Collect Trace Data from a CUCM Cluster

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Introduction

This document describes how to use the trace collection process of the Cisco Unified Communications Manager (CUCM/CallManager).

Prerequisites

Requirements

Cisco recommends that you have knowledge of these topics:

- Real-Time Monitoring Tool (RTMT) application
- Detailed tracing for the CallManager service
- Detailed tracing for the computer-telephony integration (CTI) Manager service

Note: You must be a registered Cisco client to use these tools.

Components Used

The information in this document is based on CUCM 11.X and later versions.

The information in this document was created from the devices in a specific lab environment. All of the devices used in this document started with a cleared (default) configuration. If your network is live, ensure that you understand the potential impact of any command.

Background Information

If you work with a Technical Assistance Engineer (TAC) engineer on a Communications Manager issue, you need to collect CUCM traces. This could be a task you do infrequently or have never done before.

In this scenario, you troubleshoot a call that has not been recorded even though the CUCM-side configuration appears to be correct. The administrator receives an alarm message for each call that failed to record, so the TAC engineer has asked you to reproduce the issue and gather detailed CallManager traces, detailed CTI Manager traces, and Event Viewer logs from the CUCM side. These logs capture the call signaling events, the CTI messages that are exchanged with the server that records the calls, and the alarms from the call that failed to be recorded.

To complete this task:

- Install the RTMT application
- Configure or confirm detailed traces for the CallManager service
- Configure or confirm detailed traces for the CTI Manager service
- Reproduce the issue and take notes
- Gather the requested traces
- Verify trace file coverage
- Attach a trace package to your service request

Install the RTMT Application

In CUCM, the RTMT application is used to gather traces for most types of issues. Every major and minor version of CUCM has an associated version of the RTMT application. If, on your PC, you do not see a **Unified RTMT** program group under **Start > Programs > Cisco**, or if the RTMT version does not match your CUCM cluster, you must install the RTMT tool for your CUCM version before you move forward.

- 1. Log in to the Cisco Unified CM Administration Page.
- 2. Choose **Application > Plugins**.
- 3. Click Find.
- 4. Click the **Download** link for the Cisco Unified Real-Time Monitoring Tool Windows plugin.
- 5. Save the CcmServRtmtPlugin.exe file.
- 6. Run CcmServRtmtPlugin.exe.
- 7. Step through the directions of the InstallAnywhere installation wizard, accept the License Agreement and install to the default folder location. If you had an old version of RTMT installed, the installation wizard directs you to uninstall the old version before you proceed.
- 8. Choose **Start > Programs > Cisco > Unified RTMT** and launch Cisco Unified Real-Time Monitoring Tool.
- 9. In the Real-Time Monitoring Tool Login window, enter the IP address for your CUCM Publisher.

Real-Time Monitoring Tool Login	
Host IP Address: 10.122.138.102	
Ok Cancel Certificates	

10. In the Add the Certificate to Trust Store window, click Accept.

Add the Certificate to Trust Store
The Certificate from the server is not trusted.
This could be because the certificate is self-signed or the certificate is coming from a malicious server.
Please view the Certificate to confirm its authenticity before proceeding to add it.
Accept / Reject this Certificate ?
Accept Reject View

11. In the Authentication Required window, enter the same User Name and Password as you do to log on to the CUCM Administration page.

Authentication Required	×
A username and password are b	eing requested by https://10.122.138.102:8443
User Name:	administrator
Password:	••••••
Ok	Cancel

If you are unable to log on, add theRealtime and TraceCollection permissions to your user account, or use the application administrator account created when the system was installed and try again.

12. The application opens, and you can see a Select Configuration window. Click **OK** in order to select the Default configuration.



The System Summary page opens.



You have now verified that RTMT is installed, and that you are able to log on to your CUCM cluster with the tool.

Configure or Confirm Detailed Tracing for the CallManager Service

In CUCM 9.X and later, detailed tracing is enabled by default for the CallManager service. Before you proceed, confirm that detailed tracing is still configured. If not, configure it.

- 1. Log on to the Cisco Unified Serviceability page.
- 2. Choose **Trace > Configuration**.
- 3. From the Server drop-down list, choose the CUCM Publisher and click Go.
- 4. From the Service Group drop-down list, choose CM Services and click Go.
- 5. From the Service drop-down list, choose Cisco CallManager and click Go.
- 6. The system is configured for the default detailed tracing, as shown in this image:

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(€) € https://10.122.138.102/ccmservice	arch 🔄 🚖 🖨 🗢 🍎 🗧 🚍
Cisco Unified Serviceability For Cisco Unified Communications Solutions	Navigation Cisco Unified Serviceability - Go administrator About Logout
Trace Configuration	Related Links: SDL Configuration - Go
🔚 Save 🧬 Set Default	
Status:	
Select Server, Service Group and Service	
Server* 10.122.138.102CUCM Voice/Video V	Go
Service Group* CM Services	Go
Service* Cisco CallManager (Active)	✓ Go
Apply to All Nodes	
Trace On	
Trace Filter Settings	
Debug Trace Level Detailed 🗸	=
Enable H245 Message Trace	Enable CDR Trace
Enable DT-24+/DE-30+ Trace	Enable Analog Trunk Trace
Enable PRI Trace	Enable All Phone Device Trace
Enable ISDN Translation Trace	Enable MTP Trace
Enable H225 & Gatekeeper Trace	Enable All GateWay Trace
Enable Miscellaneous Trace	Enable Forward & Miscellaneous Trace
Enable Conference Bridge Trace	Enable MGCP Trace
Enable Music On Hold Trace	Enable Media Resource Manager Trace
Enable CM Real-Time Information Server Trace Enable CD Charles	Enable SIP Call Processing Trace
Enable SIP Stack Trace Enable Application Trace	Enable SCCP Keep Alive Trace Enable ScCP Keep Alive Trace
Enable Annunciator Trace Enable SoftKov Trace	Enable Speedulal Trace Enable SID Keen Alive (PECICIES Defease) Trace
Trace Output Settings Traces for this service are written into the SDL trace file reached via Related Links above.	es. File settings are found in the SDL Configuration page
Save Set Default	
①* - indicates required item.	-

- Trace On is enabled.
- The Debug Trace Level is set to Detailed.
- All Trace Filters are enabled, with the exception of:
 - Enable Miscellaneous Trace
 - Enable SoftKey Trace
 - Enable Route or Hunt List Trace
 - Enable All GateWay Trace
 - Enable SCCP Keep Alive Trace
 - Enable SpeedDial Trace
 - Enable SIP Keep Alive (REGISTER Refresh) Trace

- 7. If the system is not configured with at least the default detailed tracing settings, and if you use CUCM 9.x or later:
 - a. Click Set Default. This reverts trace configuration for this service to default settings.
 - b. Choose Apply to All Nodes.
 - c. Click Save.
- 8. Confirm trace configuration on the other servers in the cluster.

If you use an earlier version of CUCM, you need to manually configure your trace settings to match the illustration. The **Set Default** button on earlier versions sets the Debug Trace Level to Error, and not the Detailed.

Configure or Confirm Detailed Tracing for the CTI Manager Service

In CUCM 9.X and later, detailed tracing is also enabled by default for the CTI Manager service. Before you proceed, confirm or configure this capability.

- 1. Log in to the Cisco Unified Serviceability page.
- 2. Choose **Trace > Configuration**.
- 3. From the Server drop-down list, choose the CUCM Publisher and click Go.
- 4. From the Service Group drop-down list, choose CM Services and click Go.
- 5. From the Service drop-down list, choose Cisco CallManager and click Go.

The system is configured for the default detailed tracing, as shown in this image:

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(i) ▲ https://10.122.138.102/ccmservice C Q Search	☆ 自 ♥ ♣ Ѧ ♥ ៙ - Ξ
abala Cisco Unified Serviceability	Navigation Cisco Unified Serviceability - Go
CISCO For Cisco Unified Communications Solutions	administrator About Logout
<u>A</u> larm ▼ <u>T</u> race ▼ T <u>o</u> ols ▼ <u>S</u> nmp ▼ <u>C</u> allHome ▼ <u>H</u> elp ▼	
Trace Configuration	Related Links: SDL Configuration - Go
🔚 Save 🦽 Set Default	
Status:	
(i) Ready	
Select Server, Service Group and Service	
Server* 10.122.138.102CUCM Voice/Video V Go	
Service Group* CM Services	
Service* Cisco CTIManager (Active)	▼ Go
Apply to All Nodes	
☑ Trace On	
Trace Filter Settings	
Debug Trace Level Detailed 👻	
Enable All Trace	
Trace Output Settings	
Traces for this service are written into the SDL trace files. File sett reached via Related Links above.	tings are found in the SDL Configuration page
Save Set Default	
①* - indicates required item.	

- Trace On is enabled.
- The Debug Trace Level is set to Detailed.
- Enable All Trace is enabled.

6. If these settings were modified, and if you use CUCM version 9.x or later:

- a. Click Set Default in order to revert trace configuration to default settings.
- b. Check the Apply to All Nodes check box.
- c. Click Save.

7. Confirm trace configuration on the other servers in the cluster.

As with the CallManager trace settings, if you use an earlier version of CUCM you need to manually configure your trace settings to match the settings in the previous illustration. Click **Set Default** on earlier versions if you need to set the Debug Trace Level to Error.

Note: But what about the Event Viewer logs? You do not need to change debug levels for either the Event Viewer, Application logs or the Event Viewer, nor the System logs. You need to proceed with

Reproduce the Issue and Take Notes

In this scenario, you can place test calls to generate a failure. It helps the TAC Engineer to analyze the call if you provide information on the set of traces that have no information about the test calls. Also, you risk the collection of data for the wrong time frame and if that happens, you have to start over.

For each test call, record this information:

- The phone number for the party that called.
- The called party phone number.
- The call start time.
- The call end time.
- Time and description for any issues you experienced during the call

As CUCM traces can be very lengthy, TAC needs those call details in order to find your test calls in the data.

Gather the Requested Traces

After the issue was reproduced, gather the traces requested by TAC immediately. If you do, the files are not overwritten before you can gather them.

In this scenario, you need to collect CallManager traces, CTI Manager traces, and all Event Viewer logs. Unless TAC has given you other instructions, you need to collect those files from all servers for the complete time range that covers your test call or calls. This prevents the lost of traces from a server that you did not know was in the call flow.

- 1. Launch the RTMT.
- 2. Connect to the IP address of your CUCM Publisher.
- 3. Log on with the same credentials you use for the CUCM Administration web page.
- 4. Choose System > Tools > Trace & Log Central.



- 5. Double-click Collect Files. The Collect Files window opens to Select UCM Services/Applications.6. In Select UCM Services/Applications, click the check box in the All Servers column for:
 - Cisco CTIManager
 - Cisco CallManager

Select UCM Services/Applications			
Select :	all Services on all Serve	rs	
Name	All Servers	goesto11pub	
Cisco AXL Web Service			
Cisco Bulk Provisioning Service			
Cisco CAR Web Service			
Cisco CDR Agent			
Cisco CDR Repository Manager			
Cisco CDR files on CM server			
Cisco CDR files on Publisher Processed			
Cisco CTIManager	×	Ľ	
Cisco CTL Provider			
Cisco CallManager	V		
Cisco CallManager SNMP Service			
Cisco Certificate Authority Proxy Function			
Cisco Change Credential Application			
Cisco DHCP Monitor Service			
Cisco Dialed Number Analyzer			
Cisco Dialed Number Analyzer Server			
Cisco Directory Number Alias Lookup			
Cisco Directory Number Alias Sync			
Cisco Extended Functions			
Cisco Extended Functions Report			
Cisco Extension Mobility			
Cisco Extension Mobility Application			
Cisco IP Manager Assistant			
Cisco IP Voice Media Streaming App			
Cisco Intercluster Lookup Service			
Cisco License Manager			
Cisco Location Bandwidth Manager			1.1

7. Click Next. The Collect Files window advances to Select System Services/Applications.

8. In Select System Services/Applications, click the check box in the All Servers column for:

- Event Viewer-Application Log
- Event Viewer-System Log

Select System Services/Applications			
🗌 Select a	Il Services on all Server	rs	
	All Servers	goesto11pub	
Cisco Stored Procedure Trace	Ē		
Cisco Syslog Agent	- ī		
Cisco Tomcat			
Cisco Tomcat Security Logs			
Cisco Tomcat Stats Servlet			
Cisco Trace Collection Service			
Cisco Unified OS Admin Web Service			
Cisco Unified OS Platform API			
Cisco Unified Reporting Web Service			
Cisco WebDialerRedirector Web Service			
Cron Logs			
Event Viewer-Application Log	V	Ľ	
Event Viewer-System Log	V	Ľ	
FIPS Logs			
Host Resources Agent			
PT Platform CLI Created Reports			
IPT Platform CLI Logs			
PT Platform Cert Monitor Logs			
IPT Platform CertMgr Logs			
PT Platform Cluster Manager Logs			
IPT Platform GUI Logs			
IPT Platform IPSecMgmt Logs			
IPT Platform RemoteSupport Logs			
Install File Signing			
Install and Upgrade Logs			
Kerneldump Logs			
	aaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaaa	inninnan anna anna anna anna anna anna	

- 9. Click Next. The Collect Files window advances to the Collect File Options screen.
- 10. Configure your Collection Time:
 - a. As you have timestamps for your test call(s), click the **Absolute Range** radio button.
 - b. From the **From Date/Time** drop-down list, choose the time for one minute before your first test call.

c. From the **To Date/Time** drop-down list, choose the time for one minute after your last test call. 11. Configure your Download File Options.

- a. Click **Browse** in order to configure your Download File Directory and specify a new directory for each trace file collection. For example, when you want to download these files to Desktop\TAC\callrectest01. Traces for a later test could go to Desktop\TAC\callrectest02. This keeps the collected file sets for each issue reproduction organized and separated.
- b. Leave all other settings set to the defaults.

Collect Files		×
Collect File Options:		
Absolute Range		
Select Reference Server Time Zone	Client:(GMT-5:0)Eastern Daylight Time-America/New_York	•
From Date/Time	7/22/16 - 1:05 PM	-
To Date/Time	7/22/16 - 1:15 PM	-
O Relative Range		
Files Generated in the last	5 Vinutes	-
Download File Options		
Select Partition	Active Partition	
Download File Directory	ple\Desktop\TAC\07222016_106_PM_callrec_fail Browse	
◯ Zip Files		
Do Not Zip Files		
Uncompress Log Files		
Delete Collected Log Files from	Server	
Note: The result file can be found in the user specified directory structure	the directory named <node name=""> created under e.The File Name is as specified by the user.</node>	
< Bac	ck Next > Finish Cancel	

12. Click Finish.

The Collect Files window updates with the status of trace collection. While trace collection continues, you can see a **Cancel** button is available. When collection is complete, the **Cancel** button is grayed out.



Verify Trace File Coverage

Review the files that you have gathered in order to ensure they cover the problem time frame. The simplest way to do this is to review the **TraceCollectionResult*.xml** files.

When RTMT collects a set of files, it writes a **TraceCollectionResult*.xml** file to the download file directory for each server that it collects data from. You can see these files along with subdirectories for each CUCM server. The **TraceCollectionResult*.xml** files state which files were successfully downloaded from each server. The subdirectories contain the actual trace and log files.

				1000			x
😋 🕙 🖉 🕨 🕨 TAC 🕨 (07222	016_106_PM_callrec_fail >	v 4 ₉	Search 07222016_10	06_PM_call	rec_fail	Q
Organize 👻 Include in	n libra	ary 🕶 Share with 🕶 Burn New folde	r		100		0
☆ Favorites	-	Name	Date modified	Туре	Size		
E Desktop	Е	퉬 goestol1pub_1	7/22/2016 1:06 PM	File folder			
😹 Downloads		B goesto11sub1_2	7/22/2016 1:06 PM	File folder			
Secent Places		TraceCollectionResult_2016-07-22_13-06	7/22/2016 1:06 PM	XML Document		1 KB	
		TraceCollectionResult_2016-07-22_13-06	7/22/2016 1:06 PM	XML Document		1 KB	
🥽 Libraries							
Documents	Ŧ						
4 items							

Open each TraceCollectionResult file and observe whether the modified date for the listed file or files maps to the date and time range for your trace collection. If trace files could not be collected, for example, they are overwritten, then they are lost.



If you are familiar with earlier versions of CUCM, this version differs in that the Cisco CallManager traces are a single set of SDL* traces, not a set of SDL* traces and a set of ccm* traces. This is because, in CUCM 9.X and later, traces are interwoven into a single set of files which makes analysis easier. The same is true for the Cisco CTI Manager service. Instead of both the SDL* traces and cti* traces, all of the data is in the SDL* traces for that service.

Trace collection issues can usually be avoided if you collect traces immediately after an issue reproduction.

Note: The TraceCollectionResult*.xml files simply contain a list of files which were successfully collected from each CUCM server. TAC needs to review the actual trace and log files that were collected.

Attach a Trace Package to Your Service Request

Now that you have a complete set of traces for your issue reproduction call, you need send them to your TAC engineer.

When you downloaded the traces, you specified a new download file directory. This directory now contains all of the log and trace files, as well as the TraceCollectionResult*.xml files. TAC requires you to send all of the contents of the download file directory, not just one or two files.

In order to make this simple, upload a single .zip file with the Case File Uploader tool:

- 1. Compress the entire download file directory to a single .zip archive file.
- 2. Browse to the Support Case Manager.

You are redirected to a log in page. Log in with your CCO username and password.

tiste Cisco.com Login Page X	
← → C https://sso.cisco.com/autho/forms/CDClogin.html	F 🔂 🚺 🔳 🗏
	۹.
Log In Language: English •	
Log into an Existing Account User Name yourccoid Password Log In Forgot your user ID and/or password?	Create A New Account There are various levels of access depending on your relationship with Cisco. Review the benefits of registration and find the level that is most appropriate for you. Register Now

This brings you to the Case File Uploader tool.



- 3. Enter your service request number.
- 4. Add your .zip file.
- 5. Add a file description for your TAC engineer. This is a good opportunity to communicate your issue reproduction notes.
- 6. Click **Upload**. The Case File Uploader tool displays the upload status. Wait for the upload to complete.

៉ ៅទីទ ែ Support Case Uploa	der ×		KIDA	
← → C 🔒 http	os://cway.cisco.com/csc/?requ	uestID=		☆ 🖸 🔳 =
cisco. Ca	se File Uploader			
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Upload Deta	ils			_
Name Description Category Status Type Size Elapsed	07222016_106_PM_callrec_ 1:06 PM test call - failed reco log_values COMPLETED application/x-zip-compresse 1.1 MB 2.4s	_fail.zip ording d		
0 Files In Pro	gress Add More			
File Name Progress Elapsed (2.4s)				
√ 07222016_1	06_PM_callrec_fail.zip	(1.1 MB / 1.1 MB) (100%)	2.4s	~

- 7. Close the browser window.
- 8. Ensure that you have communicated to your TAC engineer all of your issue reproduction notes whether this was through the upload tool, via email, or verbally. This allows them to start to analyze the data for you.

Analysis

The Cisco CallManager/CTI Manager traces related to the specific call can be analyzed by the Collaboration Solutions Analyzer tool (ladder diagram/annotations/filtered logs/diagnostic signatures). Check the documentation on how to use the tool:

- <u>Collaboration Solutions Analyzer User Documentation</u>
- <u>Collaboration Solutions Analyzer</u>