



Cisco Tidal Enterprise Scheduler 6.2 HP OMU Integration Guide

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HP OMU Integration Guide

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Preface

This guide describes how to integrate Cisco Tidal Enterprise Scheduler (TES) 6.2 into HP OMU.

Related Documentation

See the *Cisco Tidal Enterprise Scheduler 6.2 Documentation Overview* for a list of all TES guides.



Note

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Introduction

Understanding the Product

The Enterprise Scheduler HP Operations Manager for Unix (HP OMU) adapter provides integration of Enterprise Scheduler into HP OMU.

This integration consists of several parts, including:

- Policies for accepting messages sent by Enterprise Scheduler actions

Enterprise Scheduler actions can be configured to generate HP OMU messages, which are forwarded by the local HP OMU agent to the HP OMU Management Server. These actions are triggered by the occurrence of system or job events configured in Enterprise Scheduler.

- Policies for monitoring Enterprise Scheduler services

These services may be on the master, backup master, fault monitor and/or agents. Agent monitoring is available for either the original Enterprise Scheduler agent or the high-performance agent for both Unix and Windows systems.

- HP OMU tools

With these applications the HP OMU operator can quickly and easily perform common Enterprise Scheduler tasks from the HP OMU console.

- Executables

These executables are provided to manage Enterprise Scheduler agents on Unix nodes and provide general access to the Enterprise Scheduler command-line facility.

All of the HP OMU messages generated by Enterprise Scheduler include help text, and many include operator-initiated actions, allowing one-click response to certain problems. Use of these and other standard HP OMU integration points provide an interface familiar to any HP OMU operator.

This manual is not intended to replace the documentation provided with HP OMU and Enterprise Scheduler. Specifically, you need the HP OMU and Enterprise Scheduler documentation appropriate to your installation to achieve a thorough understanding of both products.

System Requirements

- This integration only works with Enterprise Scheduler version 6.0 or higher.
- Only HP OMU 9.0 is supported with Enterprise Scheduler.

- This integration does not place any significant resource requirements on any of the systems beyond what is expected by normal operation of the Enterprise Scheduler and HP OMU products. Refer to the documentation for your versions of Enterprise Scheduler and HP OMU to determine your actual system requirements. Consistent with normal usage of Enterprise Scheduler and HP OMU, the functionality provided by this integration consumes a small amount of system resources on server and agent machines.
- Enterprise Scheduler must be installed, licensed and fully operational before installing this integration.
- HP OMU must be installed, licensed and fully operational before installing this integration.
- The Enterprise Scheduler machine must be a HP OMU managed node. Any Enterprise Scheduler agent nodes that you wish to monitor must also be HP OMU managed nodes. The HP OMU Management Server does not need to be a Enterprise Scheduler client, agent or master node.

Terms to Know

- **Client Manager**—As one of two main components of the Enterprise Scheduler architecture, Client Manager services requests from user initiated activities, such as through the Tidal Web Client and from other external sources that utilize the Command Line Interface (CLI) or published Enterprise Scheduler Web services.
- **Event**—In the case of HP OMU, an event is any occurrence that can be detected by the monitoring facilities of HP OMU. In the case of Enterprise Scheduler, it is one of a fixed list of system or job states or conditions.
- **HP**—The Hewlett Packard Company.
- **MIB**—Management Information Base Enterprise Scheduler provides MIBs for HP NNM to identify the trap messages and understand their structure.
- **Object**—An object represents a particular entity or resource in a networked systems environment.
- **HP OMU Tool**—A HP OMU tool is an icon/link in the Tool Bank that, when triggered by the operator, causes some action to be taken. Starting, stopping and checking the status of the Enterprise Scheduler agent are examples of OMU Tools
- **HP OMU Managed Node**—A computer or network device controlled or monitored by HP OMU. Typically this is a computer with a HP OMU intelligent agent installed.
- **HP OMU Management Server**—The computer where the HP OMU server software is installed.
- **Policies**—The new term for templates.
- **Submap**—A submap is a particular view of the network environment. It consists of related symbols that are displayed in a single window.
- **Symbol**—A symbol (icon) is a graphical representation of an object.
- **Policy**—A policy is an HP OMU component that specifies a set of conditions that determine which events are ignored and which events generate messages in HP OMU. Different types of policies are used for different methods of monitoring, such as message policies, monitor policies, log file policies, SNMP policies, etc. Policies are assigned to and distributed to managed nodes to perform monitoring.
- **Tools**—A term used to describe the various installed software applications that is used HP OMU for monitoring.



Installing HP OMU for Unix

Workflow

1. Verify all prerequisites as described in the following section are completed.
2. Install the HP OMU Integration Adapter module on the HP OMU Management Server.
3. Assign the proper policies/policy groups to each Enterprise Scheduler system.
4. Distribute the assigned policies/policy groups to each node.
5. Restart the Enterprise Scheduler master to detect that the HP OMU agent is installed and that HP OMU messages are valid actions.
6. Restart all Enterprise Scheduler components to ensure proper integrity with the restarted Enterprise Scheduler master(s).
7. The installation is complete. Proceed to the next chapter to perform the Enterprise Scheduler configuration necessary to make full use of the integration.

Prerequisites

The purpose of HP OMU integration with Enterprise Scheduler is to monitor the operation of Enterprise Scheduler components, receive events, and perform actions within the product. Therefore, it is recommended that you first install and implement Enterprise Scheduler and obtain a good understanding of its operation. Performing the tutorial exercises available on your DVD is very helpful, as is the specialized training available with Enterprise Scheduler. After you are satisfactorily scheduling and tracking your own jobs, you can install the module for HP OMU with a high expectation of success. You should already be familiar with the use of your operating system(s) and HP software.



Note

For information regarding training classes for Enterprise Scheduler and its various components, contact your sales representative.

The following prerequisites must be met prior to installing and configuring the integration:

- HP OMU is installed and operational
- Enterprise Scheduler software is installed, operational, and correctly licensed
- Each Enterprise Scheduler master, agent, fault monitor, and backup master you want to monitor is an HP OMU Managed Node.

**Note**

If not already completed, you must add each Enterprise Scheduler master as a managed node in HP OMU. Consult your HP OMU documentation for instructions.

Machines with Enterprise Scheduler Client Manager, agents, fault monitors, and/or backup masters installed on it, but without HP OMU installed, will function normally. However, you can not monitor those machines from HP OMU. Consult your HP OMU documentation for instructions on adding managed nodes to your HP OMU configuration.

Installation Procedures

Installing the HP OMU Integration Adapter

The HP OMU Integration Adapter contains HP OMU components that must be loaded into the HP OMU configuration on the HP OMU Management Server. Perform the following steps on the HP OMU Management Server.

**Note**

You must have root or Superuser privileges to install the HP OMU module. You must also shut down the HP OMU user interface console to complete this installation.

If the HP OMU Management Server is running on an HP-UX machine, the Software Distributor package used to install the integration is part of the operating system. If the HP OMU Management Server is running on a Solaris machine, the Software Distributor was installed during the HP OMU installation. Each procedure is described in this section.

To install the HP OMU Integration Adapter:

-
- Step 1** Log into the HP OMU Management Server as root.
- Step 2** If one does not already exist, create a directory to serve as the mount point for the installation DVD.
- ```
mkdir <mount_point>
```
- For example:
- ```
mkdir /SD_DVDROM
```
- Step 3** Insert the installation DVD into the drive and mount the DVD.
- ```
mount -r -F DVDfs <DVDrom_device_file> <mount_point>
```
- For example:
- ```
mount -r -F DVDfs /dev/dsk/c0t2d0 /SD_DVDROM
```
- You can also use SAM to mount the DVD.
- Step 4** Run the **tar** (or equivalent) command to expand the archived package.
- Use the following command:
- ```
tar -xvf /<mount_point>/OpenView/TIDAL-SA-OV-ALLOS.tar /tmp/TIDAL-SA-OV
```
- Replace **<mount\_point>** with the directory that you created in Step .

- Step 5** Run the **opccfgupld** command to upload the template on this OMU server.  
Use the following command:

```
opccfgupld -add -subentity /tmp/TIDAL-SA-OV/DOWN_SPI
```




---

**Note** Use the **-replace** command if the template is already loaded.

---

- Step 6** Verify that the template was successfully uploaded in the Policy and Tool Banks in the HP OMU Admin UI.  
Log in as the `opc_admuser`.  
If you do not see the new policies and tools, examine the Software Distributor logfile (`/var/adm/sw/swagent.log`) to determine the cause of the installation failure.

## Assigning Policies

Monitoring an application with HP OMU policies is a two-step process, including assigning a selected set of policies/policy groups to each managed node and distributing (downloading) these policies/policy groups to the managed node.

Because the assignments are saved, you can redistribute the policies/policy groups at a later date without reselecting the templates to distribute.

When selecting policies/policy groups for a managed node, it is important to select only the policies/policy groups appropriate for that node. Typically, policies/policy groups are for a specific application on a hardware platform or operating system.

To assign policies/policy groups:

- 
- Step 1** Click the **OMU** button  in the title bar of the HP OMU Administration UI. The HPOM for Unix Configuration page displays.
- Step 2** Click the **Policy Bank** link in the Object Hierarchies section. The Policy Bank page displays.
- Step 3** In the Name column, click the **CISCO TIDAL Software** link. The Details CISCO TIDAL Software tab displays.
- Step 4** In the Name column, click the **Scheduler Templates** link. The Details Scheduler Templates tab displays.
- Step 5** Select the appropriate template by clicking the check box in its corresponding row.
- Step 6** From the Actions list, choose **Assign to Node/Node Group** to display the Selector dialog box.
- Step 7** Locate and select the appropriate node.
- Step 8** Click **OK**. A confirmation note displays.

## Distributing the Template Definitions

Once the templates have been assigned, they must be distributed (downloaded and installed) to the HP OMU Managed Nodes.

To distribute the templates:

- 
- Step 1** From the HPOM for Unix Configuration page, click the **Node Bank** link to display the Node Bank page.

- Step 2** Select the node(s) where components are installed. From the Actions menu, choose **Deploy Configuration** to display the Deploy Configuration dialog box.
- Step 3** Select the appropriate components, then click **OK** to distribute the templates.  
A note displays containing a successful message and additional information.
- Step 4** Login to the HP OM Java Console (Java GUI).




---

**Note** The Java GUI must be installed on your computer before you can view the Message Browser.

---

All messages matching your operator login responsibilities are added to the bottom of the Workspace pane. For further information regarding the installation of the Java GUI, see your *HP OMU Administrator Guide*.

A message for each selected node displays that indicates that the policies, monitors, actions and commands have been successfully distributed. If you do not see any messages concerning the distribution, verify that the HP OMU user that you are logged in as has access rights for the OpC message group on those nodes. For instructions regarding assigning responsibilities to users, see your *HP OMU Administrator Guide*.

## Restart Scheduler Components

The Enterprise Scheduler components must be stopped and restarted before the changes that occurred during the installation of the HP OMU adapter will take effect.

### Restart Enterprise Scheduler Master(s)

You must stop and restart all Enterprise Scheduler masters to which you have distributed the HP OMU agent software and templates before the changes can take effect. The restarted master should have HP ITO actions enabled.

To restart the master, follow these steps:

- 
- Step 1** From the command line of the master machine, stop the master by entering:
- ```
tesm stop
```
- Step 2** Verify that the master has completely stopped, by entering:
- ```
tesm status
```
- Step 3** Once the master has stopped, restart it by entering:
- ```
tesm start
```
-

Create Account User Definitions in Enterprise Scheduler

Enterprise Scheduler validates Windows logon names against its own user database. During installation of the master, you provide Enterprise Scheduler your Windows user name and password. Enterprise Scheduler creates the first Enterprise Scheduler user account for you with this information and automatically assigns you Superuser capability. The Superuser option provides access to all Enterprise

Scheduler functions and supersedes all security policies because it encompasses all security permissions. Refer to your *Cisco Tidal Enterprise Scheduler User Guide* for information regarding creating user accounts.

If you are using a Windows version of Enterprise Scheduler, as part of HP OMU integration you must add a user with the user name HP ITO account to Enterprise Scheduler.

**Note**

The Unix version of Enterprise Scheduler does not require a HP ITO account user.

The HP ITO account user definition must have the Superuser option selected.

As part of HP OMU integration, you must also add a user with the user name **opc_op** to Enterprise Scheduler. The **opc_op** user definition must have the Superuser option selected. This user ID is used when executing operator-initiated actions from within HP OMU.

Adding a User

To add a user:

-
- Step 1** From the Navigator pane, select **Administration > Interactive Users** to display the Users pane.
 - Step 2** Right-click in the Users pane, and select **Add Interactive User** from the context menu to display the User Definition dialog box.
 - Step 3** In the User Name field, enter the HP ITO or opc_op, as appropriate for the user definition you are creating.

**Note**

The Unix version of Enterprise Scheduler does not require a HP ITO user account.

- Step 4** Select the Superuser option.
 - Step 5** Click **OK** to save the new user definition.
-

Configuring the Adapter for a Unix Master

To use the HP OMU adapter with Enterprise Scheduler's Unix master, configuration of the master is required.

To configure the adapter for a Unix master:

Step 1 Create a file called `umlist` in the Enterprise Scheduler directory on the Unix master machine:

`/etc/TIDAL/umlist`

Step 2 In the `umlist` file, enter the following information on a single line with a single space between each entry:

- **<masterID>** The master ID (should match the master ID in the `master.props` file; e.g., **TidalSAMaster**).
- **<user>** The user account that installed the Unix master; e.g., **root**.
- **<host>** The machine name of the Unix master machine; e.g., **galaxy4**.
- **<master_directory>** The directory path to the Unix master directory; e.g., `/opt/unixsa/TIDAL/master`.
- **<java_home>** The directory path to the JVM being used by the Unix master.
This directory will be the directory above the `bin` directory in the Java directory path. For example, if the Java directory path is `/usr/java1.4/bin/java`, then **<java_home>** is `/usr/java1.4`.
- **<ito_user>** The user account, `opc_op`, created earlier in Enterprise Scheduler. (The HP OMU user account is not used with the Unix master.)

The file will resemble the following example:

```
testserver oracle galaxy4 /opt/unixsa/TIDAL/master/usr/java1.4 opc_op
```

Step 3 In a text editor, open the `master.props` file in the config directory where the Enterprise Scheduler files are installed on the Unix master machine.

Step 4 On a separate line in the file, add the **<opcmsgPath>** parameter providing the directory path to the `opcmsg` executable file.

For example:

```
opcmsgPath=/opt/OV/bin/OpC/opcmsg
```



Note On a Windows master, the **opcmsgPath** parameter in the `master.props` file would look like this:

```
opcmsgPath=\\Program Files\\HP Open View\\Installed  
Packages\\{790c06b4-844e-11d2-942b-080009ef8c2a}\\bin\\opc\\opcmsg.exe
```

Step 5 Add a new line that specifies the **<masterID>** parameter. For example:

```
masterID=TidalSABackup
```

Step 6 Save the changes and close the `master.props` file.

Step 7 Stop and restart the master to recognize the new configuration.

Using Unix Agents

To monitor the Enterprise Scheduler agent on Unix, an additional configuration step is necessary prior to distributing the HP OMU templates to the machine. The HP OMU templates that monitor the Unix Enterprise Scheduler agents rely on this configuration step.

You must create the file `/etc/TIDAL/aglist` on each managed node. You may have to create the `/etc/TIDAL` directory if it does not already exist. Permissions must be set to allow all users to read the file. This means at least read and execute permissions on the `/etc/TIDAL` directory, and read permissions on the `aglist` file itself (i.e. `chmod -R a+rx /etc/TIDAL`).

The `aglist` file should contain a line for each Unix agent that you want to monitor. Since each line includes the host name, you can create a single `aglist` file containing all agents on every node, and place a copy of that file on each Enterprise Scheduler Unix agent node. Or, you can create a separate file on each managed node that lists only the agents on that node.

The format of each line of the `aglist` file is as follows:

```
<descriptive-name> <user> <host> <tidalagent-directory-path>
```

where:

<descriptive-name> is a defined string explaining what the product is used for or where it is deployed (such as “development”, “accounting”, etc.) or just the agent name (for example, `TIDAL_AGENT_2`).

<user> is the user name (login name) of the user who owns the Enterprise Scheduler agent files

<host> is the name of the host machine where the product is installed

<tidalagent-directory-path> is the directory where the product is installed (the `$tidalagent` variable)



Note

Fields in the `aglist` file cannot contain spaces. Fields may be separated by spaces or tabs. Per normal Unix convention, include a new line at the end of the last line of data.

The following is an example of the `aglist` file in the java-based version of the Enterprise Scheduler Agent for Unix:

```
production tidal bigserver /opt/ocs development devuser devserver /usr/local/ocs accounting
account deptserver /home/account/ocs
```




Integrating HP OMU for Unix

Overview

Enterprise Scheduler provides complete visibility to your production workload and allows you to handle exceptions, as needed. Job or system level events are defined to handle these exceptions. Each event can trigger one or more actions when Enterprise Scheduler detects the event condition. Using the HP OMU module, you can specify actions that send messages to HP OMU. These messages are displayed to the responsible HP OMU operator, and contain information including the severity, data, time, node, Enterprise Scheduler event ID, and a brief description of the problem. Some messages also contain a predefined operator-initiated action, that allow the operator to respond to the event with just a few mouse clicks.

Configuring Enterprise Scheduler for HP OMU is the last step in the installation of the HP OMU module. This multi-part step should not be taken until the previous chapter's procedures have been completed successfully.

Actions, Job Events and System Events

An action is a task or notification automatically performed by Enterprise Scheduler in response to an event trigger that occurs for a specific job, job group, or system event. Actions are linked to a job or system event through the Job Event Definition and System Event Definition dialogs.

A job event connects job event triggers to actions. For the HP OMU integration, you must create a job event that sends a message to HP OMU. For example, if any of your jobs complete with a Completed Abnormally status, that event can trigger an HP ITO action to send a message to HP OMU, alerting the operator to the situation.

System events allow you assign actions to events generated by the Enterprise Scheduler master. For example, you can send a message to HP OMU any time the master is shut down. System events are useful for notification of conditions with global, or system-wide effects.

Creating an Action

To create an action to be used by this integration:

-
- Step 1** From the Navigator pane, select **Definitions > Actions > HP VP** to display the HP VP pane.
 - Step 2** Right-click in the HP VP pane and choose **Add Action** from the context menu to display the Action Definition: HP VP Operations dialog box.

An HP ITO action sends a message to the HP OMU Management Server when the associated job or system event occurs.

- Step 3** In the **Action Name** field, enter a name for this action (up to 30 characters). The name must be unique.
 - Step 4** From the **Owner** list, select an owner for the action. The default owner of the action is the creator.
 - Step 5** From the **Severity** list, select the severity level for the HP OMU message. You can choose Critical, Major, Minor, Warning or Normal. See “[OMU Severity Levels](#)” on page 6 for more information about choosing the appropriate severity level.
 - Step 6** In the **Message** field, enter the descriptive text for your message, which will appear in the HP OMU Message Browser. To include variables (such as Job Occurrence ID or Queue Name) in the **Message** field, select the desired value from the **Variables** list at the bottom of the Action Definition: HP VP dialog box.
 - Step 7** To enter a description or other notes for your action, select the **Description** tab, and enter your description.
 - Step 8** Click **OK** to close the definition of the action.
 - Step 9** Repeat this procedure for each action that you need to create.
-

Creating a Job Event

To create a job event:

-
- Step 1** On the Navigator pane, select **Definitions > Job Events** from the left pane to display the Job Events pane.
 - Step 2** Right-click in the right pane and select **Add Event** from the context menu to display the Job Event Definition dialog box.
 - Step 3** Enter a name for this event in the **Job Event Name** field (up to 30 characters).
 - Step 4** Select an event trigger from the **Event Trigger** list. The list of event triggers is a pre-defined list of events.
 - Step 5** The default owner of the event is the creator, but you can select a different owner from the Owner list.
 - Step 6** Select one of the actions, displayed in the **Available Action(s)** field and click the **left arrow** button to move it to the **Selected Action(s)** field.
 - Step 7** Click the **Associated Job(s)** tab.
 - Step 8** Select the Enterprise Scheduler job to be monitored for this event from the list or click the **Browse** button to browse for a job. If you have not yet created the desired job, or later wish to associate this event with a new job, you can also select associated events from Job Events tab in the Job Definition dialog box.
 - Step 9** Click the **Description** tab to enter descriptive information about this job event.
 - Step 10** Click **OK** to complete the definition of the job event.
 - Step 11** Repeat this procedure for each job event that you need.

Now, whenever one of the jobs you selected in the **Associated Job(s)** field meets the condition defined in the Event Trigger list, a message is sent to HP OMU with the description and severity specified for that associated action.

Creating a System Event

To create a system event:

-
- Step 1** From the Navigator pane, select **Definitions > System Events** to display the System Events pane.
 - Step 2** Right-click in the System Events pane and select **Add Event** from the context menu to display the System Event Definition dialog.
 - Step 3** In the **System Event Name** field, enter a name (up to 30 characters).
 - Step 4** From the **Event Trigger** list, select an event trigger.
 - Step 5** From the **Owner** list, select the owner of the event. The default owner of the event is the creator.
 - Step 6** In the **Available Action(s)** field, select one of the actions and click the **left arrow** button to move the action to the **Selected Action(s)** field.
 - Step 7** Click the **Description** tab to enter any descriptive information about this system event.
 - Step 8** Click **OK** to complete the system event definition.
 - Step 9** Repeat this procedure for each system event that you need.

Now, whenever the condition selected in the Event Trigger list is met, a message is sent to HP OMU with the description and severity specified for that associated action.

Monitoring Enterprise Scheduler with HP OMU

Starting the HP OMU Message Browser

To see the HP OMU message browser:

-
- Step 1** Log into the Java GUI using the login and password provided to you by your OMU Admin.
The content of the message text depends partly on what you entered in the Message field of the Action Definition dialog for the action that sent the message.
 - Step 2** To see the details of a message, double-click it or select the message and click **Properties**.
The Message Properties dialog box displays the following:
 - the node where the message originated
 - the specific application that generated the message
 - date and time
 - severity level of the message
 - template whose condition generated the message
 - actual command that would be executed if the operator clicked the **Perform** button located on the Actions tab

The HP OMU Integration Adapter has pre-configured several operator-initiated actions for appropriate events. For example, in the Message Properties dialog box above:

- A job is associated with the Job waiting for operator release event trigger.
- The Job waiting for operator release event trigger is associated with an HP ITO action for this job.
- When the job reaches the status of Job waiting for operator release, a message is sent to HP OMU, as configured.
- The HP OMU operator views the message in the Message Browser.

If the HP OMU operator clicks **Perform** in the Actions tab for that message, the job is released.

Performing Tasks

In addition to the Perform button associated with messages, the HP OMU Integration Adapter provides HP OMU Tools in the form of icons/links on the HP OMU Tool Bank window. The operator can use these tools to perform common tasks from the HP HP OMU Java GUI, typically in response to messages received.

With supplied HP OMU Tools, the operator can:

- Start, stop, or get the status of Windows agents
- Pause and resume the master production schedule
- Compile the master production schedule
- Get a list of alerts
- Get a list of job occurrences
- Perform most job control functions such as run, hold, release, cancel, remove, rerun, or set the status of a job.



Note

All HP OMU tools require the operator to select a node in the HP OMU Node Bank prior to execution. The task is then executed on the selected node. Many of these tools, and the job control functions in particular, also require the operator to enter arguments at run time. For example, to release a job, the operator must enter the job-occurrence-ID (job run ID) for the job that they wish to release. The instructions for doing this are included in the example below.

Using the HP OMU Applications

To use the HP OMU Tools:

Step 1 Launch the Java GUI and log in using the login and password provided to you by your OMU Admin.

Step 2 Right-click the node, then select **Start** or **Start Customized** from the context menu depending on whether the Tool that you want to run requires additional parameters. The Start Tool Wizard displays.



Note This procedure contains an example of a tool that requires additional parameter to run.

Step 3 In this example, to release a job (which is a job control function), open the Unix Master Jobs as show below.

Step 4 Click **Next** to display the Rerun Job panel.

Step 5 Specify the additional parameters.

The master_id must match the name that is configured in the master.props file. Additionally, the job occurrence_id is the job run id.

Step 6 Click **Finish**.

OMU Severity Levels

The following table contains the possible message severities in OMU, their corresponding colors, and meanings.

Table 3-1 HP OMU Severity Levels

Level	Color	Meaning
Critical	Red	Indicates a severe problem, requiring immediate corrective action. Service is unavailable.
Major	Orange	Indicates a significant problem. Service is degraded
Minor	Yellow	Indicates a problem of relatively low severity. Service is slightly degraded, but there is a workaround.
Warning	Cyan	Indicates detection of a potential or impending problem. Action should be taken to further diagnose and correct the situation to prevent a more serious issue.
Normal	Green	Indicates situation is as expected or other status information. Service is functioning normally.
Unknown	Blue	Indicates the severity level cannot be determined. this severity level is not available when creating an action in Enterprise Scheduler.

Monitor Policies

The HP HP OMU Integration Adapter provides monitor policies that monitor the following:

Table 3-2 Monitor Policies

Service Description	Service Name	Template name
Master Services		
Enterprise Scheduler Master Service	TidalSAMaster	TidalSAMaster
MS SQL Server Service	MSSQLServer	MSSQLServer_EnterpriseScheduler
Backup Master Services		
Enterprise Scheduler Backup Master Service	TidalSAMaster	TidalSABackup
Fault Monitor		
Enterprise Scheduler Fault Monitor Service	TidalSAFaultmon	TidalSAFaultmon

Service Description	Service Name	Template name
Client Manager		
Enterprise Scheduler Client Manager Service	TidalClientMgr	TidalClientMgr
Agent Services		
Note All agent services on an agent node are monitored. The exact names of the agent services are dependent upon the agent's configuration.		
Original Windows Agents	Depends on configuration	Enterprise Scheduler_AGENT_MON
High-Performance Agents		
Unix Agents		

To view a list of the agents on a particular agent node:

-
- Step 1** Select the agent node in the Java GUI.
- Step 2** Right-click the node, then click **Start > CISCO TIDAL Software > Unix Agent > Agent (UNIX) List**. The output window displays a list of the agents installed on that node.
-

Troubleshooting

The information included in this section will assist you in troubleshooting the HP HP OMU Integration Adapter installation. One or more of the following factors are the usual source of difficulty:

- The network connection between the HP OMU Management Server and one or more of the Enterprise Scheduler managed nodes has been lost.
- You logged into HP OMU as an operator who does not have the appropriate access rights. Verify that the operator has access rights for all of the Enterprise Scheduler nodes that are HP OMU managed nodes. The operator should have access permission to the job message group. The HP OMU Administrator (opc_adm) can view and change these permissions.
- The Enterprise Scheduler HP OMU Integration Adapter is not installed or configured correctly.
- The HP OMU agent is not installed on the remote host.
- Templates for the Enterprise Scheduler HP OMU module have not been loaded on the HP OMU agent.

Diagnosing Problems

To diagnose a problem:

-
- Step 1** Verify that HP OMU is installed and running.
- a. Launch the HP OMU console using the opc command.
 - b. Open the Message Browser and Node Bank.
 - c. Verify that node status is reflected correctly in the node bank.



Note If HP OMU reports errors when starting, or if the status of the nodes in the Node Bank is incorrect, see your HP OMU Administrator or refer to your HP HP OMU documentation for assistance.

- d. From the Unix command prompt, execute the following command:
ovstatus
 - e. Verify that all the necessary components are running.
- Step 2** Verify that the Enterprise Scheduler HP OMU adapter is installed
- a. Verify that the Enterprise Scheduler templates display in the Message Source Template window.
 - b. Using the Window - Message Source Template option, open the Message Source Template window and verify that message templates for Enterprise Scheduler appear in this window.
- Step 3** Verify that the remote HP OMU agent is installed.
- From the Unix command prompt, execute the command:
- opcragt -status <nodename>**
- This should display the status of the HP OMU agent on the remote system. If the opcragt command indicates that the HP OMU agent is not installed, follow the procedure described in the HP OMU manuals and install the HP OMU agent.
- Step 4** Verify that the templates have been successfully loaded on the remote system and download the templates to the remote host. You should see a message in the HP OMU Message Browser that indicates that templates, monitors, etc., have been successfully downloaded to the remote node.
- Step 5** Verify that the HP OMU event delivery mechanism is working
- Step 6** Execute the opcmmsg command on the remote node to send a simple text message to the HP OMU master. Verify that your message appears in the HP OMU Message Browser. An example of this command is:
- opcmmsg sev=normal appl=test obj=test msg_text="Test message from node x"**
-

Specific Problems

Operator Actions Are Not Working

In order for the HP OMU actions to work, you must add a user with the user name HP ITO Account to Enterprise Scheduler. The HP ITO Account user definition must have the Enterprise Scheduler Superuser option selected.

Job and System Messages Are Not Getting Through

Verify that HP OMU alerts are set up. Execute the **opcmmsg** command manually to make sure that the HP OMU agent and event reporting are working



Event ID Tables

Overview

Each event trigger used in Enterprise Scheduler has its own ID number. Job events use a different numbering scheme than system events. A listing of each job event and system event are provided in separate tables in the following sections.

Job Event Triggers

The following table lists the event triggers for various job events supported by Tidal Enterprise Scheduler. These event triggers are supported throughout the various integration channels. Using the event ID number displayed in the Windows application log you can reference its meaning from this table. All job events have an ID number that begins with 12.

Table 4-1 Job Event Triggers

Event ID	Trigger	Event Type(s)	Description
12000	Job added to schedule on demand	Status Change/Job Control	The job was added to the production schedule on an unscheduled basis.
12001	Job completed	Status Change	The job completed with a Completed Normally or Completed Abnormally status.
12002	Job completed abnormally	Status Change	The job completed with a Completed Abnormally status. The job's exit code is non-zero
12003	Job completed normally	Status Change	The job completed with a Completed Normally status. The job's exit code is 0
12005	Job waiting for operator release	Status Change	All the job's dependencies have been met. This event trigger only occurs when you select the Require operator release option in its job definition. The job is now waiting for the operator to release it.
12006	Job put on hold	Job Control	The operator put the waiting job on hold.

Table 4-1 Job Event Triggers

Event ID	Trigger	Event Type(s)	Description
12007	Job waiting on resource	Status Change	All the job's dependencies have been met and the job is waiting for an execution slot to become available.
12008	Job not ready by end of its time window	Schedule Irregularity	The end of the job's time window was reached before its dependencies were met.
12009	Job launched	Status Change	The queue manager released the job from its queue to an agent, and the job entered the Launched status. Launch is the status prior to the job becoming Launch.
12010	Job active	Status Change	The job started running.
12011	Job stopped	Job Control	The job was stopped by an operator.
12012	Error occurred while launching job	Status Change	The job status changed to Error Occurred. The job did not run.
12013	Job skipped	Schedule Irregularity	The job did not run because another occurrence of this job was already running. The job must have the concurrency option set to Skip in its job definition for this to occur.
12014	Job deferred	Schedule Irregularity/Status Change	Because another occurrence of this job was running when this job was ready to launch, the job is waiting for the previous occurrence to complete. The job must have the concurrency option set to Defer until completion in the Job Definition dialog box for this to occur
12015	Agent unavailable for job	Status Change	<p>The agent or the network has gone down prior to the job running. Therefore, the job cannot complete on this agent. If the job uses an agent list, this event trigger occurs in different ways based on the agent list:</p> <p>Ordered, Random, Balanced, or Rotation Agent List: If the job uses any of these lists, the event trigger occurs when all agents in the list are unavailable to run the job.</p> <p>Broadcast Agent List: If the job uses a broadcast list, the event trigger occurs for each agent in the list that is unavailable to run the job.</p>

Table 4-1 Job Event Triggers

Event ID	Trigger	Event Type(s)	Description
12016	Agent for job inactive	Status Change	<p>The agent's Enabled option is set to Disabled, or Inactive. As a result, the job cannot launch on this agent. If the job uses an agent list, this event trigger occurs in different ways based on the agent list:</p> <p>Ordered, Random, Balanced, or Rotation Agent List: If the job runs on any of these agent lists, the event trigger occurs if all agents in the agent list are inactive.</p> <p>Broadcast Agent List: If the job runs on a broadcast list, the event trigger occurs for each agent in the agent list that is inactive.</p>
12017	Job status changed	Status Change	Your job status changed. You can use this event trigger to catch all status changes for this job. The associated action occurs for all changes to the status of a job.
12018	Job might start later than expected	Schedule Irregularity	Other jobs which the job depends on are running behind schedule. This could cause your job to run later than expected. This event trigger occurs when one or all of the prerequisite jobs run longer than their estimated duration. The job might start later than originally forecast
12020	Job might not be ready by end of its time window	Schedule Irregularity	The end of the job's time window might not be reached before its dependencies are met. This trigger is activated approximately 7 seconds before the job's estimated start time becomes later than the end of the job's time window

Table 4-1 Job Event Triggers

Event ID	Trigger	Event Type(s)	Description
12021	Job running longer than expected	Schedule Irregularity	The job is running longer than its estimated duration value. The job continues to run unless you stop it with a Job Control action that is associated with this event trigger, or unless an operator stops it. You initially set the Estimated Duration value in the Job Definition dialog box when you create the job. <z_sys>sys<z_Star>*<z_ADMIRAL>ADMIRAL adjusts the value to a historical average after each run of the job.
12022	Job running past end of its time window	Schedule Irregularity	The job is running past the time window set for it in its job definition. The job continues to run unless it is stopped with an associated job control action, or unless it is stopped by an user.
12023	Job might run PST end of its time window	Schedule Irregularity	The job might run past the time window set for it in its job definition. The job will continue to run unless it is stopped with an associated job control action, or unless it is stopped by the user. This trigger is activated at the end of the job's time window minus the job's estimated duration.
12025	Job finished later than expected	Schedule Irregularity	The job ran longer than the time specified in the Estimated Duration field in its job definition.
12026	Job running longer than its maximum time	Schedule Irregularity	The job is running longer than its Maximum Duration value, as defined in its job definition. The job continues to run unless you stop it with a job control action that is associated with this event trigger, or unless it is stopped by an user.
12027	Job ran shorter than its minimum time	Schedule Irregularity	The job ran in less time than the time specified in the Minimum Duration field in its job definition
12028	Operator reran the job	Job Control	The operator ran a job again after it already completed. Once set, this trigger will only apply to jobs that were not already in the schedule.
12029	Operator canceled the job	Job Control	The operator canceled the job before it had a chance to run.

Table 4-1 Job Event Triggers

Event ID	Trigger	Event Type(s)	Description
12030	Operator aborted the job	Job Control	The operator aborted the job while it was running. The job could have taken too many resources, or some other problem could have occurred to justify the abort.
12031	Operator override of job dependencies	Job Control	The operator launched the job, even though all of its dependencies were not met.
12032	Job status is LAUNCH on startup.	Job Control	A job status of Launched means that a request to launch the job has been sent to the agent, and is pending notification from the agent that the job has started executing.
12033	Job added to schedule based on calendar	Status Change/ Job Control	The job was added to the production schedule automatically.
12034	Job orphaned	Status Change	The master lost connection to the agent running the job and can not determine the job's current status.
12035	Job rerun would exceed maximum reruns	Job Control	Rerunning the job would exceed the maximum reruns allowed.
12036	Job completed with specified exit code(s)	Status Change	The job completed within the specified exit code range. The exit code can denote normal or abnormal status for a job to trigger different actions.
12037	Job completed normally (output pending)	Status Change	Job completed normally (output pending) The job has completed normally but the job output is still being gathered and is not yet available.
12038	Job completed abnormally (output pending)	Status Change	Job completed abnormally (output pending) The job has completed abnormally but the job output is still being gathered and is not yet available.
12039	Job externally defined (output pending)	Status Change	Job externally defined (output pending) The job status was determined by an external user or program and the job output is still being gathered and is not yet available.
12040	Job has insufficient time to run before agent outage	Schedule Irregularity	Using the duration value of the job, the job will not complete before a planned outage on its agent.
12041	Job might run into agent outage window	Schedule Irregularity	Using the duration value of the job, the job may not complete before a planned outage on its agent.

System Event Triggers

The following table lists the event triggers for various system events supported by Tidal Enterprise Scheduler. These event triggers are associated with system events through the System Event Definition dialog box. These event triggers are supported throughout the various integration channels. Using the event ID number displayed in the Windows application log you can reference its meaning from this table. All system events have an ID number that begins with 20.

Table 4-2 System Event Triggers

Event ID	System Event Trigger	Description
20001	System queue limit set to zero	The system queue's (master queue under which all other queues reside) limit has been set to zero, eliminating the possibility for any jobs to enter the production schedule.
20002	Any queue limit set to zero	A queue's limit was set to zero. This may have been done to prevent jobs of a certain class from running. Note that a queue can be set to accept a certain class of jobs based on the queue's filters. To refer to the queue in an alert message, use the Queue Name variable in the assigned action.
20003	System queue reached its job limit	The number of jobs running in the overall system queue has reached the overall system queue limit, and no other jobs can run until a slot becomes available. Slots become available when a job running in the queue completes, or the queue's limit is increased. When this trigger occurs, it indicates that either too many jobs are being scheduled for the capacity of the system, or the system capacity has been underestimated, and the system queue limit needs to be raised.
20004	Any queue reached its job limit	A queue cannot launch any more jobs until a slot becomes available in the queue. This may indicate that a certain class or type of job is overloading the system. To refer to the queue in an alert message, use the Queue Name variable in the associated action.
20005	Agent reached its job limit	The number of jobs an agent is executing is equal to its job limit. The agent cannot start any more jobs until other jobs complete. To refer to the agent in an alert message, use the Agent Name variable in the assigned action. This system event can notify users when an agent is operating at capacity.
20006	Compile started	The production schedule compile has started. Compiling usually begins at midnight, when the master is started on a new day, or when you select the Create Schedule menu item from the Operations menu. You can use this system event to notify users that a new schedule is being created.

Table 4-2 System Event Triggers

Event ID	System Event Trigger	Description
20007	Compile finished	The production schedule compile has completed. Compiling time is based on, among other factors, the number of jobs. Use this system event to alert users that a new schedule is in effect.
20008	Master paused	The master was paused. Waiting jobs are suspended until the master resumes operation. You can use this system event to notify users that the master was temporarily paused, and jobs will not launch until the master resumes.
20009	Master resumed	The master has been resumed from paused state. You can use this event to notify users that the master has resumed launching jobs. Depending on how long the master was paused, many jobs may have their dependencies met at once, which may cause a spike in system resource utilization.
20010	Lost Connection to agent	An agent's network connection was lost. To refer to the agent, use the Agent Name variable in the assigned action. You can use this event to warn users that an agent is no longer connected.
20011	Master program shut down	The master has been shut down normally. You can use this system event to notify users that all waiting jobs will not run until the master restarts.
20012	Backup master took over	A fault occurred on the primary master (such as the master going down, or a network failure occurred) which caused scheduling to be transferred to the backup master. You can use this system event to warn users that the backup master took over the scheduling process. Any jobs that were manually updated after the last database replication update prior to the takeover will have to be re-entered. See the <i>Fault Tolerance Guide</i> for more information on Fault Tolerance.
20013	Primary master started	The primary master has started. You can use this system event to notify users that jobs will resume being launched. Depending on how long the Master was stopped, many jobs may have their dependencies met at once, which may cause a spike in system resources.
20014	New production day	The master has recognized a new production day for which jobs are automatically compiled. You can use this event to trigger initializing variables used in dependencies.
20015	Lost connection to fault monitor	The network connection to the fault monitor was lost.
20016	Lost connection to backup master	The network connection to the backup master was lost.

Table 4-2 System Event Triggers

Event ID	System Event Trigger	Description
20017	Lost connection to database	The connection to the database was lost. Operator alerts and <z_sys>sys<z_Star>*<z_ADMIRAL>ADMIRAL logging actions are not available because they access the database. However, the logging action can be used with the NT event log.
20018	Lost network connection to remote master	The network connection to the remote master was lost.
20019	Connection brought offline due to planned outage	The agent/adaptor connection has entered a scheduled outage window.
20020	Connection brought online after planned outage	The agent/adaptor connection suspended during a scheduled outage window has ended its outage. (Does not apply to connections that are disabled during the outage.) This event could apply to either the automatic enabling of the connection at the scheduled end of the outage or when an administrator manually enables the connection early.