Business Monitor

Event flow diagnostic and validation tool for IBM WebSphere Business Monitor

Version 7 Release 0

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This guide helps you learn how events flow from the emitter to the monitor model. Before you begin, ensure that you have successfully installed your monitor model application, created its schema, and completed the common event infrastructure configuration. If you still cannot receive and acknowledge events, this guide helps you determine where events encounter interference and how you can troubleshoot some of the basic problems.

Recording monitor model version information

The sample worksheet lists the items you need to check and explains how to navigate through the administrative console to collect the information. You will use the information to diagnose problems with a version of a monitor model. Use the instructions in this topic for a stand-alone environment. If you are running WebSphere® Business Monitor in a network deployment environment, use the information in the topic "Recording monitor model version information for an installation verification test in a network deployment environment."

About this task

The following table lists the information that you need and where to find it if you are running WebSphere Business Monitor in a stand-alone environment. If you are running WebSphere Business Monitor in a network deployment environment, use the instructions in the topic "Recording monitor model version information for an installation verification test in a network deployment environment." Record this information on the diagnostic information worksheet under the topic "Using the diagnostic information worksheet."

Table 1. Information worksheet descriptions and locations

Check item	Explanation and how to find it
1. Monitor model ID	1. On the administrative console, click **Applications** → **Monitor Models**. 2. In the Model column of the worksheet, record the identifier of the monitor model that you are interested in.
2. Monitor model version	On the same Monitor Models page, in the Version column, record the information in the **Version** field on the worksheet.
3. Monitor model version state	1. On the Monitor Models page, click **Version Details**. 2. On the worksheet, record the information in the **CEI distribution mode** field as the monitor model version state.
4. Is CEI local?	1. On the Monitor Model Version page, click **Change CEI Configuration**. The "Change CEI configuration" page opens. 2. In the Location panel, if **Local** is selected, write yes on the worksheet. If **Remote** is selected, write no on the worksheet.

Table 1. Information worksheet descriptions and locations (continued)

Check item	Explanation and how to find it
5. Remote host name	• If the CEI is**Local**, skip this field. • If the CEI is **Remote**, record the host name from the Location panel on the worksheet.
6. Remote port	• If the CEI is **Local**, skip this field. • If the CEI is **Remote**, record the remote port from the Location panel on the worksheet.
7. User ID	• If the CEI is **Local**, skip this field. • If the CEI is **Remote**, record the user ID that appears on your screen on to the worksheet.
8. Password	• If the CEI is **Local**, skip this field. • If the CEI is **Remote**, record the password for the user ID on the worksheet.
9. Event group profile scope	On the same Change CEI configuration page, note the scope of the checked item in the Event group profile list on the worksheet.
10. Are dashboards enabled?	Click **Applications** → **Monitor Models**. 1. On the Versions Details page for the model version, select the model. 2. If a green check mark is next to **Dashboards enabled**, write yes on the worksheet. Otherwise, write no on the worksheet.
11. Is the schema created?	In the Versions Details page, if a green check mark is displayed next to **Schema created**, write yes on the worksheet. Otherwise, write no on the worksheet.
12. Number of active MC instances	On the Version Details page, note the number of active monitoring context instances on the worksheet.
13. Number of failed instances	1. On the administrative console, click **Troubleshooting** → **Monitor Models** → **Failed Event Sequences**. 2. For the model version, note the number of failed instances on the worksheet. If your model version is not listed, write 0 on the worksheet.
14. Monitor model version moderator target	1. On the administrative console, click **Applications** → **Application Types** → **WebSphere Enterprise Applications**. 2. Click the link for your monitor model. 3. Click **Manage Modules**. 4. From the Module column, find the row that ends with "Moderator." 5. On the worksheet, record the name of the server for that row.

Table 1. Information worksheet descriptions and locations (continued)

Check item	Explanation and how to find it
15. Monitor model version model logic target	1. On the administrative console, click **Applications** → **Application Types** → **WebSphere Enterprise Applications**. 2. Click the link for your monitor model. 3. Click **Manage Modules**. 4. From the Module column, find the row that ends with "ModelLogic." 5. On the worksheet, record the name of the server for that row.

Recording monitor model version information for an installation verification test in a network deployment environment

If you want to use the diagnostic model as an installation verification tool in a network deployment environment, this topic provides the information that you need to enter on the information worksheet.

About this task

Record the information from the table below to the diagnostic information worksheet.

Table 2. Information worksheet descriptions and locations

Check item	Value
1. Monitor model ID	DiagnosticModel
2. Monitor model version	2009-07-02 T 12:00:00
3. Monitor model version state	Active (queue bypass or queue-based, depending on your preference)
4. Is CEI local?	Yes
5. Remote host name	Not applicable
6. Remote port	Not applicable
7. User ID	Not applicable
8. Password	Not applicable
9. Event group profile scope	The CEI cluster name, or the CEI node and server name
10. Are dashboards enabled?	Not applicable
11. Is the schema created?	Not applicable
12. Number of active MC instances	Zero
13. Number of failed instances	Zero
14. Monitor model version moderator target	Moderator cluster, or the moderator node and server name
15. Monitor model version model logic target	Model logic cluster, or the moderator node and server name

Using the diagnostic information worksheet

Use the diagnostic information worksheet to record the information that you collect to diagnose problems with a monitor model version.

About this task

Record information on the diagnostic information worksheet below. For instructions for navigating through the administrative console to find this information, refer to the topic titled, "Recording monitor model version information."

Table 3. Diagnostic model information worksheet

1. Monitor model ID	
2. Monitor model version	
3. Monitor model version state	
4. Is CEI local?	
5. Remote host name	
6. Remote port	
7. User ID	
8. Password	
9. Event group profile scope	
10. Are dashboards enabled?	
11. Is the schema created?	
12. Number of active MC instances	
13. Number of failed instances	
14. Monitor model version moderator target	
15. Monitor model version model logic target	

Before you begin the installation

Before you can install and use the diagnostic model, you must have completed the items in this topic.

Materials

Have these items ready before you install and use the diagnostic model:
- Completed monitor model version information worksheet for the problem monitor model
- Diagnostic monitor model application
- Diagnostic model event emitter

Prerequisite quick confirmation steps

In the log files of your monitor model version moderator target, ensure that you see a message with code CWMRT3005I that lists the monitor model version that you recorded on the information worksheet.

Note: If your monitor model version moderator target is a cluster, check the log files of every member of that cluster for a message with code CWMRT3005I. Then stop and start your monitor model version. If you still do not get the message, do not continue installing the diagnostic model.

Also, ensure that you have the following answers on the information worksheet:

1. Yes, the schema is created. If not, you must create your schema before the monitor model will process events.

2. There are 0 active monitoring context instances. If not, you have active monitoring context instances which means your monitor model version is receiving events.

3. There are 0 failed instances. If you have failed instances, your monitor model version is receiving events.

4. The monitor model version state is either active (monitor model queue-based) or active (monitor model queue bypass). This guide assumes that the model is active and cannot address the problems.

Definitions

The following terms and definitions are associated with WebSphere Business Monitor and the diagnostic model.

monitor configuration owner

The WebSphere Application Server server that owns the overall WebSphere Application Server configuration for the cell. If you are running WebSphere Business Monitor on a stand-alone server, the configuration owner is just that stand-alone server. If you are running WebSphere Business Monitor on a network deployment (ND) cell, the configuration owner is the deployment manager running WebSphere Business Monitor.

CEI target

The WebSphere Application Server cluster or server where the common event infrastructure server is enabled. In the administrative console, you can get a list of the common event infrastructure server targets in a particular cell by clicking **Service Integration** → **Common Event Infrastructure** → **Event Service** → **Event Services**. To see all entries in the Scope column of the table, ensure that the **Scope** field is set to **All scopes**.

Monitor model CEI target
> The common event infrastructure server target that the common event
> infrastructure configuration of a particular monitor model points to.

Monitor model CEI configuration owner
> The WebSphere Application Server that owns the overall WebSphere
> Application Server configuration that contains the monitor model common
> event infrastructure server target.

Installing the diagnostic model

Install the diagnostic model using the administrative console.

Before you begin

Before installing the diagnostic model, read and complete the items on the topic
titled "Before you begin the installation." Also, successfully install your monitor
model application, create the schema, and complete the CEI configuration.

About this task

Using the administrative console, complete the following steps:

1. From the administrative console navigation panel, click **Applications** → **New
   Application** → **New Enterprise Application**. The "Preparing for the application
   installation" page is displayed.
2. In the **Full path** field for either the local or remote file system, specify the
   location of the DiagnosticMM.ear file, and then click **Next**.
3. Click **Detailed**, and then click **Next**.
4. Click **Show me all installation options and parameters**, and then click **Next**.
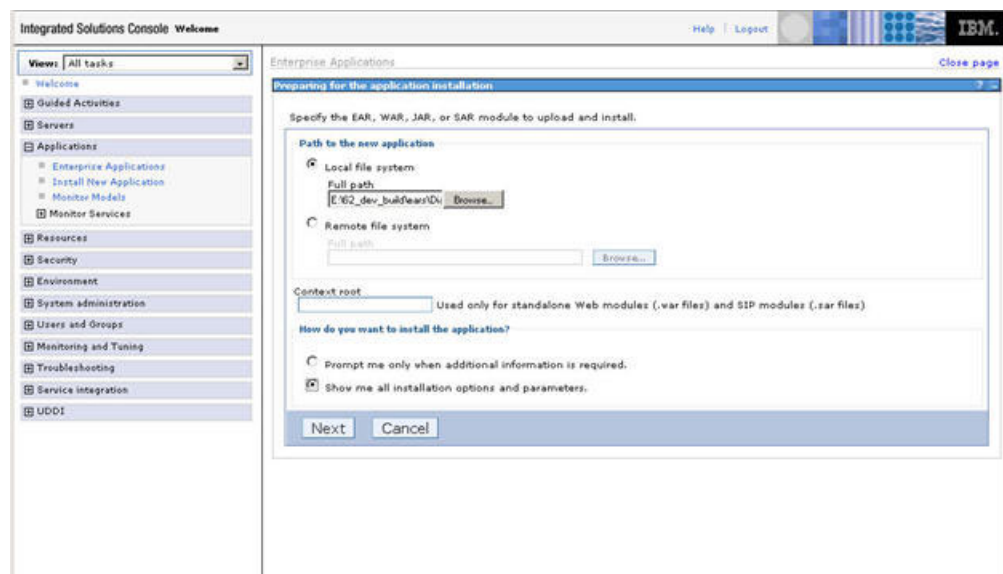
5. Accept all defaults by clicking **Next** on each page until the "Map modules to
   servers" page is displayed.
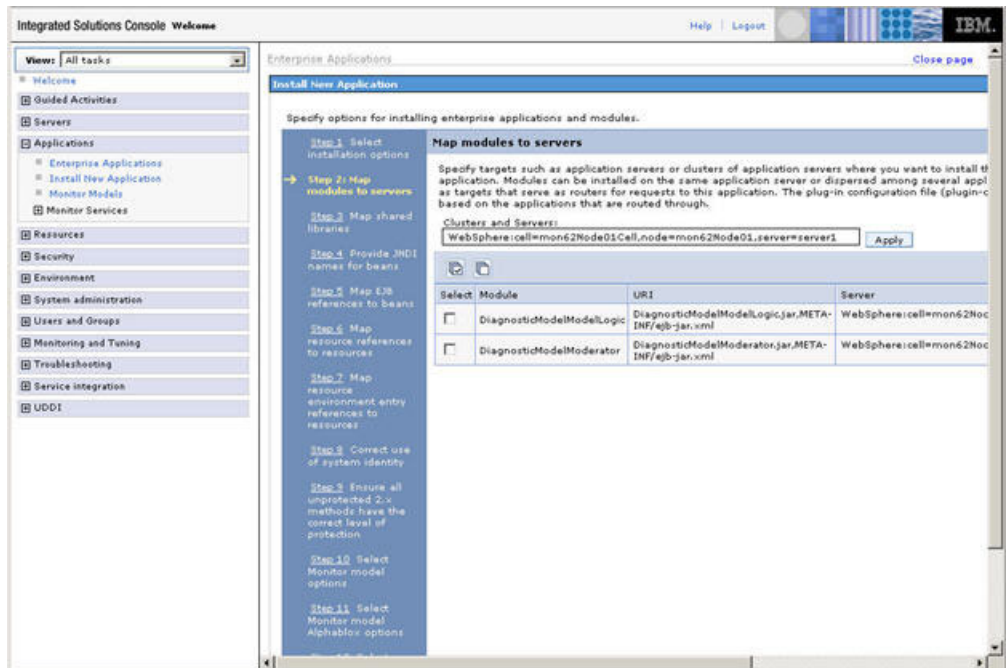
6. On the "Map modules to servers" page, complete the following steps to map the diagnostic model to the targets:

   a. In the **Clusters and Servers** field, enter the monitor model version moderator target and the monitor model version model logic target for the diagnostic model. Refer to the information you recorded on the information worksheet.

   b. Click **Apply**.

   The "Select monitor model CEI options" page is displayed as shown in the following sample:
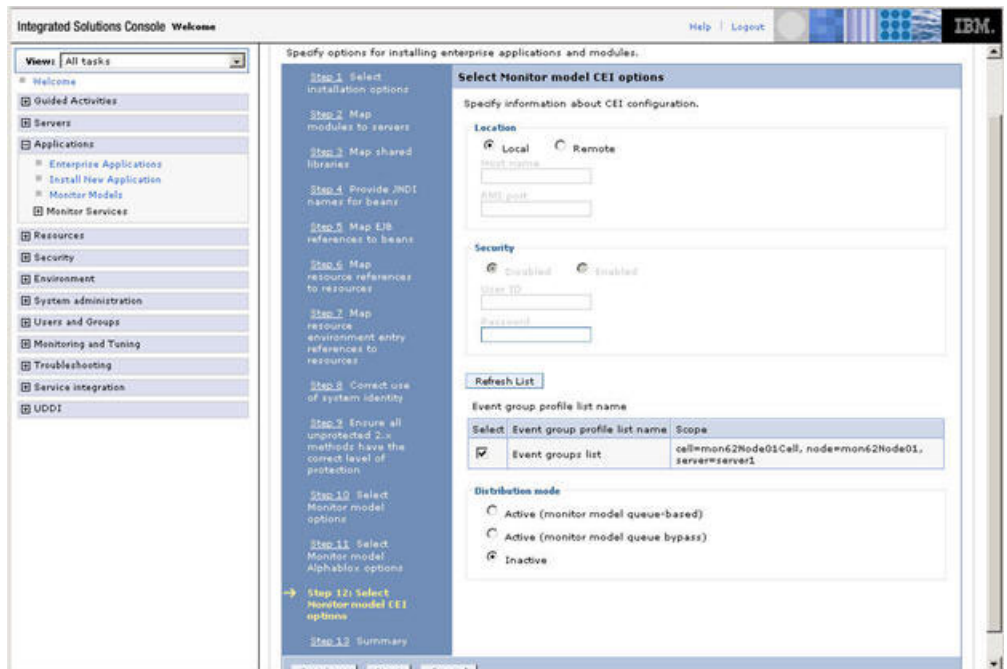
7. On the "Select monitor model CEI options" page, select **Inactive** as the distribution mode, and then click **Next**.

8. To complete the installation, click **Summary**, then **Finish**, and then click **Save**.

9. If you have a network deployment topology, synchronize your cell.

What to do next

Now, you can configure the installed diagnostic model.

Configuring the diagnostic model

After successfully installing the diagnostic model, enter additional information to configure it.

About this task

From the administrative console, complete the following steps:
1. Click **Applications** ➤ **Monitor models**.
2. Select **2009-07-02T12:00:00** next to the model, and then click **Change CEI distribution mode** ➤ **Change CEI configuration**.

3. Using the information on your worksheet, complete the following fields to change the common event infrastructure (CEI) configuration:
   a. If the common event infrastructure server is installed locally in the same WebSphere Application Server network deployment cell, select **Local**. If the common event infrastructure server is installed on a different WebSphere Application Server network deployment cell, select **Remote**.
   b. If the common event infrastructure server is local, skip this field. If the common event infrastructure server is remote, enter the host name of the remote server.
   c. If the common event infrastructure server is local, skip this field. If the common event infrastructure server is remote, enter the RMI (remote) port.
   d. Enter the user ID.
   e. Enter the password.
4. To display an updated set of CEI scopes, click **Refresh List**.
5. For the CEI scope, select the event group profile at the scope that you recorded on the worksheet.
6. Click **OK**.
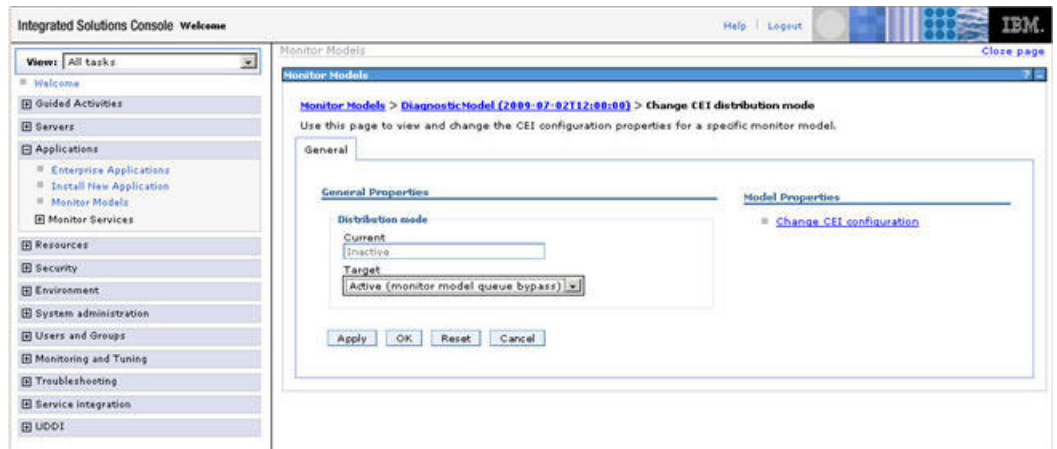
7. On the Change CEI distribution mode page, using the monitor model version state value from your worksheet, select a target.

8. Click **OK**. The common event infrastructure configuration process begins. Open the SystemOut.log file for the monitor model version moderator target. When the process completes, a message similar to the following is displayed in the log to indicate that the configuration is successful:

```
MMIntegration I com.ibm.wbimonitor.lifecycle.MMIntegration_General bindJMS_BATCH CWMLC0804I: *****
 'GENERAL' integration sequence is COMPLETE.  modelID: 'DiagnosticModel
```

9. For a cluster, open the log file for each cluster member. A message similar to the following is displayed:

```
ConsumerDaemo I com.ibm.wbimonitor.mm.DiagnosticModel.20090702120000.moderator.ConsumerDaemonHandlerImpl st
artDaemon() CWMRT3005I: The Monitor Model "DiagnosticModel 20090702120000" is starting consumption on this
server or cluster member in SERIAL_MT mode with reordering=false from *
```
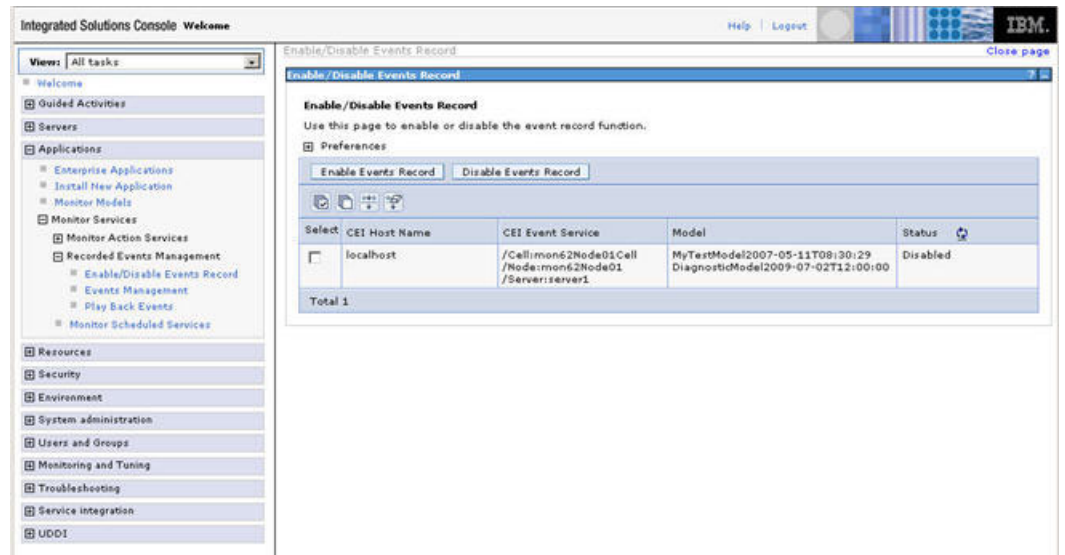
Enabling event recording

To follow events that flow to the diagnostic model, you must turn on event recording.

About this task

To enable event recording, complete the following steps on the administrative console:

1. From the administrative console navigation panel, click **Applications** ▸ **Monitor Services** ▸ **Recorded Events Management** ▸ **Enable/Disable Events Record**.

2. From the list, select the check box of the monitor model common event infrastructure (CEI) server that you are enabling event recording for.

3. Click **Enable Events Record**.

Tracking an event for the diagnostic model

To help determine where and why events are encountering resistance, track an event from where it was emitted to the monitor model input queue.

About this task

To track an event, complete the following steps. If you have trouble following or confirming any of the steps below for tracking the event, use the information in the topic titled "Troubleshooting tips."

1. Stop the diagnostic model.

2. Open a command line prompt and navigate to the `WAS_root`/scripts.wbm/ `DiagnosticModelEmitter` directory.

   Note: If your environment is a WebSphere Test Environment, the correct path to the directory is `WAS_HOME`/runtimes/bi_v7/scripts/wbm/ `DiagnosticModelEmitter`.

3. Run the appropriate command, either diagnosticModelEmitter.bat or diagnosticModelEmitter.sh *<host_name>* *<port_name>* and enter your user ID and password. If your common event infrastructure server is remote, use the related information in your information worksheet as the parameters. If your common event infrastructure server is local, use the host name and RMI port number of your WebSphere Business Monitor configuration owner. In a network deployment cell, the RMI port for your deployment manager is `BOOTSTRAP_ADDRESS`, which you can find by clicking **System Administration** → **Deployment Manager** → **Ports**.

   Note: If you are prompted to add a signer to the trust store, click **Yes**.

   The prompt starts with `*** SSL SIGNER EXCHANGE PROMPT ***` and provides details about the signer.

4. Click **Applications** → **Monitor Services** → **Recorded Events Management** → **Events Management**.

5. Filter events to just those that the diagnostic model receives by expanding the filter criteria (the button with three arrows on the toolbar), selecting the **Show Model Filter** check box, selecting DiagnosticModel (2009-07-02T12:00:00), and clicking **Apply**. Notice that it now says "Filtered total" at the bottom of the table. This message indicates that a filter has been applied.
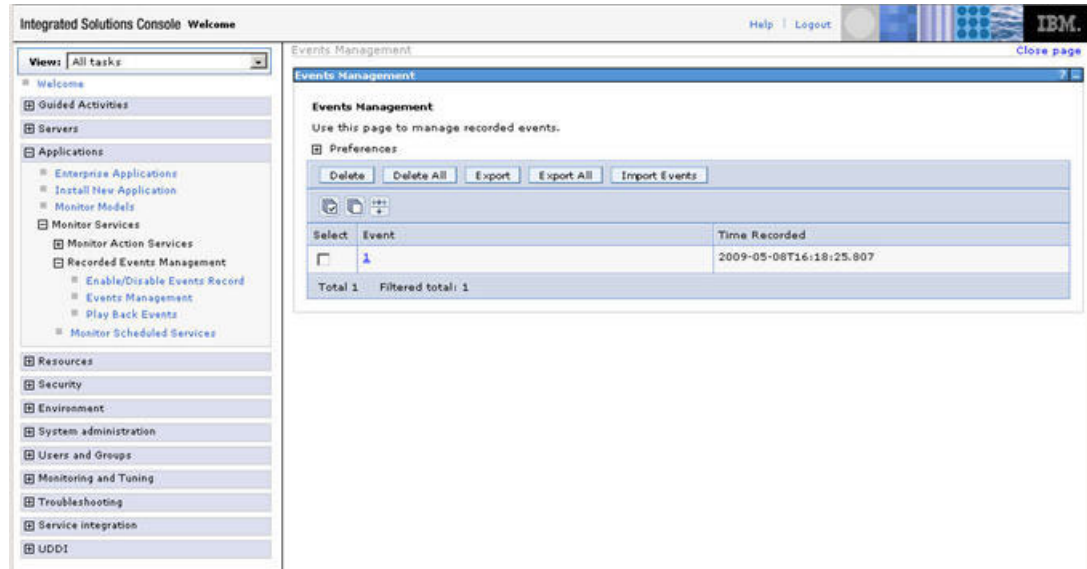
6. In the table, select the most recent event that was recorded in filtered total category. This event is the one that you just sent.

7. Confirm that the event is the same by comparing the global instance identifier from the log file of the emitter with the global instance identifier of this event. In this log file, the global instance identifier is similar to `Global Instance ID:****`

8. Confirm that the event is in the input queue for the diagnostic model:

   a. If you are running as active (monitor model queue bypass), connect to the monitor database and enter this SQL text: `Select count(id) from DIAGNOSTICMODEL.INCOMING_EVENTS Where version = 20090702120000`

   b. If you are running as active (monitor model queue-based), click **Service Integration** → **Buses** → **MONITOR.<*cell_name*>.Bus Destinations** → **wbm_DiagnosticModel_20090702120000_Q_Destination** → **Queue Points <*the queue point name*> (there should be only one)** → **Runtime**.

   c. In the **Current message depth** field, confirm that the field contains **1**.

9. Start the diagnostic model application.

10. Check the SystemOut.log file for the monitor model version moderator target. For a cluster, open and check the SystemOut.log file for each cluster member. A message similar to the following message is displayed:

    `Reporter  I com.ibm.wbimonitor.tools.udf.diagnosticmodel.Reporter reportString Received event CE1B6348B7C24BDFB2A1DE3BEF7ECBEDD0 for deads`

    This message indicates that the diagnostic model received the event that was sent. The long identifier should match the global instance identifier that the event emitter reported.

Troubleshooting using the diagnostic model

Now that you know how to track events from the emitter to the monitor model, use these same steps to follow events for your own model. Knowing how far your events go in reaching your monitor model helps narrow the search for potential problems.

You probably started using the diagnostic model because one of your own monitoring models is not receiving events.

If all the information in this guide worked for the diagnostic model, but your monitor model still cannot receive events, there is a problem with your monitor model. The most likely problem is that the event is displayed as a recorded event (if you filter by time, not by monitor model), but is not displayed on the input queue for your mode, which means that the filter expressions of the monitor model do not match the events being sent by your emitter. Using Recorded Events Management, export the events from the Event Management page and replay them in your development environment using the Integrated Test Client.

Troubleshooting tips

The numbered items in this topic of the diagnostic guide correspond to the numbered items in the topic titled "Tracking the event for the diagnostic model."

1. Ensure that you have stopped the monitor model.
2. Ensure that you have navigated to the directory, *WAS_root*/scripts.wbm/ DiagnosticModelEmitter.
3. If a problem occurs during event emission, first determine if the parameters that are passed to the emitter are incorrect. If not, another emitting application that you are using might have the same problem.

   a. If you receive an error that says `Option validation error: Unable to create either an RMI connection` and the reason contains `JSAS0455A: Unable to login principal, invalid authentication information`, correct the user ID, password, or both.

   b. If you receive an error that says `Option validation error: Unable to create either an RMI connection` and the reason contains `because of insufficient or empty credentials`, correct the user ID, password, or both.

   c. If you receive an error that says `Option validation error: Unable to create either an RMI connection` and the reason contains `com.ibm.websphere.security.auth.WSLoginFailedException: Authentication Failed`, correct the user ID, password, or both.

   d. If you receive an error that says `Option validation error: The hostname indicated,<host_name>, cannot be resolved`, change the host name to a host name that can be resolved from the machine that you are running the emitter on.

   e. If you receive an error that says `Option validation error: The port indicated, port>, is not an integer`, enter a number between 0 and 65535.

   f. If you receive an error message that says `Option validation error: The port indicated, "-1", must be between 0 and 65535`, enter a number between 0 and 65535.

   g. If you receive an error that says `Option validation error: Unable to create an RMI connection` and the reason contains

`java.net.ConnectException: Connection refused`, correct the host name, port number, or both. The next most likely cause for this error is an active firewall.

h. If you receive an error that says `Error while sending CBE` and the reason contains `No event notifications were sent because the event server could not connect to the JMS destination` and `CWSIA0006E: the authorization for the supplied user name was not successful`, set the *inter-engine auth alias* parameter and list your user name in the **Users and groups in the bus connector role** list. This error message is also displayed in the SystemOut.log file of your common event infrastructure target.

i. If you receive an error that says `Error while sending CBE` and the reason contains `No event notifications were sent because the event server could not connect to the JMS destination, CEIES0004E: The user does not have authorization to carry out this operation`, and `CWSIK0018E: Send access to destination *** was denied for user with subject ***`, add the user to the sender role for the foreign bus and add the user to the sender role for the destination as indicated in the WebSphere Business Monitor information center topic, "Completing the installation of a monitor model in a secured environment." This error message is also displayed in the SystemOut.log file of your CEI target.

j. If you receive an error that says `Unable to located an event group profile for the diagnostic model`, correct the host name, port number, or both for the monitor model CEI target that you specified for the diagnostic model.

k. If you receive an error that says `SEVERE: CWMST9502E: Error while looking up CEI event emitter` and the reason contains `CEIEM0020E The emitter failed to initialize because the JNDI lookup on the event bus home name failed`, set the inter-engine authentication alias and list your user name in the **Users and groups in the bus connector role** list.

4. See number 8.

5. See number 8.

6. See number 8.

7. See number 8.

8. If you do not see an event with a **Time Recorded** value set to approximately when you emitted the event, check the following items:

   a. Ensure that you emitted the event to the correct common event infrastructure server. If you installed the diagnostic model in multiple environments and you accidentally point to the wrong one, the emitter will not send the event to the correct server.

   b. Check the SystemOut.log file for the monitor model common event infrastructure server target. Look for messages received approximately when you emitted the event. If the monitor model Common Event Infrastructure server target is a cluster, check the log files for each cluster member. Usually the emitter reports errors at emission time but, in some cases, they are listed only in this log file.

   c. Ensure that the CEI server configuration was reloaded successfully. If not, the CEI server will not know to distribute events to the new event groups. This condition should be detected quickly and automatically, and it should trigger a message in the Monitor Configuration Owner log file. In this situation, synchronize the CEI server cell in a network deployment environment and restart the monitor model CEI server target. After restarting, emit the event again.

d. Check the resolution of the monitor model routing libraries on the monitor model CEI server target. Complete the following steps for each WebSphere Application Server installation of the monitor model CEI server target:

   1) Open a command prompt and navigate to the *was_root*/bin folder.

   2) Enter the osgiConsole.bat command.

   3) At the osgi prompt, type ss.

   4) Ensure that the following plug-ins are in the list (they can be at any number and any version) and that they are not in the `Installed` state. The `Resolved`, `Stated`, or `Active` states are fine.

      ```
      com.ibm.wbimonitor.monresources
      com.ibm.wbimonitor.observationmgr.configutil
      com.ibm.wbimonitor.observationmgr.crosscell
      com.ibm.wbimonitor.observationmgr.spi.impl
      com.ibm.wbimonitor.observationmgr.spi
      com.ibm.wbimonitor.persistence
      com.ibm.wbimonitor.router.ceiext
      com.ibm.wbimonitor.router.definition
      com.ibm.wbimonitor.router.distribution
      com.ibm.wbimonitor.router.persistence
      com.ibm.wbimonitor.router.record.ceiext
      com.ibm.wbimonitor.router.record.distribution
      com.ibm.wbimonitor.router.record.persistence
      com.ibm.wbimonitor.router.xpath2
      com.ibm.wbimonitor.util
      com.ibm.wbimonitor.xml.expression
      com.ibm.wbimonitor.xml.model.eventdefinition
      com.ibm.wbimonitor.xml.model
      com.ibm.wbimonitor.xml.utils
      com.ibm.wbimonitor.xsp.cei.extensions
      com.ibm.wbimonitor.xsp.evaluator
      com.ibm.wbimonitor.xsp.eventselector
      com.ibm.wbimonitor.xsp
      ```

   5) For each plug-in that is in the `Installed` state, enter a `diag <plugin number>` command and note the results. One of the plug-ins listed as `Installed` might say `No unresolved constraints` or might list a constraint that is present and resolved.

   6) Exit the osgiConsole by entering `exit` at the osgi prompt.

   7) Stop every Java Virtual Machine that is running against the current *<WAS_root>* server.

   8) Stop all wsadmin prompts and node agents.

   9) For each profile that is associated with the current *was_root* server, navigate to the *Profile_root*/bin folder. Then run the osgiCfgInit.bat command.

   10) Start your Java Virtual Machines again.

   11) Return to step 4 to ensure that plug-ins are listed. Plug-ins with unresolved constraints might be the cause of the problem.

   e. Because no events are listed, the monitor model did not receive any events. Change the filter condition to limit the search based on timestamps with a small range. Search the list for your event. If you have more information about the event, you can apply more filters. If the event was not recorded, it probably was not emitted. If the event is not displayed when you filter by monitor model, the event does not match your model.

9. If you have problems while confirming that an event is on the input queue, ensure that the diagnostic model has stopped. If it has not stopped, the event is used almost instantly. Therefore, you cannot issue the query before the event is no longer on the queue.

10. Check the SystemOut.log file for the monitor model version moderator target. For a cluster, open and check the SystemOut.log file for each cluster member. Look to see if a message similar to the following message is displayed:

```
Reporter  I com.ibm.wbimonitor.tools.udf.diagnosticmodel.Reporter
reportString Received event CE1B6348B7C24BDFB2A1DE3BEF7ECBEDD0 for
deads
```

11. If you have problems while confirming the use of an event on the input queue, and you do not receive a message about using a particular event, ensure that the diagnostic model does not have an event in the failed event sequences. For information about navigating to the failed event sequences, refer to the topic titled "Diagnostic information worksheet."

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