CHAPTER 3

Configuring Trace in Cisco Unified Serviceability

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Trace Configuration and Collection Checklist

Table 3-1 provides an overview of the steps for configuring and collecting trace for feature and network services in Cisco Unified Serviceability.

Table 3-1 Trace Configuration and Collection Checklist

Configuration Steps		Related Procedures and Topics
Step 1	If you want to enable trace compression, select **Zip Files** under Download File Options during Trace Collection setup.	How to Configure Trace Collection, page 9-5
Step 2	Select **System > Service Parameters** in Cisco Unified Presence Administration and configure the values of the TLC Throttling CPU Goal and TLC Throttling IOWait Goal service parameters (Cisco RIS Data Collector service).	• How to Configure Trace Collection, page 9-5 • *Configuration and Maintenance Guide for Cisco Unified Presence*
Step 3	Configure the trace setting for the service for which you want to collect traces. You can configure trace for the service on one server or on all servers in the cluster. To configure trace settings, select what information you want to include in the trace log by choosing the debug level and trace fields. If you want to run predetermined traces on services, set troubleshooting trace for those services.	• Configuring Trace Parameters, page 3-7 • Troubleshooting Trace Settings, page 3-11
Step 4	Install the Cisco Unified Communications Manager Real-Time Monitoring Tool on a local PC.	How to Install and Upgrade the Real-Time Monitoring Tool (RTMT), page 4-1

Table 3-1 Trace Configuration and Collection Checklist (continued)

Configuration Steps		Related Procedures and Topics
Step 5	If you want to generate an alarm when the specified search string exists in a monitored trace file, enable the LogFileSearchStringFound alert in RTMT. You can find the LogFileSearchStringFound alarm in the LpmTctCatalog. (In Cisco Unified Serviceability, select **Alarms > Definitions**. In the Find alarms where list box, select the **System Alarm Catalog**; in the Equals list box, select **LpmTctCatalog**.)	• How to Configure Trace Collection, page 9-5 • Viewing Alarm Definitions and Adding User-Defined Descriptions, page 2-4
Step 6	If you want to automatically capture traces for alerts such as CriticalServiceDown, check **Enable Trace Download** in the Set Alert/Properties dialog box for the specific alert in RTMT; configure how often that you want the download to occur.	How to Configure Trace Collection, page 9-5
Step 7	Collect the traces.	How to Configure Trace Collection, page 9-5
Step 8	View the log file in the appropriate viewer.	How to Configure Trace Collection, page 9-5
Step 9	If you enabled troubleshooting trace, reset the trace settings services, so the original settings are restored. **Note** Leaving Troubleshooting trace enabled for a long time increases the size of the trace files and may impact the performance of the services.	Troubleshooting Trace Settings, page 3-11

How to Configure Trace Parameters

Cisco Unified Serviceability provides trace tools to assist you in troubleshooting issues with your voice application. Cisco Unified Serviceability supports:

- SDI (System Diagnostic Interface) trace
- Log4J trace (for Java applications)

You can configure the level of information that you want traced (debug level), what information you want to trace (trace fields), and information about the trace files (such as number of files per service, size of file, and time that the data is stored in the trace files.) You can configure trace for a single service or apply the trace settings for that service to all servers in the cluster.

In the Alarm Configuration window, you can direct alarms to various locations, including SDI trace log files.If you want to do so, you can configure trace for alerts in the Cisco Unified Presence Real-Time Monitoring Tool (RTMT).

After you have configured information that you want to include in the trace files for the various services, you can collect and view trace files by using the trace and Log Central option in the RTMT.

You can configure trace parameters for any feature or network service that is available on any Cisco Unified Presence node in the cluster. Use the Trace Configuration window to specify the parameters that you want to trace for troubleshooting problems. If you want to use predetermined troubleshooting trace settings rather than choosing your own trace fields, you can use the Troubleshooting Trace window.

Note Enabling Trace decreases system performance; therefore, enable Trace only for troubleshooting purposes. For assistance in using Trace, contact Cisco TAC support.

- Service Groups in Trace Configuration, page 3-3
- Configuring Trace Parameters, page 3-7

Service Groups in Trace Configuration

Table 3-2 lists the services and trace libraries that correspond to the options in the Service Group list box in the Trace Configuration window.

Table 3-2 Service Groups in Trace Configuration

Service Group	Services and Trace Libraries	Notes
Database and Admin Services	Cisco AXL Web Service, Cisco Bulk Provisioning Service, Cisco CCM DBL Web Library, Cisco CCMAdmin Web Service, Cisco CCM User Web Service, Cisco Database Layer Monitor, Cisco License Manager, Cisco Role-based Security, and Cisco Unified Reporting Web Service	For a description of these services (not the Cisco CCM DBL Web Library or Cisco Role-based Security options), see Chapter 10, "Understanding Feature and Network Services in Cisco Unified Serviceability." Selecting the Cisco CCM DBL Web Library option activates the trace for database access for Java applications. For database access for C++ applications, activate trace for Cisco Database Layer Monitor, as described in the Appendix C, "Trace Field Descriptions." Selecting the Cisco Role-based Security option activates trace for user-role authorization. For most services in the Database and Admin Services group, you enable all trace for the service/library, instead of enabling trace for specific components. For Cisco Database Layer Monitor, you can run trace for specific components. **Note** You can control logging for services in the Cisco Unified Serviceability UI. To change the log level, select the "Database and Admin Services" group and "Cisco CCMUser Web Service" service.
Performance and Monitoring Services	Cisco AMC Service, Cisco CCM NCS Web Library, Cisco RisBean Library, Cisco Log Partition Monitoring Tool, Cisco RIS Data Collector, and Cisco RTMT Web Service	For a description of these services (not the Cisco CCM NCS Web Library or the Cisco RTMT Web Service), see Chapter 10, "Understanding Feature and Network Services in Cisco Unified Serviceability." Selecting the Cisco CCM NCS Web Library option activates trace for database change notification for the Java client. Selecting the Cisco RTMT Web Service option activates trace for the RTMT servlets; running this trace creates the server-side log for RTMT client queries.
Backup and Restore Services	Cisco DRF Local and Cisco DRF Master	For a description of these services, see the Chapter 10, "Understanding Feature and Network Services in Cisco Unified Serviceability." You enable all trace for each service, instead of running trace for specific components.

Table 3-2 Service Groups in Trace Configuration (continued)

Service Group	Services and Trace Libraries	Notes
System Services	Cisco CCMRealm Web Service, Cisco CCMService Web Service, Cisco Common User Interface, and Cisco Trace Collection Service	For a description of the Cisco Trace Collection service, see Chapter 10, "Understanding Feature and Network Services in Cisco Unified Serviceability." Selecting the Cisco CCMRealm Web Service option activates trace for login authentication. Selecting the Cisco Common User Interface option activates trace for the common code that multiple applications use; for example, Cisco Unified Operating System Administration and Cisco Unified Serviceability. Selecting the Cisco CCMService Web Service option activates trace for the Cisco Unified Serviceability web application (GUI). You enable all trace for each option/service, instead of running trace for specific components.
SOAP Services	Cisco SOAP Web Service, and Cisco SOAPMessage Service	Selecting the Cisco SOAP Web Service option activates the trace for the AXL Serviceability API. You enable all trace for this service, instead of running trace for specific components.
Platform Services	Cisco Unified OS Admin Web Service	The Cisco Unified OS Admin Web Service supports Cisco Unified Operating System Administration, which is the web application that provides management of platform-related functionality such as certificate management, version settings, and installations and upgrades. You enable all trace for this service, instead of running trace for specific components.

Table 3-2 Service Groups in Trace Configuration (continued)

Service Group	Services and Trace Libraries	Notes
Cisco Unified Presence Services	Cisco UP ConfigAgent, Cisco UP Intercluster Sync Agent, Cisco UP OAM Agent,	• Cisco UP ConfigAgent - The Cisco Unified Presence Configuration Agent is a change notification service which notifies the Cisco Unified Presence Proxy of configuration changes in the Cisco Unified Presence IDS database. You enable all trace for this service, instead of running trace for specific components. • Cisco UP Intercluster Sync Agent - The Cisco Unified Presence Intercluster Sync Agent provides the following services: DND propagation to Cisco Unified Communications Manager and synchronizes end-user information between Cisco Unified Presence clusters for intercluster SIP routing. You enable all trace for this service, instead of running trace for specific components. • Cisco UP OAM Agent - The Cisco Unified Presence OAMAgent service monitors configuration parameters in the Cisco Unified Presence IDS database that are of interest to the Presence Engine. When there are changes in the database, the OAMAgent writes a configuration file and sends an RPC notification to the Presence Engine. You enable all trace for this service, instead of running trace for specific components.

Table 3-2 Service Groups in Trace Configuration (continued)

Service Group	Services and Trace Libraries	Notes
Cisco Unified Presence Services	Cisco Client Profile Agent, Cisco UP Presence Engine, Cisco UP SIP Proxy, and Cisco UP Sync Agent	• Cisco UP Client Profile Agent - The Cisco Unified Presence Client Profile Agent service provides a secure SOAP interface to and from external clients using HTTPS. You enable all trace for this service, instead of running trace for specific components. • Cisco UP Presence Engine - The Cisco Unified Presence Engine collects, aggregates, and distributes user capabilities and attributes using this standards-based SIP and SIMPLE interface. It collects information regarding the availability status and communications capabilities of a user. You enable all trace for this service, instead of running trace for specific components. • CiscoUP SIP Proxy - The Cisco Unified Presence Proxy service is responsible for providing the SIP registrar and proxy functionality. This includes request routing, request or identification, and transport interconnection. You can enable trace for specific components. • Cisco UP Sync Agent - The Cisco Unified Presence Sync Agent keeps Cisco Unified Presence data in-sync with Cisco Unified Communications Manager data. It sends SOAP requests to the Cisco Unified Communications Manager for data of interest to Cisco Unified Presence and subscribes to change notifications from Cisco Unified Communications Manager and updates the Cisco Unified Presence IDS database. You enable all trace for this service, instead of running trace for specific components.

Configuring Trace Parameters

Before You Begin

Review the trace configuration and collection checklist.

Procedure

Step 1 Select **Trace > Configuration**.

Step 2 Perform the following actions:

a. Select the server that is running the service for which you want to configure trace from the Server list box.

b. Click **Go**.

c. Select the service group for the service that you want to configure trace from the Service Group list box. Table 3-2 lists the services and trace libraries that correspond to the options that display in the Service Group list box.

d. Click **Go**.

e. Select the service for which you want to configure trace from the Service list box.

f. Click **Go**.

Note The list box displays all services (active and inactive).

Step 3 If you configured Troubleshooting Trace for this service, a message displays at the top of the window that indicates that Troubleshooting Traces have been set. The system disables all fields on the window except the Output Settings. To configure the Output Settings, go to Step 9.

Step 4 Check **Apply to All Nodes** if you want trace to apply to all Cisco Unified Presence servers in the cluster.

Step 5 Check **Trace On**.

Step 6 Select the level of information that you want traced from the Debug Trace Level list box. Debug Trace level options vary, as described below, depending on which service you are tracing.

Level	Description
Arbitrary	Traces all Entry and Exit conditions plus low-level debugging information. **Note** Do not use this trace level with the Cisco UP Presence Engine service or the Cisco IP Voice Media Streaming Application service during normal operation.
Debug	Traces all State Transition conditions plus media layer events that occur during normal operation. Trace level that turns on all logging
Detailed	Traces all Arbitrary conditions plus detailed debugging information. **Note** Do not use this trace level with the Presence Engine service or the Cisco IP Voice Media Streaming Application service during normal operation.
Entry/Exit	Traces all Significant conditions plus entry and exit points of routines. Not all services use this trace level (for example, Cisco Unified Presence does not).
Error	Traces alarm conditions and events. Used for all traces that are generated in abnormal path. Uses minimum number of CPU cycles.
Fatal	Traces very severe error events that may cause the application to abort.

Level	Description
Info	Traces the majority of servlet problems and has a minimal effect on system performance.
Significant	Traces all State Transition conditions plus media layer events that occur during normal operation.
Special	Traces all Error conditions plus process and device initialization messages.
State Transition	Traces all Special conditions plus subsystem state transitions that occur during normal operation.
Warn	Traces potentially harmful situations.

Step 7 Check **Trace Fields** for the service that you chose; for example, Cisco UP SIP Proxy Trace Fields.

Step 8 Check the trace fields that you want to enable if the service that you chose has multiple trace fields, such as the Cisco UP SIP Proxy service.

The table below describes the service trace filter settings for the Cisco Unified Presence SIP Proxy.

Parameter	Description
Enable Federation IM Controller Trace	This parameter enables traces between Cisco Unified Presence and Microsoft OCS or LCS servers.
Enable CTI Gateway Trace	This parameter enables tracing for the CTI Gateway.
Enable Parser Trace	This parameter enables tracing of parser information related to the operation of the per-sipd child SIP parser.
Enable SIP TLS Trace	This parameter enables tracing for information related to the TLS transport of SIP messages by TCP services.
Enable Privacy Trace	This parameter enables tracing for information about processing of PAI, RPID, and Diversion headers in relation to privacy requests.
Enable Routing Trace	This parameter enables tracing for the Routing module.
Enable IPPM Trace	This parameter enables tracing for IP Phone Messenger.
Enable SIPUA Trace	This parameter enables tracing for the SIP UA application module.
Enable Number Expansion Trace	This parameter enables tracing for the Number Expansion module.
Enable Presence Web Service Trace	This parameter enables tracing for the Presence Web Service.
Enable SIP Message and State Machine Trace	This parameter enables tracing for information related to the operation of the per-sipd SIP state machine.
Enable SIP TCP Trace	This parameter enables tracing for information related to the TCP transport of SIP messages by TCP services.
Enable Authentication Trace	This parameter enables tracing for the Authentication module.
Enable Enum Trace	This parameter enables tracing for the Enum module.
Enable Registry Trace	This parameter enables tracing for the Registry module.

Parameter	Description
Enable Method/Event Routing Trace	This parameter enables tracing for the Method/Event routing module.
Enable CALENDAR Trace	This parameter enables tracing for the Calendar module.
Enable Server Trace	This parameter enables tracing for the Server.
Enable Access Log Trace	This parameter enables the proxy access log trace; the first line of each SIP message received by the proxy is logged.

Step 9 Specify the trace output setting to limit the number and size of the trace files, as described below.

Field	Description
Maximum number of files	This field specifies the total number of trace files for a given service. Cisco Unified Presence automatically appends a sequence number to the file name to indicate which file it is; for example, esp000005. When the last file in the sequence is full, the trace data begins writing over the first file. The default varies by service.
Maximum file size (MB)	This field specifies the maximum size of the trace file in megabytes. The default varies by service.

Step 10 Perform one of the following actions:

a. Click **Save** to save your trace parameters configuration.

b. Click **Set Default** to set the default.

Troubleshooting Tips

- When you change either the Maximum number of files or Maximum file size (MB) parameter, the system deletes all the service log files except the current file if the service is running, or, if the service has not been activated, the system will delete the files when the service is initially activated. If you want to keep a record of the log files, make sure that you download and save the service log files to another server before changing the Maximum No. of Files parameter or the Maximum File Size parameter.
- The changes to trace configuration take effect immediately for all services.

Related Topics

- Trace Configuration and Collection Checklist, page 3-1
- Troubleshooting Trace Settings, page 3-11
- Appendix C, “Trace Field Descriptions”

Troubleshooting Trace Settings

The Troubleshooting Trace Settings window allows you to select the services in Cisco Unified Serviceability for which you want to set predetermined troubleshooting trace settings. In this window, you can select the services on different Cisco Unified Presence nodes in the cluster. This populates the trace settings changes for all the services you choose. You can select specific activated services for a single node, all activated services for the node, specific activated services for all nodes in the cluster, or all activated services for all nodes in the cluster. In the window, N/A displays next to inactive services.

Note The predetermined troubleshooting trace settings for a Cisco Unified Presence feature or network service include SDI, and Log4j trace settings. Before the troubleshooting trace settings are applied, the system backs up the original trace settings. When you reset the troubleshooting trace settings, the original trace settings get restored.

When you open the Troubleshooting Trace Settings window after you apply troubleshooting trace settings to a service, the service that you set for troubleshooting displays as checked. In the Troubleshooting Trace Settings window, you can reset the trace settings to the original settings.

After you apply Troubleshooting Trace Setting to a service, the Trace Configuration window displays a message that troubleshooting trace is set for the given service(s). From the Related Links list box, you can select the Troubleshooting Trace Settings option if you want to reset the settings for the service. For the given service, the Trace Configuration window displays all the settings as read-only, except for some parameters of trace output settings; for example, Maximum No. of Files.

Before You Begin

Review the trace configuration and collection checklist.

Procedure

Step 1 Select **Trace > Troubleshooting Trace Settings**.

Step 2 Select the server where you want to troubleshoot trace settings from the Server list box.

Step 3 Click **Go**.

Note A list of services display. The services that are not activated on a Cisco Unified Presence node display as N/A.

Step 4 Perform one of the following actions:.

If you want to:	Action
Monitor specific services on the node that you selected from the Server list box	Check the service in the Services pane; for example, the Database and Admin Services, Performance and Monitoring Services, or the Backup and Restore Services pane (and so on). **Note** This task affects only the node that you selected from the Server list box.
Monitor all services on the node that you selected from the Server list box	Check **Check All Services.**
Monitor specific services on all nodes in a cluster	Check **Check Selected Services on All Nodes**. **Note** This setting applies for all nodes in the cluster where the service is activated.
Monitor all services for all nodes in the cluster	Check **Check All Services on All Nodes.**

Step 5 Click **Save**.

Step 6 Click one of the following buttons to restore the original trace settings:

- **Reset Troubleshooting Traces**—Restores the original trace settings for the services on the node that you chose in the Server list box; also displays as an icon that you can click.
- **Reset Troubleshooting Traces On All Nodes**—Restores the original trace settings for the services on all nodes in the cluster.

Troubleshooting Tips

- Leaving Troubleshooting trace enabled for a long time increases the size of the trace files and may impact the performance of the services.
- The Reset Troubleshooting Traces button displays only if you have set troubleshooting trace for one or more services.
- After you click the Reset button, the window refreshes, and the service check boxes display as unchecked.

Related Topics

- Trace Configuration and Collection Checklist, page 3-1