IBM Tivoli Composite Application Manager Extended Agent for Oracle Database

Version 6.3.1 Fix Pack 2

Troubleshooting Guide

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Note
Before using this information and the product it supports, read the information in "Notices" on page 43.

This edition applies to version 6.3.1 Fix Pack 2 of IBM Tivoli Composite Application Manager Extended Agent for Oracle Database (product number 5724-I45) and to all subsequent releases and modifications until otherwise indicated in new editions.

Contents

Tables v

Chapter 1. Troubleshooting 1

Chapter 2. Trace logging 3
Overview of log file management 3
Principal trace log files 4
Examples: Using trace logs 7
Trace options 8
RAS trace parameters 9
Setting RAS trace parameters by using the GUI. . 9
Manually setting RAS trace parameters 10
Dynamic modification of trace settings 11
Turning on tracing 13
Turning off tracing 13
Setting trace parameters for the Tivoli Enterprise Console server 14

Chapter 3. Problems and workarounds 15
Installation and configuration troubleshooting . . . 15
Remote deployment troubleshooting 20
Agent troubleshooting 22
Workspace troubleshooting 28
Situation troubleshooting 30
Take Action commands troubleshooting 34

Chapter 4. Support information 35

Chapter 5. Informational, warning, and error messages overview 37
Message format 37
Agent messages 38

Appendix. ITCAM for Applications documentation library 39
Prerequisite publications 39
Related publications 39
Tivoli Monitoring Community on Service Management Connect 40
Other sources of documentation 40

Notices 43
Trademarks 45
Privacy policy considerations 45

Index 47

Tables

1. Information to gather before contacting IBM Software Support 1
2. Trace log files for troubleshooting agents . . . 4
3. Problems and solutions for installation and configuration 15
4. General problems and solutions for uninstallation 17
5. Remote deployment problems and solutions 20
6. Agent problems and solutions 22
7. Workspace problems and solutions. 28
8. Situation problems and solutions 30
9. Take Action commands problems and solutions 34

Chapter 1. Troubleshooting

Problems can be related to IBM® Tivoli® Monitoring or the specific agent that you are using.

For general troubleshooting information, see the *IBM Tivoli Monitoring Troubleshooting Guide*. For other problem-solving options, see Chapter 4, "Support information," on page 35.

You can resolve some problems by ensuring that your system matches the system requirements listed in the Prerequisites topic for the agent in the information center.

The following activities can help you find a solution to the problem you are having:

- "Gathering product information for IBM Software Support"
- "Using logging" on page 2
- "Consulting the lists of identified problems and workarounds" on page 2

Gathering product information for IBM Software Support

Before contacting IBM Software Support about a problem you are experiencing with this product, gather the information shown in Table 1.

Table 1. Information to gather before contacting IBM Software Support

Information type	Description
Log files	Collect trace log files from failing systems. Most logs are located in a logs subdirectory on the host computer. See "Principal trace log files" on page 4 for lists of all trace log files and their locations. For general information about the IBM Tivoli Monitoring environment, see the *Tivoli Enterprise Portal User's Guide*.
Oracle Database information	Version number and patch level
Operating system	Operating system version number and patch level
Messages	Messages and other information displayed on the screen
Version numbers for IBM Tivoli Monitoring	Version number of the following members of the monitoring environment: • IBM Tivoli Monitoring. Also provide the patch level, if available. • IBM Tivoli Composite Application Manager Extended Agent for Oracle Database
Screen captures	Screen captures of incorrect output, if any
(UNIX systems only) Core dump files	If the system stops on UNIX systems, collect the core dump file from the *install_dir*/bin directory, where *install_dir* is the directory where you installed the monitoring agent.

You can use the pdcollect tool to collect the most commonly used information from a system. This tool gathers log files, configuration information, version information, and other data. For more information about using this tool, see the "pdcollect tool" in the *IBM Tivoli Monitoring Troubleshooting Guide*.

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

Using logging

Logging is the primary troubleshooting feature in the Oracle Database Extended agent. *Logging* refers to the text messages and trace data that is generated by the Oracle Database Extended agent. Messages and trace data are sent to a file.

Trace data captures transient information about the current operating environment when a component or application fails to operate as designed. IBM Software Support personnel use the captured trace information to determine the source of an error or unexpected condition. See Chapter 2, "Trace logging," on page 3 for more information.

Consulting the lists of identified problems and workarounds

Known problems have been organized into types such as those in the following list to make them easier to locate:

- Installation and configuration
- General usage and operation
- Display of monitoring data
- Take Action commands

Information about symptoms and detailed workarounds for these types of problems is located in Chapter 3, "Problems and workarounds," on page 15.

For general troubleshooting information, see the *IBM Tivoli Monitoring Troubleshooting Guide*.

Chapter 2. Trace logging

Trace logs are used to capture information about the operating environment when component software fails to operate as designed.

The principal log type is the RAS (Reliability, Availability, and Serviceability) trace log. These logs are in the English language only. The RAS trace log mechanism is available for all components of IBM Tivoli Monitoring. Most logs are located in a logs subdirectory on the host computer. See the following information to learn how to configure and use trace logging:

- "Principal trace log files" on page 4
- "Examples: Using trace logs" on page 7
- "Setting RAS trace parameters by using the GUI" on page 9

Note: The documentation refers to the RAS facility in IBM Tivoli Monitoring as "RAS1."

IBM Software Support personnel use the information captured by trace logging to trace a problem to its source or to determine why an error occurred. All components in the IBM Tivoli Monitoring environment have a default tracing level. The tracing level can be changed on a per-component level to adjust the type of trace information collected, the degree of trace detail, the number of trace logs to be kept, and the amount of disk space used for tracing.

Overview of log file management

Knowing the naming conventions for log files helps you to find the files.

Agent log file naming conventions

Table 2 on page 4 provides the names, locations, and descriptions of IBM Tivoli Monitoring general RAS1 log files. The log file names for the Oracle Database Extended agent adhere to the following naming convention:

- `hostname_rz_krzagent_HEXtimestamp-nn.log`
- `hostname_rz_krzclient_HEXtimestamp-nn.log`
- `hostname_rz_krzstart_HEXtimestamp-nn.log`

Where:

hostname
: Host name of the computer where the monitoring component is running.

rz
: Two-character product code for Oracle Database Extended agent.

HEXtimestamp
: Hexadecimal time stamp representing the time at which the program started.

nn
: Rolling log suffix.

These logs are in the following directory depending on the operating system that you are using:

- **Windows 32-bit:** *install_dir*`\TMAITM6\logs`
- **Windows 64-bit:** *install_dir*`\TMAITM6_x64\logs`
- **Linux:** *install_dir*`/logs`
- **UNIX:** *install_dir*`/logs`

The krzagent program is a binary copy of agent factory, which delivers requests from Tivoli Enterprise Monitoring Server to the krzclient program. The krzclient program is an agent factory custom provider that can connect multiple and different versions of Oracle databases. This program collects information from Oracle databases, and returns the information to the krzagent program when the krzagent program receives requests from Tivoli Enterprise Monitoring Server. The krzstart program initializes the environment, for example, sets the *PATH* variable and calls the krzclient program.

Note: Some operating systems, such as SUSE Linux 10, contain only the `krzstart` log file and the `krzagent` log file. The log for the krzclient program is in the `krzstart` log file, because the krzstart program uses the `execvp` system call to run the krzclient program. Some operating systems merge the logs of these two applications into one log file.

Principal trace log files

Trace log files are located on various systems.

Table 2 contains locations, file names, and descriptions of trace logs that can help determine the source of problems with agents.

Table 2. Trace log files for troubleshooting agents

System where log is located	File name and path	Description
On the Tivoli Enterprise Monitoring Server	• **Windows:** The file in the *install_dir*\InstallITM path • **UNIX:** The candle_installation.log file in the *install_dir*/logs path • **Linux:** The candle_installation.log file in the *install_dir*/logs path	Provides details about products that are installed. **Note:** Trace logging is enabled by default. A configuration step is not required to enable this tracing.
On the Tivoli Enterprise Monitoring Server	The Warehouse_Configuration.log file is in the following location on Windows systems: *install_dir*\InstallITM	Provides details about the configuration of data warehousing for historical reporting.
On the Tivoli Enterprise Monitoring Server	The name of the RAS log file is as follows: • **Windows:** *install_dir*\logs\ *hostname*_ms_*timestamp-nn*.log • **UNIX:** *install_dir*/logs/ *hostname*_ms_*timestamp-nn*.log • **Linux:** *install_dir*/logs/ *hostname*_ms_*timestamp-nn*.log **Note:** File names for RAS1 logs include a hexadecimal time stamp. Also on UNIX systems, a log with a decimal time stamp is provided: *hostname_productcode_timestamp*.log and *hostname_productcode_ timestamp*.pid nnnnn in the *install_dir*/logs path, where *nnnnn* is the process ID number.	Traces activity on the monitoring server.

Table 2. Trace log files for troubleshooting agents (continued)

System where log is located	File name and path	Description
On the Tivoli Enterprise Portal Server	The name of the RAS log file is as follows: • **Windows:** *install_dir*\logs\ *hostname* _cq_HEXtimestamp-nn.log • **UNIX:** *install_dir* /logs/*hostname*_cq_HEXtimestamp-nn.log • **Linux:** *install_dir* /logs/*hostname*_cq_HEXtimestamp-nn.log **Note:** File names for RAS1 logs include a hexadecimal time stamp. Also on UNIX systems, a log with a decimal time stamp is provided: *hostname_productcode_timestamp* .logand *hostname_productcode_ timestamp*.pid*nnnnn* in the *install_dir*/logs path, where *nnnnn* is the process ID number.	Traces activity on the portal server.
On the Tivoli Enterprise Portal Server	The teps_odbc.log file is located in the following path: • **Windows:** *install_dir*\InstallITM • **UNIX:** *install_dir*/logs • **Linux:** *install_dir*/logs	When you enable historical reporting, this log file traces the status of the warehouse proxy agent.

Table 2. Trace log files for troubleshooting agents (continued)

System where log is located	File name and path	Description
On the computer that hosts the monitoring agent	The RAS1 log files are as follows: • **Windows:** *hostname*_rz_*instance_name*_krzagent_HEXtimestamp-nn.log in the *install_dir*\tmaitm6\logs directory • **UNIX:** *hostname*_rz_*instance_name*_krzagent_HEXtimestamp-nn.log in the *install_dir*/logs directory • **Linux:** *hostname*_rz_*instance_name*_krzagent_HEXtimestamp-nn.log in the *install_dir*/logs directory These logs are in the following directories: • **Windows:** *install_dir*\tmaitm6\logs • **UNIX:** *install_dir*/logs • **Linux:** *install_dir*/logs On Linux systems, the following additional logs are provided: – *hostname*_rz_timestamp.log – *hostname*_rz_timestamp.pidnnnnn in the *install_dir*/logs path, where *nnnnn* is the process ID number	Traces activity of the monitoring agent.
On the computer that hosts the monitoring agent	The agent operations log files are as follows: *instance_hostname*RZ.LG0 is the current log created when the agent was started. *instance_hostname*_RZ.LG1 is the backup of the previous log. These logs are in the following directory depending on the operating system that you are using: • **Windows 32-bit:** *install_dir*\TMAITM6\logs • **Windows 64-bit:** *install_dir*\TMAITM6_x64\logs • **Linux:** *install_dir*/logs • **UNIX:** *install_dir*/logs	Shows whether the agent could connect to the monitoring server. Shows which situations are started and stopped, and shows other events while the agent is running. A new version of this file is generated every time the agent is restarted. IBM Tivoli Monitoring generates one backup copy of the *.LG0 file with the tag .LG1. View the .LG1 tag to learn the following details regarding the *previous* monitoring session: • Status of connectivity with the monitoring server • Situations that were running • The success or failure status of Take Action commands

Table 2. Trace log files for troubleshooting agents (continued)

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

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

Examples: Using trace logs

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

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

Example one

This excerpt shows the typical log for a failed connection between a monitoring agent and a monitoring server with the host name **server1a**:

```
(Thursday, August 11, 2005, 08:21:30-{94C}kdcl0cl.c,105,"KDCL0_ClientLookup") status=1c020006,
 "location server unavailable", ncs/KDC1_STC_SERVER_UNAVAILABLE
(Thursday, August 11, 2005, 08:21:35-{94C}kraarreg.cpp,1157,"LookupProxy") Unable to connect to
 broker at ip.pipe:: status=0, "success", ncs/KDC1_STC_OK
(Thursday, August 11, 2005, 08:21:35-{94C}kraarreg.cpp,1402,"FindProxyUsingLocalLookup") Unable
 to find running CMS on CT_CMSLIST <IP.PIPE:#server1a>
```

Example two

The following excerpts from the trace log *for the monitoring server* show the status of an agent, identified here as "Remote node." The name of the computer where the agent is running is **SERVER5B**:

```
(42C039F9.0000-6A4:kpxreqhb.cpp,649,"HeartbeatInserter") Remote node SERVER5B:RZ is ON-LINE.
. . .
(42C3079B.0000-6A4:kpxreqhb.cpp,644,"HeartbeatInserter") Remote node SERVER5B:RZ is OFF-LINE.
```

See the following key points about the preceding excerpts:

- The monitoring server appends the **RZ** product code to the server name to form a unique name (SERVER5B:RZ) for this instance of the IBM Tivoli Composite Application Manager Extended Agent for Oracle Database. By using this unique name, you can distinguish multiple monitoring products that might be running on **SERVER5B**.
- The log shows when the agent started (ON-LINE) and later stopped (OFF-LINE) in the environment.
- For the sake of brevity, an ellipsis (...) represents the series of trace log entries that were generated while the agent was running.

- Between the ON-LINE and OFF-LINE log entries, the agent was communicating with the monitoring server.
- The ON-LINE and OFF-LINE log entries are always available in the trace log. All trace levels that are described in "Setting RAS trace parameters by using the GUI" on page 9 provide these entries.

On Windows systems, you can use the following alternate method to view trace logs:

1. In the Windows **Start** menu, click **Program Files** > **IBM Tivoli Monitoring** > **Manage Tivoli Enterprise Monitoring Services**. The Manage Tivoli Enterprise Monitoring Services window is displayed.
2. Right-click a component and click **Advanced** > **View Trace Log** in the menu. For example, if you want to view the trace log of the IBM Tivoli Composite Application Manager Extended Agent for Oracle Database, right-click the name of that agent in the window. You can also use the viewer to access remote logs.

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

Trace options

The two levels of tracing are component-level tracing and file-level tracing.

For instructions about how to set trace options, see "RAS trace parameters" on page 9

- component-level tracing

  To enable component-level tracing, use the following option for the RAS trace parameters:
  `(comp: component level)`

  where:

  component
  Name of the component for which you want to set the trace option. Use one of the following components defined for RAS1 log service:
  - krzalert: the Alert Log component
  - krzbasic: the basic functions component
  - krzcomm: the common connection component
  - krzmutex: the event and mutex component
  - krzora: the OCI(Oracle Call Interface) related functions component
  - krzxml: the XML component

  level Tracing severity level: all, debug, detail, or flow.

  For example, use the `(comp: krzalert all)` option to enable tracing on the krzalert component.

- file-level tracing

  To use file-level tracing, use the following option for the RAS trace parameters:
  `(unit: filename level)`

  Where:

  file name
  Name of the file for which you want to enable tracing.

  For example, use the `(unit: krzoranet all)` option to enable tracing on the source code files with names that begin with krzoranet. These files are used for Listener monitoring and Net Service monitoring.

RAS trace parameters

Pinpoint a problem by setting detailed tracing of individual components of the monitoring agent and modules

See “Overview of log file management” on page 3 to ensure that you understand log rolling and can reference the correct log files when you manage log file generation.

Setting RAS trace parameters by using the GUI

On Windows systems, you can use the graphical user interface to set trace options.

About this task

The IBM Tivoli Composite Application Manager Extended Agent for Oracle Database uses RAS1 tracing and generates the logs described in Table 2 on page 4. The default RAS1 trace level is ERROR.

Procedure

1. Open the Manage Tivoli Enterprise Monitoring Services window.
2. Select **Advanced** > **Edit Trace Parms**. The Tivoli Enterprise Monitoring Server Trace Parameters window is displayed.
3. Select a new trace setting in the pull-down menu in the **Enter RAS1 Filters** field or type a valid string.
   - General error tracing. KBB_RAS1=ERROR
   - Intensive error tracing. KBB_RAS1=ERROR (COMP:krzora ALL)

     See “Trace options” on page 8 for detailed information.
   - Maximum error tracing. KBB_RAS1=ERROR (COMP:krzora ALL)(COMP:krzalert ALL) (COMP:krzcomm ALL) (UNIT:kra ALL)

     Note: As this example shows, you can set multiple RAS tracing options in a single statement.

     See “Trace options” on page 8 for detailed information.
4. Modify the value for Maximum Log Size Per File (MB) to change the log file size (changes LIMIT value).
5. Modify the value for Maximum Number of Log Files Per Session to change the number of log files per startup of a program (changes COUNT value).
6. Modify the value for Maximum Number of Log Files Total to change the number of log files for all startups of a program (changes MAXFILES value).
7. Optional: Click Y (Yes) in the **KDC_DEBUGd Setting** menu to log information that can help you diagnose communications and connectivity problems between the monitoring agent and the monitoring server. The **KDC_DEBUG** setting and the **Maximum error tracing** setting can generate a large amount of trace logging. Use these settings only temporarily, while you are troubleshooting problems. Otherwise, the logs can occupy excessive amounts of hard disk space.
8. Click **OK**. You see a message reporting a restart of the monitoring agent so that your changes take effect.

What to do next

Monitor the size of the `logs` directory. Default behavior can generate a total of 45 - 60 MB for each agent that is running on a computer. For example, each database instance that you monitor can generate 45 - 60 MB of log data. See the "Procedure" section to learn how to adjust file size and numbers of log files to prevent logging activity from occupying too much disk space.

Regularly prune log files other than the RAS1 log files in the `logs` directory. Unlike the RAS1 log files that are pruned automatically, other log types can grow indefinitely, for example, the logs in Table 2 on page 4 that include a process ID number (PID).

Use collector trace logs as an additional source of troubleshooting information.

Note: The **KDC_DEBUG** setting and the **Maximum error tracing** setting can generate a large amount of trace logging. Use these settings only temporarily while you are troubleshooting problems. Otherwise, the logs can occupy excessive amounts of hard disk space.

Manually setting RAS trace parameters

You can manually edit the RAS1 trace logging parameters.

About this task

The Oracle Database Extended agent uses RAS1 tracing and generates the logs described in Table 2 on page 4. The default RAS1 trace level is ERROR.

Procedure

1. Open the trace options file:
   - **Windows systems:**

     install_dir\tmaitm6\KRZENV
   - **UNIX systems:**

     install_dir /config/rz.ini
2. Edit the line that begins with **KBB_RAS1=** to set trace logging preferences. For example, if you want detailed trace logging, set the **Maximum Tracing** option: `KBB_RAS1=ERROR (UNIT:krz ALL) (UNIT:kra ALL)` See "Trace options" on page 8 for detailed information.
3. Edit the line that begins with **KBB_RAS1_LOG=** to manage the generation of log files:
   - **MAXFILES**: The total number of files that are to be kept for all startups of a given program. When this value is exceeded, the oldest log files are discarded. The default value is 9.
   - **LIMIT**: The maximum size, in megabytes (MB) of a RAS1 log file. The default value is 5.
   - IBM Software Support might guide you to modify the following parameters:
     - **COUNT**: The number of log files to keep in the rolling cycle of one program startup. The default is 3.
     - **PRESERVE**: The number of files that are not to be reused in the rolling cycle of one program startup. The default value is 1.

     Note: The **KBB_RAS1_LOG** parameter also provides for the specification of the log file directory, log file name, and the inventory control file directory and name. Do not modify these values or log information can be lost.
4. Restart the monitoring agent so that your changes take effect.

What to do next

Monitor the size of the `logs` directory. Default behavior can generate a total of 45 - 60 MB for each agent that is running on a computer. For example, each database instance that you monitor can generate 45 - 60 MB of log data. See the "Procedure" section to learn how to adjust file size and numbers of log files to prevent logging activity from occupying too much disk space.

Regularly prune log files other than the RAS1 log files in the `logs` directory. Unlike the RAS1 log files that are pruned automatically, other log types can grow indefinitely, for example, the logs in Table 2 on page 4 that include a process ID number (PID).

Use collector trace logs as an additional source of troubleshooting information.

Note: The **KDC_DEBUG** setting and the **Maximum error tracing** setting can generate a large amount of trace logging. Use these settings only temporarily while you are troubleshooting problems. Otherwise, the logs can occupy excessive amounts of hard disk space.

Dynamic modification of trace settings

You can dynamically modify the trace settings for an IBM Tivoli Monitoring component, such as, Tivoli Enterprise Monitoring Server, Tivoli Enterprise Portal Server, most monitoring agents, and other components. You can access these components, with the exception of a few monitoring agents, from the tracing utility.

Dynamic modification of the trace settings is the most efficient method, because you can do it without restarting the component. Settings take effect immediately. Modifications by this method are not persistent.

Note: When the component is restarted, the trace settings are read again from the `.env` file. Dynamically modifying these settings does not change the settings in the `.env` files. To modify these trace settings permanently, modify them in the `.env` files.

ras1

Run this command to modify the trace settings for a Tivoli Monitoring component.

The syntax is as follows:

```
ras1 set|list (UNIT|COMP: class_name ANY|ALL|Detail|ERROR|Flow|INPUT|Metrics|OUTPUT|STATE)
{(UNIT|COMP: class_name ANY|ALL|Detail|ERROR|Flow|INPUT|Metrics|OUTPUT|STATE)}
```

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

Command options

set
: Turns on or off tracing depending upon the value of its parameters. If the parameter is **ANY**, it turns it off. All other parameters turn on tracing based on the specified type or level.

list
: Displays the default level and type of tracing that is set by default.

Parameters

The parameters that determine the component classes to which to apply the trace settings are as follows:

COMP: *class_name*
: Modifies the trace setting for the name of the component class, as specified by *class_name* , for example, `COMP:KDH`. The output contains trace for the specified class.

UNIT: *class_name*
: Modifies the trace setting for any unit that starts with the specified *class_name* value, for example, `UNIT: kra`. The output contains trace for any unit that begins with the specified filter pattern.

The parameters that determine the trace level and type are as follows:

ALL
: Displays all trace levels, including every trace point defined for the component. This setting might

result in a large amount of trace, so specify other parameters to exclude unwanted trace. You might require the **ALL** parameter to isolate a problem, which is the equivalent to setting "Error Detail Flow State Input Output Metrics".

ANY
Turns off tracing.

Detail
Displays detailed information about each function.

When entered with the list option, the trace is tagged with Det.

ERROR
Logs internal error conditions.

When entered with the list option, the trace is tagged with ER. The output can also be tagged with EVERYE+EVERYU+ER.

Flow
Displays control flow data for each function entry and exit.

When entered with the list option, the trace is tagged with Fl.

INPUT
Displays input data for each function.

When entered with the list option, the trace is tagged with IN.

Metrics
Displays metrics on each function.

When entered with the list option, the trace is tagged with ME.

OUTPUT
Displays output data for each function.

When entered with the list option, the trace is tagged with OUT.

State
Displays the status for each function.

When entered with the list option, the trace is tagged with St.

Example

If you enter ras1 set (COMP:KDH ALL) (COMP:ACF1 ALL) (COMP:KDE ALL), the trace utility turns on all levels of tracing for all the files and functions for which KDH, ACF1, and KDE are the classes.

```
kbbcre1.c, 400, May 29 2007, 12:54:43, 1.1, *
kbbcrn1.c, 400, May 29 2007, 12:54:42, 1.1, *
kdhb1de.c, 400, May 29 2007, 12:59:34, 1.1, KDH
kdh0med.c, 400, May 29 2007, 12:59:24, 1.1, KDH
kdhsrej.c, 400, May 29 2007, 13:00:06, 1.5, KDH
kdhb1fh.c, 400, May 29 2007, 12:59:33, 1.1, KDH
kdhb1oe.c, 400, May 29 2007, 12:59:38, 1.2, KDH
kdhs1ns.c, 400, May 29 2007, 13:00:08, 1.3, KDH
kbbacdl.c, 400, May 29 2007, 12:54:27, 1.2, ACF1
kbbaclc.c, 400, May 29 2007, 12:54:27, 1.4, ACF1
kbbac1i.c, 400, May 29 2007, 12:54:28, 1.11, ACF1
vkdhsfcn.c, 400, May 29 2007, 13:00:11, 1.1, KDH
kdhserq.c, 400, May 29 2007, 12:59:53, 1.1, KDH
kdhb1pr.c, 400, May 29 2007, 12:59:39, 1.1, KDH
kdhsgnh.c, 400, May 29 2007, 12:59:49, 1.1, KDH
kdh0uts.c, 400, May 29 2007, 12:59:23, 1.1, KDH
kdhsrsp.c, 400, May 29 2007, 13:00:13, 1.2, KDH
```

```
kdhs1rp.c, 400, May 29 2007, 13:00:12, 1.1, KDH
kdhscsv.c, 400, May 29 2007, 12:59:58, 1.9, KDH
kdebbac.c, 400, May 29 2007, 12:56:50, 1.10, KDE
...
```

Turning on tracing

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

About this task

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

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

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

Procedure

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

   `http://`*`hostname`*`:1920`

   where *hostname* is the IP address or host name of the computer on which the IBM Tivoli Monitoring component is running.
2. Click the hyperlink associated with the component for which you want to modify its trace settings.

   Note: In the previous view, if you want to modify tracing for the Tivoli Enterprise Monitoring Server, select **IBM Tivoli Monitoring Service Console** under **Service Point: system.*your host name*_ms**.
3. Enter a user ID and password to access the system. This ID is any valid user that has access to the system.
4. Enter the command to turn on the required level of trace for the specified component classes or units.

   ```
   ras1 set (UNIT|COMP: class_name ALL|Flow|ERROR|Detail|INPUT|Metrics|OUTPUT|STATE)
   {(UNIT|COMP: class_name ALL|Flow|ERROR|Detail|INPUT|Metrics|OUTPUT|STATE)}
   ```

   For example, to turn on the control flow trace for the `KDE`, the command is:

   ```
   ras1 (COMP:KDE Flow)
   ```

Turning off tracing

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

Procedure

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

   `http://`*`hostname`*`:1920`

   where *hostname* is the IP address or host name of the computer on which the IBM Tivoli Monitoring component is running.
2. Click the hyperlink associated with the component for which you want to modify its trace settings.
3. Enter a user ID and password to access the system. This ID is any valid user that has access to the system.

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

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

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

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

Setting trace parameters for the Tivoli Enterprise Console server

In addition to the trace information captured by IBM Tivoli Monitoring, you can also collect additional trace information for the Tivoli Enterprise Console® components that gather event server metrics.

About this task

To collect this information, modify the .tec_diag_config file on the Tivoli Enterprise Console event server. Use the steps in the following procedure to modify the event server trace parameters.

Procedure

1. Open the $BINDIR/TME/TEC/.tec_diag_config file in an ASCII editor.
2. Locate the entries that configure trace logging for the agent components on the event server. Two entries are included, one for tec_reception and one for tec_rule:

   ```
   # to debug Agent Utils
   tec_reception Agent_Utils  error   /tmp/tec_reception
   SP
   # to debug Agent Utils
   tec_rule Agent_Utils   error   /tmp/tec_rule
   ```

3. To gather additional trace information, modify these entries to specify a trace level of trace2:

   ```
   # to debug Agent Utils
   tec_reception Agent_Utils   trace2  /tmp/tec_reception
   SP
   # to debug Agent Utils
   tec_rule Agent_Utils       trace2  /tmp/tec_rule
   ```

4. In addition, modify the Highest_level entries for tec_rule and tec_reception:

   ```
   tec_reception Highest_level  trace2
   SP
   tec_rule Highest_level trace2
   ```

Chapter 3. Problems and workarounds

The known problems and workarounds are organized into types of problems that might occur with the Oracle Database Extended agent, for example installation and configuration problems and workspace problems.

Note: You can resolve some problems by ensuring that your system matches the system requirements listed in the Prerequisites topic for the agent in the IBM Tivoli Composite Application Manager for Applications Information Center.

For general troubleshooting information, see the *IBM Tivoli Monitoring Troubleshooting Guide*.

Installation and configuration troubleshooting

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

The problems and solutions in Table 3 can occur during installation, configuration, and uninstallation of the agent.

Table 3. Problems and solutions for installation and configuration

Problem	Solution
(*UNIX only*) During a command-line installation, you choose to install a component that is currently installed, and you see the following warning: `WARNING - you are about to install the SAME version of "component_name"` where *component_name* is the name of the component that you are attempting to install. **Note:** This problem affects UNIX command-line installations. If you monitor only Windows environments, you see this problem if you choose to install a product component (for example, a monitoring server) on a UNIX system.	You must exit and restart the installation process. You cannot return to the list where you selected components to install. When you run the installer again, do not attempt to install any component that is currently installed.
Diagnosing problems with product browse settings (Windows systems only).	When you have problems with browse settings, complete the following steps: 1. Click **Start** > **Programs** > **IBM Tivoli Monitoring** > **Manage Tivoli Enterprise Monitoring Services**. The Manage Tivoli Enterprise Monitoring Services window is displayed. 2. Right-click the Windows agent and select **Browse Settings**. A text window is displayed. 3. Click **Save As** and save the information in the text file. If requested, you can forward this file to IBM Software Support for analysis.

Table 3. Problems and solutions for installation and configuration (continued)

Problem	Solution
A message similar to "Unable to find running CMS on CT_CMSLIST" in the log file is displayed.	If a message similar to "Unable to find running CMS on CT_CMSLIST" is displayed in the log file, the agent cannot connect to the monitoring server. Confirm the following points: • Do multiple network interface cards (NICs) exist on the system? • If multiple NICs exist on the system, find out which one is configured for the monitoring server. Ensure that you specify the correct host name and port settings for communication in the IBM Tivoli Monitoring environment.
The system is experiencing high CPU usage.	**Agent process:** View the memory usage of the KRZCMA process. If CPU usage seems to be excessive, restart the monitoring agent. **Network cards:** The network card configurations can decrease the performance of a system. Each stream of packets that a network card receives (assuming that it is a broadcast or destined for the under-performing system) must generate a CPU interrupt and transfer the data through the I/O bus. If the network card in question is a bus-mastering card, work can be offloaded and a data transfer between memory and the network card can continue without using CPU processing power. Bus-mastering cards are 32-bit and are based on PCI or EISA bus architectures.
The Oracle Database Extended agent is unable to read the remote alert log file on Windows systems.	When you configure the Oracle Database Extended agent to access the remote alert log file, the following guidelines apply: • The remote file path must follow the universal naming convention. For example, \\tivx015\path\alert_orcl.log. And file path in a mapped network drive is not supported. • The Oracle agent must run under an interactive user account, instead of the system account. • The files on the remote server can be accessed without a password, or the remote server is connected using the Oracle Database Extended agent user account.
On Solaris systems, no more than 256 characters can be entered for the Connection Name setting when configuring the Oracle Database Extended agent through the command line.	To enter a connection name that is more than 256 characters, configure the Oracle Database Extended agent through the Manage Tivoli Enterprise Monitoring Service.
The following error message in displayed in the Tivoli Enterprise Portal: Loading Oracle OCI library failed!	Oracle Instant Client - Basic Lite Packaging might cause this problem. To configure the agent, you must download and use Oracle Instant Client - Basic Packaging, which contains all files required to run OCI, OCCI, and JDBC-OCI applications. Also, an old version of the OCI library might cause this problem; download and use the latest version Oracle Instant Client to configure the agent.

Table 3. Problems and solutions for installation and configuration (continued)

Problem	Solution
When installing and configuring the agent as a non-administrator user on a Windows 2008 system, the following alert is displayed: `Your logon ID must have Administrator rights to install IBM Tivoli Composite Application Manager Extended Agent for Oracle Database`. The `Run as Administrator` option is not displayed.	When running `kinconfg.exe` or `setup.exe` commands, use the `Run as Administrator` option. The configuration process ends without error.
The agent cannot load the configuration file and cannot be started when the system OS host name is not consistent with the NetBIOS host name.	This problem happens because the XML configuration tool generates the configuration file by using the OS host name file (`OS_hostname_rz_`*`agent_instance`*`.cfg`) while the agent loads the configuration file by using the NetBIOS/NetworkAdapter host name file (`NetBIOS_hostname_rz_`*`agent_instance`*`.cfg`). You can choose from the following options: • Change the system OS host name to match the NetBIOS host name, and reconfigure the agent. • Copy the `OS_hostname_rz_`*`agent_instance`*`.cfg` file to the `NetBIOS_hostname_rz_`*`agent_instance`*`.cfg` file. • On a UNIX system, link the `OS_hostname_rz_`*`agent_instance`*`.cfg` file to the `NetBIOS_hostname_rz_`*`agent_instance`*`.cfg` file.

Table 4. General problems and solutions for uninstallation

Problem	Solution
On Windows systems, uninstallation of IBM Tivoli Monitoring fails to uninstall the entire environment.	Be sure that you follow the general uninstallation process described in the *IBM Tivoli Monitoring Installation and Setup Guide*: 1. Remove Tivoli Enterprise Monitoring Server Application support by completing the following steps: a. Use Manage Tivoli Enterprise Monitoring Services. b. Select **Tivoli Enterprise Monitoring Server**. c. Right-click and select **Advanced**. d. Select **Remove TEMS application support**. e. Select the agent to remove its application support. 2. Uninstall the monitoring agents first, as in the following examples: • Uninstall a single monitoring agent for a specific database. -OR- • Uninstall all instances of a monitoring product, such as IBM Tivoli Monitoring for Databases. 3. Uninstall IBM Tivoli Monitoring.

Table 4. General problems and solutions for uninstallation (continued)

Problem	Solution
The way to remove inactive managed systems (systems whose status is OFFLINE) from the Navigator tree in the portal is not obvious.	Use the following steps to remove, but not uninstall, an offline managed system from the Navigator tree: 1. Click the **Enterprise** icon in the Navigator tree. 2. Right-click, and then click **Workspace** > **Managed System Status**. 3. Right-click the offline managed system, and select **Clear offline entry**. To uninstall the monitoring agent, use the procedure described in the *IBM Tivoli Monitoring Installation and Setup Guide*.
IBM Tivoli Monitoring might not be able to generate a unique name for monitoring components because of the truncation of names that the product automatically generates.	If the agent supports multiple instances, IBM Tivoli Monitoring automatically creates a name for each monitoring component by concatenating the subsystem name, host name, and product code separated by colons (*subsystem_name*:*hostname*:KRZ). **Note:** When you monitor a multinode system, such as a database, IBM Tivoli Monitoring adds a subsystem name to the concatenated name, typically a database instance name. The length of the name that IBM Tivoli Monitoring generates is limited to 32 characters. Truncation can result in multiple components having the same 32-character name. If this problem happens, shorten the *hostname* portion of the name as follows: 1. Open the configuration file for the monitoring agent, which is located in the following path: • **On Windows:** *install_dir*\tmaitm6\K*product_code*CMA.INI. For example, the product code for the Monitoring Agent for Windows OS is NT. The file name is `KNTCMA.INI`. • **On UNIX and Linux:** `itm_home/config/product_code.ini` and `product_code.config`. For example, the file names for the Monitoring Agent for UNIX OS is `ux.ini` and `ux.config`. 2. Find the line that begins with `CTIRA_HOSTNAME=`. 3. Type a new name for host name that is a unique, shorter name for the host computer. The final concatenated name including the subsystem name, new host name, and KRZ, cannot be longer than 32 characters. **Note:** You must ensure that the resulting name is unique with respect to any existing monitoring component that was previously registered with the Tivoli Enterprise Monitoring Server. 4. Save the file. 5. Restart the agent.
The software inventory tag for the agent on UNIX and Linux systems is not removed during uninstallation of the agent.	After uninstalling the agent, manually remove the file named `full name of agent.cmptag` from the `$CANDLEHOME/properties/version/` directory.

Table 4. General problems and solutions for uninstallation (continued)

Problem	Solution
When the agent is installed using group deployment, deploygroup was run multiple times. The group deployment starts and completes successfully, but there were multiple entries in the Deploy Status Summary workspace on the Tivoli Enterprise Portal. When the command tried to install multiple times, the additional installations were queued and then were in failed state though the agent was deployed successfully. **Note:** • When the bundle group contains a single bundle and the deploy group contains more than one member (managed system of the same type as AIX® or Linux), the deployment is successful on both systems. • When the bundle group contains more than one bundle and the deploy group contains single or multiple members, the deployment will be executed on each group member (managed system) depending on the members present in the bundle group and deploy group. • The command creates a transaction for each XX bundle for each target system; the bundle matching the operating system for the deployment member is processed successfully; and remaining transactions were in a queued or failed state.	There is no solution at this time.

After upgrading to Fix Pack 2 and configuring the Oracle Database Extended agent silently, the agent cannot connect to the database, which is specified by the **KRZ_CONN_STR** parameter in the silent configuration response file.	The **KRZ_CONN_TYPE** parameter specifies the connection type. The Advanced type is required to configure a database connection with the KRZ_CONN_STR connection string. For example:
	`KRZ_CONN_STR.connection=//host:port/service`
	`KRZ_CONN_TYPE.connection=Advanced`
	
	To solve the problem, update the silent configuration response file to specify the **KRZ_CONN_TYPE** parameter and reconfigure the agent instance silently. For example:
	`# cat /tmp/silent_config.txt`
	`############ PRIMARY TEMS CONFIGURATION ############`
	`CMSCONNECT=YES`
	`HOSTNAME=tivp055.cn.ibm.com`
	`NETWORKPROTOCOL=ip.pipe`
	`IPPIPEPORTNUMBER=1918`
	`############ Database connection config ############`
	`INSTANCE=inst1`
	`KRZ_CONN_USERID=tivoli`
	`KRZ_CONN_PASSWORD=password`
	`KRZ_INSTANT_CLIENT_LIBPATH=/opt/IBM/oci`
	`KRZ_DYNAMIC_LISTENER=FALSE`
	`###`
	`KRZ_CONN_STR.asm=//tivx010:1521/+ASM`
	`KRZ_CONN_USERID.asm=sys`
	`KRZ_CONN_PASSWORD.asm=oracle`
	`KRZ_CONN_MODE.asm=SYSDBA`
	`KRZ_CONN_TYPE.asm=Advanced`
	
	`# /opt/IBM/ITM/bin/itmcmd config -A -o inst1`
	`-p /tmp/silent_config.txt rz`

Table 4. General problems and solutions for uninstallation (continued)

Problem	Solution
When you configure the Oracle Database Extended agent with an Oracle Instant Client library path and click **Next**, the following information message is displayed: `Cannot find README file. The Oracle Instant Client directory is invalid.`	This problem occurs because the agent cannot find the README file in the specified Oracle Instant Client library path. Typically, the Oracle Instant Client package includes a `BASIC_README` or `BASIC_LITE_README` file. But, on some operating systems, such as S/390 Linux and Power Linux, the Oracle Instant Client package might not include the readme files. The message can be ignored if the Oracle Instant Client library path is correct; it does not stop configuration of the agent. You can download and use the latest Oracle Instant Client package (http://www.oracle.com/technetwork/database/features/instant-client/index-097480.html).

Remote deployment troubleshooting

Problems can occur with remote deployment and removal of agent software using the Agent Remote Deploy process.

Table 5 contains problems and solutions related to remote deployment.

Table 5. Remote deployment problems and solutions

Problem	Solution
While you are using the remote deployment feature to install the IBM Tivoli Composite Application Manager Extended Agent for Oracle Database, an empty command window is displayed on the target computer. This problem occurs when the target of remote deployment is a Windows computer. (For more information about the remote deployment feature, see the *IBM Tivoli Monitoring Installation and Setup Guide*.)	Do not close or modify this window. It is part of the installation process and is dismissed automatically.
The removal of a monitoring agent fails when you use the remote removal process in the Tivoli Enterprise Portal desktop or browser.	This problem might occur when you attempt the remote removal process immediately after you have restarted the Tivoli Enterprise Monitoring Server. You must allow time for the monitoring agent to refresh its connection with the Tivoli Enterprise Monitoring Server before you begin the remote removal process.

Table 5. Remote deployment problems and solutions (continued)

Problem	Solution
One of the following two messages is displayed when you configure a remote agent instance: • Configuring through the portal: `KFWITM290E An unexpected error occurred. The current task was cancelled.` • Configuring through the command line: `An unexpected system error occurred while executing the addSystem command`	Follow these guidelines when you configure a remote agent instance: • Configuring through the portal: – If the number of the database connections is less than or equal to 10, the total number of user input characters must not exceed 1000. – If the number of the database connections is less than 20 and more than 10, the total number of user input characters must not exceed 750. – If the number of the database connections is more than 20, the total number of user input characters must not exceed 500. The user input includes agent instance name, user ID, password, Oracle instance client path, Oracle home, Oracle database connection name, Oracle database connection string, and Oracle Alert Log path. • Configuring through the command line: When you configure remotely using the `tacmd -t` *`pc`* `-n` *`node`* `-p` *`properties`* command, the length of the *properties* string must not exceed the maximum length of 2500 characters.
After you add the agent bundle to the Tivoli Enterprise Monitoring Server, the IBM Tivoli Composite Application Manager Extended Agent for Oracle Database is still not listed in the Select a Monitoring Agent window.	Deploy the Oracle Database Extended agent through the command line.
After you deploy the Oracle Database Extended agent remotely, the agent does not connect to the same Tivoli Enterprise Monitoring Server with the OS agent.	This problem occurs when the target of the remote deployment is a 64-bit Windows workstation, and the OS agent is 64-bit version. To solve the problem, log in the Windows workstation where the Oracle Database Extended agent is installed remotely. Reconfigure the Oracle Database Extended agent with the correct **`Agent-to-TEMS`** parameter.

Table 5. Remote deployment problems and solutions (continued)

Problem	Solution

Remotely deploying a 64-bit Oracle Database Extended agent to a Windows 64-bit computer with a Tivoli Monitoring V6.2.3 Fix Pack 1 OS agent installed by using the command line failed with the following return message: `KDY0005E The component RZ is not installed on AC. The Agent HOSTNAME bundle requires that this component be present for the installation to proceed.`	1. On the Tivoli Enterprise Monitoring Server computer where the Oracle Database Extended agent bundle was added, add the KAC bundle version of 062301000 from the IBM Tivoli Monitoring V6.2.3 Fix Pack 1 Windows images into the Tivoli Enterprise Monitoring Server depot.
	Examples:
	• For the Tivoli Enterprise Monitoring Server on Windows systems:
	`C:\IBM\ITM> tacmd addbundles -t AC -i C:\images\ITM623FP1\WINDOWS\Deploy`
	• For the Tivoli Enterprise Monitoring Server on Linux systems:
	`/opt/IBM/ITM/bin/tacmd addbundles -t AC -i /images/ITM623FP1/WINDOWS/Deploy`
	2. (Optional) Check whether an orphan process named SETUP.EXE is on the OS agent computer and stop this process.
	3. Run the **tacmd** command to remotely deploy the Oracle Database Extended agent again.

Agent troubleshooting

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

Table 6 contains problems and solutions that can occur with the agent after it has been installed.

Table 6. Agent problems and solutions

Problem	Solution
Log data accumulates too rapidly.	Check the RAS trace option settings, which are described in "Setting RAS trace parameters by using the GUI" on page 9. The trace option settings that you can set on the `KBB_RAS1=` and `KDC_DEBUG=` lines potentially generate large amounts of data.
When using the **itmcmd agent** commands to start or stop this monitoring agent, you receive the following error message: `MKCIIN0201E Specified product is not configured.`	Include the command option **-o** to specify the instance to start or stop. The instance name must match the name used for configuring the agent. For example: `./itmcmd agent -o Test1 start rz` For more information about using the itmcmd commands, see the *IBM Tivoli Monitoring Command Reference*.

Table 6. Agent problems and solutions (continued)

Problem	Solution
A configured and running instance of the monitoring agent is not displayed in the Tivoli Enterprise Portal, but other instances of the monitoring agent on the same system are displayed in the portal.	IBM Tivoli Monitoringproducts use Remote Procedure Call (RPC) to define and control product behavior. RPC is the mechanism that a client process uses to make a subroutine call (such as GetTimeOfDay or ShutdownServer) to a server process somewhere in the network. Tivoli processes can be configured to use TCP/UDP, TCP/IP, SNA, and SSL as the protocol (or delivery mechanism) for RPCs that you want. IP.PIPE is the name given to Tivoli TCP/IP protocol for RPCs. The RPCs are socket-based operations that use TCP/IP ports to form socket addresses. IP.PIPE implements virtual sockets and multiplexes all virtual socket traffic across a single physical TCP/IP port (visible from the **netstat** command). A Tivoli process derives the physical port for IP.PIPE communications based on the configured, well-known port for the hub Tivoli Enterprise Monitoring Server. (This well-known port or BASE_PORT is configured by using the 'PORT:' keyword on the **KDC_FAMILIES / KDE_TRANSPORT** environment variable and defaults to '1918'.) The physical port allocation method is defined as (BASE_PORT + 4096*N), where N=0 for a Tivoli Enterprise Monitoring Server process and N={1, 2, ..., 15} for another type of monitoring server process. Two architectural limits result as a consequence of the physical port allocation method: • No more than one Tivoli Enterprise Monitoring Server reporting to a specific Tivoli Enterprise Monitoring Server hub can be active on a system image. • No more than 15 IP.PIPE processes can be active on a single system image. A single system image can support any number of Tivoli Enterprise Monitoring Server processes (address spaces) if each Tivoli Enterprise Monitoring Server on that image reports to a different hub. By definition, one Tivoli Enterprise Monitoring Server hub is available per monitoring enterprise, so this architecture limit has been simplified to one Tivoli Enterprise Monitoring Server per system image. No more than 15 IP.PIPE processes or address spaces can be active on a single system image. With the first limit expressed above, this second limitation refers specifically to Tivoli Enterprise Monitoring Agent processes: no more than 15 agents per system image. Continued on next row.

Table 6. Agent problems and solutions (continued)

Problem	Solution
Continued from previous row.	This limitation can be circumvented (at current maintenance levels, IBM Tivoli Monitoring V6.1, Fix Pack 4 and later) if the Tivoli Enterprise Monitoring Agent process is configured to use the EPHEMERAL IP.PIPE process. (This process is IP.PIPE configured with the 'EPHEMERAL:Y' keyword in the **KDC_FAMILIES / KDE_TRANSPORT** environment variable). The number of ephemeral IP.PIPE connections per system image has no limitation. If ephemeral endpoints are used, the Warehouse Proxy agent is accessible from the Tivoli Enterprise Monitoring Server associated with the agents using ephemeral connections either by running the Warehouse Proxy agent on the same computer or by using the Firewall Gateway feature. (The Firewall Gateway feature relays the Warehouse Proxy agent connection from the Tivoli Enterprise Monitoring Server computer to the Warehouse Proxy agent computer if the Warehouse Proxy agent cannot coexist on the same computer.)
In the krzagent log file, the following message is repeatedly displayed: `4A6A1D11.1C79-9:kraahbin.cpp, 519,"WriteRow") Error writing to file` *`intall_dir`*`/` *`arch`*`/rz/hist/` *`instance_name`*`/KRZ` *`attribute_group_ID`* `errno = 1` Check the size of the KRZ`attribute_group_ID` historical file, and the file size exceeds the file size limitation of the file system, for example, 2G on Linux for System x® RH4. This problem also causes high CPU usage, and might cause the agent to fail.	Use the following steps to solve this problem: 1. Remove the historical file that exceeds the file size limitation. 2. Change the history collection configuration to reduce the historical file size: • Change the value of the Collection Interval attribute to a larger collection period. This change can be used to reduce the amount of data that is kept on disk by collecting less historical data. For example, from the default value of 15 minutes to 1 hour. • Change the value of the Warehouse Interval attribute to a shorter retention period. This change can be used to reduce the amount of data that is kept on disk after successfully uploading to the warehouse. For example, from the default value of 1 day to 1 hour.
A 0 (zero) is displayed in the following columns for the monitored Oracle RDBMS 10g instance: • The Unused Capacity column and the % Free column in the ASM Disk Group Capacity workspace under the RDBMS subnode • The Unused Capacity column and the % Free column in the ASM Disk Capacity workspace under the RDBMS subnode	0 is the value that is reported by the Oracle database. The value of the free_mb column in the Oracle views, v$asm_disk and v$asm_diskgroup, is 0 if the value is queried from a database instance. This problem exists for Oracle RDBMS 10g. For detailed information, see Oracle metalink 294325.1. The free_mb attribute value is the free space in an ASM DISKGROUP (V$ASM_DISKGROUP) or in an ASM DISK (V$ASM_DISK). Configure the agent and connect it to an ASM instance, and the correct values are displayed in the Unused Capacity columns and % Free column in the ASM Disk Group Capacity workspace under ASM subnode, and the Unused Capacity column and % Free column in the ASM Disk Capacity workspace under ASM subnode.

Table 6. Agent problems and solutions (continued)

Problem	Solution
The memory usage of the Oracle Database Extended agent processes, krzstart or krzclient, increases continually when the Oracle Database Extended agent instance has inactive database connections.	Configure Oracle Database Extended agent instances with the Oracle database or Oracle instant client version 11.1.0.6 or later.
Processes of the Oracle Database Extended agent consume high CPU.	• Writing a large amount of data to historical data collection files might consume CPU and I/O. To solve the problem, decrease the historical data collection for attribute groups that require large system resources, for example, the KRZDAFIO and KRZSEGSTAT attribute groups. You can also reduce the frequency of historical data collection by changing the value of the Collection Interval attribute to a larger collection period, for example, from the default value of 15 minutes to 1 hour. • Detailed RAS1 tracing might cause CPU and I/O overhead, and impact the performance of the monitoring agent. Check whether the RAS1 tracing is set to a detailed option, for example, `KBB_RAS1=ERROR (UNIT:krz ALL)`. Restore the RAS1 tracing to the minimal level of `KBB_RAS1=ERROR` after problem diagnosis is completed, or change the trace level to `KBB_RAS1=ERROR (UNIT: krz ERROR)`, and restart the Oracle Database Extended agent.
I cannot find my queries.	Agents that include subnodes display their queries within the element in the Query Editor list that represents the location of the attribute group. The queries are most often found under the name of the subnode, not the name of the agent.

Table 6. Agent problems and solutions (continued)

Problem	Solution
Historical data collection and the situation that is using the TOP SQL attribute group do not work.	To enable historical collection for the TOP SQL attribute group, configure historical collection: 1. In the navigation pane, click the TOP SQL attribute group. 2. Click the **Filter** tab, and enter the information in the table for the following filters: Begin Hour Before Current®, End Hour Before Current, Order By, and Row Order. Define a situation to monitor the TOP SQL workspace, and add the following additional attributes to the situation formula: Begin Hour Before Current, End Hour Before Current, Order By, and Row Order. For attribute descriptions, see "Attributes in each attribute group" in the Reference guide for the Oracle Extended agent. The following workspaces use the Order By attribute value indicated: • Top SQL by Elapse Time: elapse_time_delta • Top SQL by CPU Time: cpu_time_delta • Top SQL by buffer gets: buffer_gets_delta • Top SQL by disk reads: disk_reads_delta • Top SQL by executions: executions_delta • Top SQL by parse calls: parse_calls_delta • Top SQL by sharable memory: sharable_mem • Top SQL by version count: version_count • Top SQL by cluster wait: clwait_delta

Table 6. Agent problems and solutions (continued)

Problem	Solution
After you upgrade to V6.3.1 Fix Pack 1, the subnode ID is truncated from 25 characters to 24 characters. The original subnode with 25 characters changes to gray, and the new subnode with 24 characters is displayed.	This behavior is expected. In 6.3.1-TIV-ITM_KRZ-IF0001 or later versions, the agent changed the maximum subnode ID from 25 characters to 24 characters to avoid the following problem, which is a known APAR for IBM Tivoli Monitoring V6.2.2 Fix Pack 4: "pure event cannot fire when subnode name length is equal to or greater than 32 characters." To avoid truncation of the subnode from 25 characters to 24 characters, use one of the following two options: • Option 1: Set the following variable to a value of 25 in the agent environment variable files: **KRZ_MAX_SUBNODE_ID_LENGTH**=25. After you upgrade, the default value is 24. **Note:** – On UNIX or Linux operating systems, the environment variable files include `installdir/config/rz.ini`and `installdir/config/rz_instance.config`. – On Windows operating systems, the environment variable files include `installdir\TMAITM6\KRZENV_instance` (32-bit) or `installdir\TMAITM6_X64\KRZENV_instance` (64-bit). • Option 2: Reduce the length of the database connection name, agent instance name, or host name; or, see “Changing default naming conventions for database connections” in the Installation and Configuration Guide for the Oracle Database Extended agent for information.
The Oracle Database Extended agent reports the error message `ORA-03135: connection lost contact` and the subnode that represents the monitored database connection is still offline in the Tivoli Enterprise Portal after the monitored database recovers to active status.	Oracle Database might disconnect all active connections and reject new connections under certain circumstances. For example, when resources such as CPU are exhausted in the Oracle Server. To solve the problem, ensure that the Oracle Database and Oracle Listener are open to the new connection and restart the agent instance.

Workspace troubleshooting

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

Table 7 contains problems and solutions related to workspaces.

Table 7. Workspace problems and solutions

Problem	Solution
The process application components are available, but the Availability status shows PROCESS_DATA_NOT_ AVAILABLE.	This problem occurs because the PerfProc performance object is disabled. When this condition exists, IBM Tivoli Monitoring cannot collect performance data for this process. Use the following steps to confirm that this problem exists and to resolve it: 1. In the Windows **Start** menu, click **Run**. 2. Type `perfmon.exe` in the **Open** field of the Run window. The Performance window is displayed. 3. Click the plus sign (+) in the toolbar located above the right pane. The Add Counters window is displayed. 4. Look for **Process** in the **Performance object** menu. 5. Complete one of the following actions: • If you see **Process** in the menu, the PerfProc performance object is enabled and the problem is coming from a different source. You might need to contact IBM Software Support. • If you do not see **Process** in the menu, use the Microsoft utility from the Microsoft.com Operations website to enable the PerfProc performance object. The **Process** performance object becomes visible in the **Performance object** menu of the Add Counters windows, and IBM Tivoli Monitoring is able to detect Availability data. 6. Restart the monitoring agent.
The name of the attribute does not display in a bar chart or graph view.	When a chart or graph view that includes the attribute is scaled to a small size, a blank space is displayed instead of a truncated name. To see the name of the attribute, expand the view of the chart until sufficient space is available to display all characters of the attribute name.
At the bottom of each view, you see the following Historical workspace KFWITM220E error: `Request failed during execution`.	Ensure that you configure all groups that supply data to the view. In the Historical Configuration view, ensure that data collection is started for all groups that supply data to the view.

Table 7. Workspace problems and solutions (continued)

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

Table 7. Workspace problems and solutions (continued)

Problem	Solution
No data is returned in any workspace for a certain period of time, for example, 1 minute.	This problem occurs because no request is processed until the previous request completes or exceeds the maximum time of data collection. Possible reasons for this problem are that the database is too busy to return data, or problems occur in the Oracle database, for example, SQL execution problems. Check the database status and tune the database, or solve the problems in the Oracle database. If the response time of data collection requests is still not acceptable after tuning the database, you can change the maximum time of data collection. To control the maximum time of data collection for all attribute groups, set the **CDP_COLLECTION_TIMEOUT** environment variable, the default value of which is 60 seconds. When the value for maximum time is longer, you are more likely to get data for a special attribute group that takes a long time to respond. But you are also more likely to block other data collection requests in that period of time. To avoid blocking data collection requests from a different database connection within the same agent instance, configure the database connection with this problem to a separate agent instance.

Situation troubleshooting

Problems can occur with situations and situation configuration.

Table 8 contains problems and solutions for situations.

Table 8. Situation problems and solutions

Problem	Solution
Monitoring activity requires too much disk space.	Check the RAS trace logging settings that are described in "Setting RAS trace parameters by using the GUI" on page 9. For example, trace logs grow rapidly when you apply the `ALL` logging option.
Monitoring activity requires too many system resources.	See the information about disk capacity planning for historical data in the Reference guide for the agent for a description of the performance impact of specific attribute groups. If possible, decrease your use of the attribute groups that require greater system resources.
A formula that uses mathematical operators appears to be incorrect. For example, if you were monitoring a Linux system, the formula that calculates when **Free Memory** falls under 10 percent of **Total Memory** does not work: `LT #'Linux_VM_Stats.Total_Memory' / 10`	This formula is incorrect because situation predicates support only logical operators. Your formulas cannot have mathematical operators. **Note:** The Situation Editor provides alternatives to math operators. In the example, you can select the **% Memory Free** attribute and avoid the need for math operators.

Table 8. Situation problems and solutions (continued)

Problem	Solution
You want to change the appearance of situations when they are displayed in the navigation tree.	1. Right-click an item in the navigation tree. 2. Click **Situations** in the menu. The Situation Editor window is displayed. 3. Select the situation that you want to modify. 4. Use the **State** menu in the lower right of the window to set the status and appearance of the Situation when it triggers. **Note:** The **State** setting is not related to severity settings in the Tivoli Enterprise Console.
When a situation is triggered in the Event Log attribute group, it remains in the Situation Event Console as long as the event ID entry is present in the Event Log workspace. When this event ID entry is removed from the Event Log workspace on the Tivoli Enterprise Portal, the situation is also cleared even if the actual problem that caused the event is not resolved, and the event ID entry is also present in the Windows Event Viewer.	A timeout occurs on the cache of events for the NT Event Log group. Increase the cache time of Event Log collection to meet your requirements by adding the following variable and timeout value to the K*pc*ENV file for the agent (where *pc* is the two-letter product code): `CDP_NT_EVENT_LOG_CACHE_TIMEOUT=3600` This variable determines how long events from the NT Event Log are kept.
For a situation that uses the 'MISSING' operator and is distributed to a remote agentless monitoring subnode, no indication is displayed in the Tivoli Enterprise Portal or in the Situation Event Console when the situation becomes true.	The MISSING predicate is currently not supported on subnodes. If a situation with a MISSING predicate is distributed to a subnode, the agent cannot tell which subnode or node the event is occurring on. It inserts the system name as the origin node for the event and returns. When the event reaches the Tivoli Enterprise Portal Server, the origin node does not match the system name of the subnode where the situation is associated, so the event is dropped.
The situation for a specific agent is not visible in the Tivoli Enterprise Portal.	Open the Situation Editor. Access the All managed servers view. If the situation is not displayed, confirm that the monitoring server has been seeded for the agent. If not, seed the server, as described in the *IBM Tivoli Monitoring Installation and Setup Guide*.
The monitoring interval is too long.	Access the Situation Editor view for the situation that you want to modify. Check the **Sampling interval** area in the **Formula** tab. Adjust the time interval as required.
The situation did not activate at startup.	Manually recycle the situation as follows: 1. Right-click the situation and select **Stop Situation**. 2. Right-click the situation and select **Start Situation**. **Note:** You can permanently avoid this problem by selecting the **Run at Startup** check box of the Situation Editor view for a specific situation.
The situation is not displayed.	Click the **Action** tab and check whether the situation has an automated corrective action. This action can occur directly or through a policy. The situation might be resolving so quickly that you do not see the event or the update in the graphical user interface.
An Alert event did not occur even though the predicate was correctly specified.	Check the logs, reports, and workspaces.
A situation fires on an unexpected managed object.	Confirm that you distributed and started the situation on the correct managed system.

Table 8. Situation problems and solutions (continued)

Problem	Solution
The product did not distribute the situation to a managed system.	Click the **Distribution** tab and check the distribution settings for the situation.
The situation does not fire.	This problem can be caused when incorrect predicates are present in the formula that defines the situation. For example, the managed object shows a state that normally triggers a monitoring event, but the situation is not true because the wrong attribute is specified in the formula. In the **Formula** tab, analyze predicates as follows: 1. Click the **fx** icon in the upper-right corner of the **Formula** area. The Show formula window is displayed. a. Confirm the following details in the **Formula** area at the top of the window: • The attributes that you intend to monitor are specified in the formula. • The situations that you intend to monitor are specified in the formula. • The logical operators in the formula match your monitoring goal. • The numeric values in the formula match your monitoring goal. b. (Optional) Select the **Show detailed formula** check box in the lower left of the window to see the original names of attributes in the application or operating system that you are monitoring. c. Click **OK** to dismiss the Show formula window. 2. (Optional) In the **Formula** area of the **Formula** tab, temporarily assign numeric values that immediately trigger a monitoring event. The triggering of the event confirms that other predicates in the formula are valid. **Note:** After you complete this test, you must restore the numeric values to valid levels so that you do not generate excessive monitoring data based on your temporary settings. For additional information about situations that do not fire, see "Situations are not firing" in the *IBM Tivoli Monitoring Troubleshooting Guide*.
Situation events are not displayed in the Events Console view of the workspace.	Associate the situation with a Navigator item. **Note:** The situation does not need to be displayed in the workspace. It is sufficient that the situation is associated with any Navigator item.

Table 8. Situation problems and solutions (continued)

Problem	Solution
You do not have access to a situation.	**Note:** You must have administrator privileges to complete these steps. 1. Click **Edit** > **Administer Users** to access the Administer Users window. 2. In the **Users** area, select the user whose privileges you want to modify. 3. In the **Permissions** tab, **Applications** tab, and **Navigator Views** tab, select the permissions or privileges that correspond to the user role. 4. Click **OK**.
A managed system seems to be offline.	1. Select **Physical View** and click the Enterprise Level of the navigator tree. 2. Click **View** > **Workspace** > **Managed System Status** to see a list of managed systems and their status. 3. If a system is offline, check network connectivity and the status of the specific system or application.
The override situation cannot be fired when the scope of the override threshold is not included in the original threshold. For example: The original threshold is 'VALUE > 80%' and the override threshold is 'VALUE > 50%.	The **KRZ_SQL_PREFILTER** parameter controls whether the agent combines the filter information in the SQL query that is sent to the Oracle database for data processing. The default value is `TRUE`. Complete the following steps: 1. Open the configuration file: On Windows systems, the file path of the configuration file is *install_dir*`\TMAITM6\KRZENV_`*InstanceName*. On UNIX and Linux systems, the file path of the configuration file is *install_dir*`/config/rz.ini`. Where: *install_dir* Installation directory of the Oracle Database Extended agent. *InstanceName* Name of the agent instance. 2. Set the **KRZ_SQL_PREFILTER** environment variable to `FALSE`. 3. For the change to take effect, restart the agent instance.

Take Action commands troubleshooting

Problems can occur with Take Action commands.

Table 9 contains problems and solutions that can occur with Take Action commands.

When each Take Action command runs, it generates a log file listed in Table 2 on page 4.

Table 9. Take Action commands problems and solutions

Problem	Solution
Take Action commands often require several minutes to complete.	Allow several minutes. If you do not see a message advising you of completion, try to run the command manually.
Situations fail to trigger Take Action commands.	Attempt to manually run the Take Action command in the Tivoli Enterprise Portal. If the Take Action command works, look for configuration problems in the situation. See "Situation troubleshooting" on page 30. If the Take Action command fails, for general information about troubleshooting Take Action commands, see the *IBM Tivoli Monitoring Troubleshooting Guide*.
Take Action commands fail, and the return codes are not zero.	Click the **TakeAction Result** navigator item to access the TakeAction Status workspace, and check the detailed message from the TakeAction PL/SQL Status view or the TakeAction SELECT status view. A value of -2 in the Action App Return Code column indicates a timeout issue. To solve the timeout problem, increase the value of the **CDP_DP_ACTION_TIMEOUT** environment variable. However, if the action timeout is too large, any subsequent command or situation request might be blocked.
After you issue the RDB_Execute_SELECT Take Action command to query data from the monitored Oracle database, no query result data is displayed in the TakeAction SELECT Status view. Only the Success value is displayed in the Action Results column.	This problem occurs when one of the Oracle instances did not respond in the specific time, and the Oracle Database Extended agent is configured with this instance in the connection string. To solve the problem, check and ensure that all the Oracle instances that are specified in the connection string work correctly to establish the database connection. Then run the Take Action command again.

Chapter 4. Support information

If you have a problem with your IBM software, you want to resolve it quickly.

IBM provides the following ways for you to obtain the support you need:

Online

The following websites contain troubleshooting information:

- Go to the IBM Software Support website (http://www.ibm.com/support/entry/portal/software) and follow the instructions.
- Go to the IBM Tivoli Distributed Monitoring and Application Management Wiki (http://www.lotus.com/ldd/tivmonitorwiki.nsf). Feel free to contribute to this wiki.

IBM Support Assistant

The IBM Support Assistant (ISA) is a free local software serviceability workbench that helps you resolve questions and problems with IBM software products. The ISA provides quick access to support-related information and serviceability tools for problem determination. To install the ISA software, go to the IBM Support Assistant website (http://www.ibm.com/software/support/isa).

Chapter 5. Informational, warning, and error messages overview

Messages relay information about how the system or application is performing and can alert you to exceptional conditions when they occur.

Messages are sent to an output destination, such as a file, database, or console screen.

If you receive a warning or error message, you can do one of the following:

- Follow the instructions listed in the Detail window of the message if this information is included there.
- Consult the message details listed in this topic to see what action you can take to correct the problem.
- Consult the message log for message ID, text, time, and date of the message, as well as other data you can use to diagnose the problem.

Message format

The message format contains a message ID and text, an explanation, and an operator response.

IBM Tivoli Composite Application Manager Extended Agent for Oracle Database messages have the following format:

Message ID and text
Explanation
Operator Response

The message ID has the following format:

`CCC####severity`

where:

CCC Prefix that indicates the component to which the message applies. The component is one of the following:

KRZ General Oracle Database Extended agent messages

Number of the message

severity
Severity of the message. There are three levels of severity:

I Informational messages provide feedback about something that happened in the product or system that might be important. These messages can provide guidance when you are requesting a specific action from the product.

W Warning messages call your attention to an exception condition. The condition might not be an error but can cause problems if not resolved.

E Error messages indicate that an action cannot be completed because of a user or system error. These messages require user response.

The *Text* of the message provides a general statement regarding the problem or condition that occurred. The *Explanation* provides additional information about the message and the possible cause for the condition. The *Operator Response* provides actions to take in response to the condition, particularly for error messages (messages with the "E" suffix).

Note: Many message texts and explanations contain variables, such as the specific name of a server or application. Those variables are represented in this topic as symbols, such as "&1." Actual messages contain values for these variables.

Agent messages

The following messages apply to IBM Tivoli Composite Application Manager Extended Agent for Oracle Database.

KRZ9000I

`OK, The command succeeded.`

Explanation:

None.

Operator response:

None.

KRZ9001E

`ERROR, The command fails. See the detailed error message in the Action Results column.`

Explanation:

None.

Operator response:

None.

Appendix. ITCAM for Applications documentation library

Various publications are relevant to the use of ITCAM for Applications.

For information about how to access and use the publications, see **Using the publications** (http://pic.dhe.ibm.com/infocenter/tivihelp/v61r1/topic/com.ibm.itm.doc_6.3/common/using_publications.htm).

To find publications from the previous version of a product, click **Previous versions** under the name of the product in the **Contents** pane.

Documentation for this product is in the ITCAM for Applications Information Center (http://publib.boulder.ibm.com/infocenter/tivihelp/v24r1/topic/com.ibm.itcama.doc_7.2.1/welcome_apps721.html):

- Quick Start Guide
- Offering Guide
- Download instructions
- Links to Prerequisites
- Installation and Configuration Guide for each agent
- Link to Reference information for each agent
- Link to Troubleshooting Guide for each agent

Prerequisite publications

To use the information about the agents effectively, you must have some prerequisite knowledge.

See the following information at the IBM Tivoli Monitoring Information Center (http://pic.dhe.ibm.com/infocenter/tivihelp/v61r1/index.jsp) to gain prerequisite knowledge:

- *IBM Tivoli Monitoring Administrator's Guide*
- *IBM Tivoli Monitoring Installation and Setup Guide*
- *IBM Tivoli Monitoring High Availability Guide for Distributed Systems*
- IBM Tivoli Monitoring: Installation and Configuration Guides for the following agents: Operating System agents and Warehouse agents
- IBM Tivoli Monitoring: User's Guides for the following agents: Agentless OS monitors, Log file agent, System p agents, Systems Director base agent
- *IBM Tivoli Monitoring Agent Builder User's Guide*
- *IBM Tivoli Monitoring Command Reference*
- *IBM Tivoli Monitoring: Messages*
- *IBM Tivoli Monitoring Troubleshooting Guide*
- IBM Tivoli Monitoring: References for the following agents: Operating System agents and Warehouse agents
- IBM Tivoli Monitoring: Troubleshooting Guides for the following agents: Operating System agents and Warehouse agents
- *Tivoli Enterprise Portal User's Guide*

Related publications

The publications in related information centers provide useful information.

See the following information centers, which you can find by accessing Tivoli Documentation Central (https://www.ibm.com/developerworks/community/wikis/home?lang=en#!/wiki/Tivoli%20Documentation%20Central):

- Tivoli Monitoring
- Tivoli Application Dependency Discovery Manager
- Tivoli Business Service Manager
- Tivoli Common Reporting
- Tivoli Enterprise Console
- Tivoli Netcool/OMNIbus

Tivoli Monitoring Community on Service Management Connect

Service Management Connect (SMC) is a repository of technical information that is organized by communities.

Access Service Management Connect at https://www.ibm.com/developerworks/servicemanagement.

For information about Tivoli products, see the Application Performance Management community (http://www.ibm.com/developerworks/servicemanagement/apm/index.html).

Connect, learn, and share with Service Management professionals. Get access to developers and product support technical experts who provide their perspectives and expertise. You can use SMC for these purposes:

- Become involved with transparent development, an ongoing, open engagement between other users and IBM developers of Tivoli products. You can access early designs, sprint demonstrations, product roadmaps, and prerelease code.
- Connect one-on-one with the experts to collaborate and network about Tivoli and the Application Performance Management community.
- Read blogs to benefit from the expertise and experience of others.
- Use wikis and forums to collaborate with the broader user community.

Other sources of documentation

You can obtain additional technical documentation about monitoring products from other sources.

See the following sources of technical documentation about monitoring products:

- IBM Integrated Service Management Library (http://www.ibm.com/software/brandcatalog/ismlibrary/) is an online catalog that contains integration documentation as well as other downloadable product extensions.
- IBM Redbook publications (http://www.redbooks.ibm.com/) include Redbooks® publications, Redpapers, and Redbooks technotes that provide information about products from platform and solution perspectives.
- Technotes (http://www.ibm.com/support/entry/portal/software), which are found through the IBM Software Support website, provide the latest information about known product limitations and workarounds.
- Tivoli wikis

  Tivoli Wiki Central (http://www.ibm.com/developerworks/wikis/display/tivoli/Home) is the home for interactive wikis that offer best practices and scenarios for using Tivoli products. The wikis contain white papers contributed by IBM employees, and content created by customers and business partners.

  Two of these wikis are of particular relevance to IBM Tivoli Monitoring:

- Tivoli Distributed Monitoring and Application Management Wiki (http://www-10.lotus.com/ldd/tivmonitorwiki.nsf) provides information about IBM Tivoli Monitoring and related distributed products, including IBM Tivoli Composite Application Manager products.
- Tivoli System z® Monitoring and Application Management Wiki (http://www.ibm.com/developerworks/wikis/display/tivoliomegamon/Home) provides information about the OMEGAMON® XE products, Tivoli NetView® for z/OS®, Tivoli Monitoring Agent for z/TPF, and other System z monitoring and application management products.

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Index

A

agent
  problems and workarounds 22
Application Performance Management community on SMC 40

C

component-level tracing 8
configuration
  problems and workarounds 15
cookies 45

D

detailed 9
developerWorks website 40
documentation
  See publications

F

file-level tracing 8

I

installation
  problems and workarounds 15
Integrated Service Management Library documentation 40

L

list of messages 38

M

messages
  contents 37
  for IBM Tivoli Composite Application Manager Extended Agent for Oracle Database 38
  format 37

O

Oracle Database Extended agent
  performance considerations 30

P

performance considerations 30
prerequisite publications 39
privacy policy 45
problems and workarounds 15
  agent-specific 22
  agent-specific workspaces 28
  configuration 15
  install 15
problems and workarounds *(continued)*
  remote deployment 20
  situations 30
  Take Action commands 34
  workspaces 28
publications 39, 40
  developerWorks website 40
  IBM Tivoli Monitoring 39
  Integrated Service Management Library 40
  prerequisite 39
  Redbooks 40
  related 40
  Service Management Connect 40
  SMC
    See Service Management Connect
  Technotes 40
  wikis 40

R

ras1 11
Redbooks 40
remote deployment
  problems and workarounds 20

S

Service Management Connect 40
situations
  problems and workarounds 30
SMC
  See Service Management Connect
support
  list of messages 38

T

Take Action commands
  problems and workarounds 34
Technotes 40
trace
  turn off 13
  turn on 13
trace levels 8
trace options 8
trace settings 11
tracing 9
troubleshooting 1
  agent-specific 22
  agent-specific workspaces 28
  installation 15
  problems and workarounds 15
  remote deployment 20
  situations 30
  Take Action commands 34
  turn off trace 13
  turn on trace 13
  uninstallation 15
  workspaces 28

W

wikis 40
workarounds 15
workspaces
  problems and workarounds 28

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