# Real-Time Monitoring



# Installation and Configuration

The Unified RTMT installer can be downloaded using **Tools** > **Plug-ins** menu on the **Cisco Unified Contact Center Express Administration** web interface. See "Cisco Unified Real-Time Monitoring Tool" section in *Cisco Unified Real-Time Monitoring Tool Administration Guide for Cisco Unified Contact Center Express and Cisco Unified IP IVR* for installation and configuration procedures, available here:

https://www.cisco.com/en/US/products/sw/voicesw/ps556/prod_maintenance_guides_list.html

# Performance Monitoring

Unified CCX provides performance counters (called perfmon counters) for application performance monitoring. The perfmon counters help expose various performance values and enables to track application performance in real time.

The perfmon counters contain counter-based information, such as the name and index of the counter, the scale, the type, subcounters to set when setting a counter, the current values, and a map containing counter instance data. Each performance counter instance object contains instance-based data, like the instance ID and current values.

You can log perfmon counters locally on the computer and use the performance log viewer in Unified RTMT to display the perfmon CSV log files that you collected or the Real-time Information Server Data Collection (RISDC) perfmon logs. Choose **System** > **Performance** on the Unified RTMT tool to view perfmon counters.

## Performance Objects

Unified RTMT provides a set of default monitoring objects that assist you in monitoring the health of the system. Default objects include performance counters or critical event status for the system and other supported services.

The system logs information every 10 seconds for predefined system counters.

# Performance Counters

To troubleshoot system performance problems, you add a counter (query) that is associated with the perfmon object to the performance monitor, which displays a chart for the counter. Choose **System** > **Performance** > **Open Performance Monitoring** to add a new counter.

For more information about monitoring objects and counters, see "Performance Monitoring" section in the *Cisco Unified Real-Time Monitoring Tool Administration Guide for Cisco Unified Contact Center Express and Cisco Unified IP IVR*, available here:

https://www.cisco.com/en/US/products/sw/voicesw/ps556/prod_maintenance_guides_list.html

# Performance Objects and Counters for Unified CCX

Following are the Unified CCX application specific objects:

- Unified CCX database monitors
- Unified CCX engine JVM heap
- Intelligence center database performance Info
- Intelligence center JVM statistics
- Intelligence center system condition table
- Intelligence center thread pool section
- Intelligence center tomcat connector
- Reporting engine info
- Ramfs
- SchedulerInfo

**Note** Expand the objects in RTMT to display the counters. Right click on each counter and select **Counter Description** for the description.

# Critical Services

The Critical Services monitoring function provides the name of the critical service, the status (whether the service is up, down, activated, stopped by the administrator, starting, stopping, or in an unknown state), and the elapsed time during which the services are functional on the system.

**Note** Unified RTMT does not display a partial running status of a service in Unified CCX. For example, it does not display a service as "running" under "Critical Services" if some of its subsystems are down. The partial status of the Unified CCX services will only be viewable from the **Unified CCX Serviceability Administration** web interface.

**Note** You can view and manage Cloud Connect services using Cloud Connect CLIs. For more information, see *Cloud Connect* section in the *Command Line Interface* chapter.

# Tools

Unified RTMT provides various tools to monitor and troubleshoot system issues. The following section briefly describes these tools.

# Alerts

Unified CCX generates alert messages to notify the administrator when a predefined condition is met, such as when an activated service fails to start. The system sends alerts as email or displays alerts as a popup message on RTMT.

RTMT contains preconfigured and user-defined alerts that support alert modifications. Although you can perform configuration tasks for both types, you cannot delete preconfigured alerts (whereas you can add and delete user-defined alerts). Predefined alerts are configured for perfmon counter value thresholds as wells as event (alarms) notifications.

## Unified CCX Alerts

The following list contains preconfigured Unified CCX alerts:

***Table 1:***

| Alert Name | Syslog Alarm Name | Description |
|---|---|---|
| DB CRA % Space Used | DB CRA % Space Used | The percentage of used space in the Unified CCX database, db_cra. The database, db_cra, contains the Unified CCX historical and configuration data. |
| DBReplicationStopped | DB_REPLICATION_STOPPED | Unified CCX Database Replication has been removed. This typically happens when the replication queues become full due to the inability to contact the other node. |

| | | |
|---|---|---|
| HistoricalDataWrittenToFiles | UCCX_HISTORICAL_DATA_WRITTEN_TO_FILES | Historical data is not written to the Unified CCX database and has been written to the file system. Please verify the state of the Unified CCX database. |
| Intelligence Center CUIC_DATABASE_UNAVAILABLE | CUIC_DATABASE_UNAVAILABLE | This alert occurs when the Intelligence Center CUIC_DATABASE_UNAVAILABLE event gets generated. This indicates the system detected critical error with database. |
| Intelligence Center CUIC_DB_REPLICATION_FAILED | CUIC_DB_REPLICATION_FAILED | This alert occurs when the Intelligence Center CUIC_DB_REPLICATION_FAILED event gets generated. This indicates the Database replication failed. |
| Intelligence Center CUIC_REPORT_EXECUTION_FAILED | CUIC_REPORT_EXECUTION_FAILED | This alert occurs when the Intelligence Center CUIC_DB_REPLICATION_FAILED event gets generated. This indicates that the reporting server could not run a report. This could be because the associated datasource is offline. |

| | | |
|---|---|---|
| Intelligence Center CUIC_UNRECOVERABLE_ERROR | CUIC_UNRECOVERABLE_ERROR | This alert occurs when the Intelligence Center CUIC_UNRECOVERABLE_ERROR event gets generated. This indicates that the system has detected an internal error within Reporting Server which may prevent it from functioning correctly. Restart may be required. |
| CCXToCUICAdminSyncFailed | UCCX_TO_CUIC_SYNC_FAILED | This alert occurs when the Unified CCX has failed to notify CUIC on any resource change. |
| CCXToCUICCVDSyncFailed | UCCX_TO_CUIC_SYNC_FAILED | This alert occurs when the Unified CCX has failed to notify CUIC on any resource change. |
| CCXToCUICEngineSyncFailed | UCCX_TO_CUIC_SYNC_FAILED | This alert occurs when the Unified CCX has failed to notify CUIC on any resource change. |
| PurgeInvoked | AUTO_PURGE_COMPLETE | This alert occurs when the Unified CCX Auto Purging has completed. |
| UnifiedCCXEngineMemoryUsageHigh | UnifiedCCXEngineMemoryUsageHigh | This alert occurs when the percentage of JVM heap memory used by Cisco Unified CCX Engine process is greater than the configured threshold value. |

| | | |
|---|---|---|
| EMAIL_SERVER_DOWN | EMAIL_SERVER_DOWN | This alert occurs when the email server is not reachable. |
| EmailOAuthConnectionFailed | EMAIL_OAUTH_CONNECTION_FAILED | This alert occurs when CCP is unable to connect to the email OAuth server or get the access token. |
| EmailAuthenticationFailed | EMAIL_AUTHENTICATION_FAILED | This alert occurs when the email credentials are wrong. |
| CCPTomcatServiceDown | SS_PARTIAL_SERVICE_CCP_TOMCAT_DOWN | This alert occurs when CCP Tomcat is not reachable. |
| CCPXMPPServiceDown | CCP_XMPP_SERVICE_DOWN | This alert occurs when the Unified CCX has failed to contact CCP runtime server (XMPP). |
| OutboundScheduledContactImportFailed | OB_SCHEDULED_CONTACT_IMPORT_FAILED | Scheduled import of outbound contacts failed. |
| OutboundContactImportSchedulingFailed | OB_CONTACT_IMPORT_SCHEDULING_FAILED | Scheduling of outbound import contact failed. |
| UserPasswordMismatchAcrossNodes | UserPasswordMismatchAcrossNodes | One or more user passwords are not same across both the nodes. |
| ReasonCodesSyncRetryFailure | REASONCODE_SYNC_RETRY_ERROR | Reason Codes Sync from Finesse failed and reached to Maximum number of retries.<br>Ensure that Finesse service and Unified CCX database are active. |

| | | |
|---|---|---|
| CCPCacheStatusFull | CCP_CACHE_STATUS_FULL | Unable to cache emails as disk space is low. No new emails will be fetched. |
| CCPCacheStatusReachedLowThreshold | CCP_CACHE_STATUS_REACHED_LOW_THRESHOLD | Existing emails have consumed a considerable amount of disk space. |
| CacheStatusOnline | CCP_CACHE_STATUS_ONLINE | Considerable amount of disk space is now available. New emails would now be fetched. |
| CCPSSLError | SS_PARTIAL_SERVICE_CCP_SSL_ERROR | This alert occurs when SSL Connectivity with Customer Collaboration Platform fails. |

**Note** To view or edit values for any alert, right click on the alert and select **Set Alert/Properties...**.

## Cisco Identity Service Alerts

You can view the Cisco Identity Service alerts from the **Unified CCX** pane.

The following list contains preconfigured Cisco Identity Service alerts:

***Table 2:***

| Alert Name | Syslog Alarm Name | Description |
|---|---|---|
| IdSInitializationFailure | IDS_INIT_ERROR | This alert occurs when an error is encountered during IdS initialization. |
| IDPMetaDataLoadError | IDP_META_DATA_LOAD_ERROR | This alert occurs when the trust could not be established between IdS and IdP during initialization. |
| SPMetaDataLoadError | SP_META_DATA_LOAD_ERROR | This alert occurs when SAML SP metadata Initialization fails. |

| | | |
|---|---|---|
| IDPMetaDataUpdateError | IDP_META_DATA_UPDATE_ERROR | This alert occurs when there is an error updating IdP metadata and propagating across the cluster. |
| SPMetaDataUpdateError | SP_META_DATA_UPDATE_ERROR | This alert occurs when SAML SP certificate regeneration fails. |
| TokenMetaDataUpdateError | TOKEN_META_DATA_UPDATE_ERROR | This alert occurs when TOKEN Keystore regeneration or update fails. |
| IdSSecurityConfigNotPresent | IDS_SECURITY_CONFIG_NOT_PRESENT | This alert occurs when some IdS security configuration files are not present on the secondary node. |
| IdSSecurityConfigPullFailure | IDS_SECURITY_CONFIG_PULL_FAILURE | This alert occurs when the security config could not be pulled from the primary IdS node. |
| SAMLCertificateLoadFailed | SAML_CERTIFICATE_LOAD_FAILED | This alert occurs when the system is unable to read the SAML SP certificate. |
| IdSStateNotConfigured | STATE_NOT_CONFIGURED | This alert occurs when the trust between IdS node and IdP is yet to be established or when the IdS configuration could not be synchronized from the master node. |
| IdSStateOutOfService | STATE_OUT_OF_SERVICE | This alert occurs whenever a system error results in the IdS Application failing to start. |

**Note** To view or edit values for any alert, right-click the alert and select **Set Alert/Properties**.

# Syslog and Alert

Below are the set of syslog messages and alert which can be viewed from RTMT.

| Syslog Alarm Name | Description |
|---|---|
| CONTM_INIT_FAILURE | Container Manager initialisation failed |
| CONTM_INIT_HTTP_FAILURE | Container Manager HTTP Server initialisation failed |
| CONTM_INIT_PROVISIONING_FAILURE | Container Manager fails to initialise the provisioning |
| CONTAINER_AUTO_UPDATE_FAILURE | Container Manager fails to update containers based on the provisioning |
| CONTAINER_AUTO_UPDATE _RECOVERY_FAILURE | Container Manager failed to update containers based on new provisioning, and failed to revert back containers based on existing provisioning |

| Syslog Alarm Name | Description |
|---|---|
| CONTAINER_AUTO_UPDATE_PERSIST _PROVISIONING_FAILURE | Container Manager failed to persist the new provisioning after container auto update |

# Syslog Support for Critical Cisco Finesse Log Messages

Cisco Finesse generates syslogs for critical log messages. Use the following procedure to view the logs using Unified RTMT.

### Before you begin

Download and install RTMT on a client computer from the following URL: `https://FQDN:8443/plugins/CcmServRtmtPlugin.exe`, where FQDN is the Fully Qualified Domain Name of the Finesse server.

**Step 1** Log in to Unified RTMT using Finesse administrator credentials.

**Step 2** In the tree hierarchy, select **SysLog Viewer** or choose **System** > **Tools** > **SysLog Viewer** > **Open SysLog Viewer**.

**Step 3** From the **Select a Node** drop-down list, choose the server where the logs that you want to view are stored.

**Step 4** Under the **Logs** tab, select **Application Logs** > **CiscoSyslog** to view and save the syslog file.

**Tip** When you double-click the CiscoSyslog message, the **Show Detail** dialog displays the syslog definition and recommended actions in an adjacent pane.

For more information, see *Cisco Unified Real-Time Monitoring Tool Administration Guide* at https://www.cisco.com/c/en/us/support/unified-communications/unified-communications-manager-callmanager/products-maintenance-guides-list.html.

**Note** System log messages generated by Cisco Finesse are also available under **SysLog Viewer** > **System Logs** > **messages**.

The following are the different types of messages and corresponding descriptions that are captured in the **SysLog Viewer** > **System Logs** > **messages**.

- CTI_SOCKET_ERROR

  System has encountered an error connecting to the CTI server.

- CTI_CONNECTION_LOST

  System has lost contact with the CTI server.

- CTI_OPEN_FAILURE

  CTI Server rejected open request.

- CTI_CONNECTION_RETRIES_EXCEEDED

  System has failed to connect to CTI server in the allowed number of retries.

- CTI_CONNECTION_ESTABLISHED

  System has successfully connected to CTI server.

- SUBSYS_INIT_ERROR

  Error initializing subsystem.

- UNABLE_TO_CONNECT_TO_XMPP_SERVER

  Unable to connect xmpp server.

- DB_SS_CONNECTION_CHECK

  There was an error connecting to the database.

- cfservice_CORE_ERROR_DB_CONNECTION

  Unable to connect to the Database.

- AWDB_NOT_ACCESSIBLE

  Unable to connect to AWDB server.

- VOS_DB_ADAPTER_ERROR

  There was an error on the VOS DB Adapter operation.

- FINESSE_APP_STARTUP_ERROR

  Error during Finesse Application Startup.

- OF_STATE_CHANGED

  OF subsystem state successfully changed.

- CONNECTED_TO_XMPP_SERVER

  Successfully connected to xmpp server.

- SSO_API_ERROR

  Error processing REST API Request for SSO.

- API_ERROR_DETAIL

  Error processing REST API request.

- AWDB_CONNECTION_ERROR

  Error while connecting the AWDB server.

- AWDB_CONNECTION_SWITCH_SUCCESS

  AWDB server connection successfully switched.

# Traces and Logs

The trace and log central feature in RTMT allows you to configure on-demand trace collection for a specific date range or an absolute time. You can collect trace files that contain search criteria that you specify and save the trace collection criteria for later use, schedule one recurring trace collection and download the trace files to a SFTP or FTP server on your network, or collect a crash dump file.

After you collect the files, you can view them in the appropriate viewer within the RTMT. You can also view traces on the server without downloading the trace files by using the remote browse feature. You can open the trace files by either selecting the internal viewer that is provided with RTMT or choosing an appropriate program as an external viewer.

For more information about traces and logs, see "Tools for traces, logs, and plug-ins" in *Cisco Unified Real-Time Monitoring Tool Administration Guide for Cisco Unified Contact Center Express and Cisco Unified IP IVR*, available here:

https://www.cisco.com/en/US/partner/products/sw/voicesw/ps556/prod_maintenance_guides_list.html

# Cloud Connect Serviceability

Use the Cisco Unified Real-Time Monitoring Tool (RTMT) to collect Cloud Connect logs.

You can use the Cloud Connect CLIs to:

- List all the containers in your deployment.
- View details of the specified container in JSON format.
- Start the specified container.
- Stop the specified container.
- Generate the heap dump for the specified container that is running JVM.
- Generate the thread dump for the specified container that is running JVM.
- Set log level for the specified service.
- Update the Cloud Connect Cherry point connector configuration details.
- Download and install RTMT on a client computer.

For more information on Cloud Connect CLIs, see *Cloud Connect*.

# CUCM Telephony Data Monitoring

Following entities can be monitored using **CUCM Telephony Data** RTMT:

- Triggers
- Call Control Groups
- CTI ports

To access **CUCM Telephony Data**, click **Cisco Unified CCX** tab in RTMT.

## Triggers Page

The Triggers page displays the following information for the triggers that are configured for Unified CCX:

*Table 3: Triggers Page Options*

| Counters | Description |
|---|---|
| TriggerDN | This field displays the directory number that is associated with the trigger. |
| Trigger State | This field displays the state of the trigger, which can be In Service, Out of Service, or Unknown. |
| Application Name | This field displays the name of Unified CCX application that is associated with the trigger. |
| Ready for Call | This field indicates whether the trigger is ready to accept the call. |
| CallControlGroup ID | This field displays the ID of the call control group that is associated with the trigger. |
| Media Group ID | This field displays the ID of the media group that is associated with the trigger. |
| Last State Change Time | This field displays the time of last state change for the trigger. |
| Recommended Action | This field provides the reason the trigger state is Out of Service or Unknown and provides the recommended action to return the trigger state to In Service.<br>**Note** This field is populated only if the trigger is in Out of Service state or Unknown state. |

## Call Control Groups page

The Call Control Groups page provides the following information about the current Call Control Group that is configured for Unified CCX:

*Table 4: Call Control Groups Page Options*

| Counters | Description |
|---|---|
| CallControlGroup ID | This field displays the ID that is associated with the call control group. |
| Group State | This field displays the state of the call control group, which can be In Service, Partial Service, or Out of Service. |
| Total Ports | This field displays the total number of CTI ports that are configured for the call control group. |
| InService Ports | This field displays the number of in-service CTI ports. |
| OOS Ports | This field displays the number of out-of-service CTI ports. |

## CTI Ports Page

The CTI Ports page provides the following information about the current CTI ports that are configured for Unified CCX:

*Table 5: CTI Ports Page Options*

| Counters | Description |
|---|---|
| CTI Port DN | This field displays the directory number of the CTI port. |
| CallControlGroup ID | This field displays the ID of call control group to which the CTI port belongs. |
| Port State | This field displays the state of CTI port, which can be In Service or Out of Service. |
| CallID | This field displays the call ID of the last call that is available on the CTI port before the port state changed to Out of Service.<br>**Note** This field is populated only if the port state is Out of Service. |
| Last State Change Time | This field displays the last time when the CTI port state changed. |

## Summary Page

The Summary page provides the following information:

*Table 6: Summary Page Options*

| Counters | Description |
|---|---|
| Overall Telephony Subsystem State | This field displays the state of the Unified CCX telephony subsystem, which can be In Service, Partial Service, or Out of Service. |
| Call Control Groups In Service | This field displays the number of call control groups that are in service. |
| Call Control Groups Out Of Service | This field displays the number of call control groups that are out of service. |
| Call Control Groups In Partial Service | This field displays the number of call control groups that are in partial service. |
| Enabled Triggers | This field displays the number of triggers that are associated with valid call control group IDs. |
| Disabled Triggers | This field displays the number of triggers that are associated with invalid call control group IDs. |
| Triggers With Config Errors | This field displays the number of triggers with configuration errors. |

**Note** In UCCX system, if we do not configure any Trigger and CTI Ports then CM Telephony displays Out of Service status. Similarly in IPIVR, if we do not configure ICM Subsystem then ICM Subsystem displays Out of Service status.

# Cisco Unified Analysis Manager

Use Cisco Unified Analysis Manager, a tool included with the Unified RTMT to perform troubleshooting operations. Unified Analysis Manager also allows you to monitor various aspects of the devices added to the tool. Unified Analysis Manager is used to collect troubleshooting information from your system and analyze the information. It can identify the supported Unified Communications (UC) products and applications that you have in your system and troubleshoot call failures across these UC applications, collecting trace and log files and other platform and configuration information. You can use this information to troubleshoot on your own or send the information to Cisco Technical Assistance for analysis.

## Unified Analysis Manager for Unified CCX

To monitor and troubleshoot a Unified CCX-based solution with the help of Unified Analysis Manager, you must connect to a Unified Communications Manager server and then add the Unified CCX nodes accordingly. You can add following nodes/servers for monitoring:

- Unified CCX node
- Call record server

Consider the following points while adding nodes/servers for monitoring:

- To add nodes/servers, ensure that you select **Node Type** as **Unified CCX**.
- To add a call record server, enter **uccxsct** in the **JDBC User Name** field.

  For detailed procedures to perform these actions, see “Cisco Unified Analysis Manager preferences” section in the *Cisco Unified Real-Time Monitoring Tool Administration Guide for Cisco Unified Contact Center Express and Cisco Unified IP IVR*, available here:

  https://www.cisco.com/en/US/products/sw/voicesw/ps556/prod_maintenance_guides_list.html