that might be displayed in message and trace files.

Prefix	Component
AMX	Distributed Tivoli Enterprise Monitoring Server
AOP	AF/OPERATOR, OMEGACENTER Gateway for MVS™
ATF	OMEGAMON II for IMS™
BG	OMEGAMON II for CICS®
BPO	IBM Tivoli OMEGAMON XE for DB2® Performance Expert
Cl	OMEGAMON Base
CNDL	OMEGAMON Base
CSAA	Classic OMEGAMON
CV	OMEGAMON for VM
DGO	IBM Tivoli OMEGAMON XE for DB2 Performance Expert
DSM	OMEGAMON II for IMS
DX	DEXAN
EA	OMEGAMON II for MVS
EB	EPILOG
EC	EPILOG
ECO	Distributed directory server
ED	EPILOG
EI	EPILOG
EO	EPILOG
EP	EPILOG
ETE	End to End
ETX	OMEGAMON II for IMS
EU	OMEGAMON for VM
EV	OMEGAMON for VM
EVS	OMEGAMON II for IMS
EX	OMEGAMON II for Mainframe Networks
FPE	IBM Tivoli OMEGAMON XE for DB2 Performance Expert
H2C	OMEGAMON II for DB2
IA®	Classic OMEGAMON
ICF	OMEGAMON II for IMS

Table 5. Prefixes that might be displayed in message and trace files. (continued)

Prefix	Component
IN	Classic OMEGAMON
K3Z	IBM Tivoli Monitoring: Active Directory Agent
KA2	IBM Tivoli Alert Adapter for AF/REMOTE
KA4	IBM Tivoli Monitoring: i5/OS Agent
KAB	OMEGACENTER Gateway for MVS
KAG	PARMGEN, Tivoli Enterprise Monitoring Server
KAM	IBM Tivoli Alert Adapter for OMEGACenter Gateway for MVS
KAO	AF/OPERATOR, OMEGACENTER Gateway for MVS
KAT	AF/OPERATOR, OMEGACENTER Gateway for MVS, OMEGACENTER Status Manager for MVS
KAU	AF/Integrated Resource Manager, OMEGACENTER Gateway for MVS
KBB	TMS:Engine or Tivoli Management Service: Engine (TMS:Engine), Tivoli Enterprise Monitoring Server
KBF	CASP Native Connector
KBL	OMEGAMON XE for CASP
KBR	OMEGAMON XE for CASP
KBX	OMEGAMON XE for CASP, PARMGEN
KC2	OMEGAMON II for CICS, PARMGEN
KC3	PARMGEN, IBM Tivoli OMEGAMON XE for CICS on z/OS®
KC5	IBM Tivoli OMEGAMON XE for CICS on z/OS
KCA	OMNIMON Base
KCC	OMNIMON Base
KCF	Candle Command Center for MQSeries® Configuration, IBM Tivoli OMEGAMON XE for WebSphere® MQ, Generic Configuration, PARMGEN, IBM Tivoli Configuration Manager
KCG	OMEGAMON XE for IBM Cryptographic Coprocessors
KCI	IBM Tivoli OMEGAMON XE for CICS on z/OS, PARMGEN
KCJ	Tivoli Enterprise Portal desktop client
KCN	PARMGEN, OMNIMON Base, Candle Subsystem
KCO	Tivoli Enterprise Monitoring Server
KCP	PARMGEN, IBM Tivoli OMEGAMON XE for CICS on z/OS, Candle Command Center for CICSPlex®
KCS	OMEGAMON II for MVS
KCQ	Tivoli Enterprise Portal Server
KCW	Tivoli Enterprise Portal browser client
KD2	OMEGAMON II for DB2, PARMGEN, IBM Tivoli OMEGAMON XE for DB2 Performance Expert
KD3	PARMGEN, OMEGAMON XE for DB2, OMEGAMON XE for DB2 on z/OS
KD4	IBM Tivoli Composite Application Manager for SOA
KD5	PARMGEN, OMEGAMON XE for DB2 on z/OS, IBM Tivoli OMEGAMON XE for DB2 Performance Expert

Table 5. Prefixes that might be displayed in message and trace files. (continued)

Prefix	Component
KDB	PARMGEN, OMEGAMON II for DB2, IBM Tivoli OMEGAMON XE for DB2 Performance Expert
KDC	TMS:Engine or Tivoli Management Service: Engine (TMS:Engine)
KDE	TMS:Engine or Tivoli Management Service: Engine (TMS:Engine)
KDF	OMEGAMON II for SMS, PARMGEN, OMEGAMON II for IMS, Shared Probes
KDH	TMS:Engine or Tivoli Management Service: Engine (TMS:Engine)
KDP	PARMGEN, OMEGAMON XE for DB2, OMEGAMON XE for DB2 on z/OS, IBM Tivoli OMEGAMON XE for DB2 Performance Expert, OMEGAMON XE for DB2plex, Candle Command Center for DB2plex
KDS	Tivoli Enterprise Monitoring Server PARMGEN
KDY	Universal Agent
KDZ	PARMGEN, Candle Dump Analysis Tool for OS/390
KEB	OMNIMON Base
KED	OMEGAMON II for MVS
KEF	Tivoli Enterprise Monitoring Server
KEI	OMEGAMON II for IMS
KEP	OMEGAMON II for MVS
KET	PARMGEN, End to End, OMEGAMON II for Mainframe Networks
KEX	IBM Tivoli Monitoring for Messaging and Collaboration: Microsoft Exchange Server Agent
KEZ	IBM Tivoli OMEGAMON Monitoring Agent for eBA Solutions
KFA	Tivoli Enterprise Monitoring Server
KFAA	Tivoli Enterprise Monitoring Server
KFW	Tivoli Enterprise Monitoring Server and Tivoli Enterprise Portal Server
KFX	PARMGEN, CASP File Transfer, CandleNEt eBP File Transfer for OS390
KGL	Tivoli Enterprise Monitoring Server
KGC	IBM Tivoli OMEGAMON XE for Microsoft .NET: Commerce Server
KHI	IBM Tivoli OMEGAMON Alert Manager for HP OpenView IT/Operations
KHD	Warehouse Proxy Agent
KHL	IBM OMEGAMON z/OS Management Console
KHO	IBM Tivoli OMEGAMON Alert Manager for HP OpenView NNM
KI2	PARMGEN, OMEGAMON II for IMS/DBCTL
KI3	PARMGEN, OMEGAMON XE for IMS, IBM Tivoli OMEGAMON XE for IMS on z/OS
KI5	IBM Tivoli OMEGAMON XE for IMS on z/OS
KIA	OMNIMON Base

Table 5. Prefixes that might be displayed in message and trace files. (continued)

Prefix	Component
KIB	Tivoli Enterprise Monitoring Server
KID	PARMGEN, OMEGAMON II for IMS/DBCTL
KIC	IBM Tivoli OMEGAMON XE for WebSphere InterChange Server
KIE	IBM Tivoli OMEGAMON XE for WebSphere InterChange Server
KIH	Tivoli Enterprise Monitoring Server
KIN	PARMGEN
KIP	IBM Tivoli OMEGAMON XE for IMS on z/OS, PARMGEN, OMEGAMON XE for IMSplex, OMEGAMON XE for IMS, IBM Tivoli OMEGAMON XE for IMS on z/OS
KJI	OMNIMON Base
KIT	IBM Tivoli Enterprise Console
KJF	Distribuited link wizard
KKC	PARMGEN
KKI	PARMGEN
KLB	TMS Engine or Tivoli Management Service: Engine (TMS:Engine)
KLC	Tivoli Enterprise Monitoring Server, CL/CONFERENCE
KLD	TMS:Engine or Tivoli Management Service: Engine (TMS:Engine)
KLE	TMS:Engine or Tivoli Management Service: Engine (TMS:Engine)
KLF	TMS:Engine or Tivoli Management Service: Engine (TMS:Engine)
KLG	Tivoli Enterprise Monitoring Server, CL/SUPERSESSION
KLH	CL/SUPERSESSION, TMS:Engine or Tivoli Management Service: Engine (TMS:Engine)
KLI	Tivoli Enterprise Monitoring Server, CL/SUPERSESSION
KLS	Tivoli Enterprise Monitoring Server, CL/SUPERSESSION
KLT	TMS:Engine or Tivoli Management Service: Engine (TMS:Engine)
KLU	TMS:Engine or Tivoli Management Service: Engine (TMS:Engine)
KLV	TMS:Engine or Tivoli Management Service: Engine (TMS:Engine)
KLX	TMS:Engine or Tivoli Management Service: Engine (TMS:Engine)
KLZ	IBM Tivoli Monitoring: Linux OS Agent
KM2	OMEGAMON II for MVS, PARMGEN
KM3	IBM Tivoli OMEGAMON XE on z/OS, PARMGEN, OMEGAMON XE for OS/390®, IBM Tivoli OMEGAMON XE on z/OS
KM5	IBM Tivoli OMEGAMON XE on z/OS
KMA	Tivoli Enterprise Monitoring Server
KMC	Candle Command Center for MQSeries Configuration, IBM Tivoli OMEGAMON XE for WebSphere MQ, PARMGEN, OMEGAMON XE for WebSphere MQ Configuration
KMH	OMEGAMON II for MVS
KMQ	Candle Command Center for MQSeries, PARMGEN, OMEGAMON XE for WebSphere MQ Monitoring
KMR	OMEGAMON II for MVS

Table 5. Prefixes that might be displayed in message and trace files. (continued)

Prefix	Component
KMS	Tivoli Enterprise Monitoring Server
KMV	OMEGAMON, PARMGEN
KN3	IBM Tivoli OMEGAMON XE for Mainframe Networks, PARMGEN
KNA	IBM Tivoli NetView® for z/OS
KNS	Tivoli Enterprise Monitoring Server
KNT	IBM Tivoli Monitoring: Windows OS Agent
KNV	Tivoli Enterprise Monitoring Server
KNW	IBM Tivolie OMEGAMON XE for NetWare (UA)
KO2	PARMGEN, OMEGAMON II for DB2, IBM Tivoli OMEGAMON XE for DB2 Performance Expert
KO4	Tivoli Enterprise Monitoring Server
KOB	PARMGEN, OMNIMON Base
KOC	PARMGEN, OMEGAMON II for CICS
KOCJ	OMEGAMON II for CICS
KOE	OMEGAMON XE for OS/390 UNIX System Services, Candle Command Center for OS/390 UNIX System Services
KOG	AF/OPERATOR, OMEGACENTER Gateway for MVS
KOI	PARMGEN, OMEGAMON II for IMS
KOM	OMEGAMON II for MVS
KON	OMEGAMON II for Mainframe Networks
KOQ	IBM Tivoli Monitoring for Databases: Microsoft SQL Server Agent
KOR	IBM Tivoli Monitoring for Databases: Oracle Agent
KOS	Candle Command Center for Sysplex, IBM Tivoli OMEGAMON XE on z/OS, PARMGEN, OMEGAMON II for MVS, IBM Tivoli OMEGAMON XE on z/OS, OMEGAMON XE for Sysplex
KOX	Tivoli Enterprise Monitoring Server
KOU	Tivoli Enterprise Monitoring Server
KOY	IBM Tivoli Monitoring for Databases: Sybase Server Agent
KPD	PARMGEN, Tivoli Enterprise Monitoring Server
KPM	OMEGAMON II for MVS
KPS	Tivoli Enterprise Monitoring Server
KPT	Tivoli Enterprise Monitoring Server
KPZ	PARMGEN, Candle Performance Analysis Tool for OS/390
KQB	IBM Tivoli OMEGAMON XE for Microsoft .NET: BizTalk Server
KQ4	IBM Tivoli OMEGAMON XE for Microsoft .NET: Internet Security and Acceleration Server 2004
KQA	IBM Tivoli OMEGAMON XE for Microsoft .NET: Internet Security and Acceleration Server 2000

Table 5. Prefixes that might be displayed in message and trace files. (continued)

Prefix	Component
KQI	CCC for MQSeries Integrator, IBM Tivoli OMEGAMON XE for WebSphere Integration Brokers, PARMGEN, Tivoli Enterprise Monitoring Server, OMEGAMON XE for WebSphere Message Broker Monitoring
KQH	IBM Tivoli OMEGAMON XE for Microsoft .NET: Host Integration Server
KQM	Tivoli Enterprise Monitoring Server
KQT	IBM Tivoli OMEGAMON XE for Microsoft .NET: Content Manager Server
KQP	IBM Tivoli OMEGAMON XE for Microsoft .NET: Sharepoint Portal Server
KRA	IBM Tivoli OMEGAMON XE on z/OS, PARMGEN, Tivoli Enterprise Monitoring Server, OMEGAMON XE for OS/390, IBM Tivoli OMEGAMON XE on z/OS
KQU	IBM Tivoli OMEGAMON XE for Microsoft .NET: UDDI
KRC	OMEGAMON II for SMS
KRI	OMEGAMON II for IMS
KRR	CASP Conversion with XML
KRT	PARMGEN
KRU	CASP Analyze and Gather, CASP Conversion with XML
KS3	IBM Tivoli OMEGAMON XE for Storage on z/OS,PARMGEN
KSA	IBM Tivoli OMEGAMON XE for SAP R/3
KSB	Shared Probes
KSD	OMEGAVIEW
KSH	Tivoli Enterprise Monitoring Server
KSJ	OMEGAMON XE for WebSphere Application Server
KSL	OMEGACENTER Gateway for MVS
KSM	Tivoli Enterprise Monitoring Server
KSS	Tivoli Enterprise Monitoring Server
KT2	IBMTivoli Composite Application Manager for Trasaction Tracking
KSY	Summarization and Pruning Agent
KTN	Tivoli Enterprise Monitoring Server
KTM	Endpoint monitoring agent
KTR	Tivoli Enterprise Monitoring Server
KTV	IBM Tivoli OMEGAMON Alert Manager for Tivoli/Enterprise Console
KTX	IBM Tivoli OMEGAMON XE for Tuxedo
KUC	CASP Universal Connector
KUD	IBM Tivoli Monitoring for Databases: DB2 Agent
KUI	Tivoli Enterprise Monitoring Server
KUL	IBM Tivoli Monitoring: UNIX Log Agent
KUM	IBM Tivoli Universal Agent

Table 5. Prefixes that might be displayed in message and trace files. (continued)

Prefix	Component
KUT	Tivoli Enterprise Monitoring Server
KUX	IBM Tivoli Monitoring: UNIX OS Agent
KVI	Tivoli Enterprise Monitoring Server
KVL	OMEGAMON XE on z/VM® and Linux monitoring agent, IBM Tivoli OMEGAMON XE on z/VM Linux
KVT	IBM Tivoli OMEGAMON Alert Emitter for Tivoli/Enterprise Console
KVW	IBM Tivoli NetView for z/OS
KWD	PARMGEN, OMEGAMON XE for OS/390
KWE	OMEGAMON XE for WebSphere Application Server, IBM Tivoli OMEGAMON XE for WebSphere Application Server
KWL	IBM Tivoli OMEGAMON XE for BEA WebLogic Server
KWO	OMEGAVIEW II® for the Enterprise
KWW	OMEGAMON XE for WebSphere Application Server on OS/390
KXC	CASP Analyze and Gather, CASP eBusiness Platform
KXD	OMEGAMON II for MVS, IBM Tivoli OMEGAMON XE on z/OS
KXDF	OMEGAMON II for MVS
KXM	PARMGEN, CASP Conversion with XML, CandleNet eBusiness Platform Conversion with XML
KXO	IBM Tivoli OMEGAMON XE on z/OS, CASP Access for WebSphere
KXS	CASP eBusiness Platform, CASP Directory Services
KYN	ITCAM for WebSphere, IBM Tivoli Composite Application Manager for J2EE
KZ2	PARMGEN
LAT	OMEGAMON II for IMS
LSCX	Classic OMEGAMON
ML	OMEGAMON II for IMS
MRG	OMEGAMON II for IMS
O2	OMEGAMON II for DB2
OB	OMEGAMON Base
OBV	OMEGAMON Base
OC	OMEGAMON II for CICS
OGN	OMEGAMON for VM
OM	Classic OMEGAMON
OM2	OMEGAMON II for MVS
OMV	OMEGAMON Base
OM0	Classic OMEGAMON
OMG	AF/OPERATOR, OMEGACENTER Gateway for MVS
OR	OMEGAMON II for IMS
OS	OMEGAMON II for IMS
OTR	OMEGAMON II for IMS

Table 5. Prefixes that might be displayed in message and trace files. (continued)

Prefix	Component
OV	OMEGAMON for VM
PWA	OMEGAMON II for IMS
REG	OMEGAMON II for IMS
TRF	OMEGAMON II for IMS
VEB	OMEGAMON II for MVS

Format of messages in a RAS1 log

A RAS1 log for a monitoring agent on z/OS includes the following information:

- Environmental information
  - Operating system and CPU data. This information is prefaced with the following string:

    `PPPxxmmm`

    Where:

Variable	Description
ppp	Is the component prefix (See Table 5 for a list of component prefixes).
xx	The component code (for example, NS Node Status).
mmm	The module name (for example mdg/mgr for Model/Manager).

  - Initial command line settings
- Component summary, including the following:
  - The name of the module.
  - Information about where the library was loaded from.
  - The date and time the module was compiled.
  - The version (if this detail was specified).
- Formatted output, including entry and exit points and text strings. Entry and exit points show flow into and out of a given function. The exit shows the return code, if applicable. The text depends on the kind of trace specified. The following is an example:

```
(00D41 F9C-1{99%}:KV4MAIN.CPP,953,"MainWnd::MainWnd") Entry
(00D41 FD3-1{99%}:KV4MAIN.CPP,959,"MainWnd::MainWnd") Exit
Time,Thread,{%stack avail},pgm_name,Line#,function,text
```

As noted earlier, not all functions are RAS1 enabled, and trace level may exclude some paths. Be aware of issues involved with the granularity of this statement.

Using IBM Support Assistant

The IBM Support Assistant is a free, stand-alone application that you can install on any workstation. The OMEGAMON XE Monitoring Agents on z/OS have provided product-specific plug-in modules to the Support Assistant.

For more information about downloading and using this tool, refer to Using IBM Support Assistant.

Using the Log Analyzer

The Log Analyzer is available to help view, analyze and correlate log files. With the Log Analyzer, you can evaluate multiple event and error logs with time synchronization. This tool makes it easier and faster to debug and resolve problems within multi-tier systems by consuming data in the Common Base Event format and providing specialized visualization and analysis of the data.

With the Log Analyzer, you can gather system and performance data from local and remote systems and the various IBM Tivoli Management Services components and create resource sets, groups of definitions that contain the path locations of the logs that you need to examine and the levels of information that they contain. You can keep these customized definitions and reuse them. The definitions provide the same set of instructions about where to find a log, and what kind of information to gather from the log, saving time during subsequent log imports.

The Log Analyzer for your monitoring agent includes a symptom catalog, a knowledge database that enables the Log Analyzer tool to recognize known problems. IBM provides symptom catalogs of known problems many products, including some OMEGAMON XE Monitoring Agents on z/OS. It also provides a way for you to capture and define your own symptom information.

In addition to the Log Analyzer, specialized OMEGAMON adapters have been provided to aid in problem determination for some of the more common problems that you might experience when using Tivoli Management Services (Tivoli Enterprise Portal, Tivoli Enterprise Portal Server, and Tivoli Enterprise Monitoring Server). The OMEGAMON adapters uses the Generic Log Adapter (GLA) to process application log files and transform their contents into a common format for logging, management, and problem determination and to facilitate communication between tools in a consistent way.

The OMEGAMON adapters process application log files and transform their contents into a common format for logging, management, and problem determination. You can use the tool to view and correlate logs from the Tivoli Enterprise Portal Server or Tivoli Enterprise Monitoring Server on a distributed system, or the RKLVLOG from a monitoring agent or monitoring server on z/OS system.

The Log Analyzer tool is launched from the Tivoli Enterprise Portal Event Tools view, which is displayed as part of the Event Details workspace or by way of a link off the situation event console view in the Enterprise Status workspace.

The Log Analyzer tool can be used to view logs from Tivoli Enterprise Portal Server, Tivoli Enterprise Monitoring Server, or the RKLVLOG from an OMEGAMON XE monitoring agent on z/OS.

Additional information related to the Log Analyzer and the Generic Log Adapter is available at http://www.ibm.com/developerworks/. OMEGAMON adapters and associated documentation are available for download from http://www-01.ibm.com/software/tivoli/products/omegamonxeproductline/ as they are developed.

Starting the Log Analyzer

The Log Analyzer is a part of IBM Support Assistant, a free, standalone application that you can install on any workstation. Follow these steps to download and start the Log Analyzer.

Before you begin

If you do not have the IBM Support Assistant installed, go to the ISA Web site at www.ibm.com/software/support/isa/ to download the software. Instructions for downloading and installing the support assistant are on the support assistant web site.

Procedure

1. Using the support assistant built-in **Update** component, download and install the ISA product add-on for your OMEGAMON monitoring agent. This download also includes the associated Log Analyzer tool symptom catalog.
   a. From the **Update** menu, select **Find New Product** > **Add-ons** and select the add-on for your OMEGAMON monitoring agent from the list of Tivoli product add-ons. Click **Next** to continue.
   b. Select the **Log Analyzer** tool add-on from the list of JVM-based tools and click **Next**.
   c. Review and indicate that you accept the associated license agreements and click **Next**.
   d. Review the list of add-ons to be downloaded and installed and select **Finish**.
2. After installation of the OMEGAMON monitoring agent product add-on and the Log Analyzer is complete, start the IBM Support Assistant. Then do the following:
   a. Select **Analyze Problem**.
   b. Select the **Tools** tab.
   c. Select the **Log Analyzer** from the list of tools in the Tools Catalog.
   d. Select **Launch**. The Log Analyzer should start. If it does not, stop the support assistant and try the procedure again.

Results

The information required to analyze logs for your monitoring agent was downloaded with the monitoring agent add-on. You are now ready to import and analyze logs.

Note:

- The jar file that runs with this tool must be found in the system where the Tivoli Enterprise Portal client that is invoking it exists. It cannot be run remotely.
- Once ISA is installed, launch the Log Analyzer tool from the Tivoli Enterprise Portal Event Tools view. You can then use the tool to view logs from the Tivoli Enterprise Portal Server or Tivoli Enterprise Monitoring Server on a distributed system, or the RKLVLOG from a monitoring agent or monitoring server on z/OS system.

Importing OMEGAMON XE Monitoring Agent on z/OS log files to the Log Analyzer

To import an OMEGAMON XE Monitoring Agent log file (such as the RKLVLOG) into the Log Analyzer, complete the following steps:

Procedure

1. Copy the relevant log files from the IBM Tivoli Monitoring component servers to the system where you installed the IBM Support Assistant workbench. Put the log files for each server in a unique directory (for example, `c:\ITM\logs\serverXXX`).
2. Import the OMEGAMON log files. The Log Analyzer organizes related log files into log sets. Log sets can be used to import and analyze a set of related log files. This facility is used to organize and import your OMEGAMON log files. Log set definitions provide information to the Log Analyzer specifying where log and trace data reside and what kind of data to gather from local and remote systems. The Log Analyzer allows you to import predefined log sets that contain the necessary path information required for retrieving log files on demand.
3. Use one of the procedures described in the following sections, depending on whether you are creating a new log set or editing an existing log set.

Results

Note: You can create and reuse as many log sets as you need. For example, when importing log files from multiple servers, you need more than one log set.

Creating the initial OMEGAMON log set:

To create a new initial OMEGAMON log set, do the following:

Procedure

1. From the Log Analyzer main panel, click **File** > **Import Log File**.
2. Create a new log set.
3. Type the name for the log set. For example, you could type the following text: `OMEGAMON monitoring agents on z/OS Log files for server xxxx`
4. Click **Add**.
5. Complete the Add dialog by doing the following
   a. To limit the list of log files to the OMEGAMON log files, in the Name Filter window, type `Discovery`.
   b. Select the type of log file you are adding to the log set.
   c. Enter the name of the log file on your local system. Ensure the type of log file matches the log file you specified.
   d. Enter the correct version of the OMEGAMON product that corresponds to the log file. Refer to the Log Analyzer online help for additional options.
   e. To add the log file to the log set, click **OK**.
6. For every log file you want to include in the log set, repeat Step 5.

Results

The first time you create the log set, include every log file that you want to include in the log set.

Reusing an existing OMEGAMON log set

To reuse an existing log set, do the following:

Procedure

1. Select **File** > **Import Log File**.

2. Select an existing Log Set Definition from the drop-down list of defined log sets.
3. If necessary, change the contents of the log set definition. You can add, edit, or remove from the list of log files in the log set.
4. To indicate the file should be imported to the log set, select the checkbox next to the log file.
5. To import the log files, click **Finish**.

Correlating and analyzing OMEGAMON log files with the Log Analyzer

The correlation function lets you bring together logs from multiple servers organized by timestamp for environment-wide analysis. Your OMEGAMON log files can be combined in a single view, ordered by time stamp, to correlate the operation of the IBM Tivoli Management Services components.

When you are trying to correlate log files from multiple servers, the time clocks on those servers can be out-of-sync. This synchronization problem could be something simple, such as different time zones, or more subtle, such as a clock being a few milliseconds off from another server's clock. The Log Analyzer imbeds a function to synchronize the time between multiple log files by allowing you to adjust the time stamps in a log file. For more information, refer to the topic titled "Synchronizing time of log records for distributed applications" in the Log Analyzer online help.

There are two ways to correlate log files: simple correlation and advanced correlation.

Performing simple correlation:

To correlate all imported log files, do the following:

Procedure

1. In the Log Analyzer navigation tree view, right-click on **Logs**.
2. Click **View All Logs**.

Performing advanced correlation:

To correlate a set of log files by creating a custom correlation, complete the following steps:

Procedure

1. In the Log Analyzer navigation tree view, right-click on **Correlations**.
2. Select **New** > **Log Correlation**.
3. In the resulting window, type a descriptive name for the correlation you are creating.
4. Select the log files that you want to include for the correlation from the list of available logs.
5. Click **Finish**.
6. Refresh the navigation tree view.
7. In the navigation tree view, right-click the correlation name you typed and select **Open With** > **Log View**.

Organizing log data:

After you create a view of the logs, you can organize the log data to isolate problems. The following list identifies some of the ways that you can organize the data:

- **Sort log records**: For example, you can sort by time, component, and server name.
- **Highlight log records**: For example, you can highlight all error events in red or show all events from a specific component in blue. Highlighting is similar to filtering, but instead of eliminating data from a view, you can highlight the relevant information within the full list of events.
- **Filter log records**: You can narrow the scope of a problem and the data shown based on filter criteria. Examples of filter criteria include time stamps, severity, component, and server.
- **Find log records**: You can search for specific information in a log file. For example, you can search to see events related to interaction with a specific server or user.

For more information about how to organize the data, search the Log Analyzer online help for the "Analyzing log files" topic.

Capturing z/OS logs to send to IBM Software Support

To save a log to a file rather than viewing it online, you need to know how to do the following tasks:

- Saving the contents of a z/OS log such as RKLVLOG
- Ending one RKLVLOG and starting another
- Submitting problems to IBM Software Support

Saving the contents of a z/OS log such as RKLVLOG

To save the information in your z/OS logs (such as RKLVLOG), use the System Display and Search Facility (SDSF) facility that is part of TSO. Follow these instructions to use SDSF to capture (in this example) the RKLVLOG associated with any running task in your z/OS monitoring agent.

Procedure

1. From ISPF, select the SDSF option.
2. Enter the following on the command line:

   ```
   st taskname
   ```

   Where **taskname** is the name of the procedure whose log you are trying to display and capture. For example, entering **st cansdsst** on the command line enables you to see the OMEGAMON for Storage agent job.
3. FLUSH the message buffer to force any cached messages to be sent to the log using this command:

   ```
   f taskname,FLUSH
   ```

   Note: Be aware that your address space may be running with the option WTO(N) enabled, which limits the number of messages the product can issue. If you are using this option, you may be asked to recreate the problem without this message-suppression parameter.

4. From the SDSF screen, enter ? next to the name of the started task to display a list of the output files like the following. For example, the output files for the sample **cansdsst** task noted previously looks like this:

   ```
   JESMSGLG JES2
   JESJCL JES2
   JESYSMSG JES2
   SYSTSPRT CANSDSST
   SYSPRINT CANSDSST
   RKLVLOG CANSDSST
   RKLVSNAP CANSDSST
   RKPDLOG CANSDSST
   KS3ANMON CANSDSST
   KS3ACTCS CANSDSST
   ```

5. To print the RKLVLOG for this job to a dataset, type an s next to the RKLVLOG output file. Then, on the command line of SDSF, type:

   ```
   print d
   ```

   Press Enter. The d means that the file is printed to a dataset.

6. This action causes a panel similar to the one in the following figure to be displayed:

```
COMMAND INPUT ===>            SCROLL ===> CSR

Data set name  ===> 'USER1.NMP181.D26033.CANSON.SYSLOG'
Member to use  ===>
Disposition    ===> NEW       (OLD, NEW, SHR, MOD)
If the data set is to be created, specify the following.
Volume serial will be used to locate existing data sets if specified.
Management class   ===> (Blank for default management class)
Storage class      ===> (Blank for default storage class)
Volume serial      ===> (Blank for authorized default volume) *
Device type        ===> (Generic unit or device address)      *
Data class         ===> (Blank for default data class)
Space units        ===> TRKS (BLKS, TRKS, CYLS, BY, KB, or MB)
Primary quantity   ===> 5 (In above units)
Secondary quantity ===> 5 (In above units)
Directory blocks   ===> 0 (Zero for sequential data set)
Record format      ===> VBA
Record length      ===> 240
Block size         ===> 3120
* Only one of these fields may be specified
```

Figure 1. Figure 1. SDSF print to database panel

   On this panel, type the dataset name and characteristics for the file you are printing and press Enter.

7. You are returned to the RKLVLOG output file. On the command line, specify the number of lines you want to print by entering a range that would include the entire file, such as:

   ```
   print 1 99999999
   ```

   Then press Enter. A message in the upper right corner of the panel tells you how many lines have been printed.

8. Type `print close` on the SDSF command line to close the file. The log is now saved in the dataset that was specified in Step 6.

Results

For more information about SDSF commands, see *z/OS SDSF Operation and Customization (SA22-7670)*.

Ending one RKLVLOG and starting another

When you re-create a problem to send it to IBM Software Support, you may use a z/OS **MODIFY** command to close the current RKLVLOG spool data set and open a new one. This command is issued from a z/OS console. The **TLVLOG** command manages the recording of information to RKLVLOG. The syntax and usage of this command are as follows:

Where:

Keyword	Description
Switch	Is the keyword that dynamically allocates a new RKLVLOG file using the current values, begins recording on the new file, and closes the current RKLVLOG file, releasing it for processing by JES.
class	Is the one-character JES SYSOUT class. `CLASS=A` is the TMS: Engine startup value.
copies	Is the copy count. The valid range is 1-254. `COPIES=1` is the startup value. **Note:** JES2 allows 255, but JES3 allows only 254.
dest	Is the 1-8 character JES SYSOUT destination. `DEST=()` is the startup value.
fcb	Is the 1-4 character FCB name to be used. `FCB=()` is the startup value.
form	Is the 1-4 character form name to be used. `FORM=()` is the startup value.
hold	Determines whether the SYSOUT is to be placed in a JES operator hold when spun off. Specify **YES** (operator hold is requested) or **NO**. `HOLD=NO` is the startup value. **Note:** If `HOLD=YES` is specified, you must issue the appropriate JES release command for the SYSOUT data set to be processed by JES.
maxlines	Is the maximum number of lines to be written to RKLVLOG, in thousands (for example, `MAXLINES=2` means a maximum of 2000 lines). The valid range is **0** through **16000** (16 million lines). When this number is reached, an automatic TLVLOG SWITCH is performed, closing the current RKLVLOG and allocating a new one If the specified value is **0**, there is no maximum; you must manually enter TLVLOG SWITCH to switch log files. `MAXLINES=0` is the startup value. **Note:** Unlike the other values, MAXLINES takes effect immediately. If the new MAXLINES value is less than the number of lines that have already been written to the current RKLVLOG, a switch is immediately performed.
ucs	Specifies the 1 to 4 character UCS name to be used. `UCS=()` is the startup value.
user	Is the 1-8 character user ID to which the SYSOUT is to be spooled. Ignored if DEST is blanks. `USER=()` is the startup value.
wtrname	Is the 1-8 character external writer name to be used. `WTRNAME=()` is the startup value.

Usage Notes®:

- The **TLVLOG** command performs up to three functions, depending on the keywords that are specified. Assuming that you selected all three functions, they are performed in the following order:
  1. Updates the dynamic allocation values. With the exception of **MAXLINES**, these values are used when the next dynamic allocation is performed. Values are updated whenever they are coded on the command.
  2. Lists the current dynamic allocation values. This is always done.
  3. Switches RKLVLOGs. This is done only when **SWITCH** is specified on the command.

     Note: You may update values and request a switch with the same command; the values are updated first, then the switch is performed.
- RKLVLOGs may be automatically closed after a certain number of records have been written to them, similar to the MVS SYSLOG processing. Refer to the MAXLINES keyword for more information.
- To set up an automatic RKLVLOG switch whenever the TMS: Engine address space is started, add the following command to your RKANCMD startup CLIST:

  TLVLOG MAXLINES=nnn

  This command causes RKLVLOG to be automatically closed and released to JES whenever *nnn* thousands of lines have been written. If needed, you can add other installation-dependent values (for example, **CLASS**) to this command.
- Many diagnostic messages are recorded in RKLVLOG. If you set RKLVLOG to spin off automatically, or if you explicitly switch RKLVLOG, you must ensure that the SYSOUT files are kept at least for the life of the TMS: Engine run, in case they are required for problem solving.
- You might want to issue a **TLVLOG SWITCH** command after a problem occurs. This spins off the RKLVLOG data relating to the problem into a separate spool data set, which can be included as part of the TMS: Engine standard problem documentation. Be sure to include all previously spun-off RKLVLOG files.
- Because RKLVLOG is managed with standard IBM data management routines, records are buffered before being written. If you are viewing the currently active RKLVLOG with a product such as SDSF, you do not see the latest messages. Issue the command **FLUSH TLVLOG** to force the current data management buffer to be written. Do not use the **TLVLOG SWITCH** to spin off the current RKLVLOG for this purpose, as it unnecessarily fragments the messages recorded in RKLVLOG.
- Unless you explicitly set a non-zero **MAXLINES** value, RKLVLOG never automatically switches.
- If any error occurs when writing to RKLVLOG, TMS: Engine issues a message and disables RKLVLOG recording. However, messages continue to be written to **VIEWLOG** and to all active operator interfaces. Depending on the error, you may be able to restart RKLVLOG by issuing a switch request.

Here are some examples of ways to use this command:

- To list the current RKLVLOG destination and values: `tlvlog`
- To establish class X and destination SYSPROG as default SYSOUT attributes, and the maximum number of lines as 20,000: `tlvlog class=x dest=sysprog maxlines=20`
- To switch to a new RKLVLOG: `tlvlog switch`

Flushing the log buffers

After a TLVLOG is switched, issuing an echo command can flush the log buffers and ensure that new messages are written to the new RKLVLOG. The **ECHO** command echos any text entered back to the screen. The syntax of the **ECHO** command is shown as follows:

where *string* is a character string to be echoed back to the operator screen where the **ECHO** command was entered.

Usage notes:

- Use **ECHO** to verify that the TMS: Engine operator facility is functioning properly and to force all buffered messages to the log.
- Even after an **ECHO**, log output may not be visible in JES3 systems. This is apparently a result of the way JES3 manages spool buffers.
- Enclosing string in single quotes is not necessary unless you want to preserve leading blanks.

Submitting problems to IBM Software Support

For information about submitting problems to IBM Software Support, refer to the support appendix found in every IBM book.

Chapter 2. Troubleshooting product-specific issues

This section summarizes the types of troubleshooting information that is available for OMEGAMON for Storage and includes links to that information. This section also describes the troubleshooting process and provides summary descriptions of the logs that provide essential troubleshooting information.

Overview

In troubleshooting for OMEGAMON for Storage, you start with a symptom, or set of symptoms, and trace them back to their cause. Troubleshooting is not the same as problem solving. However, during the process of troubleshooting you might obtain sufficient information to enable you to solve a problem. In some cases, you cannot solve a problem after determining its cause. For example, a performance problem might be caused by a limitation of your hardware. However, in the following situations, troubleshooting can lead to problem solving:

- End-user errors
- Application programming errors
- System programming errors, such as in resource definitions

Troubleshooting overview

This chapter describes the troubleshooting process and provides summary descriptions of the logs that provide essential troubleshooting information:

- How to troubleshoot problems in OMEGAMON for Storage
- Sources of troubleshooting data for OMEGAMON for Storage

Note: Chapter 1, General troubleshooting for the OMEGAMON XE Monitoring Agent on z/OS, provides information that is valid for all OMEGAMON XE Monitoring Agents, including specific locations of log files.

Troubleshooting tips

These chapters describe common problems that can occur with OMEGAMON for Storage and available workarounds. These problems are grouped into the following categories:

- Chapter 3, Troubleshooting installation and configuration
- Chapter 4, Troubleshooting data collection
  - Tips regarding the collection of diagnostic data
  - Collection of monitoring data
  - Generation of data reports
- Chapter 5, Troubleshooting performance issues
- Chapter 6, Troubleshooting error conditions
- Chapter 7, Troubleshooting specific product features

Note: *IBM Tivoli Monitoring Troubleshooting Guide*, GC32-9458 provides information about problems and workarounds for the basic components of IBM Tivoli Monitoring.

Other sources of troubleshooting information

Consult the following resources for additional help with troubleshooting:

- Product Support Web page for OMEGAMON for Storage: http://www-306.ibm.com/software/sysmgmt/products/support/IBMTivoliOMEGAMONXEforStorage.html. This Web page provides links to Technotes, PSP Buckets, and Shop zSeries information, among many other topics.
- Support information appendix for other sources of support for problem determination and problem solving.
- IBM Tivoli Open Process Automation Library at the following Web site: http://catalog.lotus.com/wps/portal/tm.

How to troubleshoot problems in OMEGAMON for Storage

This section provides a sequential list of questions to help you troubleshoot problems with OMEGAMON for Storage. By answering these questions, you might be able to determine the source of problems and identify solutions.

1. Does the problem seem to be caused by or related to the monitoring agent?

2. Has required maintenance been applied?

3. When does the problem occur, or how does the problem occur?

4. Can trace logs reveal details about the problem?

5. Can more focused trace logs reveal more details about the problem?

6. Is there documentation for the problem that the logs reveal?

7. Is the problem solved?

Pursue answers to the following questions as described here:

1. Does the problem seem to be caused by or related to the monitoring agent?

Note: Avoid a basic problem with OMEGAMON for Storage by understanding the basic product architecture, as described here. The OMEGAMON for Storage monitoring agent must report to a local Tivoli Enterprise Monitoring Server that is installed and configured in the same z/OS address space. The local server for each agent must report to a hub server. The hub server can be running on any supported system. (If located in a z/OS system, the hub server can also act as the local server for a specific monitoring agent.)

Your answer:	Do this next:
No	Refer to *IBM Tivoli Monitoring Troubleshooting Guide*. This document helps you resolve problems beyond a specific monitoring agent, such as problems with the Tivoli Enterprise Portal and problems with historical reporting.
Yes	Go to Step 2. Has required maintenance been applied?.

Do not worry if you cannot answer this question with certainty at this stage. Later in this process, you generate trace logs that can pinpoint the source of a problem.

2. Has required maintenance been applied

To answer this question for the monitoring agent, consult the Program Directory to confirm that all required PTFs have been installed.

About this task

Also check the PSP bucket for updated requirements, as follows:

Procedure

1. Access the "Technical help database page for mainframe Preventive Service Planning (PSP) buckets" Web page: http://www14.software.ibm.com/webapp/set2/psp/srchBroker
2. Find relevant PSP Buckets. Search for PSP Buckets that have the OMEGAMON for Storage, V4.2.0 prefix: OMXES4200.
3. Consult each PSP Bucket to learn what PTFs are required.
4. Access the Shop z-Series Web site to obtain the PTFs: https://www14.software.ibm.com/webapp/ShopzSeries/ShopzSeries.jsp

For the Tivoli Management Services Component

Procedure

- Consult IBM Software Support Technotes, if any.
- Determine whether fix packs are available for any components that run on distributed computers. For example, a fix pack might be available for a Tivoli Enterprise Portal that is running on a Windows computer.
- See IBM Support Assistant for updates.

What to do next

Your answer:	Do this next:
No	Apply maintenance and see whether the problem persists.
Yes	Go to Step 3. When does the problem occur, or how does the problem occur?.

3. When does the problem occur, or how does the problem occur?

Note: During this step, you might review the cross-referenced documentation and fail to recognize a solution to your problem. The remaining steps of this process help you understand the problem better and find documented solutions that are not obvious at first.

Problem area:	Refer to: *
Install, configure agent	Chapter 3, Troubleshooting installation and configuration *

Problem area:	Refer to: *
Data collection	Chapter 4, Troubleshooting data collection * • Tips regarding the collection of diagnostic data • Collection of monitoring data • Generation of data reports – Long-term historical data reports
Performance issues	Chapter 5, Troubleshooting performance issues *
Error conditions	Chapter 6, Troubleshooting error conditions
Specific product features	Chapter 7, Troubleshooting specific product features * Product features include Dataset Attribute Database.

* If the cross-references in this step do not provide solutions to your problem, go to Step 4. Can trace logs reveal details about the problem?.

4. Can trace logs reveal details about the problem?

Your answer:	Do this next:
No	Trace logs frequently reveal the source of a problem. However, if you are certain that trace logs cannot help you, go to Step 7. Is the problem solved?.
Yes	Read about logging in Sources of troubleshooting data for OMEGAMON for Storage. Set up trace logs for the affected component. Also see Chapter 1, General troubleshooting for the OMEGAMON XE Monitoring Agent on z/OS, for information on these topics: • Locations of IBM Tivoli Monitoring trace logs. • Locations of trace logs for a specific monitoring agent. • Setting up RAS1 tracing, interpreting those logs, and sending logs to IBM Software Support. • Setting up OMEGAMON for Storage debugging logs, interpreting those logs, and sending logs to IBM Software Support. **Note:** The unique utilities in OMEGAMON for Storage, such as the Storage Toolkit and Dataset Attribute Database, log their messages to the Tivoli Enterprise Portal log. Consult the Tivoli Enterprise Portal log when you are troubleshooting these utilities.

Note: There is CPU and I/O overhead associated with detailed RAS1 tracing that might degrade performance of the monitoring agent. You must restore RAS1 tracing to the minimal KBB_RAS1=ERROR setting after problem diagnosis is completed.

5. Can more focused trace logs reveal more details about the problem?

Your answer:	Do this next:
No	Go to Step 7. Is the problem solved?

Your answer:	Do this next:
Yes	Define a different type of trace logging, using the methods that are referenced in Step 4. Can trace logs reveal details about the problem? **Note:** See the troubleshooting tips in Tips regarding the collection of diagnostic data, as needed, to ensure successful capture of diagnostic data.

Note: There is CPU and I/O overhead associated with detailed RAS1 tracing that might degrade performance of the monitoring agent. You must restore RAS1 tracing to the minimal KBB_RAS1=ERROR setting after problem diagnosis is completed.

6. Is there documentation for the problem that the logs reveal?

The trace logs might provide helpful key words regarding your problem, including unique message numbers.

Use key words regarding your problem to search in the following sources:

- Troubleshooting Guide for the monitoring agent
- *IBM Tivoli Monitoring Troubleshooting Guide*, GC32-9458
- RETAIN database

Your answer:	Do this next:
No	Go to Step 7. Is the problem solved?
Yes	Follow the instructions that are documented for the problem. Then go to Step 7. Is the problem solved?

7. Is the problem solved?

Your answer:	Do this next:
No.	Compile information about the problem and contact IBM Software Support. See Capturing z/OS logs to send to IBM Software Support.
Yes.	(No further action is required.)

Sources of troubleshooting data for OMEGAMON for Storage

The primary troubleshooting feature is logging. Logging refers to the text messages and trace data generated by the software. Messages and trace data are sent to an output destination, such as a console screen or a file.

Typically, text messages relay information about the state and performance of a system or application. Messages also alert the system administrator to exceptional conditions when they occur. Consult the explanation and operator response associated with the displayed messages to determine the cause of the failure.

Trace data captures information about the current operating environment when a component or application fails to operate as designed. IBM Software Support

personnel use trace information to determine the source of an error or unexpected condition. Refer to the chapter on diagnostic tools in the *IBM Tivoli Monitoring* for more information about trace tools.

Collecting diagnostic data

If you have a problem that you are unable to solve using the information in this guide, gather the following information that relates to the problem and contact IBM Software Support for further assistance.

- Description of the operation scenario that led to the problem.
- Operating system version and release level.
- Version, release and fix level of the following members of the monitoring environment:
  - IBM Tivoli Monitoring Server
  - Tivoli Enterprise Portal Server
  - Monitoring agent
- If the Windows operating system crashes, collect the `drwtsn32.log` and `user.dmp` files, if available. The files are located in the following path:

  `\Documents and Settings\All Users\Documents\DrWatson`

  See the chapter on diagnostic tools in the *IBM Tivoli Monitoring Troubleshooting Guide* for more information about trace tools.
  - Enter the following command at the command prompt to enable the Dr. Watson™ tool as default debugger: **drwtsn32 –i 2**
  - Enter the following command at the command prompt to open the configuration window of the Dr. Watson tool: **drwtsn32**
- Include such other documentation as is recommended in Table 6.
- If possible, try to classify your problem according to a component area listed in Table 7 and collect documentation as listed there.

Table 6. Recommended documentation

	Abend	Incorrect output	Performance	Function	Connectivity
LOG	X	X	X	X	X
Dump	X	X	X		
Screen shots		X		X	
Traces			X		
cinfo output				X	
TEPS database export				X	
LISTDATA output		X		X	
SMF record dump		X			
BVIR dump	X	X			
RKS3DATA dump	X	X			

Table 7. Requirement matrix based on problem type and product component

Component area	Abend	Incorrect output	Performance	Function loss	Connectivity
Application monitoring	RKLVLOG Dump	RKLVLOG Dump Screen Shots[1]	N/A	RKLVLOG Screen Shots cinfo output TEPS Db Export	N/A
Cache CU stats	RKLVLOG Dump	RKLVLOG Dump Screen Shots LISTDATA[6]	RKLVLOG Dump Traces[2]	RKLVLOG Screen Shots cinfo output LISTDATA[6]	N/A
Tape & VTS	RKLVLOG Dump SMF Record Dump[4] BVIR Dump[4]	RKLVLOG Dump Screen Shots SMF Record Dump[4] BVIR Dump[4]	N/A	RKLVLOG Screen Shots cinfo output	N/A
DASD performance	RKLVLOG Dump	RKLVLOG Dump Screen Shots	N/A	RKLVLOG Screen Shots cinfo output	N/A
DASD Space	RKLVLOG Dump	RKLVLOG Dump Screen Shots	RKLVLOG Dump Traces[2]	RKLVLOG Screen Shots TEPS Db Export	N/A
DADb	RKLVLOG Dump[3]	RKLVLOG Dump[3] Screen Shots[1]	RKLVLOG Dump[3] Traces[2]	RKLVLOG Screen Shots TEPS Db Export	N/A

Table 7. Requirement matrix based on problem type and product component (continued)

Component area	Abend	Incorrect output	Performance	Function loss	Connectivity
Data Set group	RKLVLOG Dump[3]	RKLVLOG Dump[3] Screen Shots[1]	RKLVLOG Dump[3] Traces[2]	RKLVLOG Screen Shots cinfo output TEPS Db Export	N/A
SMS	RKLVLOG Dump	RKLVLOG Dump Screen Shots	N/A	RKLVLOG Screen Shots	N/A
HSM	RKLVLOG Dump	RKLVLOG Dump Screen Shots	N/A	RKLVLOG Screen Shots	N/A
RMM	RKLVLOG Dump[3]	RKLVLOG Dump[3] Screen Shots[1]	RKLVLOG Dump[3] Traces[2]	RKLVLOG Screen Shots cinfo output TEPS Db Export	N/A
Toolkit	RKLVLOG Dump RKS3DATA Dump	RKLVLOG Dump Screen Shots[1] RKS3DATA Dump	N/A	RKLVLOG Screen Shots cinfo output TEPS Db Export	N/A
OM II Interface	RKLVLOG Dump	RKLVLOG[5] Dump Screen Shots	RKLVLOG[5] Dump[3] Traces[2]	RKLVLOG Screen Shots	RKLVLOG[5]
Historical	RKLVLOG Dump	RKLVLOG Dump Screen Shots[1]	RKLVLOG Dump[3] Traces[2]	RKLVLOG Screen Shots	N/A

Note:

1. Should include screen shots of relevant definition dialogs, as well as the errant workspaces. For instance, documentation for incorrect output in the Data Set

Group Summary should contain screen shots of the dialog where the groups are defined, as well as the workspace showing the incorrect values.

2. See the section on Traces for information about setting traces for specific component areas.
3. Some components store data in data spaces and the dump created for the abend may not contain the data space, therefore you may need to create a separate console dump to capture the data space and send it together with the abend dump. See the section on Dump Creation for more information.
4. If your problem involves an IBM VTS that pre-dates the TS7700 series, statistics are extracted from SMF Type 94 records. Please use IFASMFDP to dump all Type 94 records from one of your MAN data sets and submit it with your other documentation. See the section on Dumping SMF Records for more information.

   If your problem involves an IBM TS7700 series VTS, statistics are extracted by a BVIR data set which is created every interval. Please use a batch job to mimic this collection process and submit the output BVIR data set to support along with your other documentation. See the section on Creating a BVIR data set in batch mode for more information.
5. In some cases involving problems with the OMEGAMON for Storage interface you will need to send the RKLVLOG from the OMEGAMON for Storage started task and the RKLVLOG from the TEMS to which it is connecting.
6. OMEGAMON for Storage gathers cache information using IBM IDCSS01 service. A good way to determine whether a problem in collecting cache statistics is due to an OMEGAMON bug is to use another utility that relies on IDCSS01. IDCAMS LISTDATA command does this. See the section on Running LISTDATA for information on setting up a job to test statistics collection on a controller.

Dump Creation

The z/OS MVS System Commands reference (SA22-7627-xx) contains the most up-to-date information about using the **DUMP** command and this should ultimately be your source of information for taking dumps of z/OS address spaces.

For convenience however, here are the proper commands and format for capturing a dump of an OMEGAMON address space at the time of this writing:

```
DUMP COMM='...arbitrary dump title...'
```

The system will respond with a WTOR message like this:

```
*8297 IEE094D SPECIFY OPERAND(S) FOR DUMP COMMAND
```

You should reply:

```
R 8297,JOBNAME=stc_name,SDATA=(ALLNUC,CSA,LPA,PSA,RGN,SQA,SUM,TRT),END
```

Where `stc_name` is the name of the started task you are attempting to dump.

Some product components use data spaces as repositories for collected data. If your problem involves one of these components that you should use dump parameters that will cause the data space(s) to be included in the dump. The syntax for including the data space looks like the following:

```
R 8297,JOBNAME=stc_name,SDATA=(ALLNUC,CSA,LPA,PSA,RGN,SQA,SUM,TRT),
                    DSPNAME=('stc_name'.dspname,...),END
```

Use the following table to find the value for dspname:

Table 8. DSPNAME value

Component	Where to find it in the RKLVLOG
Data Set-level I/O statistics collector	The names are not in the log but they are 00001CND and 00002CND.
HSM Log Analyzer	Obtain from RKLVLOG msg KDFS210I
SMS MCDS Analyzer	Obtain from RKLVLOG msg KDFS208I
Data Set Groups	Obtain from RKLVLOG msg KS3G031I
RMM collector	Obtain from RKLVLOG msg KS3R204I
Data Set Attributes Database	Obtain from RKLVLOG msg KS3A000D

Traces

Many components of the OMEGAMON for Storage product contain dynamic tracing capability. For these components you can start and stop traces while the agent is running and those traces will display information specific to that one component in the RKLVLOG. Whenever possible, you should use these component-specific traces instead of the DEBUG(ON) switch mentioned in Chapter 1 under the section Tips regarding the collection of diagnostic data. The DEBUG(ON) switch will flood the RKLVLOG with information about all components in the product, making it difficult to find information pertinent to the problem you are reporting.

Here are the components which support dynamic tracing:

Table 9. Components which support dynamic tracing

Component	Trace Identifier
Application Monitoring	APLM
Command Intercept	CMIN
Data Set Attributes Database	DADB
Data Set Groups	DSNG
HSM Common Recall Queue	HCRQ
Storage Toolkit	SGTK
DASD Space Monitoring	SPAC
STK VTS Monitoring	STKT
User DASD Groups	UDGR

Dynamic tracing can easily be started and stopped by issuing modify commands to the TEMS started task.

Here is the command format:

```
F stc_name,S3DB START,trace_identifier

F stc_name,S3DB STOP,trace_identifier
```

Dumping SMF Records

Older model IBMVTS controllers (pre-TS7700) write statistical data to SMF Type 94 records and this is source for all data displayed for these devices in OMEGAMON for Storage. If you are reporting a problem with this component of the product and the matrix instructs you to collect SMF records as part of the documentation you submit, you can do so by first switching the SMF data sets and then running a job to extract the Type 94 records from the most current copy of the MAN data set.

Before you issue the **SWITCH** command, you should issue **DISPLAY SMF** to be sure you have an alternate data set available. You will also want to issue the **DISPLAY** to verify the name of the active data set.

```
D SMF
```

The system will respond similar to this:

```
IEE974I 15.43.10 SMF DATA SETS 605
NAME             VOLSER SIZE(BLKS) %FULL STATUS
P-RS22.MAN1      SFP100     18000    0   ALTERNATE
S-RS22.MAN2      SFP101     18000    84  ACTIVE
S-RS22.MAN3      SFP101     18000    0   ALTERNATE
```

In this case, the active data set is the one named RS22.MAN2. After the switch is issued, the system will close that data set and begin writing to another (probably RS22.MAN3). At that point, you may run your extract job against the previously active MAN data set (RS22.MAN2 in this case). Here's a sample of the JCL you should use to extract the data.

```
//DUMP      EXEC PGM=IFASMFDP
//SYSPRINT  DD SYSOUT=*
//SMFIN     DD DISP=SHR,DSN=input_man_dataset
//SMFOUT    DD DSN=output_smf_extract,
//          DISP=(NEW,CATLG,DELETE),
//          SPACE=(CYL,(10,10),RLSE),
//          DCB=(LRECL=4096,BLKSIZE=32760,RECFM=VB)
//SYSIN     DD *
 INDD(SMFIN,OPTIONS(DUMP))
 OUTDD(SMFOUT,TYPE(94))
/*
```

Make appropriate changes to the data set names. The data set created by SMFOUT is the one you should TERSE and send to IBM support.

Creating a BVIR data set

The TS7700 series VTS controllers from IBM write statistical data to virtual tape volumes in response to a request written first on that same volume. This is referred to a Bulk Volume Information Retrieval or BVIR. The OMEGAMON for Storage product writes a BVIR request and collects and analyzes the response data at every VTS collection interval.

If you are experiencing a problem with VTS reporting on TS7700 series devices and the matrix says you should submit a BVIR data set, you can do this very easily by submitting JCL similar to this:

```
//STEP1 EXEC PGM=IEBGENER
//SYSPRINT DD SYSOUT=*
//SYSIN   DD DUMMY
//SYSUT2  DD DSN=bvir_virtual_tape,
//  DISP=(NEW,CATLG,DELETE),UNIT=ts7700_unit,
//  DCB=(RECFM=F,LRECL=80,BLKSIZE=80,TRTCH=NOCOMP)
//SYSUT1 DD *
```

```
VTS BULK VOLUME DATA REQUEST
HISTORICAL STATISTICS FOR 297
/*
//STEP2 EXEC PGM=IEBGENER
//SYSPRINT DD SYSOUT=*
//SYSIN   DD DUMMY
//SYSUT1  DD DISP=bvir_virtual_tape,
//  VOLUME=(,,REF=*.STEP1.SYSUT2),
//  DCB=(RECFM=U,BLKSIZE=24000)
//SYSUT2 DD DSN=bvir_dataset_to_support,
//  DISP=(,CATLG,DELETE),SPACE=(CYL,(5,5)),
//  UNIT=SYSDA,DCB=(RECFM=U,BLKSIZE=24000)
```

The first step writes the request to a virtual tape. Name the tape appropriately and specify a UNIT parameter which assures the data will be written to the TS7700 device. The controller will immediately write the response data and it will be read in STEP2 and written back out to a data set on disk that you can TERSE and submit to IBM support.

Running LISTDATA

The IDCAMS **LISTDATA** command makes use of the IDCSS01 API which is the same service used by OMEGAMON for Storage to acquire statistics on cache controllers. If your cache status shows TIMEOUT, for instance, it may indicate a problem in OMEGAMON or it may be that there is a problem getting cache information from the controller.

A good way to make this determination is to run JCL similar to the following:

```
//STEP1 EXEC PGM=IDCAMS
//SYSPRINT DD SYSOUT=*
//STATREPT DD SYSOUT=*
//SYSIN DD *
 LISTDATA COUNTS UNIT(3390) VOLUME(vvvvvv) ALL
/*
```

Where *vvvvvv* = is the volser of a volume on the cache controller in question. Run this job when the problem determination chart calls for it and submit the entire job log to IBM support with your other documentation.

CINFO Output

The only way to tell the exact maintenance levels of all the applications installed in a Tivoli Enterprise Portal Server environment is to run the **CINFO** command. This command must be run with administrator authority from the command line. It has a different name in Windows than in Linux/UNIX/AIX environments.

The format is as follows:

Windows

`kincinfo –i` Or, to pipe it into a file: `cinfo.txt`

Linux/UNIX/AIX®

`cinfo –i` Or, to pipe it into a file: `cinfo –i > cinfo.txt`

Send the output to IBM support with your other problem documentation.

TEPS database export

Workspace definitions, queries, and the like are kept in the TEPS database that resides on the server with your Tivoli Enterprise Portal Server. Support may ask for an export of this data or it might be suggested in the problem determination matrix. To get an exported copy of the data:

Windows systems

Navigate to the CNPS subdirectory and enter this command: **migrate-export**. This script generates a file named `saveexport.sql` in the `c:\ibm\itm\cnps\sqllib` subdirectory. It contains all the Tivoli Enterprise Portal Server data.

UNIX or Linux systems

Navigate to `/opt/IBM/ITM/bin` and run the following command: **./itmcmd execute cq "runscript.sh migrate-export"**

This script generates a file named `saveexport.sql` in the `/opt/IBM/ITM/$platform/cq/sqllib` subdirectory. It contains all the Tivoli Enterprise Portal Server data, where `$platform` is one of the following:

- li6243 or li6263 for Intel(R) Linux
- ls3263 for zSeries(R) Linux
- aix533 for AIX

RKS3DATA Dump

The Storage Toolkit stores scheduling information, action definitions, and the like in a data set with the low-level qualifier of RKS3DATA. In case the support engineer or the problem diagnostic matrix request a dump of this data set, you can create one using standard DFDSS JCL like this:

```
/BACKUP    EXEC PGM=ADRDSSU,REGION=4096K
//SYSPRINT DD SYSOUT=X
//DISKO    DD DSN=TSJEP.RKS3DATA.BKUP,
//          DISP=(NEW,CATLG,KEEP),
//          SPACE=(CYL,(5,10),RLSE),
//          UNIT=3390
  DUMP DS(                              -
        INC(TDSMST.LSTEST.S3420M9.S3TMS06H.RKS3DATA) -
          )                             -
  ODD(DISKO)                            -
  TOL(ENQF)   WAIT(0,0)
/*
```

You must substitute your hi-level qualifier in the control card. You must also TERSE the output before sending to IBM.

Tips regarding the collection of diagnostic data

This section describes problems that might arise when you collect diagnostic data, such as debugging logs.

KDFDEVIN DEBUG
Request:

You might experience a problem in OMEGAMON for Storage and IBM Software Support requests that you turn on debugging.

Response:

Add the **DEBUG(ON)** parameter to the RKANPAR member KDFDEVIN. The parameter enables debugging messages in the OMEGAMON for Storage product only. These messages come from a wide variety of modules and components within the OMEGAMON for Storage product and substantially increase output to the RKLVLOG. For this reason, enable debugging only when you are working with IBM Software Support. And run debugging only until you have collected sufficient data, as defined by your IBM Software Support contact. To turn off debugging, remove the **DEBUG(ON)** parameter from the KDFDEVIN member.

!Trace in VTAMDATA
Request:

You might experience a problem with the OMEGAMON for Storage interface to OMEGAMON for Storage, and IBM Software Support requests that you turn on tracing in the OMEGAMON for Storage address space.

Response:

Tracing in the OMEGAMON for Storage interface is performed on a per-session basis. To enable this type of tracing, you must be able to pass **VTAM® USER** parameters in your logon command string. Some types of session managers give you this capability. If you are not using a session manager, the VTAM® USS screen that your support staff provides can give you this capability.

The parameter to pass in your logon command string is **!Trace**. The generated trace messages substantially increase output to the RKLVLOG. For this reason, enable tracing only when you are working with IBM Software Support. And run tracing only until you have collected sufficient data, as defined by your IBM Software Support contact.

STGDEBUG(X)
Request:

You might notice signs of a storage overlay or storage creep and contact IBM Software Support. Your IBM contact person might request that you **set storage debugging** to **X**, which is the setting that generates the highest level of detail. (The other possible settings are **N**, no debugging, and **Y**, minimal debugging.)

Response:

IBM Software Support might instruct you to add this parameter to the RKANPAR member KDFSYSIN as part of the debugging process. Depending on the state that IBM Software Support asks you to set, you may also need to modify the **MINIMUM** parameter in the same member. STGDEBUG(Y) adds a small amount (32 bytes) to each block of storage allocated from our internal storage manager. Normally, this does not cause problems because most systems have sufficient extra space in their engine storage allocation to allow for this. STGDEBUG(X) however, adds a total of 96 bytes to each allocated block of storage, which can quickly exceed your storage allocation. In most cases, double the value specified in the **MINIMUM** parameter whenever you specify STGDEBUG(X). Also, ensure that you run this type of debugging with the region set to 0M (REGION=0M).

Preferred dump options
Request:

You might experience a problem with OMEGAMON for Storage and IBM Software Support requests that you set a SLIP to generate a console dump of the OMEGAMON address space. However, you might be uncertain as to what SDATA options to used.

Response:

Use the following SDATA parameters for all memory or console dumps taken for the OMEGAMON for Storage product, unless IBM Software Support instructs you otherwise.

```
SDATA=(ALLNUC,CSA,LPA,PSA,RGN,SQA,SUM,TRT)
```

About log files for product components

The Tivoli Enterprise Monitoring Agent generates log files that contain messages and trace information. The log files contain message and trace information about the events and processing being performed. Log files provide a complete record of system activity, not just of problems. The log files are created when you start the IBM Tivoli Monitoring components.

When you encounter a problem, check the messages in the log files to determine if the source is a problem in your environment or with an IBM Tivoli Monitoring product. If you determine that the problem is caused by a product defect, follow the instructions for contacting IBM Software Support in the Support information. See Reproducible problems reported as Tivoli Enterprise Portal client problems for the locations of log files. The location of the log depends on the client type and operating system the client is running on. The following sections provide locations of the fundamental types of logs:

- Logs for components on distributed systems:
  - Table 1
  - Table 2
  - Table 3
- Logs for components on z/OS systems: Problems affecting an OMEGAMON XE Monitoring Agent on z/OS

IBM Software Support might request some or all of these files while investigating a problem you have reported. Also, you might be asked to set a trace in the client and then collect the log. Trace logging is a fundamental tool for troubleshooting in cases where a problem is reproducible.

Note: Some of the tracing options produce large amounts of trace information. Therefore, monitor the disk or spool space when activating tracing to prevent your disk or spool from reaching capacity. Return the trace settings to the default settings after the trace information you want has been collected.

Log files for each of the components are explained in the following sections.

Tivoli Enterprise Monitoring Server on z/OS

The log files for Tivoli Enterprise Monitoring Server on z/OS are created as defined in the started procedure when you start the Tivoli Enterprise Monitoring Server. View the log files with any text editor.

When you investigate problems with Tivoli Enterprise Monitoring Server, view the sysout data sets or spool files in the job output and view the z/OS system log for any messages that might pertain to the problem.

Tivoli Enterprise Monitoring Server on Windows or UNIX

The log files are created automatically when you start Tivoli Enterprise Monitoring Server on Windows or UNIX. View the log files with any text editor.

When you investigate problems with Tivoli Enterprise Monitoring Server, use the Windows Event Viewer to check that the Tivoli Enterprise Monitoring Server started correctly and to look for errors.

Tivoli Enterprise Portal

The log files are created automatically when you start Tivoli Enterprise Portal. View the log files with any text editor. Whenever you start a new work session, the log files are purged and written again for the current work session. To preserve the log file from the last work session, rename it or copy it to another directory before starting the Tivoli Enterprise Portal.

In desktop mode, the log files are named `kcjras1.log` and `KCJ.log`. `KCJ.log` contains any errors that might have been written by the Java libraries that are used by the Tivoli Enterprise Portal desktop client. In browser mode, the log file is named `javalog.txt` or is viewed in Java Console of Internet Explorer. You might need to edit your Internet Explorer browser options to enable the error log file on your local system. Refer to the Tivoli Enterprise Portal online help for information on enabling the log file. You can change the level of tracing by using the **File** > **Trace Options...** window.

In addition, logon prompts and progress messages are displayed in the Logon window status bar. This area is also used to display error messages.

When you investigate problems with Tivoli Enterprise Portal, use the Windows Event Viewer to check that the Tivoli Enterprise Portal Server started correctly and to look for errors.

Tivoli Enterprise Portal Server

The log files are created automatically when you start Tivoli Enterprise Portal Server. The log file is named in Table 2. View the log files with any text editor.

About this task

When the log file reaches a 5 MB size limit, it is closed. A new file is created, with the sequential number added to make the file name unique. By default, five files are saved over the life of the Tivoli Enterprise Portal Server, up to a total of 32 files maximum. When the maximum number of files (5) have been created for a session, the files are overwritten, starting with second of five files. The first file is preserved.

You can change these values through the Manage Tivoli Monitoring Services application as follows:

Procedure

1. Right-click the Tivoli Enterprise Portal Server row.
2. Select **Advanced** in the pop-up menu.

3. Select **Edit Trace Parms** to access the dialog box where you can configure logging behavior.

What to do next

When you investigate problems with Tivoli Enterprise Portal Server, use the Windows Event Viewer to check that the Tivoli Enterprise Portal Server started correctly and to look for errors.

You can change trace settings using the Manage Tivoli Enterprise Monitoring Services **Action** > **Advanced** > **Edit Trace Parms...** window. You can also use the Service Console, accessible from the Tivoli Enterprise Portal Server using an Internet Explorer browser, to read logs and turn on traces for remote product diagnostics and configuration.

For more information about troubleshooting problems on Tivoli Enterprise Portal Server, refer to *IBM Tivoli Monitoring Troubleshooting Guide*.

IBM Tivoli Data Warehouse and the Warehouse Proxy Agent

To view the Application Event Log for IBM Tivoli Data Warehouse, start the Event Viewer by clicking **Start** > **Programs** > **Administrative Tools** > **Event Viewer**. Select **Application** from the **Log** pull-down menu.

In the Warehouse Proxy Agent, you can set error tracing on to capture additional error messages that can be helpful in detecting problems. Refer to *IBM Tivoli OMEGAMON Data Files for z/OS* for more information.

Chapter 3. Troubleshooting installation and configuration

This chapter describes potential problems and workarounds regarding the installation and configuration of the product.

Take Action commands show return code 0, but might be unsuccesful

Take Action commands are a standard feature of the Tivoli Enterprise Portal in IBM Tivoli Monitoring and are described in the user's guide. In general, **Take Action** commands display a zero (0) return code in the Tivoli Enterprise Portal (which is always located on a distributed system). This code indicates successful submission of the command. The portal does not display the actual result of the command being executed. For information on the result of command execution refer to the command output in the z/OS SYSLOG for the specific system that is the target of the **Take Action** command.

Historical workspaces contain no data

If historical collection is not enabled and the historical workspace does not contain data, operators see message `KFWITM220E Request failed during execution.` displayed in the Tivoli Enterprise Portal message area.

Use the information found in *Installation and Setup* to configure historical data collection and try the operation again.

Tivoli Enterprise Monitoring Server on z/OS starts normally in a system without the Integrated Cryptographic Service Facility but does not connect to the Tivoli Enterprise Portal Server

Although Integrated Cryptographic Service Facility (ICSF) provides robust password encryption, you are not required to use it because the ICSF can affect compatibility with the z/OS OMEGAMON monitoring products.

Before you begin

The following messages are displayed when the portal server cannot connect to the monitoring server:

```
Call to KLE_CryptoGetFP failed with exit code 8. Cannot get CSNBXAE
function pointer Logon validation did not complete - system error.
User:username keyfile:key ip:ip_address
```

About this task

If you see these failed connection messages, perform the following steps so that the Tivoli Enterprise Portal Server can connect to the Tivoli Enterprise Monitoring Server.

Procedure

1. Using PARMGEN to configure the TEMS, ensure that the value **N** is specified for the **Integrated Cryptographic Service Facility (ICSF) installed?** field.

2. After the Tivoli Enterprise Monitoring Server configuration is complete and the server is running, you must modify the portal server configuration to use an older, less robust encoding algorithm by performing the following steps:
   a. Edit the `kfwenv` file in `install_dir\CNPS` (where `install_dir` is `C:\IBM\ITM` by default) using a text editor.
   b. On a separate line, enter the following text:

      ```
      USE_EGG1_FLAG=1
      ```

   c. Save the file and exit.
   d. Restart the Tivoli Enterprise Portal Server, if it is running.

Chapter 4. Troubleshooting data collection

This chapter describes potential problems and workarounds regarding data collection by the product, including the following subtopics:

- Collection of monitoring data
- Generation of data reports

Collection of monitoring data

This section describes general data collection problems.

DFSMShsm space-size values exceeded

In a system where the size of the DFSMShsm LOGY data set or the MCDS data are large, default values that OMEGAMON for Storage assigns for these data sets might be too low. To increase the capacity for MCDS information, adjust the value of the **MCDSDSPACESIZE** parameter in RKANPARU member KDFDHSIN. To increase the capacity for HSM LOGY data, adjust the value of the **LOGYDSPACESIZE** parameter in the same member. These parameters may not currently exist in your KDFDHSIN member, in which case you need to add them to the bottom of the member. The values indicate the number of blocks to be allocated when the dataspace is created. Valid values for either parameter can be an integer from **0** to **2097152**. If a parameter is omitted or the value is coded as zero, the installation default size is used. Consult your system programmer to find out the default size for a dataspace in your production environment.

Workspace displays no data or does not show all the data you expected

You have clicked on a navigation item or you have clicked on a link and the workspace either displays no data or does not show all the data that you are expecting.

Many of the workspaces that are provided in the OMEGAMON for Storage product are defined with filters. Each view in the workspace may have filters defined. These filters restrict the data that is displayed to the rows that may be interesting to the user. To view the filters that are defined to a workspace, right-click in the view and select **Properties**. Click the **Filters** tab to view or change the filters that are defined for the view. Adjust the filters to meet the needs of your enterprise. The data displayed on a workspace view is dependent on the Query supplying that data.

In some cases, the Query itself does not return the data you want. To view the Query that is returning data to the workspace view, right-click in the view and select **Properties**. Click the **Click here to assign a query** button, and examine the columns and any selection criteria.

Note: Do not modify product-provided Queries. (In many cases, modification of these queries is blocked.) If you need to change a query, make a copy of the query with a new name.

Refer to the *IBM OMEGAMON for Storage on z/OS: User's Guide* for information on the product-provided workspaces. Refer to the *IBM Tivoli Monitoring: User's Guide* for information on defining customizing workspaces and views.

Tape collection off; no VTS data occurs

Limitation:

You have configured data collection on Virtual Tape Servers (VTS), but no data is present in the VTS workspace in the Tivoli Enterprise Portal.

Workaround:

This problem can occur when you are not collecting related data; the following items are prerequisites for enabling the collection of VTS data:

- Tape device collection, which you enable when you configure OMEGAMON for Storage.
- Collection of SMF record type 94.
- Be sure to add the **IEFU84** SMF exit to the SMFPRM*nn* member of **SYS1.PARMLIB**.

The timing of tape refreshes is in minutes, but data only changes hourly

Limitation:

You have specified a tape collection interval, but data for 3494 VTS devices changes only every hour.

Workaround:

No workaround is available. This information is extracted from SMF data written by the tape controllers. 3494 VTS controllers only write SMF records hourly. For example, you can specify a tape interval of 900 seconds (15 minutes), and a refresh operation takes place every 15 minutes. However, during a given one-hour period, only data from the previous interval is available for the refresh operation. New data is available only after the one-hour interval.

Monitoring agent is running out of storage

If response time is slow on the monitoring agent, check the RKLVLOG for messages about a possible storage problem. A storage usage event is generated every hour and written to the RKLVLOG. This behavior is driven by a scheduling command in RKANCMDU member KDSSTART.

The KDSSTART member of RKANCMD has the following line by default.

```
EVERY 00:60:00 STORAGE D   * LOG STORAGE USE
```

Where

Value	Description
EVERY	Is a command that is used to schedule another command for periodic execution.
00:60:00	Shows the hours, minutes, and second. For example, a value of 00:60:00 says run this command every 60 minutes.

Value	Description
Storage	Displays statistics of ITMS:Engine storage usage.
D	Stands for Detail. **STORAGE** provides both primary and extended storage statistics. This information is helpful in tuning ITMS:Engine memory management.

The default entry causes the **STORAGE D** command to be issued every 60 minutes. The interval at which the command is automatically issued is defined during the Tivoli Enterprise Monitoring Server configuration with the **Enable storage detail logging** parameter on the **Specify Advanced Configuration Options** panel, where the values are **Y** or **N**. There are two other settings associated with the **Enable storage detail logging** parameter:

- Set the **Storage detail logging** interval to monitor storage. The interval values are written as part of the second **EVERY** command in `&rhilev.&midlev.RKANCMDU(KDSSTART)`. The default is **60 minutes**.
- Set the **Flush VSAM buffers** interval to force all deferred VSAM writes to DASD. The interval values are written as part of the third **EVERY** command in `&rhilev.&midlev.RKANCMDU(KDSSTART)`. The default is **30 minutes**.
- To disable storage detail logging, set this parameter to **N**, which then generates the second **EVERY** command as a comment.

To control storage detail logging dynamically, you can issue the following command from the z/OS console to the monitoring server started task to enable storage detail logging:

```
MODIFY procname,STORAGE D
```

Where:

Value	Description
Modify	Is the z/OS operator command.
procname	Is the name of the monitoring server started task. The default name of monitoring server started task in CANSDSST.
STORAGE	Displays statistics of ITMS:Engine storage usage.
D	Stands for Detail. **STORAGE** provides both primary and extended storage statistics. This information is helpful in tuning ITMS:Engine memory management.

After you issue this command, look in the RKLVLOG for the output. See the following sample output of this command. Explanations are provided after the sample output.

```
01 KLVSD002 EXTENDED MAIN STORAGE INFORMATION:
02 KLVSD003    ALLOCATION DETAIL:
03 KLVSD004       SIZE(1-16) USE(414) TOTAL(4582) ACCESSED(5162)
04 KLVSD004       SIZE(17-32) USE(799) TOTAL(800) ACCESSED(1428)
05 KLVSD004       SIZE(33-48) USE(226) TOTAL(1606) ACCESSED(2061)
06 KLVSD004       SIZE(49-64) USE(21) TOTAL(22) ACCESSED(44)
07 KLVSD004       SIZE(65-80) USE(9) TOTAL(10) ACCESSED(30)
08 KLVSD004       SIZE(81-96) USE(16) TOTAL(16) ACCESSED(16)
09 KLVSD004       SIZE(97-112) USE(197) TOTAL(197) ACCESSED(197)
10 KLVSD004       SIZE(113-128) USE(40) TOTAL(40) ACCESSED(240)
```

```
11 KLVSD004       SIZE(129-144) USE(0) TOTAL(1) ACCESSED(2)
12 KLVSD004       SIZE(145-160) USE(1) TOTAL(1) ACCESSED(1)
13 KLVSD004       SIZE(161-176) USE(1) TOTAL(1) ACCESSED(2)
14 KLVSD004       SIZE(177-192) USE(1) TOTAL(1) ACCESSED(1)
15 KLVSD004       SIZE(193-208) USE(0) TOTAL(0) ACCESSED(0)
16 KLVSD004       SIZE(209-224) USE(0) TOTAL(5) ACCESSED(5)
17 KLVSD004       SIZE(225-240) USE(0) TOTAL(6) ACCESSED(7)
18 KLVSD004       SIZE(241-256) USE(10) TOTAL(13) ACCESSED(126)
19 KLVSD004       SIZE(257-288) USE(2) TOTAL(6) ACCESSED(9)
20 KLVSD004       SIZE(289-320) USE(0) TOTAL(1) ACCESSED(1)
21 KLVSD004       SIZE(321-352) USE(1) TOTAL(1) ACCESSED(1)
22 KLVSD004       SIZE(353-384) USE(2) TOTAL(2) ACCESSED(2)
23 KLVSD004       SIZE(385-416) USE(1) TOTAL(1) ACCESSED(1)
24 KLVSD004       SIZE(417-448) USE(0) TOTAL(0) ACCESSED(0)
25 KLVSD004       SIZE(449-480) USE(0) TOTAL(2) ACCESSED(2)
26 KLVSD004       SIZE(481-512) USE(5) TOTAL(7) ACCESSED(7)
27 KLVSD004       SIZE(513-576) USE(0) TOTAL(0) ACCESSED(0)
28 KLVSD004       SIZE(577-640) USE(1) TOTAL(4) ACCESSED(4)
29 KLVSD004       SIZE(641-704) USE(1) TOTAL(2) ACCESSED(3)
30 KLVSD004       SIZE(705-768) USE(0) TOTAL(2) ACCESSED(2)
31 KLVSD004       SIZE(769-896) USE(1) TOTAL(1) ACCESSED(1)
32 KLVSD004       SIZE(897-1024) USE(1) TOTAL(4) ACCESSED(8)
33 KLVSD004       SIZE(1025-1280) USE(41) TOTAL(41) ACCESSED(1042)
34 KLVSD004       SIZE(1281-1536) USE(0) TOTAL(1) ACCESSED(11)
35 KLVSD004       SIZE(1537-2048) USE(3) TOTAL(4) ACCESSED(5)
36 KLVSD004       SIZE(2049-4096) USE(9) TOTAL(10) ACCESSED(14)
37 KLVSD004       SIZE(4097-8192) USE(7) TOTAL(10) ACCESSED(357)
38 KLVSD004       SIZE(8193-16384) USE(7) TOTAL(7) ACCESSED(151)
39 KLVSD004       SIZE(16385-32768) USE(0) TOTAL(1) ACCESSED(1)
40 KLVSD004       SIZE(32769-65536) USE(5) TOTAL(5) ACCESSED(7)
41 KLVSD004       SIZE(65537-131072) USE(1) TOTAL(1) ACCESSED(1)
42 KLVSD004       SIZE(131073-262144) USE(0) TOTAL(0) ACCESSED(0)
43 KLVSD004       SIZE(262145-524288) USE(1) TOTAL(1) ACCESSED(1)
44 KLVSD004       SIZE(524289-1048576) USE(1) TOTAL(1) ACCESSED(1)
45 KLVSD004       SIZE(1048577-2097152) USE(0) TOTAL(0) ACCESSED(0)
46 KLVSD004       SIZE(2097153-4194304) USE(0) TOTAL(0) ACCESSED(0)
47 KLVSD004       SIZE(4194305-8388608) USE(0) TOTAL(0) ACCESSED(0)
48 KLVSD005     LIMIT(8388608) SLOPE(15) SIZES(45) TOTAL(403319K)
49 KLVSD006     FREE(400928K) CARVED(2598K) OVERHEAD(59640)
50 KLVSD007   1% IS IN USE; 90% ALLOWED
51 KLVSD008   1% HAS BEEN CARVED; 95% ALLOWED
52 KLVSD021 TMS(0) PREFIX(8) CUSHION(8)
53 KLVSD031 BUFFER POOL INFORMATION
54 KLVSD032   POOL BUFSIZE(3564) SEGSIZE(65536) MASK(3FFFF) SIDEQ(0)
55 KLVSD033     BUFFERS INUSE(0) MAX(0) GETS(0) FREES(0)
56 KLVSD034     SEGMENTS INUSE(0) MAX(0) GETS(0) FREES(0) Q(0) QMAX(0)
57 KLVSD032   POOL BUFSIZE(3440) SEGSIZE(65536) MASK(7FFFF) SIDEQ(0)
58 KLVSD033     BUFFERS INUSE(0) MAX(0) GETS(0) FREES(0)
59 KLVSD034     SEGMENTS INUSE(0) MAX(0) GETS(0) FREES(0) Q(0) QMAX(0)
60 KLVSD032   POOL BUFSIZE(2560) SEGSIZE(65536) MASK(1FFFFFF) SIDEQ(0)
61 KLVSD033     BUFFERS INUSE(0) MAX(0) GETS(0) FREES(0)
62 KLVSD034     SEGMENTS INUSE(0) MAX(0) GETS(0) FREES(0) Q(0) QMAX(0)
63 KLVSD032   POOL BUFSIZE(1920) SEGSIZE(65536) MASK(FFFFFFFF) SIDEQ(0)
64 KLVSD033     BUFFERS INUSE(0) MAX(0) GETS(0) FREES(0)
65 KLVSD034     SEGMENTS INUSE(0) MAX(0) GETS(0) FREES(0) Q(0) QMAX(0)
66 KLVSD039 END OF BUFFER POOL INFORMATION
```

Where:

- 01 is an ITMS:Engine header message.
- 02 is an ITMS:Engine header message.
- 03 to 47 is an ITMS:Engine message specifying the following values:
  - SIZE: The range (m-n, in bytes) of the sizes of data blocks in the storage area. For example, **SIZE(1-16)** indicates that this area contains all of the blocks that are from 1 to 16 bytes long.

- USE: The number of blocks in use.
- TOTAL: The total number of storage blocks allocated.
- ACCESSED: The total number of times storage blocks in this range were accessed.

Note: If the values of both USE and TOTAL are zero, the message is not displayed.

- **48** is an ITMS:Engine message specifying the following values:
  - LIMIT: The size (in bytes) of the largest block that can be allocated.
  - SLOPE: An IBM-internal parameter.
  - SIZES: Specifies the number of storage areas.
  - TOTAL: Specifies (in kilobytes) the total amount of storage.
  - FREE: Specifies (in kilobytes) the amount of storage available.
  - CARVED: Specifies the amount of storage that has been carved into specific blocks for allocation.
  - OVERHEAD: The amount of storage (in bytes) used for storage control.
- **50** is an ITMS:Engine message specifying the following values:
  - x% IS IN USE: Indicates that percentage of allocated storage that is currently in use.
  - x% ALLOWED: When the previous percentage listed reaches this value, storage allocation quiesces nuntil enough storage is freed to bring the **IN USE** percentage below this value.
- **51** is an ITMS:Engine message specifying the following values:
  - x% HAS BEEN CARVED: Indicates the percentage of allocated storage that is currently carved into blocks for allocation.
  - x% ALLOWED: The maximum amount of allocated storage which can be carved into allocatable blocks.

Generation of data reports

This section provides troubleshooting information regarding the generation of Long-term historical data reports.

See *IBM OMEGAMON for Storage on z/OS: Planning and Configuration Guide* for information on the persistent data store, which is the repository for short-term historical data.

To troubleshoot problems with long-term data reports, also consult the following documentation for information about data warehousing, Warehouse Proxy Agent configuration, and summarization and pruning of data.

- *IBM Tivoli Monitoring: Installation and Setup Guide*
- *IBM Tivoli Monitoring: Problem Determination Guide*

Long-term historical data reports

This section provides troubleshooting information regarding the generation of historical (long-term) data reports.

Always consult the following base documents for IBM Tivoli Monitoring for general information about data warehousing, the Warehouse Proxy Agent, and the Summarization and Pruning Agent:

- *IBM Tivoli Monitoring: Installation and Setup Guide*

- *IBM Tivoli Monitoring: Problem Determination Guide*

Unable to warehouse all history data

Limitation:

Some of the historical tables for OMEGAMON for Storage are not displayed in the Historical Configuration dialog box of the Tivoli Enterprise Portal and therefore cannot be configured for data warehouse storage.

Workaround:

No workaround is available. Not all historical tables for OMEGAMON for Storage are eligible for data warehousing. For a list of tables whose data can be warehoused, see *IBM OMEGAMON for Storage on z/OS: Planning and Configuration Guide*.

SQL queries to IBM Tivoli Data Warehouse fail because of invalid column name

When you are writing a Structured Query Language (SQL) query against IBM Tivoli Data Warehouse (without using the Tivoli Enterprise Portal) where your database manager is DB2 or Oracle, the query sometimes fails, indicating that the column name is invalid.

The cause of this problem might be that your column name is greater than 30 characters in length, and DB2 and Oracle do not support column names greater than 30 characters.

The Warehouse Proxy Agent creates the table with the abbreviated column names. These abbreviations are shown in the WAREHOUSEID database table.

Additionally, column names that seem to meet the fewer than 30 characters rule might also fail when the Summarization and Pruning Agent is used because this agent adds a four-character prefix to the column name (for example, AVG_).

To avoid this problem, revise your SQL queries to match the abbreviated column names in the WAREHOUSEID table.

History Collection Configuration settings are lost after an upgrade

Context:

You enabled historical reporting for an earlier release of OMEGAMON for Storage. You upgrade the agent to V4.2.0 and the ITM V6.2.1 monitoring environment.

Limitation:

History collection customizations are lost after the upgrade and the history collection for OMEGAMON for Storage resets to the default of no attribute groups being enabled for history.

Workaround:

Navigate to the History Collection Configuration dialog box in the Tivoli Enterprise Portal. Select **OMEGAMON XE for Storage on z/OS V4.2.0** in the drop-down list. Begin customizing your history collection preferences.

Inaccurate data set counts in Data Set Attribute Database workspaces

Context:

VSAM data sets are typically reported under their cluster name in the Data Set Attribute Database workspaces. Although the data sets contain a cluster component, a data component and an index component, these components are counted as a single data set in the Data Set Attribute Database workspaces. In addition, only the cluster component name displays in the table views to represent the data set. In counters displaying the "Total Data Sets" in a group, a single VSAM data set is counted only once.

Limitation:

After a VSAM data set has been migrated, the cluster, data and index components are treated as individual data sets by the Data Set Attribute Database workspaces. Each component appears on a separate line in table views. In counters displaying the "Total Data Sets" in a group, each component is counted separately, increasing the data set count (in contrast to the count prior to migration).

Workaround:

No workaround is available. This discrepancy occurs because the catalog entry for a VSAM data set is changed after the data set is migrated. The catalog entry change causes an inaccurate count. In fact, the Catalog Search Index reports these component names as type 'A' (Non-VSAM data sets).

Chapter 5. Troubleshooting performance issues

This chapter describes system performance problems and workarounds. See the *IBM OMEGAMON for Storage on z/OS: Tuning Guide* for general tuning guidelines.

Data set I/O collection tuning

High CPU usage can be an issue in the OMEGAMON subsystem address space, specifically with the KDFSCOL and KDFSMIG modules.

Excessive CPU usage is likely when both the following conditions exist:

- The *KDF_FM01_VOL* parameter is set to *

and

- The *KDF_FM01_SAM_CNT* and *KDF_MSR_TRIP_CNT* parameters have been set to a very small value

You can reduce CPU usage by tuning data set I/O collection, which allows you to get millisecond response time information at the data set level. Use one or both of the following methods:

- Enable or disable data set I/O collection at the volume level. In general, you should monitor only volumes for which data set response time is a critical issue or volumes that are known to have problems.
- You can regulate data set I/O collection by using parameters that specify when data set level I/O monitoring starts for a volume. Apply these parameters whenever you need to monitor a large number of volumes.

You can collect data set level I/O statistics for a device, using PARMGEN to set parameters to values that will help reduce CPU usage. The way to do this is by limiting the scope of data set I/O monitoring.

Limiting the scope of data set I/O monitoring

You can reduce CPU usage by limiting your dataset I/O monitoring to specific critical volumes or jobs or by setting up monitoring to trigger only when response time is poor on a particular volume.

You can limit the volumes by specifying a volser (or volser mask) for parameter *KDF_FM01_VOL*, or a range of addresses using *KDF_FM01_FIRST_DEV* and *KDF_FM01_LAST_DEV*. You can even specify multiple rows of definitions if your volumes do not fit in under a volser mask or device range, as in the following example:

```
KDF_FM            BEGIN
KDF_FM01_ROW          01
KDF_FM01_VOL          "TSO*"
KDF_FM01_SAM_CNT      1
KDF_FM02_ROW          02
KDF_FM02_VOL          "DVP101"
KDF_FM02_SAM_CNT      1
KDF_FM03_ROW          03
KDF_FM03_VOL          "BVG288"
KDF_FM03_SAM_CNT      1
KDF_FM END
```

To establish a triggering response time threshold that will cause monitoring to begin on any volume that exceeds it, you must use a combination of the MSR parameter (to specify the threshold millisecond response time) and MSRTARG (the number of times a volume must exceed the MSR value in 100 consecutive samples for monitoring to be turned on). Once monitoring begins for a volume, it will continue until 100 consecutive samples are taken in which the volume does not exceed the threshold. The following example will cause monitoring to begin on a volume when its response time exceeds 20 milliseconds 51 times in 100 consecutive samples:

```
KDF_FM            BEGIN
KDF_FM01_ROW           01
KDF_FM01_VOL           "*"
KDF_FM01_MON_STAT      MSR
KDF_FM01_SAM_CNT       20
KDF_MSR_TRIP_CNT       51
KDF_FM                 END
```

To specify dataset I/O monitoring only for specific jobs, you should define these jobs in the "Application Summary" workspace in the TEP and specify "I/O Monitor Status" = "Start" in the definition dialog. This will save resources by monitoring only the data sets used by this job (or jobs if the definition uses a job name mask).

Performance of the Tivoli Data Warehouse database is degraded or there are gaps where historical data is unavailable for a specified collection period

A number of symptoms indicate that your database or persistent datastore is in need of maintenance. You might, for example, note that your DB2 transaction logs are filling up. You might see gaps in the data in the middle or at the end where no historical data is available for a specified collection period. This problem also manifests itself as degraded performance, such that database inserts require an unusually long period of time. Inserts must be completed between display intervals. Operations need to completed before the next collection interval to prevent the persistent data store from wrapping.

Adhere to the following guidelines to prevent these problems:

- Practice good database maintenance. Schedule regular maintenance outages and reorganize your IBM Tivoli Data Warehouse tables, including the summarization and pruning tables, using a command to reorganize table storage, such as (in DB2) the REORG command.
- Review the appendix "Relational database design and performance tuning for DB2 database servers" appendix in the IBM Tivoli Monitoring: Administrator's Guide to learn about DB2 tuning considerations.
- Change your **Send to warehouse** setting from daily to hourly.
- Increase the size of your database transaction log.
- To eliminate gaps in displays of historical data less than 24 hours old, increase the size of the persistent data store on the mainframe.

Long response times or no results returned when specifying historical collection time spans for some workspaces

For historical data collection in large data sets, the intervals that you set for refreshing historical workspaces, for data collection, and for data chunking can affect performance dramatically. For example, when you select a time span of many hours (for example, 24 hours) for a workspace where a large number (tens of thousands) of rows of data has been stored in the persistent data store, the resulting query can take 60 seconds or longer to complete. Also, the monitoring agent might use a high percentage of available CPU while the query is processed.

About this task

Apply one or more of the following solutions to mitigate this problem:

Procedure

1. Select **Refresh Every** in the **View** menu to access the submenu.
2. Select **On Demand** in the submenu. If you set a short interval instead (60 or fewer seconds) the monitoring agent processing required might not complete within the refresh interval, causing subsequent requests to be queued. The monitoring agent then works continuously to process the query. High CPU utilization continues until the user navigates to another workspace or closes the Tivoli Enterprise Portal.

What to do next

- Specify longer historical collection intervals of 30 minutes or 1 hour, instead of the 15-minute defaults, for the attribute groups that generate this problem. Longer historical collection intervals reduce the number of rows per hour stored in the persistent data store.
- Consider not collecting historical data for attribute groups that you are experiencing this problem with. Collect other data that provides the perspective on system performance or activity that you require.
- Modify the **KFW_REPORT_TERM_BREAK_POINT** parameter in the `KFWENV` file of the Tivoli Enterprise Portal Server, which is located in the `$CandleHome$\CNPS` path. This parameter controls how many hours of historical data (counting back from the present time) are to be retrieved from the persistent data store (short-term history) data sets. The default is 86400 seconds (24 hours). A shorter time setting creates smaller sets of data to be searched in the persistent data store by the Tivoli Enterprise Portal. Older data (data excluded by changing this parameter) can be accessed if you are populating historical data in the IBM Tivoli Data Warehouse. Be aware that modifying the **KFW_REPORT_TERM_BREAK_POINT** parameter affects all applications that are using the Tivoli Enterprise Portal Server.

  The Tivoli Enterprise Portal queries the IBM Tivoli Data Warehouse for data older than the value of **KFW_REPORT_TERM_BREAK_POINT**. Configure a one-hour warehousing interval to ensure that data is available in the IBM Tivoli Data Warehouse. A one-hour warehousing interval also improves performance of situations and real-time queries.

Chapter 6. Troubleshooting error conditions

This section describes messages that the system provides to indicate performance problems.

KS3T830E SERVICE CHECKPOINT DATA SET STORAGE EXHAUSTED

Limitation:

The KS3T830E message is displayed, indicating that the VSAM checkpoint database has run out of space.

Workaround:

This condition can arise when you are using the Storage Toolkit, which is described in the *IBM OMEGAMON for Storage on z/OS: User's Guide*. You use the toolkit in the Tivoli Enterprise Portal to issue action requests (commands or batch jobs) in the mainframe environment. When you issue action requests, you must manage the buildup of old results and unused requests. Otherwise, this data can build up and cause the VSAM checkpoint database to run out of space. The dialog boxes of the Storage Toolkit include a General tab that has several options to help you manage the buildup of requests and results:

- **Delete request and results after one run**: Select this option to cause deletion of this action request and any results, after the action request completes.
- **Delete after (days)**: This value determines the number of days after which the results of a toolkit action request are deleted.
- **Maximum output lines**: This value determines the number of lines that are saved from the execution of the command or batch job.

See the description of the General tab in the "Storage Toolkit" chapter of the *IBM OMEGAMON for Storage on z/OS: User's Guide* for detailed information. If you choose not to use these options, you can manually delete old results and unused requests before they build up.

Understanding abend U0001

Limitation:

The U0001 abend itself generates an unnecessary memory dump. If the memory dumps occur frequently, system performance might be affected.

The U0001 abend (abnormal end of task) is forced any time that OMEGAMON for Storage detects that an attempt to collect space information for a volume has taken more that 15 seconds to complete. Typically, this operation completes in less that a second. The abend exists so that LSPACE tasks that run too long are terminated before they affect system performance. Otherwise, the task can affect system performance because it holds an exclusive enqueue on the volume while collecting space and fragmentation data.

Workaround:

Avoid this problem by adding a **SLIP** command to the SYS1.PARMLIB to bypass memory dumps for U0001 abends in the address space of the Tivoli Enterprise Monitoring Server. An example of the **SLIP** command to add to the IEASLPxx member in your parmlib is as follows:

```
SLIP SET, C=U0001,JOBNAME=tems_taskname,A=NOSVCD,ID=xxxx,END
```

OMEGAMON for Storage is the only OMEGAMON product that uses the U0001 abend.

Determining which volume is being processed

Before you begin

Note: The following points apply to this procedure:

- This procedure is relevant when you do not add the SLIP command that is described in the preceding workaround.
- This procedure is necessary because in this situation a Hang Detected message is not generated for this volser.

About this task

When OMEGAMON for Storage abends the space collection subtask with U0001, the negative effect on response time on a volume is transient. This effect is caused by DASD maintenance tasks or high contention rates on the control unit. At times, you might want to know which volume encountered the problem, so that you can take further action, if needed. Perform the following steps to analyze the memory dump that the U0001 produces to obtain the volume serial number (VOLSER) for the affected volume:

Procedure

1. Select option **6** from the IPCS main menu.
2. Type `SUMMARY REGS` on the command line.
3. Scroll down to the KDFSPDEV program request block entry:

   ```
   EP....... KDFSPDEV
   ```

   Notice that the interrupt code for the bottom request block is `0x4E`, (`WLIC.....0002004E`). This code represents the **LSPACE** macro.
4. A service request block (SVRB) exists above that line. This SVRB contains the registers that were generated when the LSPACE macro was issued.
5. Inspect the contents of the R1 register.
6. Look up the address from the R1 register in the memory dump.
   - Notice the LSPA eye catcher shown in bold in the following example. This eye catcher marks the dummy control section (DSECT) for the **LSPACE** request.
   - Notice the *offset* +C in LSPA, shown in bold in the next line. This value is the UCB (unit control block) address.

   ```
   30A33378                  D3E2D7C1 0018200A | LSPA.... |
   30A33380 00000000 020FF190 30A33390 00000000 | ......1..t...... |
   30A33390 00008101 C0002721 000FE5A2 00000030 | ..a.{.....Vs.... |
   30A333A0 0000322D 00000000 00000000 00000000 | ................ |
   ```
7. Look up the UCB address in the dump. Notice the bolded details in the following example:

```
020FF190 00A8FF8C 196F0800 00000000 08E4C3C2 | .y...?.......UCB
020FF1A0 3030200F 000FF169 00010100 505249F3 | ......1.....PRI3
020FF1B0 F0F01002 00A00001 020FEF90 02101FA8 | 00.............y
020FF1C0 6F800101 00000000 38688072 1EB55840 | ?..............
020FF1D0 1D4CF8F0 10A7B910 D8002724 274D3232 | .<80.x..Q....(..
```

8. The VOLSER of the offending device is at *offset +1C* in the UCB.

   Note: Instead of referring to the contents of the R1 register in Step 6, you can inspect the contents of the R8 register. This register points directly to the device entry in the OMEGAMON device table, as shown in the bolded parts in this example. The VOLSER is displayed at *offset +6*.

```
296D59C0 020FF190 196F5052 49F3F0F0 0F8C0801 | ..1..?PRI300....
296D59D0 00020008 321B0008 FF000200 02D000CC | ............}..
296D59E0 0000009C 00000189 00000000 00000003 | .......i........
296D59F0 00000128 0000005C 00000090 0000012F | .......*........
```

Monitoring agent receives remote procedure call errors during warehousing, with some requests timing out and failing

While the monitoring agent is performing a warehousing operation, the agent might receive multiple remote procedure call (RPC) errors, upload failures, and specific requests that time out, while others succeed.

Before you begin

You might see messages similar to this one in the warehousing log:

```
[IBM][CLI Driver][DB2/NT] SQL0911N

The current transaction has been rolled back because of a deadlock or
timeout.

Reason code "2".

SQLSTATE=40001
```

These RPC calls may indicate that the Warehouse Proxy Agent locks up temporarily and cannot respond to new requests. Eventually, the proxy clears and continues processing. These kinds of problems are symptoms of insufficient database tuning.

About this task

If you plan to install your Tivoli Data Warehouse on DB2, you must update the DB2 configuration to reduce the likelihood of database deadlocks when large amounts of monitor data are transferred to the warehouse. Use the following examples as a guide to making the configuration changes. It is best to make these changes before installing the Warehouse Proxy Agent and Summarization and Pruning agent and creating the warehouse database. To ensure that tablespaces are created correctly, use the database creation support provided during installation (or reinstallation) of the Tivoli Data Warehouse agent from the Manage Tivoli Enterprise Services window.

To relieve database deadlock, perform the following steps:

Procedure

1. Stop the Warehouse Proxy Agent and Summarization and Pruning Agent, and drop and re-create the existing warehouse database.
2. Review the appendix "Relational database design and performance tuning for DB2 database servers" appendix in the *IBM Tivoli Monitoring: Administrator's Guide* to learn about DB2 tuning considerations. Then issue the following command from the DB2 command window:

   db2 update db cfg for WAREHOUS using parameter value

   Use the following data configuration parameters:

   DFT_DEGREE

   LOGBUFSZ

   LOCKLIST

   SORTHEAP

   NUM_IOCLEANERS

   NUM_IOSERVERS

   LOGFILSIZ

   LOGPRIMARY
3. Restart the Warehouse Proxy Agent and Summarization and Pruning Agent.
4. Configure historical collection at the Tivoli Enterprise Portal.

Other Errors

The base components of IBM Tivoli Monitoring can generate other errors in the RKLVLOG. See the *IBM Tivoli Monitoring Troubleshooting Guide* for information and messages to assist with troubleshooting framework problems.

Chapter 7. Troubleshooting specific product features

This chapter describes potential problems and workarounds for the unique features and user interface of the product:

- Troubleshooting for the Dataset Attribute Database
- Troubleshooting for cross-product linking
- Troubleshooting for the Storage Toolkit
- Troubleshooting for event forwarding

See also to the section on Tivoli Enterprise Portal in the *IBM Tivoli Monitoring Troubleshooting Guide* .

Note: The unique utilities in OMEGAMON for Storage, such as the Storage Toolkit and the Dataset Attribute Database, log their messages to RKLVLOG on the Tivoli Enterprise Monitoring Server. When you are troubleshooting these utilities you must consult RKLVLOG.

Troubleshooting for the Dataset Attribute Database

This section provides problem determination information regarding the Dataset Attribute Database.

Performance degrades while this feature runs

Be aware that there is a difference between the data obtained by IDCAMS DCOLLECT and by the Data Set Attribute Database feature. See *IBM OMEGAMON for Storage on z/OS: User's Guide* for more information.

Limitation:

Performance issues occur during the Data Set Attribute data collection cycle.

Workaround:

Data collection runs as set of subtasks within the address space of the Tivoli Enterprise Monitoring Server. Consider the following options when a new collection cycle is started:

- Clear the **Collect Catalog** data option. This setting greatly reduces the resource consumption and elapsed time of the collection cycle, but any attributes that might have been obtained from the catalog are unavailable.
- Exclude any unneeded volumes or storage groups from collection, specifying them explicitly and/or using masks.
- Schedule the collection to run only as often as necessary to rebuild the memory-resident database, and at a time when impact on the overall system will be minimal.

Data for the feature is not displayed

Limitation:

No Data Set Attribute data is displayed.

Workaround:

You cannot see Data Set Attribute data until a collection cycle has elapsed. The data is displayed after the collection cycle is completed. Also, data for this feature is stored in memory, not on the hard disk. Data might not be displayed for the following reasons:

- A collection cycle has not run. For example, collection is scheduled to begin at 2:00 AM and the Tivoli Enterprise Monitoring Server was stopped and started at 6:00 AM. No data is displayed until a collection cycle is completed.
- You restart the monitoring agent. Any data that was displayed is cleared from memory. No new data is displayed until the collection cycle is completed.
- A task from another application has exclusive control. Because the Data Set Attribute Database feature accesses every online volume, there is the potential for contention with other applications that use those resources simultaneously. If another task has exclusive control of a volume and Data Set Attribute Database is unable to gain access, the volume is bypassed and a message is issued to RKLVLOG.

Data collection for the feature runs too long

Limitation:

Data collection is not ending within a reasonable time frame.

Workaround:

Issue the **S3DA STATUS** command twice over the course of approximately 1 minute to see if the number of volumes processed is increasing. (The *IBM OMEGAMON for Storage on z/OS: User's Guide* provides information on commands in the "Command-line option" section of "Appendix D. Data Set Attributes Database"). If the remaining volumes are not being processed, issue the **S3DA STOP** command to halt the collection cycle. If data collection still does not stop normally, or you suspect the process is in a loop (in other words, very high CPU consumption within the TEMS address space), issue the **S3DA TERM** command to terminate all Data Set Attribute processing.

Data for the feature is not sent to the Tivoli Data Warehouse

Limitation:

Data Set Attributes tables are not being sent to the Tivoli Data Warehouse as expected.

Workaround:

Ensure that both the History Collection and Warehouse intervals are set to 1 hour in the TEP Historical Configuration dialog box. Because the Data Set Attribute tables normally only change once per day when the collection cycle occurs, the Warehouse Proxy Agent does not send tables to the warehouse if it detects they have not been updated frequently enough to satisfy the historical collection interval.

Data for the feature is displayed incorrectly in the workspace

Limitation:

Values displayed in Data Set Attribute workspaces seem to be in error.

Workaround:

Examine the appropriate attribute from a different source program (for example, ISPF, IDCAMS) to determine whether the values are being displayed incorrectly. For example, a data set that is displayed as having negative Free space may, in fact, show a larger amount of space Used than Allocated in its VTOC entry. This indicates that the VTOC had been incorrectly updated in the past (for example, a program reaches an ABEND (abnormal end) condition before correctly setting the values).

If the attribute displayed is incorrect, contact IBM Software Support.

Troubleshooting for cross-product linking

This OMEGAMON product dynamically creates links to other OMEGAMON products when these products are installed in the z/OS monitoring environment. This section describes problems that can occur and guidelines for solving the problems.

Cross-product links missing from link list

Cross-product workspace links are displayed in the link list if the product workspace you are linking to has been installed and your Tivoli Enterprise Portal user ID is authorized to access the target product.

If a cross-product link is missing from the link list, contact your system administrator to verify the following information:

- Your user ID is authorized to access the target product.
- The target workspaces of the product are installed. OMEGAMON help files, workspaces, and situations are installed using the CD.

An attempt to link to the workspace of another product fails and Message KFWITM081E 'The link target cannot be found' is displayed

Many of the OMEGAMON products include predefined links to workspaces that are provided by other products. Message `KFWITM081E` is displayed whenever you try to link to a workspace that does not exist. You receive this message when the target workspaces of the product have been installed, but the monitoring agent responsible for retrieving data for the target workspace is not running.

Product workspaces are installed using the *IBM Tivoli OMEGAMON Data Files for z/OS* CD. After the workspaces are installed, all predefined links to the workspaces become enabled, and links to the target workspaces are included in the link list when an operator right-clicks a link icon.

If you installed the workspaces for products that you have not installed in your environment, links to these products are displayed as valid destinations for dynamic cross-product links. To prevent the inclusion of misleading links, install only the help files, workspaces, and situations for products that you have installed.

OMEGAMON Conrefs:

This conref file is to be used for OMEGAMON. Conrefs should be used on product names, components, or company names that could be subject to change. Keep in mind that multiple people will be using this file, so be careful when updating and let your teams mates be aware when you are working in this file.

Products

OMEGAMON

Realtime Data Set Metrics Web Viewer

OMEGAMON

OMEGAMON

Tivoli

Tivoli

OMEGAMON

IBM OMEGAMON for Storage on z/OS

OMEGAMON for Storage

IBM Tivoli Data Warehouse

Tivoli Management Services

IBM Tivoli Management Services

OMEGAMON XE Monitoring Agent

Tivoli Enterprise Portal

Tivoli Enterprise Portal client

Tivoli Enterprise Monitoring Server on z/OS

Tivoli Enterprise Monitoring Server

IBM Tivoli Monitoring

TMS: Engine

IBM Tivoli Monitoring Service Console

OMEGAMON for Storage

OMEGAMON II for SMS

OMEGAMON for Storage

IBM OMEGAMON

IBM OMEGAMON

IBM OMEGAMON DE

OMEGAMON

OMEGAMON

Tivoli OMEGAMON DE

OMEGAMON for Storage on z/OS

OMEGAMON

OMEGAMON

IBM Tivoli Enterprise Monitoring Server

Tivoli Enterprise Monitoring Server

TEMS

IBM Tivoli Enterprise Monitoring Agent

Tivoli Enterprise Monitoring Agent

IBM Enterprise Portal

IBM Enterprise Portal Server

Tivoli Enterprise Portal Server

IBM Tivoli Enterprise Console

IBM Tivoli Enterprise Console

Tivoli Enterprise Console

IBM Tivoli Netcool/OMNIbus

Tivoli Netcool/OMNIbus

Tivoli Data Warehouse

TEC

IBM

IBM

IBM Software Support

IBM Support Assistant

Operating systems and components

DB2

Oracle

Java

Microsoft Windows

Windows

z/OS

z/OS

Microsoft SQL

Microsoft.NET

UNIX

AIX

Linux

Google

Java Console

Internet Explorer

Mozilla Firefox

zSeries

pSeries

iSeries

Websphere

Book titles

IBM OMEGAMON for Storage on z/OS: Planning and Configuration Guide

IBM OMEGAMON for Storage on z/OS: User's Guide

IBM OMEGAMON for Storage on z/OS: Tuning Guide

IBM OMEGAMON for Storage on z/OS: Troubleshooting Guide

IBM Tivoli Monitoring Troubleshooting Guide

IBM OMEGAMON for Storage on z/OS: Parameter Reference

IBM Tivoli Monitoring: Installation & Setup Guide

IBM Tivoli Monitoring: Problem Determination Guide

IBM Tivoli OMEGAMON Data Files for z/OS

IBM Tivoli Monitoring: User's Guide

IBM Tivoli Monitoring: Installation and Setup Guide

IBM Tivoli Monitoring: Problem Determination Guide

IBM Tivoli Warehouse Summarization and Pruning Agent User's Guide

IBM Tivoli Monitoring Warehouse Proxy Agent User's Guide

IBM Tivoli OMEGAMON XE Common Configuration Guide

IBM OMEGAMON for Storage on z/OS: Program Directory

Tivoli Management Services on z/OS: Upgrade Guide

IBM Tivoli Monitoring: Configuring the Tivoli Enterprise Monitoring Server on z/OS

Problems when linking from an OMEGAMON XE V4.2 workspace to an OMEGAMON XE V4.1 workspace

If you are migrating from OMEGAMON XE V4.1 products to OMEGAMON XE V4.2 products, you might have a combination of V4.1 and V4.2 monitoring agents installed in your environment. For example, you might have a OMEGAMON for Storage monitoring agent and an OMEGAMON XE on z/OS V4.1 monitoring agent running on the same z/OS system during the migration period.

In this migration scenario, using dynamic workspace linking to link from an OMEGAMON XE V4.2 workspace to the workspace of another OMEGAMON XE V4.1 product works correctly, as long as the target workspace exists in the V4.1 product. If the target workspace does not exist, you receive the `KFWITM081E` message.

Troubleshooting for the Storage Toolkit

This section provides problem determination information regarding the Storage Toolkit.

Unable to revise settings in the Print dialog box of the Storage Toolkit

Limitation:

When you are working in the Print dialog box of the Storage Toolkit and you select the **From/To** or **Skip/Count** radio buttons, the radio buttons remain selected. If you decide to deselect one of the radio buttons, you cannot.

Workaround:

Click **Cancel** to dismiss the dialog box. Access the dialog box again and make the revised selections that you want.

Unable to make additional changes in the Options tab

Limitation:

When you enter changes in the **Command** tab, you are unable to make further modifications in the **Options** tab.

Workaround:

If you want to enter command settings in the **Options** tab again, click **Cancel** to dismiss the dialog box, and begin constructing a new command in a new invocation of the dialog box.

Action request from the Add VRS dialog box of the Storage Toolkit fails

Context:

You use the Add VRS dialog box of the Storage Toolkit to issue the DFSMSrmm **ADDVRS** command from RMM VRS-oriented workspaces.

Limitation:

An action request that adds a **NAME VRS** and also specifies **NEXT VRS** fails with the following message:

```
EDG3297I STORENUMBER MUST BE SPECIFIED FOR A NAME VRS WHEN NEXTVRS OPERAND
IS SPECIFIED
```

This message arises when the **STORENUMBER** parameter is not specified.

Workaround:

Specify the **STORENUMBER** parameter in raw text form in the **Command** tab of this dialog box.

Create Batch Job dialog box of the Storage Toolkit does not refresh variable substitutions in some cases

Context:

When you specify a JCL data set (or PDS member) on the **Create Batch Job** dialog box, the substitution table in the dialog box is refreshed with the variables that exist in the JCL.

Limitation:

If you specify a nonexistent data set (or nonexistent PDS member), and then use the Edit JCL dialog to create it, the substitution table is not refreshed to display the variables that are in the new JCL. If you change the data set name, the substitution table might not be refreshed to display the variables in this data set. If the data set (or PDS member) is modified after you initially specify it on the Create Batch Job dialog box, the substitution table might not be refreshed to display the variables in the updated data set.

Workaround:

Manually enter the substitution variables in the substitution table or use one of the following methods to automatically refresh the table:

- Move the cursor into the data set name field, and then press Enter.
- Move the cursor into the data set name field, and then press Tab.
- Move the cursor into the data set name field, and then click any other field in the Create Batch Job dialog.

The Edit JCL dialog box in the Storage Toolkit does not save statistics for members of partitioned data sets

Context:

While using the Create Batch Job dialog box, you can create and edit JCL by accessing the Edit JCL dialog box. You might want to create or update JCL in a member of a partitioned data set (PDS).

Limitation:

The Edit JCL dialog box does not apply statistics to PDS members that it saves, such as date created, date and time changed, user ID, size, and so on. Furthermore, when the Edit JCL dialog box updates a member, existing statistics are deleted.

Workaround:

You can log on to your z/OS system and use the Reset ISPF Statistics utility to set the statistics. However, be aware that the statistics will be deleted the next time you use the Edit JCL dialog box to update the member.

Troubleshooting for event forwarding

This section provides problem determination information regarding event forwarding. This feature allows you to forward events to IBM Tivoli Enterprise Console (TEC) or IBM Tivoli Netcool/Omnibus, which specialize in management of events across an enterprise.

Incomplete event data from a situation is forwarded to Tivoli Enterprise Portal Server

Context:

The typical situation for monitoring agents in IBM Tivoli Monitoring targets a specific resource and generates a limited amount of monitoring data. In some cases, a OMEGAMON for Storage situation can generate larger amounts of information.

For example, a situation might generate a large amount of information if it monitors multiple sub-objects on a managed system, such as a situation that monitors multiple channels. As a result, relatively large amounts of monitoring data might be generated every time that the thresholds of the situation are triggered.

Limitation:

When TEC integration is enabled for the OMEGAMON for Storage, the Tivoli Enterprise Portal Server receives a buffer of monitoring data that cannot exceed 4K bytes in size. In most cases, this buffer size is sufficient. However, some situations in OMEGAMON for Storage can generate more than 4K bytes of data. When the data generated for the situation exceeds this limit, the excess data is truncated and is not presented at the Tivoli Enterprise Portal Server.

Workaround:

None. For situations that can generate large amounts of data, be aware that Tivoli Enterprise Portal Server is retrieving only the first 4K bytes of data.

Chapter 8. Overview regarding messages

This topic provides an overview regarding the messages that can be generated by OMEGAMON for Storage, the Tivoli Enterprise Monitoring Agent, and the OMEGAMON II for SMS component.

Locations of message logs

The Tivoli Enterprise Monitoring Agent generates log files that contain messages and trace information. The log files contain message and trace information about the events and processing being performed. Log files provide a complete record of system activity, not just of problems. The log files are created when you start the IBM Tivoli Monitoring components.

When you encounter a problem, check the messages in the log files to determine if the source is a problem in your environment or with an IBM Tivoli Monitoring product. If you determine that the problem is caused by a product defect, follow the instructions for contacting IBM Software Support in the Support information section.

Chapter 1. General troubleshooting for the OMEGAMON XE Monitoring Agent on z/OS describes the locations of log files. The location of the log depends on the client type and operating system the client is running on. IBM Software Support might request some or all of these files while investigating a problem you have reported. Also, you might be asked to set a trace in the client and then collect the log. Trace logging is a fundamental tool for troubleshooting in cases where a problem is reproducible.

Note: Some of the tracing options produce large amounts of trace information. Therefore, monitor the disk or spool space when activating tracing to prevent your disk or spool from reaching capacity. Return the trace settings to the default settings after the trace information you want has been collected.

Generating and viewing log files

The log files for the OMEGAMON for Storage monitoring agent are created as defined in the started procedure when you start the Tivoli Enterprise Monitoring Agent. You can view the log files with any text editor.

When you investigate problems with the OMEGAMON for Storage monitoring agent, view the sysout data sets or spool files in the job output and view the z/OS system log file for any messages that might pertain to the problem.

Message format

The messages for this product are in the following format:

```
xxxyyyyyz
```

where:

Message	Description
xxx	Alpha-numeric product or component identifier. This product supports three component identifiers: • KS3 for OMEGAMON for Storage. • KDF for OMEGAMON for Storage. • KRC for OMEGAMON II for SMS.
yyyy	Alpha-numeric message ID with three or more alpha-numeric characters.
z	One-letter message type. Most, but not all, messages have z, the message type indicator: • *I* for informational messages, which typically do not require administrator or operator actions. • *W* for warning messages, which typically require actions. • *E* for error messages, which indicate a problem that you must resolve before normal operation can continue.

This book provides the following additional information about these messages, including:

- Message text that is displayed on the same line as the message number.
- A description of the system conditions that generated the message.
- Suggested responses to the message.

Related information

Chapter 9. Appendix. Documentation library

This appendix contains information about the publications in the OMEGAMON for Storage library and about other publications related to OMEGAMON for Storage.

For all the documentation related to OMEGAMON for Storage, see http://www-01.ibm.com/support/knowledgecenter/SSAUBV/welcome.

To find publications for the previous version of a product, click **Previous versions** on the left pane for the product.

OMEGAMON for Storage library

The following documents are available for OMEGAMON for Storage at http://www-01.ibm.com/support/knowledgecenter/SS2JFP/com.ibm.oxes530.doc/welcome_storage530.htm:

- *IBM OMEGAMON for Storage on z/OS: Planning and Configuration Guide*

  Documents the installation and configuration tasks necessary for the implementation of IBM OMEGAMON for Storage on z/OS. This document is written for z/OS systems programmers and others who are responsible for installing and configuring OMEGAMON for Storage.
- *IBM OMEGAMON for Storage on z/OS: Parameter Reference*

  Documents the parameters used for setting and storing configuration values necessary for the implementation of IBM OMEGAMON for Storage on z/OS. This document is written for z/OS systems programmers and others who are responsible for installing and configuring IBM OMEGAMON for Storage on z/OS.
- *IBM OMEGAMON for Storage on z/OS: User's Guide*

  Introduces the features, workspaces, attributes, and predefined situations for the IBM OMEGAMON for Storage on z/OS product and supplements the user assistance provided with this product.
- *IBM OMEGAMON for Storage on z/OS: Tuning Guide*

  Provides information on enhancing the performance of OMEGAMON for Storage so that you can get the maximum benefit with the least amount of resources.
- *IBM OMEGAMON for Storage on z/OS: Troubleshooting Guide*

  Contains messages for the IBM OMEGAMON for Storage on z/OS product and OMEGAMON II for SMS component and information to help solve problems with the IBM OMEGAMON for Storage on z/OS product.

OMEGAMON and Tivoli Management Services on z/OS common library

The documents in this library are common to some or all of the OMEGAMON XE products or Tivoli Management Services on z/OS and can be found at http://www.ibm.com/support/knowledgecenter/SSAUBV/com.ibm.omegamon_share.doc_6.3.0.2/welcome

IBM Tivoli Monitoring Library

The following publications provide information about IBM Tivoli Monitoring V6.3 and about the commonly shared components of Tivoli Management Services which can be found at http://www-01.ibm.com/support/knowledgecenter/SSAUBV/welcome:

- *Quick Start Guide*

  Introduces the components of IBM Tivoli Monitoring.
- *Installation and Setup Guide*

  Provides instructions for installing and configuring IBM Tivoli Monitoring components on Windows, Linux, and UNIX systems.
- *Program Directory for IBM Tivoli Management Services on z/OS*

  Gives instructions for the SMP/E installation of the Tivoli Management Services components on z/OS.
- *Configuring the Tivoli Enterprise Monitoring Server on z/OS*

  Gives detailed instructions for using PARMGEN to configure Tivoli Enterprise Monitoring Server on z/OS systems. Includes scenarios for using batch mode to replicate monitoring environments across the z/OS enterprise. Also provides instructions for setting up security and for adding application support to a Tivoli Enterprise Monitoring Server on z/OS.
- *Administrator's Guide*

  Describes the support tasks and functions required for the Tivoli Enterprise Portal Server and clients, including Tivoli Enterprise Portal user administration.
- *Tivoli Enterprise Portal online help*

  Provides context-sensitive reference information about all features and customization options of the Tivoli Enterprise Portal. Also gives instructions for using and administering the Tivoli Enterprise Portal.
- *User's Guide*

  Complements the Tivoli Enterprise Portal online help. The guide provides hands-on lessons and detailed instructions for all Tivoli Enterprise Portal features.
- *Command Reference*

  Provides detailed syntax and parameter information, as well as examples, for the commands you can use in IBM Tivoli Monitoring.
- *Troubleshooting Guide*

  Provides information to help you troubleshoot problems with the software.
- *Messages*

  Lists and explains messages generated by all IBM Tivoli Monitoring components and by z/OS-based Tivoli Management Services components (such as Tivoli Enterprise Monitoring Server on z/OS and TMS: Engine).

Related publications

You can find useful information about the OMEGAMON XE Monitoring Agents at http://www-01.ibm.com/support/knowledgecenter/SSAUBV/welcome.

This set of documents includes the following items, which are related to configuration of the OMEGAMON II for SMS component, which is a required component for OMEGAMON for Storage.

- *OMEGAMON II for SMS Configuration and Customization Guide*

- *OMEGAMON II for SMS User's Guide*
- *OMEGAMON II for SMS Administrator's Guide*
- *OMEGAMON II for SMS Tuning Guide*

Other sources of documentation

You can also obtain technical documentation about IBM Tivoli Monitoring and OMEGAMON products from the following sources:

- IBM Tivoli Open Process Automation Library (OPAL)

  http://www.ibm.com/software/tivoli/opal

  OPAL is an online catalog that contains integration documentation and other downloadable product extensions. This library is updated daily.
- IBM Tivoli Distributed Monitoring and Application Management wiki

  http://www.ibm.com/developerworks/wikis/display/tivolimonitoring/Home

  The IBM Tivoli Distributed Monitoring and Application Management wiki is a source of best practices, white papers, discussion forums, and more. The wiki includes integration documentation as well as downloadable product extensions.
- IBM Redbooks®

  http://www.redbooks.ibm.com/

  IBM Redbooks, Redpapers™, and Redbooks Technotes provide information about products from platform and solution perspectives.
- Technotes

  Technotes provide the latest information about known product limitations and workarounds. You can find Technotes through the IBM Software Support Web site at http://www.ibm.com/software/support.

Chapter 10. 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
- Obtaining PTFs (Program Temporary Fixes)
- Receiving weekly support updates
- Contacting IBM Software Support

Using IBM Support Assistant

The IBM Support Assistant is a free, standalone 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.

Before you begin

The IBM Support Assistant saves you time searching product, support, and educational resources. It also 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 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.

About this task

Install and set up the IBM Support Assistant as follows:

Procedure

1. Download the IBM Support Assistant installation software from http://www.ibm.com/software/support/isa.
2. Unzip or untar the downloaded file.
3. Run the installation file and respond to the prompts from the installer.
4. Launch the IBM Support Assistant. For example, on Windows XP click **IBM Support Assistant** in the following menu path: **Start** > **All Programs** > **IBM Support Assistant**. The Welcome page is displayed.
5. Select the **Updater** hyperlink to access the Updater page.
6. Access the **Upgrades** tab and the **IBM Support Assistant** tab to select the product-specific plug-in modules that you want to install.

What to do next

If you cannot find the solution to your problem in the IBM Support Assistant, you can also check the following Internet resources for information that might help you resolve your problem:

- Forums and news groups
- Google.com

Obtaining fixes

About this task

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

Procedure

1. Go to the IBM Software Support Web site at http://www.ibm.com/software/support.
2. Select **Tivoli** in the **Select a brand and/or product** drop-down list to access the **Select a product** drop-down list.
3. Select **OMEGAMON for Storage** in the **Select a product** drop-down list.
4. Click the **Go** arrow that is located to the right of the drop-down list. The product support Web page is displayed, including the blue **OMEGAMON for Storage support** list box on the right.

   Note: The links in this list box go to dedicated Web pages for the product regarding topics such as downloads and troubleshooting. In many cases, using these links leads you to product-specific information more quickly than entering search terms.
5. To obtain information on APARs, perform the following steps:
   a. Click **Troubleshoot** in the **OMEGAMON for Storage support** list box to access the **Troubleshoot** support page.
   b. Click **APARs** in the **Browse by document type** area to access a list of APARs, with the most recent APARs first.
   c. Enter search terms to find specific types of APARs, as needed.
6. To obtain information on fixes, fix packs, and other service updates for OMEGAMON for Storage, perform the following steps:
   a. Click **Download** in the **OMEGAMON for Storage support** list box to access the **Download** support page.
   b. Click the **Recommended fixes** link to access the **Recommended Maintenance Service Levels** page. Information for IBM OMEGAMON for Storage on z/OS is provided in several places on this page.

What to do next

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.

Obtaining PTFs (Program Temporary Fixes)

About this task

The following steps describe how to identify and obtain required maintenance, known as PTFs (Program Temporary Fixes):

Procedure

1. Access the "Technical help database page for mainframe Preventive Service Planning (PSP) buckets" Web page at http://www14.software.ibm.com/webapp/set2/psp/srchBroker.
2. Find relevant PSP Buckets. Search for PSP Buckets that have the OMEGAMON for Storage, V4.2.0 prefix: **OMXES4200**.
3. Consult each PSP Bucket to learn what PTFs are required.
4. Access the Shop z-Series Web site to obtain the PTFs at https://www14.software.ibm.com/webapp/ShopzSeries/ShopzSeries.jsp.

Receiving weekly support updates

About this task

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

Procedure

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, **Application Performance & Availability**. A list of applicable products is displayed.
8. Select the products for which you want to receive updates.
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**.

What to do next

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 you begin

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.

About this task

To contact IBM Software Support, follow these steps:

Procedure

1. Determining the business impact
2. Describing problems and gathering information
3. Submitting problems

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.

Chapter 11. Notices

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Index

Special characters

A

C

D

E

F

G

H

I

K

L

M

N

O

P

R

S

T

U

W

Printed in USA

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