Call Reporting and Billing Administration Guide for Cisco Unified Communications Manager, Release 14 and SUs

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C O N T E N T S

CHAPTER 1

New and Changed Information

- New and Changed Information, on page 1

New and Changed Information

The following table provides an overview of the significant changes to the features in this guide up to this current release. The table does not provide an exhaustive list of all changes made to the guide or of the new features up to this release.

Table 1: New Features and Changed Behavior in Unified Communications Manager and IM and Presence Service

Feature or Change	Description	See	Date
Initial Release of Document for Release 14	—	—	March 31, 2021
Additional Billing Server Support	You can now add up to eight billing servers in Unified Communications Manager.	CDR Management , on page 8	March 31, 2021
Initial Release of Document for Release 14SU1	—	—	October 27, 2021
Initial Release of Document for Release 14SU2	—	—	June 16, 2022

P A R T I

CDR Analysis and Reporting

Overview

The Cisco CDR Analysis and Reporting (CAR) tool generates reports for quality of service, traffic, user call volume, billing, and gateways. CAR uses data from Call Detail Records (CDRs), Call Management Records (CMRs), and the Unified Communications Manager database in order to generate reports. The CAR interface can be accessed under the **Tools** menu of Cisco Unified Serviceability.

CAR is not intended to replace call accounting and billing solutions that third-party companies provide. You can find the companies that provide these solutions and that are members of the Cisco Technology Developer Program by searching the home page of the Cisco Developer Community.

Note CAR does not handle iDivert calls (a feature that diverts calls to a voice-messaging system) and treats them as normal calls. The part of the call after the iDivert feature gets activated may not get charged to the correct party.

- CDR Analysis and Reporting Overview, on page 5

CDR Analysis and Reporting Overview

As its primary function, CAR generates reports about the users of Unified Communications Manager and generates reports on the system status about call processing. CAR also performs CAR database management activities. You can perform these tasks in one of the following ways:

- Automatically configure the required tasks to take place.

- Manually perform the tasks by using the web interface.

You access CAR from the Tools menu of Cisco Unified Serviceability after you activate the appropriate services as described in the .

All CAR reports use CDR data. CAR processes the CDRs from flat files that the CDR Repository service places in the CDR repository folder structure. CAR processes CDRs at a scheduled time and frequency. By default, CDR data loads continuously 24 hours per day and seven days per week; however, you can set the loading time, interval, and duration as needed. In addition, the default setting loads only CDR records. CMR records do not get loaded by default.

> **Note** An option allows you to uncheck the "Load CDR Only" check box in the CAR System Scheduler window to allow CMR records to load. See Set Up CDR Load Schedule, on page 36 for additional information.

CAR retrieves information that requires for various reports from CDRs, CMRs, and the Unified Communications Manager database.

Scheduling Reports

After CAR is activated on your system, you can schedule CAR reports to generate automatically at a regular time. Each report that can be scheduled has its own report generation interval. You can make the report generation interval be daily, weekly, or monthly. Scheduling Daily reports schedules all the reports that have report generation intervals of daily. Similarly, scheduling Weekly or Monthly reports would schedule the reports that have report generation intervals of weekly or monthly. You can also specify the time to keep a report before it gets automatically deleted.

By default, CAR uses the following report generation and deletion schedule:

- Daily reports run at 1 a.m. every day. These reports get purged after two days.

- Weekly reports run at 4 a.m. every Sunday. These reports get purged after four weeks.

- Monthly bill reports run at 3 a.m. on the first day of every month. These reports get purged after two months.

- Other monthly reports run at 2 a.m. on the first day of every month. These reports get purged after two months.

> **Note** If you upgrade your system to a new version of Unified Communications Manager, you must disable the CAR reports that generate automatically, so you conserve system resources during the upgrade process.

For a list of reports and the default generation schedule, see the Enable Automatic Generation Reports, on page 56.

For system monitoring, automatically generate various reports, such as QoS reports, and review them at regular intervals, perhaps every day if you have a large system, or every week or every two weeks for smaller systems. QoS reports helping you determine the quality of calls that run on your network and judge whether you need additional hardware to improve performance. You can use utilization reports for gateways, voice messaging, conference bridge, route groups, route lists, and route patterns to provide a picture of the usage to help with system handling.

You can also customize the report parameters and enable a mailing option, so reports get emailed when they are created. The Customize Parameters option allows you to customize the report parameters for particular reports in the Customize Parameters window. For each individual report, you can customize the parameters for that report.

Setting Up Alerts

CAR provides email alerts for various events, including the following events:

- Charge Limit Notification indicates when the daily charge limit for a user exceeds the specified maximum. You can set the maximum in the **Report Config** > **Notification Limits** window.

- QoS Notification indicates when the percentage of good calls drops below a specified range or the percentage of poor calls exceeds a specified limit. You can set the range in the **Report Config > Notification Limits** window.

Enabling the system for email alerts comprises a two-step process. First, you must specify the mail server configuration information (**System** > **System Parameters** > **Mail Parameters**). CAR uses the configuration information to successfully connect to the email server. Next, you must enable the email alerts on the Automatic Report Generation/Alert window (**Report Config** > **Automatic Generation/Alert**). By default, CAR enables email alerts for some, but not all, reports.

Be sure to disable the automatic email alerts to conserve system resources while you upgrade your system to a later version of Unified Communications Manager.

Note   The system does not provide email alerts to application users because no mail ID exists for an application user.

Purging CAR Data

This section contains information on the following topics:

- Automatic purging
- Manual purging
- Event log purging

CAR provides automatic and manual purging of the CAR database. By default, the system enables automatic purging. Before and after loading CDRs/CMRs, CAR checks the size of the CAR database and invokes automatic purging, if necessary, to control the CAR database size.

With automatic purging, CAR continuously monitors the number of days that the CDRs are kept in the CAR database; when the CDR age exceeds the maximum number of days as configured in the maximum age setting in the Configure Automatic Database Purge window, CAR deletes all CDRs that are older than the number of days that you configured.

In the Configure Automatic Database Purge window, you specify the percentages of the CAR database that you want to allot for CAR data; the system maintains the CAR database size between the high water mark and low water mark that you specify. When the CAR database size exceeds the low water mark, CAR sends an email to CAR administrators. When the CAR database size exceeds the high water mark, CAR begins to delete the partitions from billing data and billing error tables, starting from the oldest date partitions until under the specified limit, allowing the system to continue loading the latest records. In cases where there are many CDRs present in the CAR database and deleting the partitions does not lower the limit, CAR keeps at least two days worth of data and send an email to CAR administrators.

Table 2: Maximum Size of CDR Database

Version	Maximum Number of CDR Records	Maximum Size of Database	Maximum Aggreg Busy Hour Call At (BHCA)
Unified Communications Manager	2 million records	6 GB	10,000

Version	Maximum Number of CDR Records	Maximum Size of Database	Maximum Aggregate Busy Hour Call Atten... (BHCA)
Cisco Unified Communications Manager Business Edition 5000	1 million records	3 GB	5,000

Configure a manual database purge when you want to delete records that are older than a particular date or that fall in a specific date range, but you do not want to change the automatic purging schedule. You can also reload the CAR database with CDR records by clicking the Reload button in the Manual Purge window. You may want to reload the database to reclassify calls after dial-plan updates, user-device association changes, call rate changes, and so on. After the system loads the new records, the system loads the records according to the schedule in the configured CDR load schedule. By default, CDR data loads 24 hours per day, 7 days per week.

Event log purging, which is a daily scheduled job that monitors the tbl_event_log table, automatically deletes the tbl_event_ log records to keep the latest 3 days of daily jobs, the latest 3 weeks of weekly jobs, and the latest 3 months of monthly jobs; that is, if more than 1500 rows exist in the tbl_event_log table, CAR automatically enables event log purging and does not send an email when event log purging occurs.

Call Costs

You can use CAR to set a base monetary rate for the cost of calls on the basis of a time increment. Then, you can further qualify the cost by applying the time-of-day and voice-quality factors. Service providers who must account for service to subscribers use this feature. Some organizations also use this information to establish billing costs for users and departments in the organization for accounting or budgeting purposes.

Reports that use these rating parameters include Individual Bill, Department Bill, Top N by Charge, Top N by Number, and Top N by Duration.

Note If you do not change the default value for charge base/block, the cost will always remain zero because the default base charge per block equals zero.

Note If you do not want to increase, call cost by voice quality, you can use the default values. The default multiplication factor specifies 1.00, so no increase in call cost for voice quality occurs.

For more information on setting call rates, see CAR Rating Engine, on page 50.

Tracking Activity

CAR provides logs that can track the status of the various activities. The event log tracks events that the CAR Scheduler triggers, such as automatically generated reports, loading of CDRs, notifications, report deletions, database purging, and monitoring, and event tracking.

CDR Management

The CDR Management window can be accessed from Cisco Unified Serviceability by choosing **Tools** > **CDR Management**. CDR Management services manage CDR and CMR storage within the cluster, as well as file

transfers to an application billing server. From Release 14 onwards, CDR/CMR files sends upto eight customer billing servers via FTP/SFTP.

CDR Management uses the following services:

- **CDR Agent**—This network service transfers the CDR files that the call processing nodes generate from the call processing nodes to the CDR Repository node via SFTP. After the file transfer is completed, the CDR Agent deletes the local CDR file from the call processing node. This service is enabled by default.

- **CDR Repository Manager**—This service must be running on at least one node in the cluster (typically, the publisher node). The CDR Repository Manager maintains copies of the generated CDR and CMR files on the repository node and purges the files after a specified expiration passes, or when the disk usage exceeds the high water mark. If an application billing server is deployed, the CDR Repository Manger initiates an SFTP transfer of the CDR and CMR files to the billing servers. This network service is on by default.

- **CDR onDemand Server**—This feature service must be activagted on the CDR Repository node if you are using an application billing server. This service uses a SOAP/HTTPS-based service, which receives SOAP requests for a particular CDR filename based on a user-specified time interval and returns all files via SFTP that fit the parameters.

SFTP File Transfers

The CDR Agent checks at 6-second intervals for CDR and CMR files to transfer from call processing nodes to the CDR Repository server via SFTP. After a successful transfer, the local file is deleted from the call processing node. Each delivery failure results in the immediate change of the sleep interval to 1 minute, then says at 1-minute intervals until successful delivery. After the first successful delivery of files, the 6-second interval resumes. If any files remain on call processing nodes without being transferred, they may be deleted by the Cisco Log Partition Monitoring Tool if the disk usage exceeds a configured threshold. For information on the Log Partition Monitoring Tool, see the *Cisco Unified Real-Time Monitoring Tool Administration Guide*.

The CDR Repository Manager checks at 6-second intervals for CDR and CMR files to send to any deployed billing servers. If the billing server does not respond, the system doubles the interval before making another attempt. Each delivery failure results in double the sleep time until 2 minutes, then stays at 2 minutes until successful delivery is reached. After a successful delivery, the 6-second interval resumes. This process continues unless you delete the billing server, or if the files fall outside the preservation window and are deleted.
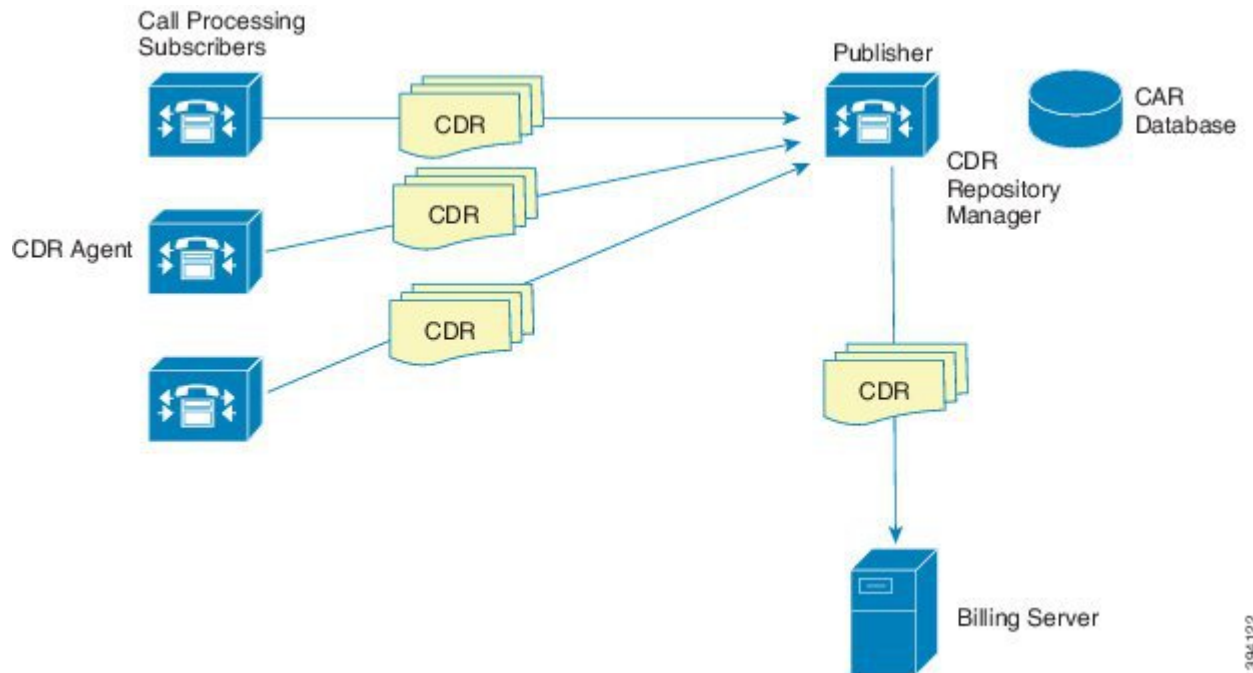
Supported SFTP Servers

For internal testing, Cisco uses the SFTP Server on Cisco Prime Collaboration Deployment (PCD) which is provided by Cisco, and which is supported by Cisco TAC. Refer to the following table for a summary of SFTP server options:

Use the information in the following table to determine which SFTP server solution to use in your system.

Table 3: SFTP Server Information

SFTP Server	Information
SFTP Server on Cisco Prime Collaboration Deployment	This server is the only SFTP server that is provided and tested by Cisco, and fully supported by Cisco TAC. Version compatibility depends on your version of Unified Communications Manager and Cisco Prime Collaboration Deployment. See the Cisco Prime Collaboration Deployment Administration Guide before you upgrade its version (SFTP) or Unified Communications Manager to ensure that the versions are compatible.
SFTP Server from a Technology Partner	These servers are third party provided and third party tested. Version compatibility depends on the third party test. See the Technology Partner page if you upgrade their SFTP product and/or upgrade Unified Communications Manager for which versions are compatible: https://marketplace.cisco.com

SFTP Server	Information
SFTP Server from another Third Party	These servers are third party provided and are not officially supported by Cisco TAC.
	Version compatibility is on a best effort basis to establish compatible SFTP versions and Unified Communications Manager versions.
	Note These products have not been tested by Cisco and we cannot guarantee functionality. Cisco TAC does not support these products. For a fully tested and supported SFTP solution, use Cisco Prime Collaboration Deployment or a Technology Partner.

Roles

CAR provides reporting capabilities for three levels of users:

- Administrators use all the features of CDR Analysis and Reporting; for example, they can generate system reports to help with load balancing, system performance, and troubleshooting.

- Managers can generate reports for users, departments, and QoS to help with call monitoring for budgeting or security purposes and for determining the voice quality of the calls.

- Individual users can generate a billing report for calls.

Any user can act as a CAR administrator. Users who have been identified as CAR administrators have full control over the CAR system. The administrator can modify all the parameters that relate to the system and the reports.

CAR requires a minimum of one administrator.

You set up administrators, managers, and users in Cisco Unified CM Administration. For more information, see the Generate CAR Users, on page 25.

Reports

From CAR, you can generate reports on demand, or if you are an administrator, you can schedule reports for an automatic generation. You can view reports in Comma Separated Values (CSV) format or Portable Document Format (PDF). If you choose PDF, you must have Adobe Acrobat Reader that installed on your PC.

Report Information

For all CAR reports that show the pattern for Hour of Day, Day of Week, and Day of Month, the charts and tables get shown according to the following conditions:

- When no records match the time range that is specified (hour of the day, day of the week, or day of the month) in the search criteria, the report displays a value of 0.00 for all the days/hours.

- If all records that are returned have a value of 0.00, CAR does not display the charts. CAR displays the charts if any record contains a non-zero value.

- When records get generated (for at least one day in the chosen date range) and the number of days that is chosen is more than the number of days that the report can show (more than seven for weekly and more than 31 for monthly), the chart displays all the days (with 0 value for the days that do not generate

records). A table displays for all the days with relevant value and 0.00 for the days that do not contain data.

- When records generate (for at least one day in the chosen date range) and the number of days that is chosen is less than the number of days that the report can show (less than 7 for weekly and less than 31 for monthly), the chart displays all the days (with 0 value for the days that do not generate records). A table displays all the days with relevant value and 0.00 for the days that do not contain data.

In all the CAR reports that display the username, userid displays if CAR cannot retrieve the username. This situation can occur when the report gets generated for prior data where the user that was involved in a call then no longer exists in the system (Unified Communications Manager database).

Generated Report Schedule

Automatically generating reports comprises a two-step process. First, you must enable the reports that you want to have generated. Second, you must schedule the reports for the day and time that you want them to generate. CAR provides a default schedule, so if the default schedule is acceptable, you need only enable the reports that you want to automatically generate.

Reports and email alerts do not automatically get enabled on a new installation. You must enable the reports that you want to automatically generate. To enable or disable a report generation, see the Enable Automatic Generation Reports, on page 56 for instructions on how to generate reports and emails automatically.

To change the specific time each day, week, or month that reports get generated and get purged from the system, see Set Up CDR Load Schedule, on page 36.

Audit Logging

With audit logging, any configuration change to the Unified Communications Manager system gets logged in separate log files for auditing. An audit event is any event that is required to be logged. Cisco Unified CDR Analysis and Reporting create audit logs for these events:

- Scheduling the CDR Loader.

- Scheduling the daily, weekly, and monthly user reports, system reports, and device reports.

- Mail parameters configurations.

- Dial plan configurations.

- Gateway configurations.

- System preferences configurations.

- Autopurge configurations.

- Rating engine configurations for the duration, time of day, and voice quality.

- QoS configurations.

- Automatic generation/alert of pre-generated reports configurations.

- Notification limits configurations.

Log-On Message

You can upload a text file that contains a customized log-on message that appears on the initial Cisco Unified Communications Manager CDR Analysis and Reporting window.

For more information and the procedure for uploading your customized log-on message, see the *Administration Guide for Cisco Unified Communications Manager*.

Internationalization

CAR, designed to be internationalized to handle any locale (or language), includes a database that can also handle any locale.

Note CAR supports all Latin-1 language and Unicode language locales as Unified Communications Manager the help specifies. Latin-1 languages include English and Western European languages. Unicode languages include Japanese and Chinese.

Two types of locale exist: user and network. Each locale comprises a set of locale files. The following definitions describe the two types of files:

- User - Files that relate to user-related functions, such as phone display text, user applications, and user web pages.

- Network - Files that relate to network-related functions, such as phone and gateway tones. Country names designate network locales.

CAR supports the locales only if the Locale Installer has installed locales.

Note For Unified Communications Manager, make sure that you have first installed the Unified Communications Manager Locale Installer on every server in the cluster. Installing the Locale Installer ensures that you have the latest translated text available for CAR.

For more information about the Unified Communications Manager Locale Installer, see the *Administration Guide for Cisco Unified Communications Manager*.

Only User and Manager windows support multiple locales. Administrator windows display in English.

In the Cisco Unified CM Administration, set the user-preferred locale in the Unified Communications Manager database. You do this when you create a user from the End User Configuration window. Specify the preferred locale along with the username, user ID, and so on. The Unified Communications Manager database stores this information.

For more detailed information, see the *Cisco Unified Communications Manager Online Help*.

These sections describe the elements that make up the internationalization of CAR.

Logon Page

When the client (browser) requests the logon information, the logon window header includes the most preferred locale of the client. The CAR system checks whether the CAR UI supports this locale. If the CAR UI does

not support the locale, or if the locale is not installed in the system, the logon window displays in the Unified Communications Manager system default locale that is set in the CiscoCommunications Manager Enterprise parameter. If CAR does not also support this locale, or the locale is not installed in the system, the locale gets set to English_United_States.

Authenticate and Show CAR Pages for Post Logon Windows

User credentials (in any language) get authenticated through the Unified Communications Manager database, and then CAR windows for non-administrative users (users or managers) display the user preferred locale. If the CAR UI does not support this locale, or if the locale is not installed in the system, the Unified Communications Manager system default locale gets used. If this locale is not supported by CAR or is not installed in the system, windows display in the most preferred locale of the browser. When the browser-preferred locale is also not supported or not installed, the locale gets set to English_United_States. All information on the UI windows, including labels, number formats, and so on, displays based on the locale. The administrator windows always display in English.

Reports

Reports, which are generated in both CSV and PDF formats, display in the user preferred locale for non-administrative users (users or managers). However, the dynamic data (like the Company Name shown in the report header) displays in the same language as was used to enter it in the database. The locale provides the basis for the header, footers, number formats, and some static data (like call classification). Reports for administrators display in English.

Online Help

To access CAR documentation online help, choose **Help** > **Contents and Index** (for a list of contents) or **Help** > **For this page** (for information that is specific to the page that displays.)

Backup Database

The CAR and CDR Disaster Recovery Service (DRS) now integrates into the Unified Communications Manager DRS. The DRS includes the backup of the CAR database, pre-generated reports, and the CDR preserved flat files.

The CAR Web Service and CAR Scheduler automatically stop before the backup and restore process begin, and automatically restart after the backup and restore process is complete.

The table displays the features and components that the Disaster Recovery System can back up and restore. For each feature that you choose, the system backs up all its components automatically.

Table 4: Cisco Unified CM Features and Components

Feature	Components
CCM - Unified Communications Manager	Unified Communications Manager database
	Platform
	Serviceability
	Music On Hold (MOH)
	Cisco Emergency Responder
	Bulk Tool (BAT)
	Preference
	Phone device files (TFTP)
	syslogagt (SNMP syslog agent)
	cdpagent (SNMP cdp agent)
	tct (trace collection tool)
	Call Detail Records (CDRs)
	CDR Reporting and Analysis (CAR)

For more detailed information, see the *Administration Guide for Cisco Unified Communications Manager*.

CPU Utilization

Cisco has performed basic testing to measure CPU utilization when CDRs and/or CMRs are enabled. The CPU utilization testing was measured on subscribers and was not measured on the publishers. Your actual results can vary because of the CDR Loader settings and the CDR Management settings for external billing servers. The following table displays the results of these tests.

Note These tests are performed with the Unified Communications Manager Release 8.0(1).

Table 5: CDR and CMR CPU Utilization

CDRs and CMRs Enabled/Disabled	Average % Increase in Cisco Unified CM CPU Utilization	Average % Increase in Total CPU Utilization	% Increase in Cisco Unified CM CPU	% Increas CPU
CDRs disabled, CMRs disabled	6.17	11.15	-	-
CDRs enabled, CMRs disabled	6.99	12.10	13.18	8.57
CDRs disabled, CMRs enabled	6.38	11.24	3.43	0.86

CDRs and CMRs Enabled/Disabled	Average % Increase in Cisco Unified CM CPU Utilization	Average % Increase in Total CPU Utilization	% Increase in Cisco Unified CM CPU	% Increase in CPU
CDRs enabled, CMRs enabled	7.71	13.04	24.92	17.02

C H A P T E R **3**

Initial Setup

- CDR Analysis and Reporting Configuration Overview, on page 17
- CDR Analysis and Reporting Initial Setup, on page 18

CDR Analysis and Reporting Configuration Overview

The following diagram illustrates the initial system configuration for Cisco CDR Analysis and Reporting.

Figure 1: CDR Analysis and Reporting Initial Setup
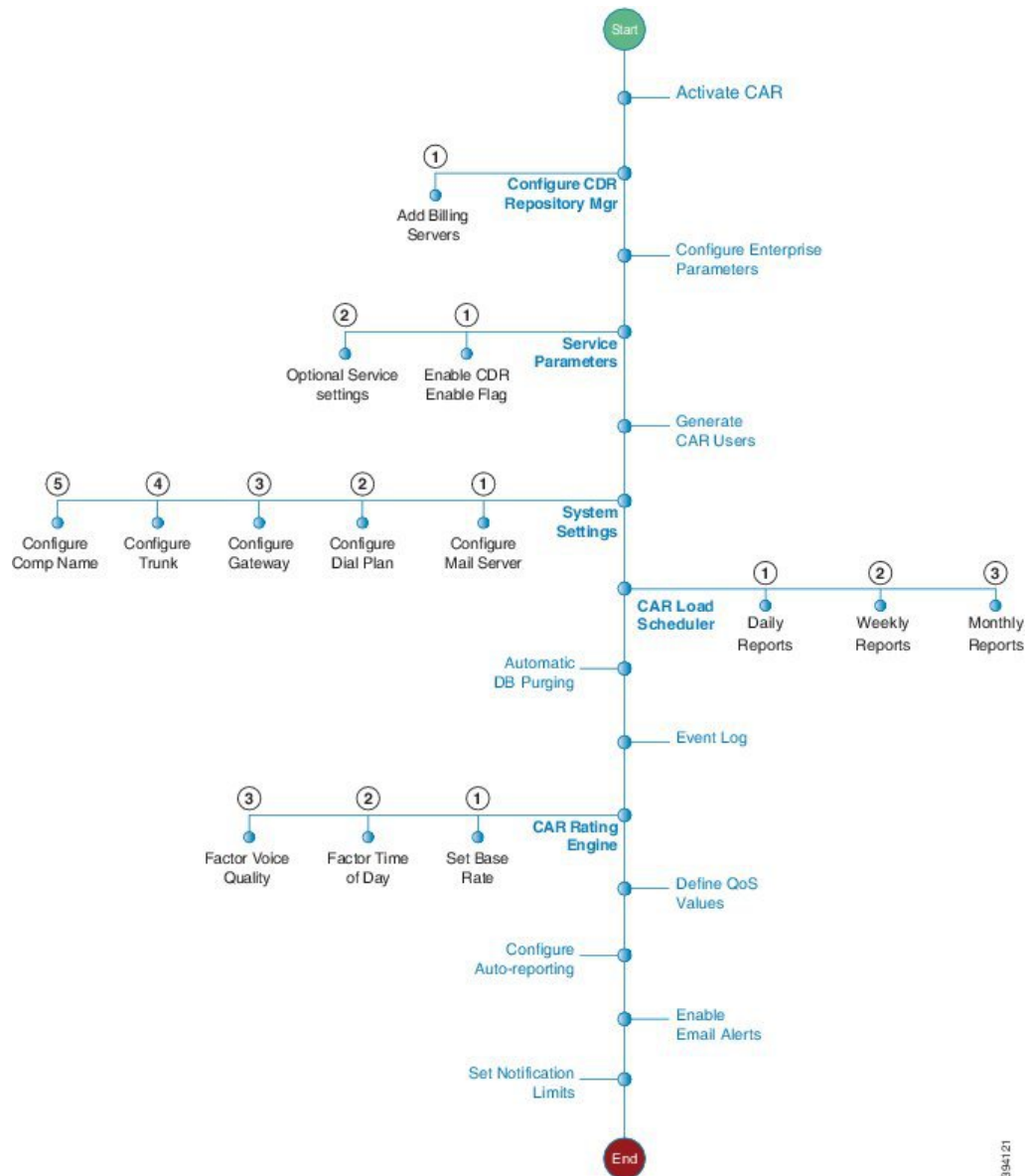
CDR Analysis and Reporting Initial Setup

Complete these tasks as part of the initial configuration for Cisco CDR Analysis and Reporting.

Procedure

	Command or Action	Purpose
Step 1	Activate CAR, on page 20	Activate the following feature services: • Cisco CAR Web Service

	Command or Action	Purpose
		• Cisco SOAP – CDRonDemand
Step 2	Configure CDR Repository Manager File Preservation Settings, on page 21	Set disk utilization and file preservation parameters for the CDR Repository Manager.
Step 3	Set Up Application Billing Servers, on page 22	Use this procedure if you want to send CDR records to an application billing server. You can configure up to eight billing servers.
Step 4	Configure CDR Enterprise Parameters, on page 23	Configure optional enterprise-level parameters for CDRs.
Step 5	Configure CDR Service Parameters, on page 24	You must set the **CDR Enabled Flag** to **True** for CDRs to be generated. Also, configure optional service parameters for CDRs.
Step 6	Generate CAR Users, on page 25	Generate CAR administrators, managers and users.
Step 7	Log On to CAR, on page 27	Log on to the Cisco CDR Analysis and Reporting tool.
Step 8	Configure the system parameters that apply: • Set Up Mail Server Parameters, on page 30 • Set Up Dial Plan, on page 31 • Set Up Gateway, on page 34 • Set Up Trunk, on page 35 • Set Up System Preferences, on page 36	Configure the CAR system parameters that apply to your deployment. For many deployments, the default values may be sufficient.
Step 9	Set Up CDR Load Schedule, on page 36	Configure the Load Scheduler for when CAR loads CDRs.
Step 10	Configure schedules for the following reports: • Schedule Daily Reports, on page 38 • Schedule Weekly Reports, on page 39 • Schedule Monthly Reports, on page 40	Configure schedules for daily, weekly, and monthly reports.
Step 11	Set Up Automatic Database Purge, on page 44	Configure rules for when you want the system to purge CDR files automatically.
Step 12	Generate Event Log, on page 46	Configure the generation of event logs.
Step 13	Configure the CAR Rating Engine. Configure the parameters that apply: • Set Base Rate, on page 50 • Factor Time of Day, on page 51 • Factor Voice Quality, on page 52	Set a monetary base rate for the cost of calls. You can further qualify the cost by applying time-of-day and voice-quality factors.

	Command or Action	Purpose
Step 14	Define QoS Values, on page 53	Configure acceptable ranges for jitter, latency, and lost packets.
Step 15	Enable Automatic Generation Reports, on page 56	Configure rules for the reports that you want to generate automatically.
Step 16	Enable Email Alerts, on page 57	Turn on email alerting for Charge Limit Notifications and QoS Notifications.
Step 17	Set Notification Limits, on page 58	Set notifications around when a user's daily charge exceeds a maximum and when QoS drops below a specifed limit.
Step 18	Install Locales	Optional. If your users want to view localized user and manager reports, install the proper locales. For details, refer to the *Administration Guide for Cisco Unified Communications Manager*.
Step 19	Run a DRS backup	Back up CAR, including the database and pregenerated reports. For details on how to run a backup, refer to the *Administration Guide for Cisco Unified Communications Manager*.

What to do next

Once the CAR tool is set up, configure individual reports that you want to deliver, as well as the parties to whom you want to send the reports. You can configure the following types of reports

- User Reports

- System Reports

- Device Reports

Activate CAR

Cisco CDR Analysis and Reporting (CAR) comprises a group of complementary services, which you can activate in the Service Activation window in Cisco Unified Serviceability. Before you can launch CAR from the Tools menu in Cisco Unified Serviceability, you must activate the CAR services by using the following procedure.

Before you begin

Cisco CDR Analysis and Reporting (CAR) also uses the following network services, all which are running by default. You can confirm that they are running in the Tools - Network Services window of Cisco Unified Serviceability:

- Cisco CDR Repository Manager

- Cisco CDR Agent

• Cisco CAR Scheduler

• Cisco SOAP - CallRecord Service

• Cisco CAR DB

Procedure

Step 1 Choose **Tools** > **Service Activation**.

Step 2 From the **Servers** drop-down list box, choose the publisher node and click **Go**.

The window displays the service names for the server that you chose, the service type, and the activation status of the services.

Step 3 Check the check boxes next to the following CDR Services:

a) **Cisco SOAP-CDRonDemand Service (optional)**. If you are using a third-party billing application that accesses CDR data via an HTTPS/SOAP interface, activate this service.

b) **Cisco CAR Web Service**

Tip Unchecking the check boxes next to the CDR Services and clicking **Update** deactivates the services. If you deactivate the Cisco CAR Web Service, the system removes CAR from the Tools menu in Cisco Unified Serviceability.

Step 4 After you have finished making the appropriate changes, click **Save**.

Note If you are running the CDRonDemand service on Axis1 Web Services, you must also execute the following command at the root level to activate the CDR onDemand service: */usr/local/cm/bin/soapservicecontrol2.sh CDRonDemandService CDRonDemand deploy 8443*.

Configure CDR Repository Manager File Preservation Settings

Use this procedure to configure disk utilization and file preservation settings for the CDR Repository Manager. For field descriptions, refer to the online help.

Procedure

Step 1 Choose **Tools** > **CDR Management**.

Step 2 Click the CDR Manager general parameter value that you want to change.

Step 3 Enter the new parameter settings.

Step 4 Click **Update**.

Tip At any time, you can click **Set Default** to specify the default values. After you set the defaults, click **Update** to save the default values.

Set Up Application Billing Servers

Use the following procedure if you want to deploy application billing servers to which you will send CDRs. You can configure up to three billing servers.

Cipher Support

For Unified Communications Manager 11.5, Unified Communications Manager advertises the following CBC and CTR ciphers for SFTP connections:

- aes128-cbc
- 3des-cbc
- aes128-ctr
- aes192-ctr
- aes256-ctr

Note   Make sure that the backup SFTP Server supports one of these ciphers to communicate with Unified Communications Manager.

From Unified Communications Manager 12.0 release onwards, CBC ciphers are not supported. Unified Communications Manager supports and advertises only the following CTR ciphers:

- aes256-ctr
- aes128-ctr
- aes192-ctr

Note   Make sure that the backup SFTP Server supports one of these CTR ciphers to communicate with Unified Communications Manager.

Procedure

Step 1   Choose **Tools** > **CDR Management Configuration**.

The CDR Management Configuration window displays.

Step 2   Perform one of the following tasks:

- To add a new application billing server, click the **Add New** button.
- To update an existing application billing server, click the server hostname/IP address.

Step 3   Enter the application billing server parameter settings.

Step 4   Click **Add** or **Update**.

Billing Server Authentication Issue

If you have a billing server that is deployed with SFTP, and you are using a non-default cipher that you configured on both Unified Communications Manager and on the billing server, a connection issue may result if you restart a Unified Communications Manager server, or if you restart the Cisco CallManager service. If this occurs, the billing server is unable to authenticate and the connection are broken.

After the restart, Unified Communications Manager advertises only the default ciphers and will not advertise any new ciphers that you installed, which will result in an authentication issue if you are using a non-default cipher. If you run into this issue, generate a new key and reset the connection:

Procedure

Step 1   Choose **Tools** > **CDR Management**.

The CDR Management Configuration window displays.

Step 2   Under **Billing Application Server Parameters**, locate your billing server.

Step 3   Click **Reset** to generate a new key that corresponds to your billing server.

After the reset, Unified Communications Manager advertises the default ciphers, and some additional ciphers. The billing server must have one of these ciphers that are installed to restore the communication.

Configure CDR Enterprise Parameters

Use this procedure to configure optional enterprise parameters for CDRs. For detailed field descriptions, click the parameter name in the GUI to access enterprise parameter help.

Procedure

Step 1   From Cisco Unified CM Administration, choose **System** > **Enterprise Parameters**.

Step 2   Under **CDR Parameters**, configure values for the following parameters. For detailed field descriptions, click the parameter name in the GUI:

- **CDR File Time Interval**—The time interval for collecting CDR data. For example, a value of 1 means each CDR file contains 1 minute of CDR data.
- **Cluster ID**—Assign a unique identifier for the cluster.

Step 3   Under **CCM Web Service Parameters**, configure values for the following parameters:

- **Allowed CDRonDemand get_file Queries Per Minute**—The maximum number of CDRonDemand get_file queries per minute
- **Allowed CDRonDemand get_file_list Queries Per Minute**—The maximum number of CDRonDemand get_list queries per minute.

Step 4   Click **Save**.

Configure CDR Service Parameters

Use this procedure to configure service parameters for CDR Analysis and Reporting. For example, the **CDR Enabled Flag** must be set to **True** for CDRs to be generated.

Procedure

Step 1   From Cisco Unified CM Administration, choose **System** > **Service Parameters**.

Step 2   From the **Server** drop-down, choose a Unified Communications Manager node.

Step 3   From the **Service** drop-down, choose **Cisco CallManager**.

Step 4   Click **Advanced**.

Step 5   Under **System**, configure values for the following parameters:.

- **CDR Enabled Flag**—This parameter must be set to **True** for CDRs to be generated. By default, this parameter is disabled.
- **CDR Log Calls with Zero Duration Flag**—Set this parameter to **True** if you want to log call detail records (CDRs) for calls that never connected or that lasted less than 1 second.

Step 6   Under **Clusterwide Parameters (Device - General)**, set the following optional parameters:

- **Display FAC in CDR**—Determines whether the FAC associated with a call displays in the CDR record.
- **Show Line Group Member DN in finalCalled PartyNumber CDR Field**—Determines whether the the finalCalledPartyNumber field in the CDR shows the directory number (DN) of the line group member who answered the call or the hunt pilot DN.
- **Show Line Group Member Non Masked DN in finalCalledPartyNumber CDR Field**—Determines whether the finalCalledPartyNumber field in the CDR shows the directory number (DN) or the DN applied with external phone number mask of the line group member who answered the call or the hunt pilot DN.

Step 7   Under **Clusterwide Parameters (Device - Phone)**, set the **Add Incoming Number Prefix to CDR** parameter to **True** if you want the system to add the incoming number prefix (for example, a National Number Prefix or Subscriber Number Prefix) to the CDR record. The default setting is **False**.

Example

Following is an example of how the **Add Incoming Number Prefix to CDR** parameter works on the inbound and outbound side of the call.

If the parameter is set to **False**, the CDR will contain the prefix that is added to the call when the type of number is a National number or Subscriber number.

If the parameter is set to **True**, the CDR contains the prefix that is added to the calling party number when the type of number is a:

- National number

- International number only when the destination is not a gateway

- Subscriber number

- Unknown number only when the destination is not a gateway

	Inbound Side of Call	Outbound Side of Call
National Number Prefix	1214	
International Number Prefix		011
Subscriber Number Prefix	214	
Unknown Number Prefix		972

Generate CAR Users

Any user can act as a CAR administrator (including application users). However, you must add the end user to an access control group that provides access to the CAR tool (such as **Standard CAR Admin Users** or **Standard CCM Super Users**). End users who have been identified as CAR administrators have full control over the CAR system. The administrator can modify all the parameters that relate to the system and the reports. End users who have not been identified as CAR administrators can access only designated CAR reports.

Note If you decide to create a customized access control group, rather than the predefined default groups, your customized group must include the **Standard Admin Rep Tool Admin** role. For details on how to configure user access, refer to the *Administration Guide for Cisco Unified Communications Manager*.

Tip To use CAR, ensure that at least one CAR administrator exists in the Unified Communications Manager database.

Before you log in to CAR, you must configure at least one CAR user that has administrative privileges in CAR. To configure CAR administrators, managers, and users, perform the following procedure:

Procedure

Step 1 In Cisco Unified CM Administration, add an end user by choosing **User Management** > **End User**. For additional information on how to perform this task, see the *Cisco Unified Communications Manager Administration Guide*. To create a manager, make sure that you enter a value in the Manager User ID field.

Note After creating the End User, edit the user password credentials by clicking the button **Edit Credentials** near the password text box. Uncheck the **User Must Change at Next Login** check box. If this action is not taken, you will get IMS_ERROR_CODE_5 (See Log On to CAR, on page 27) and will not be allowed to log in to CAR. Then, you must log in to Cisco Unified CM Administration to manually reset the password.

	Tip	Cisco recommends that you configure at least one CAR user that has administrative privileges in CAR before you start using CAR. If you have not configured a CAR administrator or want to configure another CAR administrator, continue with this procedure.

Step 2 Choose **User Management** > **Access Control Group**.

Step 3 Click **Find** to view the list of access control groups.

Step 4 Select an access control group that provides CAR access. For example, **Standard CAR Admin Users** or **Standard CCM Super Users**.

Step 5 Click **Add End Users to Group**.

Step 6 Check the check boxes for the users that you want to add to the group and click **Add Selected**.

The user displays in the Users in Group group box.

	Tip	To revoke CAR administrative privileges, check the check box of the user in Users in Group group box and click **Delete Selected**. When the warning message displays, click **OK**. The system revokes the privileges immediately.

	Note	An application user that acts as a CAR administrator can configure all reports except the Individual Bill report. An application user that acts as a CAR administrator cannot access end user (CCM user) windows. CAR notifications do not get sent to the application user because no mail ID exists for the application user.

CAR System Settings

CDR Analysis and Reporting set default values for all system parameters. Before you generate any reports in CAR, Cisco recommends that you customize several system parameters. Because default values are provided for all system parameters, Cisco recommends customizing but does not require it.

	Note	The following system parameters refer to the CAR system parameters. Be aware that they are separate and distinct from the Unified Communications Manager enterprise and service parameters that are discussed in the previous sections.

CAR allows you to set the following parameters:

- Mail server criteria - CAR uses this information to successfully connect to the email server to send alerts and reports by email. If you do not want to send alerts or reports by email, you do not need to specify this information.

- Dial plan - The default dial plan in CAR specifies the North American numbering plan (NANP). Ensure that the dial plan is properly configured, so call classifications are correct in the reports. If you have modified the default NANP that Cisco Unified CM Administration provides, or if you are outside the NANP, be sure to configure the dial plan according to your Unified Communications Manager dial plan.

- Gateways - To utilize the gateway reports, you need to configure gateways in CAR. You should do this after installation of any existing gateways in your Cisco IP telephony system and when you add gateways to the system. If the system deletes any gateways, CAR gets the latest list of gateways, and any

configuration that is specified in CAR for the deleted gateways gets deleted. CAR uses the area code information to determine whether calls are local or long distance. You must provide the Number of Ports information for each gateway to enable CAR to generate the Utilization reports.

• System preferences - You can set CAR system preferences for the Company Name parameter.

Log On to CAR

Only CAR administrators and normal end users can log on to the CAR web interface. Users do not need to be a member of a standard CAR administrator group to be a CAR administrator. Any user who has the role "Standard Admin Rep Tool Admin" associated with the user ID can access CAR as a CAR administrator. The user ID role association gets done by adding the user to a user group that has the role that is associated with it. "Standard CAR Admin Group" and "Standard CCM Super Users" comprise two groups that have the role "Standard Admin Rep Tool Admin" associated with them. The default application user that gets created at installation, who is a member of the "Standard CCM Super Users" group, can log in to CAR as a CAR administrator but only as an application user. This user cannot access the Individual Bills report.

CAR supports custom CAR Admin groups. Any custom group that has the role "Standard CAR Admin Group" associated with it can add users who are considered to be CAR administrators when logging into the CAR web interface.

End users who are not CAR administrators can log in to CAR only if they have the role "Standard CCM End Users" associated with them. You can do this user ID - role association by adding the end user to the "Standard CCM End Users" group or any other group that has the specified role associated. Any end user without the "Standard CCM End Users" group association cannot log in to the CAR web interface.

Any user without the "Standard CCM End Users" or "Standard Admin Rep Tool Admin" role cannot log in to CAR. An attempt by this user to log in to CAR generates a 403 error, and the user gets redirected to the login window with no error message. CAR Web Service traces will log the username of the user who tried to access the application.

CAR facilitates users to change their password by using a Change Password window if the user password has expired. When users with an expired password try to log into CAR, they receive IMS_Error_Code 5, 6, or 8. CAR uses the ChangePasswordFilter of ccmadmin to redirect the user to change-password.jsp when any of the preceding error codes are received.

Note The database throttle limits the concurrent users to 100; because of this limit, IMS also supports only 100 users with a login rate of approximately 112 ms.

If an error occurs while you are resetting the user password, the following message displays on the Change-Password window: "System error while changing password for user. Please contact system administrator."

Even though the CAR Administrator status extends to any user with the role "Standard Admin Rep Tool Admin," CAR notifications, alerts, and pregen reports only get sent to users who are members of the group "Standard CAR Admin Group" and not all CAR administrators.

To log on to CAR, perform the following procedure:

Before you begin

Perform the following tasks:

- Before you can log in to CAR, verify that the Cisco CAR Web Service and the CiscoCAR Scheduler service that is run on the first server. After you activate the services, the option CDR Analysis and Reporting displays under the Tools menu in Cisco Unified Serviceability. For information on how to activate services, see the Activate CAR, on page 20.

- Configure CAR administrators, managers, and users as described in Generate CAR Users, on page 25.

Procedure

Step 1   To log on to CAR, perform one of the following tasks:

a)   For CAR system administrators only - From Cisco Unified Serviceability, choose **Tools** > **CDR Analysis and Reporting**.

b)   For CAR users or administrators - From the web browser, enter **https://<Server-ip/name>:8443/car/**

Step 2   After the CAR logon window displays, enter your user ID in the User Name field.

Step 3   In the Password field, enter your password. Click **Login**.

The CAR window displays.

If the user ID or password is invalid, CAR displays one of the Identity Management System (IMS) messages that are listed in the following table.

Table 6: CAR Invalid Logon Messages

Error Code	Message
IMS_ERROR_CODE 1	Either the User Name or the Password entered is invalid. Ensure that you are logging into CAR as a CAR administrator or a regular End User.
IMS_ERROR_CODE 2	The account has been locked by System Administrator. Please contact the administrator.
IMS_ERROR_CODE 3	The account has been temporarily locked. Please contact the System Administrator or try after sometime.
IMS_ERROR_CODE 4	The account has been deactivated due to lack of activity. Please contact the System Administrator.
IMS_ERROR_CODE 5	The account has been locked as the password has expired. Please reset the password or contact the System Administrator.
IMS_ERROR_CODE 6	The account has been locked as the password has expired. Please contact the System Administrator.
IMS_ERROR_CODE 7 = ERROR: LDAP_INACTIVE	The system has changed over to using LDAP authentication and the user is still in the old database. Please contact the System Administrator. This error code is not used for Cisco Unified Communications Manager Business Edition 5000.

Error Code	Message
IMS_ERROR_CODE 8	The account has been locked as the user needs to log in manually and change the credential first. Please reset the password from the Cisco Unified Communications Manager Administrationpage or contact the System Administrator.
IMS_ERROR_CODE UNKNOWN	System error. Please contact the System Administrator.
IMS_EXCEPTION (any exception returned by IMS) = AUTHENTICATION FAILURE	Unable to Authenticate User due to System Error. Please contact System Administrator.

After you log on to CAR, the following warning messages are displayed on a dashboard, if any:

- Displays a list of nodes where CallManager service is activated but **CDR Enabled** flag is not enabled. Also, specifies that the CDRs will not be generated on the listed nodes.

- If cluster wide parameter **Call Diagnostics Enabled** flag is disabled, it displays that the flag is disabled and states that the QoS information will not be generated on calls.

- Displays the status of CAR Scheduler service and Cisco Repository Manager Service, if they are stopped on publisher.

- Displays the breach status, if either the limit 2M or HWM is breached.

- Displays the status of CDR loader.

- Last run of CAR Loader is interrupted, please check the CAR Scheduler Logs for more information.

a) If the loader is disabled, it states that the loader is disabled.
b) If the loader is enabled, it checks for the last load status of CDR loader. If the last load status of CDR loader is failed, it displays that the loading of CDR loader is failed and informs you to check the CAR scheduler logs. If the CDR loader is interrupted by DRS backup or restore activity, or if the Cisco CAR Scheduler service restarts, it displays the message: `Last run of CAR Loader is interrupted, please check the CAR Scheduler Logs for more information.`

1. If any of the Tbl_System_Preferences table columns does not have expected values, the dashboard displays the exceptions along with a **Restore Defaults** button. You can click the **Restore Defaults** button, to populate the Tbl_System_Preferences table with default values required for the smooth functioning of CAR loader and reports.

   The following list of notice messages are displayed on the dashboard, if any:

2. If **CDR Log Calls with Zero Duration** flag is activated, the dashboard displays that the flag is activated, and states that large number of CDRs of zero duration may be generated. Due to this, the billing tables may be filled quickly which in turn cause the 2M or HWM limit to be breached soon.

3. Displays whether the loader schedule is continuous or intermittent.

4. If CDR Load Only option is selected in the CDR Load page, the dashboard states that CMRs are not loaded into CAR database.

5. If the mail parameters are not configured, the dashboard displays that you have not configured the mail parameters and provides the path for configuring the mail parameters.

6. If the mail ID of CAR Administrator is not configured, the dashboard displays that you have not configured the mail ID of CAR Administrator.

7. Displays the following status of Billing tables:

   • Number of records present in Tbl_Billing_Data.

   • Number of records present in Tbl_Billing_Error.

   • Maximum and minimum date of Tbl_Billing_Data and Tbl_Billing_Error tables.

Log Out of CAR

This section describes how to log out of CAR.

Procedure

Step 1	At the CAR window, choose **Logout**.
Step 2	A prompt message "For security reasons, it is advisable to close the browser window on Logout. Do you want to close the browser window?" displays. To close the CAR window (browser), click **OK**; clicking Cancel displays the CAR Logon window.

CAR System Parameters

Unless you want to use the default values, you should customize several system parameters before you generate any reports. This section describes the system parameters that affect CAR. Because default values are provided for all system parameters, Cisco recommends customizing, but does not require it. You can customize parameters for the following:

   • Mail server

   • Dial Plan

   • Gateway

   • Trunk

   • Company Name

Set Up Mail Server Parameters

To send email alerts and reports by email, you must specify the mail server configuration information. CAR uses the configuration information to successfully connect to the email server.

This section describes how to specify email server information.

Procedure

Step 1   Choose **System** > **System Parameters** > **Mail Parameters**.

The Mail Parameters window displays.

Step 2   In the Mail ID field, only enter the email identifier that will be used in the From field when emails are sent (for example, smith1@abc.com, enter **smith1** in the Mail ID field.

> **Note**   CAR does not support SMTP authentication. You must disable authentication on the SMTP mail server.

Step 3   In the Mail Server Name field, enter the domain name for the server that runs the email system (that is, **abc.com** from the previous example.

Step 4   Click **Update** .

Set Up Dial Plan

The default dial plan in CAR specifies the North American numbering plan (NANP). Make sure that the dial plan is properly configured, so call classifications display correctly in the reports.

> **Note**   If you have modified the default NANP that is provided in Cisco Unified CM Administration, or if you are outside the NANP, be sure to configure the dial plan in CAR according to your Unified Communications Manager dial plan. At least one condition must exist to configure the Dial Plan.
>
> For more information about dial plan, see the *Cisco Unified Communications Manager Online Help* and the *Cisco Unified Communications Manager System Guide*.

To configure the dial plan, define the parameters for the outgoing call classifications. Call classifications include International, Local, Long Distance, On Net, and so on. For example, if local calls in your area equal six digits in length, you would specify a row in the dial plan as follows:

Condition	No of Digits	Pattern	Call Type
=	6	!	Local

This section describes how to update the CAR dial plan configuration.

Procedure

Step 1   Choose **System** > **System Parameters** > **Dial Plan Configuration**.

The Dial Plan Configuration window displays.

Step 2   In the Toll Free Numbers field, enter the numbers in your dial plan that can be placed without a charge.

Step 3   Update the values in the table by using the following fields:

a) Condition - Select the condition of the rule where > represents greater than, < represents less than, and = represents a value that is equal to the specified value in the No of Digits field.

b) No of Digits - Choose the number of digits in the directory number to which this rule should be applied. If the number of digits does not impact the rule, specify NA.

c) Pattern - Enter the pattern that is used for the call classification, where

- G - Signifies classified as specified in the rule (G equals a wildcard for the gateway area code that is specified.

- K - Signifies classified as specified in the rule (K equals a wildcard for the trunk area code that is specified).

- T - Retrieves the toll-free numbers that are configured in CAR.

- ! - Signifies multiple digits (any number that is more than 1 digit in length, such as 1234 or 5551234).

- X - Signifies a single-digit number (such as 0, 1, or 9).

d) Call Type - Choose the call type if the condition is satisfied.

Step 4   To add more rows, check the check box in the row below where you want to add rows and click **Add Rows** link. The system adds a row above the row that you chose. To delete a row, check the check box by the row that you want to delete and click **Delete Rows**.

Note   CAR classifies calls on the basis of the dialed number as stored in the CDRs. If the dialed digits differ from the digits that are written in CDRs (due to number transformations), configure the Dial Plan in CAR on the basis of how the digits show up in CDRs.

Step 5   Click **Update**.

Restore Default Values

If you have modified the default dial plan in CAR, you can restore the default values that are based on the North American numbering plan (NANP).

The following table provides the default NANP values.

Table 7: Default Values for CAR Dial Plan

Row	Condition	No of Digits	Pattern	Call Type
1	=	5	!	OnNet
2	=	7	!	Local
3	=	10	T!	Others
4	=	10	G!	Local
5	=	10	K!	Local
6	=	10	!	Long Distance
7	=	11	T!	Others

Row	Condition	No of Digits	Pattern	Call Type
8	=	11	XG!	Local
9	=	11	XK!	Local
10	=	11	!	Long Distance
11	>	3	011!	International

The following information explains the default table values.

- Row 1 - If the number of digits that are dialed equals 5 and the pattern is! (more than one digit, in this case, 5 digits), the call gets classified as On Net.

- Row 2 - If the number of digits that are dialed equals 7 and the pattern is! (more than one digit, in this case, 7 digits), the call gets classified as Local.

- Row 3 - If the number of digits that are dialed equals 10 and the pattern is T! (more than one digit, in this case a 10-digit number that starts with a Toll Free number code), the call gets classified as Others.

- Row 4 - If the number of digits that are dialed equals 10 and the pattern is G! (more than one digit, in this case a 10-digit number that starts with a gateway code), the call gets classified as Local.

- Row 5 - If the number of digits that are dialed equals 10 and the pattern is K! (more than one digit, in this case a 10-digit number that starts with a trunk code), the call gets classified as Local.

- Row 6 - If the number of digits hat is that are dialed equals 10 and the pattern is! (more than one digit, in this case a 10-digit number), the call gets classified as Long Distance.

- Row 7 - If the number of digits that are dialed equals 11 and the pattern is T! (more than one digit, in this case an 11-digit number that starts with a toll-free number code), the call gets classified as Others.

- Row 8 - If the number of digits that are dialed equals 11 and the pattern is XG! (more than one digit, in this case an 11-digit number that starts with any single digit followed by a gateway code), the call gets classified as Local.

- Row 9 - If the number of digits that are dialed equals 11 and the pattern is XK! (more than one digit, in this case an 11-digit number that starts with any single digit followed by a trunk code), the call gets classified as Local.

- Row 10 - If the number of digits that are dialed equals 11 and the pattern is! (more than one digit, in this case an 11-digit number), the call gets classified as Long Distance.

- Row 11 - If the number of digits dialed is greater than 3 and starts with 011, the call gets classified as International.

If none of the condition gets satisfied, the call gets classified as Others. This section describes how to restore the NANP dial plan values in CAR.

Note   The combination of characters, such as '!!', 'GG', 'KK', 'TT', 'GK', 'KG' is not allowed in dial plan configuration.

Procedure

Step 1   Choose **System > System Parameters > Dial Plan Configuration**.

The Dial Plan Configuration window displays.

Step 2   Click **Restore Defaults**.

The restoration takes effect at midnight. To make changes take effect immediately, restart the Cisco CAR Scheduler service.

Set Up Gateway

Tip   Configure the gateways in CAR for existing Unified Communications Manager system gateways. After you add gateways to Cisco Unified CM Administration, configure the new gateways in CAR. When gateway is deleted from the Unified Communications Manager system, the system automatically removes the gateways (and any configuration settings that you specified) from CAR

CAR uses the area code information to determine whether calls are local or long distance. You must provide the Number of Ports information for each gateway to enable CAR to generate the Utilization reports.

Note   "G" acts as a wildcard for the gateway area codes that is used in a Dial Plan configuration.

This section describes how to configure gateways in CAR.

Procedure

Step 1   Choose **System > System Parameters > Gateway Configuration**.

The Gateway Configuration window displays.

Note   If you have not configured gateways in Cisco Unified CM Administration, a message displays that indicates that you have not configured gateways for the system.

Step 2   Perform one of the following tasks:

a)   To update the area code for all gateways, enter the area code in the Area Code field and click **Set Area Code** .

A message displays that indicates that you must click **Update** to save changes. Click **OK**.

b)   To update the area code for specific gateways, enter the area code for each gateway that you want to configure in the area code field for that gateway.

Step 3   In the **Max No. of Ports** field, enter the number of ports for each gateway that you want to configure. The maximum number of ports range goes from 1 to 999.

Note CAR uses the values that were provided for the gateway when it was added in Cisco Unified CM Administration. Therefore, some gateways will already have an area code setting or have a zero for maximum number of ports, depending on the details that were specified when the gateway was added in Cisco Unified CM Administration. CAR does not accept 0 as a value for the maximum number of ports; you may be prompted to change the maximum number of ports for all gateways with a value of zero.

Step 4 Click **Update**.

You can run reports in CAR on any or all the configured gateways.

Set Up Trunk

Tip Configure the trunks in CAR for existing Unified Communications Manager system trunks. After you add trunks to Cisco Unified CM Administration, configure the new trunks in CAR. When trunks are deleted from the Unified Communications Manager system, the system automatically removes the trunks (and any configuration settings that you specified) from CAR.

CAR uses the area code information to determine whether calls are local or long distance. You must provide the Number of Ports information for each trunk to enable CAR to generate the Utilization reports.

This section describes how to configure trunks in CAR.

Procedure

Step 1 Choose **System** > **System Parameters** > **Trunk Configuration**.

The Trunk Configuration window displays.

Note If you have not configured trunks in Cisco Unified CM Administration, a message displays that indicates that you have not configured trunks for the system.

Step 2 Perform one of the following tasks:

a) To update the area code for all trunks, enter the area code in the Area Code field and click **Set Area Code**.

A message displays that indicates that you must click Update to save changes. Click **OK**.

b) To update the area code for specific trunks, enter the area code for each trunk that you want to configure in the area code field for that trunk.

Step 3 In the **Max No. of Ports** field, enter the number of ports for each trunk that you want to configure. The maximum number of ports range goes from 1 to 999.

Note CAR uses the values that were provided for the trunk when it was added in Cisco Unified CM Administration. Therefore, some trunks will already have a zero for maximum number of ports, depending on the details that were specified when the trunk was added in Cisco Unified CM Administration. CAR does not accept zero as a value for the maximum number of ports; you may be prompted to change the maximum number of ports for all trunks with a value of zero.

Step 4   Click **Update**.

You can run reports in CAR on any or all the configured trunks.

Set Up System Preferences

CAR provides default system preferences; however, you can customize the system by specifying values for the system parameters.

This section describes how to specify values for system preferences.

Procedure

Step 1   Choose **System > System Parameters > System Preferences.**

The System Preferences window displays. The list of available system parameters displays in the Parameter Name list.

Step 2   In the **Parameter Value** field, enter the desired value for the parameter as described in the following table.

Table 8: System Preferences Parameter

Parameter	Description
COMPANY_NAME	Enter the company name that is used as header information in reports. The company name cannot exceed 64 characters in length.

Step 3   Click **Update**.

Set Up CDR Load Schedule

By default, CDR data loads continuously 24 hours a day, 7 days a week, and loads only CDR records.

Note   The default batch size equals 600 CDR or CMR records. The default sleep time between each CDR batch equals 2500 and 3000ms for each CMR batch. However you can, configure the batch size from the tbl_system_preferences table "LOADER_BATCH" column to have any value 50-2000.

This section describes how to customize the loading schedule, how to restore the default loading schedule if it is customized, and how to disable CDR loading.

Disable CDR loading when you are installing or upgrading the system. The CDR data does not get updated when CDR loading is disabled. Be sure to enable CDR loading again as soon as possible. The CAR tool does not affect the CDR generation in Unified Communications Manager.

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| Tip | To manually delete the CAR data and reload the database with CDRs. |

Procedure

Step 1 Choose **System** > **Scheduler** > **CDR Load**.

The CDR Load window displays.

Step 2 Choose one of the following options:

a) Disable Loader - To disable CDR data loading, check the **Disable Loader** check box and click **Update**.

CDR data will not load into CAR until you enable CDR loading. Changes take effect at midnight. You can force the change to take effect immediately by stopping and restarting the CAR Scheduler service.

To enable CDR data loading, uncheck the **Disable Loader** check box and continue with the next step to configure the load parameters.

b) Continuous Loading 24/7 - To enable the CDR Loader to run continuously 24 hours a day, 7 days a week to load CDRs into the CAR database, check the **Continuous Loading 24/7** check box and click **Update**. This choice represents the default setting for the CDR Load Scheduler.

| Note | Under the default setting, only CDR records continuously load. The CMR records do not load. You must manually uncheck the **Load CDR only** check box to force the CMR records to continuously load with the CDR records. |

The CAR Scheduler service stops, and the CAR Loader, as configured, runs immediately (Within1-2minutes). The CAR Scheduler service restarts. If no new files for processing exist, the CDR Loader sleeps and then checks periodically for new files to be loaded.

| Note | If this option is chosen, it takes over precedence and ignores the other CDR and CMR load parameters on the screen, such as Time, Loading Interval, Duration, and Uninhibited Loading. |

c) Load CDR Only - To load only CDR records into the CAR database, check the **Load CDR only** check box and click **Update**. Continue to the next step to configure the load parameters. With this option, CMR records do not load into the CAR database. This choice represents the default setting for the CDR Load Scheduler.

Step 3 In the Load CDR & CMR area, complete the fields as described in the following table.

Table 9: Load CDR and CMR Values

Field	Value
Time	Choose the hour and minute that you want CAR to begin loading CDR data from the CDR flat files.
Loading Interval	Choose the interval at which you want records that are loaded. The interval can range from every 15 minutes to every 24 hours.

Field	Value
Duration	Enter the number of minutes that you want to allow CDR data to load. Depending on the size of the CDR flat files, CAR performance may degrade when CDRs load. You can limit the time that is allowed for loading, but in doing so, the possibility exists that only a portion of the CDR data will be loaded in the time that you set. Be sure to reconcile the duration limit that you place with the interval. For example, if you load CDR data every 15 minutes, the duration of loading cannot exceed 15 minutes.

Uninhibited loading allows you to set a time during which CDR data load continuously. CDR data does not load **automatically** in the duration that is specified. The CDR data loads uninhibited in the specified duration only if loading starts at the duration that is specified in the Load CDR and CMR area settings. If CDR data loading starts at an uninhibited loading interval, loading continues to the end of the uninhibited loading interval, plus the time in the duration field that is set in the Load CDR and CMR area, or until no new files to process exist.

Uninhibited loading takes precedence over any values that are set for scheduled loading. If you do not want uninhibited loading of CDR data, set the From and To values at 00:00.

Step 4   In the Uninhibited Loading of CDR area, complete the fields as described in the following table:

Table 10: Uninhibited Loading of CDR Values

Field	Value
From	Choose the hour and minute that you want continuous loading of CDR data to begin.
To	Choose the hour and minute that you want continuous loading of CDR data to end.

Step 5   Click **Update**.

CAR loads CDR data based on the time, interval, and duration that you have specified. Changes take effect at midnight. You can force the change to take effect immediately by stopping and restarting the CAR Scheduler service.

Note	If Continuous Loading 24/7 is selected, the CAR Scheduler service restarts automatically when the **Update** is clicked. CAR will load CDR data immediately (within 1-2 minutes).

Schedule Daily Reports

The Daily Report Scheduler schedules the time and duration of CAR daily reports.

Before you begin

Specify the reports to be generated by using the Automatic Generation/Alert Option.

This section describes how to schedule the time and duration of the automatic daily reports.

Procedure

Step 1   Choose **System > Scheduler > Daily**.

The Daily Scheduler window displays.

Step 2   From the Time drop-down list box, choose the hour and minute when you want daily reports to be generated.

A 24-hour clock represents time, where 0 equals midnight, and 1 through 11 represent a.m. hours, and 12 through 23 represent the p.m. hours of 1 p.m. through 11 p.m., respectively.

Step 3   From the Life drop-down list box, choose the duration of the report from the range of 0 to 12 days.

Tip   If you set the life of the report to 00, the report does not generate.

Step 4   Click **Update**.

Reports with report generation interval of Daily in the Automatic Generation/Alert Option and enabled automatically generate every day at the time that you specify and get deleted after the number of days that you specify.

Changes take effect at midnight. You can force the change to take effect immediately by stopping and restarting the CAR Scheduler service.

Tip   To restore the defaults, click **Restore Defaults**. By default, the daily reports run at 1a.m. every day and get purged after two days.

Schedule Weekly Reports

The Weekly Report Scheduler schedules the day, time, and duration of the automatic weekly reports.

Before you begin

Use the Automatic Generation/Alert Option to specify the reports to be generated.

This section describes how to schedule the day, time, and duration of the automatic weekly reports.

Procedure

Step 1   Choose **System > Scheduler > Weekly**.

The Weekly Scheduler window displays.

Step 2   From the Day of Week drop-down list box, choose the day that you want reports to be generated.

Step 3   From the Time drop-down list box, choose the hour and minute when you want reports to be generated.

A 24-hour clock represents time, where 0 equals midnight, and 1 through 11 represent a.m. hours, and 12 through 23 represent the p.m. hours of 1 p.m. through 11 p.m., respectively.

Step 4   From the Life drop-down list box, choose the duration of the report from the range of 00 to 12 weeks. The option that you choose indicates how many weeks the report remains on the disk before the report gets deleted.

> **Tip**   If you set the life of the report to 00, the report does not generate.

Step 5   Click **Update**.

Reports with report generation interval of Weekly in the Automatic Generation/Alert Option and enabled automatically generate every week at the time that you specify and get deleted after the number of weeks that you specify.

Changes take effect at midnight. For the changes to take effect immediately, stop and restart the CAR Scheduler service in the Control Center - Feature Services window.

> **Tip**   To restore the defaults, click **Restore Defaults**. By default, weekly reports run at 4 a.m. every Sunday and get purged after four weeks.

Schedule Monthly Reports

The Monthly Report Scheduler schedules the day, time, and duration of CAR monthly reports.

Before you begin

Use the Automatic Generation/Alert Option to specify the reports to be generated.

This section describes how to schedule the day, time, and duration of the automatic monthly reports.

Procedure

Step 1   Choose **System** > **Scheduler** > **Monthly**.

The Monthly Scheduler window displays.

Step 2   From the Day of Month drop-down list box in the Monthly Bill Generation row, choose the day of the month on which you want the report to be generated.

If you set the value to a day that does not occur in a given month (such as 29, 30, or 31), the report generates on the last day of that month.

Step 3   From the Time drop-down list box in the Monthly Bill Generation row, choose the hour and minute when you want the report to be generated.

A 24-hour clock represents time, where 0 equals midnight, and 1 through 11 represent a.m. hours, and 12 through 23 represent the p.m. hours of 1 p.m. through 11 p.m., respectively.

Step 4   From the Life drop-down list box in the Monthly Bill Generation row, choose the duration of the report from the range of 00 to 12 months. The option that you choose indicates how many months the report remains on the disk before the report gets deleted.

> **Tip**   If you set the life of the report to 00, the report does not generate.

Step 5   From the Day of Month drop-down list box in the Other Monthly Reports row, choose the day of the month on which you want the reports to be generated.

If you set this value to a day that does not occur in a given month (such as 29, 30, or 31), the report generates on the last day of that month.

Step 6 From the Time drop-down list box in the Other Monthly Reports row, choose the hour and minute that you want reports to be generated.

A 24-hour clock represents time, where 0 equals midnight, and 1 through 11 represent a.m. hours, and 12 through 23 represent the p.m. hours of 1 p.m. through 11 p.m., respectively.

Step 7 From the Life drop-down list box in the Other Monthly Reports row, choose the life of the report from the range of 00 to 12 months. The option that you choose indicates how many months the report remains on the disk before the report gets deleted.

> **Tip** If you set the life of the report to 00, the report does not generate.

Step 8 Click **Update**.

Reports with report generation interval of Monthly in Automatic Generation/Alert Option and enabled automatically generate every month at the time that you specify and are deleted after the number of months that you specify.

Changes take effect at midnight. For the changes to take effect immediately, stop and restart the CAR Scheduler service in the Control Center - Feature Services window.

> **Tip** To restore the defaults, click **Restore Defaults**. By default, monthly bill reports run at 3 a.m. on the first day of every month and get purged after two months, and other monthly reports run at 2 a.m. on the first day of every month and get purged after two months.

Alarms

This release of Unified Communications Manager introduces a CAR alarm catalog (CARAlarmCatalog.xml) for the CAR Scheduler.

The following table displays the alarms/alerts in this catalog.

To configure these alarms, go to **Cisco Unified Serviceability** > **Alarm** > **Configuration** > **CDR Services**.

Table 11: CAR Alarm Catalog

Name	Severity	Description
CARSchedulerJobFailed	ERROR_ALARM	A critical CAR scheduled job failed. An alert gets raised when critical CDR Scheduler jobs and tasks fail (for example, DailyCdrLoad, PopulateSchedules, etc.).
CARSchedulerJobError	ERROR_ALARM	A CAR scheduled job failed. An alarm gets sent for all other noncritical CAR Scheduler jobs and tasks (for example, daily, weekly, and monthly reports, QoSNotification, ChargeLimitNotification, etc.).

Name	Severity	Description
BadCDRFileFound	ERROR_ALARM	Bad CDR or CMR flat file was found during CDR Load to the CAR database. The CDR Loader can detect bad or corrupted CDR and/or CMR flat files and log the specified error. Information on the failure cause (specified reason for the bad record) and the failure summary (tracks number of bad records in comparison to the total records in the file) gets provided.
CARIDSEngineDebug	DEBUG_ALARM	Indicates debug events from CAR IDS database engine. This alarm provides low-level debugging information from CAR IDS database engine. System administrator can disregard this alarm.
CARIDSEngineInformation	INFORMATION_ALARM	No error has occurred but some routine event has completed in CAR IDS database engine.
CARIDSEngineCritical	CRITICAL_ALARM	This alarm does not compromise data or prevent the use of the system but requires monitoring by the CAR DB adminstrator.
CARIDSEngineFailure	ERROR_ALARM	Combined alarm for emergency and error situations. This alarm indicates that something unexpected occurred that can compromise data, or access to data, or cause CAR IDS to fail.

For additional information on these alarms and recommended action, see the alarm definitions at **Cisco Unified Serviceability** > **Alarm** > **Definitions** > **CARAlarmCatalog**.

CAR System Database

You can configure CAR to notify you when the CAR database size exceeds a percentage of the maximum number of records. You can set the message and the maximum number of records and specify the alert percentage.

You can configure the system to maintain the CAR database size between the low water mark and the high water mark values that you configure through the Configure Automatic Database Purge window. When the database size reaches the low water mark, CAR sends an alert to the user. When the database size reaches the high water mark, the system deletes records based on the deletion age and sends an e-mail.

To configure the CAR system database, go to **Cisco Unified Serviceability** > **Tools** > **CDR Analysis and Reporting** > **System or Report Config**.

Purge CAR Database

This section describes how to manually purge selected records from the CAR database and how to delete all of the CAR data and reload the database with new CDR data. You may want to reload the database to reclassify calls after dial-plan updates, user-device association changes, call rate changes, and so on.

Before you begin to manually purge data, disable the CDR Loader.

1. Choose **System** > **Scheduler** > **CDR Load**.

2. Chosse either of the following:

   - Disable Loader - check the **Disable Loader** check box and click the **Update**.

     Enable CDR loading to load the data into CAR. Changes take effect at midnight. You can force the change to take effect immediately by stopping and restarting the CAR Scheduler service.

   - Enable Loader - uncheck the **Disable Loader** check box.

Manual purging of the CDRs gets stopped if the CAR Web Service is stopped during the manual purge process. Manual purging cannot begin again until the CAR Web Service restarts. Then you must begin the manual purge process again.

There are two ways to intentionally stop the CAR Web Service:

   - Deactivate the CAR Web Service in the Serviceability Service Activation window (**Cisco Unified Serviceability** > **Service Activation**).

   - Stop the CAR Web Service in the Feature Services window of the Serviceability Control Center (**Cisco Unified Serviceability** > **Tools** > **Control Center - Feature Services**).

The CDR Loader cannot begin again until either the CAR Web Service or the CAR Scheduler gets restarted.

A CAR administrator can no longer generate CAR reports when a manual purge of the CAR database is in process or CDR records are reloading. The following error message displays when you try to run reports during these processes:

```
10023: Manual Purge/Reload is in process. Please run the reports once the Manual
 Purge/Reload is over.
```

Both the **Purge** button and the **Reload All Call Detail Records** button get disabled, and the following alert message displays on the Manual Purge window, when either a manual purge or CDR reload occurs:

```
Manual Purge/Reload is still running. User will not be allowed to run another
instance of Manual Purge/Reload. So, both Purge and Reload All Call Detail Records
 buttons are disabled.
```

Procedure

Step 1   Choose **System** > **Database** > **Manual Purge**.

The Manual Database Purge window displays.

Step 2   Choose one of the following actions:

a) To delete the existing CAR data and reload the CAR database, click **Reload All Call Detail Records**.

The system displays a message that indicates that deleting the records may impact system performance. To continue the reload process, click **OK**.

The system begins loading the CDRs into the CAR database within 5 minutes and continues uninterrupted for up to 6 hours. To monitor the progress of the reload, generate the CDR Load event log.

After the system loads the new records, the system loads the records according to the schedule that is configured. By default, CDR data loads 24 hours per day and 7 days per week.

b) To manually purge selected CAR records, continue with the next step.

Step 3   In the Select Table field, choose the table in the database that you want purged.

To view the tables for which manual purge is permitted, the total number of records in the table, and the latest record and oldest record in the table, click **Table Information**.

The Table Information window displays. You will see a table with the following information:

Database Name	Table Name	Total No. of Records	Latest Record	Oldest Record
CAR	Tbl_billing_data	0	0	0
CAR	Tbl_billing_error	0	0	0
CAR	Tbl_purge_history	0	0	0

To return to the Manual Database Purge window, click **Close**.

Step 4   In the Delete records field, choose a date that will determine which records will be purged by clicking one of the following radio buttons:

a) Older than - Choose a date for which all records before that date will be deleted.

b) Between - Choose a range of dates between which all records will be deleted.

Step 5   Choose the date range of the CAR records that you want to delete.

Step 6   To delete all records older than or between the dates that you specified, click **Purge**.

A prompt advises you that you are about to permanently delete the specified records.

Step 7   To purge the records, click **OK** or click **Cancel** to abort the purge operation.

If you click **OK**, the records get purged from the selected table. After successful deletion of records, the status message shows the number of records that were deleted from the table.

Set Up Automatic Database Purge

This section describes how to schedule and disable automatic purging of the CAR database. By default, the system enables automatic database purge.

Procedure

Step 1   Choose **System** > **Database** > **Configure Automatic Purge**.

The Configure Automatic Database Purge window displays. At the top of the window, the percentage amount of the CAR database space that has been used gets displayed. The maximum CAR Database space that is available gets displayed in megabytes.

Step 2   From the Low Water Mark drop-down list box, choose the minimum percentage of the maximum CAR database size that you want the system to use for CAR data. The default value specifies 80percent.

| Tip | The system notifies you when the CAR database size reaches the low or the high water mark; it also notifies you when the CAR database size exceeds the maximum number of records. For information on configuring an e-mail alert. |

Step 3 From the High Water Mark drop-down list box, choose the maximum percentage of the maximum CAR database size that you want the system to use for CAR data. The default value specifies 90percent.

Step 4 In the Max Age of Call Detail Records field, enter the maximum number of days that you want to keep the CDRs in the CAR database. Enter a number between 1 and 180. The default value specifies 60days.

CAR deletes all CDRs that are older than the specified number of days.

| Note | To restore the default values for the fields in this window, click **Restore Defaults**. |

Step 5 Click **Update**.

The changes take effect at midnight. To make changes take effect immediately, restart the Cisco CAR Scheduler service.

| Note | When the 2M or HWM limit is breached: |

a. CAR deletes the database partitions one by one, starting from the oldest date partition.

b. CAR stops purging under one of the following conditions:

- When the record count falls below the 2M or HWM limit.

- When there is only last two days partitions left on the billing tables.

In cases where there are large number of CDRs present in the billing tables and deleting the partitions does not bring the record count below the 2M or HWM limit, CAR holds at least two days data in the database.

When the record count in the database reaches the 2M or HWM limit:

a. CAR loader stops processing the new records.

b. CAR starts purging the records from the oldest partition till the record count reaches 2M or HWM limit.

If the record count does not fall below the 2M or HWM limit even after deleting the records, CAR holds at least two days records and stops the CAR loader. Also, CAR sends an e-mail notification to CAR administrator to proceed with manual purge.

Following an upgrade, the **Configure Automatic Database Purge > MAX DATABASE AGE** parameter will be changed to one of the following:

- If the MAX DATABASE AGE in the old version is between 1 and 60, it will be configured to 60 in the new version.

- If the MAX DATABASE AGE in the old version is between 60 and 180, it will be configured to the same age in the new version.

- If the MAX DATABASE AGE in the old version is more than 180, it will be configured to 180 in the new version.

CAR System Event Log

CAR provides logs that you can use to track the status of the various activities. The event log tracks events that the CAR Scheduler triggers, such as automatically generated reports, loading of CDRs, report deletions, and database purging.

The event log provides a report on the status of the activities that the CAR Scheduler controls. The event log report shows whether the tasks started, completed successfully, or are in progress.

Generate Event Log

This section describes how to generate the event log report. The event log includes a list of tasks/reports that are scheduled on a daily, weekly, or monthly basis.

This release of Unified Communications Manager introduces the Task Monitor and Database Maintenance as new features.

TaskMonitor monitors the status of other jobs and cleans up Informix Dynamic Server (IDS) memory when necessary by using the IDS command "onmode -F." DatabaseMaintenance runs the IDS-recommended optimized database maintenance "update statistics" procedures.

Task Monitor begins about 1minute after the Scheduler starts, and 1minute after the Scheduler repopulates the schedules every day at midnight (00.00). The Task Monitor periodically (every 5minutes) monitors the status of all jobs for the day from the tbl_event_log with the exception of the following jobs: PopulateSchedules, TaskMonitor, DatabaseMaintenance, and DailyCdrLoad.

When a task does not start on schedule because a previous task is still running, you may see something like the following trace message:

```
2008-02-14 08:00:04, 602 WARN [main] services. Scheduler - runTasks(): Job
[DailyCdrLoad] thread is busy, hence it will be removed from today's schedule and
 not be started!"
```

The Scheduler gives a grace period to periodically sleep for 10seconds and then check whether the task thread is complete. The Scheduler sleeps up to 2 minutes total. If the task thread is not complete after the 2minutes of wait, the next task gets removed from the current schedule, and does not run until its next scheduled time.

The following table displays the list of tasks/reports and how often they are scheduled.

Table 12: Task List

Task	Scheduled
CDR Load	Daily
Task Monitor[1]	Daily
Database Maintenance[2]	Daily
QoS Notification	Daily
Charge Limit Notification	Daily
Database Alert	Daily
Delete Reports	Daily

Task	Scheduled
Database Purge	Daily
Traffic Summary - Hour of Day	Daily
Top N Charge	Daily
Top N Duration	Daily
Top N Calls	Daily
Conference - Detail	Daily
Traffic Summary - Day of week	Weekly
Conference Bridge Utilization - Day of week	Weekly
Voice Messaging Utilization - Day of week	Weekly
Route Pattern/Hunt Pilot Utilization - Day of week	Weekly
Route/Hunt List Utilization - Day of week	Weekly
Route Group Utilization - Day of week	Weekly
Gateway Utilization - Day of week	Weekly
Line Group Utilization - Day of week	Weekly
QoS Summary	Monthly
Gateway Summary	Monthly
Traffic Summary - Day of month	Monthly
System Overview	Monthly
Department Bill Summary	Monthly
Individual Bill Summary	Monthly
Top N Charge	Monthly
Top N Duration	Monthly
Top N Calls	Monthly
Conference - Summary	Monthly

[1]
[2]

[34]

---

[3] The system automatically configures and executes the Task Monitor, which is an internal task, on a daily basis.
[4] Database Maintenance represents an internal task that the system automatically configures and executes on a daily basis.

Procedure

Step 1	Choose **System** > **Log Screens** > **Event Log**.
	The Event Log window displays.
Step 2	Click the **Daily** radio button to choose daily jobs, the **Weekly** radio button to choose weekly jobs, or the **Monthly** radio button to choose monthly jobs.
Step 3	In the List of Jobs area, choose the tasks for which you want information.
Step 4	To add the chosen task to the Selected Jobs area, click the right arrow icon.
Step 5	To remove tasks from the Selected Jobs area, choose the task that you want removed and click the left arrow icon.
Step 6	To add tasks with a different frequency, repeat the previous steps. For example, you can have daily reports and reports that include monthly or weekly tasks.
Step 7	Choose the status to include in the report. You must choose at least one status as described in the following table.

> **Note**   The system chooses the status of each event log report by default.

Table 13: Event Log Report Status

Status	Description
Complete	If this check box is checked, the event log report includes tasks that are complete.
In Progress	If this check box is checked, the event log report includes tasks that are currently in progress.
Interrupted	If this check box is checked, the event log includes tasks that have been interrupted, either manually by an administrator, or by an administrative process such as a DRS backup.
Unsuccessful	If this check box is checked, the event log report includes tasks that have failed.
Scheduled	If this check box is checked, the event log report includes tasks that have been scheduled but have not yet started.

> **Note**   When the Scheduler restarts, all unfinished jobs with a status of Scheduled get deleted. Current jobs with the status of In Progress or Scheduled get changed to Interrupted.

Step 8	Choose a date range by choosing From and To values.
Step 9	To generate the event log report, click **OK** .
	The event log displays information about the chosen tasks.
Step 10	Print the log by right-clicking on the screen and choosing **Print**.

Note	A grace period of up to 2 minutes gets provided, so an in-process job can finish before the next schedule job is scheduled to begin.

Output of Event Log Report

Table 14: Event Log Report Output

Parameter	Description
Sl No	Serial number
Jobs	Name of the task
Start Time	Time the task starts
End Time	Time the task ends
Status	Unsuccessful, in progress, completed
Date	Date the task is scheduled

CAR Reports Configuration

Before you start generating reports with CAR, configure items such as the rating engine, QoS values, automatic report generation and notification limits.

Rating Engine

You can use CAR to set a base monetary rate for the cost of calls based on a time increment. You can further qualify the cost by applying the time-of-day and voice-quality factors. Service providers who must account for service to subscribers commonly use this feature. Some organizations also use this information to establish billing costs for users and departments in the organization for accounting or budgeting purposes.

Reports that use these rating parameters include Individual Bill, Department Bill, Top N by Charge, TopN by Duration, and Top N by Number of Calls.

Note	If you do not change the default value for charge base/block, the cost will always equal zero because the default base charge per block equals zero.

The charge of any call comprises the multiplication of the basic charge of the call, multiplication factor for time of day, and multiplication factor for voice quality. You can set the basic charge for a call through the **Report Config** > **Rating Engine** > **Duration window**. See the following list:

- Basic charge = cost, or number of units, applied to the duration block that is specified in the Number of Blocks section.

- Number of blocks = total duration of call, in seconds, for which you want the base charge to be applied.

You can set the multiplication factor for time of day through the **Report Config** > **Rating Engine** > **Time of Day** window. The basis of the settings provides the connect time of the call.

You can set the multiplication factor for voice quality through the **Report Config** > **Rating Engine** > **Voice Quality** window.

QoS Values

CAR generates QoS reports. To qualify the data that is presented in those reports, CAR uses predefined values that are set about voice quality. You can specify the value ranges that are good, acceptable, fair, and poor for jitter, latency, and lost packets.

Automatic Generation of Reports and Alerts

CAR automatically generates reports based on a schedule. Report generation can include a daily, weekly, or monthly summary report, QoS reports, traffic reports, Device/Route Plan utilization reports, and so on, that you may want to view on a regular basis.

Notification Limits

You can specify limits for QoS and daily charges, so the administrator gets alerted by e-mail when these limits are exceeded. The alerts go to all users that are designated as CAR Administrators through Cisco Unified CM Administration.

CAR Rating Engine

Use the CAR rating engine configuration to define the base rate and duration, time of day, and voice quality rating parameters for calls.

Note Rating parameters for calls get used during CAR loading. If you want old CDR records in the CAR database to use new values for these parameters, you must reload all the CDRs in the CAR database.

Set Base Rate

To establish a cost basis for calls, you must specify a base rate for all calls. For example, if your service provider charges you 6 cents for each minute, billed in 10-second increments, you can set the base rate at which all calls are charged at 1cent for each 10-second increment.

This section describes how to establish the base charge and duration values.

Note If you use the default base charge value, reports do not provide any costs. The system provides default values, but if left to the defaults, the Rating Engine stays disabled and does not provide costs.

Procedure

Step 1 Choose **Report Config > Rating Engine > Duration**.

The Call Duration window displays.

Step 2   In the **To (seconds)** field, enter the seconds for which you want the base charge to be applied. For example, if you are billed in 6-second increments, enter 6 in this field. If you are billed a flat rate for each minute regardless of call duration, enter 60 in this field, so the charge is based on whole minutes.

Step 3   In the **Base Charge/Block** field, enter the cost basis for the seconds that are shown in the To (seconds) field. For example, if you are billed 6 cents for each minute in 6-second increments, enter 0.006 in this field. If you are billed 7 cents for each minute in whole minutes (no incremental billing), enter 0.07 in this field.

In the preceding examples, if you are billed in 6-second increments and the cost is 0.006 for each 6-second increment, a call that lasts 7 seconds would cost 0.012. Rationale: Each 6-second increment costs 0.006, and two blocks from 0–6 seconds occurred.

Likewise, if you are billed in whole minutes and the cost is 7 cents for each minute, a call that lasted 3 minutes would cost 21 cents. Rationale: Each 60-second increment costs 7 cents, and three blocks of 1 minute occurred.

Step 4   Click **Update**.

> **Tip**   To restore the default setting, click **Restore Defaults**. By restoring the default value of 0 for the call charge/block, you effectively disable the other factors that are used in determining call cost.

Factor Time of Day

To further define the cost of calls, you can specify a multiplication factor for certain times of day. For example, if you want to charge subscribers a premium for daytime calls, you can apply a multiplication factor to the base charge/block that you specified in the Call Duration window.

This section describes how to establish certain times of day when calls cost more.

> **Note**   If you do not want to increase call cost by time of day, you can use the default values. The default multiplication factor specifies 1, so no increase in call cost for time of day occurs.

Procedure

Step 1   Choose **Report Config > Rating Engine > Time of Day**.

The Time of Day window displays.

Step 2   To add rows, click the **Add Rows** link.

The system adds a row between 00:00:00 and 23:59:59.

Step 3   To add additional rows, check the check box for the row above which you want to add a new row and click the **Add Rows** link.

> **Note**   To delete rows, check the check box for the row that you want to delete and click the **Delete Rows** link.

Step 4   Enter the From and To time ranges in 24-hour, minute, and second format. A 24-hour period, from 00:00:00 to 23:59:59, represents the default time range. If you want to set one time-of-day range from 8am to 5 pm, you will need to establish three time-of-day ranges: the first from 00:00:00 to 07:59:59, the second from 08:00:00 to 16:59:59, and the third from 17:00:00 to 23:59:59.

Note   You must use Coordinated Universal Time (UTC), rather than a 12-hour clock, when factoring Time of Day into Call Cost.

Step 5   Enter the Multiplication Factor that designates a number by which you want the base charge/block to be multiplied when a call occurs in the specified time range. For example, if you charge a premium of double the price for calls that are placed between 8a.m. and 5p.m., the multiplication factor equals 2.00. A multiplication factor of 1.00 does not affect the cost of the call.

Step 6   To add the time-of-day and multiplication factors, click **Update** .

Tip   To restore the default setting, click **Restore Defaults**.

Factor Voice Quality

To further define the cost of calls, you can specify a multiplication factor for the voice quality of a call. For example, if subscribers are paying a premium price to ensure the highest voice quality on calls, you can apply various multiplication factors to the base charge/block that you specified in the Call Duration window depending on the voice quality. Using a multiplication factor other than 1.00 helps differentiate between the various voice qualities calls as well.

This section describes how to establish call cost when calls that have a certain voice quality cost more.

Note   If you do not want to increase, call cost by voice quality, you can use the default values. The default multiplication factor equals 1.00, so no increase in call cost occurs for voice quality.

Procedure

Step 1   Choose **Report Config** > **Rating Engine** > **Voice Quality**.

The Voice Quality window displays.

Step 2   In the Multiplication Factor field, enter the number by which you want the base charge/block to be multiplied when a call occurs in the specified voice-quality category. The 'Define QoS values' section defines the voice-quality categories: Good, Acceptable, Fair, and Poor.

Example

Voice Quality Good; Factor 1.2

Voice Quality Acceptable; Factor 1.0

Voice Quality Fair; Factor 1.0

Voice Quality Poor; Factor 0.8

A good call gets charged 1.2 times that of an acceptable or fair call. A poor call gets charged 0.8 times that of an acceptable or fair call.

Note Multiplication factor for a good call >= the multiplication factor for acceptable >= multiplication factor for fair >= multiplication factor for poor.

Step 3 Cick **Update** .

Tip To restore the default setting, click **Restore Defaults**.

Define QoS Values

QoS values get configured for lost packets, jitter, and latency based on good, acceptable, fair, or poor criteria.

If a call does not satisfy any of the criteria that are set for any of the four voice-quality categories, it receives a classification of NA (not applicable); likewise, if the system is not configured to generate CMR data (or if the CMR is bad), the CMR receives a classification of NA (not applicable).

Enter NA to ignore the values of a parameter. For example, a QoS parameter such as jitter, has NA, and the QoS is defined as good, which means that the QoS depends only on the values of latency and lost packets. All three parameters cannot have NA as values. Infinity designates the maximum value that is available for any parameter. If you specify a rule where a jitter value from 500 to Infinity is considered poor, a call with jitter greater than 500 receives a classification of poor.

Note Be aware that the classifications of "NA" and "Infinity" are case-sensitive.

This section describes how to define the QoS values.

Procedure

Step 1 Choose **Report Config** > **Define QoS**.

The Define Quality of Service window displays. The following table describes the QoS default values.

Table 15: QoS Default Values

QoS Parameter	Default
Lost Packets	Good - 0.00 to 15.00Acceptable - 15.01 to 30.00Fair - 30.01 to 45.00Poor - 45.01 to infinity
Jitter	Good - 0 to 20Acceptable - 21 to 100Fair - 101 to 150Poor - 151 to infinity
Latency	No default values apply.

Step 2 To add rows, check the check box for the row above which you want to add a new row and click **Add Rows** link.

The new row gets added above the row that you checked, and the check box is cleared.

The rows represent the values that CAR uses to quantify the conditions good, acceptable, fair, and poor in the QoS reports. For each value set, enter the upper and lower limits in the From and To columns.

Note   To delete rows, check the check box for the row that you want to delete and click **Delete Rows** link.

Step 3   For each value that you have set, choose the Quality of Service.

Step 4   Click **Update**.

Tip   To restore the default QoS values, click **Restore Defaults**.

Automatic Generation of CAR Reports and Alerts

Before You Begin

Before you start generating reports with CAR, configure the system.

The following table displays the list of reports that the system enables or disables for automatic generation, the report generation interval, and the recipients of the report.

Table 16: Automatically Generated Reports

Name of Report	Report Generation Interval	Recipients
Department Bill Summary	Monthly	• CAR managers • CAR administrators
Gateway Summary	Monthly	• CAR administrators
Individual Bill	Monthly	• Individual users configured in Cisco Unified CM. • CAR administrators **Note** Administration users do not get access to this report.
Individual Bill Summary	Monthly	• Individual users configured in Cisco Unified CM • CAR managers • CAR administrators

Name of Report	Report Generation Interval	Recipients
Conference Summary	Monthly	• CAR administrators
Conference Detail	Daily	• CAR administrators
QoS Summary	Monthly	• CAR managers • CAR administrators
System Overview	Monthly	• CAR administrators
Top N Charge	Daily	• CAR managers • CAR administrators
Top N Charge	Monthly	• CAR managers • CAR administrators
Top N Duration	Daily	• CAR managers • CAR administrators
Top N Duration	Monthly	• CAR managers • CAR administrators
Top N Calls	Daily	• CAR managers • CAR administrators
Top N Calls	Monthly	• CAR managers • CAR administrators
Traffic Summary - Day of Month	Monthly	• CAR administrators
Traffic Summary - Day of Week	Weekly	• CAR administrators
Traffic Summary - Hour of Day	Daily	• CAR administrators
Conference Bridge Util - Day of Week	Weekly	• CAR administrators
Voice Messaging Util - Day of Week	Weekly	• CAR administrators
Route Pattern/Hunt Pilot Util - Day of Week	Weekly	• CAR administrators
Route/Hunt List Util - Day of Week	Weekly	• CAR administrators

Name of Report	Report Generation Interval	Recipients
Route Group Util - Day of Week	Weekly	• CAR administrators
Line Group Util - Day of Week	Weekly	• CAR administrators
Gateway Util - Day of Week	Weekly	• CAR administrators

Note In large setups, with a large number of gateways, route groups, route lists, and route patterns, enabling all the Utilization reports (Gateway Utilization, Line Group Utilization, Route Group Utilization, Route List Utilization, and Route Pattern Utilization) increases the CPU usage of the system, therefore increasing the time in which reports are generated. This also affects system performance. Cisco recommends that you enable only Gateway Utilization reports for automatic generation, due to the number of gateways that are typically found in a large system. You can generate all Utilization reports on demand by selecting five or less gateways, route groups, route lists, or route groups.

Automatically generating reports involves a two-step process:

- First, enable the reports that you want to generate unless they are enabled by default.

- Second, schedule the reports for the day and time that you want them to generate. (CAR provides a default schedule. If the default schedule is acceptable, only enable the reports that you want to generate automatically.)

CAR provides e-mail alerts for various events. Enabling the system for e-mail alerts involves a two-step process:

- First, enable the e-mail alerts. Default enables some, but not all, reports.

- Second, configure the e-mail that is sent when the alert criteria are met.

Enable Automatic Generation Reports

This section describes how to enable or disable one or all reports for automatic generation. You can also customize the report parameters and enable a mailing option, so reports get emaileded when they are created. When the report gets mailed, CAR generates the email address by using the mail ID for the CAR administrator(s) and the mail domain that is configured in the Mail Parameters window; that is, CAR uses <mail ID for the CAR administrator> @ <domain that is configured in the mail parameters window>.

For all new installations of Unified Communications Manager, you must first enable the email alerts and reports for automatic generation. The default status for all reports and alerts specifies **Disabled**.

For all Unified Communications Manager upgrades from Release 5.x to a later release of Unified Communications Manager, the tbl_pregenmail_option table data migrates only if the CAR Scheduler service is active.

When you upgrade to another version of Unified Communications Manager, disable all reports and alerts while the upgrade is in process to conserve system resources. Remember to enable the reports and alerts after the upgrade completes.

The Generated Report Schedule, on page 12 describes reports that are enabled by default.

Procedure

Step 1	Choose **Report Config** > **Automatic Generation/Alert**.
	The Automatic Report Generation/Alert Option window displays.
Step 2	In the **Reports [Report Generation Interval]** box, choose the report that you want to automatically generate based on the schedule that you defined in the System Scheduler. See the Set Up CDR Load Schedule, on page 36.
Step 3	In the Status field, choose **Enabled** or **Disabled**.
Step 4	To customize the report or have the report emailed when it is generated, click **Customize Parameters**.
	The Customize Parameters window displays.
	Note Each report provides different customization options, depending on the type of report.
Step 5	Choose the CSV or PDF radio button, depending on the type of report that you want the system to mail.
Step 6	To have the report mailed to all CAR administrators, check the **Mailing Option** check box.
Step 7	To save the values that you specified, click **Update**.
	The Customize Parameters window closes.
Step 8	To enable or customize other reports, repeat the previous steps.
Step 9	Click **Update**.
	Changes take effect at midnight. You can force the change to take effect immediately by stopping and restarting the CAR Scheduler service.

Enable Email Alerts

There are two Alerts by Mail that are available. These alerts are:

- Charge Limit Notification

- QoS Notification

See the Set Notification Limits, on page 58 for information on how to configure these alerts.

This section describes how to enable these alerts to be mailed to users.

Procedure

Step 1	Choose **Report Config** > **Automatic Generation/Alert**.
	The Automatic Report Generation/Alert window displays.
Step 2	In the Alerts by Mail box, choose the alert that you want to enable or disable.
Step 3	In the Status field, choose **Enabled** or **Disabled**.
Step 4	Click **Update**.
Step 5	To enable or disable alerts by mail, repeat the previous steps.

Changes take effect at midnight. You can force the change to take effect immediately by stopping and restarting the CAR Scheduler service.

CAR Reports Notification Limits

Before You Begin

Before you start generating reports with CAR, configure the system.

Set Notification Limits

This section describes how to specify the notification limits for QoS and daily charges.

Procedure

Step 1 Choose **Report Config** > **Notification Limits**.

The Set Limits for Notification window displays.

Step 2 In the **Daily QoS Parameters** area, enter a threshold for good and poor calls.

The threshold applies in the form of a percentage of all calls that must be exceeded to trigger an email alert to the administrator. The default for good calls specifies less than 20 percent, meaning that when good calls represent less than 20 percent of all calls per day, an alert gets sent. The default for poor calls specifies greater than 30 percent, meaning that when poor calls represent more than 30 percent of all calls per day, an alert gets sent. The alert is called the QoS Notification.

Step 3 In the **Daily Charge Limit** area, enter the number of monetary units (such as dollars, francs, or pounds) that, when exceeded by any user in the system, will trigger sending an email alert to the administrator. The alert is called the Charge Limit Notification.

Step 4 Click **Update**.

Changes take effect immediately. The new values get used whenever the next alert is sent.

User Reports

User Reports Overview

CAR provides reporting capabilities for three levels of users:

- Administrators - Generate system reports to:

  - Load balancing

  - System performance

  - Troubleshooting

- Managers - Generate reports for users, departments, QoS to help with the call monitoring for budgeting or security purposes, and for determining the voice quality of the calls.

- Individual users - Generate a billing report for their calls.

> **Note** You may have access restrictions to view some reports depending on your job function.

User Reports Description

Users, managers, and CAR administrators can generate user reports. CAR includes the following user reports:

- Bills

  - Individual - Available for users, managers, and CAR administrators. Individual bills provide call information for the date range that you specify. You can generate, view, or mail summary or detail

information about your individual phone bills. Those CAR administrators who are also application users cannot get this report.

- Department - Available for managers and CAR administrators. Department bills provide call information and quality of service (QoS) ratings. If you are a manager, you can generate a summary or detailed report of the calls that are made by all users who report to you, or only those users that you choose. If you are a CAR administrator, you can generate a summary or detailed report of the calls that some or all users in the system make. This report helps you to keep track of all calls on a user-level basis for the entire system.

- Top N

  - By Charge - Available for managers and CAR administrators. The Top N by Charge reports list the top number of users that incurred a maximum charge for calls during a period that you specify. Reports that are generated by destinations list the destinations that incurred the maximum charges. Reports that are generated by all calls list the calls that incurred the maximum charges. If you are a manager, the report includes the top charges for all calls that are made by users who report to you during the specified period. If you are a CAR administrator, the report includes the top charges for all calls that are made by all users on the system for the specified period.

  - By Duration - Available for managers and CAR administrators. The Top N by Duration reports list the top number of users that incurred a maximum time on calls during a period that you specify. Reports that are generated by destinations list the destinations that incurred the maximum duration. Reports that are generated by all calls list the calls that incurred the maximum duration. If you are a manager, the report lists the top number of users who report to you who incurred a maximum time for calls that are made during the chosen date range, starting with the longest. If you are a CAR administrator, the report lists the top number of users that incurred a maximum time for calls that were made during the chosen date range, starting with the longest.

  - By Number of Calls - Available for managers and CAR administrators. The Top N by Number of Calls reports list the users who incurred the maximum number of calls. Reports that extensions generate list the extensions that placed or received the greatest number of calls during a period that you specify. If you are a manager, the report lists the top number of calls by user or extension, among the users who report to you, for the chosen date range. If you are a CAR administrator, the report lists the top number of calls for each user or extension in the system. Reports that are generated by Individual Users list the users who incurred the maximum number of calls. Reports that are generated By Extensions list the extensions that have placed or received the greatest number of calls in the group (for a manager) or in the system (for the CAR administrator).

- Cisco Unified Communications Manager Assistant

  - Manager Call Usage - Available for CAR administrators. The Cisco Unified Communications Manager Assistant (IPMA) summary and detail reports provide call completion usage details for IPMA managers. The manager reports can include calls that managers handle for themselves only, calls that assistants handle for managers only, or calls that both managers and assistants handle for managers.

  - Assistant Call Usage - Available for CAR administrators. The Cisco IPMA summary and detail reports provide call completion usage details for IPMA assistants. The assistant reports can include calls that assistants handle for themselves only, calls that assistants handle for managers, calls that assistants handle for themselves and for managers.

• Cisco IP Phone Services - Available for CAR administrators. The Cisco IP Phone Services report shows selected Cisco IP Phone services, the number of users that are subscribed to each of the selected services, and the utilization percentage for each of the selected services. You can create services for a wide variety of business and entertainment uses. If you have revenue that is tied to a service, such as for advertising, you can use this report to determine the number of users who have subscribed to the service. You can also use this report to indicate the popularity of the selected services.

Mail Reports

You can email all reports in CAR. You can send a report by mail from any report window in CAR. You can also view the report first and then send it.

Before you begin

To email reports, first, configure valid mail parameters. The mail parameters allow CAR to send email by using an email server in your system. See the Set Up Mail Server Parameters, on page 30, for more information. Also, set up the details of the report that you want generated.

The following procedure describes how to mail a CAR report.

Procedure

Step 1	Within any CAR Reports window or after viewing the report, click **Send Report**.
	The Mail To window displays.
Step 2	Enter the email ID for the user to whom you want to send the report.
Step 3	You can search for a user by clicking the **To**.
	A User Search window displays.
Step 4	In the First Name and Last Name fields, enter characters of the first or last name of the user and click **Search**.
	A User Search Results window displays on the same page and lists all users who matched the search criteria that you entered.
Step 5	In the row for the user to whom you want to send the report, click the **Select** link.
	The user that you chose gets added to the To field of the Mail To window. Repeat this step to add more users to the list of people who will be emailed a copy of this report.
Step 6	When you have added all users, click **Close** in the User Search window.
	The users who are listed in the Search Users window get copied to the To field of the Mail To window.
Step 7	To add a user to the Cc field, click the **Cc** and follow the same instructions as described in Step 4, on page 61 through Step 6, on page 61.
Step 8	In the Subject field, enter a subject message (optional).
Step 9	In the Message area, enter a message (optional).
Step 10	Click **Send**.

View CSV Reports

At times, the data in the CSV report may not be aligned properly. To align the data and view the report in the right format, do the following:

Procedure

Step 1   Open the CSV report in a web browser.

Step 2   Right-click anywhere on the report and choose **View Source**.

The report opens as a text file.

Step 3   Save the text file with a CSV file extension.

Step 4   Open the CSV file.

The data is displayed in the right format.

Search Users

Many reports in CAR provide a search function, so you can look for users. The following CAR User reports support search by user: Department and individual bills, Top N by charge, duration, and a number of calls, Cisco Unified Communications Manager Assistant, and Cisco Unified IP Phone. You can mail all reports that can be generated through the Send Report.

Before you begin

You must use the window in User Reports that allows you to search for users.

This section describes how to search for a user.

Procedure

Step 1   Click the **Search Users** link.

A User Search window displays.

Step 2   In the **First Name** and **Last Name** fields, enter characters of the first or last name of the user and click **Search**.

A User Search Results window displays in the same window and lists all users who matched the search criteria that you entered.

Step 3   In the row for the user that you want, click **Select** link.

The user that you chose gets added to the List of Users in the User Search window. Repeat this step to add more users.

Step 4   When you have added all users, click **Close** in the User Search window.

Bills User Reports

CAR provides reporting capabilities for three levels of users:

- Administrators - Generate system reports to help with load balancing, system performance, and troubleshooting.

- Managers - Generate reports for users, departments, and QoS to help with a call monitoring for budgeting or security purposes and for determining the voice quality of the calls.

- Individual users - Generate a billing report for their calls.

Note   You may have access restrictions to view some reports depending on your job function.

Bills Reports

Individual bills provide the call information for the date range that you specify. You can either view reports that the system automatically generates or generate new reports. Only CAR administrators can schedule reports for an automatic generation. If you are an administrator, see *Automatic Generation of CAR Reports and Alerts* for more information.

Department bills provide call information and QoS ratings. If you are a manager, you can generate a summary or detailed report of the calls that all users who report to you made, or only those users that you choose.

If you are a CAR administrator, you can generate a summary or detailed report of the calls that some or all users in the system made. This report helps you track all the calls on a user-level basis for the entire system.

	Command or Action	Purpose
Step 1	Generate Individual Bills Reports	Describes how to view, or mail, summary or detail information reports about users, managers, and administrators. **Note** Administration users do not get access to this report.
Step 2	Generate Department Bills Reports	Describes how to generate, view, or mail summary or detail information about departmental bills. **Note** Application users do not get access to this report.

Generate Individual Bills Reports

Before you can configure the Individual Bills report, you must ensure that a device with an assigned Owner User ID exists in Cisco Unified CM Administration for each user that included in the report. Use the following procedure to create the Owner User IDs:

Procedure

Step 1 In Cisco Unified CM Administration, choose **Device** > **Add a New Phone** > **Phone** > **Phone Configuration**.

Step 2 Add the information for the device and the user.

> **Note** If the Extension Mobility feature enabled on the device and the user logs in to the phone and places a call, the User ID that gets recorded in the CDRs matches the logged in User ID. If extension mobility is not enabled on the device, the User ID that gets recorded in the CDRs equals the "Owner User ID" that is configured for the device.
>
> In the situation were neither the User ID nor the Owner User ID is configured (that is, extension mobility is not enabled, and the Owner User ID is not configured), the User ID field in the CDRs gets recorded as blank.
>
> CAR uses the default User ID of "_unspecified user" when it loads the CDRs, and the CDRs do not appear in the Individual Bills User reports because no user by the name "_unspecifieduser" exists in the Cisco Unified CM database.
>
> If you look for the reports for a particular end user in the directory, either the User ID for the particular end user must be configured as the Owner User ID for the device, or the particular end user must have logged in to the device with the extension mobility feature enabled.

You are now ready to configure the Individual Bills report.

Step 3 Perform one of the following tasks:
   a) Choose **Bills** > **Individual**, if you are a user or manager.
   b) Choose **User Reports** > **Bills** > **Individual**, If you are a CAR administrator.

Step 4 Choose **Summary** or **Detail** in the Report Type field.

Summary reports - Provides a summary of all calls for a chosen period, including the call classification (Internal, Local, Long Distance, International, or On Net), the QoS information, the total number of calls that were made, and the charges that were incurred.

Detailed reports - Provides the date of the call, origination time of the call, origination number (calling number), destination number (called number), call classification (On Net, Internal, Local, Long Distance, International, or Others), QoS information, duration of time for which the call lasted (in seconds), and the charge for the call, based on the rating engine configuration in CAR for all calls over a chosen period.

Step 5 Choose an automatically generated report (if available) and go to or use the default Generate New Report and go to In the Available Reports field.

> **Note** You can only choose the automatically generated report if you are logged in as CAR administrator. The automatically generated reports do not display in the drop-down list box if you are logged in as a manager or individual user.

Step 6 Choose the date range for the period for which you want to see call information.

Step 7 Choose **CSV** in the Report Format area, if you want the report in CSV format. Choose **PDF** in the Report Format area, if you want the report in PDF format.

Step 8 Click **View Report**.

Step 9 Click **Send Report**. If you want to mail the report, follow the procedure that is described in the .

Generate Department Bills Reports

Before you can configure the Department Bills report, you must ensure a device with an assigned Owner User ID and Manager User ID exists in Cisco Unified CM Administration for each user that is included in the report. Use the following procedure to add the device, Owner User ID, and the associated Manager User ID for each user:

Procedure

Step 1 Choose **Device** > **Phone** > **Add a New Phone** > **Phone Configuration** in Cisco Unified CM Administration.

Step 2 Add the information for the device and the user.

Step 3 Choose **User Management** > **End User** > **Add**, in Cisco Unified CM Administration.

Step 4 Add the Manager User ID information to the end user information.

Note	If the Extension Mobility feature is enabled on the device and the user logs into the phone and places a call, the User ID that gets recorded in the CDRs is the logged in User ID. If extension mobility is not enabled on the device, the User ID that gets recorded in the CDRs specifies the "Owner User ID" that is configured for the device.

In the situation were neither the User ID nor the Owner User ID is configured (that is, extension mobility is not enabled, and the Owner User ID is not configured), the User ID field in the CDRs gets recorded as blank. CAR uses the default User ID of "_unspecified user" when it loads the CDRs, and the CDRs are not seen in the Department Bills User reports because no user by the name "_unspecifieduser" exists in the Cisco Unified CM database.

If you look for the reports for a particular end user in the directory, either the User ID for the particular end user must be configured as the Owner User ID for the device or the particular end user must have logged in to the device with the Extension Mobility feature enabled.

Step 5 Perform one of the following tasks:

a) Choose **Bills** > **Department**, if you are a manager.

b) Choose **User Reports** > **Bills** > **Department**, if you are a CAR administrator.

Step 6 Choose **Summary** or **Detail**, in the Report Type field.

Summary reports - Provides a summary of all calls for a chosen period, including the call classification (OnNet, Internal, Local, Long Distance, International, Incoming, Tandem, or Others), the QoS information, the total number of calls that were made, and the charges that were incurred.

Detailed reports - Provides the date of the call, origination time of the call, origination number (calling number), destination number (called number), call classification (On Net, Internal, Local, Long Distance, International, or Others), QoS information, duration for which the call lasted (in seconds), and the charge for the call, based on the rating engine configuration in CAR for all calls over a chosen period.

Step 7 In the Available Reports field, choose an automatically generated report (if available) and go to or use the default Generate New Report and go to .

Note	You can only choose the automatically generated report if you are logged in as a CAR administrator. The automatically generated reports do not display in the drop-down list box if you are logged in as a manager.

Step 8 Choose the date range for the period for which you want to see call information.

| Step 9 | If you are a manager, continue with ; otherwise, if you are a CAR administrator, continue with . |

Step 10 To choose all of your direct reports, check the **Select All Reportees** check box.

The List of Reportees shows your direct reports.

Note Click **Down** to view your direct reports. Use the **Up** and **Down** to move up and down the report chain information.

Step 11 To choose individual reportees, choose the reports that are shown in the List of Reportees.

Step 12 Click **Add**.

The department bill includes only users who are listed in the Selected Reportees box.

Step 13 To see the reportees under a particular user, choose the user and click Down.

Step 14 If you are a CAR administrator, check the **Select All Users** check box to include all users. If you are a manager, proceed to .

Step 15 To specify individual users, enter the user ID of the individual that you want to include in the report in the User ID field. Click **Add**.

You can also use a provided user search function. See the , for instructions on using the search feature.

Step 16 Choose **CSV** in the Report Format area, if you want the report in CSV format. Choose **PDF** in the Report Format area, if you want the report in PDF format.

Step 17 Click **View Report**.

Step 18 Click **Send Report**. If you want to mail the report, perform the procedure that is described in the .

Top N User Reports

CAR provides reporting capabilities for three levels of users:

- Administrators - Generate system reports to help with load balancing, system performance, and troubleshooting.

- Managers - Generate reports for users, departments, and QoS to help with call monitoring for budgeting or security purposes and for determining the voice quality of the calls.

- Individual users - Generate a billing report for their calls.

Note You may have access restrictions to view some reports depending on your job function.

Top N Reports

Top N Charge reports the users who made the maximum charge for the specified date range. If you are a manager, the report includes the top charges for all calls that users who report to you made during the specified

period. If you are a CAR administrator, the report includes the top charges for all calls that all users on the system made for the specified period. You can generate each Top N Charge report with options to show the information by individual users, by destinations, or by all calls.

Top N Duration reports the top number of users that incurred a maximum time on calls during a period that you specify. If you are a manager, the report lists the top number of users who report to you that incurred a maximum time for calls that were made during the chosen date range, starting with the longest. If you are a CAR administrator, the report lists the top number of users that incurred a maximum time for calls that were made during the chosen date range, starting with the longest. You can generate each Top N Duration report with options to show the information by individual users, by destinations, or by all calls.

Top N Number of Calls reports the top number of calls that were made and received by users during a period that you specify. If you are a manager, the report lists the top number of calls by users among the users who report to you for the chosen date range. If you are a CAR administrator, the report lists the top number of calls for each user in the system. You can generate each Top N Number of Calls report with options to show the information by individual users and by extensions.

Generate Top N by Charge Reports

This section describes how to generate, view, or mail reports about the top calls when classified by cost.

Procedure

Step 1   Perform one of the following tasks:
a) Choose **Top N** > **By Charge**, if you are a manager.
b) Choose **User Reports** > **Top N** > **By Charge**, if you are a CAR administrator.

Step 2   In the Select Call Types area, check the check boxes for the types of calls that you want the report to include. These boxes display only when you choose Generate New Report from the Available Reports drop-down list box, as described in the following table. The next table describes the call types.

Tip   To check all check boxes, click **Select All**; to uncheck the check boxes, click **Clear All**.

Table 17: Top N by Charge Call Types

Call Type	Description
On Net	Outgoing calls that originate on one Unified Communications Manager network, go out through a trunk, and terminate on a different Unified Communications Manager network. For CAR purposes, be aware that any outgoing call can be classified as an OnNet call if it is configured as such in the CAR dial plan configuration window. See Set Up Dial Plan, on page 31 .
Internal	Calls, including intracluster calls, that originate in the Unified Communications Manager network and end in the same Unified Communications Manager network (no gateways or trunks are used).
Local	Local calls that are routed through the public switched telephone network (PSTN) to numbers without an area code or that include one of the local area codes.
Long Distance	Long-distance calls that originate in the Unified Communications Manager network going out through the PSTN.

Call Type	Description
International	International calls that originate in the Unified Communications Manager network and go out through the PSTN.
Incoming	Inbound calls that originate outside the Unified Communications Manager network and enter the Unified Communications Managernetwork through a gateway.
Tandem	Inbound calls that originate outside the Unified Communications Manager network, enter the Unified Communications Managernetwork through a gateway, and transfer outbound from the Unified Communications Managernetwork through a gateway.
Others	All other outgoing calls, such as toll-free numbers or emergency calls such as 911.

Step 3   In the **Report Type** field, choose a report type as described in the following table.

Table 18: Top N by Charge Report Types

Report Type	Description
By Individual Users	This report lists the users who incurred the maximum charges.
By Destinations	This report lists the destinations that incurred the maximum charges.
By All Calls	This default report lists the calls that incurred the maximum charges.

Note   Top N Destination by Charge reports display the top destinations based on the charge incurred. If the same destination number comprises different call classifications (for example, some are Internal, and some are Incoming), they get treated and listed separately in these reports.

Step 4   In the **Available Reports** field, choose an automatically generated report (if available) and go to the table or use the default setting, **Generate New Report**, and go to the table.

Note   You can only choose the automatically generated report if you are logged in as CAR administrator. The automatically generated reports do not display in the drop-down list box if you are logged in as a manager.

Step 5   Enter the number (n) of records to display in the report in the **No of Records** field. The default designates five.

Step 6   Choose the date range for the period for which you want to generate the report.

Step 7   Choose **CSV** in the Report Format area, if you want the report in CSV format. Choose **PDF** in the Report Format area, if you want the report in PDF format.

Step 8   Click **View Report**.

Step 9   Click **Send Report**. To send the report, perform the procedure that is described in the .

Generate Top N by Duration Reports

This section describes how to generate, view, or mail reports about the top calls when they are classified by duration.

Procedure

Step 1   Perform one of the following tasks:

a)   Choose **Top N** > **By Duration.**, if you are a manager

b)   Choose **User Reports** > **Top N** > **By Duration.**, if you are a CAR administrator.

Step 2   In the Select Call Types area, check the check boxes for the types of calls that you want included in the report. These boxes display only when you choose Generate New Report from the Available Reports drop-down list box, as described in the following table. The next table describes the call types.

Table 19: Top N by Duration Call Types

Call Type	Description
On Net	Outgoing calls that originate on one Unified Communications Managernetwork, go out through a trunk, and terminate on a different Unified Communications Managernetwork. For CAR purposes, be aware that any outgoing call can be classified as an OnNet call if it is configured as such in the CAR dial plan configuration window. See .
Internal	Calls, including intracluster calls, that originate in the Unified Communications Manager network and end in the same Unified Communications Managernetwork (no gateways or trunks are used).
Local	Local calls that are routed through the public switched telephone network (PSTN) to numbers without an area code or that include one of the local area codes.
Long Distance	Long-distance calls that originate in the Unified Communications Managernetwork going out through the PSTN.
International	International calls that originate in the Unified Communications Manager network and go out through the PSTN.
Incoming	Inbound calls that originate outside the Unified Communications Manager network, enter through a gateway, and go into the Unified Communications Manager network.
Tandem	Inbound calls that originate outside the Unified Communications Managernetwork, enter the Unified Communications Manager network through a gateway, and then are transferred outbound from the Unified Communications Manager network through a gateway.
Others	All other outgoing calls, such as toll-free numbers or emergency calls such as 911.

Step 3   In the **Report Type** field, choose a report type as described in the following table.

Table 20: Top N by Duration Report Types

Report Type	Description
By Individual Users	This report lists the users who incurred the maximum duration.

Report Type	Description
By Destinations	This report lists the destinations that incurred the maximum duration.
By All Calls	This report lists the calls that incurred the maximum duration.

Note Top N Destinations by Duration reports display the top destinations based on the duration of the calls. If the same destination number comprises different call classifications (for example, some are Internal and some are Incoming), they get treated and listed separately in these reports.

Step 4 In the **Available Reports** field, choose an automatically generated report (if available) and go to the table or use the default setting, **Generate New Report** and go to the table.

Note You can only choose the automatically generated report if you are logged in as a CAR administrator. The automatically generated reports do not display in the drop-down list box if you are logged in as a manager.

Step 5 Enter the number (n) of records to display in the report in the No of Records field. The default designates five.

Step 6 Choose the date range for the period for which you want to generate the report.

Step 7 Choose **CSV** in the Report Format area, if you want the report in CSV format. Choose **PDF** in the Report Format area, if you want the report in PDF format.

Step 8 Click **View Report**.

Step 9 Click **Send Report**, if you want to mail the report button. To send the report, perform the procedure that is described in the Mail Reports, on page 61.

Generate Top N by Number of Calls Reports

This section describes how to generate, view, or mail reports about the top calls when classified by volume.

Procedure

Step 1 Perform one of the following tasks:

   a) Choose **Top N** > **By Number of Calls**, if you are a manager.
   b) Choose **User Reports** > **Top N** > **By Number of Calls**, if you are a CAR administrator.

Step 2 In the **Select Call Types** area, check the check boxes for the types of calls that you want included in the report. These boxes display only when you choose **Generate New Report** from the **Available Reports** drop-down list box, as described in the following table. The next table describes the call types.

Table 21: Top N by Number of Calls Call Types

Call Type	Description
On Net	Outgoing calls that originate on one Unified Communications Manager network, go out through a trunk, and terminate on a different Unified Communications Manager network. For CAR purposes, be aware that any outgoing call can be classified as an OnNet call if it is configured as such in the CAR dial plan configuration window. See Set Up Dial Plan, on page 31.
Internal	Calls, including intracluster calls, that originate in the Unified Communications Manager network and end in the same Unified Communications Manager network (no gateways or trunks are used).
Local	Local calls that are routed through the public switched telephone network (PSTN) to numbers without an area code or that include one of the local area codes.
Long Distance	Long-distance calls that originate in the Unified Communications Manager network going out through the PSTN.
International	International calls that originate in the Unified Communications Manager network and go out through the PSTN.
Incoming	Inbound calls that originate outside the Unified Communications Manager network, enter through a gateway, and go into the Unified Communications Manager network.
Tandem	Inbound calls that originate outside the Unified Communications Managernetwork, enter the Unified Communications Manager network through a gateway, and transfer outbound from the Unified Communications Manager network through a gateway.
Others	All other outgoing calls, such as toll-free numbers or emergency calls such as 911.

Step 3 In the **Report Type** field, choose a report type as described in the following table.

Table 22: Top N by Number of Calls Report Types

Report Type	Description
By Individual Users	This report lists the users who incurred the maximum number of calls.
By Extensions	This report lists the extensions that have placed or received the greatest number of calls in your group (managers) or the system (CAR administrators).

Step 4 In the **Available Reports** field, choose an automatically generated report (if available) and go to the table or use the default **Generate New Report** and go to the table.

| Note | You can only choose the automatically generated report if you are logged in as a CAR administrator. The automatically generated reports do not display in the drop-down list box if you are logged in as a manager. |

Step 5   Enter the number (n) of records that display in the report in the No of Records field. The default designates five.

Step 6   Choose the date range for the period for which you want to generate the report.

Step 7   Choose **CSV** in the Report Format area, if you want the report in CSV format. Choose **PDF** in the Report Format area, if you want the report in PDF format.

Step 8   Click **View Report**.

Step 9   Click **Send Report**, if you want to mail the report. To send the report, perform the procedure that is described in the Mail Reports, on page 61.

Assistant User Reports

CAR provides reporting capabilities for three levels of users:

- Administrators - Generate system reports to help with load balancing, system performance, and troubleshooting.

- Managers - Generate reports for users, departments, and QoS to help with call monitoring for budgeting or security purposes and for determining the voice quality of the calls.

- Individual users - Generate a billing report for their calls.

Note   You may have access restrictions to view some reports depending on your job function.

Assistant Usage Reports

CAR provides call completion usage reports for the following Cisco Unified Communications Manager Assistant users: manager(s) and the configured/assigned assistant(s) that manage the calls of the manager(s). Only CAR administrators can generate the Cisco Unified Communications Manager Assistant reports. The Cisco Unified Communications Manager Assistant menu allows you to choose all or a subset of managers or assistants by using simple search functionality that is based on partial or complete first or last name. You can generate these reports on demand in either PDF or CSV format and email them. In addition, you can choose the time range and generate either detailed or summary level reports.

The manager reports can include calls that only managers handle for themselves, calls that only assistants handle for managers, and calls that qualify in either case. The summary report for a manager shows the number of calls of each call classification type, the total number of calls, and the total duration of all calls (in seconds) for each manager and/or assistant. The detail report for a manager shows the date, origination time, origination number (calling number), destination (called number), call classification, and duration (in seconds) for each call for each manager and/or assistants and the cumulative duration total for the manager.

The assistant reports can include calls that only assistants handle for themselves, or calls that only assistants handle for managers, and calls that qualify in either case. The summary report for an assistant shows the number of calls of each type and total of them apart from duration for each manager (and/or assistant). The detail assistant report shows the date, origination time, origination (calling number), destination (called number), call classification, and duration (in seconds) for each call for all the managers (and/or assistant) and the cumulative duration total for the assistant.

This section contains the following procedures:

- Generate Manager Call Usage Assistant Reports
- Generate Assistant Call Usage Assistant Reports

Generate Manager Call Usage Assistant Reports

This section describes how to generate a manager call usage report for Cisco Unified Communications Manager Assistant. Only CAR administrators can generate Cisco Unified Communications Manager Assistant reports.

Procedure

Step 1	Choose **User Reports** > **Cisco Unified Communications Manager Assistant** > **Manager Call Usage**.
	The Call Usage for Manager window displays.
Step 2	From the Report Type drop-down list, choose either **Summary** or **Detail**.
Step 3	From the Calls handled by drop-down list, choose **Manager**, **Assistant for Manager**, or **Manager & Assistant for Manager**.
Step 4	Choose the date range for the period for which you want to see call information.
Step 5	In the Select Manager(s) box, either check the **Select All Manager(s)** check box and enter a manager ID or click the **Select Manager(s)** link to search for a manager ID and enter the ID(s) in the Manager Id field.
Step 6	Click **Add**.
	The ID that you chose displays in the Selected Manager(s) box.
Step 7	Choose **CSV** in the Report Format area, if you want the report in CSV format. Choose **PDF** in the Report Format area, if you want the report in PDF format.
Step 8	Click **Send Report**, if you want to mail the report. To send the report, perform the procedure that is described in the Mail Reports, on page 61.

> **Note** To remove a manager from the Selected Manager(s) list, highlight the ID and click **Remove**. To remove all managers from the list, click **Remove All**.

Generate Assistant Call Usage Assistant Reports

This section describes how to generate an assistant call usage report for Cisco Unified Communications Manager Assistant. Only CAR administrators can generate these reports.

Procedure

Step 1	Choose **User Reports** > **CiscoUnified Communications Manager Assistant** > **Assistant Call Usage**.
	The Call Usage for Assistant window displays.
Step 2	From the Report Type drop-down list, choose either **Summary** or **Detail**.

Step 3	From the Calls handled by drop-down list, choose **Assistant**, **Assistant for Manager**, or **Assistant & Assistant for Manager**.
Step 4	Choose the date range for the period for which you want to see call information.
Step 5	In the Select Assistant(s) box, either check the **Select All Assistant(s)** check box and enter an assistant ID or click **Select Assistant(s)** link to search for an assistant ID and enter the ID(s) in the Assistant Id field.
Step 6	Click **Add**. The ID that you chose displays in the Selected Assistant(s) box.
Step 7	Choose **CSV** in the Report Format area, if you want the report in CSV format. Choose **PDF** in the Report Format area, if you want the report in PDF format.
Step 8	Click **View Report**.
Step 9	Click **Send Report**, if you want to mail the report. To send the report, perform the procedure that is described in the Mail Reports, on page 61 .
	Note To remove a manager from the Selected Assistant(s) list, highlight the ID and click **Remove**. To remove all assistants from the list, click **Remove All**.
Step 10	When you have added all users, click **Close** in the User Search window.

IP Phone Service User Reports

CAR provides reporting capabilities for three levels of users:

- Administrators - Generate system reports to help with load balancing, system performance, and troubleshooting.

- Managers - Generate reports for users, departments, and QoS to help with call monitoring for budgeting or security purposes and for determining the voice quality of the calls.

- Individual users - Generate a billing report for their calls.

Note You may have access restrictions to view some reports depending on your job function.

Generate IP Phone Services Reports

Only CAR administrators can generate the Cisco IP Phone Services report. You can generate a report that shows chosen Cisco IP Phone services, the number of users who are subscribed to each of the chosen services, and the subscription percentage for each of the chosen services.

Use the following instructions to generate a report that shows the usage of one of the following specific Cisco Unified IP Phone services:

- Missed calls

- Received calls

- Placed calls

- Intercom calls

- Personal directory

- Corporate directory

- Extension mobility

Procedure

Step 1   Choose **User Reports** > **Cisco IP Phone**.

The Cisco IP Phone window displays a list of all Cisco Unified IP Phone services that have been configured in the system.

Step 2   In the List of Cisco IP Phone area, choose the services that you want to include in the report.

Step 3   Click the right arrow to add the chosen service to the Selected Cisco IP Phone box.

The report includes all services that are listed in this box when you generate it.

Step 4   Choose **CSV** in the Report Format area, if you want the report in CSV format. Choose **PDF** in the Report Format area, if you want the report in PDF format.

Step 5   Click **Send Report**, if you want to mail the report. To send the report, perform the procedure that is described in the Mail Reports, on page 61.

Review User Reports Results

This chapter describes report output information for each CAR user report.

Bill Summary Report Results

The report combines information in groups by the username in ascending order. The summary report includes the following fields (see the following table).

Table 23: Summary Report Fields

Field	Description
Call Classification - Call categories specify classes.	
On Net	Outgoing calls that originate on one Unified Communications Manager network, go out through a trunk, and terminate on a different Unified Communications Manager network. For CAR purposes, be aware that any outgoing call can be classified as an OnNet call if it is configured as such in the CAR dial plan configuration window. See Set Up Dial Plan, on page 31.
Internal	Calls, including intracluster calls, that originate in the Unified Communications Managernetwork and end in the same Unified Communications Manager network (no gateways or trunks are used).

Field	Description
Local	Local calls that are routed through the public switched telephone network (PSTN) to numbers without an area code or that include one of the local area codes.
Long Distance	Long-distance calls that originate in the Unified Communications Manager network that go out through the PSTN.
International	International calls that originate in the Unified Communications Manager network and go out through the PSTN.
Others	All other outgoing calls, such as toll-free numbers or emergency calls such as 911.
QOS	The number of calls for each Quality of Service category. Parameters that the CAR administrator sets provide the basis for the following QoS categories: • Good - QoS for these calls designates the highest possible quality. • Acceptable - QoS for these calls shows them slightly degraded but still within an acceptable range. • Fair - QoS for these calls, that although degraded, still fall within a usable range. • Poor - QoS for these calls get categorized as unsatisfactory. • NA - These calls do not match any criteria for the established QoS categories. See the Define QoS Values, on page 53 and the Generate QoS by Gateway Reports, on page 96.
Calls	Indicates the number of calls for each call classification.
Charge	Indicates the charge that is associated with each call. Call charge information that the CAR administrator provides for the CAR rating engine provides basis for charges. See CAR Rating Engine, on page 50.

The following figures display sample output from the Individual Bill and Department Bill Summary reports.

Figure 2: Individual Bill Summary Report Sample

Figure 3: Department Bill Summary Report Sample

Department Bill - Summary

From Date:Jan 1, 2008
To Date:Jan 26, 2008

Date:Jan 26, 2008
Page:1 of 2

Call Classification	Good	Acceptable	Fair	Poor	NA	Calls	Charge
			Quality of Service				
			Bill for user1				
Internal	0	0	0	0	4	4	120.00
Total for user1	0	0	0	0	4	4	120.00
			Bill for user3				
Internal	0	0	0	0	4	4	120.00
Total for user3	0	0	0	0	4	4	120.00
			Bill for _unspecifieduser				
Internal	3	0	0	0	12	15	1,700.00
On Net	0	0	0	0	1	1	100.00
Others	1	0	0	0	0	1	120.00
Total for _unspecifieduser	4	0	0	0	13	17	1,920.00
			Bill for user4				
Internal	0	0	0	0	4	4	120.00
Total for user4	0	0	0	0	4	4	120.00
			Bill for user2				
Internal	0	0	0	0	4	4	120.00
Total for user2	0	0	0	0	4	4	120.00
			Bill for caradmin				
Total for caradmin	0	0	0	0	0	0	0.00

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Bill Detail Report Results

The report places information in groups by the username in ascending order. The detail report includes the following fields (see the following table).

Table 24: Detail Report Fields

Field	Description
Date	The date that the call originated.
Orig. Time	The time that the call originated.
Orig.	The originating number from which the call was placed.
Dest.	The destination number to which the call was directed.

Field	Description
Call Classification - Call categories specify classes.	
On Net	Outgoing calls that originate on one Unified Communications Manager network, go out through a trunk, and terminate on a different Unified Communications Manager network. For CAR purposes, be aware that any outgoing call can be classified as an OnNet call if it is configured as such in the CAR dial plan configuration window. See Set Up Dial Plan, on page 31.
Internal	Calls, including intracluster calls, that originate in the Unified Communications Manager network and end in the same Unified Communications Manager network (no gateways or trunks are used).
Local	Local calls that are routed through the public switched telephone network (PSTN) to numbers without an area code or that include one of the local area codes.
Long Distance	Long-distance calls that originate in the Unified Communications Manager network that go out through the PSTN.
International	International calls that originate in the Unified Communications Manager network and go out through the PSTN.
Others	All other outgoing calls, such as toll-free numbers or emergency calls such as 911.
QOS	The number of calls for each Quality of Service category. Parameters that the CAR administrator sets provide the basis for the following QoS categories: • Good - QoS for these calls designates the highest possible quality. • Acceptable - QoS for these calls shows them slightly degraded but still within an acceptable range. • Fair - QoS for these calls, that although degraded, still fall within a usable range. • Poor - QoS for these calls get categorized as unsatisfactory. • NA - These calls do not match any criteria for the established QoS categories. See the Define QoS Values, on page 53 and the Generate QoS by Gateway Reports, on page 96.
Duration(s)	The time, in seconds, that the call remains connected.
Charge	The charge that is associated with each call. Call charge information that the CAR administrator provided for the CAR rating engine provides the basis for charges. See the Define QoS Values, on page 53.

The following figures display a sample output from the Individual Bill and Department Bill Detail reports.

Figure 4: Individual Bill Detail Sample Report

cisco
Individual Bill - Detail

From Date:Feb 1, 2008
To Date:Feb 10, 2008

Date:Feb 10, 2008
Page:1 of 1

Date	Orig. Time	Orig.	Dest.	Call Classification	QoS	Duration (sec)	Charge
			Bill for CARuser1				
Feb 8, 2007	3:25:22 PM	1001	1003	Internal	Good	10	192.00
Feb 8, 2007	3:25:50 PM	1001	1003	Internal	Good	6	96.00
Feb 8, 2007	3:25:58 PM	1001	1003	Internal	Good	7	192.00
Feb 8, 2007	3:26:09 PM	1001	1003	Internal	Good	14	288.00
			Total for CARuser1			37	768.00

Figure 5: Department Bill Detail Sample Report

cisco
Department Bill - Detail

From Date:Feb 1, 2008
To Date:Feb 10, 2008

Date:Feb 10, 2008
Page:1 of 6

Date	Orig. Time	Orig.	Dest.	Call Classification	QoS	Duration (sec)	Charge
			Bill for CARuser1				
Feb 8, 2007	3:25:22 PM	1001	1003	Internal	Good	10	192.00
Feb 8, 2007	3:25:50 PM	1001	1003	Internal	Good	6	96.00
Feb 8, 2007	3:25:58 PM	1001	1003	Internal	Good	7	192.00
Feb 8, 2007	3:26:09 PM	1001	1003	Internal	Good	14	288.00
			Total for CARuser1			37	768.00
			Bill for CARuser2				
Feb 1, 2007	3:23:16 PM	1002	1003	Others	Good	167	2,688.00
Feb 1, 2007	3:29:16 PM	1002	1006	Others	Good	55	960.00
Feb 1, 2007	3:30:48 PM	1002	1001	Others	Good	37	672.00
Feb 1, 2007	3:36:58 PM	1002	1003	Others	Good	81	1,344.00

Top N by Charge or Duration Report Results

The fields for the Top N by Charge and the Top N by Duration vary depending on the report type. The reports show only outgoing calls. See the table.

Table 25: Top N by Charge and by Duration Report Fields

Field	Description
By Individual Users	
User	User names.
Calls	Total number of calls.
Duration(s)	The time, in seconds, that the call was connected.
Charge	The charge that is associated with each call. Call charge information that the CAR administrator provided for the CAR rating engine provides basis for charges. See the Define QoS Values, on page 53.
By Destinations	
Dest	The destination of the calls.
Call Classification	The total number of calls for each call classification.
Calls	Total number of calls.
Duration	The time, in seconds, that the call was connected.
Charge	The charge that is associated with each call. Call charge information that the CAR administrator provided for the CAR rating engine provides basis for charges. See CAR Rating Engine, on page 50.
By Number of Calls	
User	User names.
Date	Date that the call occurred.
Orig Time	Time that the call originated.
Orig	Origin of the call.
Dest	Destination of the call.
Call Classification	The total number of calls for each call classification.
Duration	The time, in seconds, that the call was connected.
Charge	The charge that is associated with each call. Call charge information that the CAR administrator provided for the CAR rating engine provides basis for charges. See CAR Rating Engine, on page 50.

Figure 6: Top N Charge by Destinations Sample Report, on page 81 and Figure 7: Top N Duration by Destinations Sample Report, on page 81 display sample reports.

Figure 6: Top N Charge by Destinations Sample Report

Figure 7: Top N Duration by Destinations Sample Report

Top N by Number of Calls Report Results

The fields for the Top N by Number of Calls report vary depending on the report type. The report shows both incoming and outgoing calls. See the table.

Table 26: Top N by Number of Calls Report Fields

Field	Description
By Individual Users	
Users	User names.
Charge	The total amount of billing charges for all calls to that user. Call charge information that the CAR administrator provided for the CAR rating engine provides basis for charges. See CAR Rating Engine, on page 50.

Field	Description
Duration(s)	The time, in seconds, that the call connected.
Calls Made	The total number of calls that the user placed.
Calls Received	The total number of calls that the user received.
Total Calls	The total number of incoming and outgoing calls.
By Extensions	
Extension No	The extension that originated/placed and received the call.
Charge	The total amount of billing charges for all calls to that user. Call charge information that the CAR administrator provided for the CAR rating engine provides basis for charges. See CAR Rating Engine, on page 50.
Duration	The time, in seconds, that the call was connected.
Calls Made	The total number of calls that the user placed.
Calls Received	The total number of calls that the user received.
Total Calls	The total number of incoming and outgoing calls.

Figure 8: Top N by Number of Calls Report Sample Output, on page 82 displays sample report output of Top N by Number of Calls by Individual Users in PDF format.

Figure 8: Top N by Number of Calls Report Sample Output

Call Usage for Assistant Detail Report Results

The report, which supports Cisco Unified Communications Manager Assistant, shows the number of calls that assistants handled for themselves, that the assistant handled for each manager, and the total number of calls that the assistant handled. The report places information in groups about calls that the assistant handled and calls that the assistant handled for the manager. The detail report includes the following fields (see the following table).

Table 27: Detail Report Fields

Field	Description
Date	The date that the call originated.
Orig. Time	The time that the call originated.
Orig.	The originating number from which the call was placed.
Dest.	The destination number to which the call was directed.
Call Classification	The type of call (internal, incoming, and so on).
Duration (sec)	The time, in seconds, that the call connected.

Figure 9: Call Usage for Assistant Detail Report, on page 83 displays sample output from a Call Usage for the Assistant Detail report in PDF format.

Figure 9: Call Usage for Assistant Detail Report

Call Usage for Assistant Summary Report Results

The report, which supports Cisco Unified Communications Manager Assistant, shows information about calls that the assistant handled for themselves and that the assistant handled for the manager. The reports place call information by groups by attendant name. The summary report includes the following fields (see the following table).

Table 28: Summary Report Fields

Field	Description
Assistant-Extn/Manager	Shows the assistant name and directory number. If the assistant handles a call for a manager, the manager name displays.
Call Classification - Call categories specify classes.	
Internal	Calls, including intracluster calls, that originate in the Unified Communications Manager network and end in the same Unified Communications Manager network (no gateways or trunks are used).
Local	Local calls that are routed through the public switched telephone network (PSTN) to numbers without an area code or that include one of the local area codes.
Long Distance	Long-distance calls that originate in the Unified Communications Manager network that go out through the PSTN.
International	International calls that originate in the Unified Communications Manager network and go out through the PSTN.
Incoming	Inbound calls that originate outside the Unified Communications Managernetwork, enter through a gateway, and go into the Unified Communications Manager network.
On Net	Outgoing calls that originate on one Unified Communications Manager network, go out through a trunk, and terminate on a different Unified Communications Manager network. For CAR purposes, be aware that any outgoing call can be classified as an OnNet call if it is configured as such in the CAR dial plan configuration window. See Set Up Dial Plan, on page 31.
Others	All other outgoing calls, such as toll-free numbers or emergency calls such as 911.
Calls	The number of calls that the assistant handled or that the assistant handled for the manager.
Duration (sec)	The total duration for all the calls for the particular call classification.

The following figure displays sample output of the Call Usage for the Assistant Summary report in PDF format.

Figure 10: Call Usage for Assistant Summary Report

Call Usage for Manager Detail Report Results

The report, which supports Cisco Unified Communications Manager Assistant, provides information about calls that managers handle for themselves and that assistants handle for managers. The report places information in groups by the assistant name and shows the total number of calls that the manager handles and that the assistant handles for the manager. The detail report includes the following fields (see the table).

Table 29: Detail Report Fields

Field	Description
Date	The date that the call originates.
Orig. Time	The time that the call originates.
Orig.	The originating number from which the call is placed.
Dest.	The destination number to which the call is directed.
Call Classification	The type of call (internal, incoming, and so on).
Duration (sec)	The time, in seconds, that the call connects.

displays sample output from the Call Usage for Manager Detail report.

Figure 11: Call Usage for Manager Detail Report

Call Usage for Manager Summary Report Results

The report, which supports Cisco Unified Communications Manager Assistant, shows information about calls that the managers handle for themselves and that the assistants handle for the managers. The report places information in groups by the manager name and shows the total number of calls that are handled for each manager. The report includes the following fields (see the following table).

Table 30: Summary Report Fields

Field	Description
Manager-Extn/Assistant	Shows the manager name and directory number. If the assistant handles a call for a manager, the assistant name displays.
Call Classification - Call categories specify classes.	
Internal	Calls, including intracluster calls, that originate in the Unified Communications Manager network and end in the same Unified Communications Managernetwork (no gateways or trunks are used).
Local	Local calls that are routed through the public switched telephone network (PSTN) to numbers without an area code or that include one of the local area codes.
Long Distance	Long-distance calls that originate in the Unified Communications Manager network that go out through the PSTN.
International	International calls that originate in the Unified Communications Managernetwork and go out through the PSTN.

Field	Description
Incoming	Inbound calls that originate outside the Unified Communications Manager network, enter through a gateway, and go into the Unified Communications Manager network.
On Net	Outgoing calls that originate on one Unified Communications Manager network, go out through a trunk, and terminate on a different Unified Communications Manager network. For CAR purposes, be aware that any outgoing call can be classified as an OnNet call if it is configured as such in the CAR dial plan configuration window. See Set Up Dial Plan, on page 31.
Others	All other outgoing calls, such as toll-free numbers or emergency calls such as 911.
Calls	The number of calls that the assistant or the manager handles.
Duration	The total duration for all the calls for the particular call classification.

The following figure displays sample output of the Call Usage for Manager Summary report in PDF format.

Figure 12: Call Usage for Manager Summary Report

IP Phone Services Report Results

The Cisco IP Phone Services report includes the following fields (see the table).

Table 31: CiscoUnifiedIPPhone Services Report Fields

Field	Description
CiscoIPPhone Services	The name of the selected service.
Number of Subscribers	The total number of subscribers for a given service.

Field	Description
% Subscription	The percentage of users who are subscribed to a given service, out of the total number of subscriptions for all services.

Figure 13: Cisco IP Phone Services Report Sample Output, on page 88 displays sample output from the Cisco IP Phone Services Report in PDF format.

Figure 13: Cisco IP Phone Services Report Sample Output

Cisco IP Phone Services

Date:Jan 23, 2008
Page:1 of 1

Cisco IP Phone Services	Number of Subscribers	% Subscription
Corporate Directory	0	0.00
Intercom Calls	0	0.00
Missed Calls	0	0.00
Personal Directory	0	0.00
Placed Calls	0	0.00
Received Calls	0	0.00

System Reports

CAR System Reports

CAR provides reporting capabilities for three levels of users:

- Administrators - Generate system reports to help with load balancing, system performance, and troubleshooting.

- Managers - Generate reports for users, departments, and QoS to help with call monitoring for budgeting or security purposes and for determining the voice quality of the calls.

- Individual users - Generate a billing report for calls of each user.

Note   You may have access restrictions to view some reports depending on your job function.

System Reports Summary Description

CDR Analysis and Reporting provide system reports for managers and CAR administrators. Managers or CAR administrators can access the QoS summary report. Only CAR administrators can access all other reports. This section describes the following reports:

- QoS

    - Detail - Available for CAR administrators. The QoS detail report provides the QoS ratings that are attributed to inbound and outbound calls on the Unified Communications Manager network for the

period that you specify. Use this report to help monitor the voice quality of all calls on a user-level basis for the entire system. The call details in CDRs and CMRs and the QoS parameters that you choose provide the basis for assigning a particular voice-quality category to a call.

- Summary - Available for managers and CAR administrators. This report provides a two-dimensional pie chart that shows the distribution of QoS grades that are achieved for the specified call classifications and period. The report also provides a table that summarizes the calls for each QoS. The call details in CDRs and CMRs and the QoS parameters that you choose provide the basis for assigning a call to a particular voice-quality category. Use this report to monitor the voice quality of all calls through the network.

- By Gateway - Available for CAR administrators. This report shows the percentage of the calls for each of the chosen gateways that meet the QoS criteria that the user chooses. You can generate this report on an hourly, daily, or weekly basis.

- By Call Types - Available for CAR administrators. This report shows the percentage of the calls for each chosen call type that meet the QoS criteria that the user chooses. You can generate this report on an hourly, daily, or weekly basis.

- Traffic

  - Summary - Available for CAR administrators. This report provides information about the call volume for a period that you specify and include only those call types and QoS voice-quality categories that you choose. Use this report to determine the number of calls that are being made on an hourly, weekly, or daily basis. This report helps you identify high- and low-traffic patterns for capacity planning.

  - Summary by Phone Number - Available for CAR administrators. This report provides information about the call volume for a period and set of phone numbers that you specify. It includes only those call types and phone numbers that you choose. You can generate the report on an hourly, weekly, or daily basis. This report helps you determine high-usage users or groups by aggregating the usage level across the users that you specify.

- FAC/CMC

  - Client Matter Code - Available for CAR administrators. This report allows administrators to view the originating and destination numbers, the date, and time that the call originated, the call duration in seconds, and the call classification for calls that relate to each chosen client matter code.

  - Authorization Code Name - Available for CAR administrators. This report allows administrators to view the originating and destination numbers, the date, and time that the call originated, the call duration in seconds, the call classification, and the authorization level for calls that relate to each chosen authorization code name.

  - Authorization Level - Available for CAR administrators. This report allows administrators to view the originating and destination numbers, the date, and time that the call originated, the call duration in seconds, the authorization code name, and the call classification for calls that relate to each chosen authorization level.

- Malicious Call Details - Available for CAR administrators. The Unified Communications Manager Malicious Call Identification (MCID) service tracks malicious calls. The Malicious Call Details report displays the details of malicious calls for a given date range.

- Precedence Call Summary - Available for CAR administrators. The Unified Communications ManagerCall Precedence service allows authenticated users to preempt lower priority phone calls. The PDF version

of the CAR Precedence Call Summary report displays the Call Summary for the precedence values in the form of a bar chart, on an hour of the day, day of the week, or day of the month basis, for each of the precedence levels that you choose. CAR generates one chart for each precedence level, a table for each precedence level that lists the number of call legs, and a subtable that summarizes the percentage distribution for each precedence level. CAR makes the report available on-demand; the report does not get autogenerated.

• System Overview - Available for CAR administrators. Use the System Overview report to see a high-level picture of the Unified Communications Manager network. The System Overview provides the following reports:

- • Top 5 Users Based on Charge

- • Top 5 Destinations Based on Charge

- • Top 5 Calls Based on Charge

- • Top 5 Users Based on Duration

- • Top 5 Destinations Based on Duration

- • Top 5 Calls Based on Duration

- • Traffic Summary Hour of Day - Incoming, Internal, International, Local, Long Distance, On Net, Others, Tandem, and Total calls

- • Traffic Summary Day of Week - Incoming, Internal, International, Local, Long Distance, On Net, Others, Tandem, and Total calls

- • Traffic Summary Day of Month - Incoming, Internal, International, Local, Long Distance, On Net, Others, Tandem, and Total calls

- • QoS Summary

- • Gateway Summary

• CDR Error - Available for CAR administrators. This report provides statistics for the number of error records in the CAR Billing_Error table and the reason for the errors. Use this report to determine whether CAR incurred any errors with CDR data while the CDR data was loaded. This report lists the percentage of CDRs that are invalid and the reason that these CDRs have been classified as invalid.

User Search

Many reports in CAR provide a search function, so you can look for users. The following CAR System reports support search by user: QoS Details and Traffic Summary by Phone Number. You can mail all reports that can be generated by using the Send Report button.

Before you begin

You must use the window in System Reports that allows you to search for users.

This section describes how to search for a user.

Procedure

Step 1   Click the **Search Users** link.

A User Search window displays.

Step 2   In the First Name and Last Name fields, enter characters of the first or last name of the user and click **Search**.

A User Search Results window displays in the same window and lists all users who matched the search criteria that you entered.

Step 3   In the row for the user that you want, click **Select** link.

The user that you chose gets added to the List of Users in the User Search window. Repeat this step to add more users.

Step 4   When you have added all users, click **Close** in the User Search window.

QoS System Reports

CAR provides reporting capabilities for three levels of users:

- Administrators - Generate system reports to help with load balancing, system performance, and troubleshooting.

- Managers - Generate reports for users, departments, and QoS to help with call monitoring for budgeting or security purposes and for determining the voice quality of the calls.

- Individual users - Generate a billing report for calls by each user.

Note   You may have access restrictions to view some reports depending on your job function.

Only CAR administrators generate the QoS detail report. The report details the QoS ratings that are attributed to inbound and outbound calls on the Unified Communications Manager network for the period that is specified.

Managers or CAR administrators generate the QoS summary report. The report provides a two-dimensional pie chart that shows the distribution of QoS grades that are achieved for the specified call classifications and period. The report also provides a table that summarizes the calls for each QoS. The call details in CDRs and CMRs and the QoS parameters that are provided in the Define QoS Values, on page 53 provide a basis for assigning a particular voice-quality category to a call.

You can either view reports that the system automatically generates or generate new reports. Only CAR administrators can schedule reports for automatic generation. For more information, see Automatic Generation of CAR Reports and Alerts, on page 54.

QoS Parameter Operators

The following table describes the QoS parameter operators that you use in generating the QoS reports.

Table 32: QoS Parameter Operators

Operator	Description
>=	Choose this operator to generate jitter, latency, or lost packet data that is greater than or equal to the specified value.
=	Choose this operator to generate jitter, latency, or lost packet data that is equal to the specified value.
<=	Choose this operator to generate jitter, latency, or lost packet data that is less than or equal to the specified value.
N.A.	Choose this operator to preclude jitter, latency, or lost packet data.
Between	Choose this operator to generate jitter, latency, or lost packet data that occurs between one value and another value. When you choose this operator, a second field displays, so you can set the start and end values.

Generate QoS Detail Reports

This section describes how to generate, view, or mail detailed information about the system QoS.

Procedure

Step 1   Choose **System Reports** > **QoS** > **Detail**.

The QoS Detail window displays.

Step 2   In the Select Call Types area, check the check boxes for the types of calls that you want the report to include. The following table describes the call types.

Table 33: QoS Detail Report Call Types

Call Type	Description
On Net	Outgoing calls that originate on one Unified Communications Manager network, go out through a trunk and terminate on a different Unified Communications Manager network. For CAR purposes, be aware that any outgoing call can be classified as an OnNet call if it is configured as such in the CAR dial plan configuration window. For more information, see Set Up Dial Plan, on page 31.
Internal	Calls, including intracluster calls, that originate in the Unified Communications Manager network and end in the same Unified Communications Manager network (no gateways or trunks are used).
Local	Local calls that are routed through the public switched telephone network (PSTN) to numbers without an area code or that include one of the local area codes.

Call Type	Description
Long Distance	Long-distance calls that originate in the Unified Communications Manager network and go out through the PSTN.
International	International calls that originate in the Unified Communications Manager network and go out through the PSTN.
Incoming	Inbound calls that originate outside the Unified Communications Manager network, enter through a gateway and go into the Unified Communications Manager network.
Tandem	Inbound calls that originate outside the Unified Communications Manager network, enter the Unified Communications Manager network through a gateway and are transferred outbound from the Unified Communications Manager network through a gateway.
Others	All other outgoing calls, such as toll-free numbers or emergency calls such as 911.

Step 3 In the Select QoS area, check the check boxes for the voice-quality categories that you want to be included in the report. The parameters set in the following table provide the basis for all voice-quality categories.

Table 34: QoS Detail Report Voice Quality

Voice Quality	Description
Good	QoS for these calls represents the highest possible quality.
Acceptable	QoS for these calls, although slightly degraded, still fall within an acceptable range.
Fair	Although QoS for these calls is degraded, calls still fall within a usable range.
Poor	QoS for these calls designates unsatisfactory quality.
NA	These calls did not match any criteria for the established QoS categories.

Step 4 Choose the date range for the period for which you want to see QoS information.

Step 5 In **Select Users** field, you can either choose all users or search for particular users. To choose all users, check the **Select All Users** check box. To choose individual users, enter the user ID of the individual in the User ID field and click **Add** .

> **Note** You can also use a provided search function. See the User Search, on page 91.

Step 6 Choose **CSV** in the Report Format area, if you want the report in CSV format. Choose **PDF** in the Report Format area, if you want the report in PDF format.

Step 7 Click **View Report**.

Step 8 Click **Send Report**, if you want to mail the report. To send the report, perform the procedure that is described in the Mail Reports, on page 61.

Generate QoS Summary Reports

This section describes how to generate, view, or mail summary information about the system QoS.

Procedure

Step 1 Perform one of the following steps:

a) If you are a manager, choose **QoS** > **Summary**.

b) If you are a CAR administrator, choose **System Reports** > **QoS** > **Summary**.

The QoS Summary window displays.

Step 2 In the **Available Reports** field, choose an automatically generated report (if available) and go to the following step, or use the default setting, **Generate New Report**, and go to the next step

Note You can only choose the automatically generated report if you are logged in as a CAR administrator. The automatically generated reports do not display in the drop-down list box if you are logged in as a manager.

Step 3 In the Select Call Types area, check the check boxes for the types of calls that you want the report to include. The following table describes the call types.

Table 35: QoS Summary Report Call Types

Call Type	Description
On Net	Outgoing calls that originate on one Unified Communications Manager network, go out through a trunk, and terminate on a different Unified Communications Manager network. For CAR purposes, be aware that any outgoing call can be classified as an OnNet call if it is configured as such in the CAR dial plan configuration window. See Set Up Dial Plan, on page 31.
Internal	Calls, including intracluster calls, that originate in the Unified Communications Manager network and end in the same Unified Communications Manager network (no gateways or trunks are used).
Local	Local calls that are routed through the public switched telephone network (PSTN) to numbers without an area code or that include one of the local area codes.
Long Distance	Long-distance calls that originate in the Unified Communications Managernetwork and go out through the PSTN.
International	International calls that originate in the Unified Communications Manager network and go out through the PSTN.
Incoming	Inbound calls that originate outside the Unified Communications Managernetwork, enter through a gateway, and go into the Unified Communications Managernetwork.

Call Type	Description
Tandem	Inbound calls that originate outside the Unified Communications Manager network, enter the Unified Communications Managernetwork through a gateway, and transfer outbound from the Unified Communications Manager network through a gateway.
Others	All other outgoing calls, such as toll-free numbers or emergency calls such as 911.

Step 4   If you chose Generate New Report in the previous step, choose the date range for the period for which you want to generate the report.

Step 5   Choose **CSV** in the Report Format area, if you want the report in CSV format. Choose **PDF** in the Report Format area, if you want the report in PDF format.

Step 6   Click **View Report**.

Step 7   Click **Send Report**, if you want to mail the report. To send the report, perform the procedure that is described in the .

Generate QoS by Gateway Reports

Only CAR administrators generate the QoS by Gateway report. The report provides the percentage of calls that satisfy the selected QoS criteria for a period that is specified for the selected gateways.

⚠️

Caution   Use CAR only during off-peak hours. Otherwise, data collection and report generation could cause performance degradation on the Unified Communications Manager system.

This section describes how to generate, view, or mail QoS information about all chosen gateways.

Before you begin

Configure the gateway by using the procedures in the .

Procedure

Step 1   Choose **System Reports** > **QoS** > **By Gateways**.

The QoS based on Gateways window displays.

Step 2   In the **Generate Reports** field, choose a time as described in the following table.

Table 36: Generate Report Fields

Parameter	Description
Hour of Day	Displays the percentage of the calls, for each selected gateway, that satisfies the QoS criteria for the period that you specify in Step 6, on page 97. The percentage results show for an hour of the day.
Day of Week	Displays the percentage of the calls, for each selected gateway, that satisfies the QoS criteria for the period that you specify in Step 6, on page 97. The percentage results show for a day of the week.
Day of Month	Displays the percentage of the calls, for each selected gateway, that satisfies the QoS criteria for the period that you specify in Step 6, on page 97. The percentage results show for day of month.

Step 3   In the **Jitter** field, choose the operator that you want to use and enter the value for jitter. See the Table 32: QoS Parameter Operators, on page 93 for descriptions of operators.

Step 4   In the **Latency** field, choose the operator that you want to use and enter the value for latency. See the Table 32: QoS Parameter Operators, on page 93 for descriptions of operators.

Step 5   In the **LostPackets** field, choose the operator that you want to use and enter the value for a number of lost packets. See the Table 32: QoS Parameter Operators, on page 93 for descriptions of operators.

Step 6   Choose the date range of the period for which you want to see call information.

Step 7   To choose the type of gateway that you want to be included in the report, perform one of the following tasks:

    a) To display all the gateways that are configured in the system, click **Gateway Types** in the column on the left side of the window.

    b) To expand the tree structure and display the type of gateway from which you can choose, click the icon next to Gateway Types.

    c) To choose a gateway that uses a particular route pattern/hunt pilot, rather than a gateway type, click **Route Patterns/Hunt Pilots** in the column on the left side of the window. The tree structure expands and displays the gateways that are associated with the configured Route Patterns/Hunt Pilots.

    d) To expand the tree structure and display route pattern/hunt pilot for you to choose, click the icon next to Route Patterns/Hunt Pilots.

      Note   You can also search for specific route patterns/hunt pilots by entering part of the name of the route pattern(s)/hunt pilot(s) in the Route Patterns/Hunt Pilots box in the column on the left side of the window. CAR searches for the route pattern(s)/hunt pilot(s) that matches the search string.

Step 8   From the list, choose a gateway type.

      The gateway name displays in the List of Gateways box.

      Note   The List of Gateways box display up to 200 gateways that are configured for the chosen gateway type.

Step 9   In the **List of Gateways** box, select the gateways that you want to include in the report.

Note		You can generate a report for up to 15 gateways at a time. If you select more than 15 gateways, you will see the message "Select 15 or fewer gateways to generate a new report."

Step 10   Click the down arrow icon to move the chosen gateway to the list of Selected Gateways box.

The gateway that you chose displays in the Selected Gateways box.

Step 11   Choose **CSV** in the Report Format area, if you want the report in CSV format. Choose **PDF** in the Report Format area, if you want the report in PDF format.

Step 12   Click **View Report**.

Step 13   Click **Send Report**, if you want to mail the report. To send the report, perform the procedure that is described in the Mail Reports, on page 61.

Generate QoS by Call Types Reports

Only CAR administrators generate the QoS by Call Types report. The report provides jitter, latency, and lost packet information for a period that is specified for all calls of a chosen type.

This section describes how to generate, view, or mail QoS information about all calls of a certain type.

Caution	Use CAR only during off-peak hours. Otherwise, data collection and report generation could cause performance degradation on the Unified Communications Manager system.

Procedure

Step 1   Choose **System Reports** > **QoS** > **By Call Types**.

The QoS based on Call Types window displays.

Step 2   In the **Generate Report** field, choose a time as described in the following table.

Table 37: Generate Report Fields

Parameter	Description
Hour of Day	Displays the percentage of the calls, for each call type, that satisfies the QoS criteria for the period that you specify in Step 7, on page 100. The percentage results show for an hour of the day.
Day of Week	Displays the percentage of the calls, for each call type, that satisfies the QoS criteria for the period that you specify in Step 7, on page 100. The percentage results show for a day of the week.

Parameter	Description
Day of Month	Displays the percentage of the calls, for each call type, that satisfies the QoS criteria for the period that you specify in Step 7, on page 100. The percentage results show for a day of the month.

Step 3 In the **Jitter** field, choose the operator that you want to use and enter the value for jitter. See the Table 32: QoS Parameter Operators, on page 93 for descriptions of operators.

Step 4 In the **Latency** field, choose the operator that you want to use and enter the value for latency. See the Table 32: QoS Parameter Operators, on page 93 for descriptions of operators.

Step 5 In the **LostPackets** field, choose the operator that you want to use and enter the value for a number of lost packets. See the Table 32: QoS Parameter Operators, on page 93 for descriptions of operators.

Step 6 In the **Select Call Types** area, check the check boxes for the types of calls that you want the report to include. The following table describes the call types.

Table 38: QoS Parameters by Call Types

Call Type	Description
On Net	Outgoing calls that originate on one Unified Communications Manager network, go out through a trunk and terminate on a different Unified Communications Manager network. For CAR purposes, be aware that any outgoing call can be classified as an OnNet call if it is configured as such in the CAR dial plan configuration window. See Set Up Dial Plan, on page 31.
Internal	Calls, including intracluster calls, that originate in the Unified Communications Manager network and end in the same Unified Communications Manager network (no gateways or trunks are used).
Local	Local calls that are routed through the public switched telephone network (PSTN) to numbers without an area code or that include one of the local area codes.
Long Distance	Long-distance calls that originate in the Unified Communications Manager network and go out through the PSTN.
International	International calls that originate in the Unified Communications Manager network and go out through the PSTN.
Incoming	Inbound calls that originate outside the Unified Communications Manager network, enter through a gateway and go into the Unified Communications Manager network.

Call Type	Description
Tandem	Inbound calls that originate outside the Unified Communications Manager network, enter the Unified Communications Managernetwork through a gateway, and transfer outbound from the Unified Communications Manager network through a gateway.
Others	All other outgoing calls, such as toll-free numbers or emergency calls such as 911.

Step 7   Choose the date range for the period for which you want to see call information.

Step 8   Choose **CSV** in the Report Format area, if you want the report in CSV format. Choose **PDF** in the Report Format area, if you want the report in PDF format.

Step 9   Click **View Report**.

Step 10   Click **Send Report**, if you want to mail the report. To send the report, perform the procedure that is described in the .

Traffic System Reports

CAR provides reporting capabilities for three levels of users:

- Administrators - Generate system reports to help with load balancing, system performance, and troubleshooting.

- Managers - Generate reports for users, departments, and QoS to help with call monitoring for budgeting or security purposes and for determining the voice quality of the calls.

- Individual users - Generate a billing report for calls by each user.

Note   You may have access restrictions to view some reports depending on your job function.

Only CAR administrators can generate the traffic summary report. The report provides information about the call volume for a period that you specify. It includes only those call types and QoS voice-quality categories that you chose.

Tip   When you configure CAR to generate a traffic summary report, you can choose different call types (On Net, Internal, Local, Long Distance, and so on). CAR compares the traffic volume for every hour interval and identifies the hour with the highest traffic volume (the Busy Hour Call Completion [BHCC] number). To obtain the overall BHCC number, choose all call types when you configure CAR. Under the report title, a separate line displays the BHCC number for that day.

Only CAR administrators can generate the traffic summary by phone numbers report. The report provides information about the call volume for a period and set of phone numbers that you specify, and includes only those call types and phone numbers that you choose.

🔍

Tip   You can use this report to track call usage by a specified group of users, by a department, or by another criteria, such as lobby phones or conference room phones. You can set up this report to generate on a weekly basis. This report helps you determine high-usage users or groups by aggregating the usage level across the users that you specify.

Generate Traffic Summary Reports

Only CAR administrators generate the Traffic Summary report. The report provides information about the call volume for a period that you specify.

You can either view reports that the system automatically generates or generate new reports. For more information, see Set Up CDR Load Schedule, on page 36.

This section describes how to generate, view, or mail summary information about system traffic.

Procedure

Step 1   Choose **System Reports** > **Traffic** > **Summary**.

The Traffic Summary window displays.

Step 2   In the **Generate Report** field, choose a time as described in the following table.

Table 39: Generate Report Fields

Parameter	Description
Hour of Day	Displays the average number of calls in the system for the period that you specify in Step 4, on page 102, the call types that you specify in Step 5, on page 102, and the QoS values that you specify in Step 6, on page 103 for an hour of the day.
	If the period that you specify in Step 4, on page 102 is within one day, the system compares the traffic volume for every hour interval and identifies the hour with the highest traffic volume as the BHCC number for that day.
Day of Week	Displays the average number of calls in the system for the period that you specify in Step 4, on page 102, the call types that you specify in Step 5, on page 102, and the QoS values that you specify in Step 6, on page 103 for the day of the week.
Day of Month	Displays the average number of calls in the system for the period that you specify in Step 4, on page 102, the call types that you specify in Step 5, on page 102, and the QoS values that you specify in Step 6, on page 103 for a day of the month.

Step 3 In the **Available Reports** field, choose an automatically generated report (if available) and go to Step 8, on page 103 or use the default setting, Generate New Report and go to Step 4, on page 102.

Step 4 Choose the date range for the period for which you want to generate the report.

Step 5 In the **Select Call Types** area, check the check boxes for the types of calls that you want to include in the report. To obtain the overall BHCC number for a particular hour or 24-hour period, choose all call types. The following table describes the call types.

Table 40: Traffic Summary by Call Types

Call Type	Description
On Net	Outgoing calls that originate on one Unified Communications Manager network, go out through a trunk and terminate on a different Unified Communications Manager network. For CAR purposes, be aware that any outgoing call can be classified as an OnNet call if it is configured as such in the CAR dial plan configuration window. See Set Up Dial Plan, on page 31.
Internal	Calls, including intracluster calls, that originate in the Unified Communications Manager network and end in the same Unified Communications Manager network (no gateways or trunks are used).
Local	Local calls that route through the public switched telephone network (PSTN) to numbers without an area code or that include one of the local area codes.
Long Distance	Long-distance calls that originate in the Unified Communications Manager network and go out through the PSTN.
International	International calls that originate in the Unified Communications Manager network and go out through the PSTN.
Incoming	Inbound calls that originate outside the Unified Communications Manager network, enter through a gateway and go into the Unified Communications Manager network.
Others	All other outgoing calls, such as toll-free numbers or emergency calls such as 911.

Note	The calls that the chart/table shows comprise an average number of calls per day. If the data that is generated is less and you have chosen a wide date range, the report shows negligible values that are treated as 0, and the graph does not display. For example, if a Day of Week report gets generated for eight days that comprise two Mondays, the data that is shown for Monday represents the average number of calls for both the Mondays (the sum of all the calls in each Monday that is divided by 2). Similarly, in an Hour of Day report, the data that displays against 05-06 will designate the average number of calls per day between the time 05 and 06 of the date range that was chosen for the report.

Step 6 In the **Select QoS** area, check the check boxes for the voice-quality categories that you want to include in the report. The parameters that are set in the following table provide the basis for all voice-quality categories.

Table 41: QoS Detail Report Voice Quality

Voice Quality	Description
Good	QoS for these calls represents the highest possible quality.
Acceptable	QoS for these calls, although slightly degraded, still falls within an acceptable range.
Fair	QoS for these calls, although degraded, remains within a usable range.
Poor	Poor voice quality indicates that QoS for these calls is unsatisfactory.
NA	These calls did not match any criteria for the established QoS categories.

Step 7 Choose **CSV** in the Report Format area, if you want the report in CSV format. Choose **PDF** in the Report Format area, if you want the report in PDF format.

Step 8 Click **View Report**.

Step 9 Click **Send Report**, if you want to mail the report. To send the report, perform the procedure that is described in the .

Generate Traffic Summary by Phone Number Reports

Only CAR administrators generate the Traffic Summary by Phone Number report. The report provides information about the call volume for a period and set of phone numbers that you specify.

This section describes how to generate, view, or mail a traffic summary report based on user phone numbers.

Procedure

Step 1 Choose **System Reports** > **Traffic** > **Summary By Phone Number**.

The Traffic Summary that is based on Phone Number(s) window displays.

Step 2 In the **Generate Report** field, choose a time as described in the following table.

Table 42: Generate Report Fields

Parameter	Description
Hour of Day	Displays the average number of calls in the system for the chosen phone numbers for the date range that was chosen for an hour of the day. **Note** Ensure that the date and time range does not exceed one month.
Day of Week	Displays the average calls in the system for the selected phone numbers for the date range that was chosen for the day of the week. **Note** Ensure that the date and time range does not exceed one month.
Day of Month	Displays the average calls in the system for the selected phone numbers for the date range that was chosen for the day of the month. **Note** Ensure that the date and time range does not exceed one month.

Step 3 In the **Select Call Types** area, check the check boxes for the types of calls that you want to include in the report. The following table describes the call types.

Table 43: Traffic Summary (Phone Number) by Call Types

Call Type	Description
On Net	Outgoing calls that originate on one Unified Communications Manager network, go out through a trunk, and terminate on a different Unified Communications Manager network. For CAR purposes, be aware that any outgoing call can be classified as an OnNet call if it is configured as such in the CAR dial plan configuration window. See Set Up Dial Plan, on page 31.
Internal	Calls, including intracluster calls, that originate in the Unified Communications Manager network and end in the same Unified Communications Manager network (no gateways or trunks are used).
Local	Local calls that are routed through the public switched telephone network (PSTN) to numbers without an area code or that include one of the local area codes.

Call Type	Description
Long Distance	Long-distance calls that originate in the Unified Communications Manager network and go out through the PSTN.
International	International calls that originate in the Unified Communications Manager network and go out through the PSTN.
Incoming	Inbound calls that originate outside the Unified Communications Manager network, enter through a gateway and go into the Unified Communications Manager network.
Others	All other outgoing calls, such as toll-free numbers or emergency calls such as 911.

Note The calls that the chart/table shows comprise an average number of calls per day. If the data that is generated is less and you have chosen a wide date range, the report shows negligible values that are treated as 0, and the graph does not display. For example, if a Day of Week report gets generated for eight days that comprise two Mondays, the data that is shown for Monday represents the average number of calls for both the Mondays (the sum of all the calls in each Monday that is divided by 2). Similarly, in an Hour of Day report, the data that displays against 05-06 will represent the average number of calls per day between the time 05 and 06 of the date range that was chosen for the report.

Step 4 In the Select Phone Number(s) group box, you can either choose all phone numbers or search for phone numbers based on users.

Note You can enter a wildcard pattern like "!" or "X" to search on phone numbers. The "!" represents any n digit that has 0-9 as each of its digits, and the "X" represents a single digit in the range 0-9.

To choose all phone numbers, check the **Select All Phone Number(s)** check box. To choose phone numbers based on users, enter the phone number of the individual in the Phone Number field and click the **Add Phone Number** button. You can also use a provided search function, as described in the User Search, on page 91.

Step 5 Choose **CSV** in the Report Format area, if you want the report in CSV format. Choose **PDF** in the Report Format area, if you want the report in PDF format.

Step 6 Click **View Report**.

Step 7 Click **Send Report**, if you want to mail the report. To send the report, perform the procedure that is described in the Mail Reports, on page 61.

FAC/CMC System Reports

CAR provides reporting capabilities for three levels of users:

- Administrators - Generate system reports to help with load balancing, system performance, and troubleshooting.

• Managers - Generate reports for users, departments, and QoS to help with call monitoring for budgeting or security purposes and for determining the voice quality of the calls.

• Individual users - Generate a billing report for calls by each user.

> **Note**   You may have access restrictions to view some reports depending on your job function.

Only CAR administrators can generate Forced Authorization Code (FAC)/Client Matter Code (CMC) reports.

The following sections describe how to configure FAC/CMC reports:

Generate Client Matter Code Reports

Only CAR administrators can generate the Client Matter Code report. You can generate a report that shows the origination (calling number), destination (called number), origination date time (the date and time that the call originated), duration (call duration in seconds), and the call classification that relates to each CMC.

The following procedure describes how to generate a report that shows the usage of specific client matter codes.

Procedure

Step 1   Choose **System Reports** > **FAC/CMC** > **Client Matter Code**.

The Call Details for Client Matter Code window displays a list of all client matter codes that are configured in the system.

Step 2   In the List of Client Matter Codes box, choose the codes that you want to be included in the report.

> **Note**   You can choose up to 100 Client Matter Codes.

Step 3   To add the chosen code(s) to the Selected Client Matter Codes box, click down arrow.

The report includes all codes, for which data is available, that are listed in this box.

Step 4   In the **From Date** and **To Date** pull-down list boxes, enter the date range of the period for which you want to see Client Matter Code information.

Step 5   Choose **CSV** in the Report Format area, if you want the report in CSV format. Choose **PDF** in the Report Format area, if you want the report in PDF format.

Step 6   Click **View Report**.

Step 7   Click **Send Report**, if you want to mail the report. To send the report, perform the procedure that is described in Mail Reports, on page 61.

Generate Authorization Code Name Reports

Only CAR administrators can generate the Authorization Code Name report. You can generate a report that shows the origination (calling number), destination (called number), origination date time (the date and time

that the call originated), duration (call duration in seconds), and the call classification that relates to each chosen authorization code name.

> **Note** For security purposes, the authorization code does not display; instead, the authorization code name (description) displays.

The following procedure describes how to generate a report that shows the usage of specific authorization code names.

Procedure

Step 1 Choose **System Reports** > **FAC/CMC** > **Authorization Code Name**.

The Call Details for Authorization Code Name window displays a list of all authorization code names that are configured in the system.

Step 2 In the List of Authorization Code Names box, choose the code names that you want to be included in the report.

> **Note** You can choose up to 30 code names.

Step 3 To add the chosen code name(s) to the Selected Authorization Code Names box, click the down arrow.

The report includes all code names, for which data is available, that are listed in this box.

Step 4 In the **From Date** and **To Date** drop-down list boxes, enter the date range of the period for which you want to see authorization code name information.

Step 5 Choose **CSV** in the Report Format area, if you want the report in CSV format. Choose **PDF** in the Report Format area, if you want the report in PDF format.

Step 6 Click **View Report**.

Step 7 Click **Send Report**, if you want to mail the report. To send the report, perform the procedure that is described in Mail Reports, on page 61.

Generate Authorization Level Reports

Only CAR administrators can generate the Authorization Level report. You can generate a report that shows the origination (calling number), destination (called number), origination date time (the date and time that the call originated), duration (call duration in seconds), and the call classification that relate to each chosen authorization level.

The following procedure describes how to generate a report that shows the usage of specific authorization levels.

Procedure

Step 1 Choose **System Reports** > **FAC/CMC** > **Authorization Level**.

The Call Details by Authorization Level window displays a list of all authorization levels that are configured in the system.

Step 2 In the List of Authorization Levels box, choose the levels that you want to be included in the report.

Step 3 To add the chosen level(s) to the Selected Authorization Levels box, click the down arrow.

The report includes all levels, for which data is available, that are listed in this box.

Note Only FAC authorization levels reports that are associated with Route Patterns will get generated.

Step 4 In the **From Date** and **To Date** drop-down list boxes, enter the date range of the period for which you want to see authorization level information.

Step 5 Choose **CSV** in the Report Format area, if you want the report in CSV format. Choose **PDF** in the Report Format area, if you want the report in PDF format.

Step 6 Click **View Report**.

Step 7 Click **Send Report**, if you want to mail the report. To send the report, perform the procedure that is described in the .

Malicious Call Details System Reports

CAR provides reporting capabilities for three levels of users:

- Administrators - Generate system reports to help with load balancing, system performance, and troubleshooting.

- Managers - Generate reports for users, departments, and QoS to help with call monitoring for budgeting or security purposes and for determining the voice quality of the calls.

- Individual users - Generate a billing report for calls by each user.

Note You may have access restrictions to view some reports depending on your job function.

Generate Malicious Call Details Reports

Only CAR administrators generate the Malicious Call Details report. The report displays the following details about malicious calls for a particular date range: origination time, termination time, duration (in seconds), origination (calling number), destination (called number), origination device, destination device, and call classification.

This section describes how to generate, view, or mail a Malicious Call Detail report.

Procedure

Step 1 Choose **System Reports** > **Malicious Call Details**.

The Malicious Call Details window displays.

Step 2	In the **From Date** drop-down list boxes, choose the month, day, and year from which you want malicious call details.
Step 3	In the **To Date** drop-down list boxes, choose the month, day, and year to which you want malicious call details.
Step 4	Choose **CSV** in the Report Format area, if you want the report in CSV format. Choose **PDF** in the Report Format area, if you want the report in PDF format.
Step 5	To view the report, click **View Report**.
Step 6	To mail the report to an email recipient, see the .

Precedence Call Summary System Reports

CAR provides reporting capabilities for three levels of users:

- Administrators - Generate system reports to help with load balancing, system performance, and troubleshooting.

- Managers - Generate reports for users, departments, and QoS to help with call monitoring for budgeting or security purposes and for determining the voice quality of the calls.

- Individual users - Generate a billing report for calls by each user.

Note You may have access restrictions to view some reports depending on your job function.

Generate Precedence Call Summary Reports

Only CAR administrators generate the Call Summary by Precedence report. The report displays the Call Summary for the precedence values that you choose by Hour of Day, Day of Week, or Day of Month.

This section describes how to generate, view, or mail a Call Summary by Precedence report.

Procedure

Step 1	Choose **System Reports** > **Precedence Call Summary**. The Call Summary by Precedence window displays.
Step 2	In the **Generate Reports** field, choose a time as described in the following table.

Table 44: Generate Report Fields

Parameter	Description
Hour of Day	Displays the average number of calls in the system for the chosen phone numbers for the date range that was chosen for an hour of the day.
	Note Ensure that the date and time range does not exceed one month.
Day of Week	Displays the average number of calls in the system for the chosen phone numbers for the date range that was chosen for the day of the week.
	Note Ensure that the date and time range does not exceed one month.
Day of Month	Displays the average number of calls in the system for the chosen phone numbers for the date range that was chosen for the day of the month.
	Note Ensure that the date and time range does not exceed one month.

Step 3   In the **Select Precedence Levels** field, check a precedence level that you want in the report or click **Select All** to check all precedence levels.

Table 45: Call Precedence Levels

Voice Quality	Description
Flash Override	Highest precedence setting for MLPP calls.
Flash	Second highest precedence setting for MLPP calls.
Immediate	Third highest precedence setting for MLPP calls.
Priority	Fourth highest precedence setting for MLPP calls.
Routine	Lowest precedence setting for MLPP calls.

Note   The Executive Override precedence level that is mentioned in the MLPP Precedence level on the Administration page will be considered as Flash Override in this report.

Note   To uncheck the precedence level check boxes, click **Clear All**.

Step 4   In the **From Date** drop-down list boxes, choose the month, day, and year from which you want precedence summary information.

Step 5   In the **To Date** drop-down list boxes, choose the month, day, and year for which you want precedence summary information.

Step 6	Choose **CSV** in the Report Format area, if you want the report in CSV format. Choose **PDF** in the Report Format area, if you want the report in PDF format.
Step 7	Click **View Report**.
Step 8	To mail the report to an e-mail recipient, see the .

System Reports

CAR provides reporting capabilities for three levels of users:

- Administrators - Generate system reports to help with load balancing, system performance, and troubleshooting.

- Managers - Generate reports for users, departments, and QoS to help with call monitoring for budgeting or security purposes and for determining the voice quality of the calls.

- Individual users - Generate a billing report for each call by each user.

Note You may have access restrictions to view some reports depending on your job function.

Generate System Reports

Only CAR administrators generate the System Overview report that provides the entire set of system reports in one report.

The System Overview report includes the following information:

- Top five users based on charge.

- Top five destinations based on charge.

- Top five calls based on charge.

- Top five users based on duration.

- Top five destinations based on duration.

- Top five calls based on duration.

- Traffic summary - Hour of day for incoming, internal, international, local, long distance, on the net, others, tandem, and total calls.

- Traffic summary - Day of the week for incoming, internal, international, local, long distance, on the net, others, tandem, and total calls.

- Traffic summary - Day of month for incoming, internal, international, local, long distance, on the net, others, tandem, and total calls.

- Quality of service summary.

- Gateway summary.

For more information about the System Overview reports, see the System Reports Results, on page 115.

You can either view reports that the system automatically generates or generate new reports. Only CAR administrators can schedule reports for automatic generation. For more information, see Set Up CDR Load Schedule, on page 36.

This section describes how to generate, view, or mail summary information about the Unified Communications Manager system.

Procedure

Step 1   Choose **System Reports** > **System Overview**.

The System Overview window displays.

Step 2   In the **Available Reports** field, select an automatically generated report (if available) and go to Step 6, on page 112, or use the default setting, Generate New Report, and go to Step 3, on page 112.

Step 3   Choose the date range for the period for which you want to generate the report.

Step 4   From the List of Reports, select the reports that you want to be generated by highlighting the report and clicking the right arrow.

The reports that you select appear in the Selected Reports list box.

> **Tip**   You can highlight more than one report at a time by pressing the **Ctrl** key on your keyboard while clicking the reports.

Step 5   Choose **CSV** in the Report Format area, if you want the report in CSV format. Choose **PDF** in the Report Format area, if you want the report in PDF format.

Step 6   Click **View Report**.

Step 7   Click **Send Report**, if you want to mail the report. To send the report, perform the procedure that is described in Mail Reports, on page 61.

CDR Error System Reports

CAR provides reporting capabilities for three levels of users:

- Administrators - Generate system reports to help with load balancing, system performance, and troubleshooting.

- Managers - Generate reports for users, departments, and QoS to help with call monitoring for budgeting or security purposes and for determining the voice quality of the calls.

- Individual users - Generate a billing report for calls by each user.

> **Note**   You may have access restrictions to view some reports depending on your job function.

Generate CDR Error Reports

Only CAR administrators generate the CDR Error report. The report provides statistics for the number of error records in the CAR Billing Error (tbl_billing_error) table for a particular time period.

In order to determine why the error records failed the CDR Load, you must review the information in the tbl_error_id_map table.

The following table lists the CDR error codes and the definition of the error.

Table 46: CDR Error Codes

Error Code	Definition
CDRs	
31101	CDR globalCallID_callManagerId <= 0
31102	CDR globalCallID_callId <= 0
31103	CDR origLegCallIdentifier <= 0
31105	CDR dateTimeOrigination <= 0
31108	CDR destLegIdentifier <= 0
31110	CDR dateTimeConnect <= 0
31111	CDR dateTimeDisconnect <= 0
31119	CDR originalCalledPartyNumber is empty
31120	CDR finalCalledPartyNumber is empty
31122	CDR duration < 0
31137	CDR LDAP error while retrieving UserID or ManagerID
31139	CDR callingPartyNumber is empty
31147	CDR origDeviceName is empty
31148	CDR destDeviceName is empty
31151	CDR origCallTerminationOnBehalfOf < 0
31152	CDR destCallTerminationOnBehalfOf < 0
31153	CDR lastRedirectRedirectOnBehalfOf < 0
31155	CDR destConversationId < 0
31156	CDR globalCallId_ClusterID is empty
Orig CMR	

Error Code	Definition
31123	Orig CMR globalCallID_callManagerId <= 0
31124	Orig CMR globalCallID_callId <= 0
31125	Orig CMR numberPacketsSent < 0
31126	Orig CMR numberPacketsReceived < 0
31127	Orig CMR jitter < 0
31129	Orig CMR callIdentifier <= 0
31149	Orig CMR deviceName is empty
31157	Orig CMR globalCallId_ClusterID is empty
Dest CMR	
31140	Dest CMR globalCallID_callManagerId <= 0
31141	Dest CMR globalCallID_callId <= 0
31142	Dest CMR numberPacketsSent < 0
31143	Dest CMR numberPacketsReceived < 0
31144	Dest CMR jitter < 0
31145	Dest CMR callIdentifier <= 0
31150	Dest CMR deviceName is empty
31158	Dest CMR globalCallId_ClusterID is empty

This section describes how to generate, view, or mail information about the CDR Error report.

Procedure

Step 1   Choose **System Reports** > **CDR Error**.

The CDR Error window displays.

Step 2   Choose the date range of the period for which you want to generate the report.

Step 3   Choose **CSV** in the Report Format area, if you want the report in CSV format. Choose **PDF** in the Report Format area, if you want the report in PDF format.

Step 4   Click **View Report**.

Step 5   Click **Send Report**, if you want to mail the report. To send the report, perform the procedure that is described in the Mail Reports, on page 61.

System Reports Results

This chapter describes report output information for each CAR system report.

QoS Detail Report Results

The results of the QoS Detail report include the following fields. See the following table.

Table 47: QoS Detail Report Fields

Field	Description
Orig. Time	The time that the call was placed, in 24-hour, minute, and second format.
Term. Time	The time that the call disconnected, in 24 hour, minute, and second format.
Duration(s)	The time, in seconds, that the call was connected.
Orig.	The originating number from which the call was placed.
Dest.	The destination number to which the call was directed.
Call Classification - Call categories specify classes.	
On Net	Outgoing calls that originate on one Unified Communications Manager network, go out through a trunk, and terminate on a different Unified Communications Manager network. For CAR purposes, be aware that any outgoing call can be classified as an OnNet call if it is configured as such in the CAR dial plan configuration window. See Set Up Dial Plan, on page 31.
Internal	Calls, including intracluster calls, that originate in the Unified Communications Manager network and end in the same Unified Communications Managernetwork (no gateways or trunks are used).
Local	Local calls that are routed through the public switched telephone network (PSTN) to numbers without an area code or that include one of the local area codes.
Long Distance	Long-distance calls that originate in the Unified Communications Manager network and go out through the PSTN.
International	International calls that originate in the Unified Communications Managernetwork that go out through the PSTN.

Field	Description
Incoming	Inbound calls that originate outside the Unified Communications Manager network, enter through a gateway, and go into the Unified Communications Manager network.
Tandem	Inbound calls that originate outside the Unified Communications Managernetwork, enter the Unified Communications Managernetwork through a gateway, and are transferred outbound from the Unified Communications Manager network through a gateway.
Others	All other outgoing calls, such as toll-free numbers or emergency calls such as 911.
Orig. Codec	The codec that the originating device uses.
Dest. Codec	The codec that the destination device uses.
Orig. Device	The name of the device that placed the call.
Dest. Device	The name of the device that received the call.
Orig. QoS	The voice quality that the device that placed the call experienced.
Dest. QoS	The voice quality that the device that received the call experienced.

The following figure displays sample output of the QoS Detail report in PDF format.

Figure 14: QoS Detail Report

QoS Summary Report Results

The QoS Summary report includes the following fields. See the table. If you select PDF format for the report output, the report shows a pie chart that displays the QoS of the total number of calls.

Table 48: QoS Summary Report Fields

Field	Description
Quality of Service	The quality of service of the calls.
Call Legs	Number of call legs with the quality of service that the Quality of Service field specified.

Figure 15: QoS Summary Report in PDF Format, on page 118 displays sample output of the QoS Summary Report in PDF format.

Figure 15: QoS Summary Report in PDF Format
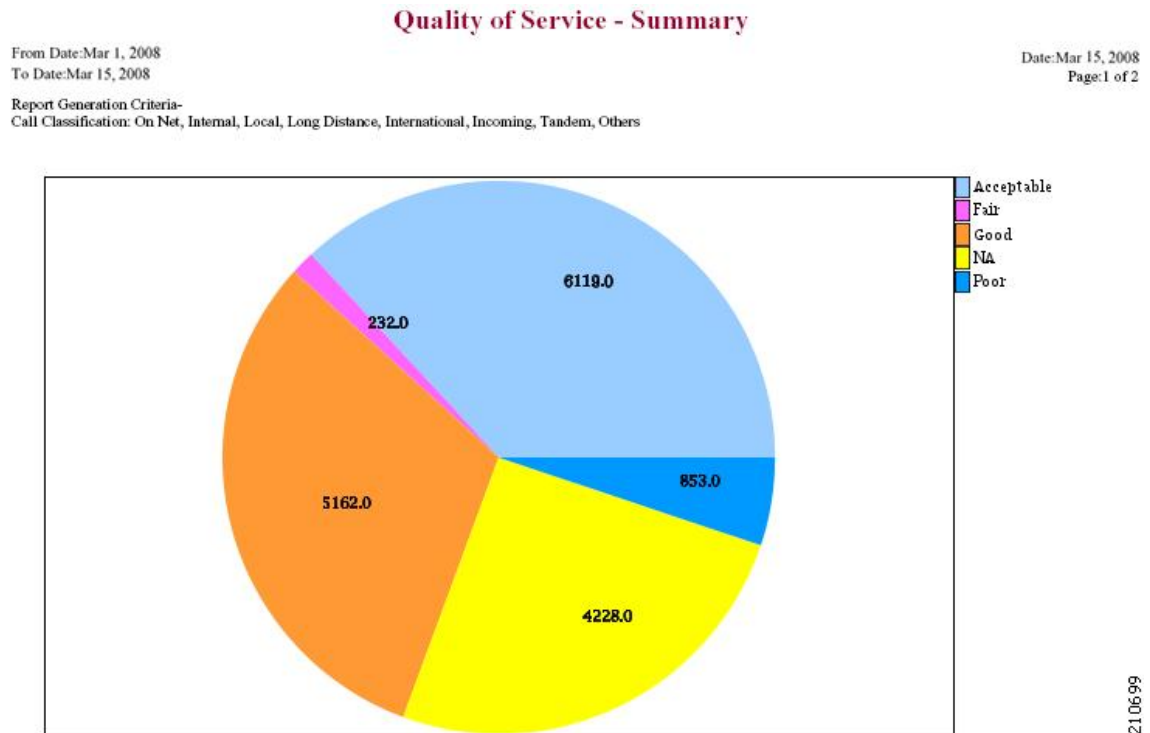
QoS by Gateways Report Results

The QoS by Gateways report provides the following information. See the table.

Table 49: QoS by Gateways Report Fields

Field	Description
Time/Day	Indicates the cumulative hours of the day(s), the days of the week, or the days of the month for the selected date range.
% of Call Legs	Displays the percentage of calls for each gateway for the hours of the day, the days of the week, or the days of the month for the selected date range.

Figure 16: QoS by Gateways Report, on page 119 displays sample output of the QoS by Gateways report in PDF format.

Figure 16: QoS by Gateways Report

QoS by Call Types Report Results

The QoS by Call Types report provides the following information. See the table.

Table 50: QoS by Call Types Report Fields

Field	Description
Time/Day	The cumulative hours of the day(s), the days of the week, or the days of the month for the selected date range.
% of Call Legs	The percentage of calls for each gateway for the hours of the day, the days of the week, or the days of the month for the selected date range.

Field	Description
Internal	Calls, including intracluster calls, that originate in the Unified Communications Manager network and end in the same Unified Communications Managernetwork (no gateways or trunks are used).
Local	Local calls that are routed through the public switched telephone network (PSTN) to numbers without an area code or that include one of the local area codes.
Long Distance	Long-distance calls that originate in the Unified Communications Manager network and go out through the PSTN.
International	International calls that originate in the Unified Communications Manager network that go out through the PSTN.
On Net	Outgoing calls that originate on one Unified Communications Manager network, go out through a trunk, and terminate on a different Unified Communications Manager network. For CAR purposes, be aware that any outgoing call can be classified as an OnNet call if it is configured as such in the CAR dial plan configuration window. See Set Up Dial Plan, on page 31.
Incoming	Inbound calls that originate outside the Unified Communications Manager network, enter through a gateway, and go into the Unified Communications Manager network.
Tandem	Inbound calls that originate outside the Unified Communications Manager network, enter the Unified Communications Manager network through a gateway, and are transferred outbound from the Unified Communications Manager network through a gateway.
Others	All other outgoing calls, such as toll-free numbers or emergency calls such as 911.

Figure 17: QoS by Call Types Report, on page 121 displays sample output of the QoS by Call Types report in PDF format.

Figure 17: QoS by Call Types Report

Traffic Summary Report Results

The Traffic Summary and Traffic Summary by Phone Number reports contain the same information and include some or all the following fields. See the table. A separate line displays under the report title for the Busy Hour Call Completion (BHCC) number for that day.

Table 51: Traffic Summary Report Fields

Field	Description
Time/Day	The cumulative hours of the day(s), the days of the week, or the days of the month for the selected date range.

Field	Description
Average Number of Calls	The percentage of calls for each gateway for the hours of the day, the days of the week, or the days of the month for the selected date range.
On Net	Outgoing calls that originate on one Unified Communications Manager network, go out through a trunk,and terminate on a different Unified Communications Manager network. For CAR purposes, be aware that any outgoing call can be classified as an OnNet call if it is configured as such in the CAR dial plan configuration window. See Set Up Dial Plan, on page 31.
Internal	Calls, including intracluster calls, that originate in the Unified Communications Manager network and end in the same Unified Communications Manager network (no gateways or trunks are used).
Local	Local calls that are routed through the public switched telephone network (PSTN) to numbers without an area code or that include one of the local area codes.
Long Distance	Long-distance calls that originate in the Unified Communications Manager network and go out through the PSTN.
International	International calls that originate in the Unified Communications Manager network that goes out through the PSTN.
Incoming	Inbound calls that originate outside the Unified Communications Manager network, enter through a gateway and go into the Unified Communications Manager network.
Tandem	Inbound calls that originate outside the Unified Communications Manager network, enter the Unified Communications Manager network through a gateway and are transferred outbound from the Unified Communications Manager network through a gateway.
Others	All other outgoing calls, such as toll-free numbers or emergency calls such as 911.
Total	The total number of calls for each hour or day.

Figure 18: Traffic Summary Report Results, on page 123 and Figure 19: Traffic Summary By Phone Number Report Results, on page 124 display sample output of the Traffic Summary and the Traffic Summary by Phone Number report results in PDF format.

Figure 18: Traffic Summary Report Results

Traffic Summary - Hour of Day

From Date:Jan 1, 2008
To Date:Jan 19, 2008

Date:Jan 19, 2008
Page:18 of 19

Report Generation Criteria-
Call Classification: On Net, Internal, Local, Long Distance, International, Incoming, Tandem, Others
QoS: Good, Acceptable, Fair, Poor, NA

BHCC:19

Time	Average Number Of Calls
Total	
00-01	0
01-02	0
02-03	0
03-04	0
04-05	0
05-06	0
06-07	0
07-08	0
08-09	0
09-10	0
10-11	0
11-12	0
12-13	0
13-14	0
14-15	0
15-16	0
16-17	4
17-18	1
18-19	0
19-20	19
20-21	0
21-22	0
22-23	0
23-00	0
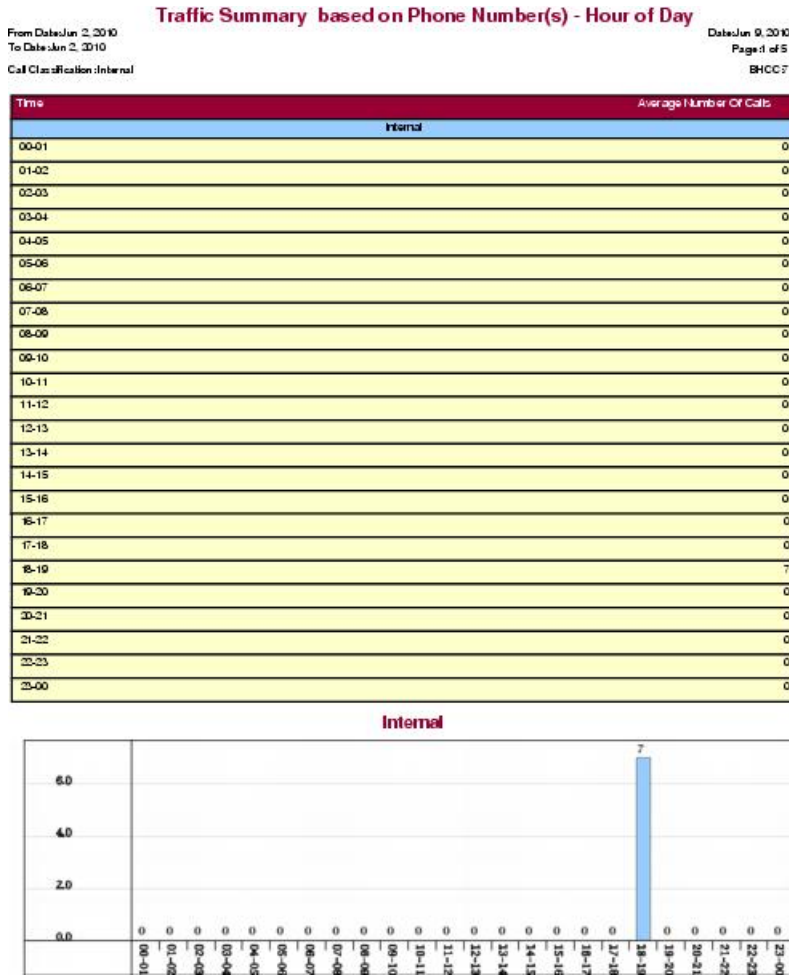
Total

Figure 19: Traffic Summary By Phone Number Report Results

Authorization Code Name Call Details Report Results

This report shows the usage of specific authorization code names. For security purposes, the authorization code name (description) displays and not the authorization code. The Authorization Code Name Call Details report includes the following fields (see the table).

Table 52: Authorization Code Name Call Details Report Fields

Field	Description
Orig.	The originating number from which the call was placed.
Dest.	The destination number to which the call was directed.
Orig. Date Time	The date and time that the call originated.
Duration (sec)	The time, in seconds, that the call connected.

Field	Description
Call Classification	The type of call (internal, incoming, on so on.)
Authorization Level	The authorization level for calls for each chosen authorization code name.

displays sample output of the Authorization Code Name Call Details report in PDF format.

Figure 20: Authorization Code Name Call Details Report

Authorization Code Name Call Details

From Date:Jan 1, 2008   Date:Jan 31, 2008
To Date:Jan 31, 2008   Page:1 of 1

Orig.	Dest.	Orig. Date Time	Duration (sec)	Call Classification	Authorization Level
Calls for Authorization Code Name : test					
1000	1001	Jan 31, 2008 11:08:34 AM	21	Internal	3
1000	1001	Jan 31, 2008 11:15:57 AM	23	Internal	3
1002	1001	Jan 31, 2008 11:16:32 AM	20	Internal	3
Total Calls for test : 3					

Authorization Level Call Details Report Results

This report shows the usage of specific authorization levels. The Authorization Level Call Details report includes the following fields (see the table).

Table 53: Authorization Level Call Details Report Fields

Field	Description
Orig.	The originating number from which the call was placed.
Dest.	The destination number to which the call was directed.
Orig. Date Time	The date and time that the call originated.
Duration (sec)	The time, in seconds, that the call connected.
Call Classification	The type of call (internal, incoming, and so on.)
Authorization Code Name	The authorization code name for each authorization level that you chose.

displays sample output of the Authorization Level Call Details report in PDF format.

Figure 21: Authorization Level Call Details Report

Client Matter Code Details Report Results

The report shows the usage of specific client matter codes. The Client Matter Code Details report includes the following fields (see the following table).

Table 54: Detail Report Fields

Field	Description
Orig.	The originating number from which the call was placed.
Dest.	The destination number to which the call was directed.
Orig. Date Time	The date and time that the call originated.
Duration (sec)	The time, in seconds, that the call connected.
Call Classification	The type of call (internal, incoming, and so on).

displays sample output of the Client Matter Code Details report in PDF format.

Figure 22: Client Matter Code Details Report

Malicious Call Details Report Results

The Malicious Call Details report provides information about malicious calls. The report provides the following fields. See the table.

Table 55: Malicious Call Details Report Fields

Field	Description
Orig. Time	Time at which the malicious call originated.
Term. Time	Time at which the malicious call terminated.
Duration	Total time of malicious call in seconds.
Orig.	Originating DN.
Dest.	Destination DN.
Orig. Device	Name of the originating device.
Dest. Device	Name of the destination device.
Call Classification	Classification of the malicious call.

displays sample output of the Malicious Calls Detail report in PDF format.

Figure 23: Malicious Calls Detail Report

Precedence Call Summary Report Results

The Precedence Call Summary report provides information about calls based on precedence levels. The report displays the call summary for the precedence values in the form of a bar chart on an "Hour of Day," "Day of Week," or "Day of Month" basis for each precedence level that you choose. If you choose to display the report in PDF format, two tables, one reflecting the bar chart, and the other listing the "Number of Calls" and "Percentage" for each precedence level that was chosen, display in the report. See the table.

Table 56: Precedence Call Summary Report Fields

Field	Description
Time/Day	Indicates the cumulative hours of the day(s), the days of the week, or the days of the month for the selected date range.
Call Legs	Number of calls for each precedence level by time/day.
Precedence Level	Precedence level value of the call.
No. of Call Legs	Number of call legs per each precedence level.
Percentage	Percentage of calls per each precedence level.

displays sample output of the Precedence Call Summary by Hour of Day report in PDF format.

Call Summary by Precedence - Hour of Day

From Date:Jan 1, 2008
To Date:Jan 19, 2008

Date:Jan 19, 2008
Page:10 of 14

Report Generation Criteria-
Call Precedence Levels: FLASH OVERRIDE, FLASH, IMMEDIATE, PRIORITY, ROUTINE

Time	Average Call Legs
ROUTINE	
00-01	0
01-02	0
02-03	0
03-04	0
04-05	0
05-06	0
06-07	0
07-08	0
08-09	0
09-10	0
10-11	0
11-12	0
12-13	0
13-14	0
14-15	0
15-16	0
16-17	8
17-18	1
18-19	0
19-20	38
20-21	0
21-22	0
22-23	0
23-00	0
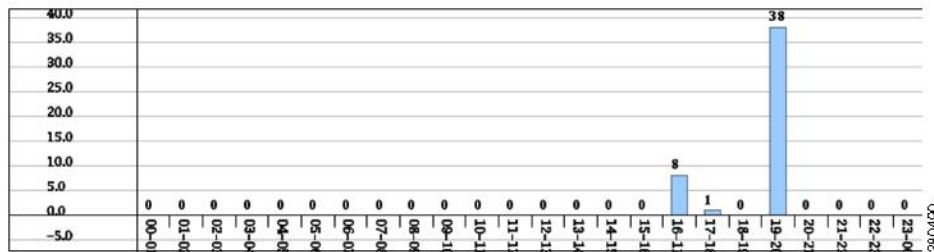
System Report Results

The system overview provides information about all parts of the Unified Communications Manager network. The report provides the following sections. See the table.

Table 57: System Overview Report

Field	Description
Top 5 Users based on Charge	Details the five users who have incurred the highest charges for calls that occurred during the specified date range. See the Top N by Charge or Duration Report Results, on page 79 for details about this section of the system overview report.
Top 5 Destinations based on Charge	Details the five called numbers that have incurred the highest charges for calls during the specified date range. See the Top N by Charge or Duration Report Results, on page 79 for details about this section of the system overview report.
Top 5 Calls based on Charge	Details the five calls that have incurred the highest charges for calls during the specified date range. See the Top N by Charge or Duration Report Results, on page 79 for details about this section of the system overview report.
Top 5 Users based on Duration	Details the five users who have spent the most time on calls during the specified date range. See Top N by Charge or Duration Report Results, on page 79 for details about this section of the system overview report.
Top 5 Destinations based on Duration	Details the five called numbers that have been engaged in calls for the longest time during the specified date range. See the Top N by Charge or Duration Report Results, on page 79 for details about this section of the system overview report.
Top 5 Calls based on Duration	Details the five longest calls for the specified date range. See the Top N by Charge or Duration Report Results, on page 79 for details about this section of the system overview report.
Traffic Summary Report - Hour of Day	Shows the volume of calls during the specified date range based on each hour of the day. If the date range is within one day, the system identifies the hour with the highest traffic volume (the BHCC number). See the Traffic Summary Report Results, on page 121 for details about this section of the system overview report.
Traffic Summary Report - Day of Week	Shows the volume of calls during the specified date range based on each day of the week. See the Traffic Summary Report Results, on page 121 for details about this section of the system overview report.

Field	Description
Traffic Summary Report - Day of Month	Shows the volume of calls during the specified date range based on each day of the month. See the Traffic Summary Report Results, on page 121 for details about this section of the system overview report.
Quality of Service Report - Summary	Shows the number of calls that fell within each voice-quality category during the specified date range. See the QoS Summary Report Results, on page 117 for details about this section of the system overview report.
Gateway Summary Report	Shows the summary of the call classification for each gateway along with the QoS, the number of calls, and the duration for each classification for the gateway during the specified date range. See the QoS by Gateways Report Results, on page 118 for details about this section of the system overview report.

CDR Error Report Results

The CDR Error report provides the following information. See the following table.

Table 58: CDR Error Report Fields

Field	Description
Time	The hour of the specified day that the error occurred.
No of Error CDRs	The total number of CDR records that were not processed during the CAR load because of an error.
No of Valid CDRs	The total number of CDR records that were successfully loaded into CAR.
% of Error CDRs	The percentage of failed CDR data records out of all the CDR data records to be loaded.

The following figure displays sample output of the CDR Error report in PDF format.

Figure 25: CDR Error Report

CDR Error

From Date:Jan 1, 2008
To Date:Jan 26, 2008

Date:Jan 26, 2008
Page:1 of 2

Time	No. of Error CDRs	No. of valid CDRs	% of Error CDRs
00-01	0	0	0.00
01-02	0	0	0.00
02-03	0	0	0.00
03-04	0	0	0.00
04-05	0	0	0.00
05-06	0	0	0.00
06-07	0	0	0.00
07-08	0	0	0.00
08-09	0	0	0.00
09-10	0	0	0.00
10-11	0	0	0.00
11-12	0	3	0.00
12-13	0	2	0.00
13-14	0	0	0.00
14-15	0	2	0.00
15-16	0	0	0.00
16-17	0	23	0.00
17-18	0	4	0.00
18-19	0	0	0.00
19-20	0	0	0.00
20-21	0	0	0.00
21-22	0	0	0.00
22-23	0	0	0.00
23-00	0	0	0.00

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Device Reports

CAR Device Reports

CAR provides reporting capabilities for three levels of users: administrators, managers, and individual users. Only administrators generate device reports.

Device reports track the load and performance of Unified Communications Manager related devices, such as conference bridges, voice-messaging servers, gateways, and trunks.

Device Reports Summary Descriptions

Device reports help CAR administrators track the load and performance of Unified Communications Manager-related devices, such as conference bridges, voice-messaging server, gateways, and trunks. This section describes the device reports:

- Gateway

  - Detail - Available for CAR administrators. Use the Gateway Detail report to track issues with specific gateways. The report provides a list of calls that used the specified gateways. Use this report to review detailed information about chosen gateways. You can specify gateways by type, such as all or some of the VG200 gateways in your system, or by only those gateways that use a particular route pattern. You can also specify search criteria based on call types and QoS values.

  - Summary - Available for CAR administrators. The Gateway Summary report provides a summary of all the calls that went through the gateways. It also provides the total number of calls and duration for each of the categories, namely Incoming, Tandem, and Outgoing (Long Distance, Local, International, Others, OnNet), and, also, the total calls for each QoS value for each gateway in the system. Use this report to track the functionality of the system on a daily basis. If you discover issues that need to be studied further, use the gateway detail report.

- Utilization - Available for CAR administrators. The Gateway Utilization report provides an estimate of the utilization percentage of the gateway(s). You can examine the usage on the basis of each hour of a day or by a specified number of days of the week or month. Reports generate for each gateway that is chosen. Use this report for load balancing or capacity planning (to evaluate the need for adding or removing gateways, depending on their utilization). You can specify gateways by type, such as all or some of the VG200 gateways in your system, or by only those gateways that use a particular route pattern.

- Route Patterns/Hunt Pilots

  - Route and Line Group Utilization - Only CAR administrators can generate the Route and Line Group Utilization report. This report provides an estimated utilization percentage of the chosen route and line group(s). You can examine the usage on the basis of each hour of a day or by a specified number of days of the week or month. Reports generate for each chosen route and line group. Use the report to analyze whether the route and line group capacity is sufficient to meet the usage requirements. Based on the results, you can decide whether additions are required. If you are load balancing gateways by using different route and line groups or route patterns and hunt lists that are assigned to the gateways, you can use this report to see the load for the whole grouping. This report also provides a convenient way of generating utilization information for a grouping of gateways by a particular route and line group; the group will also include any H.323 fallback gateways that are using the specified route and line group.

  - Route/Hunt List Utilization - Available for CAR administrators. The Route/Hunt List Utilization report provides an estimated utilization percentage of the chosen route/hunt list(s). You can examine the usage on the basis of each hour of a day or by a specified number of days of the week or month. Reports generate for each chosen route/hunt list. Use the report to analyze whether the route and line group capacity is sufficient to meet the usage requirements. Based on the results, you can decide whether additions are required. If you are load balancing gateways by using different route/hunt lists that are assigned to the gateways, you can use this report to see the load for the whole grouping. This report also provides a convenient way of generating utilization information for a grouping of gateways by a particular route/hunt list; the group will also include any H.323 fallback gateways that are using the chosen route/hunt list.

  - Route Pattern/Hunt Pilot Utilization - Available for CAR administrators. The Route Pattern/Hunt Pilot Utilization report provides an estimated utilization percentage of the chosen route pattern(s)/hunt pilot(s). You can examine the usage on the basis of each hour of a day or by a specified number of days of the week or month. Reports generate for each chosen route pattern/hunt pilot. Use the report to analyze system usage on the chosen route pattern/hunt pilot.

  - Hunt Pilot Summary - Only CAR administrators generate the Hunt Pilot Summary Report.The CDR Hunt Pilot Call Summary report displays the call details for the specified hunt pilot. This report displays an only an overview of the calls for the hunt pilots and hunt member information is not included. The CAR administrator can generate report for a maximum of five hunt pilot DNs.

  - Hunt Pilot Detail - Only CAR administrators generate the Hunt Pilot Detailed Call Report. This report displays call details for a hunt pilot number or a hunt member dn.

- Conference Call Details - Available for CAR administrators. The Conference Call Details report allows you to generate and view details about conference calls and conference bridges. The Summary Report displays the summary information of conference calls within a chosen date/time range but does not contain information about each individual conference participant call leg. The Detailed Report displays the detailed information about the conference calls within a chosen date/time range and includes information about each individual conference participant call leg.

- Conference Bridge Utilization - Available for CAR administrators. The Conference Bridge Utilization report provides an estimate of the utilization percentage of the conference bridge(s). You can examine the usage on the basis of each hour of a day or by a specified number of days of the week or month. Generate reports for all the conference bridges in the system. Use this report to determine the activity on the conference bridge(s) and whether you need to add additional resources. This report helps you identify usage patterns, so you can plan capacity when you discover recurring peaks in the usage pattern.

- Voice Messaging Utilization - Available for CAR administrators. The Voice Messaging Utilization report provides an estimate of the utilization percentage of the voice-messaging device(s). You can examine the usage on the basis of each hour of a day or by a specified number of days of the week or month. Reports generate for each voice-messaging device. Use this report to determine the activity on the voice messaging device(s) and whether you need to add additional resources. This report helps you to identify usage patterns, so you can plan capacity when you discover recurring peaks in the usage pattern.

- Trunk Utilization - Available for CAR administrators. Only CAR administrators generate the Trunk Utilization report. This report calculates the utilization reports for devices based on the duration of calls that passed through the devices. You can generate this report on an hourly, daily, or monthly basis. Reports generate for each trunk that is chosen. You can use this report for capacity assessment. You can also generate utilization reports for route groups, route lists and route patterns that are connected through trunks.

Gateway Device Reports

CAR provides reporting capabilities for three levels of users: administrators, managers, and individual users. Only administrators generate device reports.

Device reports track the load and performance of Unified Communications Manager related devices, such as conference bridges, voice-messaging servers, and gateways.

Only CAR administrators generate the gateway reports. The following sections describe how to configure Gateway Detail, Gateway Summary, and Gateway Utilization reports.

Generate Gateway Detail Reports

Only CAR administrators generate the Gateway Detail report. Use the Gateway Detail report to track issues with specific gateways.

This section describes how to generate, view, or mail detailed information about selected gateways.

Procedure

Step 1	Choose **Device Reports** > **Gateway** > **Detail**.

The Gateway Detail window appears.

Step 2	To display the list of gateways that you can include in the report, in the List of Gateways box perform one of the following tasks:

a) To display all gateways in the List of Gateways box, click **Gateway Types** in the column on the left side of the window.

b) To display gateways for a particular gateway type in the List of Gateways box, click the icon next to **Gateway Types** in the column on the left side of the window. The tree structure expands, and a list of gateway types displays. Choose a gateway type from the list, and the gateway name displays in the List of Gateways box.

Note The List of Gateways box lists up to 200 gateways that are configured for the chosen gateway type.

c) To display all gateways that are associated with configured route patterns/hunt pilots, click the **Route/Patterns/Hunt Pilots** in the column on the left side of the window.

d) To display gateways that use a particular route pattern, rather than a gateway type, click the icon next to **Route Patterns/Hunt Pilots** in the column on the left side of the window. The tree structure expands and displays a list of route patterns/hunt lists. Choose a route pattern/hunt pilot from the list, and the gateway name displays in the List of Gateways box.

Note You can also search for specific route patterns/hunt lists by entering part of the name of the route pattern(s)/hunt list(s) in the Route Patterns/Hunt Pilots box in the column on the left side of the window. CAR searches for the route pattern(s)/hunt list(s) that matches the search string.

Step 3 In the List of Gateways box, choose the gateways that you want to include in the report.

Note You can generate a report for up to five gateways at a time.

Step 4 To move the chosen gateway to the list of Selected Gateways box, click the down arrow.

The gateway or gateways that you chose appear in the Selected Gateways box.

Step 5 In the **Select Call Types** area, check the check boxes for the types of calls that you want to include in the report. The following table describes the call types.

Table 59: Gateway Details by Call Types

Call Type	Description
On Net	Outgoing calls that originate on one Unified Communications Manager network, go out through a trunk and terminate on a different Unified Communications Manager network. For CAR purposes, be aware that any outgoing call can be classified as an OnNet call if it is configured as such in the CAR dial plan configuration window. See Set Up Dial Plan, on page 31.
Local	Local calls that are routed through the public switched telephone network (PSTN) to numbers without an area code or that include one of the local area codes.
Long Distance	Long-distance calls that originate in the Unified Communications Manager network and go out through the PSTN.

Call Type	Description
International	International calls that originate in the Unified Communications Manager network and go out through the PSTN.
Incoming	Inbound calls that originate outside the Unified Communications Manager network, enter through a gateway and go into the Unified Communications Manager network.
Tandem	Inbound calls that originate outside the Unified Communications Manager network, enter the Unified Communications Manager network through a gateway and transfer outbound from the Unified Communications Manager network through a gateway.
Others	All other outgoing calls, such as toll-free numbers or emergency calls such as 911.

Step 6   In the **Select QoS** area, check the check boxes for the voice-quality categories that you want to include in the report. The parameters that are set in the following table provide the basis for all voice-quality categories.

Table 60: Gateway Detail Voice Quality

Voice Quality	Description
Good	QoS for these calls represents the highest possible quality.
Acceptable	QoS for these calls, although slightly degraded, still falls within an acceptable range.
Fair	QoS for these calls represents degraded quality but still within a usable range.
Poor	QoS for these calls represents unsatisfactory quality.
NA	These calls do not match any criteria for the established QoS categories.

Step 7   Choose the date range for the period for which you want to see call information.

> **Note**   Ensure the date and time range does not exceed one month.

Step 8   Choose **CSV** in the Report Format area, if you want the report in CSV format. Choose **PDF** in the Report Format area, if you want the report in PDF format.

Step 9   Click **View Report**.

Step 10   Click **Send Report**, if you want to mail the report. To send the report, follow the procedure that is described in the Mail Reports, on page 61.

Generate Gateway Summary Reports

Only CAR administrators generate the Gateway Summary report. This report provides a summary of all the calls that went through the gateways. You can use this information for monitoring the traffic and QoS for calls through the gateways.

You can either view reports that the system automatically generates or generate new reports. Only CAR administrators can schedule reports for automatic generation. For more information, see CAR System Parameters, on page 30.

This section describes how to generate, view, or mail summary information about gateways.

Procedure

Step 1   Choose **Device Reports** > **Gateway** > **Summary**.

The Gateway Summary window displays.

Step 2   In the **Available Reports** field, choose an automatically generated report (if available) and go to Step 6, on page 139 or use the default setting, **Generate New Report** and go to Step 3, on page 138.

Step 3   In the **Select Call Types** area, check the check boxes for the types of calls that you want to include in the report. The following table describes the call types.

Tip   To check all check boxes, click **Select All**; to uncheck the check boxes, click **Clear All**.

Table 61: Gateway Summary by Call Types

Call Type	Description
On Net	Outgoing calls that originate on one Unified Communications Manager network, go out through a trunk and terminate on a different Unified Communications Manager network. For CAR purposes, be aware that any outgoing call can be classified as an OnNet call if it is configured as such in the CAR dial plan configuration window. See Set Up Dial Plan, on page 31.
Internal	Calls, including intracluster calls, that originate in the Unified Communications Manager network and end in the same Unified Communications Manager network (no gateways or trunks are used).
Local	Local calls that are routed through the public switched telephone network (PSTN) to numbers without an area code or that include one of the local area codes.
Long Distance	Long-distance calls that originate in the Unified Communications Manager network and go out through the PSTN.

Call Type	Description
International	International calls that originate in the Unified Communications Manager network and go out through the PSTN.
Incoming	Inbound calls that originate outside the Unified Communications Manager network, enter through a gateway and go into the Unified Communications Manager network.
Tandem	Inbound calls that originate outside the Unified Communications Manager network, enter the Unified Communications Manager network through a gateway and transfer outbound from the Unified Communications Manager network through a gateway.
Others	All other outgoing calls, such as toll-free numbers or emergency calls such as 911.

Step 4 If you chose Generate New Report, choose the date range of the period for which you want to generate the report.

Step 5 Choose **CSV** in the Report Format area, if you want the report in CSV format. Choose **PDF** in the Report Format area, if you want the report in PDF format.

Step 6 Click **View Report**.

Step 7 Click **Send Report**, if you want to mail the report. To send the report, perform the procedure that is described in the Mail Reports, on page 61.

Generate Gateway Utilization Reports

Only CAR administrators generate the Gateway Utilization report. The report provides an estimate of the utilization percentage of the gateway for the period and not the exact utilization. For example, the system calculates the utilization of a gateway between 11hrs-12hrs, as the (sum of the duration of the calls that used the gateway in that hour / (maximum duration seconds in an hour * maximum number of ports in a gateway * number of days between the fromDate and toDate selected) * 100). Similarly, to get a utilization for the whole day, the system calculates the utilization as mentioned for each hour. You can examine the usage based on each hour of a day or on a specified number of days for each week or month.

In the case of weekly utilization reports, the system calculates the utilization as ((sum of the duration of the calls that used the gateway in a day) / (maximum duration seconds in each day * number of each day between the fromDate and toDate selected * maximum number of ports in a gateway) * 100).

In the case of monthly utilization reports, the system calculates the utilization as ((sum of the duration of the calls that used the gateway in a day) / (maximum duration seconds in each day * number of each day between the fromDate and toDate selected * maximum number of ports in a gateway) * 100).

Reports generate for each gateway that is chosen.

For calculation of the utilization of H.323 gateways, the system uses the port numbers from the CAR Gateway Configuration window. To find this window, choose **System** > **System Parameters** > **Gateway Configuration**. You cannot take port details for H.323 gateways from the Unified Communications Manager database because

the H.323 port number always equals zero in the database. The user must update H.323 gateway ports information in the CAR Gateway Configuration window.

Be aware that the only port detail information that is taken from the CAR Gateway Configuration window is only for those gateways that do not have port details that are available or that show zero in the Unified Communications Manager database.

You can either view reports that the system automatically generates or generate new reports. Only CAR administrators can schedule reports for automatic generation. For more information, see CAR System Parameters, on page 30.

This section describes how to generate, view, or mail Gateway Utilization reports.

Procedure

Step 1　　Choose **Device Reports** > **Gateway** > **Utilization**.

The Gateway Utilization window displays.

Step 2　　In the Generate Reports field, choose a time as described in the following table.

Table 62: Generate Report Fields

Parameter	Description
Hour of Day	Displays the cumulative utilization for each hour in a 24-hour period for the period that you specify in Step 8, on page 141.
Day of Week	Displays the cumulative utilization for the days of the week that occur within the period that you specify in Step 8, on page 141.
Day of Month	Displays the cumulative utilization for the days of the month that occur within the period that you specify in Step 8, on page 141.

Step 3　　In the **Available Reports** field, choose an automatically generated report (if available) and go to Step 10, on page 141 or use the default Generate New Report and go to Step 4, on page 140.

Step 4　　To display the list of gateways that you can include in the report in the List of Gateways box, perform one of the following tasks:

a) To display all gateways in the List of Gateways box, click **Gateway Types** in the column on the left side of the window.

b) To display gateways for a particular gateway type in the List of Gateways box, click the icon next to **Gateway Types** in the column on the left side of the window. The tree structure expands, and a list of gateway types displays. Choose a gateway type from the list, and the gateway name displays in the List of Gateways box.

　　Note　　The List of Gateways box will list up to 200 gateways that are configured for the chosen gateway type.

c) To display all gateways that are associated with configured route patterns/hunt pilots, click **Route Patterns/Hunt Pilots** in the column on the left side of the window.

d) To display gateways that use a particular route pattern, rather than a gateway type, click the icon next to **Route Patterns/Hunt Pilots** in the column on the left side of the window. The tree structure expands and displays a list of route patterns/hunt lists. Choose a route pattern/hunt pilot from the list, and the gateway name displays in the List of Gateways box.

Note	You can also search for specific route patterns/hunt lists by entering part of the name of the route pattern(s)/hunt list(s) in the Route Patterns/Hunt Pilots box in the column on the left side of the window. CAR searches for the route pattern(s)/hunt list(s) that matches the search string.

Step 5   Choose a gateway type from the list.

The gateway name displays in the List of Gateways box.

Note	The List of Gateways box will display up to 200 gateways that are configured for the chosen gateway type.

Step 6   In the **List of Gateways** box, choose the gateways that you want to include in the report.

Note	You can generate a report for up to five gateways at a time.

Step 7   To move the chosen gateway to the list of Selected Gateways box, click the down arrow.

The gateway(s) that you chose displays in the Selected Gateways box.

Step 8   If you chose **Generate New Report**, enter the date range of the period for which you want to see call information.

Note	Ensure the date and time range does not exceed one month.

Step 9   If you want the report in CSV format, choose **CSV** in the Report Format area. If you want the report in PDF format, choose **PDF** in the Report Format area.

Step 10   Click **View Report**.

Step 11   Click **Send Report**, if you want to mail the report. To send the report, perform the procedure that is described in the .

Route Pattern and Hunt Pilot Device Reports

CAR provides reporting capabilities for three levels of users: administrators, managers, and individual users. Only administrators generate the Route Pattern and Hunt Pilot device reports.

Device reports track the load and performance of Unified Communications Manager related devices, such as conference bridges, voice-messaging servers, and gateways.

Generate Route and Line Group Utilization Reports

Only CAR administrators generate the Route and Line Group Utilization report. This report provides an estimate of the maximum utilization percentage of the route and line group (cumulative utilization of all the gateways under the route and line group) for the period and not the exact utilization. The system calculates the utilization in the same manner as is done for Gateway Utilization, but this calculation gives cumulative

utilization of all the gateways under the route groups and all the lines under the line groups. You can examine the usage based on each hour of a day or on a specified number of days for each week or month. Reports generate for each of the selected route and line groups.

You can either view reports that the system automatically generates or generate new reports. Only CAR administrators can schedule reports for automatic generation. For more information, see CAR System Parameters, on page 30.

This section describes how to generate, view, or mail Route and Line Group Utilization reports.

Procedure

Step 1 Choose **Device Reports** > **Route Patterns/Hunt Pilots** > **Route and Line Group Utilization**.

The Route and Line Group Utilization window displays.

Step 2 In the **Generate Reports** field, choose a time as described in the following table.

Table 63: Generate Report Fields

Parameter	Description
Hour of Day	Displays the cumulative utilization for each hour in a 24-hour period for the period that you specify in Step 8, on page 143.
Day of Week	Displays the cumulative utilization for the days of the week that occur within the period that you specify in Step 8, on page 143.
Day of Month	Displays the cumulative utilization for the days of the month that occur within the period that you specify in Step 8, on page 143.

Step 3 In the **Available Reports** field, choose an automatically generated report (if available) and go to Step 10, on page 143, or use the default setting, Generate New Report, and go to Step 4, on page 142.

Step 4 To choose only those route and line groups that use a particular route pattern, click **Route Patterns/Hunt Pilots** in the column on the left side of the window.

The tree structure expands and displays the route patterns/hunt lists that you chose.

Note   You can also search for specific route patterns/hunt lists by entering part of the name of the route pattern(s)/hunt list(s) in the Route Patterns/Hunt Pilots box in the column on the left side of the window. CAR searches for the route pattern(s)/hunt list(s) that matches the search string.

Step 5 Choose a route pattern/hunt list from the list.

The route and line groups for this route pattern/hunt list display in the List of Route/Line Groups box.

Note   The List of Route/Line Groups box will display up to 200 route groups.

Step 6 In the List of Route/Line Groups box, choose the route/line groups that you want to include in the report.

Note   You can generate a report for up to five route/line groups at a time.

Step 7   To move the chosen gateway to the list of Selected Route/Line Groups box, click the down arrow.

The route/line groups that you chose to display in the Selected Route Groups box.

Step 8   If you chose Generate New Report, enter the date range of the period for which you want to see call information.

Note   Ensure the date and time range does not exceed one month.

Step 9   If you want the report in CSV format, choose **CSV** in the Report Format area. If you want the report in PDF format, choose **PDF** in the Report Format area.

Step 10   Click **View Report**.

Step 11   Click **Send Report**, if you want to mail the report. To send the report, follow the procedure that is described in the Mail Reports, on page 61.

Generate Route and Hunt List Utilization Reports

Only CAR administrators generate the Route/Hunt List Utilization report. The Route/Hunt List Utilization report provides an estimate of the maximum utilization percentage of the route/hunt list (cumulative utilization of all the gateways under the route/hunt list) for the period and not the exact utilization. The system calculates the cumulative utilization of all the gateways under the route lists and all the lines under the hunt lists.

You can examine the usage based on each hour of a day or on a specified number of days for each week or month. Reports generate for each of the selected route/hunt lists.

You can either view reports that the system automatically generates or generate new reports. Only CAR administrators can schedule reports for automatic generation. For more information, see Set Up CDR Load Schedule, on page 36.

This section describes how to generate, view, or mail the Route/Hunt List Utilization reports.

Procedure

Step 1   Choose **Device Reports** > **Route Patterns/Hunt Pilots** > **Route/Hunt List Utilization**.

The Route/Hunt List Utilization window displays.

Step 2   In the **Generate Report** field, choose a time as described in the following table.

Table 64: Generate Report Fields

Parameter	Description
Hour of Day	Displays the cumulative utilization for each hour in a 24-hour period for the period that you specify in Step 8, on page 144.
Day of Week	Displays the cumulative utilization for the days of the week that occur within the period that you specify in Step 8, on page 144.

Parameter	Description
Day of Month	Displays the cumulative utilization for the days of the month that occur within the period that you specify in Step 8, on page 144.

Step 3   In the **Available Reports** field, choose an automatically generated report (if available) and go to Step 10, on page 144 or use the default setting, Generate New Report, and go to Step 4, on page 144.

Step 4   To choose the route/hunt lists that you want to include in the report, click **Route Patterns/Hunt Pilots** in the column on the left side of the window. The tree structure expands and displays the route patterns/hunt pilots that you chose.

        Note   You can also search for specific route patterns/hunt lists by entering part of the name of the route pattern(s)/hunt lists in the Route Patterns/Hunt Pilots box in the column on the left side of the window. CAR searches for the route pattern(s)/hunt list(s) that matches the search string.

Step 5   Choose a route/hunt list from the list.

    The route/hunt list name displays in the List of Route/Hunt Lists box.

        Note   The List of Route/Hunt Lists box will display up to 200 route/hunt lists.

Step 6   In the List of Route/Hunt Lists box, choose the route/hunt lists that you want to include in the report.

        Note   You can generate a report for up to five route/hunt lists at a time.

Step 7   To move the chosen route/hunt lists to the list of Selected Route/Hunt Lists box, click down arrow.

    The route/hunt lists that you chose to display in the Selected Route/Hunt Lists box.

Step 8   If you chose Generate New Report, enter the date range of the period for which you want to see call information.

        Note   Ensure the date and time range does not exceed one month.

Step 9   If you want the report in CSV format, choose **CSV** in the Report Format area. If you want the report in PDF format, choose **PDF** in the Report Format area.

Step 10   Click **View Report**.

Step 11   Click **Send Report**, if you want to mail the report. To send the report, perform the procedure that is described in the Mail Reports, on page 61.

Generate Route Pattern and Hunt Pilot Utilization Reports

Only CAR administrators generate the Route Pattern/Hunt Pilot Utilization report. The report provides an estimate of the maximum utilization percentage of the route pattern/hunt pilot (cumulative utilization of all the gateways under the route pattern/hunt pilot) for the period and not the exact utilization. The system calculates the utilization of all the gateways under the route patterns and all the lines under the hunt pilots. You can examine the usage based on each hour of a day or on a specified number of days for each week or month. Reports generate for each of the selected route patterns/hunt pilots.

You can either view reports that the system automatically generates or generate new reports. Only CAR administrators can schedule reports for automatic generation. For more information, see Set Up CDR Load Schedule, on page 36.

This section describes how to generate, view, or mail Route Pattern/Hunt Pilot Utilization reports.

Procedure

Step 1   Choose **Device Reports** > **Route Pattern/Hunt Pilots** > **Route Pattern/Hunt Pilot Utilization**.

The Route Pattern/Hunt Pilot Utilization window displays.

Step 2   In the **Generate Report** field, choose a time as described in the following table.

Table 65: Generate Report Fields

Parameter	Description
Hour of Day	Displays the cumulative utilization for each hour in a 24-hour period for the period that you specify in Step 8, on page 146.
Day of Week	Displays the cumulative utilization for the days of the week that occur within the period that you specify in Step 8, on page 146.
Day of Month	Displays the cumulative utilization for the days of the month that occur within the period that you specify in Step 8, on page 146.

Step 3   In the **Available Reports** field, choose an automatically generated report (if available) and go to Step 10, on page 146 or use the default Generate New Report and go to Step 4, on page 145.

Step 4   To choose the route pattern(s)/hunt list(s) that you want to include in the report, click **Route Patterns/Hunt Pilots** in the column on the left side of the window.

The tree structure expands and displays the route pattern(s)/hunt list(s) that you chose.

Note   You can also search for specific route patterns/hunt lists by entering part of the name of the route pattern(s)/hunt list(s) in the Route Patterns box in the column on the left side of the window. CAR searches for the route pattern(s)/hunt list(s) that matches the search string.

Step 5   Choose a route pattern/hunt pilot from the list.

The route pattern/hunt pilot name displays in the List of Route Patterns/Hunt Pilots box.

Note   The List of Route Patterns/Hunt Pilots box will display up to 200 route patterns/hunt lists.

Step 6   In the List of Route Patterns/Hunt Pilots box, choose the route patterns/hunt lists that you want to include in the report.

Note   You can generate a report for up to five route patterns/hunt pilots at a time.

Step 7   Click the down arrow to move the chosen route pattern/hunt pilot to the list of Selected Route Patterns/Hunt Pilots box.

The route pattern/hunt pilot that you chose displays in the Selected Route Patterns/Hunt Pilots box.

Step 8   If you chose Generate New Report, enter the date range of the period for which you want to see call information.

Note   Ensure the date and time range does not exceed one month.

Step 9   If you want the report in CSV format, choose **CSV** in the Report Format area. If you want the report in PDF format, choose **PDF** in the Report Format area.

Step 10   Click **View Report**.

Step 11   Click **Send Report**, if you want to mail the report. To send the report, perform the procedure that is described in the Mail Reports, on page 61.

Generate Hunt Pilot Summary Report

Only CAR administrators generate the Hunt Pilot Summary Report. The CDR Hunt Pilot Call Summary report displays the call details for the specified hunt pilot. This report displays only an overview of the calls for the hunt pilots and hunt member information is not included. The CAR administrator can a generate report for a maximum of five hunt pilot DNs.

This section describes how to generate, view, or mail Hunt Pilot Summary reports.

Procedure

Step 1   Choose **Device Reports** > **Route Pattern/Hunt Pilots** > **Hunt Pilot Summary**.

The Hunt Pilot Detail Summary displays.

Step 2   Enter the hunt pilot number in the **Hunt Pilots** text box and press the Enter key.

The hunt pilot number is displayed below the text box. Alternately, you can click the icon to display all the available hunt pilot numbers.

Step 3   Click on the required hunt pilot number, so that it is listed in the List of Hunt Pilots.

Step 4   From the Generate Reports drop-down list, choose:
   a) Hour of the day - Displays the call details for each hour in a 24-hour period for the period that you specify in Step 7, on page 146.
   b) Day of the Week - Displays the call details for the days of the week that occur within the period that you specify in Step 7, on page 146.
   c) Day of the Month - Displays the call details for the days of the month that occur within the period that you specify in Step 7, on page 146.

Step 5   Choose any of the available reports or the Generate New Report option from the **Available Reports** drop-down list.

Step 6   From the list of hunt pilots available, choose the required ones and click the down arrow.

The hunt pilots chosen are displayed in the **Selected Hunt Pilots** list.

Step 7   Choose the **From Date** and the **To Date** from the drop-down lists available.

Step 8	Choose the required report format.
	It can either be **CSV** or **PDF**. PDF is the default report option.
Step 9	Click **View Report** to view the report.
	To view the report results, see Generate Hunt Pilot Summary Report, on page 146.
Step 10	Click **Send Report**, if you want to mail the report.
	To send the report, perform the procedure that is described in the Mail Reports, on page 61.

Generate Hunt Pilot Detail Report

Only CAR administrators generate the Hunt Pilot Detailed Call Report. This report displays call details for a hunt pilot number or a hunt member dn.

This section describes how to generate, view, or mail Hunt Pilot Detail reports.

Procedure

Step 1	Choose **Device Reports** > **Route Pattern/Hunt Pilots** > **Hunt Pilot Detail**.
	The Hunt Pilot Detail window displays.
Step 2	Select the **HuntPilot** or the **MemberDn** for generating the report.
Step 3	Enter the hunt pilot number in the **Hunt Pilots** text box and press the Enter key.
	The hunt pilot number is displayed below the text box. Alternately, you can click the icon to display the hunt pilot numbers.
Step 4	If you had selected the hunt pilot option, click on the required hunt pilot number, so that it is listed in the **SelectedHuntPilot/MemberDn** list box. Proceed to Step 7, on page 147.
Step 5	If you had selected the member dn option, click on the required hunt pilot number to list the member dn numbers in it.
Step 6	From the list of member dns, click on the required ones so that they get listed in the **SelectedHuntPilot/MemberDn** list box.
Step 7	Choose any of the available reports or the Generate New Report option from the **Available Reports** drop-down list.
Step 8	Choose the **From Date** and the **To Date** from the drop-down lists available.
Step 9	Choose the required report format.
	It can either be CSV or PDF. PDF is the default report option.
Step 10	Click **View Report** to view the report.
	To view the report results, see Hunt Pilot Detail Report Results, on page 163.
Step 11	Click **Send Report**, if you want to mail the report.

To send the report, perform the procedure that is described in the Mail Reports, on page 61.

Conference Bridge Device Reports

CAR provides reporting capabilities for three levels of users: administrators, managers, and individual users. Only CAR administrators generate the conference bridge device reports.

Device reports track the load and performance of Unified Communications Manager related devices, such as conference bridges, voice-messaging servers, and gateways.

Generate Conference Call Details

Only CAR administrators generate the Conference Call Details report. The Conference Call Details report allows you to generate and view details about conference calls.

This section describes how to generate, view, or mail a Conference Call Details report.

Procedure

Step 1 Choose **Device Reports > Conference Bridge > Call Details**.

The Conference Call Details window displays.

Step 2 In the Report Type drop-down menu, choose either **Summary** or **Detail**.

Step 3 In the Available Reports field, choose an automatically generated report (if available) and go to Step 7, on page 148 or use the default setting, Generate New Report, and go to Step 4, on page 148.

Step 4 In Select Conference Types, check the check box of the conference type that you want to include in the report as described in the following table.

Table 66: Conference Calls Detail Fields

Parameter	Description
Ad-Hoc	Ad hoc conferences allow the conference controller to let only certain participants into the conference.
Meet-Me	Meet-me conferences allow users to dial in to a conference.

Step 5 If you chose Generate New Report, enter the date range of the period for which you want to see conference call details.

Note Ensure that the date and time range does not exceed one month.

Step 6 Choose CSV in the Report Format area, if you want the report in CSV format. Choose PDF in the Report Format area, if you want the report in PDF format.

Step 7 Click **View Report**.

Step 8   Click **Send Report**, if you want to mail the report. To send the report, perform the procedure that is described in the Mail Reports, on page 61.

Generate Conference Bridge Utilization Reports

Only CAR administrators generate the Conference Bridge Utilization report. The report provides an estimate of the utilization percentage of the conference bridges (cumulative utilization of all the conference bridges that are selected for OnDemand reports) for the period and not the exact utilization. For example, the system calculates the utilization of a conference bridge between 11hrs and 12hrs as the ((Sum of duration of the calls that used the conference bridge in that hour) / (Number of days between the fromDate and toDate selected * Maximum number of streams in the conference bridge * Maximum number of duration in seconds in an hour) * 100)). The value that is calculated will display in the report as the utilization for the time between 11hrs and 12hrs. You can examine the usage based on each hour of a day or on a specified number of days for each week or month.

You can either view reports that the system automatically generates or generate new reports. Only CAR administrators can schedule reports for automatic generation. For more information, see Set Up CDR Load Schedule, on page 36.

This section describes how to generate, view, or mail Conference Bridge Utilization reports for each conference bridge type.

Procedure

Step 1   Choose **Device Reports > Conference Bridge > Utilization**.

The Conference Bridge Utilization window displays.

Step 2   In the Generate Report field, choose a time as described in the following table.

Table 67: Generate Report Fields

Parameter	Description
Hour of Day	Displays the cumulative utilization for each hour in a 24-hour period for the period that you specify in Step 6, on page 150.
Day of Week	Displays the cumulative utilization for the days of the week that occur within the period that you specify in Step 6, on page 150.
Day of Month	Displays the cumulative utilization for the days of the month that occur within the period that you specify in Step 6, on page 150.

Step 3   In the Available Reports field, choose an automatically generated report (if available) and go to Step 8, on page 150 or use the default, Generate New Report, and go to Step 4, on page 149.

Step 4   From the Conference Bridge Types column in the left pane, choose the conference bridge type(s) that you want to include in the utilization report.

The conference bridges of the particular conference bridge type that you chose to display in the List of Devices box.

Note   For this report, choose a maximum of five conference bridges.

Step 5   When you have chosen all the conference bridges that you want to include in the report, click the down arrow to add them to the Selected Devices box.

Step 6   If you chose Generate New Report, enter the date range of the period for which you want to see call information.

Note   Ensure the date and time range does not exceed one month.

Step 7   If you want the report in CSV format, choose **CSV** in the Report Format area. If you want the report in PDF format, choose **PDF** in the Report Format area.

Step 8   Click **View Report**.

Step 9   Click **Send Report**, if you want to mail the report. To send the report, perform the procedure described in the Mail Reports, on page 61.

Voice Messaging Utilization Device Reports

CAR provides reporting capabilities for three levels of users: administrators, managers, and individual users. Only administrators generate device reports.

Device reports track the load and performance of Unified Communications Manager related devices, such as conference bridges, voice-messaging servers, and gateways.

Generate Voice Messaging Utilization Reports

Only CAR administrators generate the Voice Messaging Utilization report. The report provides an estimate of the maximum utilization percentage of the voice-messaging devices for the period and not the exact utilization. For example, the system calculates the utilization of a voice-messaging port/voice-messaging DNs between 11hrs and 12hrs by using the duration of the calls that used the voice-messaging port/voice messaging DNs. The system calculates utilization for the voice-messaging port as the (sum of duration of calls that used the voice-messaging port in that hour*100) / (maximum duration seconds in an hour * number of days between the fromDate and toDate selected). The utilization calculation for voice-messaging DNs represents the (sum of duration of calls that used the voice-messaging DNs in that hour * 100) / (maximum duration seconds in an hour * number of days between the fromDate and toDate selected * maximum number of ports in a gateway that is connected to the voice-messaging DN). The same value will display in the report as the utilization for the time between 11hrs and 12hrs.

You can review the Voice Messaging Utilization report for Voice Messaging Ports only as a newly generated report and not as a report that the system automatically generates.

You can automatically generate the Voice Messaging Utilization report for Voice Messaging DNs, or you can generate it as a new report. Only CAR administrators can schedule reports for automatic generation. For more information, see Set Up CDR Load Schedule, on page 36.

Note	The CAR Voice Messaging Utilization report supports the Cisco Unity and Cisco Unity Connection voice-messaging systems.

This section describes how to generate, mail, or view Voice Messaging Utilization reports.

Procedure

Step 1 Choose **Device Reports > Voice Messaging > Utilization**.

The Voice Messaging Utilization window displays.

Step 2 In the Generate Report field, choose a time as described in the following table.

Table 68: Generate Report Fields

Parameter	Description
Hour of Day	Displays the utilization results for each hour in a 24-hour period for the period that you specify in Step 10, on page 152.
Day of Week	Displays the utilization for the days of the week that occur within the period that you specify in Step 10, on page 152.
Day of Month	Displays the utilization for the days of the month that occur within the period that you specify in Step 10, on page 152.

Step 3 In the Available Reports field, choose an automatically generated report (if available) and go to Step 12, on page 152 or use the default setting, Generate New Report, and go to Step 4, on page 151.

Step 4 To choose a voice-messaging DN, click **Voice Messaging DNs** in the Voice Utilization pane.

The previously configured voice-messaging DN displays.

Note	The Voice Messaging DN that displays in this window represents the Voice Messaging DN that you configure in the VoiceMailDn service parameter, which supports the Cisco Messaging Interface service. Set the parameter name VoiceMailDn to the routing pattern that you have created on the machine. Configure this by opening Cisco Unified CM Administrationand clicking **System.** Click **Service Parameters**; then, select the service **Cisco Messaging Interface**.

Step 5 Choose the voice-messaging DN.

The DN that you chose displays in the List of DNs/Ports list box.

Step 6 To choose a voice-messaging port, click **Voice Messaging Ports** in the Voice Utilization pane.

A list of configured voice-messaging ports displays.

Step 7 From the list of ports, choose a voice-messaging port.

The port that you chose displays in the List of DNs/Ports list box.

Step 8 In Select Voice Messaging DNs/Ports, click the down arrow.

The port that you chose displays in the Selected DNs/Ports list box.

Step 9 Repeat Step 7, on page 151 and Step 8, on page 152 until you have chosen the ports that you want to include in the report.

Note For this report, you can choose a maximum of five Voice Messaging Ports/Voice Messaging DNs. You can choose the default Voice Messaging DN and four Voice Messaging Ports, or you can choose five Voice Messaging Ports.

Step 10 If you chose **Generate New Report**, enter the date range of the period for which you want to see call information.

Note Ensure the date and time range does not exceed one month.

Step 11 Choose **CSV** in the Report Format area, if you want the report in CSV format. If you want the report in PDF format, choose **PDF** in the Report Format area.

Step 12 Click **View Report**.

Step 13 Click **Send Report**, if you want to mail the report. To send the report, perform the procedure described in the Mail Reports, on page 61.

Trunk Device Reports

CAR provides reporting capabilities for three levels of users: administrators, managers, and individual users. Only administrators generate device reports.

Device reports track the load and performance of Unified Communications Manager related devices, such as conference bridges, voice-messaging servers, gateways, and trunks.

Only CAR administrators generate the trunk reports. The following section describes how to configure Trunk Utilization reports.

Generate Trunk Utilization Reports

Only CAR administrators generate the Trunk Utilization report. This report calculates the utilization reports for devices based on the duration of calls that passed through the devices.

You can generate this report on an hourly, daily, or monthly basis. The system calculates the utilization of a trunk for each hour in the selected date range. For example, the system calculates the utilization of a trunk between 11hrs-12hrs, using the formula, (Sum of the duration of calls that used the trunk in that hour / (total seconds in an hour * maximum number of ports in a trunk * number of days between the fromDate and toDate selected) * 100).

Similarly, to get the utilization for each day in a week, the system calculates the utilization using the formula, ((sum of the duration of calls that used the trunk in a day) / (total seconds in each day * number of each day between the fromDate and toDate selected * maximum number of ports in a trunk) * 100).

In the case of monthly utilization reports, the system calculates the utilization for each day in a month, using the formula, ((sum of the duration of calls that used the trunk in a day) / (total seconds in each day * number of each day between the fromDate and toDate selected * maximum number of ports in a trunk) * 100).

Reports generate for each trunk that is chosen.

For calculation of the trunk utilization, the system uses the port numbers from the CAR Trunk Configuration window. To find this window, choose **System** > **System Parameters** > **Trunk Configuration**. You cannot take port details for H.323 trunks from the Unified Communications Manager database because the H.323 port number always equals zero in the database. The user must update H.323 trunk ports information in the CAR Trunk Configuration window.

Be aware that the only port detail information that is taken from the CAR Trunk Configuration window is only for those trunks that do not have port details that are available or that show zero in the Unified Communications Manager database.

This section describes how to generate, view, or mail Trunk Utilization reports.

Procedure

Step 1   Choose **Device Reports** > **Trunk** > **Utilization**.

The Trunk Utilization window displays.

Step 2   In the Generate Reports field, choose a time as described in the following table.

Table 69: Generate Report Fields

Parameter	Description
Hour of Day	Displays the cumulative utilization for each hour in a 24-hour period for the period that you specify in Step 7, on page 154.
Day of Week	Displays the cumulative utilization for the days of the week that occur within the period that you specify in Step 7, on page 154.
Day of Month	Displays the cumulative utilization for the days of the month that occur within the period that you specify in Step 7, on page 154.

Note   The Trunk Utilization report is not generated automatically.

Step 3   To display the list of trunks that you can include in the report in the List of Trunks box, perform one of the following tasks:

a) To display all trunks in the List of Trunks box, click **Trunk Types** in the column on the left side of the window.

b) To display trunks for a particular trunk type in the List of Trunks box, click the icon next to **Trunk Types** in the column on the left side of the window. The tree structure expands, and a list of trunk types displays. Choose a trunk type from the list, and the trunk name displays in the List of Trunks box.

   Note   The List of Trunks box will list up to 200 trunks that are configured for the chosen trunk type.

Note You can generate the trunk utilization reports for route groups, route lists, and route patterns that are connected through trunks.

Step 4 Choose a trunk type from the list.

The trunk name displays in the List of Trunks box.

Note The List of Trunks box displays up to 200 trunks that are configured for the chosen trunk type.

Step 5 In the List of Trunks box, choose the trunks that you want to include in the report.

Note You can generate a report for up to five trunks at a time.

Step 6 To move the chosen trunk to the list of Selected Trunks box, click the down arrow.

The trunk(s) that you chose displays in the Selected Trunks box.

Step 7 If you chose Generate New Report, enter the date range of the period for which you want to see call information.

Note Ensure the date and time range does not exceed one month.

Step 8 If you want the report in CSV format, choose **CSV** in the Report Format area. If you want the report in PDF format, choose **PDF** in the Report Format area.

Step 9 Click **View Report**.

Step 10 Click **Send Report**, if you want to mail the report. To send the report, perform the procedure that is described in the Mail Reports, on page 61.

CAR Device Reports Results

This chapter describes report output information for each device report.

Gateway Detail Report Results

The Gateway Detail report includes the following fields. See the table.

Table 70: Gateway Detail Report Fields

Field	Description
Date	The date when the call went through the gateway.
Orig. Time	The time when the call went through the gateway.
Term. Time	The time that the call terminated.
Duration(s)	The duration, in seconds, that the call was connected. The duration specifies the difference between the Dest Connect and the Dest Disconnect times.
Orig	The directory number from which the call was placed.

Field	Description
Dest	The directory number to which the call was originally placed. If the call was not forwarded, this directory number should match the Final Destination number. If the call was forwarded, this field contains the original destination number of the call before it was forwarded.
Orig. Codec	The codec code (compression or payload code) that the call originator used on its sending side during this call. This code may differ from the codec code that was used on its receiving side.
Dest. Codec	The codec code (compression or payload code) that the destination used on its sending side during this call. This code may differ from the codec code that was used on its receiving side.
Orig. Device	The device name of the device that placed the call. For incoming and tandem calls, this field specifies the device name of the gateway.
Dest Device	The device name of the device that received the call. For outgoing and tandem calls, this field specifies the device name of a gateway. For conference calls, this field specifies the device name of the conference bridge.
Orig QoS	QoS depicts the voice-quality grade that was achieved for the calls.
Dest QoS	The QoS category that was experienced by the receiver of the call.

Figure 26: Gateway Detail Report, on page 155 displays sample output of the Gateway Detail Report in PDF format.

Figure 26: Gateway Detail Report

Gateway Summary Report Results

The Gateway Summary report includes the following fields. See the following table.

✎

Note   The Gateway Summary report segregates calls for each call classification that the user selects and divides the calls based on QoS type.

Table 71: Gateway Summary Report Fields

Field	Description
Call Classification	Shows the type of call (internal, incoming, and tandem.)
Quality of Service	Shows a summary of the performance of the various gateways with the total number of calls for each voice-quality category. The parameters set in the Define QoS Values, on page 53 provide the basis for all voice-quality categories. • Good - QoS for these calls specifies the highest possible quality. • Acceptable - QoS for these calls, although slightly degraded, still falls within an acceptable range. • Fair - QoS for these calls, although degraded, still falls within a usable range. • Poor - QoS for these calls was unsatisfactory. • NA - These calls did not match any criteria for the established QoS categories.
Calls	Shows the total calls for the particular call classification.
Duration (sec)	Shows the total duration for all the calls for the particular call classification.

The following figure displays sample output of the Gateway Summary Report in PDF format.

Figure 27: Gateway Summary Report

Gateway and Route Utilization Report Results

The Gateway, Route Group, Route List, and Route Pattern Utilization reports provide similar output. If you choose to display the report in PDF format, the report shows the utilization as a bar chart. A graph displays for each selected gateway or route group. See the table.

Table 72: Gateway and Route Utilization Report Fields

Field	Description
Time/Day	Time in one-hour blocks if you chose Hourly or one-day blocks if you chose weekly or monthly. The results show the utilization for each hour or day for the entire period that is shown in the from and to dates.
%	Gateway, route group, route list, or route pattern utilization percentage. This field gives the estimated utilization percentage of the gateways or route groups or route lists or route patterns relative to the total number of calls that all the gateways put together can support at any one time.

Figure 28: Gateway Utilization Report, on page 158 displays sample output of the Gateway Utilization Report in PDF format.

Figure 28: Gateway Utilization Report
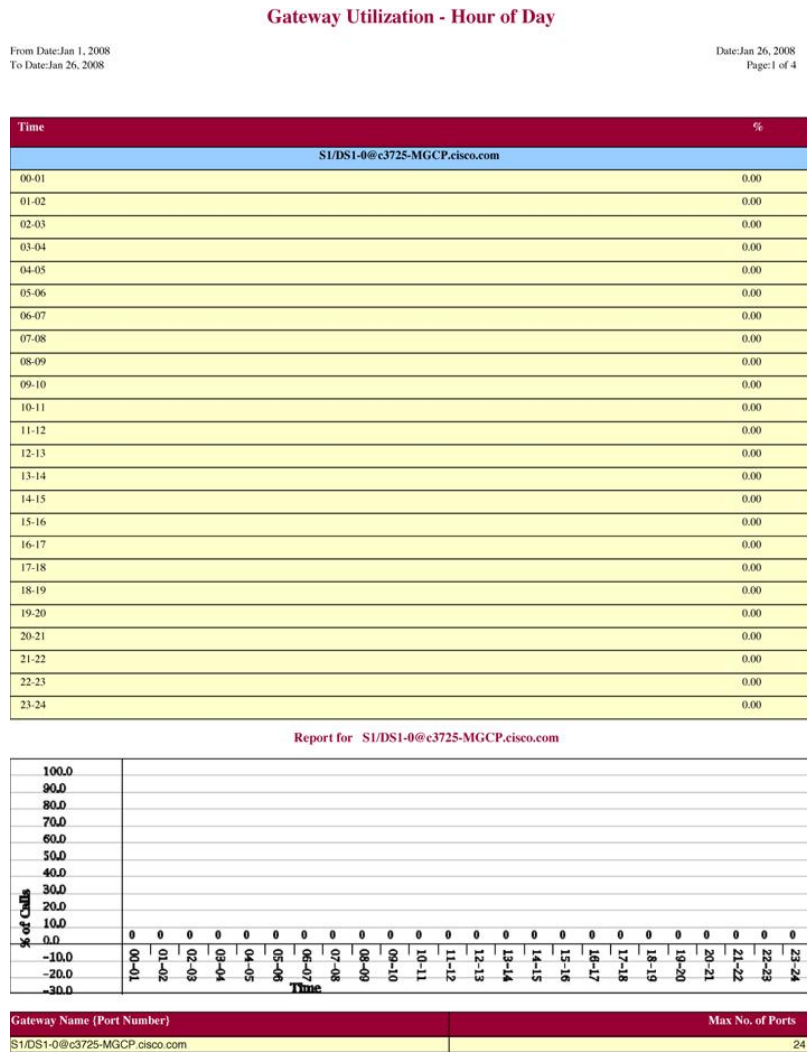
Figure 29: Route/Hunt List Utilization Report, on page 159 displays sample output of the Route/Hunt List Utilization report in PDF format.

Figure 29: Route/Hunt List Utilization Report

Route/Hunt List Utilization - Hour of Day

From Date:Jan 1, 2008
To Date:Jan 31, 2008

Date:Jan 31, 2008
Page:1 of 3

Time	%
testRL	
00-01	0.00
01-02	0.00
02-03	0.00
03-04	0.00
04-05	0.00
05-06	0.00
06-07	0.00
07-08	0.00
08-09	0.00
09-10	0.00
10-11	0.00
11-12	0.00
12-13	0.00
13-14	0.00
14-15	0.00
15-16	0.00
16-17	0.00
17-18	0.00
18-19	0.00
19-20	0.00
20-21	0.00
21-22	0.00
22-23	0.00
23-24	0.00

Route List Name	Gateway Name {Port Number}	Max No. of Ports
testRL	S1/DS1-0@c3725-MGCP.cisco.com	24
	Total number of Ports for testRL	24

280497

Figure 30: Route and Line Group Utilization Report, on page 160 displays sample output from the Route and Line Group Utilization report in PDF format.

Figure 30: Route and Line Group Utilization Report

Figure 31: Route Pattern/Hunt Path Utilization Report, on page 161 displays sample output of the Route Pattern/Hunt Path Utilization report in PDF format.

Route Pattern/Hunt Pilot Utilization - Hour of Day

From Date:Jan 1, 2008   Date:Jan 29, 2008
To Date:Jan 29, 2008   Page:1 of 3

Time	%
7.XXXX	
00-01	0.00
01-02	0.00
02-03	0.00
03-04	0.00
04-05	0.00
05-06	0.00
06-07	0.00
07-08	0.00
08-09	0.00
09-10	0.00
10-11	0.00
11-12	0.00
12-13	0.00
13-14	0.00
14-15	0.00
15-16	0.00
16-17	0.00
17-18	0.00
18-19	0.00
19-20	0.00
20-21	0.00
21-22	0.00
22-23	0.00
23-24	0.00

Route Pattern Name	Gateway Name {Port Number}	Max No. of Ports
7.XXXX	S1/DS1-0@c3725-MGCP.cisco.com	24
	Total number of Ports for 7.XXXX	24

280496

Hunt Pilot Summary Report Results

The Hunt Pilot Summary report includes the following fields. See the table.

Table 73: Hunt Pilot Summary Report Fields

Field	Description
Time	Time in one-hour blocks if you chose Hourly or one-day blocks if you chose weekly or monthly. The results show the call details for each hour or day for the entire period that is shown in the from and to dates.

Field	Description
No.of Calls Presented/Received	Number of calls presented and received at the specified time duration/day. Number of calls received = Number of calls handled + Number of calls abandoned + Number of calls Forwarded due to no Answer + Number of calls Forwarded due to Busy + Number of calls Failed.
No.of Calls Handled/Answered	Number of calls answered.
No.of Calls Abandoned (Not Answered nor Redirected)	Number of calls that went on/off hook but were never connected or answered.
No.of Calls Forwarded due to no Answer (FONA)	Number of calls that were forwarded due to no reply.
No.of Calls Forwarded due to Busy (FOB)	Number of calls that were forwarded since the receiving end was busy.
No.of Calls Failed	Number of calls that failed to go through.
Hunt Pilot Name	Lists the name of the available Hunt Pilots.
Line Number	List the line numbers of the hunt members.

Figure 32: Hunt Pilot Summary Report, on page 163 displays sample output of the Hunt Pilot Summary report in PDF format.

Hunt Pilot Summary - Hour of Day

From Date:Nov 13, 2009
To Date:Nov 13, 2009

Date:Nov 13, 2009
Page:1 of 3

Time	No.of Calls Presented/Received	No.of Calls Handled/Answered	No.of Calls Abandoned(Not Answered nor Redirected)	No.of Calls Forwarded due to no Answer(FONA)	No.of Calls Forwarded due to Busy(FOB)	No.of Calls Failed
			5555			
00-01	0	0	0	0	0	0
01-02	0	0	0	0	0	0
02-03	0	0	0	0	0	0
03-04	0	0	0	0	0	0
04-05	0	0	0	0	0	0
05-06	0	0	0	0	0	0
06-07	0	0	0	0	0	0
07-08	0	0	0	0	0	0
08-09	0	0	0	0	0	0
09-10	0	0	0	0	0	0
10-11	0	0	0	0	0	0
11-12	2	2	0	0	0	0
12-13	0	0	0	0	0	0
13-14	0	0	0	0	0	0
14-15	0	0	0	0	0	0
15-16	0	0	0	0	0	0
16-17	0	0	0	0	0	0
17-18	0	0	0	0	0	0
18-19	0	0	0	0	0	0
19-20	0	0	0	0	0	0
20-21	0	0	0	0	0	0
21-22	0	0	0	0	0	0
22-23	0	0	0	0	0	0
23-00	0	0	0	0	0	0

Hunt Pilot Name	Line Number
5555	1001
	1002
Total number of MemberDns for 5555	2

277326

Hunt Pilot Detail Report Results

The Hunt Pilot Detail report includes the following fields. See the table.

Table 74: Hunt Pilot Detail Report Fields

Field	Description
Date/Time connected	Date and Time when the call was received
Date/Time disconnected	Date and Time when the call ended
Duration	Time duration of the call
Calling Party	Directory number (DN) of the caller

Field	Description
Called Party	Hunt Pilot Directory number (DN)
Final Called Party Number	Directory Number where the call landed in the end. If the call is landed in Hunt Pilot, then it will show its member DN. Suppose the call forward is set from member DN to some other DN, it will show that DN where the call got forwarded. The number of the hunt member is displayed only when the Show Line Group Member DN in finalCalledPartyNumber CDR Field is set to true. If the value is set to false, the Hunt Pilot DN is displayed in this field. For details on setting this parameter see, Service Parameters Configuration in Cisco Unified CM Administration Guide.
Dest. Device Name	Device identifier of the device that answered the call.
Call Answered	Indicates if the call was answered or not. Values could be Yes or No.
Call Abandoned	Indicates if the call was abandoned. Values could be Yes or No.
Call Forwarded Due to No Answer (FONA)	Indicates if the call was forwarded due to no reply. Values could be Yes or No.
Call Forwarded Due to Busy (FOB)	Indicates if the call was forwarded since the answering end was busy. Values could be Yes or No.
Call Failed	Indicates if the call failed to get through. Values could be Yes or No.
Call Reference	Identification number to trace the call. This is the globalcallid_callid value in the CDR database.

Figure 33: Hunt Pilot Details Report, on page 164 displays sample output of the Hunt Pilot Details report in the PDF format.

Figure 33: Hunt Pilot Details Report

Conference Call Detail Report Results

You can choose to generate Conference Call information in either a summary or a detailed report. The reports display the call details in a table when you generate the report in PDF format. The following tables show the fields in the Conference Call Detail and Summary reports. See the tables.

✎

Note   The report criteria include the type of conference (ad hoc and/or meet-me) and the From and To date range.

Table 75: Conference Call Detail Summary Report Fields

Field	Description
Orig. Time	Time that the first participant enters the conference.
Term. Time	Time that the last participant leaves the conference.
No. of Participants	Number of participants in the conference.
Duration	Sum of the duration of individual participants in the conference in seconds.
Device Name	Names of the conference devices that were used.

Table 76: Conference Call Detail Report Fields

Field	Description
Conference Start Time	Time at which conference started.
Conference End Time	Time at which conference ended.
Connect Time	Time at which conference participants connected to conference.
Disconnect Time	Time at which conference participants disconnected from conference.
Duration	Total time of conference.
Directory Number	Directory number of participants.
Call Classification	Call types of conference (internal, incoming, and so on.)
Device Name	Names of the conference devices that were used.
QoS	Quality of service.

Figure 34: Conference Call Details Summary Report, on page 166 displays sample output of the Conference Call Details Summary report in PDF format.

Figure 34: Conference Call Details Summary Report

Conference Bridge Utilization Report Results

The Conference Bridge Utilization report provides the following fields. If you choose PDF format, the report shows the utilization as a table. See the table.

Table 77: Conference Bridge Utilization Report Fields

Field	Description
Time/Day	Time in one-hour blocks if you chose Hourly or one-day blocks if you chose day of week or daily.
% Usage	Conference bridge utilization percentage.
Conf. Bridge	The conference bridge device that is used to hold conference calls.
Type	Either hardware or software conference bridge.
Max Streams	The number of conferences that can be held at a time along with the number of people per conference.

displays sample output of the Conference Bridge Utilization report in PDF format.

Figure 35: Conference Bridge Utilization Report

The Voice Messaging Utilization report provides the following fields. See the table.

Table 78: Voice Messaging Utilization Report Fields

Field	Description
Time/Day	Time in one-hour blocks if you chose Hourly or one-day blocks if you chose day of week or daily.
% Usage	Voice-messaging percentage.

Voice Messaging Utilization Report Results

Field	Description
Voice Messaging Ports	The sum of the maximum number of ports for all the gateways under the route patterns that are configured for the voice-messaging systems and the entries in the Device table of Unified Communications Manager that have type Class as 8.
Voice Messaging Gateways	The originating or destination device name of the gateways under the route patterns that are configured for the voice-messaging systems.
Number of Ports	The number of ports that the voice-messaging gateway supports.

Figure 36: Voice Messaging Utilization Report, on page 168 displays sample output of the Voice Messaging Utilization report in PDF format.

Figure 36: Voice Messaging Utilization Report
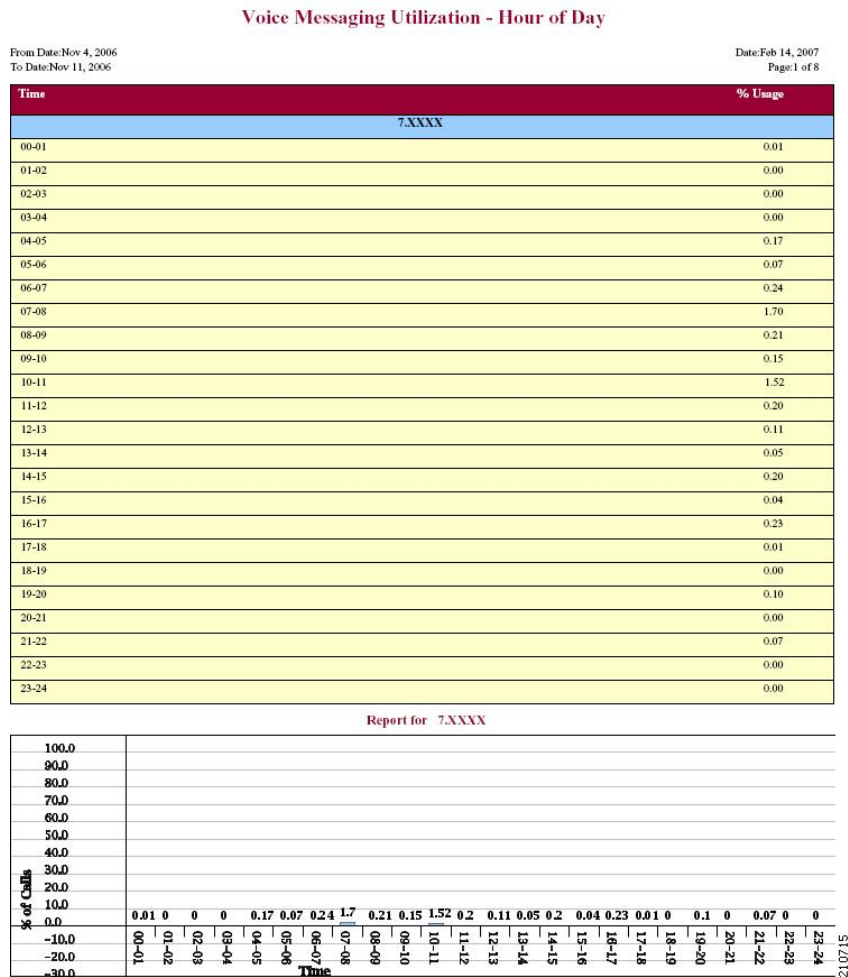
Trunk Utilization Report Results

The Trunk Utilization report provides the following fields. If you choose to display the report in PDF format, the report shows the utilization as a bar chart. A graph displays for each selected trunk. See the table.

Table 79: Trunk Utilization Report Fields

Field	Description
Time/Day	Time in one-hour blocks if you chose Hourly or one-day blocks if you chose weekly or monthly. The results show the utilization for each hour or day for the entire period that is shown in the from and to dates.
%	Trunk utilization percentage. This field gives the estimated utilization of the trunks relative to the total number of calls that passed through the devices.

Figure 37: Trunk Utilization Report Sample 1

Trunk Utilization - Hour of Day

From Date:Jul 1, 2010
To Date:Jul 1, 2010

Date:Jul 16, 2010
Page:1 of 10

Time	%
ICTNGC1	
00-01	0.00
01-02	0.00
02-03	100.00
03-04	0.00
04-05	0.00
05-06	0.00
06-07	0.00
07-08	0.00
08-09	0.00
09-10	0.00
10-11	0.00
11-12	100.00
12-13	100.00
13-14	100.00
14-15	0.00
15-16	0.00

Time	%
ICTNGC1	
16-17	0.00
17-18	0.00
18-19	0.00
19-20	0.00
20-21	0.00
21-22	0.00
22-23	0.00
23-00	0.00
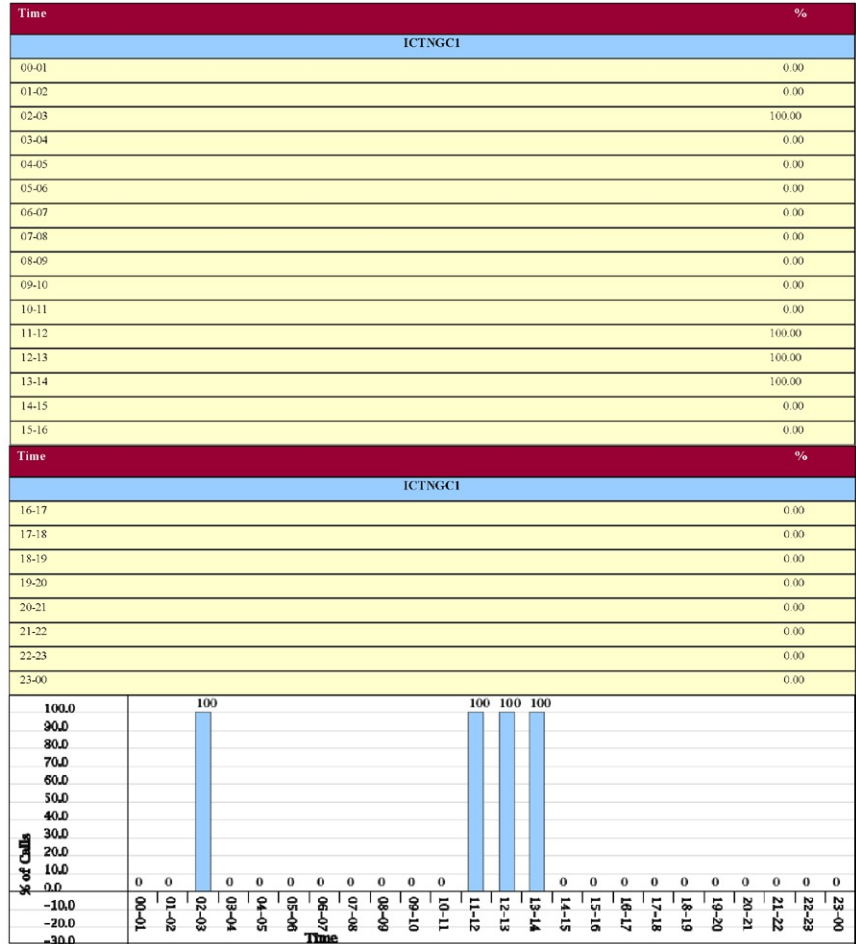
Figure 38: Trunk Utilization Report Sample 2

From Date:Jul 1, 2010
To Date:Jul 1, 2010

Date:Jul 16, 2010
Page:4 of 10

Time	%
ICTNGC2	
00-01	0.00
01-02	0.00
02-03	0.00
03-04	0.00
04-05	0.00
05-06	0.00
06-07	0.00
07-08	0.00
08-09	0.00
09-10	0.00
10-11	0.00
11-12	0.00
12-13	0.00
13-14	100.00
14-15	100.00
15-16	0.00
16-17	0.00
17-18	0.00
18-19	0.00

Time	%
ICTNGC2	
19-20	0.00
20-21	0.00
21-22	0.00
22-23	0.00
23-00	0.00
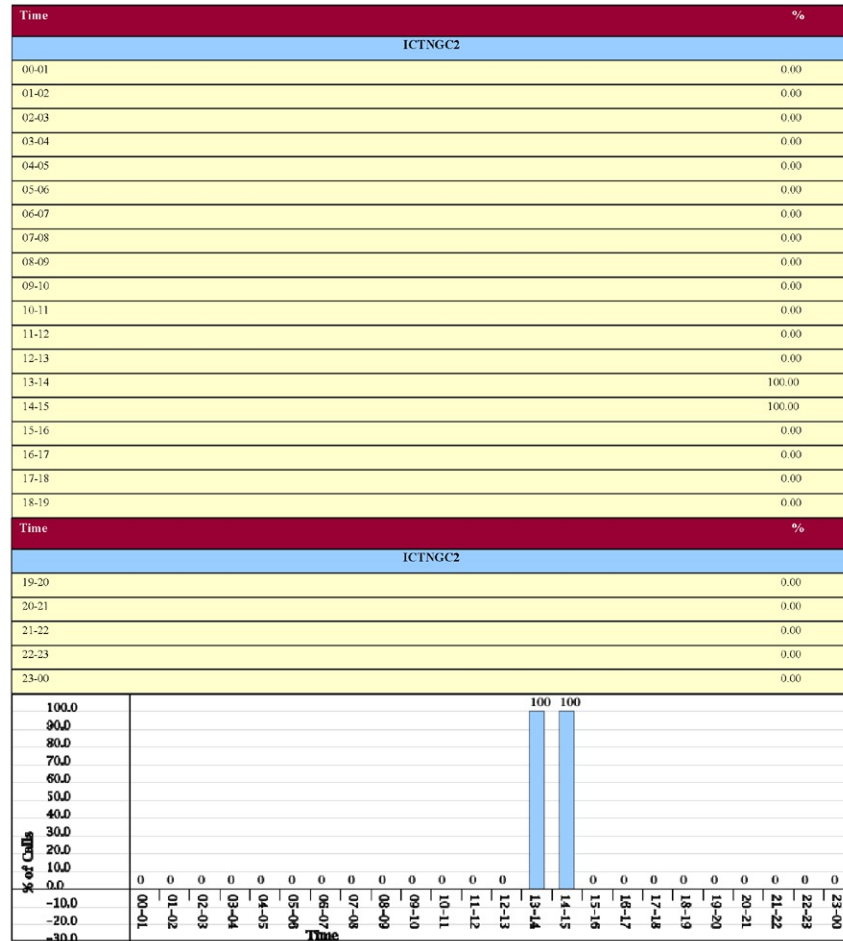
Figure 39: Trunk Utilization Report Sample 3

From Date:Jul 1, 2010
To Date:Jul 1, 2010

Date:Jul 16, 2010
Page:6 of 10

Time	%
SIP1	
00-01	0.00
01-02	0.00
02-03	0.00
03-04	0.00
04-05	0.00
05-06	0.00
06-07	0.00
07-08	0.00
08-09	0.00
09-10	0.00
10-11	0.00
11-12	0.00
12-13	0.00
13-14	0.00
14-15	0.00
15-16	0.00
16-17	0.00
17-18	0.00
18-19	0.00

Time	%
SIP1	
19-20	0.00
20-21	0.00
21-22	0.00
22-23	0.00
23-00	0.00
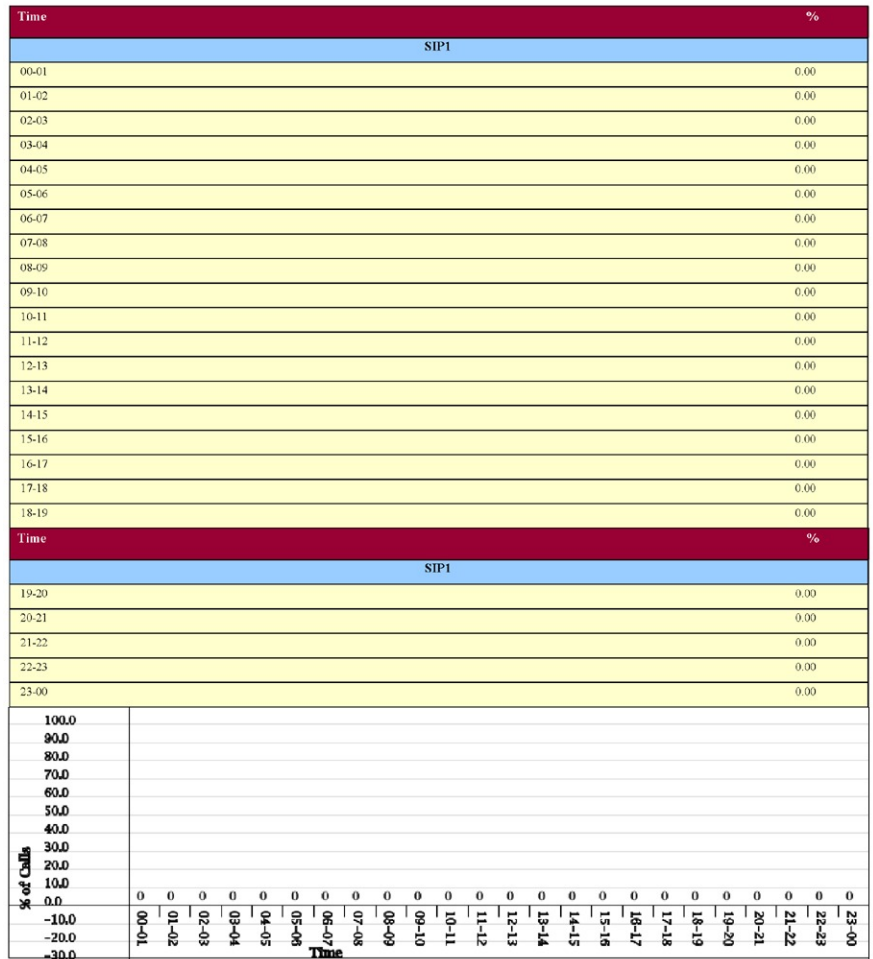
236183

Figure 40: Trunk Utilization Report Sample 4

From Date:Jul 1, 2010
To Date:Jul 1, 2010

Date:Jul 16, 2010
Page:8 of 10

Time	%
SIP2	
00-01	0.00
01-02	0.00
02-03	0.00
03-04	0.00
04-05	0.00
05-06	0.00
06-07	0.00
07-08	0.00
08-09	0.00
09-10	0.00
10-11	0.00
11-12	0.00
12-13	0.00
13-14	0.00
14-15	0.00
15-16	0.00
16-17	0.00
17-18	0.00
18-19	0.00

Time	%
SIP2	
19-20	0.00
20-21	0.00
21-22	0.00
22-23	0.00
23-00	0.00

Trunk Name {Port Number}	Max No. of Ports
SIP2	5
SIP1	5
ICTNGC1	5
ICTNGC2	5

236184
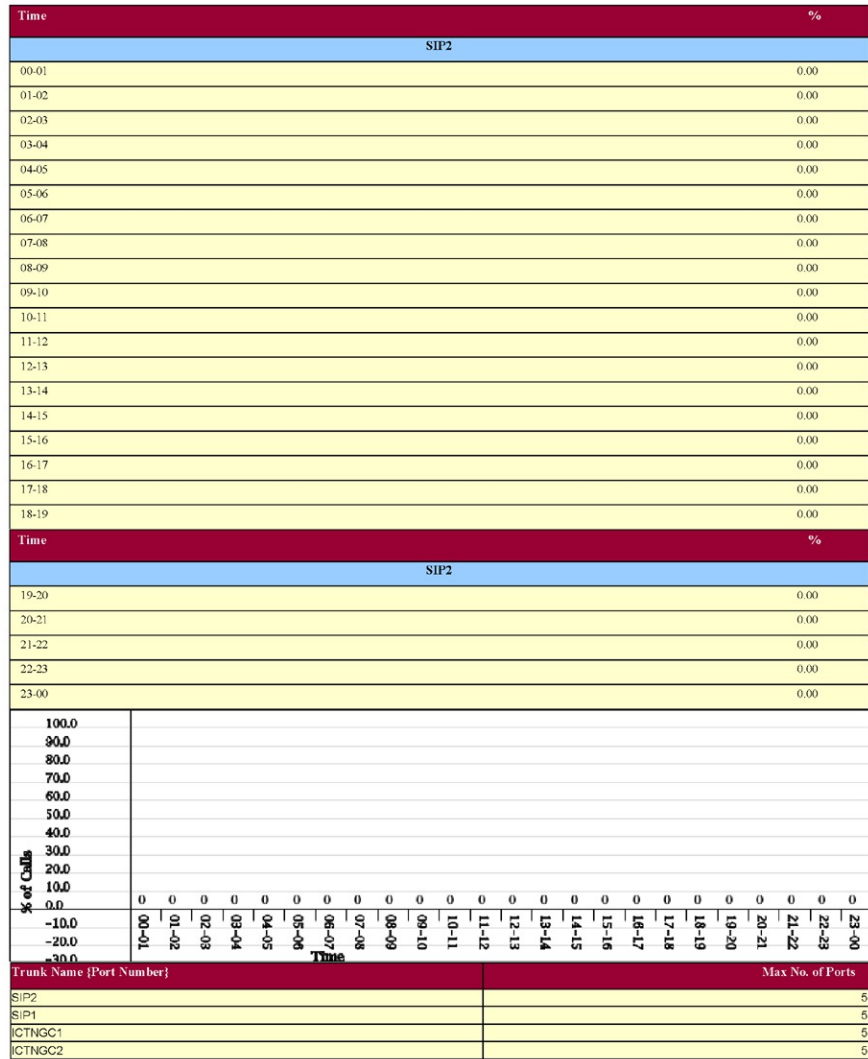
Export CDRs and CMRs

CDR and CMR Records

This chapter describes how to export CDR/CMR records and how to view the exported records.

Use Export CDR/CMR in the CDR menu in Cisco Unified Communications Manager CDR Analysis and Reporting to export CDR/CMR dump information to the location of your choice on your computer. The CDR/CMR dump exists in the CSV format. You can also view the dump of the exported records.

Export CDR and CMR Records

Follow this procedure to export CDR and CMR record results.

Procedure

Step 1   From CDR Analysis and Reporting, choose **CDR** > **Export CDR/CMR**.

The **Export CDR/CMR records** window appears.

Step 2   In the **From Date** and **To Date** drop-down list boxes, choose a date range for the CDR/CMR dump.

Step 3   In Select records, check the CDR records and/or CMR records check box.

Step 4   Click **Export to File**.

The **Export CDR/CMR records Result** window appears. See the View CDR and CMR Records Results, on page 175.

View CDR and CMR Records Results

The following procedure describes how to view Export CDR/CMR record results.

Before you begin

Before you begin the following procedure, perform all the steps in the .

Procedure

Step 1 From the Export CDR/CMR Record Results window, right-click either the **CDR Dump** or **CMR Dump** link.

A popup window that comprises the following options displays:

a) Open - This option allows you to open the window that contains the CDR/CMR dump in the same window.
b) Open in a New Window - This option allows you to open the window that contains the CDR/CMR dump in a new window.
c) Save Target As... - This option allows you to save the CDR/CMR dump to a location on your computer.
d) Print Target - This option allows you to print the CDR/CMR dump information.
e) Copy Shortcut - This option allows you to copy the window shortcut to paste in another file.
f) Add to Favorites - This option allows you to add the CDR/CMR dump to your Favorites folder.
g) Properties - This option provides the properties of the CDR/CMR dump file.

Step 2 From the pop-up window, choose one of the options.

Step 3 If you chose to save the CDR/CMR dump to your computer, choose a location in which to save the dump and click **Save**. After the download is complete, you can locate the file wherever you download it to open it.

Step 4 To delete the CDR and/or CMR dump, check **Delete File** check box and click **Back** or **Close**.

The files get deleted.

> **Note** If you do not check the Delete File check box(es) (for example, if the CDR or CMR dump files get left undeleted), the background process deletes the files daily. Because the CDR and CMR dump files are large, Cisco recommends that you download the file to a local disk and delete them from the server to avoid the disk usage on the server side.

CDR Data

Call detail records (CDRs) detail the called number, the number that places the call, the date and time that the call starts, the time that the call connects, and the time that the call ends. Call management records (CMRs), or diagnostic records, detail the jitter, lost packets, the amount of data sent and received during the call, and latency. CDR data comprises CDRs and CMRs collectively. A single call can result in the generation of several CDRs and CMRs. Unified Communications Manager records information regarding each call in CDRs and CMRs. CDRs and CMRs, known collectively as CDR data, serve as the basic information source for CAR.

The Cisco CDR Agent service transfers CDR and CMR files that Unified Communications Manager generates from the local host to the CDR repository node, where the CDR Repository Manager service runs over a SFTP connection. If the SFTP connection fails, the Cisco CDR Agent services continue to make connection attempts to the CDR repository node until a connection is made. The CiscoCDR Agent service sends any accumulated CDR files when the connection to the CDR Repository node resumes. The CDR Repository Manager service maintains the CDR and CMR files, allocates the amount of disk space for use by CMRs and CDRs, sends the files to up to three configured destinations, and tracks the delivery result for each destination. CAR accesses the CDR/CMR files in the directory structure that the CDR Repository Manager service creates.

The high and low water mark settings that you configure specify percentages of the total disk space that are allocated for the CDR repository. Although the preserved folder under the CDR repository folder contributes to the high and low water mark percentages, Log Partition Monitoring never deletes the folder if the high water mark gets reached. If the high water mark gets reached, the CDR Repository Manager deletes processed CDR files until the low water mark is reached or all processed files are deleted, whichever comes first. If all processed CDR files are deleted but the low water mark has not been reached, the deletion stops. The CDRHighWaterMarkExceeded alarm gets generated until the system reaches the maximum disk allocation. If the maximum disk allocation gets reached, the system deletes undelivered files, and files within the preservation duration, starting with the oldest files, until disk utilization falls below the high water mark. If you receive the CDRMaximumDiskSpaceExceeded alarm repeatedly for this scenario, either increase the disk allocation or lower the number of preservation days.

Note When the disk allocation usage exceeds the configured high water mark threshold value, LMP also purges the CDR and CMR data that are exported at the following path automatically: `/var/log/active/tomcat/logs/car/carreports/reports/ondemand/temp`.

Customers or any third-party applications should ensure to retrieve the exported files immediately to avoid losing their buffered historical data.

Information on these alarms is found in the CDR Repository Alarm Catalog (CDRRepAlarmCatalog). The following table displays the alarms and alerts in this catalog.

To configure these alarms, go to **Cisco Unified Serviceability** > **Alarm** > **Configuration** > **CDR Services**.

Table 80: CDR Repository Alarm Catalog

Name	Severity	Description
CDRFileDeliveryFailed	ERROR_ALARM	SFTP delivery of CDR files to the outside billing server failed.
CDRAgentSendFileFailed	ERROR_ALARM	The CDR Agent cannot send CDR files from the Cisco Unified CM node to the CDR Repository node within the Unified Communications Manager cluster.
CDRHWMExceeded	WARNING_ALARM	The high water mark (HWM) for CDR files was reached; some successfully delivered CDR files have been deleted.
CDRMaximumDiskSpaceExceeded	CRITICAL_ALARM	The CDR files disk usage exceeded the maximum disk allocation. Some undelivered files may have been deleted to bring disk usage down.
CDRFileDeliveryFailureContinues	ERROR_ALARM	SFTP delivery of CDR files failed on retries.

Name	Severity	Description
CDRAgentSendFileFailureContinues	ERROR_ALARM	The CDR Agent cannot send CDR files from the Cisco Unified CM node to the CDR Repository node on retries.

For additional information on these alarms and recommended action, see the alarm definitions at **Cisco Unified Serviceability** > **Alarm** > **Definitions** > **CDRRepAlarmCatalog**.

For more information on CDR services and alarms, see the *Cisco Unified Serviceability Administration Guide*.

CDR Search

In all CDR Search reports, the system only displays the oldest 100 records that fall into the time and date range that you configure. The CDR Search reports generate only in HTML format.

You can configure CDR searches to verify the details of a call. The search forms groups of all the related legs of a call, which can be useful if the call involves a conference or transfer. This method helps you track the progress and quality of each part of an entire call.

This section describes the following features:

- CDR Search by User/Phone Number/SIP URL - Available for CAR administrators. You can search CDRs by the user or directory number (calling, original called, final called, or bridge number) to analyze call details for the first 100 records that satisfy the search criteria. You can search for calls by using specific numbers for the period that you specify, which helps you trace calls that are placed from or to any specific numbers for diagnostic or informational purposes. All associated records, such as transfer and conference calls, appear together as a logical group. If you do not specify the phone number or SIP URL, the system returns the first 100 CDR records that match the date range that you specify.

- CDR Search by Gateway - Available for CAR administrators. You can search CDRs by gateways to analyze the call details of calls that are using specific gateways. This method helps you trace issues on calls through specific gateways.

- CDR Search by Cause for Call Termination - Available for CAR administrators. You can search CDRs by cause for call termination to get information about the cause for the termination of a call. You can choose from a list of causes for call termination and can generate the report for a particular date range. The generated report contains the report criteria, along with the total number of calls that were placed in the given time. In addition, a table displays with the fields Call Termination Cause Value and description, the total number of calls, and the percentage of calls for each Call Termination Cause, and an option to choose the CDRs.

- CDR Search by Call Precedence Level - Available for CAR administrators. You can search CDRs by call precedence level. The report that generates allows you to view the CDRs on the basis of precedence. You can choose the precedence level and date range for which to generate a report. The report displays the number of calls and the percentage of these calls for each precedence level that you choose. Report criteria display the precedence levels and date range for which the report-generated information in the Call Precedence Details window. You can view the media information and the CDR-CMR dump from the CDR Search by Precedence Levels Result window. The media information and CDR-CMR dump information display in separate windows.

- CDR Search for Malicious Calls - Available for CAR administrators. You can search for CDRs to get information about malicious calls. You can choose phone number or SIP URL and the date range for which to generate a report. The report displays the CDRs for all the malicious calls for a chosen phone number or SIP URL and date range. Report criteria display the phone number or SIP URL and the date range for which the report-generated information. You can view the media information and CDR-CMR dump from the CDR-CMR search results window. The media information and CDR-CMR dump information display in separate windows.

- Export CDR/CMR - Available for CAR administrators. With this feature, you can export CDR/CMR dump information, for a given date range in the CSV format, to a location that you choose on your computer. You can also view the file size of the dump information and delete CDR/CMR files.

Note CAR provides reporting capabilities for three levels of users: administrators, managers, and individual users. However, only CAR administrators can use CDR Search.

Before You Begin

Make sure that you set the Unified Communications Manager service parameters CDR Enabled Flag and Call Diagnostics Enabled to **True** (enabled), so the system can generate CDR/CMR data. By default, the system disables these service parameters. For more information about these service parameters, see the Configure CDR Service Parameters, on page 24.

All CAR reports use CDR data. Be sure to have the most current CDR data from which to build your reports. By default, CDR data loads continuously 24 hours a day, 7 days a week. However, you can set the loading time, interval, and duration as needed. For more information, see Set Up CDR Load Schedule, on page 36.

Note After you log in to the CAR main window, the following warning may display if Unified Communications Manager is also activated: "Warning: In some servers in this cluster the CDR Enabled Flag is false and so CDR entries may not be generated for all the calls that are made in this cluster." Some clusters have multiple nodes where some of the nodes do not run Unified Communications Manager services. This warning checks all nodes in the cluster regardless of Unified Communications Manager service activation status. Ignore the warning after manually checking the CDR Enabled Flag parameter settings for all the Unified Communications Manager service subscribers.

Generate CDR Search by User

Only CAR administrators use the CDR Search by User/Phone Number/SIP URL feature.

This section describes how to show the details of CDR data based on a user or phone number or SIP URL feature. You can search CDR data by user or directory number (calling, original called, or final called) to analyze call details for the oldest 100 records that satisfy the search criteria. If more than 100 records are returned, the system truncates the results. You can search for calls by using specific numbers for the period that you specify, which helps you trace calls that are placed from or to any specific numbers for diagnostic or informational purposes. All associated records, such as transfer, mobility, silent monitoring and recording, and conference calls, appear together as a logical group.

Procedure

Step 1   Choose **CDR > Search > By User/Phone Number/SIP URL**.

The CDR Search window displays.

Note	You can enter a wildcard pattern like "!" or "X" to search on phone number or SIP URL. The "!" represents any n digit that has 0-9 as each of its digits, and the "X" represents a single digit in the range 0-9.

Step 2   Perform one of the following tasks:

a)   To search CDRs based on Internal Phone Number/SIP URLs, enter the value in the Phone Number/SIP URL field and click **Add Phone Number/SIP URL**.

b)   To search CDRs based on user, click the **Search Internal Phone Number/SIP URL based User** link, enter the first few letters of the first and/or the last name in the First Name and/or the Last Name fields, and click **Search**. When the results display, click the **Select** link next to the result that you want to include. Click **Close**.

The phone number or SIP URL displays in the Phone Number/SIP URL(s) box.

Note	To delete an item from the Report Criteria box, click **Remove Phone Number/SIP URL(s)**. You can delete all items from the Report Criteria box by clicking **Remove All Phone Number/SIP URL(s)** .

Step 3   Choose the date and time range of the period for which you want to see CDR data for the specified user or phone number or SIP URL. The current time displays in both Coordinated Universal Time (UTC) and local time and uses the following rules:

a)   The UTC and local time comprise a numeric string of mmddyyyy hhmmss, as in January 15, 2007 12:00:00.

b)   The default FromDate and ToDate values display in UTC time.

c)   The default ToDate specifies the current time of the server in UTC time.

d)   The default FromDate value specifies the ToDate value minus 1hour. For example, if ToDate = January 15, 2007 12:00:00, the FromDate default value = January 15, 2007 11:00:00 (all times in UTC).

Step 4   Choose whether to run the CDR Search report with grouping or without grouping. If you choose with grouping, check the check box beside **With Grouping**. The default value specifies Without Grouping.

Note	With Grouping choice means that the system returns CDR records that match the date and time range for the search, and groups them with their associated records. Without Grouping returns all the CDR records that match the date and time range without grouping all the associated records for each call.

Step 5   Click **OK**.

The CDR-CMR Search Results window displays. The system only displays the oldest 100 records that fall into the date range that you configured in Step 3, on page 180.

Step 6   To view the CMR data, click **Others**. To view both the CDR and CMR data fields, click **View**.

Step 7   To mail the report to e-mail recipient(s), follow the steps in the Mail Reports, on page 61.

Generate CDR Search by Gateway

Only CAR administrators use the CDR Search by Gateway feature.

This section describes how to search CDR data based on a specific gateway type or on those gateways that use a chosen route pattern.

Procedure

Step 1   Choose **CDR > Search > By Gateway**.

The CDR Search by Gateway window displays.

Step 2   Perform one of the following tasks:

    a)   To display all the gateways that are configured in the system, click **Gateway Types** in the Gateway Types and Route Patterns pane.

    b)   To expand the tree structure and display the type of gateway from which you can choose, click the icon next to Gateway types.

    c)   To choose a gateway that uses a particular route pattern/hunt pilot, rather than a gateway type, click **Route Patterns/Hunt Pilots** in the Gateway Types and Route Patterns pane. The gateways that are associated with the configured Route Patterns/Hunt Pilots display.

    d)   To expand the tree structure and display route pattern/hunt pilot for you to choose, click the icon next to Route Patterns/Hunt Pilots.

       Note   You can also search for specific route patterns/hunt lists by entering part of the name of the route pattern(s)/hunt pilot(s) in the Route Patterns/Hunt Pilots box in the column on the left side of the window. CAR searches for the route pattern(s)/hunt list(s) that matches the search string.

Step 3   Choose a gateway type from the list.

The gateway name displays in the List of Gateways box.

       Note   The List of Gateways box displays up to 200 gateways that are configured for the chosen gateway type.

Step 4   In the List of Gateways box, choose the gateways that you want to include in the report.

       Note   You can generate a report for up to 15 gateways at a time. If you choose more than 15 gateways, you will receive a message that states "Select 15 or fewer gateways to generate new report."

Step 5   To move the chosen gateway to the list of Selected Gateways box, click the down arrow.

The gateway that you chose displays in the Selected Gateways box.

Step 6   Choose the date and time range of the period during which you want to search for CDR data. The current time displays in both Coordinated Universal Time (UTC) and local time and uses the following rules:

    a)   The UTC and local time comprise a numeric string of mmddyyyy hhmmss, as in January 15, 2007 12:00:00.

    b)   The default FromDate and ToDate values display in UTC time.

    c)   The default ToDate specifies the current time of the server in UTC time.

    d)   The default FromDate value specifies the ToDate value minus 1hour. For example, if ToDate = January 15, 2007 12:00:00, the FromDate default value = January 15, 2007 11:00:00 (all times in UTC).

Step 7   Choose whether to run the CDR Search report with grouping or without grouping. If you chose with grouping, check the check box beside **With Grouping**. The default specifies Without Grouping.

> **Note**   With Grouping choice means that the system returns CDR records that match the date and time range for the search, and groups them with their associated records. Without Grouping returns all the CDR records that match the date and time range without grouping all the associated records for each call.

Step 8   Click **OK**.

The CDR-CMR Results window displays. The system only displays the oldest 100 records that fall into the date and time range that you configured in Step 6, on page 181. If more than 100 records are returned, the system truncates the results.

Step 9   To view the CMR data, click **Others** . To view both the CDR and CMR data fields, click **View**.

Step 10   To mail the report to e-mail recipient(s), follow the steps in the Mail Reports, on page 61.

Generate CDR Search by Cause for Call Termination

Only CAR administrators use the CDR Search by Cause for Call Termination feature. The following tables contain the call termination cause codes by which you may search.

Table 81: Call Termination Cause Codes

Code	Description
0	No error
1	Unallocated (unassigned) number
2	No route to specified transit network (national use)
3	No route to destination
4	Send special information tone
5	Misdialed trunk prefix (national use)
6	Channel unacceptable
7	Call awarded and being delivered in an established channel
8	Preemption
9	Preemption - circuit reserved for reuse
16	Normal call clearing
17	User busy
18	No user responding
19	No answer from user (user alerted)

Code	Description
20	Subscriber absent
21	Call rejected
22	Number changed
26	Non-selected user clearing
27	Destination out of order
28	Invalid number format (address incomplete)
29	Facility rejected
30	Response to STATUS ENQUIRY
31	Normal, unspecified
34	No circuit/channel available
38	Network out of order
39	Permanent frame mode connection out of service
40	Permanent frame mode connection operational
41	Temporary failure
42	Switching equipment congestion
43	Access information discarded
44	Requested circuit/channel not available
46	Precedence call blocked
47	Resource unavailable, unspecified
49	Quality of Service not available
50	Requested facility not subscribed
53	Service operation violated
54	Incoming calls barred
55	Incoming calls barred within Closed User Group (CUG)
57	Bearer capability not authorized
58	Bearer capability not presently available
62	Inconsistency in designated outgoing access information and subscriber class
63	Service or option not available, unspecified

Code	Description
65	Bearer capability not implemented
66	Channel type not implemented
69	Requested facility not implemented
70	Only restricted digital information bearer capability is available (national use)
79	Service or option not implemented, unspecified
81	Invalid call reference value
82	Identified channel does not exist
83	A suspended call exists, but this call identity does not
84	Call identity in use
85	No call suspended
86	Call having the requested call identity has been cleared
87	User not member of CUG (Closed User Group)
88	Incompatible destination
90	Destination number missing and DC not subscribed
91	Invalid transit network selection (national use)
95	Invalid message, unspecified
96	Mandatory information element is missing
97	Message type nonexistent or not implemented
98	Message is not compatible with the call state, or the message type is nonexistent or not implemented
99	An information element or parameter does not exist or is not implemented
100	Invalid information element contents
101	The message is not compatible with the call state
102	Call terminated when timer expired; a recovery routine executed to recover from the error
103	Parameter nonexistent or not implemented - passed on (national use)
110	Message with unrecognized parameter discarded
111	Protocol error, unspecified
122	Precedence Level Exceeded

Code	Description
123	Device not Preemptable
125	Out of bandwidth (Cisco specific)
126	Call split (Cisco specific)
127	Interworking, unspecified
129	Precedence out of bandwidth

Table 82: Cisco-Specific Call Termination Cause Codes

Decimal Value Code	Hex Value Code	Description
262144	0x40000	Conference Full (was 124)
393216	0x60000	Call split (was 126) This code applies when a call terminates during a transfer operation because it was split off and terminated (was not part of the final transferred call). This can help determine which calls terminated as part of a feature operation.
458752	0x70000	Conference drop any party/Conference drop last party (was 128)
16777257	0x1000029	CCM_SIP_400_BAD_REQUEST
33554453	0x2000015	CCM_SIP_401_UNAUTHORIZED
50331669	0x3000015	CCM_SIP_402_PAYMENT_REQUIRED
67108885	0x4000015	CCM_SIP_403_FORBIDDEN
83886081	0x5000001	CCM_SIP_404_NOT_FOUND
100663359	0x600003F	CCM_SIP_405_METHOD_NOT_ALLOWED
117440591	0x700004F	CCM_SIP_406_NOT_ACCEPTABLE
134217749	0x8000015	CCM_SIP_407_PROXY_AUTHENTICATION_REQUIRED
150995046	0x9000066	CCM_SIP_408_REQUEST_TIMEOUT
184549398	0xB000016	CCM_SIP__410_GONE
201326719	0xC00007F	CCM_SIP_411_LENGTH_REQUIRED
234881151	0xE00007F	CCM_SIP_413_REQUEST_ENTITY_TOO_LONG
251658367	0xF00007F	CCM_SIP_414_REQUEST_URI_TOO_LONG
268435535	0x1000004F	CCM_SIP_415_UNSUPPORTED_MEDIA_TYPE
285212799	0x1100007F	CCM_SIP_416_UNSUPPORTED_URI_SCHEME

Decimal Value Code	Hex Value Code	Description
83886207	0x1500007F	CCM_SIP_420_BAD_EXTENSION
369098879	0x1600007F	CCM_SIP_421_EXTENSION_REQUIRED
402653311	0x1800007F	CCM_SIP_423_INTERVAL_TOO_BRIEF
419430421	0x19000015	CCM_SIP_424_BAD_LOCATION_INFO
1073741842	0x40000012	CCM_SIP_480_TEMPORARILY_UNAVAILABLE
1090519081	0x41000029	CCM_SIP_481_CALL_LEG_DOES_NOT_EXIST
1107296281	0x42000019	CCM_SIP_482_LOOP_DETECTED = 0x42000000 + EXCHANGE_ROUTING_ERROR
1124073497	0x43000019	CCM_SIP_483_TOO_MANY_HOOPS
1140850716	0x4400001C	CCM_SIP_484_ADDRESS_INCOMPLETE
1157627905	0x45000001	CCM_SIP_485_AMBIGUOUS
1174405137	0x46000011	CCM_SIP_486_BUSY_HERE
1191182367	0x4700001F	CCM_SIP_487_REQUEST_TERMINATED
1207959583	0x4800001F	CCM_SIP_488_NOT_ACCEPTABLE_HERE
1258291217	0x4B000011	CCM_SIP_491_REQUEST_PENDING
1291845649	0x4D000011	CCM_SIP_493_UNDECIPHERABLE
1409286185	0x54000029	CCM_SIP_500_SERVER_INTERNAL_ERROR
1442840614	0x56000026	CCM_SIP_502_BAD_GATEWAY
1459617833	0x57000029	CCM_SIP_503_SERVICE_UNAVAILABLE
-1493172161	0xA700003F	CCM_SIP_503_SERVICE_UNAVAILABLE_SER_OPTION_NOAVAIL
1476395110	0x58000066	CCM_SIP__504_SERVER_TIME_OUT
1493172351	0x5900007F	CCM_SIP_505_SIP_VERSION_NOT_SUPPORTED
1509949567	0x5A00007F	CCM_SIP_513_MESSAGE_TOO_LARGE
2701131793	0xA1000011	CCM_SIP_600_BUSY_EVERYWHERE
2717909013	0xA2000015	CCM_SIP_603_DECLINE
2734686209	0xA3000001	CCM_SIP_604_DOES_NOT_EXIST_ANYWHERE
2751463455	0xA400001F	CCM_SIP_606_NOT_ACCEPTABLE

This section describes how to search for information about the cause for termination of a call.

Procedure

Step 1 Choose **CDR** > **Search** > **By Cause for Call Termination**.

The Cause for Call Termination window displays.

Step 2 To search for the cause(s) of the termination of a call, highlight the cause(s) in the list of call termination causes.

> **Tip** You can select more than one cause by clicking the causes that you want while holding down the Ctrl key on your keyboard. You can also select all causes in the list by holding down the Shift key while clicking all causes.

Step 3 With the desired cause(s) highlighted, click the down arrow above the Selected Call Termination Causes box.

The cause(s) that you selected displays in the Selected Call Termination Causes list box.

> **Note** To view a complete list of Call Termination Causes, see the "Call Termination Cause Codes" section in the Cisco Unified Communications Manager Call Detail Records Administration Guide.

Step 4 Choose the date and time range of the period during which you want to search CDR data. When you configure the time range, use UTC.

Step 5 Choose whether to run the CDR Search report with grouping or without grouping. If you chose with grouping, check the box beside **With Grouping**. The default specifies Without Grouping.

> **Note** With Grouping choice means that the system returns CDR records that match the date and time range for the search and groups them with their associated records. Without Grouping returns all the CDR records that match the date and time range without grouping all the associated records for each call.

Step 6 Click **OK**.

The Call Termination Details window displays the report criteria for which the report was generated, along with the total number of calls that were placed during the given time range as well as how many call legs and the percentage of call legs for each cause code that is selected. The system displays only the oldest 100 records that fall into the date and time ranges that you configured in Step 4, on page 187. If more than 100 records are returned, the system truncates the results.

Step 7 To view CDRs, see the View Call Termination Details, on page 187.

View Call Termination Details

This section describes how to view the call termination details.

Before you begin

Follow the steps in the Generate CDR Search by Cause for Call Termination, on page 182 to display the Call Termination Details window.

Procedure

Step 1   In the Select CDRs field, check the check box beside the individual CDRs that you want to view or if you want to view all CDRs in the list, check the **Select CDRs** check box.

Step 2   After you have chosen the CDRs that you want to view, click **View CDRs**.

The CDR-CMR Search Results window displays.

To view the media information and the CDR-CMR dump records, click **Others** and **View** links.

Step 3   To print information that displays on the window, click **Edit** in your browser. Right-click **Select All** to highlight the section of the report that you want to print. Click **Print**.

Step 4   To mail the report in an e-mail, click **Send Report** and follow the procedure that is described in the Mail Reports, on page 61.

Generate CDR Search by Call Precedence

Only CAR administrators use the CDR Search by Call Precedence Levels feature.

This section describes how to search for calls according to call precedence.

Procedure

Step 1   Choose **CDR** > **Search** > **By Call Precedence Level**.

The CDR Search by Precedence Levels window displays.

Step 2   In **Select Precedence Levels**, check the check boxes for the call precedence levels on which you want to search as described in the following table.

Table 83: Call Precedence Levels

Voice Quality	Description
Flash Override	Highest precedence setting for MLPP calls.
Flash	Second highest precedence setting for MLPP calls.
Immediate	Third highest precedence setting for MLPP calls.
Priority	Fourth highest precedence setting for MLPP calls.
Routine	Lowest precedence setting for MLPP calls.

Note   The Executive Override precedence level that is mentioned in the MLPP Precedence level on the Administration page will be considered as Flash Override in this report.

Note   To check the check boxes of every precedence level, click **Select All**. To clear the check boxes, click **Clear All**.

Step 3 In the **From Date** field, choose the date and time from which you want CDRs searched. The current time displays in both Coordinated Universal Time (UTC) and local time and uses the following rules:

a) The UTC and local time comprise a numeric string of mmddyyyy hhmmss, as in January 15, 2007 12:00:00.

b) The default FromDate and ToDate values display in UTC time.

c) The default ToDate specifies the current time of the server in UTC time.

d) The default FromDate value specifies the ToDate value minus 1hour. For example, if ToDate = January 15, 2007 12:00:00, then the FromDate default value = January 15, 2007 11:00:00 (all times in UTC).

Step 4 In the **To Date** field, choose the date and time to which you want CDRs searched.

Step 5 Choose whether to run the CDR Search report With Grouping or Without Grouping. If you chose. With Grouping, check the check box beside **With Grouping**. The default value specifies Without Grouping.

> **Note** With Grouping, choice means that the system returns CDR records that match the date and time range for the search and groups them with their associated records. Without Grouping returns all the CDR records that match the date and time range without grouping all the associated records for each call.

Step 6 Click **OK**.

The Call Precedence Details window displays and shows the call precedence levels and values, number of call legs, and percentage of call legs.

Step 7 In the Select CDRs column, check the check boxes of the CDRs at which you want to look.

Step 8 Click **View CDRs**.

The CDR-CMR Search by Precedence Levels - CDR-CMR Search Results window displays. The system displays only the oldest 100 records that fall into the date and time ranges that you configured in Step 3, on page 189 and Step 3, on page 189Step 4, on page 189. If more than 100 records are returned, the system truncates the results.

Step 9 To view the CMR data, click **Others**. To view both the CDR and CMR data fields, click **View**.

Step 10 To mail the report to e-mail recipient, click **Send Report** and follow the steps in the Mail Reports, on page 61.

Generate CDR Search for Malicious Calls

Only CAR administrators use the CDR Search for Malicious Calls feature.

This section describes how to search for malicious calls.

Procedure

Step 1 Choose **CDR > Search > Malicious Calls**.

The CDR Search for Malicious Calls window displays.

Step 2 Perform one of the following tasks:

a) In the Select Phone Number/SIP URL(s) box, enter the phone number or SIP URL in the Phone Number/SIP URL field and click **Add Phone Number/SIP URL**.

The phone number or SIP URL of the user displays in the Selected Phone Number/SIP URL(s) box.

b) To search for a user phone number or SIP URL, click the **Search Internal Phone Number/SIP URL based User** link, enter the first few letters of the first and/or last name in the First Name and/or Last Name fields, and click the **Search** button. When the results display, click the **Select** link next to the result that you want to include. The phone number or SIP URL of the user displays in the Selected Phone Number/SIP URLs box. Click **Close**.

> **Note** To remove the phone number or SIP URL, highlight the phone number or SIP URL that you want to remove and click **Remove Phone Number/SIP URL(s)**. To remove all phone numbers or SIP URL(s), click **Remove All Phone Number/SIP URL(s)**.

Step 3 Choose the date and time range of the period when you want to search for CDR data. The current time displays in both Coordinated Universal Time (UTC) and local time and uses the following rules:

a) The UTC and local time comprise a numeric string of mmddyyyy hhmmss, as in January 15, 2007 12:00:00.
b) The default FromDate and ToDate values display in UTC time.
c) The default ToDate specifies the current time of the server in UTC time.
d) The default FromDate value specifies the ToDate value minus 1hour. For example, if ToDate = January 15, 2007 12:00:00, then the FromDate default value = January 15, 2007 11:00:00 (all times in UTC).

Step 4 Choose whether to run the CDR Search report With Grouping or Without Grouping. If you chose with grouping, check the box beside **With Grouping**. The default value specifies Without Grouping

> **Note** With Grouping means that the system returns CDR records that match the date and time range for the search and groups them with their associated records. Without Grouping returns all the CDR records that match the date and time range without grouping all the associated records for each call together.

Step 5 Click **OK**.

The CDR-CMR Search Results window displays. The system only displays the oldest 100 records that fall into the date and time ranges that you configured in Step 3, on page 190. If more than 100 records are returned, the system truncates the results.

Step 6 To view the CMR data, click **Others**. To view both the CDR and CMR data fields, click **View**.

Step 7 To mail the report to e-mail recipients, follow the steps in the Mail Reports, on page 61.

Generate CDR Search for Call Types

Only CAR administrators use the CDR Search for Different Call Types feature.

This section describes how to search for different call types.

Procedure

Step 1 Choose **CDR** > **Search** > **By Call Types**.

The CDR Search for Different Call Types window displays.

Note	You can enter a wildcard pattern like "!" or "X" to search on phone number or SIP URL. The "!" represents any n digit that has 0-9 as each of its digits, and the "X" represents a single digit in the range 0-9.

Step 2 Choose the call type from the **Select Call Type** drop down list.

The following is a list of the call types:

- **Successful IME Call**: Calls that were successfully routed through IME trunks.

- **Failed IME Calls**: Calls that tried to route through the IME trunk, but failed.

- **IME Calls with Fallback to Alternate Route**: Calls which were initially routed through the IME trunk, but due to some reason (for example, poor QoS), the fallback mechanism was initiated and these calls were re-routed mid-call to an alternate route. The alternate route is typically a PSTN route.

- **Successful Fallback Calls to Alternate Route**: Calls which successfully fell back to the alternate route. The alternate route is typically a PSTN route.

- **Failed Fallback Calls to Alternate Route**: Calls which failed to fall back to the alternate route.

- **Calls on Alternate Route due to IME Redirection**: Calls that tried to route (at call setup) to IME, but for some reason were routed to an alternate route. The alternate route is typically a PSTN route.

Step 3 Perform one of the following tasks:

a) To search CDRs based on phone numbers/SIP URLs, enter the phone number or SIP URL in the Phone Number/SIP URL field and click **Add Phone Number/SIP URL** .

b) To search CDRs based on user, click the **Search Internal Phone Number/SIP URL based User** link, enter the first few letters of the first and/or the last name in the First Name and/or Last Name fields, and click **Search**. When the results display, click the **Select** link next to the result that you want to include. Click **Close**.

The phone number or SIP URL displays in the Selected Phone Number/SIP URL(s) box.

Note	To delete an item from the Report Criteria box, click the **Remove Phone Number/SIP URL(s)** button. You can delete all items from the Report Criteria box by clicking the **Remove All Phone Number/SIP URL(s)** .

Step 4 Current time displays in both Coordinated Universal Time (UTC) and local time. The UTC and local time comprise a numeric string of mmddyyyy hhmmss, as in January 15, 2007 12:00:00.

Step 5 From the **Select TimeZone** field, choose the time zone that you want to use to search the CDRs. Options include your local time zone and Greenwich Mean Time (GMT).

Step 6 In the **From Date** field and the **To Date** field, choose the date and time from and to which you want to search the CDRs, respectively. The times in the From and To fields use the following rules:

a) The default FromDate and ToDate values display in UTC time.

b) The default ToDate specifies the current time of the server in UTC time.

c) The default FromDate value specifies the ToDate value minus 1hour. For example, if ToDate = January 15, 2007 12:00:00, then the FromDate default value = January 15, 2007 11:00:00 (all times in UTC).

Step 7 Click **OK**.

The CDR-CMR Search Results window displays. The system displays only the oldest 100 records that fall into the date and time ranges that you configured in Step 3 and Step 4. If more than 100 records are returned, the system truncates the results.

Step 8   To view the CMR data, click **Others**. To view both the CDR and CMR data fields, click **View**.

Step 9   To mail the report to e-mail recipient(s), click **Send Report** and follow the steps in the Mail Reports, on page 61.

CDR Search Results

The CDR search allows users to view the CDR/CMR fields as described in the table. The CDR search retrieves the CDR/CMR files from the tbl_billing_data and tbl_billing_error tables of the CAR database.

See the following table.

Table 84: CDR Search Results

Field	Description
Sl No	Specifies the serial or record number.
Call Type	Specifies the type of call: simple, transfer, forward, pickup, conference, refer, replaces, or redirection.
GCID_CMIdGCID_CallId	Specifies the call identifiers that are associated with all the records for the entire call.
Orig Node IdDest Node Id	Specifies the server where the call originator/destination was registered at the time of the call.
Orig Leg IdDest Leg Id	Specifies the unique identifiers to the originating/destination leg of a call.
Calling NoCalling No Partition	The calling number specifies the directory number where the call originated. The calling partition specifies the partition that is associated with the calling party.
Called NoCalled No Partition	The called number specifies the directory number from which the call was initially placed and is the same as the Dest No when the call is not transferred or forwarded. The called partition specifies the partition that is associated with the called party.
Dest NoDest No Partition	The destination number specifies the directory number where the call finally terminated and is the same as the called number when the call is not transferred or forwarded. The destination number partition specifies the partition that is associated with the destination number.

Field	Description
Last Rd NoLast Rd No Partition	The last redirected number specifies the directory number from which the call was finally redirected. The last redirected number partition specifies the partition that is associated with the last redirected number.
Media InfoOrig Pkts Rcd Dest Pkts Rcd Orig Pkts Lost Dest Pkts Lost	Specifies the packets that were received or lost for the origination or destination leg of a call and a link to the media information.
CDR - CMR Dump	Specifies a link to the CDR and CDR dump tables. This link allows the users to view the values in the CDR/CMR fields.

Media Information

The media information table provides the following information. See the table.

Table 85: CDR Media Information

Field	Description
Origination Leg	A unique identifier for the originating leg of a call.
Destination Leg	A unique identifier for the destination leg of a call.
Parameter	The media parameters MediaTransportAdd_Ip, PayLoadCapability, MediaCap_g723BitRate, Packets Sent, Octets Sent, Packets Received, Octets Received, Packets Lost, Jitter, Latency, QoS, VideoCap_Codec, VideoCap_Bandwidth, VideoCap_Resolution, VideoTransportAddress_IP, and VideoTransportAddress_Port
Origination	The value for all the preceding parameters for the origination leg of the call.
Destination	The value for all the preceding parameters for the destination leg of the call.

CDR and CMR Dump Tables

The CDR and CMR dump tables provide the following information. See the following table.

Note You can view the content of the voice quality metrics field, varVQMetrics, in the Origination CMR and Destination CMR fields.

Table 86: CDR and CMR Dump Tables

Field	Description
CDR	This field specifies the call detail record fields.
Origination CMR	Only a single set of fields for origination and destination exists. You can find the origination or destination CMR by using the leg IDs. If the leg IDs of the CMR match the Orig/Dest leg ID of the CDR, the following record represents Orig/Dest CMR.
Destination CMR	Only a single set of fields for origination and destination exists. You can find the origination or destination CMR by using the leg IDs. If the leg IDs of the CMR match the Orig/Dest leg ID of the CDR, the following record represents Orig/Dest CMR.

The following example displays output from a CDR dump file:

Sample CDR Dump File Output

cdrRecordType, globalCallID_callManagerId, globalCallID_callId, origLegCallIdentifier, dateTimeOrigination, origNodeId, origSpan, origIpAddr, callingPartyNumber, callingPartyUnicodeLoginUserID, origCause_location, origCause_value, origPrecedenceLevel, origMediaTransportAddress_IP, origMediaTransportAddress_Port, origMediaCap_payloadCapability, origMediaCap_maxFramesPerPacket, origMediaCap_g723BitRate, origVideoCap_Codec, origVideoCap_Bandwidth, origVideoCap_Resolution, origVideoTransportAddress_IP, origVideoTransportAddress_Port, origRSVPAudioStat, origRSVPVideoStat, destLegIdentifier, destNodeId, destSpan, destIpAddr, originalCalledPartyNumber, finalCalledPartyNumber, finalCalledPartyUnicodeLoginUserID, destCause_location, destCause_value, destPrecedenceLevel, destMediaTransportAddress_IP, destMediaTransportAddress_Port, destMediaCap_payloadCapability, destMediaCap_maxFramesPerPacket, destMediaCap_g723BitRate, destVideoCap_Codec, destVideoCap_Bandwidth, destVideoCap_Resolution, destVideoTransportAddress_IP, destVideoTransportAddress_Port, destRSVPAudioStat, destRSVPVideoStat, dateTimeConnect, dateTimeDisconnect, lastRedirectDn, pkid, originalCalledPartyNumberPartition, callingPartyNumberPartition, finalCalledPartyNumberPartition, lastRedirectDnPartition, duration, origDeviceName, destDeviceName, origCallTerminationOnBehalfOf, destCallTerminationOnBehalfOf, origCalledPartyRedirectOnBehalfOf, lastRedirectRedirectOnBehalfOf, origCalledPartyRedirectReason, lastRedirectRedirectReason, destConversationId, globalCallId_ClusterID, joinOnBehalfOf, comment, authCodeDescription, authorizationLevel, clientMatterCode, origDTMFMethod, destDTMFMethod, callSecuredStatus, origConversationId, origMediaCap_Bandwidth, destMediaCap_Bandwidth, authorizationCodeValue, outpulsedCallingPartyNumber, outpulsedCalledPartyNumber, origIpv4v6Addr, destIpv4v6Addr, origVideoCap_Codec_Channel2, origVideoCap_Bandwidth_Channel2, origVideoCap_Resolution_Channel2, origVideoTransportAddress_IP_Channel2, origVideoTransportAddress_Port_Channel2, origVideoChannel_Role_Channel2, destVideoCap_Codec_Channel2, destVideoCap_Bandwidth_Channel2, destVideoCap_Resolution_Channel2, destVideoTransportAddress_IP_Channel2, destVideoTransportAddress_Port_Channel2, destVideoChannel_Role_Channel2, IncomingProtocolID, IncomingProtocolCallRef, OutgoingProtocolID, OutgoingProtocolCallRef, currentRoutingReason, origRoutingReason, lastRedirectingRoutingReason, huntPilotPartition, huntPilotDN

INTEGER, INTEGER, INTEGER, INTEGER, INTEGER, INTEGER, INTEGER, INTEGER, VARCHAR(50), VARCHAR(128), INTEGER, INTEGER, INTEGER, INTEGER, INTEGER, INTEGER, INTEGER, INTEGER, INTEGER, INTEGER, INTEGER, INTEGER, INTEGER, INTEGER, VARCHAR(64), VARCHAR(64),

INTEGER, INTEGER, INTEGER, INTEGER, VARCHAR(50), VARCHAR(50), VARCHAR(128), INTEGER, INTEGER, INTEGER, INTEGER, INTEGER, INTEGER, INTEGER, INTEGER, INTEGER, INTEGER, INTEGER, INTEGER, INTEGER, VARCHAR(64), VARCHAR(64), INTEGER, INTEGER, VARCHAR(50), UNIQUEIDENTIFIER, VARCHAR(50), VARCHAR(50), VARCHAR(50), VARCHAR(50), INTEGER, VARCHAR(129), VARCHAR(129), INTEGER, INTEGER, INTEGER, INTEGER, INTEGER, INTEGER, INTEGER, VARCHAR(50), INTEGER, VARCHAR(2048), VARCHAR(50), INTEGER, VARCHAR(32), INTEGER, INTEGER, INTEGER, INTEGER, INTEGER, INTEGER, VARCHAR(32), VARCHAR(50), VARCHAR(50), VARCHAR(64), VARCHAR(64), INTEGER, INTEGER, INTEGER, INTEGER, INTEGER, INTEGER, INTEGER, INTEGER, INTEGER, INTEGER, INTEGER, INTEGER, INTEGER, VARCHAR(32), INTEGER, VARCHAR(32), INTEGER, INTEGER, INTEGER, VARCHAR(50), VARCHAR(50)

1, 1, 37, 29654625, 1258090294, 1, 0, 136269066, 1001, caruser2, 0, 16, 4, 136269066, 16790, 4, 20, 0, 0, 0, 0, 0, 0, 0, 0, 29654626, 1, 0, 85937418, 5555, 1002, caruser1, 0, 0, 4, 85937418, 30844, 4, 20, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1258090296, 1258090383, 5555, dcf0b5c9-7d57-475b-b166-d207a6617f34, , , , , 87, SEP003094C3CCB0, SEP0002FD3BA528, 12, 0, 0, 0, 0, 0, 0, StandAloneCluster, 0, , , 0, , 3, 3, 0, 0, 64, 64, , , , 10.77.31.8, 10.77.31.5, 101,0,5,0,0,1,100,0,3,0,0,1,3,000000000000000108012BB4AE00000002,3,000000000000000108012BB4B200000000,2,5,7,1000, 5555

PART II

CDR Records

Call Details Records Overview

This chapter provides information about the format and logic of the Call Detail Records (CDRs) that the Cisco Unified Communications Manager system generates. You can use this information for post-processing activities such as generating billing records and network analysis.

When you install your system, the system enables CDRs by default, Call Management Records (CMRs) remain disabled by default. You can enable or disable CDRs or CMRs at any time that the system is in operation. You do not need to restart the Unified Communications Manager for the change to take effect. The system responds to all changes within a few seconds. The system enables CMRs or diagnostic data separately from CDR data.

CDR Management

The CDR Management (CDRM) feature, a background application, supports the following capabilities:

- Collects the CDR/CMR files from the Unified Communications Manager server or node to the CDR Repository server or node.

- Collects and maintains the CDR/CMR files on the server where you configure CAR.

- Maintains the CDR/CMR files on the CDR Repository node or CDR server.

- Allows third-party applications to retrieve CDR/CMR files on demand through a SOAP interface.

- Accepts on-demand requests for searching file names.

- Pushes CDR/CMR files from individual nodes within a cluster to the CDR Repository server or node.

- Sends CDR/CMR files to up to three customer billing servers via FTP/SFTP.

- Monitors disk usage of CDR/CMR files on the server where you configure CAR or on the CDR Repository server or node.

- Periodically deletes CDR/CMR files that were successfully delivered. You can configure the amount of storage that is used to store flat files. Predefined storage limits exist. If the storage limits are exceeded, the CDR Repository Manager deletes old files to reduce the disk usage to the preconfigured low water

mark. The post-processing applications can later retrieve the buffered historical data to re-get any lost, corrupted, or missing data. The CDRM feature, which is not aware of the flat file format, does not manipulate the file contents.

Note The CDRM feature handles CDR files and CMR files in the same manner.

CDRM comprises two default services, the CDR Agent and the CDR Repository Manager, and one activate service, CDR onDemand Service.

CDR Agent

As part of the CDRM feature, a resident component on the server or node within a Unified Communications Manager installation acts as the CDR Agent. On the server or nodes were both Unified Communications Manager and the CDR Agent are running, Unified Communications Manager writes the CDRs into CDR flat files in comma separated value (CSV) format. A special control character ("_") that is prefixed to the filename by the call processing module that indicates that the file is not available for transfer. If this control character is not present, the system assumes that the file is available for transfer, and the CDR Agent then SFTPs those files to the designated CDR repository node. Upon a successful transfer, the system deletes the local copy of the file.

Reliability gets the highest priority for the CDRM feature. CDRs comprise important financial data, so the goal of this feature is to guarantee that no CDR is lost. The Unified Communications Manager continuously writes CDRs to flat files, closes existing flat files, and opens new ones. The number of records that are written varies by the type of call and the significant changes that occur during a call: such as, ending the call, transferring the call, redirecting the call, splitting the call, or joining the call.

Note On Linux platforms, the CDR Agent collects the CDR/CMR flat files that the Unified Communications Manager generates and sends these files to the publisher through SFTP. The Windows versions of do not support SFTP. On Windows platforms, the CDR Agent copies the files directly from the subscriber disk to the shared publisher disk.

CDR Repository Manager

Within a Unified Communications Manager server or cluster, one instance of the CDR Repository Manager runs on the CDR Repository server or node. It manages CDR files that are received from the Unified Communications Manager nodes and periodically sends the files to the specified customer/third-party billing servers via FTP/SFTP.

When the file arrives on the CDR Repository server or node, the CDR Repository Manager detects it. The system archives the file in a directory that is dedicated to the date that is indicated by the UTC timestamp that was placed in the filename when the file was created.

If any external billing server is specified in the CDRM configuration, the system creates an empty file in each of the corresponding folders for CAR and the billing servers, if CAR or the corresponding billing server is activated. The CDR Agent monitors new CDR/CMR files that are generated on CallManager servers or nodes by the call processing component. It sends the files to the CDR Repository node and then deletes the local copy after the file is pushed out. The file sender component of the CDR Repository Manager detects these

empty files and sends the file to the destination with the specified method. If the delivery is successful, the system removes the empty file in the destination directory.

Every Unified Communications Manager can generate one CDR file and one CMR file every minute for up to 1hour. You can configure the maximum disk space that is used for storage of CDR files in the CDR Repository through provisioning.

The File Manager component of the CDR Repository Manager runs hourly. When the File Manager runs, it deletes files with dates outside the configured preservation duration. It also checks whether the disk usage has exceeded the high water mark. If so, the system deletes the processed CDR files until the low water mark is reached, starting with the oldest files. However, if any CDR file to be deleted was not successfully sent to the specified billing server, the system leaves it in the CDR Repository and raises a notification or alarm. The system creates a flag file during the configured maintenance window, which denies access to the CDR files for the CDR onDemand Service. The system removes the flag file after the maintenance window expires.

CDR onDemand Service

The CDR onDemand Service is a SOAP/HTTPS-based service, that runs on the CDR Repository server or node. It receives SOAP requests for CDR filename lists based on a user-specified time interval (up to a maximum of 1hour) and returns all lists that fit the duration that the request specifies.

The CDR onDemand Service can also handle requests for delivering a specific CDR file to a specified destination through an SFTP API. All SFTP connections require a user id and password information for each session setup. A separate SFTP session gets set up for every file that is sent, and the session is closed after the file has been sent. The system can activate the CDR onDemand service on the CDR Repository node because it has to access the CDR files in the repository. The system prohibits service during the maintenance window. For more information on the CDR onDemand Service, see the *Cisco Unified Communications Manager* Developers Guide.

For Cisco Unified Communications Manager Release 12.x and later releases, CDR onDemand Service is not enabled by default. If you want to enable the CDR onDemand service, the service should be activated manually. Execute the following command at the root level to activate the CDR onDemand service: `/usr/local/cm/bin/soapservicecontrol2.shCDRonDemandServiceCDRonDemanddeploy8443.`

CDR Database Backup and Recovery

Be sure that the CAR and CDR Disaster Recovery Service (DRS) is integrated into the Cisco Unified Communications Manager DRS.

For more information, see *Administration Guide for Cisco Unified Communications Manager.*

Record Processing

Unified Communications Manager generates two different types of call information records: CDRs and CMRs. The CDR records store information about a call. The CMR records store information about the quality of the streamed audio of the call. The CDR records relate to the CMR records by way of two GlobalCallID columns: Global CallID callManagerId and GlobalCallID Called. Depending upon the call scenario, more than one CMR may exist for each CDR.

When Unified Communications Manager places or receives a call, the system generates a CDR record when the call terminates. The system writes the CDR to a flat file (text file). Inside the Unified Communications

Manager, the Call Control process generates CDR records. The system writes records when significant changes occur to a given call, such as ending the call, transferring the call, redirecting the call, splitting the call, joining a call, and so forth.

When CDR records are enabled, Call Control generates one or more CDR records for each call. The system sends these records to EnvProcessCdr, where they are written to the flat files. The number of records that are written varies by type of call and the call scenario. When Diagnostics are enabled, the device generates CMR records for each call. The system writes one CMR record for each IP phone that is involved in the call or for each Media Gateway Control Protocol (MGCP) gateway. The system also sends these records to EnvProcessCdr where they get written to flat files.

The Unified Communications Manager generates CDR and CMR records but does not perform any post processing on the records. The system writes the records to comma-delimited flat files and periodically passes them to the CDR Repository. The CDR and CMR files represent a specific filename format within the flat file.

Filename Format

The following example shows the full format of the filename:
`tag_clusterId_nodeId_datetime_seqNumber`

- **`tag`**—Identifies the type of file, either CDR or CMR.

- **`clusterId`**—Identifies the cluster or server where the Unified Communications Manager database resides.

- **`nodeId`**—Identifies the node

- **`datetime`**—UTC time in yyyymmddhhmm format

- **`seqnumber`**—Sequence number

Two examples of the filenames follow:

```
cdr_Cluster1_01_200404021658_1
cmr_Cluster1_02_200404061011_6125
```

Flat File Format

The CDR and CMR flat files have the following format:

- Line 1—List of field names comma separated

- Line 2—List of field type comma separated

- Line 3—Data comma separated

- Line 4—Data comma separated

The following example shows a flat file:

```
Line1-"cdrRecordType","globalCallID_callManagerId","globalCallID_callId","origLegCallIdentifier",...
Line2-INTEGER,INTEGER,INTEGER,INTEGER,...
Line3-1,1,388289,17586046,...
Line4-1,1,388293,17586054,...
```

Note   If the value of the CDR Log Calls With Zero Duration Flag parameter is True, the system writes all calls to a flat file. For more information, see *Configuring CDR Service Parameters* section in this book.

Call Information Record Types

Unified Communications Manager generates two different types of call information records: Call Detail Records (CDRs) and Call Management Records (CMRs), also called call diagnostic records. CDRs store information about the endpoints of the call and other call control/routing aspects. CMRs contain diagnostic information about the quality of the streamed audio of the call. More than one CMR can exist per CDR.

CMRs are supported by Cisco Unified IP Phones, Cisco 7960 series phones, and Media Gateway Control Protocol (MGCP) gateways. If one of these endpoints is involved in a call, it will generate a CMR record after the call terminates. Each endpoint in the call generates a separate CMR record. If the call involves endpoints that do not support call diagnostics, no record gets generated for that endpoint. A call from a Cisco7960 phone to an H.323 gateway generates one CMR record (from the Cisco 7960 phone).

CDRs relate to the CMRs via two globalCallID columns:

  • globalCallID_callManagerId

  • globalCallId_callId

When the Call Diagnostics service parameter is set to True, the system generates up to two CMRs for each call. Each type of call, such as conference calls, call transfers, forwarded calls, and calls through gateways, produce a set of records that get written to ASCII files at the end of the call. Only completed calls and failed calls generate CDRs and CMRs. Unified Communications Manager does not perform any post-processing on CDRs or CMRs.

Global Call Identifier

The Unified Communications Manager allocates a global call identifier (GlobalCallID_callId) each time that a Cisco Unified IP Phones is taken off the hook or a call is received from a gateway. The GlobalCallID_callId is allocated sequentially on a Unified Communications Manager server, independent of calls running on other call servers in the cluster. Unified Communications Manager writes the GlobalCallID_callId value to a disk file for every 1,000th call. When Unified Communications Manager restarts for any reason, it assigns the next 1000th number to the next GlobalCallID_callId.

For example, when a successful call gets made, the GlobalCallID_callId value in the CDR specifies 1001. For the next call, the GlobalCallID_callId value specifies 1002, and so on. When Unified Communications Manager restarts, the value for the next call in the CDR gets assigned 2001. The numbers continue sequentially from there until Unified Communications Manager restarts again. For the next restart, the GlobalCallID_callId value specifies 3001.

Note   The maximum value that gets assigned to the GlobalCallID_callId is limited to 24 bits. When this limitation occurs, the GlobalCallID_callId value gets reset to 1.

The GlobalCallID_callIds in the CDR file may not be in sequential order in the CDR flat file. If a call with GlobalCallID_callId = 1 lasts longer than the call with GlobalCallID_callId = 2, then the CDR records for GlobalCallId_callId= 2 are written before GlobalCallID_callId = 1. GlobalCallID_callIds may be completely missing from the CDR flat file. If the first CDR record has GlobalCallID_callId = 1, and the second CDR has GlobalCallID_callId = 3, that does not mean that the CDR for GlobalCallID_callId = 2 is missing. GlobalCallID_callId = 2 did not meet the criteria to generate a CDR. The failure to generate a CDR can occur because while the first and third call was successful, the second call was never completed; or, GlobalCallID_callId = 2 could be part of a conference call. Each call leg in a conference call is assigned a GlobalCallID_callId that is overwritten in the conference GlobalCallID_callId. The original GlobalCallID_callId may not appear in the CDR flat file.

If the GlobalCallID_callId field is missing from the CDR record, CAR generates an error for that particular record. For more information, see *CDR Error Reports* in this guide.

Note
For Unified Communications Manager Release 5.x and later releases, the value in the GlobalCallId CDR field survives over Unified Communications Manager restarts. In Release 4.x and earlier releases, although the GlobalCallId field is time-based, the field gets reused under conditions of heavy traffic. Because of this behavior, problems can occur with customer billing applications and the ability of CAR to correlate CMRs with CDRs and to correlate conference call CDRs. For Release 5.x and later releases, GlobalCallId redesign ensures that the field retains a unique value, at least for some days. Now, the last used globalCallId_callId value gets written to disk periodically (for every x number of calls). The value gets retrieved after a Unified Communications Manager restart, and the new globalCallId_callId value begins with this number plus x.

Number Translations

The Unified Communications Manager can perform translations on the digits that a user dials. The translated number, not the actual dialed digits, appears in the CDR.

For example, many companies translate "911" calls to "9-911," so the caller does not need to dial an outside line in an emergency. In these cases, the CDR contains "9911" although the user dials "911."

Note
Gateways can perform further modifications to the number before the digits are actually output through the gateway. The CDR does not reflect these modifications.

Partitions and Numbers

Within a CDR, a combination of extension number and partitions identifies each phone that is referenced, if partitions are defined. When partitions exist, fully identifying a phone requires both values because extension numbers may not be unique.

The Partition field stays empty when a call ingresses through a gateway. When a call egresses through a gateway, the Partition field shows the partition to which the gateway belongs.

If the dial plan allows callers to use the # key for speed dialing, the # key goes into the database when it is used. For example, the Called Party Number field may contain a value such as "902087569174#."

The Party Number fields may include SIP URIs instead of the traditional calling/called party number.

CDRs use the Partition/Extension Numbers that are shown in the following table:

Table 87: Partition/Extension Numbers in CDRs

Phone Number	Description
callingPartyNumber	This party placed the call. For transferred calls, the transferred party becomes the calling party.
originalCalledPartyNumber	This number designates the originally called party, after any digit translations have occurred.
finalCalledPartyNumber	For forwarded calls, this number designates the last party to receive the call.
	For non-forwarded calls, this field shows the original called party.
lastRedirectDn	For forwarded calls, this field designates the last party to redirect the call.
	For non-forwarded calls, this field shows the last party to redirect (such as transfer and conference) the call.
callingPartyNumberPartition	This number identifies the partition name that is associated with the CallingPartyNumber field. This field uniquely identifies this number because the Unified Communications Manager supports multiple Cisco Unified IP Phones with the same extension number in different partitions.
	For calls that ingress through a gateway, this field remains blank.
originalCalledPartyNumberPartition	This number identifies the partition name that is associated with the OriginalCalledPartyNumber field. This field uniquely identifies this number because the Unified Communications Manager supports multiple Cisco Unified IP Phones with the same extension number in different partitions.
	For calls that egress through a gateway, this field specifies the partition name that is associated with the route pattern that pointed to the gateway.
finalCalledPartyNumberPartition	This number identifies the partition name that is associated with the FinalCalledPartyNumber field. This field uniquely identifies this number because the Unified Communications Manager supports multiple Cisco Unified IP Phones with the same extension number in different partitions.
	For calls that egress through a gateway, this field specifies the partition name that is associated with the route pattern that pointed to the gateway.

Phone Number	Description
lastRedirectDnPartition	This number identifies the partition name that is associated with the LastRedirectDn field. This field uniquely identifies this number because the Unified Communications Managersupports multiple Cisco Unified IP Phones with the same extension number in different partitions. For calls that egress through a gateway, this field specifies the partition name that is associated with the route pattern that pointed to the gateway.
outpulsedCallingPartyNumber	The calling party number outpulsed from the device.
outpulsedCalledPartyNumber	The called party number outpulsed from the device.

Timestamps

Timestamps within a CDR appear in Universal Coordinated Time (UTC). This value remains independent of daylight saving time changes.

Unsigned 32-bit integers represent all time values. This unsigned integer value displays from the database as a single integer. The field specifies a time_t value that is obtained from the operating system.

The following table displays the UTC timestamps that get included in the CDR.

Table 88: UTC Timestamps in CDRs

Field	Format	Description
dateTimeOrigination	UTC	For outgoing calls, this field designates the time that the device goes off-hook. For incoming calls, this field designates the time that the SETUP message is received. This field always gets populated.
dateTimeConnect	UTC	This field designates the time that the devices connect. Thisfield shows a zero if the call never connects.
dateTimeDisconnect	UTC	This field designates the time that the call disconnects. This field gets set even if the call never connects. The time gets stored as UTC. This field always gets populated.

Call Clearing Causes

The CDR includes two call clearing cause codes: OrigCause and DestCause. When the originating party releases the call, the OrigCause gets populated. When the terminating party releases the call, or the call is rejected, the DestCause gets populated. When unpopulated, the cause code value shows zero.

Call Termination Cause Codes, on page 236 lists the call clearing cause code values per ITU specification Q.850. For On Net call legs, the Unified Communications Manager determines the cause code value. For Off Net call legs, the far-end switch determines the cause code value.

Convert Signed Decimal Value to IP Address

The system stores IP addresses as unsigned integers. The CDR file displays IP addresses as signed integers. Toconvert the signed decimal value to an IP address, first convert the value to a hex number, taking into consideration that it is really an unsigned number. The 32-bit hex value represents four bytes in reverse order (Intel standard). To determine the IP address, reverse the order of the bytes and convert each byte to a decimal number. The resulting four bytes represent the four-byte fields of the IP address in dotted decimal notation.

Note   The file displays a negative number when the low byte of the IP address has the most significant bit set.

For example, the IP address 192.168.18.188 displays as -1139627840. To convert this IP address, perform the following procedure:

Procedure

Step 1   Convert the database display (-1139627840) to a hex value.

The hex value equals 0xBC12A8C0.

Step 2   Reverse the order of the hex bytes, as shown below:

CO A8 12 BC

Step 3   Convert the four bytes from hex to decimal, as shown below:

192 168 18 188

Step 4   The IP address displays in the dotted decimal format:

192.168.18.188

What to do next

When working with CDRs, you may want to read other tables in the CAR database to obtain information about the type of device in each CDR because the correlation between devices in the device table and the IP address that is listed in the CDR is not straightforward.

CHAPTER **9**

CDR Field Descriptions

This chapter provides field descriptions for the Call Detail Records (CDRs) in the order in which they appear in the CDR file.

- CDR Field Descriptions, on page 209
- Routing Reason Values for External Call Control, on page 232
- Cisco Call Detail Records Codes, on page 233

CDR Field Descriptions

The following table describes all fields in the current CDRs in the order in which they appear.

Table 89: CDR Field Descriptions

Field Name	Range of Values	Description
cdrRecordType	0, 1, 2	Defines the type of record. The following valid values apply: • 0—Start call detail record (not used) • 1—End call detail record (CDR) • 2—CMR record Default - For CDRs, this field always remains1.
globalCallID_callManagerId	Positive Integer	Designates a unique Unified Communications Manager identity. The Global Call ID comprises two fields: globalCallID_callId globalCallID_callManagerId. All records that are associated with a standard call have the same Global Call ID in them. Default - Ensure that this field is populated.

Field Name	Range of Values	Description
globalCallID_callId	Positive Integer	Designates a unique call identity value that is assigned to each call. The system allocates this identifier independently on each call server. Values get chosen sequentially when a call begins. A value gets assigned for each call, successful or unsuccessful. When Unified Communications Manager restarts, it checks the file for the current globalCallID_callId number and assigns the next 1000th number to the next GlobalCallID_callId. The Global Call ID consists of two fields: globalCallID_callId globalCallID_callManagerId. All records that are associated with a standard call have the same Global Call ID in them. **Note** For Unified Communications Manager Release 5.x and later releases, the value in the GlobalCallId CDR field survives over Unified Communications Manager restarts. In Release 4.x and earlier releases, although the GlobalCallId field is time-based, the field gets reused under conditions of heavy traffic. Because of this behavior, problems can occur with customer billing applications and the ability of CAR to correlate CMRs with CDRs and to correlate conference call CDRs. For Release 5.x and later releases, GlobalCallId redesign ensures that the field retains a unique value, at least for a certain number of days. Now, the last used globalCallId_callId value gets written to disk periodically (for every x number of calls). The value gets retrieved after a Unified Communications Manager restart, and the new globalCallId_callId value begins with this number plus x. Default - Ensure that this field is populated.
origLegCallIdentifier	Positive Integer	Identifies the originating leg of a call. Be aware that this value is unique within a cluster. If the leg of a call persists across several subcalls and CDRs (as during a call transfer), this value remains constant. Default - Ensure that this field is populated.
dateTimeOrigination	Integer	Identifies the date and time when the user goes off the hook or the date and time that the H.323 SETUP message is received for an incoming call. The time gets stored as UTC. Default - Ensure that this field is populated.
origNodeId	Positive Integer	Identifies the server, or node within a cluster, to which the originator of the call is registered at the time that the call is made. Default - Ensure that this field is populated.

Field Name	Range of Values	Description
origSpan	0, Positive Integer	For calls that originate at a gateway, this field indicates the B-channel number of the T1, PRI, or BRI trunk where the call originates, or a zero value for FXS or FXO trunks.
		For H.323 gateways, the span number remains unknown, and this field contains the call leg ID of the originator.
		For calls that did not originate at a gateway, the value specifies zero.
		Default - This field gets populated based on these rules.
origIpAddr	Integer	Identifies the v4 IP address of the device that originates the call signaling.
		For Cisco Unified IP Phones, this field specifies the v4 address of the phone.
		For PSTN calls, this field specifies the v4address of the H.323 gateway.
		For intercluster calls, this field specifies the v4address of the remote Unified Communications Manager.
		Default - 0. If the v4 address does not exist for the originating device, this field equals 0. This field gets populated based on these rules.
callingPartyNumber	Text String	Specifies a numeric string of up to 25 characters that indicates the calling party number if the calling party is identified with a directory number.
		If the calling party uses a blended address in the identity headers, this field contains the directory number portion of the blended address.
		For calls that originate at a Cisco Unified IP Phone, this field shows the extension number of the line that is used.
		For incoming H.323 calls, this field specifies the value that is received in the Calling Party Number field in the Setup message. This field reflects any translations that are applied to the Calling Party Number before it arrives at the Unified Communications Manager (such as translations at the gateway).
		For the server calls, where Unified Communications Manager originates a half call without a calling party, this field may remain empty.
		CallingPartyNumber could contain a SIP URI.
		Default - This field gets populated based on these rules.
callingPartyUnicodeLoginUserID	Unicode – UTF_8	Specifies the calling party login user ID. The format of this field specifies UTF_8.
		Default - Empty string "". If the user ID does not exist, this field stays empty.
origCause_location	0 to 15 For a list of cause code values see Call Termination Cause Codes, on page 236	Specifies the Location field that is indicated in the ISDN release message for clearing causes that are received over ISDN signaling links. See topics that are related to call termination cause codes for a list of the valid values per Q.850.
		For clearing causes that are created internally by the Unified Communications Manager, this value specifies zero.
		Default - 0

Field Name	Range of Values	Description
origCause_value	0 to 129 For a list of cause code values see Call Termination Cause Codes, on page 236	Reflects the reason for clearance for the calls that are cleared by the originating party. Unified Communications Managercurrently uses the Q.850 codes and some Unified Communications Managerdefined codes. See topics that are related to call termination cause codes for a listing. For calls that are cleared by the terminating party, this field specifies zero. In addition to the standard values that are described in Q.850, when a call is split by a feature (transfer or conference), the CDR terminates, and this field gets set to 393216. This represents a proprietary value for this field. Default - 0
origPrecedenceLevel	0 to 4	Represents the precedence level of the original leg. For MLPP, each call leg includes a precedence level. • Precedence 0 = FLASH OVERRIDE/ EXECUTIVE OVERRIDE • Precedence 1 = FLASH • Precedence 2 = IMMEDIATE • Precedence 3 = PRIORITY • Precedence 4 = ROUTINE Default - 4
origMediaTransportAddress_IP	0, Integer	Identifies the v4 IP address of the device that originates the media for the call. For Cisco Unified IP Phones, this field specifies the v4 address of the phone. For PSTN calls, this field specifies the v4address of the H.323 gateway. For intercluster calls, this field specifies the v4address of the remote phone. Default - 0. If media is not established or the address is not v4, this field equals 0.
origMediaTransportAddress_Port	0, Positive Integer	Identifies the IP port number that is associated with the OrigMediaTransportAddress_IP field. Default - 0. If media is not established, this field stays 0.
origMediaCap_payloadCapability	0, Positive Integer For a full list of codecs, see Codec Types, on page 233	Identifies the codec type that the originator uses to transmit media. Unified Communications Manager currently uses the following payload capability values: 0, 1-16, 18-20, 25, 32, 33, 81-86. See topics related to codec types for a listing of the valid values. Default - 0. If media is not established, this field stays 0.

Field Name	Range of Values	Description
origMediaCap_maxFramesPerPacket	0, Positive Integer	Identifies the number of milliseconds of data per packet that the originating party sends. This field normally gets set to 10, 20, or 30 for G.729 or G.711 codecs, but the field can store any nonzero value. Default - 0. If media is not established, this field stays 0.
origMediaCap_g723BitRate	0	This field is not used in the current release of Unified Communications Manager. Default - This field will remain 0.
origVideoCap_Codec	0, 100 = H.261, 101 = H.263, 103 = H.264	Identifies the codec type that the originator uses to transmit video (H.261, H.263, or H.264.) Default - 0. If media is not established, this field stays 0.
origVideoCap_Bandwidth	0, Positive Integer	Identifies the bandwidth that is measured in units of kbps. Default - 0. If media is not established, this field stays 0.
origVideoCap_Resolution	0, 1 = SQCIF, 2 = QCIF, 3 = CIF, 4 = CIF4, 5 = CIF16 6 = H263 custom resolution 7 = W360P 8 = VGA 9 = W448P 10 = HD720P 11 = HD1080P 12 = CIF2	Indicates the transmitting resolution. In the case of H.264 codec or SIP device, this field refers to the max transmitting resolution the device can transmit for this call. Default - 0. If media is not established, this field stays 0.
origVideoTransportAddress_IP	0, Integer	Identifies the v4 IP address of the device that originates the call. Default - 0. If media is not established or the address is not v4, this field stays 0.
origVideoTransportAddress_Port	0, Positive Integer	Identifies the video RTP port that is associated with the origVideoTransportAddress_IP field. Default - 0. If media is not established, this field stays 0.

Field Name	Range of Values	Description
origRSVPAudioStat	0 to 5	Provides the status of the RSVP audio reservation from originator to terminator. 0 – No reservation. 1 – RSVP Reservation Failure condition at call setup or feature invocation. 2 – RSVP Reservation Success condition at the call setup or feature invocation. 3 – RSVP Reservation No Response (RSVP Agent) condition at the call setup or feature invocation. 4 – RSVP Mid Call Failure Preempted condition (preempted after the call setup). 5 – RSVP Mid Call Failure Lost Bandwidth condition (includes all mid-call failures except MLPP preemption). Default – 0
origRSVPVideoStat	0 to 5	Provides the status of the RSVP video reservation from originator to terminator. 0 – No reservation. 1 – RSVP Reservation Failure condition at call setup or feature invocation. 2 – RSVP Reservation Success condition at call setup or feature invocation. 3 – RSVP Reservation No Response (RSVP Agent) condition at call setup or feature invocation. 4 – RSVP MID Call Failure Preempted condition (preempted after call setup). 5 – RSVP MID Call Failure Lost Bandwidth condition (includes all mid-call failures except MLPP preemption). Default – 0
destLegCallIdentifier	0, Positive Integer	Identifies the terminating leg of a call. This value remains unique within a cluster. If the leg of a call persists across several sub-calls and, consequently, several CDRs (as during a call transfer), this value remains constant. Default - 0. If the destination cannot be reached, this field stays 0.
destNodeId	0, Positive Integer	Identifies the location, or node within a cluster, to which the terminating party of the call is registered at the time that the call is made. Default - 0. If the destination cannot be reached, this field stays 0.

Field Name	Range of Values	Description
destSpan	0, Positive integer	For calls that are received at a gateway, this field indicates the B channel number of the T1, PRI, or BRI trunk where the call is received, or a zero value for FXS or FXO trunks. For H.323 gateways, the span number remains unknown, and this field contains the call leg ID of the destination. For calls not terminating at a gateway, the value specifies zero. Default - 0. If the destination cannot be reached, this field stays 0.
destIpAddr	0, Integer	Identifies the v4 IP address of the device that terminates the call signaling. For Cisco Unified IP Phones, this field specifies the v4 address of the phone. For PSTN calls, this field specifies the v4address of the H.323 gateway. For intercluster calls, this field specifies the v4address of the remote Unified Communications Manager. Default - 0. If the destination cannot be reached, this field stays 0. If the v4 address does not exist for this device, the field equals 0.
originalCalledPartyNumber	Text String	Specifies the number to which the original call was presented, prior to any call forwarding. If translation rules are configured, this number reflects the called number after the translations have been applied. If a blended address is used for the called party, this field specifies the directory number portion of the blended address. This field represents a numeric string of up to 48 characters that can be either digits or a SIP URL. Default - Empty string "". If destination cannot be reached, or if the called party number is a directory URI, this field stays empty.
finalCalledPartyNumber	Text String	Specifies the phone number to which the call finally gets presented, until it is answered or rings out. If no forwarding occurs, this number shows the same number as the originalCalledPartyNumber. If the call finally gets presented to a directory URI, the field remains empty. If a blended address is used, this field specifies the directory number portion of the blended address. For calls to a conference bridge, this field contains the actual identifier of the conference bridge, which is an alphanumeric string (for example, b0019901001). This field represents an alphanumeric string that can be either digits or a SIP URL. Default - Empty string "". If destination cannot be reached, this field stays empty.
finalCalledPartyUnicodeLoginUserID	Unicode – UTF_8	Specifies the login user ID. The format of this field specifies UTF_8. Default - Empty string "". If the user ID does not exist, this field stays empty.

Field Name	Range of Values	Description
destCause_location	0 to 15 For a list of cause code values see Call Termination Cause Codes, on page 236	For clearing causes that are received over ISDN signaling links, the ISDN release message indicates this location field. See topics that are related to call termination cause codes for a listing of the valid values per Q.850. For clearing causes that Unified Communications Manager creates internally, this value equals zero. Default - 0. If the destination cannot be reached, this field stays 0.
destCause_value	0 to 129 For a list of cause code values see Call Termination Cause Codes, on page 236	Reflects the reason for the calss that the destination party cleared. See topics that are related to call termination cause codes for a listing of the valid values per Q.850. For calls that the originating party clears, this field stays zero. In addition to the standard values that are described in Q.850, when a call gets split by a feature (transfer or conference), the CDR terminates, and this field gets set to 393216. This represents a proprietary value for this field. Default - 0. If the destination cannot be reached, this field stays 0.
destPrecedenceLevel	0 to 4	Represents the destination legs precedence level. For MLPP, each call leg has a precedence level. • Precedence 0 = FLASH OVERRIDE • Precedence 1 = FLASH • Precedence 2 = IMMEDIATE • Precedence 3 = PRIORITY • Precedence 4 = ROUTINE Default - 4
destMediaTransportAddress_IP	0, Integer	Identifies the v4 IP address of the device that terminates the media for the call. For Cisco Unified IP Phones, this field designates the v4 address of the phone. For PSTN calls, this field designates the v4address of the H.323 gateway. For intercluster calls, this field shows the v4address of the remote phone. Default - 0. If the destination cannot be reached or the IP address of the destination is not v4, this field stays 0.
destMediaTransportAddress_Port	0, Positive Integer	Identifies the IP port number that is associated with the DestMediaTransportAddress_IP field. Default - 0. If the destination cannot be reached, this field stays 0.
destMediaCap_payloadCapability	0, Positive Integer For a full list of codecs, see Codec Types, on page 233	Identifies the codec type that the terminating party uses to transmit media. Unified Communications Manager currently uses the following payload capability values: 0, 1-16, 18-20, 25, 32, 33, 81-86. See topics related to codec types for a listing of the valid values. Default - 0. If the destination cannot be reached, this field stays 0.

Field Name	Range of Values	Description
destMediaCap_maxFramesPerPacket	0, Positive Integer	Identifies the number of milliseconds of data per packet that the terminating party of the call sends. This field normally gets set to 10, 20, or 30 for G.729 or G.711 codecs but can store any nonzero value.

This field can specify zero if the media is never established.

Default - 0. If the destination cannot be reached, this field stays 0. |
| destMediaCap_g723BitRate | 0 | This field is not used in the current release of Unified Communications Manager.

Default - This field stays 0. |
| destVideoCap_Codec | 0,

100 = H.261,

101 = H.263,

103 = H.264 | Identifies the codec type that the terminating party uses to transmit video (H.261, H.263, or H.264).

Default - 0. If the destination cannot be reached, this field stays 0. |
| destVideoCap_Bandwidth | 0, Positive Integer | Identifies the bandwidth, and is measured in units of kbps.

Default - 0. If the destination cannot be reached, this field stays 0. |
| destVideoCap_Resolution | 0,

1 = SQCIF,

2 = QCIF,

3 = CIF,

4 = CIF4,

5 = CIF16

6 = H263 custom resolution

7 = W360P

8 = VGA

9 = W448P

10 = HD720P

11 = HD1080P

12 = CIF2 | Indicates the transmitting resolution. In the case of H.264 codec or SIP device, this field refers to the max transmitting resolution the device can transmit for this call.

Default - 0. If media is not established, this field stays 0. |
| destVideoTransportAddress _IP | 0, Integer | Identifies the v4 IP address of the device that receives the call.

Default - 0. If the destination cannot be reached or the IP address of the destination is not v4, this field stays 0. |
| destVideoTransportAddress_Port | 0, Positive Integer | Identifies the video RTP port that is associated with the destVideoTransportAddress_IP field.

Default - 0. If the destination cannot be reached, this field stays 0. |

Field Name	Range of Values	Description
destRSVPAudioStat	0 - 5	Designates the status of the RSVP audio reservation from terminator to originator.
		0 – No reservation.
		1 – RSVP Reservation Failure condition at the call setup or feature invocation.
		2 – RSVP Reservation Success condition at call setup or feature invocation.
		3 – RSVP Reservation No Response (RSVP Agent) condition at call setup or feature invocation.
		4 – RSVP Mid Call Failure Preempted condition (preempted after call setup).
		5 – RSVP Mid Call Failure Lost Bandwidth condition (includes all mid call failures except MLPP preemption).
		Default – 0
destRSVPVideoStat	0 - 5	Designates the status of the RSVP video reservation from terminator to originator.
		0 – No reservation.
		1 – RSVP Reservation Failure condition at call setup or feature invocation.
		2 – RSVP Reservation Success condition at call setup or feature invocation.
		3 – RSVP Reservation No Response (RSVP Agent) condition at call setup or feature invocation.
		4 – RSVP Mid Call Failure Preempted condition (preempted after call setup).
		5 – RSVP Mid Call Failure Lost Bandwidth condition (includes all mid call failures except MLPP preemption).
		Default – 0
dateTimeConnect	0, Integer	Identifies the date and time that the call connects. The time gets stored as UTC. If the call is never answered, this value shows zero.
		Default - 0. If the call is never connected, this field stays 0.
dateTimeDisconnect	Integer	Identifies the date and time when the call is cleared. This field gets set even if the call never connects. The time gets stored as UTC.
		Default - Ensure that this field is populated.

Field Name	Range of Values	Description
lastRedirectDn	Text String	Specifies a numeric string of up to 25 characters. The numeric string can contain digits or a SIP URL.
		For forwarded calls, this field specifies the phone number of the next to last hop before the call reaches its final destination. If only one hop occurs, this number matches the OriginalCalledPartyNumber.
		If a blended address is used for call addressing, this field contains only the directory number portion of the blended address.
		For calls that are not forwarded, this field matches the OriginalCalledPartyNumber and the FinalCalledPartyNumber.
		For calls to a conference bridge, this field contains the actual identifier of the conference bridge, which is an alphanumeric string (for example, b0019901001).
		Default - Empty string "". If the call is never redirected, or if the next to last hop address is a directory URI, this field remains empty.
pkid	Text String	Identifies a text string that the database uses internally to uniquely identify each row. This text string provides no meaning to the call itself.
		Default - A unique ID should always populate this field.
originalCalledPartyNumberPartition	Text String	Identifies unique partition name that is associated with the OriginalCalledPartyNumber field because Unified Communications Manager supports multiple Cisco Unified IP Phones with the same extension number in different partitions.
		For calls that egress through an H.323 gateway, this field uniquely specifies the partition name that is associated with the route pattern that points to the gateway.
		Default - Empty string "". If the original called party does not have a partition, this field remains empty.
callingPartyNumberPartition	Text String	Identifies unique partition name that is associated with the CallingPartyNumber field because Unified Communications Manager supports multiple Cisco Unified IP Phones with the same extension number in different partitions.
		For calls that ingress through an H.323 gateway, this field remains blank.
		Default - Empty string "". If the original called party does not have a partition, this field remains empty.
finalCalledPartyNumberPartition	Text String	Identifies unique partition name that is associated with the FinalCalledPartyNumber field because Unified Communications Manager supports multiple Cisco Unified IP Phones with the same extension number in different partitions.
		For calls that egress through an H.323 gateway, this field uniquely specifies the partition name that is associated with the route pattern that points to the gateway.
		Default - Empty string "". If the final called party does not have a partition, this field remains empty.

Field Name	Range of Values	Description
lastRedirectDnPartition	Text String	Identifies unique partition name that is associated with the LastRedirectDn field because Unified Communications Manager supports multiple Cisco Unified IP Phones with the same extension number in different partitions.
		For calls that egress through an H.323 gateway, this field specifies the partition name that is associated with the route pattern that points to the gateway.
		Default - Empty string "". If the last redirecting Party does not have a partition or the call was never redirected, this field stays empty.
duration	0, Positive integer	Identifies the difference between the Connect Time and Disconnect Time. This field specifies the time that the call remains connected, in seconds. This field remains zero if the call never connects or if it connects for less than 1 second.
		Default - 0
origDeviceName	Text String	Specifies the text string that identifies the name of the originating device.
		Default - Ensure that this field is populated.
destDeviceName	Text String	Specifies the text string that identifies the name of the destination device.
		Default - Empty string"". If the original device does not have a name, this field stays empty.
origCallTerminationOnBehalfOf	0, Positive Integer For a complete list of OnBehalfOf fields, see OnBehalfof Codes, on page 245	Specifies code that identifies why the originator was terminated.
		For example, if the originator of the call hangs up the phone, the OnBehalfOf code shows "12" for Device. If the call terminates because of a transfer, the OnBehalfOf code shows "10" for Transfer.
		See topics related to CDR field descriptions for a list of the codes. This release added new OnBehalfOf codes.
		Default - 0
destCallTerminationOnBehalfOf	0, Positive Integer For a complete list of OnBehalfOf fields, see OnBehalfof Codes, on page 245	Specifies code that identifies why the destination was terminated.
		For example, if the destination of the call hangs up the phone, the OnBehalfOf code shows "12" for Device. If the call terminates because of a transfer, the OnBehalfOf code shows "10" for Transfer.
		See topics related to CDR field descriptions for a list of the codes. This release added new OnBehalfOf codes.
		Default - 0
origCalledPartyRedirectOnBehalfOf	0, Positive Integer For a complete list of OnBehalfOf fields, see OnBehalfof Codes, on page 245	Specifies code that identifies the reason for redirection of the original called party.
		For example, if the original called party was redirected because of a conference, the OnBehalfOf code specifies "4."
		See topics related to CDR field descriptions for a list of the codes. This release added new OnBehalfOf codes.
		Default - 0

Field Name	Range of Values	Description
lastRedirectRedirectOnBehalfOf	0, Integer For a complete list of OnBehalfOf fields, see OnBehalfof Codes, on page 245	Specifies code that identifies the reason for redirection of the last redirected party. For example, if the last redirected party was redirected on behalf of a conference, the OnBehalfOf code specifies "4." See topics related to CDR field descriptions for a list of the codes. This release added new OnBehalfOf codes. Default - 0
origCalledPartyRedirectReason	0, Integer For a complete list of OnBehalfOf fields, see Redirect Reason Codes, on page 242	Identifies the reason for a redirect of the original called party. See topics related to redirect reason codes for a complete list of the codes. Default - 0
lastRedirectRedirectReason	0, Integer For a complete list of OnBehalfOf fields, see Redirect Reason Codes, on page 242	Identifies the last redirect reason for redirection. See topics related to redirect reason codes for a complete list of the codes. Default - 0
destConversationID	0, Integer	Specifies a unique identifier that is used to identify the parties of a conference call. For conference chaining scenarios, the origConversationID and destConversationID fields identify which conferences are chained together. Default - 0
globalCallId_ClusterId	Text String	Specifies a unique ID that identifies a cluster of Unified Communications Managers. The field is generated at installation and is not used by Unified Communications Manager. The fields globalCallId_ClusterId + globalCallId_CMId + globalCallId_CallId make up this unique key. Default - This field should always be populated.
joinOnBehalfOf	0, Integer For a complete list of OnBehalfOf fields, see OnBehalfof Codes, on page 245	Specifies code that identifies the reason for a join. For example, if the join takes place on behalf of a transfer, the OnBehalfOf code specifies "10." See topics related to CDR field descriptions for a list of the codes. Default - 0
comment	Text String	Allows features to add text to the CDRs. This text can describe details about the call. For example, the following field flags malicious calls: Tag—CallFlag Value—MALICIOUS Default - Empty string "".

Field Name	Range of Values	Description
authCodeDescription	Text String	Provides a description of the FAC. Default - Empty string "" or null.
authorizationLevel	0, Integer	Displays the level of the FAC. Default - 0
clientMatterCode	Text String	Displays the client matter code. Before the system extends a call, the user enters a client matter code that can be used for assigning account or billing codes to calls. Default - Empty string "" or null.
origDTMFMethod	0, Positive Integer	Displays the DTMF method that the originator uses. 0 - No DTMF - Use ANY matched DTMF. 1 - OOB - Use OOB if endpoints behind SIPTrunk support it. 2 - 2833 - Use RFC2833 if endpoints behind SIPTrunk support it. 3 - OOB and 2833 - Use both KPML and RFC2833 if endpoints behind SIPTrunk can support both. 4 - Unknown Default - 0 (No preference)
destDTMFMethod	0, Positive Integer	Displays the DTMF method that the destination uses. 0 - No DTMF - Use ANY matched DTMF.1 - OOB - Use OOB if endpoints behind SIPTrunk support it.2 - 2833 - Use RFC2833 if endpoints behind SIPTrunk support it.3 - OOB and 2833 - Use both KPML and RFC2833 if endpoints behind SIPTrunk can support both.4 - Unknown. Default - 0 (No preference)
callSecuredStatus	0, Positive Integer	Displays the highest security status that is reached during a call. For example, if the call is originally unsecured, and later the call changes to secured, the CDR contains 1 for "Secured" even though different portions of the call have different status values. 0 - Non-secured 1 - Authenticated (not encrypted) 2 - Secured (encrypted) Default - 0 (Non-secured)
origConversationID	Integer	Identifies the conference ID that is associated with the originating leg of the call. In most cases, this field equals 0. For conference chaining scenarios, the origConversationID and destConversationID fields identify which conferences are chained together. Default - 0
origMediaCap_Bandwidth	0, Positive Integer	Displays the media bandwidth that is used at the origination of the call. Default - 0

Field Name	Range of Values	Description
destMediaCap_Bandwidth	0, Positive Integer	Displays the media bandwidth that is used at the destination of the call. Default - 0
authorizationCodeValue	Text String	Displays the Forced Authorization Code (FAC) that is associated with the call. Default - Empty string "" or null.
outpulsedCallingPartyNumber	Text String	Comprises an alphanumeric string of up to 50 characters. The calling party number gets outpulsed from the device. This field gets populated only when normalization or localization takes place at the device. Default - Empty string "" or null.
outpulsedCalledPartyNumber	Text String	Comprises an alphanumeric string of up to 50 characters. The called party number gets outpulsed from the device. This field gets populated only when normalization or localization takes place at the device. Default - Empty string ""or null.
origIpv4v6Addr	Text string	Comprises an alphanumeric string of up to 64 characters. This field identifies the IP address of the device that originates the call signalling. The field can be either IPv4 or IPv6 format depending on the type of IP address that gets used for the call. For Cisco Unified IP Phones, this field is the address of the Cisco Unified IP Phone. For PSTN calls, this field is the address of the gateway. For intercluster calls, this field is the address of the remote Unified Communications Manager. The IP addressis either in dotted decimal format or in colon separated hexadimal format. Default - TheIP address of the originating device as reported by the device or used for the call after media negotiation.
destIpv4v6Addr	Text string	Comprises an alphanumeric string of up to 64 characters. This field identifies the IP address of the device that terminates the call signalling. The field can be either in IPv4 or IPv6 format depending upon the type of IP address that gets used for the call. For Cisco Unified IP Phones, this field is the address of the Cisco Unified IP Phone. For PSTN calls, this field is the address of the gateway. For intercluster calls, this field is the address of the remote Unified Communications Manager. The IP addressis either in dotted decimal format or in colon separated hexadimal format. Default - Empty String "" or null. If the destination does not get reached, this field stays empty.

Field Name	Range of Values	Description
origVideoCap_Codec_Channel2	0, 100 = H.261, 101 = H.263, 103 = H.264,	Identifies the codec type that the originator uses to transmit video (H.261, H.263, or H.264) for the second video channel. Default - 0. If media does not get established, this field displays 0. Also, if H.239 and BFCP are not supported for this call, this field displays 0.
origVideoCap_Bandwidth_Channel2	0, Positive integer	Identifies the bandwidth measured in units of kbps for the second video channel. Default - 0. If media does not get established, this field displays 0. Also, if H.239 and BFCP are not supported for this call, this field displays 0.
origVideoCap_Resolution_Channel2	0, 1 = SQCIF, 2 = QCIF, 3 = CIF, 4 = CIF4, 5 = CIF16 6 = H263 custom resolution 7 = W360P 8 = VGA 9 = W448P 10 = HD720P 11 = HD1080P 12 = CIF2	Indicates the transmitting resolution for the second video channel. In the case of H.264 codec or SIP device, this field refers to the maximum transmitting resolution the device can transmit for this call. Default - 0. If media is not established, this field stays 0. Also, if H.239 and BFCP are not supported for this call, this field displays 0.
origVideoTransportAddress_IP_Channel2	0, Integer	Identifies the v4 IP address of the device that originates the call for the second video channel. Default - 0. If media does not get established, this field displays 0. Also, if H.239 and BFCP are not supported for this call, this field displays 0.
origVideoTransportAddress_Port_Channel2	0, Positive integer	Identifies the video RTP port associated with the origH239VideoTransportAddress_IP field for the second video channel. Default - 0. If media does not get established, this field displays 0. Also, if H.239 and BFCP are not supported for this call, this field displays 0.
origVideoChannel_Role_Channel2	0 = Presentation role, 1 = Live role, Positive integer	Identifies the H.239 video channel role of the device that originates. Default - 0. If media does not get established, this field displays 0. Also, if H.239 is not supported, this field displays 0.
destVideoCap_Codec_Channel2	0, 100 = H.261, 101 = H.263, 103 = H.264	Identifies the codec type that the terminating party uses to transmit video (H.261, H.263, or H.264) for the second video channel. Default - 0. If the destination cannot be reached, this field stays 0. Also, if H.239 and BFCP are not supported for this call, this field displays 0.

Field Name	Range of Values	Description
destVideoCap_Bandwidth_Channel2	0, Positive integer	Identifies the bandwidth measured in units of kbps for the second video channel. Default - 0. If media does not get established, this field displays 0. Also, if H.239 and BFCP are not supported for this call, this field displays 0.
destVideoCap_Resolution_Channel2	0, 1 = SQCIF, 2 = QCIF, 3 = CIF, 4 = CIF4, 5 = CIF16 6 = H263 custom resolution 7 = W360P 8 = VGA 9 = W448P 10 = HD720P 11 = HD1080P 12 = CIF2	Indicates the transmitting resolution for the second video channel. In the case of H.264 codec or SIP device, this field refers to the maximum transmitting resolution the device can transmit for this call. Default - 0. If media is not established, this field stays 0. Also, if H.239 and BFCP are not supported for this call, this field displays 0.
destVideoTransportAddress_IP_Channel2	0, Integer	Identifies the v4 IP address of the device that receives the call. Default - 0. If media does not get established, this field displays 0. Also, if H.239 and BFCP are not supported for this call, this field displays 0.
destVideoTransportAddress_Port_Channel2	0, Positive integer	Identifies the video RTP port associated with the destH239VideoTransportAddress_IP field. Default - 0. If media does not get established, this field displays 0. Also, if H.239 and BFCP are not supported for this call, this field displays 0.
destVideoChannel_Role_Channel2	0 = Presentation role, 1 = Live role, Positive integer	Identifies the H.239 video channel role of the device that receives the call. Default - 0. If media does not get established, this field displays 0. Also, if H.239 is not supported, this field displays 0.
incomingProtocolID	0 = Unknown, 1 = SIP, 2 = H323, 3 = CTI/JTAPI, 4 = Q931, Integer	Identifies the protocol (SIP, H.323, CTI/JTAPI, or Q.931) used between Cisco Unified CM and the upstream voice product in the call path.
incomingProtocolCallRef	Varchar(32)	Identifies the globally unique call reference identification for the protocol. The value is received from the upstream voice product. The value is alpha–numeric and truncated to 32 characters.

Field Name	Range of Values	Description
outgoingProtocolID	0 = Unknown, 1 = SIP, 2 = H323, 3 = CTI/JTAPI, 4 = Q931, Integer	Identifies the protocol (SIP, H.323, CTI/JTAPI, or Q.931) used between Cisco Unified CM and the downstream voice product in the call path.
outgoingProtocolCallRef	Varchar(32)	Identifies the globally unique call reference identification for the protocol. The value is passed to the next downstream voiced product. The value is alpha–numeric and truncated to 32 characters.
currentRoutingReason	Positive Integer For field values see Routing Reason Values for External Call Control, on page 232	Displays the reason why the call was intercepted for the active call. This field is used with the external call control feature. See topics related to routing reason values for external call control for a list of reasons. Default value is 0.
origRoutingReason	Positive Integer For a complete list of OnBehalfOf fields, see OnBehalfof Codes, on page 245	Displays the reason why the call was intercepted for the first time. This field is used with the external call control feature, See topics related to routing reason values for external call control for a list of reasons. Default value is 0.
lastRedirectingRoutingReason	Positive Integer For a complete list of OnBehalfOf fields, see OnBehalfof Codes, on page 245	Displays why the call was intercepted for the last time. This field is used with the external call control feature. See topics related to routing reason values for external call control for a list of reasons. Default - Empty string.
huntPilotPartition	Text String	Indicates the partition for the hunt pilot DN. Default - Empty string.
huntPilotDN	Text String	Indicates the hunt pilot DN through which the call is routed. Default - Empty string.

Field Name	Range of Values	Description
calledPartyPatternUsage	Positive Integer	Indicates the pattern of the called party. Default value specifies 5 (PATTERN_ROUTE). • If the huntPilotDN is populated, use the huntPilotDN field value as the hunt pilot. • If the huntPilotDN is not available, check the pattern usage (7 =PATTERN_HUNT_PILOT) in the CDR table to identify the call type. If this call is a hunt list call, use the finalCalledPartyNumber as the huntPilotDN. **Possible value for the fields:** • 0 CallPark PATTERN_CALL_PARK • 1 Conference PATTERN_CONF • 2 Device PATTERN_DEVICE • 3 Translation PATTERN_TRANSLATION • 4 Call Pick Up Group PATTERN_CALL_PICK_UP_GROUP • 5 Route PATTERN_ROUTE • 6 Message Waiting PATTERN_MESSAGE_WAITING • 7 Hunt Pilot PATTERN_HUNT_PILOT • 8 Voice Mail Port PATTERN_VOICE_MAIL_PORT • 9 Domain Routing PATTERN_ROUTE_DOMAIN • 10 IPAddress Routing PATTERN_ROUTE_IPNET • 11 Device template PATTERN_DEVICE_TEMPLATE • 12 Directed Call Park PATTERN_DIRECTED_CALL_PARK • 13 Device Intercom PATTERN_DEVICE_INTERCOM • 14 Translation Intercom PATTERN_TRANSLATION_INTERCOM • 15 Translation Calling Party Number PATTERN_TRANSLATION_CALLING_PARTY_NUMBER • 16 Mobility Handoff PATTERN_MOBILITY_HANDOFF • 17 Mobility DTMF PATTERN_MOBILITY_DTMF • 18 Mobility IVR PATTERN_MOBILITY_IVR • 19 Device Intercom Template PATTERN_DEVICE_INTERCOM_TEMPLATE

Field Name	Range of Values	Description
incomingICID	Text String	Specifies alphanumeric string up to 50 characters.
		This field is populated with the IMS Identifier(ICID) from the P-Charging Vector at the incoming call leg of the call.
		This field will be empty when the call leg has no IMS or SIP trunk with P-Charging-Vector enabled.
		Default = Empty String " "
incomingOrigIOI	Text String	Specifies alphanumeric string up to 50 characters.
		This field is populated with the originating Interoperator Identifier(IOI) from the P-Charging Vector at the incoming call leg of the call.
		This field will be empty when the call leg has no IMS or SIP trunk with P-Charging-Vector enabled.
		Default = Empty String " "
incomingTermIOI	Text String	Specifies alphanumeric string up to 50 characters.
		This field is populated with the terminating Interoperator Identifier(IOI) from the P-Charging Vector at the incoming call leg of the call.
		This field will be empty when the call leg has no IMS or SIP trunk with P-Charging-Vector enabled.
		Default = Empty String " "
outgoingICID	Text String	Specifies alphanumeric string up to 50 characters.
		This field is populated with the IMS Identifier(ICID) from the P-Charging Vector at the outgoing call leg of the call.
		This field will be empty when the call leg has no IMS or SIP trunk with P-Charging-Vector enabled.
		Default = Empty String " "
outgoingOrigIOI	Text String	Specifies alphanumeric string up to 50 characters.
		This field is populated with the originating Interoperator Identifier(IOI) from the P-Charging Vector at the outgoing call leg of the call.
		This field will be empty when the call leg has no IMS or SIP trunk with P-Charging-Vector enabled.
		Default = Empty String " "
outgoingTermIOI	Text String	Specifies alphanumeric string up to 50 characters.
		This field is populated with the terminating Interoperator Identifier(IOI) from the P-Charging Vector at the outgoing call leg of the call.
		This field will be empty when the call leg has no IMS or SIP trunk with P-Charging-Vector enabled.
		Default = Empty String " "

Field Name	Range of Values	Description
outpulsedOriginalCalledPartyNumber	Text String	Specifies alphanumeric string up to 50 characters. The Original called party number outpulsed from the device. Refer to section on *Redirecting Number Transformation* for details. Default = Empty String " "
outpulsedLastRedirectingNumber	Text String	Specifies alphanumeric string up to 50 characters. The Last Redirecting number outpulsed from the device. Refer to section on *Redirecting Number Transformation* for details. Default = Empty String " "
wasCallQueued	Positive Integer	Specifies whether the call has been put into a queue or not. A value of 0 means that the call is not put into any queue; 1 means the call has been put into a queue.
totalWaitTimeInQueue	Positive Integer	Specifies how long a caller has been put into a queue. The value is specified in second. The value is 0 if the call is never put into any queue.
callingPartyNumber_uri	Text String	Specifies an alphanumeric string of up to 254 characters that identifies the calling party if the calling party uses a directory URI for call addressing. If the calling party uses a blended address in the identity headers, this field contains the directory URI portion of the blended address. Default - Empty string "". If the calling party does not use a directory URI, the field stays empty.
originalCalledPartyNumber_uri	Text String	Specifies a string of up to 254 alphanumeric characters that specifies the directory URI to which the original call was addressed, prior to any call forwarding, provided the call was addressed to a directory URI. If a blended address is used for the called party, this field specifies the directory URI portion of the blended address. Default - Empty string "". If destination cannot be reached, or if the called party is a directory number, this field stays empty.
finalCalledPartyNumber_uri	Text String	Specifies an alphanumeric string of up to 254 characters that indicate the directory URI address to which the call finally gets presented, if the final address is a directory URI. If no forwarding occurs, this field shows the same directory URI as the originalCalledPartyNumber_uri field. If a blended address is used for the called number, this field specifies the directory URI portion of the blended address. For calls to a conference bridge, this field contains the actual identifier of the conference bridge, which is an alphanumeric string (for example, b0019901001). Default - Empty string "". If destination cannot be reached, or if a directory number is used for called addressing, this field stays empty.

Field Name	Range of Values	Description
lastRedirectDn_uri	Text String	Specifies an alphanumeric string of up to 254 characters.
		For forwarded calls that use a directory URI for addressing, this field specifies the directory URI of the next to last hop before the call reaches its final destination. If only one hop occurs, this number matches the originalCalledPartyNumber_uri.
		If a blended address is used, this field contains only the directory URI portion of the blended address.
		For calls that are not forwarded, this field matches the originalCalledPartyNumber_uri and the finalCalledPartyNumber_uri.
		For calls to a conference bridge, this field contains the actual identifier of the conference bridge, which is an alphanumeric string (for example, b0019901001).
		Default - Empty string "". If the call is never redirected, or if the address is a directory number, this field remains empty.
mobileCallingPartyNumber	Text string	Specifies the mobile cellular number if the original calling device is a mobile device.
		If the original calling device is not a mobile device, this field remains empty.
		Default - Empty string
finalMobileCalledPartyNumber	Text string	Specifies the mobile called party if the final called device is a mobile device.
		If the final called device is not a mobile device, this field remains empty.
		Default - Empty string
origMobileDeviceName	Text string	Specifies the device name of the calling party if the call is placed from a mobile device.
		If the mobile call uses a remote destination profile, the device name is the mobile number and remote destination profile name. For example, mobileNumber: RDP-name.
		If the mobile device uses a mobile identity, the device name is the mobile identity name.
		If the original device is not a mobile device, this field remains empty.
		Default - Empty string
destMobileDeviceName	Text string	Specifies the name of the destination mobile device.
		If the mobile device uses a remote destination profile the device name is the mobile number and remote destination profile name. For example, mobileNumber: RDP-name.
		If the mobile device uses a mobile identity, the device name is the mobile identity name.
		If the destination device is not a mobile device, this field remains empty.
		Default - Empty string

Field Name	Range of Values	Description
origMobileCallDuration	Positive integer	Specifies the call duration in the mobile network of the originating device if the calling party is a mobile device. If the calling party is not a mobile device, this field remains empty. Default - 0
destMobileCallDuration	Positive integer	Specifies the call duration in the mobile network for the destination device if the destination device is a mobile device. If the destination device is not a mobile device, this field remains empty. Default - 0
mobileCallType	Positive integer	Specifies the mobility feature that is invoked for this mobile call. Default - 0
originalCalledPartyPattern	Text String	Specifies numeric string (with special characters) up to 50 characters. This is the pattern to which the original call was placed before any configured translation is applied. Calls to Translation Pattern will always populate the pattern after applying the configured transformation on the translation pattern. Default—empty string "".
finalCalledPartyPattern	Text String	Specifies numeric string (with special characters) string up to 50 characters. The pattern of the final called party to which the call is presented until that call is answered or ringing has ended. If no forwarding occurred, this pattern is the same as originalCalledPartyPattern. This field indicates the pattern before any configured translation rules are applied. This value is the same as the finalCalledPartyNumber if the number is a direct match without any translation Default—empty string "".
lastRedirectingPartyPattern	Text String	Specifies numeric string (with special characters) string up to 50 characters. The pattern of the last party which redirected the call to the current called party. If there is no redirection, the field has the same value as the originalCalledPartyPattern. Default—empty string "".
huntPilotPattern	Text String	Specifies numeric string (with special characters) string up to 50 characters. The huntPilot pattern as configured in the database. This field is populated only when the HuntPilot member answers the call which is placed either directly or due to redirection to the huntPilot. Default - empty string "". If no huntPilot member answers, this field is empty.

Field Name	Range of Values	Description
origDeviceType	Text String	Indicates whether the device that initiated the call was a Spark client that is anchored to Cisco Unified Communications Manager over the Spark Remote Device: • If yes, this field indicates "CiscoSparkRemoteDevice" • If no, this field is empty.
destDeviceType	Text String	Indicates whether the device that was called was a Spark client that is anchored to Cisco Unified Communications Manager over the Spark Remote Device: • If yes, this field indicates "CiscoSparkRemoteDevice" • If no, this field is empty. **Note** If the Spark client "rings" and the CDR Log Calls with Zero Duration Flag service parameter is True, this field gets populated as 'CiscoSparkRemoteDevice' even if an enterprise number was dialed with "Ring all shared lines" configured.
origDeviceSessionID	Text String	Indicates the call Session ID of the originating device. When the session terminates, the system generates a CDR record and the field is populated with the originating device Session ID for the particular call. **Note** If the CDR service parameter 'CDR Log Calls with Zero Duration Flag' is set to 'True', this field is populated even though the call is not answered. The maximum length of this field is restricted to 127 characters. For example, origDeviceSessionID = ab30317fla784dc48fl824d0d3715d86 Default—empty string "".
destDeviceSessionID	Text String	Indicates the call Session ID of the destination device. When the session terminates, the system generates a CDR record and the field is populated with the destination device Session ID for the particular call. The maximum length of this field is restricted to 127 characters. For example, destDeviceSessionID = 47755a9de7794ba387653f2099600ef2 Default—empty string "".

Routing Reason Values for External Call Control

Unified Communications Manager supports the external call control feature, which enables an adjunct route server to make call-routing decisions for Unified Communications Manager by using the Cisco Unified Routing Rules Interface. When you configure external call control, Unified Communications Manager issues a route request that contains the calling party and called party information to the adjunct route server. The adjunct

route server receives the request, applies appropriate business logic, and returns a route response that instructs Unified Communications Manager on how the call should get routed, along with any additional call treatment that should get applied.

The adjunct route server can instruct Unified Communications Manager to allow, divert, or deny the call, modify calling and called party information, play announcements to callers, reset call history so adjunct voicemail and IVR servers can properly interpret calling/called party information, and log reason codes that indicate why calls were diverted or denied.

The following table includes the reasons that can display for the currentRoutingReason, origRoutingReason, or lastRedirectingRoutingReason fields.

Table 90: Routing Reason Values for External Call Control

Field Value	Reason	Description
0	PDPDecision_NONE	This value indicates that the route server did not return a routing directive to the Unified Communications Manager.
1	PDPDecision_Allow_Fulfilled	This value indicates that Unified Communications Manager allowed a call.
2	PDPDecision_Allow_Unfulfilled	This value indicates that Unified Communications Manager disallowed a call.
3	PDPDecision_Divert_Fulfilled	This value indicates that Unified Communications Manager diverted the call.
4	PDPDecision_Divert_Unfulfilled	This value indicates that Unified Communications Manager was not able to divert the call.
5	PDPDecision_Forward_Fulfilled	This value indicates that Unified Communications Manager forwarded the call.
6	PDPDecision_Forward_Unfulfilled	This value indicates that Unified Communications Manager was unable to forward the call.
7	PDPDecision_Reject_Fulfilled	This value indicates that Unified Communications Manager rejected the call.
8	PDPDecision_Reject_Unfulfilled	This value indicates that Unified Communications Manager was not able to reject the call.

Cisco Call Detail Records Codes

This chapter section information about the codec types and codes that are used in the Call Detail Record fields.

Codec Types

The following table contains the compression and payload types that may appear in the codec fields.

Table 91: Codec Types

Value	Description
1	NonStandard
2	G711Alaw 64k
3	G711Alaw 56k
4	G711mu-law 64k
5	G711mu-law 56k
6	G722 64k
7	G722 56k
8	G722 48k
9	G7231
10	G728
11	G729
12	G729AnnexA
13	Is11172AudioCap
14	Is13818AudioCap
15	G.729AnnexB
16	G.729 Annex AwAnnexB
18	GSM Full Rate
19	GSM Half Rate
20	GSM Enhanced Full Rate
25	Wideband 256K
32	Data 64k
33	Data 56k
40	G7221 32K
41	G7221 24K
42	AAC
43	MP4ALATM_128
44	MP4ALATM_64

Value	Description
45	MP4ALATM_56
46	MP4ALATM_48
47	MP4ALATM_32
48	MP4ALATM_24
49	MP4ALATM_NA
80-	GSM
81	ActiveVoice
82	G726 32K
83	G726 24K
84	G726 16K
86	iLBC
89	iSAC
90	OPUS
100	H261
101	H263
102	Vieo
103	H264
104	H264_SVC
105	T120
106	H224
107	T38Fax
108	TOTE
109	H265
110	H264_UC
111	XV150_MR_711U
112	NSE_VBD_711U
113	XV150_MR_729A
114	NSE_VBD_729A

Value	Description
115	H264_FEC
120	Clear_Chan
222	Universal_Xcoder
257	RFC2833_DynPayload
258	PassThrough
259	Dynamic_Payload_PassThru
260	DTMF_OOB
261	Inband_DTMF_RFC2833
299	NoAudio
300	v150_LC_ModemRelay
301	v150_LC_SPRT
302	v150_LC_SSE
303	T38 fax

Call Termination Cause Codes

The following tables contain call termination cause codes that may appear in the Cause fields in CDRs.

Note Cause Code is defined in call control as Natural number. It is a 32 bit unsigned (long) positive integer with values ranging from 0 to +4,294,967,295.

Table 92: Call Termination Cause Codes

Code	Description
0	No error
1	Unallocated (unassigned) number
2	No route to specified transit network (national use)
3	No route to destination
4	Send special information tone
5	Misdialed trunk prefix (national use)
6	Channel unacceptable

Code	Description
7	Call awarded and being delivered in an established channel
8	Preemption
9	Preemption—circuit reserved for reuse
16	Normal call clearing
17	User busy
18	No user responding
19	No answer from user (If "No Answer Ring duration" value is greater than the T301 Timer value and after T301 Timer expiry, Call Forwarding No Answer(CFNA) Feature would be invoked).
20	Subscriber absent
21	Call rejected
22	Number changed
25	Natural Exchange Routing Error
26	Non-selected user clearing
27	Destination out of order
28	Invalid number format (address incomplete)
29	Facility rejected
30	Response to STATUS ENQUIRY
31	Normal, unspecified
34	No circuit/channel available
38	Network out of order
39	Permanent frame mode connection out of service
40	Permanent frame mode connection operational
41	Temporary failure
42	Switching equipment congestion
43	Access information discarded
44	Requested circuit/channel not available
46	Precedence call blocked
47	Resource unavailable, unspecified

Code	Description
49	Quality of Service not available
50	Requested facility not subscribed
53	Service operation violated
54	Incoming calls barred
55	Incoming calls barred within Closed User Group (CUG)
57	Bearer capability not authorized
58	Bearer capability not presently available
62	Inconsistency in designated outgoing access information and subscriber class
63	Service or option not available, unspecified
65	Bearer capability not implemented
66	Channel type not implemented
69	Requested facility not implemented
70	Only restricted digital information bearer capability is available (national use)
79	Service or option that is not implemented, unspecified
81	Invalid call reference value
82	Identified channel does not exist
83	A suspended call exists, but this call identity does not
84	Call identity in use
85	No call suspended
86	Call having the requested call identity has been cleared
87	User not member of CUG (Closed User Group)
88	Incompatible destination
90	Destination number missing and DC not subscribed
91	Invalid transit network selection (national use)
95	Invalid message, unspecified
96	Mandatory information element is missing
97	Message type nonexistent or not implemented

Code	Description
98	Message is not compatible with the call state, or the message type is nonexistent or not implemented
99	An information element or parameter does not exist or is not implemented
100	Invalid information element contents
101	The message is not compatible with the call state
102	Call terminated when timer expired; a recovery routine that is executed to recover from the error
103	Parameter nonexistent or not implemented - passed on (national use)
110	Message with unrecognized parameter discarded
111	Protocol error, unspecified
122	Precedence Level Exceeded
123	Device not Preemptable
125	Out of bandwidth (Cisco specific)
126	Call split (Cisco specific)
127	Interworking, unspecified
129	Precedence out of bandwidth
130	Natural Isolated Code
131	Call Control Discovery PSTN Failover (Cisco specific)
132	IME QOS Fallback (Cisco specific)
133	PSTN Fallback locate Call Error (Cisco specific)
134	PSTN Fallback wait for DTMF Timeout (Cisco specific)
135	IME Failed Connection Timed out (Cisco specific)
136	IME Failed not enrolled (Cisco specific)
137	IME Failed socket error (Cisco specific)
138	IME Failed domain blocked (Cisco specific)
139	IME Failed prefix blocked (Cisco specific)
140	IME Failed expired ticket (Cisco specific)
141	IME Failed remote no matching route (Cisco specific)
142	IME Failed remote unregistered (Cisco specific)

Code	Description
143	IME Failed remote IME disabled (Cisco specific)
144	IME Failed remote invalid IME trunk URI (Cisco specific)
145	IME Failed remote URI not E164 (Cisco specific)
146	IME Failed remote called number not available (Cisco specific)
147	IME Failed Invalid Ticket (Cisco specific)
148	IME Failed unknown (Cisco specific)
155	DCC Allowed Percentage Exceeded

Table 93: Cisco-Specific Call Termination Cause Codes

Decimal Value Code	Hex Value Code	Description
262144	0x40000	Conference Full (was 124)
393216	0x60000	Call split (was 126) This code applies when a call terminates during a transfer operation because it was split off and terminated (was not part of the final transferred call). This code can help you to determine which calls terminated as part of a feature operation.
458752	0x70000	Conference drop any party/Conference drop last party (was 128)
16777257	0x1000029	CCM_SIP_400_BAD_REQUEST
33554453	0x2000015	CCM_SIP_401_UNAUTHORIZED
50331669	0x3000015	CCM_SIP_402_PAYMENT_REQUIRED
67108885	0x4000015	CCM_SIP_403_FORBIDDEN
83886081	0x5000001	CCM_SIP_404_NOT_FOUND
100663359	0x600003F	CCM_SIP_405_METHOD_NOT_ALLOWED
117440591	0x700004F	CCM_SIP_406_NOT_ACCEPTABLE
134217749	0x8000015	CCM_SIP_407_PROXY_AUTHENTICATION_REQUIRED
150995046	0x9000066	CCM_SIP_408_REQUEST_TIMEOUT
184549398	0xB000016	CCM_SIP__410_GONE
201326719	0xC00007F	CCM_SIP_411_LENGTH_REQUIRED
234881151	0xE00007F	CCM_SIP_413_REQUEST_ENTITY_TOO_LONG
251658367	0xF00007F	CCM_SIP_414_REQUEST_URI_TOO_LONG

Decimal Value Code	Hex Value Code	Description
268435535	0x1000004F	CCM_SIP_415_UNSUPPORTED_MEDIA_TYPE
285212799	0x1100007F	CCM_SIP_416_UNSUPPORTED_URI_SCHEME
83886207	0x1500007F	CCM_SIP_420_BAD_EXTENSION
369098879	0x1600007F	CCM_SIP_421_EXTENSION_REQUIRED
402653311	0x1800007F	CCM_SIP_423_INTERVAL_TOO_BRIEF
419430421	0x19000015	CCM_SIP_424_BAD_LOCATION_INFO
503316501	0x1E000015	CCM_SIP_429_PROVIDE_REFER_IDENTITY
1073741842	0x40000012	CCM_SIP_480_TEMPORARILY_UNAVAILABLE
1090519081	0x41000029	CCM_SIP_481_CALL_LEG_DOES_NOT_EXIST
1107296281	0x42000019	CCM_SIP_482_LOOP_DETECTED = 0x42000000 + EXCHANGE_ROUTING_ERROR
1124073497	0x43000019	CCM_SIP_483_TOO_MANY_HOOPS
1140850716	0x4400001C	CCM_SIP_484_ADDRESS_INCOMPLETE
1157627905	0x45000001	CCM_SIP_485_AMBIGUOUS
1174405137	0x46000011	CCM_SIP_486_BUSY_HERE
1191182367	0x4700001F	CCM_SIP_487_REQUEST_TERMINATED
1207959583	0x4800001F	CCM_SIP_488_NOT_ACCEPTABLE_HERE
1258291217	0x4B000011	CCM_SIP_491_REQUEST_PENDING
1291845649	0x4D000011	CCM_SIP_493_UNDECIPHERABLE
1409286185	0x54000029	CCM_SIP_500_SERVER_INTERNAL_ERROR
1442840614	0x56000026	CCM_SIP_502_BAD_GATEWAY
1459617833	0x57000029	CCM_SIP_503_SERVICE_UNAVAILABLE
2801795135	0xA700003F	CCM_SIP_503_SERVICE_UNAVAILABLE_SER_OPTION_NOAV
1476395110	0x58000066	CCM_SIP__504_SERVER_TIME_OUT
1493172351	0x5900007F	CCM_SIP_505_SIP_VERSION_NOT_SUPPORTED
1509949567	0x5A00007F	CCM_SIP_513_MESSAGE_TOO_LARGE
2701131793	0xA1000011	CCM_SIP_600_BUSY_EVERYWHERE
2717909013	0xA2000015	CCM_SIP_603_DECLINE

Decimal Value Code	Hex Value Code	Description
2734686209	0xA3000001	CCM_SIP_604_DOES_NOT_EXIST_ANYWHERE
2751463455	0xA400001F	CCM_SIP_606_NOT_ACCEPTABLE
655360	0xA0000	CTI_REQUEST_INVALID_PRIMARY_CALL_STATE
851976	0xD0008	PREEMPTION_NON_IP
917512	0xE0008	PREEMPTION_NETWORK
301989951	0x1200003F	CCM_SIP_417_ERR_RESOURCE_PRIORITY_ROUTINE
570425365	0x22000015	CCM_SIP_433_ANONYMITY_DISALLOWED

Redirect Reason Codes

The following table contains the available Redirect Reason Codes that may appear in a record.

Q.931 Standard Redirect Reason Codes	
Value	**Description**
0	Unknown
1	Call Forward Busy
2	Call Forward No Answer
4	Call Transfer
5	Call Pickup
7	Call Park
8	Call Park Pickup
9	CPE Out of Order
10	Call Forward
11	Call Park Reversion
15	Call Forward all
Nonstandard Redirect Reason Codes	
18	Call Deflection
34	Blind Transfer
50	Call Immediate Divert
66	Call Forward Alternate Party

Q.931 Standard Redirect Reason Codes	
Value	**Description**
82	Call Forward On Failure
98	Conference
114	Barge
129	Aar
130	Refer
146	Replaces
162	Redirection (3xx)
177	SIP-forward busy greeting
178	Call Forward Unregistered
207	Follow Me (SIP-forward all greeting)
209	Out of Service (SIP-forward busy greeting)
239	Time of Day (SIP-forward all greeting)
242	Do Not Disturb (SIP-forward no answer greeting)
257	Unavailable (SIP-forward busy greeting)
274	Away (SIP-forward no answer greeting)
303	Mobility HandIn
319	Mobility HandOut
335	Mobility Follow Me
351	Mobility Redial
354	Recording
370	Monitoring
399	Mobility IVR
401	Mobility DVOR
402	Mobility EFA
403	Mobility Session Handoff
415	Mobility Cell Pickup
418	Click to Conference

Q.931 Standard Redirect Reason Codes	
Value	**Description**
434	Forward No Retrieve
450	Forward No Retrieve Send Back to Parker
464	Call Control Discovery (indicates that the call is redirected to a PSTN failover number)
480	Intercompany Media Engine (IME)
496	IME Connection Timed Out
512	IME Not Enrolled
528	IME Socket Error
544	IME Domain Blacklisted
560	IME Prefix Blacklisted
576	IME Expired Ticket
592	IME Remote No Matching Route
608	IME Remote Unregistered
624	IME Remote IME Disabled
640	IME Remote Invalid IME Trunk URI
656	IME Remote URI not E164
672	IME Remote Called Number Not Available
688	IME Invalid Ticket
704	IME Unknown
720	IME PSTN Fallback
738	Presence Enabled Routing
752	Agent Greeting
783	NuRD
786	Native Call Queuing, queue a call
802	Native Call Queuing, de-queue a call
818	Native Call Queuing, redirect to the second destination when no agent is logged in

Q.931 Standard Redirect Reason Codes	
Value	Description
834	Native Call Queuing, redirect to the second destination when the queue is full
850	Native Call Queuing, redirect to the second destination when the maximum wait time in queue is reached

OnBehalfof Codes

The following table contains the available OnBehalfof Codes that may appear in a CDR record.

Table 94: OnBehalfof Codes

Value	Description
0	Unknown
1	CctiLine
2	Unicast Shared Resource Provider
3	Call Park
4	Conference
5	Call Forward
6	Meet-Me Conference
7	Meet-Me Conference Intercepts
8	Message Waiting
9	Multicast Shared Resource Provider
10	Transfer
11	SSAPI Manager
12	Device
13	Call Control
14	Immediate Divert
15	Barge
16	Pickup
17	Refer
18	Replaces

Value	Description
19	Redirection
20	Callback
21	Path Replacement
22	FacCmc Manager
23	Malicious Call
24	Mobility
25	Aar
26	Directed Call Park
27	Recording
28	Monitoring
29	CCDRequestingService
30	Intercompany Media Engine
31	FallBack Manager
32	Presence Enabled Routing
33	AgentGreeting
34	NativeCallQueuing
35	MobileCallType

CDR Examples

This chapter provides examples of the call detail records (CDRs) that the Unified Communications ManagerRelease system generates for all call types. You can use this information for post-processing activities such as generating billing records and network analysis.

When you install your system, the system enables CDRs by default. You can enable or disable CDRs at any time that the system is in operation. You do not need to restart Unified Communications Manager for the change to take effect. The system responds to all changes within a few seconds.

AAC Calls

Advanced Audio Coding-Low Delay (AAC-LD) is a super-wideband codec that provides excellent speech and music quality at various bit rates. The audio quality scales up with the bit rate. Two mutually incompatible RTP payload formats are supported: mpeg4-generic and MP4A-LATM.

For AAC-LD (mpeg4-generic) calls, the codec type (payload capability) value 42 is used.

For AAC-LD (MP4A-LATM) calls, a separate codec type value is used for each supported bit rate. The codec type values are 43 (128K), 44 (64K), 45 (56K), 46 (48K), 47 (32K), and 48 (24K).

The system adds an audio bandwidth field to the CDR for AAC-LD calls.

Field Names	Definitions
origMediaCap_bandwidth	This integer field contains the audio bandwidth.
destMediaCap_bandwidth	This integer field contains the audio bandwidth.

The system populates the bandwidth fields based on the following table:

Codec	Bandwidth
G711Alaw64k	64

Codec	Bandwidth
G711Alaw56k	56
G711mu-law64k	64
G711mu-law56k	56
G722 64k	64
G722 56k	56
G722 48k	48
G7231	7
G728	16
G729	8
G729AnnexA	8
Is11172AudioCap	0
Is13818AudioCap	0
G729AnnexB	8
G729AnnexAwAnnexB	8
GSM Full Rate	13
GSM Half Rate	7
GSM Enhanced Full Rate	13
Wideband 256K	256
Data 64k	64
Data 56k	56
G7221 32K	32
G7221 24K	24
AAC-LD (mpeg4-generic)	256
AAC-LD (MP4A-LATM) 128K	128
AAC-LD (MP4A-LATM) 64K	64
AAC-LD (MP4A-LATM) 56K	56
AAC-LD (MP4A-LATM) 48K	48
AAC-LD (MP4A-LATM) 32K	32

Codec	Bandwidth
AAC-LD (MP4A-LATM) 24K	24
GSM	13
iLBC	15 or 13
iSAC	32
XV150 MR 729A	8
NSE VBD 729A	8

AAC-LD (mpeg4-generic) Calls CDR Example

This example applies to a call with AAC-LD (mpeg4-generic) codec:

Field Names	AAC CDR
globalCallID_callId	121
origLegCallIdentifier	101
destLegCallIdentifier	102
callingPartyNumber	51234
originalCalledPartyNumber	57890
finalCalledPartyNumber	57890
lastRedirectDn	57890
origCause_Value	0
dest_CauseValue	16
origMediaCap_payloadCapability	42
origMediaCap_Bandwidth	256
destMediaCap_payloadCapability	42
destMediaCap_Bandwidth	256

Abandoned Calls

The logging of calls with zero duration represents an optional action. If logging calls with zero duration is enabled, the following actions occur:

- All calls generate a CDR.

- If the call is abandoned, such as when a phone is taken off hook and placed back on hook, various fields do not contain data. In this case, the originalCalledPartyNumber, finalCalledPartyNumber, the partitions that are associated with them, the destIpAddr, and the dateTimeConnect fields all remain blank. All calls that are not connected have a duration of 0 second. When a call is abandoned, the cause code contains **0**.

- If the user dials a directory number and abandons the call before it connects, the FirstDest and FinalDest fields and their associated partitions contain the directory number and the partition to which the call would have been extended. The DestIp field remains blank, and the duration specifies 0 second.

Note **You must enable the CDR Log Calls With Zero Duration Flag service parameter to log calls with zero duration.** This parameter enables or disables the logging of CDRs for calls which lasted less than 1second. See the "Configuring CDR Service Parameters" section in the *CDR Analysis and Reporting Administration Guide* for more information.

Examples of Abandoned Calls

1. Extension 2001 goes off hook, then on hook.

Field Names	CDR
globalCallID_callId	1
origLegCallIdentifier	100
destLegCallIdentifier	0
callingPartyNumber	2001
originalCalledPartyNumber	
finalCalledPartyNumber	
lastRedirectDn	
origCause_Value	16
dest_CauseValue	0
duration	0

2. Extension 2001 calls 2309, but 2001 hangs up (abandons) the call before it is answered.

Field Names	CDR
globalCallID_callId	2
origLegCallIdentifier	200
destLegCallIdentifier	201
callingPartyNumber	2001

Field Names	CDR
originalCalledPartyNumber	2309
finalCalledPartyNumber	2309
lastRedirectDn	2309
origCause_Value	16
dest_CauseValue	0
duration	0

Ad Hoc Conference Linking

The advanced ad hoc conference linking feature allows you to link multiple ad hoc conferences together by adding an ad hoc conference to another ad hoc conference as if it were an individual participant. You can also use the methods that are available for adding individual participants to an ad hoc conference to add another conference to an ad hoc conference.

CDRs that the advanced ad hoc conference linking feature generates include a field that is called OrigConversationId. This field associates the conference bridges that are involved in a linked conference. The Comment field of the CDR adds the ConfRequestorDN and ConfRequestorDeviceName tags to indicate add/drop of participants of the conference by a non-controller of the conference.

The following scenarios show some of the various CDRs:

Conference Linking Using Join

The direction of the call between the bridges depends upon which of the two calls that involve Carol is primary. The primary call survives, and the secondary call gets redirected to the conference.

Alice calls Bob, and Bob conferences in Carol (Conference 1). Dave calls Carol, and conferences in Ed (Conference 2). Two separate conferences get created. Carol exists in both conferences. At this point, CDR1, CDR2, CDR3, and CDR4 get generated.

Carol joins the two conferences. At this point, CDR5 gets generated.

When the remaining parties hang up, the remaining CDRs get generated in the order that the parties leave the conference.

Conference Linking Using Join Example

Field Names	CDR1: Alice -> Bob (original call)	CDR2: Bob -> Carol (consultation call)	CDR3: Dave -> Carol (original call)	CDR4: Dave -> Ed (consultation call)	CDR5: Carol -> Conference Bridge (conference call)	CDR6: Dave -> Conference Bridge (conference call)
globalCallID_callId	1	2	3	4	3	3
origLegCallIdentifier	11	13	21	23	22	22
destLegCallIdentifier	12	14	22	24	25	26

Field Names	CDR1: Alice -> Bob (original call)	CDR2: Bob -> Carol (consultation call)	CDR3: Dave -> Carol (original call)	CDR4: Dave -> Ed (consultation call)	CDR5: Carol -> Conference Bridge (conference call)	CDR6: Dave -> Conference Bridge (conference call)
callingPartyNumber	1000	1001	1003	1003	1002	1003
originalCalledPartyNumber	1001	1002	1002	1004	b0029901222	b0029901222
finalCalledPartyNumber	1001	1002	1002	1004	b0029901222	b0029901222
lastRedirectDn	1001	1002	1002	1004	1003	1003
origTerminationOnBehalfOf	4	4	4	4	4	4
destTerminationOnBehalfOf	4	4	4	4	4	4
lastRedirectRedirectReason	0	0	0	0	98	98
lastRedirectRedirectOnBehalfOf	0	0	0	0	4	4
origConversationID	0	0	0	0	0	0
destConversationID	0	0	0	0	2222	2222
Comment					`ConfControllerDn=1001;ConfControllerDeviceName=SEP0003E333FEBD;ConfRequestorDn-1001;ConfRequestorDeviceName=SEP0003E333FEBD`	`ConfControllerDn=1003;ConfControllerDeviceName=SEP0003E333FAD1;ConfRequestorDn-1003;ConfRequestorDeviceName=SEP0003E333FAD1`

Field Names	CDR7: Dave -> Conference Bridge (conference call)	CDR8: Ed -> Conference Bridge (conference call)	CDR9: Conference Bridge (conference call)	CDR10: Alice -> Conference Bridge (conference call)	CDR11: Bob -> Conference Bridge (conference call)
globalCallID_callId	3	3	1	1	1
origLegCallIdentifier	21	24	17	11	12
destLegCallIdentifier	26	27	28	15	16
callingPartyNumber	1003	1004	b0029901001	1000	1001
originalCalledPartyNumber	b0029901222	b0029901222	b0029901222	b0029901001	b0029901001
finalCalledPartyNumber	b0029901222	b0029901222	b0029901222	b0029901001	b0029901001
lastRedirectDn	1003	1003	1002	1001	1001
origTerminationOnBehalfOf	0	0	0	0	0
destTerminationOnBehalfOf	0	0	0	0	0
lastRedirectRedirectReason	98	98	4	98	98
lastRedirectRedirectOnBehalfOf	4	4	10	4	4
origConversationID	0	0	0	0	0

Field Names	CDR7: Dave -> Conference Bridge (conference call)	CDR8: Ed -> Conference Bridge (conference call)	CDR9: Conference Bridge (conference call)	CDR10: Alice -> Conference Bridge (conference call)	CDR11: Bob -> Conference Bridge (conference call)
destConversationID	2222	2222	2222	2222	2222
Comment	ConfControllerDn=1003;ConfControllerDeviceName=SEP0003E333FAD1;ConfRequestorDn-1003;ConfRequestorDeviceName=SEP0003E333FAD1	ConfControllerDn=1003;ConfControllerDeviceName=SEP0003E333FAD1;ConfRequestorDn-1003;ConfRequestorDeviceName=SEP0003E333FAD1	ConfControllerDn=1003;ConfControllerDeviceName=SEP0003E333FAD1;ConfRequestorDn-1003;ConfRequestorDeviceName=SEP0003E333FAD1	ConfControllerDn=1001;ConfControllerDeviceName=SEP0003E333FEBD;ConfRequestorDn-1001;ConfRequestorDeviceName=SEP0003E333FEBD	ConfControllerDn=1001;ConfControllerDeviceName=SEP0003E333FEBD;ConfRequestorDn-1001;ConfRequestorDeviceName=SEP0003E333FEBD

Conference Linking Using Transfer or Direct Transfer

Alice calls Bob, and Bob conferences Carol (Conference 1). Dave calls Carol and conferences in Ed (Conference 2). Two separate conferences get created; Carol exists in both conferences. At this point, CDR1, CDR2, CDR3, and CDR4 get generated.

Carol presses the **Direct Transfer** (DirTrfr) softkey on the call to the first conference. Alice and Bob exist in Conference1 while Dave and Ed are in Conference2. When the remaining parties hang up, the remaining CDRs get generated in the order in which the parties leave the conference.

Note The direction of the call between the bridges depends on which of the two calls that involve Carol is the primary call. The primary call side represents the calling party of the transferred call.

Conference Linking Using Transfer or Direct Transfer Example

Field Names	CDR1: Alice -> Bob (original call)	CDR2: Bob -> Carol (consultation call)	CDR3: Dave -> Carol (original call)	CDR4: Dave -> Carol (consultation call)	CDR5: Carol -> Conference Bridge (conference call)	CDR6: Carol -> Conference Bridge (conference call)
globalCallID_callId	1	2	3	4	1	3
origLegCallIdentifier	11	13	21	23	14	22
destLegCallIdentifier	12	14	22	24	17	25
callingPartyNumber	1000	1001	1003	1003	1002	1003
originalCalledPartyNumber	1001	1002	1002	1004	b0029901001	b0029901222
finalCalledPartyNumber	1001	1002	1002	1004	b0029901001	b0029901222
lastRedirectDn	1001	1002	1002	1004	1001	1003
origTerminationOnBehalfOf	4	4	4	4	10	10
destTerminationOnBehalfOf	4	4	4	4	10	10
lastRedirectRedirectReason	0	0	0	0	98	98

Field Names	CDR1: Alice -> Bob (original call)	CDR2: Bob -> Carol (consultation call)	CDR3: Dave -> Carol (original call)	CDR4: Dave -> Carol (consultation call)	CDR5: Carol -> Conference Bridge (conference call)	CDR6: Carol -> Conference Bridge (conference call)
lastRedirectRedirectOnBehalfOf	0	0	0	0	4	4
origConversationID	0	0	0	0	0	0
destConversationID	0	0	0	0	1111	2222
Comment					`ConfControllerDn=1001;ConfControllerDeviceName=SEP0003E333FEBD;ConfRequestorDn-1001;ConfRequestorDeviceName=SEP0003E333FEBD`	`ConfControllerDn=1003;ConfControllerDeviceName=SEP0003E333FAD1;ConfRequestorDn-1003;ConfRequestorDeviceName=SEP0003E333FAD1`

Field Names	CDR7: Dave -> Conference Bridge (conference call)	CDR8: Ed -> Conference Bridge (conference call)	CDR9: Conference Bridge (conference call)	CDR10: Alice -> Conference Bridge (conference call)	CDR11: Bob -> Conference Bridge (conference call)
globalCallID_callId	3	3	1	1	1
origLegCallIdentifier	21	24	17	11	12
destLegCallIdentifier	26	27	28	15	16
callingPartyNumber	1003	1004	b0029901001	1000	1001
originalCalledPartyNumber	b0029901222	b0029901222	b0029901222	b0029901001	b0029901001
finalCalledPartyNumber	b0029901222	b0029901222	b0029901222	b0029901001	b0029901001
lastRedirectDn	1003	1003	1002	1001	1001
origTerminationOnBehalfOf	0	0	0	0	0
destTerminationOnBehalfOf	0	0	0	0	0
lastRedirectRedirectReason	98	98	4	98	98
lastRedirectRedirectOnBehalfOf	4	4	10	4	4
origConversationID	0	0	111	0	0
destConversationID	2222	2222	2222	1111	1111
Comment	`ConfControllerDn=1003;ConfControllerDeviceName=SEP0003E333FAD1;ConfRequestorDn-1003;ConfRequestorDeviceName=SEP0003E333FAD1`	`ConfControllerDn=1003;ConfControllerDeviceName=SEP0003E333FAD1;ConfRequestorDn-1003;ConfRequestorDeviceName=SEP0003E333FAD1`	`ConfControllerDn=1003;ConfControllerDeviceName=SEP0003E333FAD1;ConfRequestorDn-1003;ConfRequestorDeviceName=SEP0003E333FAD1`	`ConfControllerDn=1001;ConfControllerDeviceName=SEP0003E333FEBD;ConfRequestorDn-1001;ConfRequestorDeviceName=SEP0003E333FEBD`	`ConfControllerDn=1001;ConfControllerDeviceName=SEP0003E333FEBD;ConfRequestorDn-1001;ConfRequestorDeviceName=SEP0003E333FEBD`

Linked Conference Party Removal

CDRs get generated in the order in which the parties leave a conference. When the remaining conference only has two parties, the two parties get joined directly together.

Alice calls Bob, and Bob conferences Carol (Conference 1). Dave calls Carol, and conferences in Ed (Conference 2). Two separate conferences get created; Carol participates in both conferences. At this point, CDR1, CDR2, CDR3, and CDR4 get generated.

Carol presses the **Direct Transfer** (DirTrfr) softkey on the call to the first conference. Alice and Bob exist in Conference1 while Dave and Ed are in Conference2. Conference 1 and Conference 2 get transferred together. Carol hangs up and leaves only two parties in Conference 1.

Because only two parties exist in the conference, Bob and the conference link get joined together. At this point, CDR7, CDR8, and CDR9 get generated. Because Bob is the controller in Conference1, Bob represents the calling party in the call between Bob and Conference2. When the remaining parties hang up, the remaining CDRs get generated in the order in which the parties leave the conference.

> **Note** If Bob is not a controller and the chaining occurs before Bob joins Conference1, the call between Bob and Conference2 gets generated in the opposite direction from what is shown in the CDRs.

The direction of the call between the final two parties of a conference depends on who has been in the conference the longest. The party that has been in the conference the longest becomes the calling party.

Removing a Party From a Linked Conference Example

Field Names	CDR1: Alice -> Bob (original call)	CDR2: Bob -> Carol (consultation call)	CDR3: Dave -> Carol (original call)	CDR4: Dave -> Carol (consultation call)	CDR5: Carol -> Conference Bridge (conference call)	CDR6: Carol -> Conference Bridge (conference call)
globalCallID_callId	1	2	3	4	1	3
origLegCallIdentifier	11	13	21	23	14	22
destLegCallIdentifier	12	14	22	24	17	25
callingPartyNumber	1000	1001	1003	1003	1002	1002
originalCalledPartyNumber	1001	1002	1002	1004	b0029901001	b0029901222
finalCalledPartyNumber	1001	1002	1002	1004	b0029901001	b0029901222
lastRedirectDn	1001	1002	1002	1004	1001	1003
origTerminationOnBehalfOf	4	4	4	4	10	10
destTerminationOnBehalfOf	4	4	4	4	10	10
lastRedirectRedirectReason	0	0	0	0	98	98
lastRedirectRedirectOnBehalfOf	0	0	0	0	4	4
origConversationID	0	0	0	0	0	0
destConversationID	0	0	0	0	1111	2222

Field Names	CDR1: Alice -> Bob (original call)	CDR2: Bob -> Carol (consultation call)	CDR3: Dave -> Carol (original call)	CDR4: Dave -> Carol (consultation call)	CDR5: Carol -> Conference Bridge (conference call)	CDR6: Carol -> Conference Bridge (conference call)
Comment					`ConfControllerDn=1001;ConfControllerDeviceName=SEP0003E333FEBD;ConfRequestorDn-1001;ConfRequestorDeviceName=SEP0003E333FEBD`	`ConfControllerDn=1003;ConfControllerDeviceName=SEP0003E333FAD1;ConfRequestorDn-1003;ConfRequestorDeviceName=SEP0003E333FAD1`

Field Names	CDR7: Alice -> Conference Bridge (conference call)	CDR8: Bob -> Conference Bridge (conference call)	CDR9: Conference Bridge -> Conference Bridge	CDR10: Bob -> Conference Bridge (conference call)	CDR11: Dave -> Conference Bridge (conference call)	CDR12: Ed -> Conference Bridge (conference call)
globalCallID_callId	1	1	3	3	3	3
origLegCallIdentifier	11	12	25	11	12	24
destLegCallIdentifier	15	16	28	15	16	27
callingPartyNumber	1001	1001	b0029901222	1000	1001	1003
originalCalledPartyNumber	b0029901001	b0029901001	b0029901001	b0029901222	b0029901222	b0029901222
finalCalledPartyNumber	b0029901001	b0029901001	b0029901001	b0029901222	b0029901222	b0029901222
lastRedirectDn	1001	1001	1002	b0029901001	1003	1003
origTerminationOnBehalfOf	16	4	4	4	0	0
destTerminationOnBehalfOf	0	4	4	4	0	0
lastRedirectRedirectReason	98	98	4	98	98	98
lastRedirectRedirectOnBehalfOf	4	4	10	4	4	4
origConversationID	0	0	2222	0	0	0
destConversationID	1111	1111	1111	2222	2222	2222
Comment	`ConfControllerDn=1001;ConfControllerDeviceName=SEP0003E333FEBD;ConfRequestorDn-1001;ConfRequestorDeviceName=SEP0003E333FEBD`	`ConfControllerDn=1001;ConfControllerDeviceName=SEP0003E333FEBD;ConfRequestorDn-1001;ConfRequestorDeviceName=SEP0003E333FEBD`	`ConfControllerDn=1003;ConfControllerDeviceName=SEP0003E333FAD1;ConfRequestorDn-1003;ConfRequestorDeviceName=SEP0003E333FAD1`	`ConfControllerDn=1003;ConfControllerDeviceName=SEP0003E333FAD1;ConfRequestorDn-1003;ConfRequestorDeviceName=SEP0003E333FAD1`	`ConfControllerDn=1003;ConfControllerDeviceName=SEP0003E333FAD1;ConfRequestorDn-1003;ConfRequestorDeviceName=SEP0003E333FAD1`	`ConfControllerDn=1003;ConfControllerDeviceName=SEP0003E333FAD1;ConfRequestorDn-1003;ConfRequestorDeviceName=SEP0003E333FAD1`

Linked Conference Party (Controller) Removal

CDRs get generated in the order in which the parties leave a conference. When the remaining conference only has two parties, these two parties get joined directly together.

Alice calls Bob, and Bob conferences Carol (Conference 1). Dave calls Carol and conferences in Ed (Conference 2). Two separate conferences get created; Carol participates in both conferences. At this point, CDR1, CDR2, CDR3, and CDR4 get generated.

Carol presses the **Direct Transfer** (DirTrfr) softkey on the call to the first conference. Alice and Bob exist in Conference1, while Dave and Ed are in Conference2. Conference 1 and Conference 2 get transferred together. Bob hangs up which leaves only two parties that are connected to Conference1.

Because only two parties exist in Conference1, Alice and the conference link get joined directly together. At this point, CDR7, CDR8, and CDR9 get generated. Because Alice has been in the conference longer, she becomes the calling party in the call between Alice and Conference2. When the remaining parties hang up, the remaining CDRs get generated in the order in which the parties leave the conference.

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>
> **Note** The direction of a call between the final two parties of a conference depends on who has been in the conference the longest. The party that has been in the conference the longest becomes the calling party.

Removing a Controller From a Linked Conference Example

Field Names	CDR1: Alice -> Bob (original call)	CDR2: Bob -> Carol (consultation call)	CDR3: Dave -> Carol (original call)	CDR4: Dave -> Carol (consultation call)	CDR5: Carol -> Conference Bridge (conference call)	CDR6: Carol -> Conference Bridge (conference call)
globalCallID_callId	1	2	3	4	1	3
origLegCallIdentifier	11	13	21	23	14	22
destLegCallIdentifier	12	14	22	24	17	25
callingPartyNumber	1000	1001	1003	1003	1002	1002
originalCalledPartyNumber	1001	1002	1002	1004	b0029901001	b0029901222
finalCalledPartyNumber	1001	1002	1002	1004	b0029901001	b0029901222
lastRedirectDn	1001	1002	1002	1004	1001	1003
origTerminationOnBehalfOf	4	4	4	4	10	10
destTerminationOnBehalfOf	4	4	4	4	10	10
lastRedirectRedirectReason	0	0	0	0	98	98
lastRedirectRedirectOnBehalfOf	0	0	0	0	4	4
origConversationID	0	0	0	0	0	0
destConversationID	0	0	0	0	1111	2222

Field Names	CDR1: Alice -> Bob (original call)	CDR2: Bob -> Carol (consultation call)	CDR3: Dave -> Carol (original call)	CDR4: Dave -> Carol (consultation call)	CDR5: Carol -> Conference Bridge (conference call)	CDR6: Carol -> Conference Bridge (conference call)
Comment					`ConfControllerDn=1001;ConfControllerDeviceName=SEP0003E333FEBD;ConfRequestorDn-1001;ConfRequestorDeviceName=SEP0003E333FEBD`	`ConfControllerDn=1003;ConfControllerDeviceName=SEP0003E333FAD1;ConfRequestorDn-1003;ConfRequestorDeviceName=SEP0003E333FAD1`

Field Names	CDR7: Conference Bridge -> Conference Bridge	CDR8: Alice -> Conference Bridge (conference call)	CDR9: Conference Bridge -> Conference Bridge	CDR10: Alice -> Conference Bridge (conference call)	CDR11: Dave -> Conference Bridge (conference call)	CDR12: Ed -> Conference Bridge (conference call)
globalCallID_callId	1	1	3	3	3	3
origLegCallIdentifier	12	11	25	11	21	24
destLegCallIdentifier	16	15	28	25	26	27
callingPartyNumber	1001	1000	b0029901001	1001	1003	1004
originalCalledPartyNumber	b0029901001	b0029901001	b0029901001	b0029901222	b0029901222	b0029901222
finalCalledPartyNumber	b0029901001	b0029901001	b0029901001	b0029901222	b0029901222	b0029901222
lastRedirectDn	1001	1001	1002	b0029901001	1003	1003
origTerminationOnBehalfOf	4	16	4	4	0	0
destTerminationOnBehalfOf	4	0	4	4	0	0
lastRedirectRedirectReason	98	98	4	98	98	98
lastRedirectRedirectOnBehalfOf	4	4	10	4	4	4
origConversationID	0	0	2222	0	0	0
destConversationID	1111	1111	1111	2222	2222	2222
Comment	`ConfControllerDn=1001;ConfControllerDeviceName=SEP0003E333FEBD;ConfRequestorDn-1001;ConfRequestorDeviceName=SEP0003E333FEBD`	`ConfControllerDn=1001;ConfControllerDeviceName=SEP0003E333FEBD;ConfRequestorDn-1001;ConfRequestorDeviceName=SEP0003E333FEBD`	`ConfControllerDn=1003;ConfControllerDeviceName=SEP0003E333FAD1;ConfRequestorDn-1003;ConfRequestorDeviceName=SEP0003E333FAD1`	`ConfControllerDn=1003;ConfControllerDeviceName=SEP0003E333FAD1;ConfRequestorDn-1003;ConfRequestorDeviceName=SEP0003E333FAD1`	`ConfControllerDn=1003;ConfControllerDeviceName=SEP0003E333FAD1;ConfRequestorDn-1003;ConfRequestorDeviceName=SEP0003E333FAD1`	`ConfControllerDn=1003;ConfControllerDeviceName=SEP0003E333FAD1;ConfRequestorDn-1003;ConfRequestorDeviceName=SEP0003E333FAD1`

Linked Conference Removal

Alice calls Bob, and Bob conferences Carol (Conference 1). Dave calls Carol, and conferences in Ed (Conference 2). Two separate conferences get created; Carol participates in both conferences. At this point, CDR1, CDR2, CDR3, and CDR4 get generated.

Carol presses the **Direct Transfer** (DirTrfr) softkey on the call to the first conference. Alice and Bob exist in Conference1, while Dave and Ed are in Conference2. Conference 1 and Conference 2 get transferred together.

Bob presses the ConfList softkey and has Alice, Bob, and the conference link "Conference" shown in the list. Bob selects "Conference" and presses the **Remove** softkey. At this point, CDR7, CDR8, and CDR9 get generated. The conference link gets removed, which leaves two parties in the conference.

The remaining two parties get joined together. In Conference 1, Alice and Bob get joined together, and in Conference2, Dave and Ed get joined together. When the remaining parties hang up, the remaining CDRs get generated in the order in which the parties leave the conference.

Removing the Linked Conference Example

Field Names	CDR1: Alice -> Bob (original call)	CDR2: Bob -> Carol (consultation call)	CDR3: Dave -> Carol (original call)	CDR4: Dave -> Carol (consultation call)	CDR5: Carol -> Conference Bridge (conference call)	CDR6: Carol -> Conference Bridge (conference call)
globalCallID_callId	1	2	3	4	1	3
origLegCallIdentifier	11	13	21	23	14	22
destLegCallIdentifier	12	14	22	24	17	25
callingPartyNumber	1000	1001	1003	1003	1002	1002
originalCalledPartyNumber	1001	1002	1002	1004	b0029901001	b0029901222
finalCalledPartyNumber	1001	1002	1002	1004	b0029901001	b0029901222
lastRedirectDn	1001	1002	1002	1004	1001	1003
origTerminationOnBehalfOf	4	4	4	4	10	10
destTerminationOnBehalfOf	4	4	4	4	10	10
lastRedirectRedirectReason	0	0	0	0	98	98
lastRedirectRedirectOnBehalfOf	0	0	0	0	4	4
origConversationID	0	0	0	0	0	0
destConversationID	0	0	0	0	1111	2222
Comment					`ConfControllerDn=1001;ConfControllerDeviceName=SEP0003E333FEBD;ConfRequestorDn-1001;ConfRequestorDeviceName=SEP0003E333FEBD`	`ConfControllerDn=1003;ConfControllerDeviceName=SEP0003E333FAD1;ConfRequestorDn-1003;ConfRequestorDeviceName=SEP0003E333FAD1`

Field Names	CDR7: Conference Bridge -> Conference Bridge	CDR8: Alice -> Conference Bridge (conference call)	CDR9: Bob -> Conference Bridge	CDR10: Dave -> Conference Bridge (conference call)	CDR11: Ed -> Conference Bridge (conference call)	CDR12: Bob-> Alice
globalCallID_callId	3	1	1	3	3	3
origLegCallIdentifier	25	11	12	21	24	21
destLegCallIdentifier	28	15	16	26	27	24
callingPartyNumber	b0029901222	1000	1001	1003	1004	1003
originalCalledPartyNumber	b0029901001	b0029901001	b0029901001	b0029901222	b0029901222	b0029901222
finalCalledPartyNumber	b0029901001	b0029901001	b0029901001	b0029901222	b0029901222	1004
lastRedirectDn	1002	1001	1001	1003	1003	b0029901222
origTerminationOnBehalfOf	4	4	4	16	0	0
destTerminationOnBehalfOf	4	4	4	0	0	0
lastRedirectRedirectReason	4	98	98	98	98	98
lastRedirectRedirectOnBehalfOf	10	4	4	4	4	4
origConversationID	0	0	0	0	0	0
destConversationID	1111	1111	1111	2222	2222	0
Comment	ConfControllerDn=1003;ConfControllerDeviceName=SEP0003E333FAD1;ConfRequestorDn-1003;ConfRequestorDeviceName=SEP0003E333FAD1	ConfControllerDn=1001;ConfControllerDeviceName=SEP0003E333FEBD;ConfRequestorDn-1001;ConfRequestorDeviceName=SEP0003E333FEBD	ConfControllerDn=1001;ConfControllerDeviceName=SEP0003E333FEBD;ConfRequestorDn-1001;ConfRequestorDeviceName=SEP0003E333FEBD	ConfControllerDn=1003;ConfControllerDeviceName=SEP0003E333FAD1;ConfRequestorDn-1003;ConfRequestorDeviceName=SEP0003E333FAD1	ConfControllerDn=1003;ConfControllerDeviceName=SEP0003E333FAD1;ConfRequestorDn-1003;ConfRequestorDeviceName=SEP0003E333FAD1	ConfControllerDn=1003;ConfControllerDeviceName=SEP0003E333FAD1;ConfRequestorDn-1003;ConfRequestorDeviceName=SEP0003E333FAD1

Field Names	CDR13: Dave -> Ed
globalCallID_callId	3
origLegCallIdentifier	21
destLegCallIdentifier	24
callingPartyNumber	1003
originalCalledPartyNumber	b0029901222
finalCalledPartyNumber	1004
lastRedirectDn	b0029901222
origTerminationOnBehalfOf	0

Field Names	CDR13: Dave -> Ed
destTerminationOnBehalfOf	0
lastRedirectRedirectReason	98
lastRedirectRedirectOnBehalfOf	4
origConversationID	0
destConversationID	0

Comment	`ConfControllerDn=10`
	`03;ConfControllerDe`
	`viceName=SEP0003E33`
	`3FAD1;ConfRequestor`
	`Dn-1003;ConfRequest`
	`orDeviceName=SEP000`
	`3E333FAD1`

Agent Greeting Calls

The Agent Greeting call feature instructs Unified Communications Manager to play a prerecorded announcement to the customer automatically after successful media connection to the agent device occurs. Both the agent and the customer hear the Agent Greeting.

Example of an Agent Greeting Call

1. The customer (1001) calls the agent (1006).

2. The agent (1006) answers the call. The customer and the agent connect.

3. The Agent Greeting call feature instructs Unified Communications Manager to play a prerecorded announcement to the customer automatically after successful media connection to the agent device occurs. This causes an IVR (1000) to connect to the Built-In Bridge (BIB) of agent phone. Both the agent and the customer hear the Agent Greeting.

4. The customer-agent call ends. A CDR gets generated for the customer-to-agent call. A CDR gets generated for the IVR (1000) to BIB of agent phone.

The CDR for the IVR to agent BIB specifies the comment **`AgentGreeting=<agentCI>`**. The OnBehalfOf field is set to 33 and redirectReason code is set to 752 for Agent Greeting call.

Field Names	Call From Customer to Agent	Call From IVR to Agent BIB
globalCallID_callId	270001	270002
origLegCallIdentifier	22980857	22980861
destLegCallIdentifier	22980858	22980862
callingPartyNumber	1001	1000
originalCalledPartyNumber	1006	b00121104001

Field Names	Call From Customer to Agent	Call From IVR to Agent BIB
finalCalledPartyNumber	1006	b00121104001
origCallTerminationOnBehalfOf	12	0
destCallTerminationOnBehalfOf	0	33
origCalledPartyRedirectOnBehalfOf	0	33
lastRedirectRedirectOnBehalfOf	0	33
origCalledPartyRedirectReason	0	752
lastRedirectRedirectReason	0	752
destConversationId	0	22980858
joinOnBehalfOf		33
comment		AgentGreeting=22980858
duration	23	9

Barge

When a shared line uses the barge feature, the **origCalledPartyNumber**, **finalCalledPartyNumber,** and **lastRedirectDn** represent the conference bridge number 'b00. . .'. The redirect and join OnBehalfOf fields reflect a value of Barge = 15, and the redirect reason fields specify Barge = 114.

Barge Examples

1. 40003 calls 40001, and 40001 answers. Shared line 40001' on another phone presses the Barge softkey. All the parties get conferenced together; then, 40003 hangs up.

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Note   Both CDRs have the same globalCallID_callId, and the conversationID field links back to the CI (call Identifier) of the barged call.

Field Names	Original Call CDR	Barge Call CDR
globalCallID_callId	7	7
origLegCallIdentifier	16777230	16777232
destLegCallIdentifier	16777231	16777235
callingPartyNumber	40003	40003
origCalledPartyNumber	40001	b001501001
finalCalledPartyNumber	40001	b001501001

Field Names	Original Call CDR	Barge Call CDR
lastRedirectDn	40001	b001501001
origCause_Value	16	0
dest_CauseValue	0	0
origCalledPartyRedirectReason	0	114
lastRedirectRedirectReason	0	114
origCalledPartyRedirectOnBehalfOf		15
lastRedirectRedirectOnBehalfOf		15
joinOnBehalfOf		15
destConversationID	0	16777231

2. 40003 calls 40001, and 40001 answers. Shared line 40001' on another phone presses the Barge softkey. All the parties get conferenced together; then, 40001 hangs up.

✎

Note   Both CDRs have the same globalCallID_callId, and the conversationID field links back to the CI (call Identifier) of the barged call.

Field Names	Original Call CDR	Barge Call 1 CDR	Final Call 2 CDR
globalCallID_callId	9	9	9
origLegCallIIdentifier	16777236	16777238	16777236
destLegCallIIdentifier	16777237	16777241	16777238
callingPartyNumber	40003	40001	40003
origCalledPartyNumber	40001	b001501001	40001
finalCalledPartyNumber	40001	b001501001	40001
lastRedirectDn	40001	b001501001	40001
origCause_Value	0	393216	16
dest_CauseValue	16	393216	0
origCalledPartyRedirectReason	0	114	0
lastRedirectRedirectReason	0	114	0
origTerminationOnBehalfOf		15	12
destTerminationOnBehalfOf	12	15	12
lastRedirectRedirectOnBehalfOf		15	

Field Names	Original Call CDR	Barge Call 1 CDR	Final Call 2 CDR
joinOnBehalfOf		15	
destConversationID	0	16777237	0

3. 40003 calls 40001, and 40001 answers. Shared line 40001' on another phone presses the Barge softkey. All the parties get conferenced together; then, 40001' (another shared line and phone) presses the Barge softkey. 40003 hangs up first.

> **Note** All CDRs have the same **globalCallID_callId**, and the conversationID field links back to the CI (call Identifier) of the barged call.

Field Names	Original Call CDR	Barge Call 1 CDR	Final Call 2 CDR
globalCallID_callId	14	14	14
origLegCallIdentifier	16777249	16777251	16777255
destLegCallIdentifier	16777250	16777254	16777258
callingPartyNumber	40003	40001	40001
origCalledPartyNumber	40001	b001501001	b001501001
finalCalledPartyNumber	40001	b001501001	b001501001
lastRedirectDn	40001	b001501001	b001501001
origCause_Value	16	0	0
dest_CauseValue	0	0	0
origCalledPartyRedirectReason	0	114	114
lastRedirectRedirectReason	0	114	114
origTerminationOnBehalfOf	12	15	15
destTerminationOnBehalfOf			
origRedirectRedirectOnBehalfOf		15	15
lastRedirectRedirectOnBehalfOf		15	15
joinOnBehalfOf		15	15
destConversationID	0	16777250	16777251

Call Monitoring

The system generates CDRs for the Call Monitoring feature by using existing CDR fields.

The monitoring calls have one-way media. The media fields stay empty for one side of the call for one-way media CDRs.

The **destConversationID** field of the Call Monitoring CDR matches the agent call leg identifier in the CDR of the call that is monitored and links together the Call Monitoring CDR and the CDR of the monitored call.

Call Monitoring Examples

1. The customer (9728134987) calls the agent (30000), and the agent answers. The supervisor (40003) monitors the call. The destConversationID from the monitoring call matches the destLegCallIdentifier of the monitored call.

Field Names	Monitored Call CDR	Monitoring Call CDR
globalCallID_callId	7	10
origLegCallIdentifier	16777230	16777232
destLegCallIdentifier	16777231	16777235
callingPartyNumber	9728134987	40003
originalCalledPartyNumber	30000	b001501001
finalCalledPartyNumber	30000	b001501001
lastRedirectDn	30000	b001501001
origCause_Value	16	0
dest_CauseValue	0	0
origCalledPartyRedirectReason	0	370
lastRedirectRedirectOnBehalfOf	0	370
origCalledPartyRedirectOnBehalfOf		28
lastRedirectRedirectOnBehalfOf		28
destConversationID	0	16777231

2. The agent (30000) calls the customer (9728134987), and the customer answers. The supervisor (40003) monitors the call. The destConversationID from the monitoring call matches the origLegCallIdentifier of the monitored call.

Field Names	Monitored Call CDR	Monitoring Call CDR
globalCallID_callId	71	101
origLegCallIdentifier	16777299	16777932
destLegCallIdentifier	16777300	16777235
callingPartyNumber	30000	40003
originalCalledPartyNumber	9728134987	b001501002
finalCalledPartyNumber	9728134987	b001501002

Field Names	Monitored Call CDR	Monitoring Call CDR
lastRedirectDn	9728134987	b001501002
origCause_Value	16	0
dest_CauseValue	0	0
origCalledPartyRedirectReason	0	370
lastRedirectRedirectOnBehalfOf	0	370
origCalledPartyRedirectOnBehalfOf		28
lastRedirectRedirectOnBehalfOf		28
destConversationID	0	16777299

Call Park

Call Park generates two CDRs, one for the original call that gets parked and another for the call that gets picked up or reverted. These CDRs will have the same globalCallID_callId.

Call Park Pickup

When the call is parked, the call gets split. The original call generates a CDR. The **origTerminationOnBehalfOf** and **destTerminationOnBehalfOf** fields get set to Call Park = 3 for this CDR.

When the parked call gets retrieved, the user goes off hook and enters the park code. This call joins with the parked call. Because the user who is picking up the call gets joined with the parked call, the system treats the user as the originator of the call, and the parked user gets treated as the destination. This means that the **callingPartyNumber** field of the call contains the directory number of the user who is picking up the call, and the **originalCalledNumber** and **finalCalledNumber** fields contain the directory number of the parked user. The **lastRedirectDn** field contains the park code that is used to pick up the call. The **lastRedirectRedirectReason** field specifies Call Park Pickup = 8. The **lastRedirectRedirectOnBehalfOf** field should specify Call Park = 3.

Call Park Pickup CDR Example

50003 calls 50002; 50002 presses the Park softkey. 50001 picks up the parked call by dialing the park code (44444).

Field Names	Original Call That Is Parked CDR	Parked Call That Is Picked Up CDR
globalCallID_callId	1	1
origLegCallIdentifier	20863957	20863961
destLegCallIdentifier	20863958	20863957

Field Names	Original Call That Is Parked CDR	Parked Call That Is Picked Up CDR
callingPartyNumber	50003	50001
originalCalledPartyNumber	50002	50003
finalCalledPartyNumber	50002	50003
lastRedirectDn	50002	44444
origCause_Value	393216	0
dest_CauseValue	393216	16
origCalledPartyRedirectReason	0	0
lastRedirectRedirectReason	0	8
origCalledPartyRedirectOnBehalfOf	0	0
lastRedirectRedirectOnBehalfOf	0	3
origTerminationOnBehalfOf	3	0
destTerminationOnBehalfOf	3	12
joinOnBehalfOf	0	3
duration	4	60

Call Park Reversion

When a call is parked and not picked up, the call park reversion timer expires and redirects the call to the called party. In this case, the system generates two CDRs. The first CDR appears the same as the preceding Call Park Pickup scenario, but the second CDR differs slightly. When the Call Pickup Reversion timer expires, the call gets redirected to the called party.

When the call is parked, the call gets split. This action generates a CDR for the original call. The **origTerminationOnBehalfOf** and **destTerminationOnBehalfOf** fields get set to Call Park = 3 for this CDR, the same as the Call Park Pickup scenario.

When the Call Park Reversion timer expires, the call gets redirected to the called party. The **origCalledPartyRedirectOnBehalfOf** and **lastRedirectRedirectOnBehalfOf** fields specify Call Park = 3. The **origCalledPartyRedirectReason** field specifies Call Park = 7, and the **lastRedirectRedirectReason** field specifies Call Park Reversion = 11.

Call Park Reversion CDR Example

- **Call Park Reversion Example** – 50003 calls 50002; 50002 presses the Park softkey. Nobody picks up the parked call; the parked call reverts to 50002, and 50002 answers.

Field Names	Original Call That Is Parked CDR	Reverted Call CDR
globalCallID_callId	2	2
origLegCallIdentifier	20863963	20863963
destLegCallIdentifier	20863964	20863967
callingPartyNumber	50003	50003
originalCalledPartyNumber	50002	50002
finalCalledPartyNumber	50002	50002
lastRedirectDn	50002	50002
origCause_Value	393216	0
dest_CauseValue	393216	16
origCalledPartyRedirectReason	0	7
lastRedirectRedirectReason	0	11
origCalledPartyRedirectOnBehalfOf	0	3
lastRedirectRedirectOnBehalfOf	0	3
origTerminationOnBehalfOf	3	3
destTerminationOnBehalfOf	3	12
joinOnBehalfOf	0	3
duration	7	60

Call Pickup

There are two types of call pickup in Unified Communications Manager: Pickup and Auto Pickup. The CDR records appear slightly different for these two types of call pickup.

Pickup

Pickup CDR Example

A call comes in from the PSTN to extensions 2000, 2001, and 2002. These extensions reside in the same pickup group. Extension 2002 picks up the call that is ringing on 2001. Extension 2002 answers the call, and the call connects between the PSTN caller and extension 2002.

Field Names	Pickup Call CDR
globalCallID_callId	22
callingPartyNumber	9728131234
originalCalledPartyNumber	2001
finalCalledPartyNumber	2002
lastRedirectDn	2001
origCause_Value	0
dest_CauseValue	16
origTerminationOnBehalfOf	16
destTerminationOnBehalfOf	16
lastRedirectOnBehalfOf	16
lastRedirectReason	5
joinOnBehalfOf	16

Auto Pickup

Auto Pickup acts like call pickup with auto answer. The user does not need to press the last answer softkey. The call automatically connects. Two CDRs get generated for Auto Pickup. These CDRs have the same Call ID.

- The first CDR gets generated for the original call. This CDR has the **origTerminationOnBehalfOf** and **destTerminationOnBehalfOf** fields equal to 16 (Pickup). This value indicates that the call got terminated on behalf of the Pickup feature.

- The second CDR represents the final call after it was picked up. This CDR has the **lastRedirectOnBehalfOf** and the **joinOnBehalfOf** fields set to 16 (Pickup). This value indicates that the call was joined on behalf of the Pickup feature. The **lastRedirectReason** contains the redirect reason of 5 (Pickup).

Auto Pickup CDRs look the same for all types of auto pickup: Auto Pickup, Auto Group Pickup and Auto Other Pickup.

Note   When the Service Parameter **Auto Call Pickup Enabled** is set to True for an IP Phone and a Unified Communications Manager receives an incoming call that the IP phone picks up, the prefix digit defined in the Translation Pattern is added to the **callingPartyNumber** in CDR. However, the prefix digit is not added when the Service Parameter **Auto Call Pickup Enabled** is set to False.

Auto Pickup CDR Example

- **Auto Pickup Example** - Call goes from the PSTN to extension 2001; 2001 and 2002 exist in the same pickup group. 2002 picks up the call that rings on 2001; the call automatically connects between the PSTN caller and 2002. They talk for 2 minutes.

Note The prefix digits defined in the Translation Pattern only applies to basic call.

Field Names	Original Call CDR	Pickup CDR
globalCallID_callId	11	11
origLegCallIdentifier	12345	12345
destLegCallIdentifier	12346	12347
callingPartyNumber	9728134987	9728134987
originalCalledPartyNumber	2001	2001
finalCalledPartyNumber	2001	2002
lastRedirectDn	2001	2001
origCause_Value	393216	16
dest_CauseValue	393216	0
origTerminationOnBehalfOf	16	12
destTerminationOnBehalfOf	16	16
lastRedirectRedirectReason	0	5
lastRedirectRedirectOnBehalfOf	0	16
joinOnBehalfOf	0	16
duration	0	120

Call Recording

The system generates CDRs for the Call Recording feature by using existing CDR fields.

The recording calls have one-way media. The media fields stay empty for one side of the call for one-way media CDRs.

The **origConversationID** field of the two Call Recording CDRs matches the agent call leg identifier in the Recording Call CDR and links together the Call Recording CDR and the CDR of the recorded call.

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| Note | If the CDR Log Calls with Zero Duration Flag service parameter is set to true, two additional server call records are created. |

Call Recording CDR Examples

1. The customer (9728134987) calls the agent (30000), and the agent answers. The Recorder's DN is 90000. The recording feature creates two recording calls to the recording device, which results in two additional CDRs: one for the agent voice, and another for the customer voice. The origConversationID from the recording CDRs matches the destLegCallIdentifier of the recorded CDR. In this scenario, the customer hangs up.

Field Names	Recorded Call CDR	Recording Call CDR1	Recording Call CDR2
globalCallID_callId	7	10	11
origLegCallIdentifier	16777110	16777120	16777122
destLegCallIdentifier	16777111	16777121	16777123
callingPartyNumber	9728134987	BIB	BIB
originalCalledPartyNumber	30000	90000	90000
finalCalledPartyNumber	30000	90000	90000
lastRedirectDn	30000	90000	90000
origCause_Value	16	0	0
dest_CauseValue	0	0	0
origCalledPartyRedirectReason	0	354	354
lastRedirectRedirectOnBehalfOf	0	354	354
origCalledPartyRedirectOnBehalfOf		27	27
lastRedirectRedirectOnBehalfOf		27	27
origConversationID	0	16777111	16777111

2. The agent (30000) calls the customer (9728134987), and the customer answers. The Recorder's DN is 90000. The recording feature creates two recording calls to the recording device, which results in two additional CDRs: one for the agent voice, and another for the customer voice. The **origConversationID** field from the recording CDRs will match the **origLegCallIdentifier** field of the recorded CDR. In this scenario, the agent hangs up.

Field Names	Recorded Call CDR	Recording Call CDR 1	Recording Call CDR 2
globalCallID_callId	71	100	110
origLegCallIdentifier	16777113	16777220	16777222
destLegCallIdentifier	16777114	16777221	16777223
callingPartyNumber	30000	BIB	BIB

Field Names	Recorded Call CDR	Recording Call CDR 1	Recording Call CDR 2
originalCalledPartyNumber	9728134987	90000	90000
finalCalledPartyNumber	9728134987	90000	90000
lastRedirectDn	9728134987	90000	90000
origCause_Value	16	16	16
dest_CauseValue	0	0	0
origCalledPartyRedirectReason	0	354	354
lastRedirectRedirectOnBehalfOf	0	354	354
origCalledPartyRedirectOnBehalfOf		27	27
lastRedirectRedirectOnBehalfOf		27	27
origConversationID	0	16777113	16777113

Call Secured Status

This field identifies security status of the call. It contains the highest level of security that is reached during a call. For example, if the call is originally unsecured, and later the call changes to secured, the CDR contains 1 for "Secured" even though different portions of the call have different status values. The **callSecuredStatus** field identifies the security status of the call.

Call Secured Status CDR Examples

1. **Encrypted Call** - The system encrypts the call between 20000 and 20001. The parties talk for 5minutes.

Field Names	CDR
globalCallID_callId	102
origLegCallIdentifier	16777140
destLegCallIdentifier	16777141
callingPartyNumber	20000
origCalledPartyNumber	20001
finalCalledPartyNumber	20001
lastRedirectDn	20001
origCause_Value	0
dest_CauseValue	16
callSecuredStatus	2
duration	300

2. **Authenticated Call** - The call between 20000 and 20001 gets authenticated (not encrypted). The parties talk for 10 minutes.

Field Names	CDR
globalCallID_callId	103
origLegCallIdentifier	16777142
destLegCallIdentifier	16777143
callingPartyNumber	20000
origCalledPartyNumber	20001
finalCalledPartyNumber	20001
lastRedirectDn	20001
origCause_Value	0
dest_CauseValue	16
callSecuredStatus	1
duration	600

Calling Party Normalization

This feature provides the support of the international escape code "+" to Unified Communications Manager. This addition enhances the dialing capabilities of dual-mode phones and improves callbacks for companies in different geographical locations.

The **callingPartyNumber**, **originalCalledPartyNumber**, **finalCalledPartyNumber**, **lastRedirectDN fields**, and the new fields, **outpulsedCallingPartyNumber** and **outpulsedCalledPartyNumber,** may now contain a "+" in the CDR. The device reports the Calling Party Number that it outpulsed back to Call Control only if calling party normalization/localization takes place. If calling party normalization/localization occurs, the action gets recorded in the CDR in the new field **outpulsedCallingPartyNumber**.

Calling Party Normalization CDR Examples

1. A call gets placed from a Dallas PSTN to an enterprise phone. The 7-digit calling number comprises 5001212; the Dallas area code displays 972. The calling party transformation contains +1972. The **callingPartyNumber** field in the CDR contains +1 972 500 1212 (global format). The new field **outpulsedCallingPartyNumber** contains the localized number 500 1212.

Field Names	Values
globalCallID_callId	1
origLegCallIdentifier	100
destLegCallIdentifier	101

Field Names	Values
callingPartyNumber	+19725001212
outpulsedCallingPartyNumber	5001212
duration	60

1. A call gets placed from an enterprise phone to a Dallas PSTN. The extension of the enterprise phone comprises 12345; the fully qualified number comprises 9725002345. Calling party transformation checks the external phone number mask feature. The **callingPartyNumber** field in the CDR contains +1 972 500 2345 (global format). The new field **outpulsedCallingPartyNumber** contains the localized number 9725002345.

Field Names	Values
globalCallID_callId	2
origLegCallIdentifier	102
destLegCallIdentifier	103
callingPartyNumber	+19725002345
outpulsedCallingPartyNumber	9725002345
duration	60

Calls with Busy or Bad Destinations

The system logs all these calls as normal calls, and all relevant fields contain data. The Calling or Called Party Cause fields contain a cause code that indicates why the call does not connect, and the Called Party IP and Date/Time Connect fields remain blank. The system logs all unsuccessful calls, even if zero duration calls are not being logged (CdrLogCallsWithZeroDurationFlag set at **True** or **False**, a duration of zero, and a DateTimeConnect value of zero).

Examples of Unsuccessful Calls CDRs

1. Call goes to PSTN number, but party already is engaged (cause 17 = user busy)

Field Names	CDR
globalCallID_callId	3
origLegCallIdentifier	300
destLegCallIdentifier	301
callingPartyNumber	2001
originalCalledPartyNumber	9728134987

Field Names	CDR
origCause_Value	0
dest_CauseValue	17
duration	0

2. Call goes to PSTN number, but number does not exist (cause 1 = number unavailable)

Field Names	CDR
globalCallID_callId	4
origLegCallIdentifier	302
destLegCallIdentifier	303
callingPartyNumber	2001
originalCalledPartyNumber	9728134987
origCause_Value	1
dest_CauseValue	0
duration	0

3. Call to PSTN fails because PSTN trunks are out of order (cause 38 = Network Out Of Order).

Field Names	CDR
globalCallID_callId	5
origLegCallIdentifier	304
destLegCallIdentifier	305
callingPartyNumber	2001
originalCalledPartyNumber	9728134987
origCause_Value	0
dest_CauseValue	38
duration	0

cBarge

The cBarge feature acts very similar to the conference feature. When a shared line uses the cBarge feature, the **origCalledPartyNumber, finalCalledPartyNumber** and **lastRedirectDn** represent the conference bridge

number 'b00. . . '. The redirect and join **OnBehalfOf** fields have a value of Conference = 4, and the **redirect reason** fields specify Conference = 98.

cBarge CDR Example

40003 calls 40001, and 40001 answers; 40001' (shared line) on another phone presses the cBarge button.

Field Names	Orig Call CDR	cBarge Call CDR 1	cBarge Call CDR 2	cBarge Call CDR 3	Final Call CDR
globalCallID_callId	49	49	49	49	49
origLegCallIdentifier	1677346	1677348	1677347	1677346	1677347
destLegCallIdentifier	1677347	1677353	1677351	1677352	1677346
callingPartyNumber	40003	40001	40001	40003	40001
originalCalledPartyNumber	40001	b0029901001	b0029901001	b0029901001	40003
finalCalledPartyNumber	40001	b0029901001	b0029901001	b0029901001	40003
lastRedirectDn	40001	b0029901001	40001	40001	b0029901001
origCause_Value	393216	16	393216	393216	16
dest_CauseValue	393216	0	393216	393216	0
origCalledPartyRedirectReason	0	98	98	98	0
lastRedirectRedirectReason	0	98	98	98	98
destTerminationOnBehalfOf	4		4	4	4
origCalledRedirectOnBehalfOf		4	4	4	
lastRedirectRedirectOnBehalfOf		4	4	4	4
joinOnBehalfOf		4	4	4	4
Conversation ID	0	16777220	16777220	16777220	1
duration	60	360		360	360

Comment	
Orig Call CDR	
cBarge Call CDR 1	ConfControllerDn=40003;ConfControlerDeviceName=SEP0003E333FEBD
cBarge Call CDR 2	ConfControllerDn=40003;ConfControlerDeviceName=SEP0003E333FEBD
cBarge Call CDR 3	ConfControllerDn=40003;ConfControlerDeviceName=SEP0003E333FEBD
Final Call CDR	ConfControllerDn=40003;ConfControlerDeviceName=SEP0003E333FEBD

Client Matter Code (CMC)

When the CMC feature gets invoked, the system writes the client matter code into the CDR. The **clientMatterCode** field contains the client matter code that the caller enters.

CMC CDR Example

10000 calls 2142364624; the user gets prompted for a client matter code and enters 11111. The caller answers the call and talks for 10 minutes.

Field Names	Values
globalCallID_callId	101
origLegCallIdentifier	16777130
destLegCallIdentifier	16777131
callingPartyNumber	10000
origCalledPartyNumber	2142364624
finalCalledPartyNumber	2142364624
lastRedirectDn	2142364624
origCause_Value	0
dest_CauseValue	16
clientMatterCode	11111
duration	600

CMC Example 2

Blind conference using CMC :

1. Call from 136201 to 136111.

2. 136111 answers and speaks for a few seconds.

3. 136201 presses the **Conference** softkey and dials 136203.

4. The user is prompted to enter the CMC code and the user enters 125. CMC code 125 is configured as level 1 and is given a name as Forward_CMC.

5. While 136203 is ringing, 136201 presses **Conference** softkey to complete the conference.

6. 136203 answers the call.

7. The three members in the conference talk for sometime.

8. 136111 hangs sup, leaving 136201 and 136203 in the conference. Since there are only two participants in the conference, the conference feature will join these two directly together and they talk for a few seconds.

FieldNames	Orig Call CDR	Setup Call CDR	Conference CDR 1	Conference CDR 2	Conference CDR 3	Final CDR
globalCallID_callId	60025	60026	60025	60025	60025	60027
origLegCallIdentifier	23704522	23704524	23704523	23704522	23704526	23704527
destLegCallIdentifier	23704523	23704526	23704531	23704530	23704532	23704528
callingPartyNumber	136201	136201	136111	136201	136203	136201
origCalledPartyNumber	136111	136203	b00105401002	b00105401002	b00105401002	136203
finalCalledPartyNumber	136111	136203	b00105401002	b00105401002	b00105401002	136203
lastRedirectDn	136111	136203	136201	136201	136201	136203
origCause_Value	393216	0	16	393216	393216	0
dest_CauseValue	393216	0	393216	393216	393216	16
authCodeDescription		Forward_CMC				
authorizationLevel	0	1	0	0	0	0
Duration	20	0	32	32	25	48
authorizationCode		125				

Note The setup call CDR for this example is generated even though it is of zero duration since CMC is used for this call.

Conference Calls

Multiple records get logged for calls that are part of a conference. The number of CDR records that get generated depends on the number of parties in the conference. One CDR exists for each party in the conference; one CDR for the original placed call, one CDR for each setup call that gets used to join other parties to the conference, and one CDR for the last two parties that get connected in the conference. For a three-party, ad hoc conference, six CDRs exist: one CDR for the original call, three CDRs for the parties that get connected to the conference, one CDR for each setup call, and one CDR for the final two parties in the conference. You can associate the setup calls with the correct call leg in the conference by examining the calling leg ID and called leg ID.

The conference bridge device represents special significance to the Unified Communications Manager, and calls to the conference bridge appear as calls to the conference bridge device. A special number in the form "b0019901001" shows the conference bridge port. Records show all calls into the conference bridge, regardless

of the actual direction; however, by examining the setup call CDRs, you can determine the original direction of each call.

You can find the conference controller information in the comment field of the CDR. The format of this information follows:

Comment field = "ConfControllerDn=1000;ConfControllerDeviceName=SEP0003"

- The conference controller DN + conference controller device name uniquely identify the conference controller. The system needs the device name in the case of shared lines.

- If the call is involved in multiple conference calls, the comment field contains multiple conference controller information. This situation can occur when the conference goes down to two parties, and one of these parties starts another conference. If this is the case, the **last** conference controller information in the comment field identifies the conference controller.

The call legs that are connected to the conference include the following information fields:

- The **finalCalledPartyNumber** field contains the conference bridge number "b0019901001."

- The **origCalledPtyRedirectOnBehalfOf** field gets set to Conference = 4.

  - The **lastRedirectRedirectOnBehalfOf** field gets set to Conference = 4.

  - The **joinOnBehalfOf** field gets set to (Conference = 4).

  - The **comment** field identifies the conference controller.

  - The **destConversationID** field remains the same for all members in the conference. You can use this field to identify members of a conference call.

The original placed call and all setup calls that were used to join parties to the conference have the following characteristics:

- The **origCallTerminationOnBehalfOf** field gets set to Conference = 4.

- The **destCallTerminationOnBehalfOf** field gets set to Conference = 4.

Conference Call CDR Example

- Call goes from 2001 to 2309.

- 2309 answers and talks for 60 seconds.

- 2001 presses the conference softkey and dials 3071111.

- 307111 answers and talks for 20 seconds; then, 2001 presses the conference softkey to complete the conference.

- The three members of the conference talk for 360 seconds.

3071111 hangs up and leaves 2001 and 2309 in the conference. Because only two participants are left in the conference, the conference features joins these two directly together, and they talk for another 55 seconds.

Note Each conference call leg gets shown as placing a call into the conference bridge. The system shows the call as a call into the bridge, regardless of the actual direction of the call.

Field Names	Orig Call CDR	Setup Call CDR	Conference CDR 1	Conference CDR 2	Conference CDR 3	Final CDR
globalCallID_callId	1	2	1	1	1	1
origLegCallIdentifier	101	105	101	102	106	101
destLegCallIdentifier	102	106	115	116	117	102
callingPartyNumber	2001	2001	2001	2309	3071111	2001
originalCalledPartyNumber	2309	3071111	b0029901001	b0029901001	b0029901001	2309
finalCalledPartyNumber	2301	3071111	b0029901001	b0029901001	b0029901001	2309
lastRedirectDn	2001	3071111	b0029901001	b0029901001	b0029901001	b0029901001
origCause_Value	393216	0	16	393216	393216	16
dest_CauseValue	393216	0	393216	393216	393216	0
origCalledPartyRedirectReason	0	0	0	0	0	0
lastRedirectRedirectReason	0	0	0	0	0	98
origTerminationOnBehalfOf	4	4	12	12	4	12
destTerminationOnBehalfOf	4	4	0	0	4	4
origCalledRedirectOnBehalfOf	0	0	4	4	4	0
lastRedirectRedirectOnBehalfOf	0	0	4	4	4	4
joinOnBehalfOf	0	0	4	4	4	4
Conversation ID	0	0	1	1	1	0
duration	60	20	360	360	360	55

Comment	
Orig Call CDR	
Setup Call CDR	ConfControllerDn=2001;ConfControlerDeviceName=SEP0003E333FEBD
Conference CDR 1	ConfControllerDn=2001;ConfControlerDeviceName=SEP0003E333FEBD
Conference CDR 2	ConfControllerDn=2001;ConfControlerDeviceName=SEP0003E333FEBD
Conference CDR 3	ConfControllerDn=2001;ConfControlerDeviceName=SEP0003E333FEBD
Final CDR	

Operational Factors

Three major operational factors exist for conference call CDRs:

1. When a conference decreases to two parties, the two parties connect directly and release the conference resource. This change generates an additional CDR for the call between the last two parties in the conference call.

   For example, if four people connect in a conference call (Amy, Dustin, Spencer, Ethan), when Ethan hangs up, three people remain in the conference call that is connected to the conference bridge (Amy, Dustin, Spencer). When Spencer hangs up, only two people remain in the conference call (Amy and Dustin). The system joins Amy and Dustin directly, and, the conference resource gets released. Directly joining Amy and Dustin creates an additional CDR between the last two parties in the conference.

2. The system adds the conference controller information to the comment field in the CDR. This information identifies the conference controller. No need now exists to examine the consultation call to determine who is the conference controller. The following example shows this information:

   Comment field = "ConfControllerDn=1000;ConfControllerDeviceName=SEP0003E333FEBD"

   - The conference controller DN + conference controller device name uniquely identify the conference controller. A need for the device name exists in the case of shared lines.

   - If the call is involved in multiple conference calls, the comment field contains multiple conference controller information. This situation may occur when the conference goes down to two parties, and one of these parties starts another conference. If this is the case, the last conference controller information in the comment field identifies the conference controller.

3. The party that added the participant, known as the requestor party, appears in the CDR comment field. The tags for the requestor information include ConfRequestorDn and ConfRequestorDeviceName. The party that requested to remove a participant, known as the drop requestor, appears in the CDR comment field. The tags for the drop requestor information include DropConfRequestorDn and DropConRequestorDeviceName.

Calls that are part of a conference have multiple records that are logged for them. The number of CDRs that get generated depends on the number of parties in the conference. One CDR exists for each party in the conference, one CDR for the original placed call, and one CDR for each setup call that is used to join other parties to the conference. Therefore, for a three-party ad hoc conference, six CDRs exist:

- One CDR for the original call.

- Three CDRs for the parties that are connected to the conference.

- One CDR for each setup call.

- One CDR for the final two parties in the conference.

You can associate the setup calls with the correct call leg in the conference by examining the callinglegID and the calledlegID.

The conference bridge device holds special significance to the Unified Communications Manager. Calls to the conference bridge appear as calls to the conference bridge device. A special number in the form "b0019901001" shows the conference bridge port. All calls get shown "into" the conference bridge, regardless of the actual direction. You can determine the original direction of each call by examining the setup call CDRs.

The call legs that are connected to the conference have the following values for these fields:

- **finalCalledPartyNumber**—Represents a conference bridge "b0019901001".

- **origCalledPartyRedirectOnBehalfOf**—Set to Conference (4).

- **lastRedirectRedirectOnBehalfOf**—Set to Conference (4).

- **joinOnBehalfOf**—Set to Conference (4).

- **comment**—Identifies the conference controller.

The original placed call and all setup calls that get used to join parties to the conference have the following values for the fields:

- **origCallTerminationOnBehalfOf**—Set to Conference (4).

- **destCallTerminationOnBehalfOf**—Set to Conference (4).

Conference Now Calls

This feature allows both external and internal callers to join a conference by dialing a Conference Now IVR Directory Number. An Interactive Voice Response (IVR) application guides the caller to join the conference by playing an announcement and collecting caller entered DTMF digits.

A conference call using the Conference Now feature logs multiple CDR records for a call. The number of CDR records that get generated depends on the number of parties in the conference. One CDR exists for each party in the conference; one CDR for the original placed call, and one CDR for each setup call that get used to join the conference bridge. For a two-party, Conference Now, four CDRs exists: two CDR for the original call, and two CDR for parties that get connected to the conference bridge.

The conference bridge device represents special significance to the Unified Communications Manager, and calls to the conference bridge appear as calls to the conference bridge device. A special number in the form "b00105401006" shows the conference bridge port. Records show all calls into the conference bridge, regardless of the actual direction; however, by examining the setup call CDRs, you can determine the original direction of each call.

You can find the Conference Now host information in the comment field of the CDR. The comments field will only be populated for redirection of the call to the CFB. The format of this information follows:

Comment field = "ConferenceNowHostId =john; ConferenceNowMeetingNumber=136136".

The ConferenceNowHostId+ConferenceNowMeetingNumber uniquely identifies the Conference Now information.

The call legs that are connected to the conference include the following information fields:

- The finalCalledPartyNumber field contains the conference bridge number "b00105401006".The finalCalledPartyNumber field in case of initial call when it connects to IVR contains the IVR directory number "c00124401001".

- The origCalledPtyRedirectOnBehalfOf field is set to (Meet-me Conference Intercepts= 7).

- The lastRedirectRedirectOnBehalfOf field is set to (Meet-me Conference Intercepts= 7).

- The joinOnBehalfOf field is set to (Meet-me Conference Intercepts=7).

- The comment field identifies ConfrenceNowHostId and ConferenceNowMeetingNumber.

• The destConversationId field is the same for all members in the conference. This field can be used to identify members of a conference call.

The original placed call and all setup calls that were used to join parties to the conference have the following characteristics:

• The origCallTerminationOnBehalfOf field is set to (Meet-me Conference Intercepts= 7).

• The destCallTerminationOnBehalfOf field is set to (Meet-me Conference Intercepts= 7).

ConferenceNow CDR Example

The following table contains an example CDR for the following scenario.

• User A (139139) calls into a Conference Now conference bridge with the phone number 1010.

• User A (139139) connects to IVR and IVR requests for a Meeting Number.

• User A (139139) dials the Meeting Number " 136136" followed by #.

• User A (139139) joins as an attendee; therefore presses # and then enters attendee access code followed by #.

• User A (139139) is placed on Music On Hold (MoH).

• User B (136136) dials the Conference Now phone number 1010.

• User B (136136) connects to IVR and the IVR requests for a Meeting Number.

• User B (136136) dials in the Meeting Number followed by #.

• User B (136136) enters the host pin followed by # as the user is joining the conference call as a host.

• Both the attendee and the host get redirected to Conference Bridge and are placed into conference.

FieldNames	Orig Call CDR1	Conference CDR 1	Orig Call CDR2	Conference CDR 2
globalCallID_callId	47002	47002	47003	47003
origLegCallIdentifier	20795093	20795093	20795098	20795098
destLegCallIdentifier	20795096	20795104	20795101	20795103
callingPartyNumber	139139	139139	136136	136136
originalCalledPartyNumber	1010	1010	1010	1010
finalCalledPartyNumber	c00124401001	b00105401006	c00124401001	b00105401006
lastRedirectDn	1010	c00124401001	1010	c00124401001
origCause_Value	0	16	0	16
dest_CauseValue	0	0	0	0
origCalledPartyRedirectReason	0	0	0	0
lastRedirectRedirectReason	0	0	0	0
origTerminationOnBehalfOf	7	12	7	12

FieldNames	Orig Call CDR1	Conference CDR 1	Orig Call CDR2	Conference CDR 2
destTerminationOnBehalfOf	7	7	7	7
origCalledRedirectOnBehalfOf	0	0	0	0
lastRedirectRedirectOnBehalfOf	0	7	0	7
joinOnBehalfOf	0	7	0	7
Conversation ID	0	16809217	0	16809217
duration	14	20	10	9

Comment	
Orig Call CDR 1	
Conference CDR 1	ConferenceNowHostID=Rishi;ConferenceNowMeetingNumber=136136
Orig Call CDR 2	
Conference CDR 2	ConferenceNowHostID=Rishi;ConferenceNowMeetingNumber=136136

Conference Drop Any Party

The Conference Drop Any Party feature terminates calls that look the same as other calls except for a new cause code. The cause code identifies the calls that this feature terminates.

Conference Drop Any Party CDR Example

The following table contains an example CDR for a call that connects to a conference and gets dropped by this feature.

Calling Party	Calling Partition	Original Called Party	Orig Cause	Original Called Partition	Called Leg	Dest Cause	Final Called Party	Final Called Partition	Last Redirec Party
2001	ACNTS	2309	0	MKTG	102	16	2309	MKTG	2001
2001	ACNTS	2309	16	MKTG	115	0	b0029901001		b002990100
2309	ACNTS	b0029901001	0		116	128	b0029901001		b002990100
3071111	PSTN	b0029901001	16		117	0	b0029901001		b002990100
2001	ACNTS	2309	16	PSTN	106	0	3071111	PSTN	30711111

Orig Conversation ID	OrigCall Termination OnBehalfOf	DestCall Termination OnBehalfOf	OriginalCalled Pty Redirect OnBehalfOf	LastRedirect Redirect OnBehalfOf	Join OnBehalfOf	Duration
0	4	4	0	0	0	60

Orig Conversation ID	OrigCall Termination OnBehalfOf	DestCall Termination OnBehalfOf	OriginalCalled Pty Redirect OnBehalfOf	LastRedirect Redirect OnBehalfOf	Join OnBehalfOf	Duration
1	12	0	4	4	4	360
1	13	0	4	4	4	200
1	4	4	4	4	4	360
0	4	4	0	0	0	20

Original Calling Party on Transfer

DTMF Method

These fields identify the Dual Tone Multi-Frequency (DTMF) method that gets used for the call.

DTMF CDR Examples

1. **No Preference Example** - The DTMF method that gets used during this call represents No Preference/Best Effort. This call connects for 1minute.

Field Names	CDR
globalCallID_callId	200
origLegCallIdentifier	16777500
destLegCallIdentifier	16777501
callingPartyNumber	20000
origCalledPartyNumber	20001
finalCalledPartyNumber	20001
lastRedirectDn	20001
origCause_Value	0
dest_CauseValue	16
origDTMFMethod	0
destDTMFMethod	0
duration	60

1. **Preferred OOB Example** - The DTMF method that is used during this call represents OOB Preferred. This call remains connected for 1minute.

Field Names	CDR
globalCallID_callId	201
origLegCallIdentifier	16777502
destLegCallIdentifier	16777503
callingPartyNumber	20000
origCalledPartyNumber	20001
finalCalledPartyNumber	20001
lastRedirectDn	20001
origCause_Value	0
dest_CauseValue	16
origDTMFMethod	1
destDTMFMethod	1
duration	60

End-to-End Call Trace

The End-to-End Call Trace feature facilitates tracing calls that traverse multiple Cisco voice products, such as Unified CM, Cisco IOS Gateways, and other products.

End-to-End Call Trace Example

1. H323 - Calling party 1003 calls 1004 via H.323 trunk.

FieldNames	Values
cdrRecordType	1
globalCallID_callManagerId	1
globalCallID_callId	32009
origLegCallIdentifier	19654113
dateTimeOrigination	1221263718
origNodeId	1
origSpan	0
origIpAddr	1897990154

FieldNames	Values
callingPartyNumber	1004
origCause_value	16
origPrecedenceLevel	4
origMediaTransportAddress_IP	1897990154
origMediaTransportAddress_Port	19824
origMediaCap_payloadCapability	4
origMediaCap_maxFramesPerPacket	20
destLegIdentifier	19654114
destNodeId	1
destSpan	19654114
destIpAddr	424630538
originalCalledPartyNumber	1003
finalCalledPartyNumber	1003
destCause_value	0
destPrecedenceLevel	4
destMediaTransportAddress_IP	-1759442934
destMediaTransportAddress_Port	27508
destMediaCap_payloadCapability	4
destMediaCap_maxFramesPerPacket	20
dateTimeConnect	1221263720
dateTimeDisconnect	1221263721
lastRedirectDn	1003
Pkid	c8868f84-0f4e-452c-a814-bf97a7fe69fc
Duration	1
origDeviceName	SEP003094C2B08C
destDeviceName	self-loop
origCallTerminationOnBehalfOf	12
destCallTerminationOnBehalfOf	0

FieldNames	Values
origDTMFMethod	3
destDTMFMethod	4
origMediaCap_Bandwidth	64
destMediaCap_Bandwidth	64
origIpv4v6Addr	10.8.33.113
destIpv4v6Addr	10.8.33.151
IncomingProtocolID	0
IncomingProtocolCallRef	
OutgoingProtocolID	2
OutgoingProtocolCallRef	0053C43F6701B18C030004010A082171

2. **Q931** - 1004 calls 1003 via Q931.

FieldNames	Values
cdrRecordType	1
globalCallID_callManagerId	1
globalCallID_callId	32008
origLegCallIdentifier	19654111
dateTimeOrigination	1221263350
origNodeId	1
origSpan	2
origIpAddr	122640650
callingPartyNumber	1004
origCause_value	0
origPrecedenceLevel	4
origMediaTransportAddress_IP	122640650
origMediaTransportAddress_Port	17218
origMediaCap_payloadCapability	4
origMediaCap_maxFramesPerPacket	20

FieldNames	Values
destLegIdentifier	19654112
destNodeId	1
destSpan	0
destIpAddr	-1759442934
originalCalledPartyNumber	1003
finalCalledPartyNumber	1003
destCause_value	16
destPrecedenceLevel	4
destMediaTransportAddress_IP	-1759442934
destMediaTransportAddress_Port	23350
destMediaCap_payloadCapability	4
destMediaCap_maxFramesPerPacket	20
dateTimeConnect	1221263351
dateTimeDisconnect	1221263352
lastRedirectDn	1003
Pkid	b576bd8d-9703-4f66-ae45-64ae5c04738e
Duration	1
origDeviceName	BRI/S1/SU0/P1@nw052b-3640.cisco.com
destDeviceName	SEP003094C2D263
origCallTerminationOnBehalfOf	0
destCallTerminationOnBehalfOf	12
origDTMFMethod	1
destDTMFMethod	3
origMediaCap_Bandwidth	64
destMediaCap_Bandwidth	64
origIpv4v6Addr	10.89.79.7
destIpv4v6Addr	10.8.33.151
IncomingProtocolID	4

FieldNames	Values
IncomingProtocolCallRef	01-1004-1003
OutgoingProtocolID	0
OutgoingProtocolCallRef	

Forced Authorization Code (FAC)

When the FAC feature gets invoked, the system writes the authorization description and level into the CDR. For security reasons, the actual authorization code does not get written to the CDR.

- The **authCodeDescription** field contains the description of the authorization code.

- The **authorizationLevel** field contains the level of authorization that is associated with the authorization code.

FAC CDR Example 1

45000 calls 9728134987; the system prompts the user for an authorization code and enters 12345. FAC code 12345 gets configured as level 1 and name Legal1. The caller answers the call and talks for 2minutes.

Field Names	Values
globalCallID_callId	100
origLegCallIdentifier	16777123
destLegCallIdentifier	16777124
callingPartyNumber	45000
origCalledPartyNumber	9728134987
finalCalledPartyNumber	9728134987
lastRedirectDn	9728134987
origCause_Value	0
dest_CauseValue	16
authCodeDescription	Legal1
authorizationLevel	1
duration	120
authorizationCode	12345

CDR will now be written for a setup call leg for all the unanswered calls before the call is redirected to another caller if FAC is used to setup the call.

✎

Note　The unanswered call will not have any connect time since media is not connected for this call. The CDR will be logged regardless of the service parameter **CdrLogCallsWithZeroDurationFlag** if FAC is present in the call.

FAC Example 2

Blind conference using FAC:

1. Call from 136201 to 136111.

2. 136111 answers and speaks for a few seconds.

3. 136201 presses the **Conference** softkey and dials 136203.

4. The user is prompted to enter the FAC code and the user enters 124. FAC code 124 is configured as level 1 and given a name as Forward_FAC.

5. While 136203 is ringing, 136201 presses the **Conference** softkey to complete the conference.

6. 136203 answers the call.

7. The three members in the conference talk for sometime.

8. 136111 hangs up, leaving 136201 and 136203 in the conference. Since there are only two participants in the conference, the conference feature will join these two directly together and they talk for a few seconds.

FieldNames	Orig Call CDR	Setup Call CDR	Conference CDR 1	Conference CDR 2	Conference CDR 3	Final CDR
globalCallID_callId	60015	60016	60015	60015	60015	60017
origLegCallIdentifier	23704372	23704374	23704373	23704372	23704376	23704377
destLegCallIdentifier	23704373	23704376	23704381	23704380	23704382	23704378
callingPartyNumber	136201	136201	136111	136201	136203	136201
origCalledPartyNumber	136111	136203	b00105401002	b00105401002	b00105401002	136203
finalCalledPartyNumber	136111	136203	b00105401002	b00105401002	b00105401002	136203
lastRedirectDn	136111	136203	136201	136201	136201	136203
origCause_Value	393216	0	16	393216	393216	0
dest_CauseValue	393216	0	393216	393216	393216	16
authCodeDescription		Forward_FAC				
authorizationLevel	0	1	0	0	0	0
Duration	18	0	37	37	32	38
authorizationCode		124				

Note The setup call CDR for this example is generated even though it is of zero duration since FAC is used for this call.

Forwarded or Redirected Calls

Forwarded calls generate a single CDR and show the Calling Party, Original Called Number, Last Redirecting Number, Final Called Number, and the associated partitions. If the call gets forwarded more than twice, the intermediate forwarding parties do not populate in the CDR.

Call forwarding can occur on several conditions (always, busy, and no answer). The condition under which the call gets forwarded does not populate in the CDR.

The CDRs for forwarded calls match those for normal calls, except for the originalCalledPartyNumber field and the originalCalledPartyNumberPartition field. These fields contain the directory number and partition for the destination that was originally dialed by the originator of the call. If the call gets forwarded, the finalCalledPartyNumber and finalCalledPartyNumberPartition fields differ and contain the directory number and partition of the final destination of the call.

Also, when a call gets forwarded, the lastRedirectDn and lastRedirectDnPartition fields contain the directory number and partition of the last phone that forwarded or redirected the call.

Call Forwarding uses the redirect call primitive to forward the call. Features that use the redirect call primitive have similar CDRs. Some of the important CDR fields for forwarded calls follow:

- The **originalCalledPartyNumber** contains the number of the original called party.

- The **finalCalledPartyNumber** represents the number that answered the call.

- The **lastRedirectDn** field specifies the number that performed the last redirect.

- The **origCalledPartyRedirectReason** represents the reason that the call was redirected the first time. For call forwarding, this field can contain **Call Forward Busy=1, Call Forward No Answer=2, Call Forward All=15**.

- The **lastRedirectRedirectReason** specifies the reason that the call was redirected the last time. For call forwarding, this field can contain **Call Forward Busy=1, Call Forward No Answer=2, Call Forward All=15**.

- The **origCalledPartyRedirectOnBehalfOf** field identifies which feature redirects the call for the first redirect. For call forwarding, this field specifies 5 (Call Forward).

- The **lastRedirectRedirectOnBehalfOf** field identifies which feature redirects the call for the last redirect. For call forwarding, this field specifies 5 (Call Forward).

Forwarded Calls CDR Examples

1. **CFA** - Call comes in from the PSTN to extension 2001; the call gets forwarded (CFA) to 2309, where the call is answered, and talk occurs for 2minutes.

Field Names	CDR
globalCallID_callId	12345

Field Names	CDR
origLegCallIdentifier	100
destLegCallIdentifier	102
callingPartyNumber	9728134987
originalCalledPartyNumber	2001
finalCalledPartyNumber	2309
lastRedirectDn	2001
origCause_Value	0
dest_CauseValue	16
origCalledPartyRedirectReason	15
lastRedirectRedirectReason	15
origCalledPartyRedirectOnBehalfOf	5
lastRedirectRedirectOnBehalfOf	5
duration	120

2. **Multiple Hop CFA & CFNA** - Call comes in from the PSTN to extension 1000; the call gets forwarded (CFA) to 2000; then, the call gets forwarded (CFNA) to the voice-messaging system (6000) where the caller leaves a message.

Field Names	CDR
globalCallID_callId	12346
origLegCallIdentifier	102
destLegCallIdentifier	105
callingPartyNumber	9728134987
originalCalledPartyNumber	1000
finalCalledPartyNumber	6000
lastRedirectDn	2000
origCause_Value	0
dest_CauseValue	16
origCalledPartyRedirectReason	15
lastRedirectRedirectReason	2

Field Names	CDR
origCalledPartyRedirectOnBehalfOf	5
lastRedirectRedirectOnBehalfOf	5
duration	15

3. **Multiple Hop CFNA & CFB** - Call comes in from the PSTN to extension 4444; the call gets forwarded (CFNA) to 5555; then, it gets forwarded (CFB) to 6666 where the call is answered, and they talk for 30 seconds.

Field Names	CDR
globalCallID_callId	12347
origLegCallIdentifier	106
destLegCallIdentifier	108
callingPartyNumber	9728134987
originalCalledPartyNumber	4444
finalCalledPartyNumber	6666
lastRedirectDn	5555
origCause_Value	16
dest_CauseValue	0
origCalledPartyRedirectReason	2
lastRedirectRedirectReason	1
origCalledPartyRedirectOnBehalfOf	5
lastRedirectRedirectOnBehalfOf	5
duration	30

Hunt List Support

Hunt List Examples

1. **Answered Calls** - In this example, calls go to a hunt list and a member of the hunt list answers the call.

   - Cisco Unified IP Phones 3001, 3002, 3003 and 3004 are part of the hunt list. The display names for the phones are 3001-Name, 3002-Name, 3003-Name and 3004-Name, respectively.

   - Hunt Pilot 2000 is associated with a hunt list. Hunt pilot 2000 is configured with display name as 2000-Name.

• Phone 1000 calls hunt pilot 2000; call is offered at 3001 and answered.

When the **Show Line Group Member DN in finalCalledPartyNumber CDR Field** service parameter is set to True, the following values appear in the CDR.

Field Names	CDR
callingPartyNumber	1000
callingPartyNumberPartition	
originalCalledPartyNumber	2000
originalCalledPartyNumberPartition	
finalCalledPartyNumber	3001
finalCalledPartyNumberPartition	
origDeviceName	Phone 1000
destDeviceName	Phone 3001
huntPilotDN	2000
huntPilotPartition	

When the **Show Line Group Member DN in finalCalledPartyNumber CDR Field** service parameter is set to False, the following values in the table display in the CDR.

Field Names	CDR
callingPartyNumber	1000
callingPartyNumberPartition	
originalCalledPartyNumber	2000
originalCalledPartyNumberPartition	
finalCalledPartyNumber	2000
finalCalledPartyNumberPartition	
origDeviceName	Phone 1000
destDeviceName	Phone 3001
huntPilotDN	2000
huntPilotPartition	

1. **Abandoned or Failed Calls** - In this example, calls go to a hunt list and a member of the hunt list abandons or fails the call.

   • Cisco Unified IP Phones 3001, 3002, 3003 and 3004 are part of the hunt list.

- Hunt Pilot 2000 is associated with a hunt list.

- Phone 1000 calls hunt pilot 2000; call is offered at 3001 and abandoned. When the **Show Line Group Member DN in finalCalledPartyNumber CDR field** service parameter is set to True, the following values from the table display in the CDR:

Field Names	CDR
callingPartyNumber	1000
callingPartyNumberPartition	
originalCalledPartyNumber	2000
originalCalledPartyNumberPartition	
finalCalledPartyNumber	**2000**
finalCalledPartyNumberPartition	
origDeviceName	Phone 1000
destDeviceName	Phone 3001
huntPilotDN	
huntPilotPartition	
calledPartyPatternUsage	7

Note If the call is not answered by any of the hunt group members, the finalCalledPartyNumber field shows the hunt pilot DN. The number shows a line group member DN only when one of the line group member answers the call.

Because the call does not get answered, the huntPilotDN is not available in the CDR. The **PatternUsage** (7 = PATTERN_HUNT_PILOT) field gets set to 7 to indicate that the call was made to a hunt pilot. When the service parameter is enabled, the **finalCalledPartyNumber** field denotes the member hunt DN and the **originalCalledPartyNumber** field denotes the huntPilot DN.

When the **Show Line Group Member DN in the finalCalledPartyNumber CDR field** service parameter is set to False, the following values in the table display in the CDR:

Field Names	CDR
callingPartyNumber	1000
callingPartyNumberPartition	
originalCalledPartyNumber	2000
originalCalledPartyNumberPartition	

Field Names	CDR
finalCalledPartyNumber	**2000**
finalCalledPartyNumberPartition	
origDeviceName	Phone 1000
destDeviceName	Phone 3001
huntPilotDN	
huntPilotPartition	
calledPartyPatternUsage	7

Because the call is not answered, the huntPilotDN is not available in the CDR. The **PatternUsage** (7 = PATTERN_HUNT_PILOT) field gets set to 7 to indicate that the call was made to a hunt pilot. When the service parameter is not enabled, the **finalCalledPartyNumber** field denotes the member hunt DN.

H.239

Unified Communications Manager supports H.239. This feature defines the procedures for use of up to two video channels in H.320-based systems and for labeling individual channels with a role of "presentation" or "live." This procedure indicates the requirements for processing the channel and the role of the channel content in the call. Role labels apply to both H.320 and H.245 signaling-based systems.

Several new CDR fields support a second video channel for both the origination and destination devices. This CDR provides an example of these new fields.

H.239 CDR Example

When A and B declare H.239 capability in Terminal Capability Set (TCS) and one, or both, of the endpoints initiates the receiving channel to have an extended video channel in an H.239 mechanism for presentation or video feed, the new CDR fields display in the CDR in addition to the existing fields of a video call.

Calling party 51234 calls the called party 57890. Let 103 represent H.264, 187962284 represents 172.19.52.11, 288625580 represents 172.19.52.17, and 352 represents 352K.

Field Names	CDR
globalCallID_callId	121
origLegCallIdentifier	101
destLegCallIdentifier	102
callingPartyNumber	51234
originalCalledPartyNumber	57890
finalCalledPartyNumber	57890
lastRedirectDn	57890

Field Names	CDR
origCause_Value	0
destCause_Value	16
origVideoCap_Codec	103
origVideoCap_Bandwidth	352
origVideoCap_Resolution	0
origVideoTransportAddress_IP	187962284
origVideoTransportAddress_Port	2406
destVideoCap_Codec	103
destVideoCap_Bandwidth	352
destVideoCap_Resolution	0
destVideoTransportAddress_IP	288625580
destVideoTransportAddress_Port	2328
origVideoCap_Codec_Channel2	103
origVideoCap_Bandwidth_Channel2	352
origVideoCap_Resolution_Channel2	0
origVideoTransportAddress_IP_Channel2	187962284
origVideoTransportAddress_Port_Channel2	2410
origVideoChannel_Role_Channel2	0
destVideoCap_Codec_Channel2	103
destVideoCap_Bandwidth_Channel2	352
destVideoCap_Resolution_Channel2	0
destVideoTransportAddress_IP_Channel2	288625580
destVideoTransportAddress_Port_Channel2	2330
destVideoChannel_Role_Channel2	0

iLBC Calls

Internet Low Bit Rate Codec (iLBC) enables graceful speech quality degradation in a lossy network where frames get lost. For iLBC calls, the codec specifies Media_Payload_ILBC = 86.

The system adds an audio bandwidth field to the CDR for iLBC calls.

Field Names	Definitions
origMediaCap_bandwidth	This integer field contains the audio bandwidth.
destMediaCap_bandwidth	This integer field contains the audio bandwidth.

The system populates the bandwidth fields based on the following table:

Codec	Bandwidth
G711Alaw64k	64
G711Alaw56k	56
G711mu-law64k	64
G711mu-law56k	56
G722 64k	64
G722 56k	56
G722 48k	48
G7231	7
G728	16
G729	8
G729AnnexA	8
Is11172AudioCap	0
Is13818AudioCap	0
G729AnnexB	8
G729AnnexAwAnnexB	8
GSM Full Rate	13
GSM Half Rate	7
GSM Enhanced Full Rate	13
Wideband 256K	256
Data 64k	64
Data 56k	56
G7221 32K	32
G7221 24K	24

Codec	Bandwidth
AAC-LD (mpeg4-generic)	256
AAC-LD (MP4A-LATM) 128K	128
AAC-LD (MP4A-LATM) 64K	64
AAC-LD (MP4A-LATM) 56K	56
AAC-LD (MP4A-LATM) 48K	48
AAC-LD (MP4A-LATM) 32K	32
AAC-LD (MP4A-LATM) 24K	24
GSM	13
iLBC	15 or 13
iSAC	32
XV150 MR 729A	8
NSE VBD 729A	8

iLBC Call CDR Example

This example applies to a call with iLBC codec.

Field Names	iLBC CDR
globalCallID_callId	121
origLegCallIdentifier	101
destLegCallIdentifier	102
callingPartyNumber	51234
originalCalledPartyNumber	57890
finalCalledPartyNumber	57890
lastRedirectDn	57890
origCause_Value	0
dest_CauseValue	16
origMediaCap_payloadCapability	86
origMediaCap_Bandwidth	15
destMediaCap_payloadCapability	86

Field Names	iLBC CDR
destMediaCap_Bandwidth	15

Intercompany Media Engine

Successful IME Calls

A call is made to PSTN. The gateway has it in the learned IME route and the call is extended to IME trunk. Call is successfully routed out through IME trunk.

Field Names	CDR
globalCallID_callId	3
origLegCallIdentifier	300
destLegCallIdentifier	301
callingPartyNumber	2001
originalCalledPartyNumber	9728134987
lastRedirectRedirectOnBehalfOf	30
lastRedirectRedirectReason	0
duration	10

Failed IME Calls Due to IME Trunk Rejection

A call is made to PSTN. The gateway has it in the learned IME route and the call is extended to IME trunk. The IME trunk rejects the call, and the call treatment does not cause the call to be redirected to the PSTN, so the call gets rejected. Depending on the reason of IME trunk reject, different lastRedirectRedirectReason can be reported.

Field Names	CDR
globalCallID_callId	3
origLegCallIdentifier	300
destLegCallIdentifier	301
callingPartyNumber	2001
originalCalledPartyNumber	9728134987
origTerminationOnBehalfOf	30
lastRedirectRedirectOnBehalfOf	30

Field Names	CDR
lastRedirectRedirectReason	496 OR 512 OR 528 OR 544 OR 560 OR 576 OR 592 OR 608 OR 624 OR 640 OR 656 OR 672 OR 688 OR 704
origCause_Value	31
duration	0

IME Calls Redirected to PSTN Due to IME Trunk Rejection

A call is made to PSTN. The gateway has it in the learned IME route and the call is extended to IME trunk. The IME Trunk rejects the call, and the call treatment DOES cause the call to be redirected to the PSTN, so the call gets rejected. Depending on reason of IME trunk reject, different lastRedirectRedirectReason can be reported.

Field Names	CDR
globalCallID_callId	3
origLegCallIdentifier	300
destLegCallIdentifier	301
callingPartyNumber	2001
originalCalledPartyNumber	9728134987
lastRedirectRedirectOnBehalfOf	30
lastRedirectRedirectReason	496 OR 512 OR 528 OR 544 OR 560 OR 576 OR 592 OR 608 OR 624 OR 640 OR 656 OR 672 OR 688 OR 704
duration	10

IME Call Successfully Routed Out Through IME Trunk, Call Fallback to PSTN Due to Poor QoS

A call is made to PSTN. The gateway has it in the learned IME route and the call is extended to IME trunk. Call is routed out through IME trunk. Bad QoS later discovered and call falls back to PSTN.

Two CDRs are generated in this case; one for the IME call and one for fallback to PSTN call.

Table 95: For IME call

Field Names	CDR
globalCallID_callId	3
origLegCallIdentifier	300
destLegCallIdentifier	301
callingPartyNumber	2001

Field Names	CDR
originalCalledPartyNumber	9728134987
OrigTerminationOnBehalfOf	30
lastRedirectRedirectOnBehalfOf	30
origCause_value	132
duration	5

Table 96: For Fallback to PSTN Call

Field Names	CDR
globalCallID_callId	3
origLegCallIdentifier	300
destLegCallIdentifier	301
callingPartyNumber	2001
originalCalledPartyNumber	9728134987
lastRedirectRedirectOnBehalfOf	31
joinOnBehalfOf	31
lastRedirectRedirectReason	722
duration	5

Clear the PSTN Failback Call Case 1

A call is made to PSTN. The gateway has it in the learned IME route and the call is extended to IME trunk. Call is routed out through IME trunk. Bad QoS is discovered later and fall back initiated to PSTN. Call is rejected by PSTN gateway. Call is intercepted by Fallback Manager which clears the call. IME call remains untouched.

Two CDRs are generated in this case; one for the IME call and one for fallback to PSTN call.

Table 97: For IME Call

Field Names	CDR
globalCallID_callId	3
origLegCallIdentifier	300
destLegCallIdentifier	301
callingPartyNumber	2001

Field Names	CDR
originalCalledPartyNumber	9728134987
lastRedirectRedirectOnBehalfOf	30
lastRedirectRedirectReason	0
duration	5

Table 98: For Fallback to PSTN Call

Field Names	CDR
globalCallID_callId	3
origLegCallIdentifier	300
destLegCallIdentifier	301
callingPartyNumber	2001
originalCalledPartyNumber	9728134987
OrigTerminationOnBehalfOf	31
origCause_value	Existing PSTN GW cause codes
duration	0

Clear the PSTN Failback Call Case 2

A call is made to PSTN. The gateway has it in the learned IME route and the call is extended to IME trunk. Call is routed out through IME trunk. Bad QoS is discovered later and fall back initiated to PSTN. Cannot find link to IME call. Call is intercepted by Fallback Manager which clears the call. IME call remains untouched.

Two CDRs are generated in this case; one for the IME call and one for fallback to PSTN call.

Table 99: For IME Call

Field Names	CDR
globalCallID_callId	3
origLegCallIdentifier	300
destLegCallIdentifier	301
callingPartyNumber	2001
originalCalledPartyNumber	9728134987
lastRedirectRedirectOnBehalfOf	30
lastRedirectRedirectReason	0

Field Names	CDR
duration	5

Table 100: For Fallback to PSTN Call

Field Names	CDR
globalCallID_callId	3
origLegCallIdentifier	300
destLegCallIdentifier	301
callingPartyNumber	2001
originalCalledPartyNumber	9728134987
OrigTerminationOnBehalfOf	31
origCause_value	133 OR 134 OR existing cause codes
duration	0

Immediate Divert (to Voice-Messaging System)

Immediate Divert (IDivert) gets invoked in three different call states:

- You can invoke the IDivert feature while the incoming call is ringing. The CDR for the ringing case acts very similar to call forwarding, but the **origCalledPartyRedirectOnBehalfOf** and the **lastRedirectRedirectOnBehalfOf** fields specify Immediate Divert = 14.

- You can invoke the IDivert feature while the call is connected or on hold. These scenarios generate two CDRs. Both CDRs have the same **globalCallID_CallId** field. The first CDR applies to the original connection, and the second CDR applies to the call redirected to the voice-messaging system. The first call has the **origTerminationOnBehalfOf** and **destTerminationOnBehalfOf** fields set to Immediate Divert = 14.

- The call that gets redirected to the voice-messaging system has the **origCalledPartyRedirectOnBehalfOf** and **lastRedirectRedirectOnBehalfOf** fields set to Immediate Divert = 14.

IDivert CDR Examples

1. **IDivert during Alerting** – 40003 calls 40001, and while 40001 is ringing, 40001 presses the IDivert button, and call diverts to the voice-messaging system 40000.

> **Note** If the call gets redirected by IDivert in the Alerting state, only one CDR gets generated.

Field Names	Original call CDR
globalCallID_callId	37
origLegCallIdentifier	16777327
destLegCallIdentifier	16777329
callingPartyNumber	40003
origCalledPartyNumber	40001
finalCalledPartyNumber	40000
lastRedirectDn	40001
origCause_Value	16
dest_CauseValue	0
origCalledPartyRedirectReason	50
lastRedirectRedirectReason	50
origCalledPartyRedirectOnBehalfOf	14
lastRedirectRedirectOnBehalfOf	14
joinOnBehalfOf	14

2. **IDivert during Connect** – 40003 calls 40001, and 40001 answers the call. 40001 decides to divert the caller to the voice-messaging system and presses the IDivert softkey. 40003 gets diverted to the voice-messaging system 40000.

Because the call gets connected before the redirect, two CDRs get generated: one for the original connected call, and another for the call that is diverted to the voice-messaging system.

Field Names	Original Connected Call CDR	Diverted Call CDR
globalCallID_callId	38	38
origLegCallIdentifier	16777330	16777330
destLegCallIdentifier	16777331	16777332
callingPartyNumber	40003	40003
origCalledPartyNumber	40001	40001
finalCalledPartyNumber	40001	40000
lastRedirectDn	40001	40001
origCause_Value	0	16
dest_CauseValue	0	0

Field Names	Original Connected Call CDR	Diverted Call CDR
origCalledPartyRedirectReason	0	50
lastRedirectRedirectReason	0	50
origCalledPartyRedirectOnBehalfOf		14
lastRedirectRedirectOnBehalfOf		14
origTerminationOnBehalfOf	14	14
destTerminationOnBehalfOf	14	12
joinOnBehalfOf		14

IMS Application Server

1. IMS A with calls IMS B through Unified Communications Manager

   The incoming invite to Unified Communications Manager contains:

   Icid: 5802170000010000000000A85552590A (say, PCV1) and orig_ioi: rcdn-85.swyan.open-ims.test (say, IOI_1).

   The INVITE from the Unified Communications Manager to IMS B has the same icid as 5802170000010000000000A85552590A (PCV1), orig_ioi as rcdn-85.swyan.open-ims.test (IOI_1).

2. When B answers, 200 OK to Unified Communications Manager has icid as 5802170000010000000000A85552590A (PCV1), orig_ioi as rcdn-85.swyan.open-ims.test (IOI_1), and term_ioi, rcdn-86.swyan.open-ims.test (IOI_2). There could be extra fields with this 200 OK.

3. The 200 OK from Unified Communications Manager to IMS A has icid 5802170000010000000000A85552590A (PCV1), orig_ioi as rcdn-85.swyan.open-ims.test (IOI_1), and term_ioi as rcdn-86.swyan.open-ims.test (IOI_2). The extra fields in the 200 OK will be passed to IMS A.

CDR	Side A			Side B		
parties	icid	orig_ioi	term_ioi	icid	orig_ioi	term_ioi
A-B	PCV1	IOI_1	IOI_2	PCV1	IOI_1	IOI_2

Fields Names	CDR
globalCallID_callId	3
origLegCallIdentifier	300
destLegCallIdentifier	301
origDeviceName	CUCM_ISC_TRUNK1

Fields Names	CDR
destDeviceName	CUCM_ISC_TRUNK2
IncomingICID	580217000010000000000A85552590A
IncomingOrigIOI	rcdn-85.swyan.open-ims.test
IncomingTermIOI	rcdn-86.swyan.open-ims.test
OutgoingICID	580217000010000000000A85552590A
OutgoingOrigIOI	rcdn-85.swyan.open-ims.test
OutgoingTermIOI	rcdn-86.swyan.open-ims.test

Intercom Calls

The Intercom feature provides one-way audio; therefore, the CDR reflects one-way audio. For talk-back intercom, two-way audio exists, and the CDR reflects two-way audio.

The Intercom feature requires a partition (intercom partition), and existing CDR partition fields get used to identify intercom calls.

The following two examples show CDRs for intercom.

Intercom CDR Examples

1. **Whisper Intercom** - Phone 20000 invokes the intercom. The configured intercom partition name specifies "Intercom."

Field Names	Original Call CDR
globalCallID_callId	1111000
origLegCallIdentifier	21822467
destLegCallIdentifier	21822468
callingPartyNumber	20000
originalCalledPartyNumber	20001
finalCalledPartyNumber	20001
origCause_Value	16
dest_CauseValue	0
origMediaTransportAddress_IP	0
origMediaTransportAddress_Port	0
destMediaTransportAddress_IP	-47446006

Field Names	Original Call CDR
destMediaTransportAddress_Port	28480
origCalledPartyNumberPartition	Intercom
callingPartyNumberPartition	Intercom
finalCalledPartyNumberPartition	Intercom
duration	5

2. **Talk-Back Intercom** - Phone 20000 presses the intercom button. 20001 invokes Talk-Back and talks to 20000. The configured intercom partition name specifies "Intercom."

Field Names	Original Call CDR
globalCallID_callId	1111000
origLegCallIdentifier	21822469
destLegCallIdentifier	21822470
callingPartyNumber	20000
originalCalledPartyNumber	20001
finalCalledPartyNumber	20001
origCause_Value	16
dest_CauseValue	0
origMediaTransportAddress_IP	-131332086
origMediaTransportAddress_Port	29458
destMediaTransportAddress_IP	-47446006
destMediaTransportAddress_Port	29164
origCalledPartyNumberPartition	Intercom
callingPartyNumberPartition	Intercom
finalCalledPartyNumberPartition	Intercom
duration	5

IPv6 Calls

Unified Communications Manager supports IPv6 in this release. There are two new fields in the CDR for this feature:

- **origIpv4v6Addr**—This field identifies the IP address of the device that originates the call signaling. The field can be in either IPv4 or IPv6 format depending on the IP address type that gets used for the call.

- **destIpv4v6Addr**—This field identifies the IP address of the device that terminates the call signaling. The field can be in either IPv4 or IPv6 format depending on the IP address type that gets used for the call.

The following CDR examples display IPv6 with successful and unsuccessful calls.

Successful Calls

1. A talks to B; A hangs up. A is configured as v4_only and B is configured as v4_only. The new fields **origIpv4v6Addr** and **destIpv4v6Addr** get populated with the format of their respective v4 addresses.

Field Names	Values
globalCallID_callId	1
origLegCallIdentifier	100
destLegCallIdentifier	101
callingPartyNumber	2001
originalCalledPartyNumber	2309
finalCalledPartyNumber	2309
lastRedirectDn	2309
origIpAddr	352737802
destIpAddr	1878566390
origIpv4v6Addr	10.90.6.21
destIpv4v6Addr	10.90.7.144
duration	60

2. A talks to B; A hangs up. A is configured as v6_only and B is configured as v6_only. The new fields **origIpv4v6Addr anddestIpv4v6Addr** get populated with the format of their respective v6 addresses.

Field Names	Values
globalCallID_callId	1
origLegCallIdentifier	100
destLegCallIdentifier	101
callingPartyNumber	2001
originalCalledPartyNumber	2309

Field Names	Values
finalCalledPartyNumber	2309
lastRedirectDn	2309
origIpAddr	0
destIpAddr	0
origIpv4v6Addr	2001:fecd:ba23:cd1f:dcb1:1010:9234:40881
destIpv4v6Addr	2001:420:1e00:e5:217:8ff:fe5c:2fa9
duration	60

3. A talks to B; A hangs up. A is configured as v4_only and B is configured as v6_only. The new fields **origIpv4v6Addr** and **destIpv4v6Addr** get populated with the format of their respective v4/v6 addresses.

Field Names	Values
globalCallID_callId	1
origLegCallIdentifier	100
destLegCallIdentifier	101
callingPartyNumber	2001
originalCalledPartyNumber	2309
finalCalledPartyNumber	2309
lastRedirectDn	2309
origIpAddr	352737802
destIpAddr	-1878566390
origIpv4v6Addr	10.90.6.21
destIpv4v6Addr	10.90.7.144
duration	60

4. A talks to B; A hangs up. A is configured as v4_v6 and B is configured as v4_only. In this case, media negotiates v4. The new fields **origIpv4v6Addr and destIpv4v6Addr** get populated with the format of their respective v4 addresses.

Field Names	Values
globalCallID_callId	1
origLegCallIdentifier	100
destLegCallIdentifier	101

Field Names	Values
callingPartyNumber	2001
originalCalledPartyNumber	2309
finalCalledPartyNumber	2309
lastRedirectDn	2309
origIpAddr	352737802
destIpAddr	-1878566390
origIpv4v6Addr	10.90.6.21
destIpv4v6Addr	10.90.7.144
duration	60

5. A talks to B; A hangs up. A is configured as v4_v6 and B is configured as v6_only. In this case, media negotiates v6. The new fields **origIpv4v6Addr** and **destIpv4v6Addr** get populated with the format of their respective v6 addresses.

Field Names	Values
globalCallID_callId	1
origLegCallIdentifier	100
destLegCallIdentifier	101
callingPartyNumber	2001
originalCalledPartyNumber	2309
finalCalledPartyNumber	2309
lastRedirectDn	2309
origIpAddr	352737802
destIpAddr	0
origIpv4v6Addr	2001:fecd:ba23:cd1f:dcb1:1010:9234:4088
destIpv4v6Addr	2001:420:1e00:e5:217:8ff:fe5c:2fa9
duration	60

Unsuccessful Calls

1. A calls B; A abandons the call. A is configured as v4_only and B is configured as v6_only. The new field **origIpv4v6Addr** gets populated with the format of its v4 address. The new field **destIpv4v6Addr** does not get populated.

Field Names	Values
globalCallID_callId	1
origLegCallIdentifier	100
destLegCallIdentifier	101
callingPartyNumber	2001
originalCalledPartyNumber	2309
finalCalledPartyNumber	2309
lastRedirectDn	2309
origIpAddr	352737802
destIpAddr	-569419254
origIpv4v6Addr	10.90.15.222
destIpv4v6Addr	
duration	0

2. A calls B; the call fails. A is configured as v6_only and B is configured as v4_v6. The new field **origIpv4v6Addr** gets populated with the format of its v6 address. The new field **destIpv4v6Addr** does not get populated in this case.

Field Names	Values
globalCallID_callId	1
origLegCallIdentifier	100
destLegCallIdentifier	101
callingPartyNumber	2001
originalCalledPartyNumber	2309
finalCalledPartyNumber	2309
lastRedirectDn	2309
origIpAddr	0
destIpAddr	0
origIpv4v6Addr	2001:fecd:ba23:cd1f:dcb1:1010:9234:4088
destIpv4v6Addr	
duration	0

Legacy Call Pickup

Legacy Call Pickup calls act similar to forwarded calls. Legacy Call Pickup uses the redirect call control primitive like call forwarding. Some of the important CDR fields for Legacy Call Pickup calls follow:

- The **originalCallPartyNumber** field contains the number of the original called party.

- The **finalCalledPartyNumber** field specifies the number of the party that picks up the call.

- The **lastRedirectDn** field specifies the number that rings when the call gets picked up.

- The **origCalledPartyRedirectReason** field specifies the reason that the call gets redirected the first time. For call pickup calls, this field can contain **Call Pickup = 5**.

- The **lastRedirectRedirectReason** field specifies the reason that the call gets redirected the last time. For call pickup, this field can contain **Call Pickup = 5**.

- The **origCalledPartyRedirectOnBehalfOf** field identifies which feature redirects the call for the first redirect. For call pickup, this field specifies **Pickup = 16**.

- The **lastRedirectRedirectOnBehalfOf** field identifies which feature redirects the call for the last redirect. For call pickup, this field specifies **Pickup = 16**.

Legacy Call Pickup CDR Example

Call from the PSTN to extension 2001; 2001 and 2002 exist in the same pickup group. 2002 picks up the call that rings on 2001. 2002 answers the call, and the call connects between the PSTN caller and 2002. They talk for 2 minutes.

Field Names	CDR
globalCallID_callId	22
origLegCallIdentifier	1
destLegCallIdentifier	2
callingPartyNumber	9728134987
originalCalledPartyNumber	2001
finalCalledPartyNumber	2002
lastRedirectDn	2001
origCause_Value	0
dest_CauseValue	16
origCalledPartyRedirectReason	0
lastRedirectRedirectReason	5
origCalledPartyRedirectOnBehalfOf	16

Field Names	CDR
lastRedirectRedirectOnBehalfOf	16
duration	120

Local Route Groups and Called Party Transformation

In this release, Unified Communications Manager supports the new feature, local route groups and called party transformation. The device reports the Called Party Number that it outpulsed back to Call Control only if called party transformation occurs. This action gets recorded in the CDR in the new field **outpulsedCalledPartyNumber**.

Local Route Groups and Called Party Normalization CDR Example

A call gets placed from an enterprise phone in Dallas to the PSTN; the dialed number specifies 9.5551212.

The translation causes the called party number to take the digits as dialed by the originator, discard PreDot and add the Prefix +1 214.

The **finalCalledPartyNumber** in the CDR comprises the globally unique E.164 string +12145551212.

If a San Jose gateway gets selected, it transforms the global string +1 214 555 1212 into 12145551212, and if a Dallas gateway gets selected, the global string gets transformed into 2145551212.

The device returns this global string to Call Control as the **outpulsedCalledPartyNumber; it gets** recorded in the CDR.

The following CDR gets created if the San Jose gateway gets selected.

Field Names	Values
globalCallID_callId	1
origLegCallIdentifier	100
destLegCallIdentifier	101
callingPartyNumber	2001
originalCalledPartyNumber	+12145551212
finalCalledPartyNumber	2309
lastRedirectDn	2309
origCause_Value	16
dest_CauseValue	0
duration	60
outpulsedCalledPartyNumber	12145551212

The following CDR gets created if the Dallas gateway gets selected.

Field Names	Values
globalCallID_callId	1
origLegCallIdentifier	100
destLegCallIdentifier	101
callingPartyNumber	2001
originalCalledPartyNumber	+12145551212
finalCalledPartyNumber	+12145551212
lastRedirectDn	+12145551212
origCause_Value	16
dest_CauseValue	0
duration	60
outpulsedCalledPartyNumber	2145551212

Logical Partitioning Calls

The Telecom Regulatory Authority of India (TRAI) requires that voice traffic over an enterprise data network and a PSTN network remain separate. The logical partitioning feature ensures that a single system can be used to support both types of calls as long as calls that pass through a PSTN gateway can never directly connect to a VoIP phone or VoIP PSTN gateway in another geographic location (geolocation).

CDR Example for Call Termination Cause Code CCM_SIP_424_BAD_LOCATION_INFO

A SIP trunk call goes from cluster1 to cluster2. The call contains a geolocation header but does not include an XML location. Cluster2 releases the call with a SIP Status code of 424 (bad location information [decimal value = 419430421]).

Cause code CCM_SIP_424_BAD_LOCATION_INFO gets logged for calls that are cleared because of bad location information by the SIP trunk on the Unified Communications Manager. The remote endpoint on the SIP trunk can send the 424 SIP Status code for cases when the geolocation information is bad for some of the following reasons:

- The geolocation header indicates the inclusion of PIDF-LO, but the message body does not carry this information.

- The geolocation header has a CID header that refers to a URL, but no corresponding Content-IP header with the same URL exists.

- The geolocation header has a URL other than the CID header (that is a SIP, or SIPS URL).

Refer to additional CDR examples for more information on other call termination cause codes.

Field Names	Values
globalCallID_callId	1
origLegCallIdentifier	100
destLegCallIdentifier	101
callingPartyNumber	2001
originalCalledPartyNumber	9900
finalCalledPartyNumber	9900
lastRedirectDn	9900
origCause_Value	0
dest_CauseValue	419430421
duration	0

CDR Example for Call Termination Cause Code 503

Call 82291002 from cluster1 gets call-forwarded to the PSTN 41549901. A call occurs from cluster2 from DN 89224001 to cluster1 DN 82291002. The call gets denied because of logical partitioning with a call termination cause code of CCM_SIP_503_SERVICE_UNAVAIL_SER_OPTION_NOAVAIL [decimal value of -1493172161]) for the dest_CauseValue.

Cause code CCM_SIP_503_SERVICE_UNAVAIL_SER_OPTION_NOAVAIL gets logged for calls that get cleared because of restricted logical partitioning policy checks during the call establishment phase (basic call, call forwarding, call pickup, call park, meet-me conferences, and so forth). Refer to additional CDR examples for more information on other call termination cause codes.

Field Names	Values
globalCallID_callId	1
origLegCallIdentifier	100
destLegCallIdentifier	101
callingPartyNumber	89224001
originalCalledPartyNumber	82291002
finalCalledPartyNumber	41549901
lastRedirectDn	82291002
origCause_Value	0
dest_CauseValue	-1493172161
duration	0

Malicious Calls

When a call gets identified as a malicious call (button press), the local Unified Communications Manager network flags the call. The Comment field flags the malicious call.

Malicious Calls CDR Example

The following table contains an example CDR of a customer call that gets marked as malicious.

Calling Party	Calling Partition	Original Called Party	Original Called Partition	Orig Cause	Dest Cause	Comment
9728552001	CUST	5555	ACNTS	0	16	"callFlag=MALICIOUS"

Meet-Me Conferences

A meet-me conference occurs when several parties individually dial into a conference bridge at a predetermined time.

The Cisco Secure Conference feature uses the existing **callSecuredStatus** field to display the highest security status that a call reaches. For meet-me conferences, the system clears calls that try to join the conference but do not meet the security level of the meet-me conference with a terminate cause = 58 (Bearer capability not presently available).

Meet-Me Conference CDR Example

The following table contains an example CDR for the following scenario. 5001 specifies the dial-in number. The conference bridge device signifies special significance to the Unified Communications Manager, and calls to the conference bridge appear as forwarded calls; that is, UserA phones the predetermined number (5001); the call gets forwarded to a conference bridge port. The conference bridge port appears with a special number of the form "b0019901001."

- User A (2001) calls into a meet-me conference bridge with the phone number 5001.

- User B (2002) calls into a meet-me conference bridge with the phone number 5001.

- User C (2003) calls into a meet-me conference bridge with the phone number 5001.

	Calling Party	Calling Partition	Original Called Party	Original Called Partition	Final Called Party	Final Called Partition	Last Redirect Party	Last Redirect Partition
A	2001	Accounts	5001		b0019901001		b0019901001	
B	2002	Accounts	5001		b0019901001		b0019901001	
C	2003	Accounts	5001		b0019901001		b0019901001	

Mobility

The following call detail record (CDR) fields apply specifically to Mobility calls. If the call does not invoke a mobility feature, these fields remain empty:

- mobileCallingPartyNumber

- finalMobileCalledPartyNumber

- origMobileDeviceName

- destMobileDeviceName

- origMobileCallDuration

- destMobileCallDuration

- mobileCallType

The system generates a standard CDR for every call that uses the Mobility features. When a call gets split, redirected, or joined by the Mobility feature, the corresponding **OnBehalfOf** code represents a new value that is designated to Mobility. If any of the following **OnBehalfOf** fields has the Mobility code of 24, the CDR has the Mobility call type:

- origCallTerminationOnBehalfOf

- destCallTerminationOnBehalfOf

- origCalledPartyRedirectOnBehalfOf

- lastRedirectRedirectOnBehalfOf

- joinOnBehalfOf

MobileCallType Values

The following table displays the field values for the mobileCallType CDR field. Cisco Analysis and Reporting (CAR) uses the mobileCallType field to determine the CAR call type. If a single call invokes more than one mobility feature, the value of the mobileCallType field represents the integer values added together. For example, if a call uses the Mobile Connect feature and then invokes Hand-Out, the mobile call type will be 136 (8 + 128).

Mobility Feature	mobileCallType Value
Nonmobility call	0
Dial via Office Reverse Callback	1
Dial via Office Forward	2
Reroute remote destination call to enterprise network	4
Mobile Connect	8
Interactive Voice Response	10

Mobility Feature	mobileCallType Value
Enterprise Feature Access	20
Hand-In	40
Hand-Out	80
Redial	100
Least Cost Routing with dial-via-office reverse callback	200
Least Cost Routing with dial-via-office forward	82
Send call to mobile	800
Session handoff	1000

Last Redirect Reason

In legacy deployments before 10.0, CAR uses the lastRedirectReason field to identify the mobility call type. The following table shows the Mobility values for lastRedirectReason.

Mobility Feature	lastRedirectReason Value
Hand-In	303
Hand-Out	319
Mobile Connect	335
Redial	351
Interactive Voice Response	399
Dial via Office Reverse Callback	401
Enterprise Feature Access	402
Session Handoff	403
Send call to mobile	415
Reroute remote destination call to enterprise network	783

Mobility CDR Examples

The following examples demonstrate how mobility features display in CDR records:

1. **Mobile phone initiates Dial via Office Reverse Callback** - A mobile phone with a device name of BOTSAU, a mobile number of 2145551234, and an enterprise number of 1000 invokes the dial-via-office Reverse callback feature to place a call to extension 2000. The MAC address of the called device is

SEP001FCAE90004. The IP address of the SIP gateway is 10.194.108.70. The total call duration is 55 seconds.

Field	Dial via Office Reverse Callback CDR
origCallTerminationOnBehalfOf	0
destCallTerminationOnBehalfOf	12
origCalledRedirectOnBehalfOf	24
lastRedirectOnBehalfOf	24
joinOnBehalfOf	24
origCalledPartyRedirectReason	401
lastRedirectReason	401
origDeviceName	10.194.108.70
destDeviceName	SEP001FCAE9004
finalCalledPartyNumber	2000
huntPilotDN	
mobileCallingPartyNumber	2145551234
finalMobileCalledPartyNumber	
origMobileDeviceName	BOTSAU
destMobileDeviceName	
origMobileCallDuration	55
destMobileCallDuration	
mobileCallType	1

2. **Mobile phone initiates Dial via Office Forward** - Mobile phone 2145551234 initiates the Dial via Office Forward feature to place a call. The mobile phone has a device name of BOTSAU and is mapped to enterprise number 1000. The called number is extension 823006 with a device MAC address of SEP001FCAE90004. The call crosses a SIP gateway at 10.194.108.70 and lasts for a total duration of 120 seconds.

Field	Dial via Office Forward CDR
origCallTerminationOnBehalfOf	0
destCallTerminationOnBehalfOf	12
origCalledRedirectOnBehalfOf	0
lastRedirectOnBehalfOf	0

Field	Dial via Office Forward CDR
joinOnBehalfOf	0
origCalledPartyRedirectReason	0
lastRedirectReason	0
origDeviceName	10.194.108.70
destDeviceName	SEP001FCAE90004
finalCalledPartyNumber	823006
huntPilotDN	
mobileCallingPartyNumber	2145551234
finalMobileCalledPartyNumber	
origMobileDeviceName	BOTSAU
destMobileDeviceName	
origMobileCallDuration	120
destMobileCallDuration	0
mobileCallType	2

3. **Call to remote destination is rerouted to enterprise number** - Cisco Unified IP Phone SEP001FCAE90004, at extension 2000, dials mobile number 2145551234. The destination mobile phone is mapped to enterprise number 1000 and has the Reroute Remote Destination Calls to Enterprise Number service parameter enabled in Unified Communications Manager. Unified Communications Manager reroutes the mobile call to enterprise number 1000. The call crosses SIP gateway GW_SIP and lasts for a total duration of 60 seconds.

Field	Reroute Remote Detination CDR
origCallTerminationOnBehalfOf	0
destCallTerminationOnBehalfOf	12
origCalledRedirectOnBehalfOf	24
lastRedirectOnBehalfOf	24
joinOnBehalfOf	0
origCalledPartyRedirectReason	783
lastRedirectReason	783
origDeviceName	SEP001FCAE90004
destDeviceName	GW_SIP

Field	Reroute Remote Detination CDR
finalCalledPartyNumber	1000
huntPilotDN	
mobileCallingPartyNumber	
finalMobileCalledPartyNumber	2145551234
origMobileDeviceName	
destMobileDeviceName	2145551234:rdp
origMobileCallDuration	0
destMobileCallDuration	60
mobileCallType	4

4. **Mobile phone invokes deskphone call pickup** - Cisco Unified IP Phone SEP001FCAE90004 calls extension 1000, which is shared between a desk phone and a mobile device. The mobile phone answers the call and then hangs up, triggering the desktop pickup feature. The desktop call pickup timer runs for about 10 seconds before expiring. After the timer expires, the call is resumed on a Wi-Fi device for another 10 seconds.

Field	Desktop Call Pickup CDR
origCallTerminationOnBehalfOf	0
destCallTerminationOnBehalfOf	12
origCalledRedirectOnBehalfOf	0
lastRedirectOnBehalfOf	0
joinOnBehalfOf	0
origCalledPartyRedirectReason	0
lastRedirectReason	0
origDeviceName	SEP001FCAE90004
destDeviceName	GW_SIP
finalCalledPartyNumber	1000
huntPilotDN	
mobileCallingPartyNumber	
finalMobileCalledPartyNumber	
origMobileDeviceName	

Field	Desktop Call Pickup CDR
destMobileDeviceName	
origMobileCallDuration	0
destMobileCallDuration	10
mobileCallType	8

5. **Mobile Connect Call - Single Number Reach Voicemail policy set to Timer Control** - Cisco Unified IP Phone SEP001FCAE90004, at extension 2000, calls enterprise number 1000. Mobile Connect is invoked and both the desk phone and mobile phone ring. The mobile phone uses a mobile identity with a device name of BOTSARAH. The Single Number Reach Voicemail policy is set to Timer Control. The call traverses a SIP gateway and lasts for 10 minutes.

Field	CDR
origCallTerminationOnBehalfOf	0
destCallTerminationOnBehalfOf	12
origCalledRedirectOnBehalfOf	0
lastRedirectOnBehalfOf	0
joinOnBehalfOf	0
origCalledPartyRedirectReason	0
lastRedirectReason	0
origDeviceName	SEP001FCAE90004
destDeviceName	GW_SIP
finalCalledPartyNumber	1000
huntPilotDN	
mobileCallingPartyNumber	
finalMobileCalledPartyNumber	2145551234
origMobileDeviceName	
destMobileDeviceName	BOTSARAH
origMobileCallDuration	0
destMobileCallDuration	10
mobileCallType	8

6. **Mobile Connect Call - Single Number Reach Voicemail Policy set to UserControl Mode** -Cisco Unified IP Phone SEP001FCAE91231 at enterprise number 238011 calls across a SIP gateway, GW_SIP.

The called party is SEP001FCEA91289, at enterprise number 238006 and mobile number 14089022179. Three CDRs are produced.

Field	Announcement to user	0 Duration Call	IP Phone to Mobile Phone
origCallTerminationOnBehalfOf	24	24	12
destCallTerminationOnBehalfOf	24	24	24
origCalledRedirectOnBehalfOf	24	24	24
lastRedirectOnBehalfOf	24	24	24
joinOnBehalfOf	0	0	24
origCalledPartyRedirectReason	335	335	335
lastRedirectReason	335	335	335
origDeviceName	SEP001FCAE91231	ParkingLotDevice	SEP001FCAE91231
destDeviceName	GW_SIP	GW_SIP	GW_SIP
finalCalledPartyNumber	238006	238006	238006
huntPilotDN			
mobileCallingPartyNumber			
finalMobileCalledPartyNumber	14089022179	14089022179	14089022179
origMobileDeviceName			
destMobileDeviceName	14089022179:rdp	14089022179:rdp	14089022179:rdp
origMobileCallDuration	0	0	
destMobileCallDuration	3		6
mobileCallType	8	8	8

7. **Mobile phone makes an Enterprise Feature Access (EFA) call with two-stage dialing** - Remote destination deepak-RDP, at 4089022179 with shared-line desk phone SEP001EBE90DE95 and enterprise number 238006, calls internal desk phone SEP001FCAE91231, at enterprise number 238011, using Enterprise Feature Access two-stage dialing. Total call duration is 30 seconds. Two CDRs are produced: one for the mobile phone dialing the EFA access codes into Unified Communications Manager and the second for the mobile phone to desk phone conversation.

Field	Mobile Phone to Unified Communications Manager	Mobile Phone to Desk Phone
origCallTerminationOnBehalfOf	24	12
destCallTerminationOnBehalfOf	24	24

Field	Mobile Phone to Unified Communications Manager	Mobile Phone to Desk Phone
origCalledRedirectOnBehalfOf	24	24
lastRedirectOnBehalfOf	24	24
joinOnBehalfOf	24	24
origCalledPartyRedirectReason	402	402
lastRedirectReason	402	402
origDeviceName	GW_SIP	GW_SIP
destDeviceName	ParkingLotDevice	SEP001FCAE91231
finalCalledPartyNumber	00111101001	238011
huntPilotDN		
mobileCallingPartyNumber	14089022179	14089022179
finalMobileCalledPartyNumber		
origMobileDeviceName	14089022179:rdp	14089022179:rdp
destMobileDeviceName		
origMobileCallDuration	5	25
destMobileCallDuration	0	
mobileCallType	32	32

8. **Mobile phone makes a Mobile Voice Access call** - Remote destination 4089022179, with shared line desk phone SEP001EBE90DE95 at enterprise number 238006, uses Mobile Voice Access to call an internal desk phone SEP00000000000002 at enterprise number 238011. The remote destination has a remote destination profile of deepak-rdp. The call traverses SIP gateway GW_SIP and lasts for 60 seconds.

Field	Mobile Phone to Desk Phone
origCallTerminationOnBehalfOf	12
destCallTerminationOnBehalfOf	0
origCalledRedirectOnBehalfOf	24
lastRedirectOnBehalfOf	24
joinOnBehalfOf	24
origCalledPartyRedirectReason	399
lastRedirectReason	399

Field	Mobile Phone to Desk Phone
origDeviceName	GW_SIP
destDeviceName	SEP00000000000002
finalCalledPartyNumber	238011
huntPilotDN	
mobileCallingPartyNumber	14089022179
finalMobileCalledPartyNumber	
origMobileDeviceName	14089022179:rdp
destMobileDeviceName	
origMobileCallDuration	60
destMobileCallDuration	
mobileCallType	16

9. **Mobility Hand-In** - Cisco Unified IP Phone SEP001FCAE91231 at enterprise number 238011, calls enterprise number 238006, which is unregistered on the VoIP side, but registered to the smartphone TCTSAU. The mobile identity of the smartphone is 14089022179. At the beginning of the call TCTSAU is located in a cellular network, but the device moves into Wi-Fi range and the Hand-In feature is invoked to move the call into the enterprise. The total call duration is 85 seconds, with the called device in Wi-Fi range for the last 30 seconds.

Field	IP Phone to Cellular Phone	IP Phone to IP Phone
origCallTerminationOnBehalfOf	24	12
destCallTerminationOnBehalfOf	24	24
origCalledRedirectOnBehalfOf	0	0
lastRedirectOnBehalfOf	0	24
joinOnBehalfOf	0	24
origCalledPartyRedirectReason	0	303
lastRedirectReason	0	303
origDeviceName	SEP001FCAE91231	SEP001FCAE91231
destDeviceName	GW_SIP	TCTSAU
finalCalledPartyNumber	238006	238006
huntPilotDN		
mobileCallingPartyNumber		

Field	IP Phone to Cellular Phone	IP Phone to IP Phone
finalMobileCalledPartyNumber	14089022179	
origMobileDeviceName		
destMobileDeviceName	TCTSAU	
origMobileCallDuration	0	0
destMobileCallDuration	55	
mobileCallType	8	72

10. **Mobility Hand-Out** - Cisco Unified IP Phone SEP001FCAE94005 at enterprise number 238011, calls a dual-mode smartphone with a mobile identity of 14089022179, at enterprise number 238006. The smartphone is in local Wi-Fi range when the call is answered and the two parties speak for 27 seconds. The smartphone moves out of the enterprise network and the call is switched to the cell network, after which the parties continue to speak for another 25 seconds.

Field	IP Phone to IP Phone	IP Phone to Cell Network
origCallTerminationOnBehalfOf	24	0
destCallTerminationOnBehalfOf	24	12
origCalledRedirectOnBehalfOf	0	0
lastRedirectOnBehalfOf	0	24
joinOnBehalfOf	0	24
origCalledPartyRedirectReason	0	0
lastRedirectReason	0	319
origDeviceName	SEP001FCAE94005	SEP001FCAE94005
destDeviceName	TCTSAU	GW_SIP
finalCalledPartyNumber	238006	238006
huntPilotDN		
mobileCallingPartyNumber		
finalMobileCalledPartyNumber		14089022179
origMobileDeviceName		
destMobileDeviceName		TCTSAU
origMobileCallDuration	0	0
destMobileCallDuration	0	23

Field	IP Phone to IP Phone	IP Phone to Cell Network
mobileCallType	0	128

11. **Mobile phone invokes Least Cost Routing Hand-Out using Dial via Office Reverse Callback** - A dual-mode phone, BOTSAU, with a mobile identity of 14089022179, is within the enterprise wifi network and registered to enterprise number 238006. The phone invokes Dial via Office Reverse Callback (DVOR) using least cost routing to call enterprise number 238011. The two parties speak for 25 seconds, but the mobile phone moves out of Wi-Fi range, triggering the handout feature to the cellular network. On the cell network, the two parties speak for another 35 seconds.

Field	DVOR callback	IP phone to IP phone	Mobile phone to IP phone
origCallTerminationOnBehalfOf	24	24	0
destCallTerminationOnBehalfOf	24	24	12
origCalledRedirectOnBehalfOf	0	0	0
lastRedirectOnBehalfOf	0	0	24
joinOnBehalfOf	0	0	24
origCalledPartyRedirectReason	0	0	0
lastRedirectReason	0	0	319
origDeviceName	ParkingLotDevice	BOTSAU	GW_SIP
destDeviceName	GW_SIP	SEP001FCAE91231	SEP001FCAE91231
finalCalledPartyNumber	238006	238011	238011
huntPilotDN			
mobileCallingPartyNumber			14089022179
finalMobileCalledPartyNumber	14089022179		
origMobileDeviceName			BOTSAU
destMobileDeviceName	BOTSAU		
origMobileCallDuration	0	0	35
destMobileCallDuration	0	0	
mobileCallType	0	0	512

12. **Mobile Phone invokes Least Cost Routing Hand-Out using Dial via Office Forward** - A dual-mode phone, BOTSAU, with a mobile number of 14089022179, is mapped to enterprise number 238006 and is within Wi-Fi range of the enterprise. The phone invokes Dial via Office Forward with least cost routing to place a call to enterprise number 238011, which is registered to a Cisco Unified IP Phone SEP001FCAE91006. The two parties talk for 30 seconds before the mobile phone moves out of Wi-Fi

range and the call is handed out to the cell network, following which the call continues for another 25 seconds.

Field	IP Phone to IP Phone	Mobile Phone to IP Phone
origCallTerminationOnBehalfOf	24	12
destCallTerminationOnBehalfOf	24	0
origCalledRedirectOnBehalfOf	0	0
lastRedirectOnBehalfOf	0	24
joinOnBehalfOf	0	24
origCalledPartyRedirectReason	0	0
lastRedirectReason	0	319
origDeviceName	BOTSAU	GW_SIP
destDeviceName	SEP001FCAE91006	SEP001FCAE91006
finalCalledPartyNumber	238011	238011
huntPilotDN		
mobileCallingPartyNumber		14089022179
finalMobileCalledPartyNumber		
origMobileDeviceName		BOTSAU
destMobileDeviceName		
origMobileCallDuration	0	0
destMobileCallDuration	0	25
mobileCallType	0	130

13. **Send Call to Mobile** - A Cisco Unified IP Phone SEP001FCAE90001 at 238011, makes a call to enterprise number 238006. The called party answers the call on Cisco Unified IP Phone SEP001FCAE90022. The conversation continues for 45 seconds before the called party presses the Mobility softkey to send the call to the mobile phone, BOTSAU, at 12145551234. The call continues on the mobile phone for another 35 seconds. The total call duration is 55 seconds.

Field	Announcement	IP Phone to IP Phone	IP Phone to Mobile Phone
origCallTerminationOnBehalfOf	24	24	24
destCallTerminationOnBehalfOf	24	24	12
origCalledRedirectOnBehalfOf	0	0	0

Field	Announcement	IP Phone to IP Phone	IP Phone to Mobile Phone
lastRedirectOnBehalfOf	0	0	24
joinOnBehalfOf	0	0	24
origCalledPartyRedirectReason	0	0	0
lastRedirectReason	0	0	415
origDeviceName	SEP001FCAE90001	SEP001FCAE90001	SEP001FCAE90001
destDeviceName	GW_SIP	SEP001FCAE90022	GW_SIP
finalCalledPartyNumber	238006	238006	238006
huntPilotDN			
mobileCallingPartyNumber			
finalMobileCalledPartyNumber	12145551234		12145551234
origMobileDeviceName			
destMobileDeviceName	BOTSAU		BOTSAU
origMobileCallDuration	0	0	0
destMobileCallDuration	0	0	35
mobileCallType	0	0	2048

14. **Session Handoff** - Cisco Unified IP Phone SEP001FCAE90001, at extension 1000, calls extension 2500. The phone rings at both a desk phone and a mobile phone. The called party answers on a mobile phone, BOTSAU at mobile number 2145551234 and a conversation begins. After 35 seconds, the called party triggers the Session Handoff feature and transfers the call to a desk phone. The call continues on desk phone SEP001FCAE90022 for another 60 seconds.

Field	Parking Lot to Desk Phone	IP Phone to Mobile Phone	IP Phone to IP Phone
origCallTerminationOnBehalfOf	24	24	24
destCallTerminationOnBehalfOf	24	24	12
origCalledRedirectOnBehalfOf	0	0	0
lastRedirectOnBehalfOf	0	0	24
joinOnBehalfOf	0	0	24
origCalledPartyRedirectReason	0	0	0
lastRedirectReason	0	0	403

Field	Parking Lot to Desk Phone	IP Phone to Mobile Phone	IP Phone to IP Phone
origDeviceName	SEP001FCAE90001	SEP001FCAE90001	SEP001FCAE90001
destDeviceName	SEP001FCAE90022	BOTSARAH	SEP001FCAE90022
finalCalledPartyNumber	2500	2500	2500
huntPilotDN			
mobileCallingPartyNumber			
finalMobileCalledPartyNumber		2145551234	
origMobileDeviceName			
destMobileDeviceName		BOTSARAH	
origMobileCallDuration	0	0	0
destMobileCallDuration	0	15	10
mobileCallType	0	0	5096

Native Call Queuing

The Native Call Queuing feature provides an enhanced capability to handle incoming calls to a hunt pilot number. Unified Communications Manager provides call queuing natively to users so that callers can be held in a queue until hunt members are available to answer them. Callers in a queue receive an initial greeting announcement followed by music on hold or tone on hold. If the caller remains in a queue for time, a secondary announcement is played at a configured interval until the call can be answered—or until the maximum wait timer expires.

Native Call Queuing Example

Unified Communications Manager cluster has four IP Phones: DN 1000, 1001, 1002, and 1003.

A hunt pilot (HP) 2000 is created with line group DN 1000 associated with it. So, this hunt pilot 2000 can only handle one call. Now, Check the "Queuing" enabled flag on the hunt pilot 2000 configuration page. Set the "Max Call Waiting Timer" to be 30 seconds, and select "Route the call to this destination" to be DN 1003. Ideally, if a caller has been put into that queue for 30 seconds, then it will be routed to DN 1003.

1. DN 1001 calls HP 2000, and 1000 answers the call.

2. DN 1002 calls HP 2000. Since the agent is busy, call is queued.

3. After 30 seconds, call is routed to DN 1003.
   .

4. DN 1003 answers the call.

Field Names	CDR
globalCallID_callId	87029
origLegCallIdentifier	30117105
callingPartyNumber	1002
originalCalledPartyNumber	2000
wasCallQueued	1
totalWaitTimeInQueue	30

Normal Calls (Cisco Unified IP Phone to Cisco Unified IP Phone)

Normal calls log three records per call; one CDR and two CMRs, one for each endpoint. In the CDR, the "originalCalledPartyNumber" field contains the same Directory Number as the "finalCalledPartyNumber" field.

Successful Normal Calls CDR Examples

A successful call between two Cisco Unified IP Phones generates a single CDR at the end of the call.

1. The caller terminates a 60-second call. Because the calling party hangs up, the **orig_CauseValue** specifies 16 (Normal Clearing).

Field Names	CDR
globalCallID_callId	1
origLegCallIdentifier	100
destLegCallIdentifier	101
callingPartyNumber	2001
originalCalledPartyNumber	2309
finalCalledPartyNumber	2309
lastRedirectDn	2309
origCause_Value	16
dest_CauseValue	0
duration	60

2. The called party clears a 60-second call. Because the called party hangs up, the **dest_CauseValue** specifies 16 (Normal Clearing).

Field Names	CDR
globalCallID_callId	1
origLegCallIdentifier	100
destLegCallIdentifier	101
callingPartyNumber	2001
originalCalledPartyNumber	2309
finalCalledPartyNumber	2309
lastRedirectDn	2309
origCause_Value	0
dest_CauseValue	16
duration	60

Original Calling Party on Transfer

This feature changes the calling party number for a consultation call of a Cisco Unity or Cisco Unity Connection-initiated call transfer. The CDR of the consultation call shows that the original caller calls the transfer destination, not that the Cisco Unity or Cisco Unity Connection port calls the transfer destination.

You must configure this feature in the service parameters in Unified Communications Manager. See additional information at "Configuring CDR Service Parameters" section of the *CDR Analysis and Reporting Administration Guide*.

Original Calling Party on Transfer CDR Example

4001 calls 4002. 4002 transfers the call to 4003. The system generates three CDRs:

- The call between the original parties (4001 to 4002).

- The consultation call between the transferring party (4002) to the final transfer destination (4003).

- The call from the transferred party (4001) to the transfer destination (4003).

Call	CallingPartyNumber	originalCalledPartyNumber
1	4001	4002
2	4002	4003
3	4001	4003

✎

Note   No originalCallingParty field exists in the CDR.

Personal Assistant Calls

This section contains information about Personal Assistant Calls.

Personal Assistant Direct Call

A personal assistant direct call acts similar to the Blind Transfer from the Calling Party call type.

Personal Assistant Direct Call CDR Example

The following table contains an example CDR for this scenario:

- User A (2101) calls a Personal Assistant route point (2000) and says "call User B."

- The call transfers to User B (2105). In this case, User B did not configure any rules.

✎

Note   In the following example, 2000 represents the main personal assistant route point to reach personal assistant, 21XX represents the personal assistant interceptor route point, and 2001-2004 represents the media port.

In all cases, 2101 specifies the calling number.

Calling Party Num	OrigLegCall Identifier	Calling Party Number Partition	DestLeg Identifier	Final Called Party Num	Final Called Party Number Partition	Original Called Party Num	Original Called Party Number Partition	Last Redir DN	Last Redirect DN Partition	Duration (secs)
2101	16777217	PAManaged	16777219	2004	Phones	2000	1023970182	2000	Phones	34
2004	16777221	Phones	16777222	2105	PAManaged	2105	1023970182	2105	PAManaged	0
2101	16777217	PAManaged	16777222	2105	PAManaged	2105	1023970191	2105	PAManaged	5

Personal Assistant Interceptor Going to Media Port and Transferring Call

This scenario acts similar to Blind Transfer from the Calling Party and Forwarded Calls actions.

Personal Assistant Interceptor Going to Media Port and Transferring the Call CDR Example

The following table contains an example CDR for this scenario:

- User A (2101) dials 2105.

- The personal assistant interceptor (21XX) picks up the call and redirects it to a media port (2002).

- Personal assistant processes the call according to the rules (if any) and transfers the call to the destination (2105), which has not configured any rules.

Calling Party Num	OrigLegCall Identifier	Calling Party Number Partition	DestLeg Identifier	Final Called Party Num	Final Called Party Number Partition	Original Called Party Num	Original Called Party Number Partition	Last Redir DN	Last Redirect DN Partition	Duration (secs)
2002	16777234	Phones	16777285	2105	PAManaged	2105	1023970478	2105	PAManaged	2
2101	16777230	PAManaged	16777232	2002	PA	2105	1023970478	21xx	" "	9
2105	16777235	PAManaged	16777230	2101	" "	" "	1023970483	" "	" "	5

Personal Assistant Interceptor Going Directly to Destination

This scenario can have two different cases: with rules and with no rules.

Example Personal Assistant Interceptor Going Directly to Destination with No Rules CDR

The following table contains an example CDR for this scenario:

- User A (2101) dials 2105.

- The personal assistant interceptor (21XX) picks up the call, processes it according to the rules (if any), and redirects the call to the destination (2105).

The following table contains an example CDR for this scenario:

Calling Party Number	OrigLegCall Identifier	Calling Party Number Partition	DestLeg Identifier	Final Called Party Number	FinalCalled Party Number Partition	Original Called Party Number	Original Called Party Number Partition	Last Redirect DN	Last Redirect DN Partition	Duration(secs)
2101	16777240	PAManaged	16777242	2105	PA	2105	1023970710	21XX	" "	8

Example Personal Assistant Going Directly to Destination with Rule to Forward Calls to Different Destination CDR

The following table contains an example CDR for this scenario:

- User A (2101) dials 2105.

- The Personal Assistant interceptor (21XX) picks up the call and processes it according to the rules.

- The Personal Assistant interceptor then redirects the call to the final destination (2110). In this case, 2105 configured a rule to forward the call to extension 2110.

Calling Party Number	OrigLegCall Identifier	Calling Party Number Partition	DestLeg Identifier	Final Called Party Number	FinalCalled Party Number Partition	Original Called Party Number	Original Called Party Number Partition	Last Redirect DN	Last Redirect DN Partition	Duration(secs)
2101	16777240	PAManaged	16777242	2110	PA	2105	1023970710	21XX	" "	8

Personal Assistant Interceptor Going to Multiple Destinations

This scenario can have several different cases. In each case, User B (2105) configures a rule to reach him at extension 2110 or 2120. This rule can activate when a caller calls Personal Assistant route point (2000) and says "call User B" (direct case) or when the caller dials User B (2105) directly (interceptor case).

Personal Assistant Interceptor Going to Multiple Destinations CDR Examples

The following sections contain examples of each case. The following tables contain example CDRs for each of these scenarios:

- Personal assistant direct multiple destinations: 2110 and 2120 (call accepted at first destination)

- Personal assistant direct multiple destinations: 2110 and 2120 (call accepted at second destination)

- Personal assistant direct multiple destinations: 2110 and 2120 (call accepted at third destination)

- Personal assistant intercept multiple destinations: 2110 and 2120 (call accepted at first destination)

- Personal assistant intercept multiple destinations: 2110 and 2120 (call accepted at second destination)

- Personal assistant intercept multiple destinations: 2110 and 2120 (call accepted at third destination)

Personal Assistant Direct Multiple Destinations: 2110 and 2120 (Call Accepted at First Destination)

- User A calls personal assistant and says, "call User B."

- User B answers the call at 2110 extension.

Calling Party Num	OrigLegCall Identifier	Calling Party Number Partition	DestLeg Identifier	Final Called Party Num	Final Called Party Number Partition	Original Called Party Num	Original Called Party Number Partition	Last Redir DN	Last Redirect DN Partition	Duration (secs)
2004	16777262	Phones	16777263	2110	PAManaged	2110	1023971303	2110	PAManaged	6
2101	16777258	PAManaged	16777260	2004	Phones	2000	1023971303	2000	Phones	22
2110	16777263	PAManaged	16777258	2101	" "	" "	1023971312	" "	" "	9

Personal Assistant Direct Multiple Destinations: 2110 and 2120 (Call Accepted at Second Destination)

- User A calls personal assistant and says, "call User B."

- User B answers the call at 2120 extension.

Calling Party Num	OrigLegCall Identifier	Calling Party Number Partition	DestLeg Identifier	Final Called Party Num	Final Called Party Number Partition	Original Called Party Num	Original Called Party Number Partition	Last Redir DN	Last Redirect DN Partition	Duration (secs)
2001	16777269	Phones	16777270	2110	PAManaged	2110	1023971456	2110	PAManaged	0
2001	16777272	Phones	16777273	2120	PAManaged	2120	1023971467	2120	PAManaged	4
2101	16777265	PAManaged	16777267	2001	Phones	2000	1023971467	2000	Phones	37
2120	16777273	PAManaged	16777265	2101	" "	" "	1023971474	" "	" "	7
2110	16777275	PAManaged	0	" "	" "	" "	1023971476	" "	" "	0

Personal Assistant Direct Multiple Destinations: 2110 and 2120 (Call Accepted at Third Destination)

- User A calls personal assistant and says, "call User B."

- User B does not answer at either extension 2110 or 2120.

- Personal Assistant transfers the call to the original destination (2105), and User B then answers at that extension.

✎

Note 2105 (the original destination) represents the third destination in this case.

Calling Party Num	OrigLegCall Identifier	Calling Party Number Partition	DestLeg Identifier	Final Called Party Num	Final Called Party Number Partition	Original Called Party Num	Original Called Party Number Partition	Last Redir DN	Last Redirect DN Partition	Duration (secs)
2002	16777281	Phones	16777282	2110	PAManaged	2110	1023971602	2110	PAManaged	0
2002	16777284	Phones	16777285	2120	PAManaged	2120	1023971615	2120	PAManaged	0
2101	16777277	PAManaged	16777279	2002	Phones	2000	1023971619	2000	Phones	38
2002	16777287	Phones	16777288	2105	PAManaged	2105	1023971619	2105	PAManaged	0
2101	16777277	PAManaged	16777288	2105	PAManaged	2105	1023971627	2105	PAManaged	7
2105	16777289	PAManaged	0	" "	" "	" "	1023971629	" "	" "	0

Personal Assistant Intercept Multiple Destinations: 2110 and 2120 (Call Accepted at First Destination)

- User A calls personal assistant and says, "call User B."

- User B answers the call at extension 2110.

Calling Party Num	OrigLegCall Identifier	Calling Party Number Partition	DestLeg Identifier	Final Called Party Num	Final Called Party Number Partition	Original Called Party Num	Original Called Party Number Partition	Last Redir DN	Last Redirect DN Partition	Duration (secs)
2003	16777295	Phones	16777296	2110	PAManaged	2110	1023971740	2110	PAManaged	4
2101	16777291	PAManaged	16777293	2003	PA	2105	1023971740	21XX	" "	10
2110	16777296	PAManaged	16777291	2101	" "	" "	1023971749	" "	" "	9

Personal Assistant Intercept Multiple Destinations: 2110 and 2120 (Call Accepted at Second Destination)

• User A calls personal assistant and says, "call User B."

• User B answers the call at extension 2120.

Calling Party Num	OrigLegCall Identifier	Calling Party Number Partition	DestLeg Identifier	Final Called Party Num	Final Called Party Number Partition	Original Called Party Num	Original Called Party Number Partition	Last Redir DN	Last Redirect DN Partition	Duration (secs)
2004	16777302	Phones	16777303	2110	PAManaged	2110	1023971815	2110	PAManaged	0
2004	16777305	Phones	16777306	2120	PAManaged	2120	1023971824	2120	PAManaged	3
2101	16777298	PAManaged	16777300	2004	PA	2105	1023971824	21XX	" "	22
2120	16777306	PAManaged	16777298	2101	" "	" "	1023971832	" "	" "	8

Personal Assistant Intercept Multiple Destinations: 2110 and 2120 (Call Accepted at Third Destination)

• User A calls personal assistant and says, "call User B."

• User B does not answer at either extension 2110 or 2120.

• Personal assistant transfers the call to the original destination (2105), which User B then answers.

Note 2110 (the original destination) represents the third destination in this case.

Calling Party Num	OrigLegCall Identifier	Calling Party Number Partition	DestLeg Identifier	Final Called Party Num	Final Called Party Number Partition	Original Called Party Num	Original Called Party Number Partition	Last Redir DN	Last Redirect DN Partition	Duration (secs)
2001	16777312	Phones	16777313	2110	PAManaged	2110	1023971923	2110	PAManaged	0
2001	16777315	Phones	16777316	2120	PAManaged	2120	1023971936	2120	PAManaged	0
2101	16777308	PAManaged	16777310	2001	PA	2105	1023971940	21XX	" "	30
2001	16777318	Phones	16777319	2105	PAManaged	2105	1023971940	2105	PAManaged	0

Calling Party Num	OrigLegCall Identifier	Calling Party Number Partition	DestLeg Identifier	Final Called Party Num	Final Called Party Number Partition	Original Called Party Num	Original Called Party Number Partition	Last Redir DN	Last Redirect DN Partition	Duration (secs)
2101	16777308	PAManaged	16777319	2105	PAManaged	2105	1023971953	2105	PAManaged	12

Personal Assistant Conferencing

Personal assistant conferencing acts similar to the ad hoc conferences call type.

Personal Assistant Conferencing CDR Example

The following table contains an example CDR for this scenario:

- User A calls personal assistant route point (2000) and says, "conference User B (2105) and User C (2110)."

- Personal assistant conferences User B and C into User A conference.

Calling Party Num	OrigLegCall Identifier	Calling Party Number Partition	DestLeg Identifier	Final Called Party Num	Final Called Party Number Partition
2003	16777345	Phones	16777346	2105	PAManaged
2101	16777340	PAManaged	16777342	2003	Phones
2003	16777350	Phones	16777351	2002	PAManaged
2003	16777342	Phones	16777347	2110	" "
2110	16777351	PAManaged	16777352	b00110201001	" "
2105	16777346	PAManaged	16777349	b00110201001	" "
2101	16777340	PAManaged	16777348	b00110201001	" "

This table continues with this additional information.

Original CalledParty Number	Original Called Party Number Partition	Last Redirect DN	Last Redirect DN Partition	Duration (seconds)
2105	1023972575	2105	PAManaged	6
2000	1023972576	2003	Phones	62
2110	1023972595	2110	PAManaged	39
b00110201001	1023972601	b00110201001	" "	25
b00110201001	1023972609	b00110201001	" "	14
b00110201001	1023972610	b00110201001	" "	34

Original CalledParty Number	Original Called Party Number Partition	Last Redirect DN	Last Redirect DN Partition	Duration (seconds)
b00110201001	1023972610	b00110201001	" "	34

Precedence Calls (MLPP)

Precedence calls take place the same as other calls except the precedence level fields get set in the CDR. Also, when a higher level precedence call preempts a call, the cause codes indicate the reason for the preemption.

Precedence Call CDR Examples

1. A call to another IP phone occurs by dialing a precedence pattern (precedence level 2).

Field Names	Precedence Call CDR
globalCallID_callId	100
origLegCallIdentifier	12345
destLegCallIdentifier	12346
callingPartyNumber	2001
origCalledPartyNumber	826001
origCause_Value	0
dest_CauseValue	16
origPrecedenceLevel	2
destPrecedenceLevel	2

2. A precedence call gets received from another network (precedence level 1).

Field Names	Precedence Call CDR
globalCallID_callId	102
origLegCallIdentifier	11111
destLegCallIdentifier	11112
callingPartyNumber	9728552001
origCalledPartyNumber	6001
origCause_Value	16
dest_CauseValue	0
origPrecedenceLevel	1

Field Names	Precedence Call CDR
destPrecedenceLevel	1

3. A call gets preempted by a higher precedence level call.

Field Names	Original call CDR	Higher Level Call CDR
globalCallID_callId	10000	10001
origLegCallIdentifier	12345678	12345680
destLegCallIdentifier	12345679	12345681
callingPartyNumber	2001	9728551234
origCalledPartyNumber	826001	826001
origCause_Value	0	0
dest_CauseValue	9	16
origPrecedenceLevel	2	1
destPrecedenceLevel	2	1

Redirection (3xx) Calls

This example shows CDRs for the redirection feature (3xx).

When a call is redirected by the Redirection Feature (3xx), the **origCalledPartyRedirectOnBehalfOf** and **lastRedirectRedirectOnBehalfOf** fields specify UnifiedCM Redirection = 19. The **origCalledPartyRedirectReason** and the **lastRedirectRedirectReason fields** specify Redirection = 162.

Redirection (3xx) CDR Example

Activate CFA on phone 10010 that is running SIP (registered to Unified Communications Manager) with a CFA destination of 10000. 35010 calls 10010, which is CFA to 10000. The call gets redirected from 10010 to 10000. 10000 answers the call and talks for 1minute.

Field Names	Original Call CDR
globalCallID_callId	11
origLegCallIdentifier	21832023
destLegCallIdentifier	21832026
callingPartyNumber	35010
originalCalledPartyNumber	10010
finalCalledPartyNumber	10000

Field Names	Original Call CDR
lastRedirectDn	10010
origCause_Value	0
dest_CauseValue	16
origCalledPartyRedirectReason	162
lastRedirectRedirectReason	162
origCalledPartyRedirectOnBehalfOf	19
lastRedirectRedirectOnBehalfOf	19
origTerminationOnBehalfOf	0
destTerminationOnBehalfOf	12
joinOnBehalfOf	19
duration	60

Redirecting Number Transformation

When the redirecting number transformation feature is enabled, original called and last redirecting number are transformed before it sends out in outgoing setup message.

Redirecting Number Transformation Example

1. CCM1 - Phone A [180000] , Phone B [180001] , Phone C [180002]

2. SIP trunk is configured on CCM1 pointing to SIP Gateway

3. Phone B has external mask set as +9111XXXX

4. Phone C has external mask set as +9122XXXX

On SIP trunk, redirecting party CSS is configured which has the partitions P1 and there is a Calling Party transformation pattern associated with P1. This pattern has external phone number mask enabled.

Scenario

A - calls Phone B ---- CFA - Phone C CFA --- SIP Trunk --- SIP Gateway

B - Original Called Party, C - Last Redirecting Party

There are 2 diversion headers corresponding to original and last redirecting party that is sent out in outgoing SIP INVITE message and these diversion headers have transformed redirecting number, that is, +91110001 and +91220002.

These values are also stored in CDR records. Transformed original called number will be stored in outpulsedOriginalCalledPartyNumber and transformed last redirecting number will be stored in outpulsedLastRedirectingNumber.

Field Names	CDR
globalCallID_callId	115010
origLegCallIdentifier	30751507
callingPartyNumber	180000
outpulsedCallingPartyNumber	880003
outpulsedOriginalCalledPartyNumber	+91110001
outpulsedLastRedirectingNumber	+91220002

Refer Calls

See the replaces calls topic for an example of Refer with Replaces.

Replaces Calls

The examples show CDRs for various types of Replaces calls.

Replaces CDR Examples

1. **Invite with Replaces** – Phone 35010 that is running SIP calls phone 35020 that is running SIP. The transfer button gets pressed on 35010, and a call gets placed to SCCP phone 3000, 3000 answers the call; then, phone 35010 completes the transfer. The final transferred call occurs between 35020 and 3000.

> **Note**   When the transfer is complete, the system sends an Invite with Replaces to Unified Communications Manager.

Field Names	Original Call CDR	Reverted Call CDR
globalCallID_callId	5045247	5045248
origLegCallIdentifier	21822467	21822469
destLegCallIdentifier	21822468	21822468
callingPartyNumber	35010	35020
originalCalledPartyNumber	3000	3000
finalCalledPartyNumber	3000	3000
lastRedirectDn	3000	35010
origCause_Value	393216	0
dest_CauseValue	393216	16

Field Names	Original Call CDR	Reverted Call CDR
origCalledPartyRedirectReason	0	0
lastRedirectRedirectReason	0	146
origCalledPartyRedirectOnBehalfOf	0	0
lastRedirectRedirectOnBehalfOf	0	18
origTerminationOnBehalfOf	18	0
destTerminationOnBehalfOf	18	12
joinOnBehalfOf	0	18
duration	5	60

2. **Refer with Replaces** – Phone 35010 that is running SIP calls SCCP 3000, the transfer button gets pressed on 35010, and a call is placed to SCCP 3001; 3001 answers the call; then, phone 35010 completes the transfer. The final transferred call occurs between 3000 and 3001.

Note When the transfer completes, a Refer with Replaces gets sent to Unified Communications Manager.

Field Names	Original Call CDR	Consultation Call CDR	Final Transferred Call CDR
globalCallID_callId	5045245	5045246	5045245
origLegCallIdentifier	21822461	21822463	21822462
destLegCallIdentifier	21822462	21822464	21822464
callingPartyNumber	35010	35010	3000
originalCalledPartyNumber	3000	3001	3001
finalCalledPartyNumber	3000	3001	3001
lastRedirectDn	3000	3001	35010
origCause_Value	393216	393216	16
dest_CauseValue	393216	393216	0
origCalledPartyRedirectReason	0	0	130
lastRedirectRedirectReason	0	0	146
origCalledPartyRedirectOnBehalfOf	0	0	17
lastRedirectRedirectOnBehalfOf	0	0	18

Field Names	Original Call CDR	Consultation Call CDR	Final Transferred Call CDR
origTerminationOnBehalfOf	17	18	12
destTerminationOnBehalfOf	17	18	17
joinOnBehalfOf	0	0	18
duration	25	4	25

RSVP

These fields identify the status of RSVP reservation for the call. Be aware that the Unified Communications Manager RSVP CDR status field value gets concatenated, and the system retains the last 32 status values for the call.

For example, if a call is established with "Optional" policy, and the initial RSVP reservation is successful, and then it subsequently loses its bandwidth reservation and then regains its bandwidth reservation after retry, for several times during middle of the call, the call ends with a successful RSVP reservation. The CDR shows the following string as the UnifiedCommunication RSVP reservation status for that particular stream: "2:5:2:5:2:5:2" (success:lost_bw:success:lost_bw:success:lost_bw:success).

RSVP Call CDR Examples

1. The example represents a call that gets established with "Optional" policy, and the initial RSVP reservation succeeds. The parties talk for 5minutes.

Field Names	CDR
globalCallID_callId	300
origLegCallIdentifier	16777300
destLegCallIdentifier	16777301
callingPartyNumber	20000
origCalledPartyNumber	20001
finalCalledPartyNumber	20001
lastRedirectDn	20001
origCause_Value	0
dest_CauseValue	16
origDTMFMethod	2
destDTMFMethod	2
duration	300

2. The example represents a call that is established with "Optional" policy, and the initial RSVP reservation succeeds, then it loses its bandwidth reservation but regains it after a retry. The parties talk for 1minute.

Field Names	CDR
globalCallID_callId	301
origLegCallIdentifier	16777302
destLegCallIdentifier	16777303
callingPartyNumber	20000
origCalledPartyNumber	20001
finalCalledPartyNumber	20001
lastRedirectDn	20001
origCause_Value	0
dest_CauseValue	16
origDTMFMethod	2:5:2
destDTMFMethod	2:5:2
duration	60

Secure Conference Meet-Me

The following example shows a CDR for a meet-me secure conference. 35010 calls into a secure meet-me conference, but 35010 is a non-secure phone. Because 35010 does not meet the minimum security level of the meet-me conference, the call gets cleared with the cause code of 58 (meet-me conference minimum security level not met).

Secure Conference Meet-Me CDR Example

Field Names	Call to the Meet-Me Conference CDR
globalCallID_callId	5045247
origLegCallIdentifier	123456879
destLegCallIdentifier	123456999
callingPartyNumber	35010
originalCalledPartyNumber	50000
finalCalledPartyNumber	50000
lastRedirectDn	50000

Field Names	Call to the Meet-Me Conference CDR
origCause_Value	58
dest_CauseValue	0
origCalledPartyRedirectReason	0
lastRedirectRedirectReason	0
origCalledPartyRedirectOnBehalfOf	0
lastRedirectRedirectOnBehalfOf	0
origTerminationOnBehalfOf	6
destTerminationOnBehalfOf	6

Short Calls

A short call, with a **CdrLogCallsWithZeroDurationFlag** set at True and a duration of less than 1second, appears as a zero duration call in the CDR. The **DateTimeConnect** field, which shows the actual connect time of the call, differentiates these calls from failed calls. For failed calls (which never connected), this value equals zero.

Short Calls CDR Example

The following table contains an example of a successful On Net call with a duration of less than 1second that the called party cleared.

Calling Party	Calling Partition	Original CalledParty	Original CalledPartition	Orig Cause	Dest Cause	DateTime Connect	Duration
2001	Accounts	2309	Marketing	0	16	973795815	0

SIP Call with URL in CallingPartyNumber Field

Calling and called parties can have SIP calls where the extension number is a URL. The extension number can use all printable ASCII characters. Do not leave any spaces in the URL. For example, extension "1000 1001" does not get accepted as a valid URL.

Note   Printable ASCII characters represent characters with ASCII code (in decimal) from 33 to 126.

SIP Call with URL in CallingPartyNumber Field CDR Example

The SIP trunk of the Unified Communications Manager receives an incoming call. The call contains a SIP URL for the callingPartyNumber.

Field Names	Values
globalCallID_callId	1
origLegCallIdentifier	100
destLegCallIdentifier	101
callingPartyNumber	bob@abc.com
originalCalledPartyNumber	2309
finalCalledPartyNumber	2309
lastRedirectDn	2309
origCause_Value	16
dest_CauseValue	0
duration	60

Successful on Net Calls

A successful call between two Cisco Unified IP Phones generates a single CDR at the end of the call.

Successful On Net Call CDR Examples

The following table contains two examples:

- A—A 60-second call that the caller terminates

- B—A 60-second call that the called party clears

	Calling Party	Calling Partition	Original Called Party	Original Called Partition	Orig Cause	Dest Cause	Duration
A	2001	Accounts	2309	Marketing	16	0	60
B	2001	Accounts	2309	Marketing	0	16	60

Transferred Calls

Calls that are transferred generate multiple CDRs. One CDR exists for the original call, one for the consultation call, and another for the final transferred call.

For the original call, the **origCause_value** and **destCause_value** gets set to split = 393216, which indicates the call was split. The **origCallTerminationOnBehalfOf** and **destCallTerminationOnBehalfOf** fields get set to Transfer = 10 to indicate that this call was involved in a transfer.

For the consultation call, the **origCause_value** and **destCause_value** fields get set to split = 393216, which indicates that the call was split. The **origCallTerminationOnBehalfOf** and **destCallTerminationOnBehalfOf** fields get set to Transfer = 10 to indicate that this call was involved in a transfer.

For the final transferred call, the **joinOnBehalfOf** field gets set to Transfer = 10 to indicate that this call resulted from a transfer.

Transferred Calls CDR Examples

The following examples, which are not an exhaustive set, illustrate the records that would be generated under the stated circumstances. These examples help clarify what records are generated on transferred calls.

Blind Transfer From the Calling Party CDR Example

Call goes from extension 2001 to a PSTN number; they talk for 120 seconds. 2001 initiates a blind transfer to 2002. **CDR 1** (original call) shows a call from extension 2001 to a PSTN number, talking for 120 seconds. **CDR 2** (consultation call) shows a call from 2001 to extension 2002. **CDR 3** represents the final transferred call where 2001 completes the transfer, drops out of the call, and leaves a call between the PSTN and 2002.

Field Names	Original Call CDR	Consultation Call CDR	Final Transferred CD
globalCallID_callId	1	2	1
origLegCallIdentifier	101	103	102
destLegCallIdentifier	102	104	104
callingPartyNumber	2001	2001	3071111
originalCalledPartyNumber	3071111	2002	2002
finalCalledPartyNumber	3071111	2002	2002
lastRedirectDn	3071111	2002	2001
origCause_Value	393216	393216	16
dest_CauseValue	393216	393216	0
origTerminationOnBehalfOf	10	10	0
destTerminationOnBehalfOf	10	10	0
joinOnBehalfOf	0	0	10
duration	120	0	360

Consultation Transfer From the Calling Party CDR Example

Call goes from extension 2001 to a PSTN number; they talk for 60 seconds. 2001 initiates a consultation transfer to 2002 and talks for 10 seconds before the transfer completes. The final transferred call talks for 360 seconds. **CDR 1** (original call) shows a call from extension 2001 to a PSTN number, talking for 60 seconds. **CDR 2** (consultation call) shows a call from 2001 to extension 2002, talking for 10 seconds. **CDR 3** represents the final transferred call where 2001 completes the transfer, drops out of the call, and leaves a call between the PSTN and 2002.

Field Names	Original Call CDR	Consultation Call CDR	Final Transferred Call CI
globalCallID_callId	1	2	1
origLegCallIdentifier	111	113	112
destLegCallIdentifier	112	114	114
callingPartyNumber	2001	2001	3071111
originalCalledPartyNumber	3071111	2002	2002
finalCalledPartyNumber	3071111	2002	2002
lastRedirectDn	50001	50001	2001
origCause_Value	393216	393216	16
dest_CauseValue	393216	393216	0
origTerminationOnBehalfOf	10	10	0
destTerminationOnBehalfOf	10	10	0
joinOnBehalfOf	0	0	10
duration	60	10	360

Blind Transfer From the Called Party CDR Example

Call goes from 50000 to 50001; they talk for 120 seconds. 50001 initiates a blind transfer to 50002. **CDR 1** (original call) shows a call from extension 50001 to 50002, talking for 120 seconds. **CDR 2** (consultation call) shows a call from 50001 to extension 50002. **CDR 3** represents the final transferred call where 50001 completes the transfer, drops out of the call, and leaves a call between 50000 and 50002.

Field Names	Original Call CDR	Consultation Call CDR	Final Transferred Call CI
globalCallID_callId	1	2	1
origLegCallIdentifier	200	202	200
destLegCallIdentifier	201	203	203
callingPartyNumber	50000	50001	50000
originalCalledPartyNumber	50001	50002	50002
finalCalledPartyNumber	50001	50002	50002
lastRedirectDn	50001	50001	50001
origCause_Value	393216	393216	16
dest_CauseValue	393216	393216	0
origTerminationOnBehalfOf	10	10	0

Field Names	Original Call CDR	Consultation Call CDR	Final Transferred Ca
destTerminationOnBehalfOf	10	10	0
joinOnBehalfOf	0	0	10
duration	120	0	360

Consultation Transfer From the Called Party CDR Example

Call goes from 50000 to 50001; they talk for 120 seconds. 50000 initiates a blind transfer to 50002. **CDR1** (original call) shows a call from extension 50000 to a 50001, talking for 120 seconds. **CDR2** (consultation call) shows a call from 50000 to extension 50002. **CDR3** represents the final transferred call where 50000 completes the transfer, drops out of the call, and leaves a call between 50001 and 50002.

Field Names	Original Call CDR	Consultation Call CDR	Final Transferred Ca
globalCallID_callId	1	2	1
origLegCallIdentifier	200	202	201
destLegCallIdentifier	201	203	203
callingPartyNumber	50000	50001	50000
originalCalledPartyNumber	50001	50002	50002
finalCalledPartyNumber	50001	50002	50002
lastRedirectDn	50001	50001	50001
origCause_Value	393216	393216	16
dest_CauseValue	393216	393216	0
origTerminationOnBehalfOf	10	10	0
destTerminationOnBehalfOf	10	10	0
joinOnBehalfOf	0	0	10
duration	120	0	360

Video Calls

The following example shows a CDR for a video call.

Video Calls CDR Example

Calling party 51234 calls the called party 57890. In the following example, let 100 = H.261, 187962284=172.19.52.11, 288625580=172.19.52.17, 320=320K, and 2=QCIF.

Field Names	Video Call CDR
globalCallID_callId	121
origLegCallIdentifier	101
destLegCallIdentifier	102
callingPartyNumber	51234
origCalledPartyNumber	57890
finalCalledPartyNumber	57890
lastRedirectDn	57890
origCause_Value	0
dest_CauseValue	16
origVideoCap_Codec	100
origVideoCap_Bandwidth	320
origVideoCap_Resolution	2
origVideoTransportAddress_IP	187962284
origVideoTransportAddress_Port	49208
destVideoCap_Codec	100
destVideoCap_Bandwidth	320
destVideoCap_Resolution	2
destVideoTransportAddress_IP	288625580
destVideoTransportAddress_Port	49254

Video Conference Calls

Calls that are part of a video conference have multiple records logged. The number of CDR records that are generated depends on the number of parties in the video conference. One CDR record exists for each party in the video conference, one for the original placed call, one for each setup call that was used to join other parties to the video conference, and one for the last two parties that are connected in the video conference.

Therefore, for a three party ad hoc video conference, six CDR records exist:

- 1 record for the original call
- 3 records for the parties that connected to the conference
- 1 record for each setup call

• 1 record for the final two parties in the conference

You can associate the setup calls with the correct call leg in the conference by examining the calling leg ID and called leg ID.

The conference bridge device has special significance to the Unified Communications Manager, and calls to the conference bridge appear as calls to the conference bridge device. A special number in the form "b0019901001" shows the conference bridge port.

All calls in or out of the conference bridge get shown going into the conference bridge, regardless of the actual direction. By examining the setup call CDR records, you can determine the original direction of each call.

You can find the conference controller information in the comment field of the CDR. The format of this information follows:

Comment field = "ConfControllerDn=1000;ConfControllerDeviceName=SEP0003"

• The conference controller DN + conference controller device name uniquely identifies the conference controller. You need the device name in the case of shared lines.

• If the call is involved in multiple conference calls, the comment field will contain multiple conference controller information. This could happen in case the conference goes down to two parties and one of these parties starts another conference. If this is the case, the last conference controller information in the comment field will identify the conference controller.

The call legs that are connected to the conference will have the following fields information:

  • The **finalCalledPartyNumber** field contains the conference bridge number "b0019901001".

  • The **origCalledPtyRedirectOnBehalfOf** field gets set to (Conference = 4).

  • The **lastRedirectRedirectOnBehalfOf** field gets set to (Conference = 4).

  • The **joinOnBehalfOf field** gets set to (Conference = 4).

  • The comment field identifies the conference controller.

  • The **destConversationId** field remains the same for all members in the conference. You can use this field to identify members of a conference call.

The original placed call and all setup calls that were used to join parties to the conference will have the following fields:

  • The **origCallTerminationOnBehalfOf** field gets set to (Conference = 4).

  • The **destCallTerminationOnBehalfOf field** gets set to (Conference = 4).

Video Conference Call CDR Example

1. Call from 2001 to 2309; 2309 answers, and they talk for 60 seconds.

2. 2001 presses the conference softkey and dials 3071111.

3. 307111 answers and talks for 20 seconds; 2001 presses the conference softkey to complete the conference.

4. The three members of the conference talk for 360 seconds.

5. 3071111 hangs up; 2001 and 2309 stay in the conference. Because only two participants remain in the conference, the conference feature joins the two directly together, and they talk for another 55seconds.

✎

Note Each video conference call leg gets shown placing a call into the conference bridge. The call gets shown as a call into the bridge, regardless of the actual direction of the call.

FieldNames	Orig Call CDR	Setup Call CDR	Conference CDR 1	Conference CDR 2	Conference CDR 3	Final CDR
globalCallID_callId	1	2	1	1		1
origLegCallIdentifier	101	105	101	102	106	101
destLegCallIdentifier	102	106	115	116	117	102
callingPartyNumber	2001	2001	2001	2309	3071111	2001
originalCalledPartyNumber	2309	3071111	b0029901001	b0029901001	b0029901001	2309
finalCalledPartyNumber	2309	3071111	b0029901001	b0029901001	b0029901001	2309
lastRedirectDn	2001	3071111	b0029901001	b0029901001	b0029901001	b0029901001
origCause_Value	393216	0	16	393216	393216	16
dest_CauseValue	393216	0	393216	393216	393216	0
origVideoCap_Codec	103	103	103	103	103	103
origVideoCap_Bandwidth	320	320	320	320	320	320
origVideoCap_Resolution	0	0	0	0	0	0
origVideoTransportAddress_IP	552953152	552953152	552953152	-822647488	-945658560	552953152
origVideoTransportAddress_Port	5445	5445	5445	5445	5445	5445
destVideoCap_Codec	103	103	103	103	103	103
destVideoCap_Bandwidth	320	320	320	320	320	320
destVideoCap_Resolution	0	0	0	0	0	0
destVideoTransportAddress_IP	-822647488	-945658560	-666216182	-666216182	-666216182	-822647488
destVideoTransportAddress_Port	5445	10002	10000	10004	10001	5445
origCalledPartyRedirectReason	0	0	0	0	0	0
lastRedirectRedirectReason	0	0	0	0	0	98
origTerminationOnBehalfOf	4	4	12	12	4	12
destTerminationOnBehalfOf	4	4	0	0	4	4
origCalledRedirectOnBehalfOf	0	0	4	4	4	0
lastRedirectRedirectOnBehalfOf	0	0	4	4	4	4
joinOnBehalfOf	0	0	4	4	4	4
Conversation ID	0	1		1	1	0
duration	60	360		360	360	55

Comment	
Orig Call CDR	
Setup Call CDR	**ConfControllerDn=2001;ConfControlerDeviceName=SEP0003E333FEBD**
Conference CDR 1	ConfControllerDn=2001;ConfControlerDeviceName=SEP0003E333FEBD
Conference CDR 2	ConfControllerDn=2001;ConfControlerDeviceName=SEP0003E333FEBD
Conference CDR 3	ConfControllerDn=2001;ConfControlerDeviceName=SEP0003E333FEBD
Final CDR	

PART III

CMR Records

Call Management Records

This chapter describes the format and logic of the call management records (CMRs) that the Unified Communications Manager system generates, and how to access the CMR files.

Call Management Records Overview

The Unified Communications Manager system generates call management records (CMRs). You can use this information for post-processing activities such as generating billing records and network analysis.

When you install your system, CMRs remain disabled by default, you can enable or disable CMRs at any time that the system is in operation. You do not need to restart Unified Communications Manager for the change to take the effect. The system responds to all changes within a few seconds. The system enables CMR or diagnostic data separately from CDR data.

CMR Processing

The CMR records store information about the quality of the streamed audio and video of the call.

When Unified Communications Manager places or receives a call, the system generates a CDR record when the call terminates. The system writes the CDR to a flat file (text file). Inside the Unified Communications Manager, the call control process generates CDR records. The system writes records when significant changes occur to a given call, such as ending the call, transferring the call, redirecting the call, splitting the call, joining a call, and so forth.

When CMR records are enabled, the number of records that are written varies by type of call and the call scenario. When Diagnostics are enabled, the device generates CMR records for each call. The system writes one CMR record for each IP phone that is involved in the call or for each Media Gateway Control Protocol (MGCP) gateway. The system sends these records to EnvProcessCdr where they get written to flat files.

> **Note**
> For Hold and Resume calls on SCCP devices, multiple CMR Records are generated based on the number of times the call is put on hold.

The Unified Communications Manager generates CMR records but does not perform any post processing on the records. The system writes the records to comma-delimited flat files and periodically passes them to the CDR Repository. The CMR files represent a specific filename format within the flat file.

Filename Format

The following example shows the full format of the filename:
`tag_clusterId_nodeId_datetime_seqNumber`

- tag—Identifies the type of file, either CDR or CMR.

- clusterId—Identifies the cluster or server where the Unified Communications Manager database exists.

- nodeId—Identifies the node.

- datetime—Specifies UTC time in yyyymmddhhmm format.

- seqnumber—Specifies sequence number.

An example of the filename follows:

- `cmr_Cluster1_02_200404061011_6125`

Flat File Format

The CMR flat files have the following format:

- Line 1—List of field names in comma separated format.

- Line 2—List of field types in comma separated format.

- Line 3—Data in comma separated format.

- Line 4—Data in comma separated format.

The following example shows a flat file:

```
Line1-"cmrRecordType","globalCallID_callManagerId","globalCallID_callId","origLegCallIdentifier",...
Line2-INTEGER,INTEGER,INTEGER,INTEGER,...
Line3-1,1,388289,17586046,...
Line4-1,1,388293,17586054,...
```

CMRs for SIP Trunks

Unified Communications Manager stores end-of-call video and audio information and metrics in Call Management Records (CMRs) for incoming and outgoing SIP trunk calls through Cisco Unified Border Element (CUBE) or SIP IOS gateways.

CUBE sends the call statistics in a P-RTP-Stat header either in a BYE message or a 200 OK response to BYE message to update the CMRs in Unified Communications Manager.

When the call is routed through a Session Manager Edition (SME), call statistics sent by CUBE are recorded in the CMRs generated on the SME than the LEAF cluster.

Note   CMRs are generated by Unified Communications Manager when *Call Diagnostics Enabled* service parameter is enabled.

P-RTP Stat Format

The format of P-RTP-Stat is as follows:

P-RTP-Stat: PS=<Packets Sent>, OS=<Octets Sent>, PR=<Packets Recd>, OR=<Octets Recd>, PL=<Packets Lost>, JI=<Jitter>, LA=<Round Trip Delay in ms>, DU=<Call Duration in seconds>

The following table describes the P-RTP-Stat header fields:

Table 101: P-RTP-Stat Header Fields

Field	Description
PS	Packets Sent
OS	Octets Sent
PR	Packets Received
OR	Octets Received
PL	Packets Lost
JI	Jitter
LA	Round-Trip Delay in milliseconds (ms)
DU	Call Duration in seconds

Example

The following example shows the sample BYE message with a P-RTP-Stat header.

Sample BYE Message

```
BYE sip:45002@209.165.201.1:5060;transport=tcp SIP/2.0
Via: SIP/2.0/TCP 209.165.200.225:5060;branch=z9hG4bK1a2f5c92d361
From:<sip:1006@209.165.200.225>;tag=12734~95fd5a73-11ac-4642-9308-401b17a658fb-17711590
To:<sip:45002@209.165.201.1;tag=445~b5883d68-042a-4a73-adc3-6be8a5f9f263-25068153
Date: Fri, 13 Oct 2017 04:29:38 GMT
Call-ID: 1e4d2a80-9e014132-6e2-e11f4d0a@209.165.200.225
User-Agent: Cisco-CUCM12.5
P-Asserted-Identity: <sip:1006@209.165.200.225>
CSeq: 102 BYE
Reason: Q.850;cause=16
Session-ID: 97173553334349d0a9391305caa12733;remote=49fd996b345a4745b9db7f242ddaa446
Content-Length: 0
P-RTP-Stat: PS=3775,OS=649300,PR=3775,OR=604000,PL=0,JI=0,LA=4,DU=98
```

Corresponding Sample Call Management Records

```
"cdrRecordType","globalCallID_callManagerId","globalCallID_callId","nodeId","directoryNum",
"callIdentifier","dateTimeStamp","numberPacketsSent","numberOctetsSent","numberPacketsReceived"
"numberOctetsReceived","numberPacketsLost","jitter","latency","pkid","directoryNumPartition",
"globalCallId_ClusterID","deviceName","varVQMetrics","duration","videoContentType","videoDuration",
"numberVideoPacketsSent","numberVideoOctetsSent","numberVideoPacketsReceived","numberVideoOctetsReceived",
"numberVideoPacketsLost","videoAverageJitter","videoRoundTripTime","videoOneWayDelay","videoReceptionMetrics",
"videoTransmissionMetrics","videoContentType_channel2","videoDuration_channel2","numberVideoPacketsSent_channel2",
"numberVideoOctetsSent_channel2","numberVideoPacketsReceived_channel2","numberVideoOctetsReceived_channel2",
"numberVideoPacketsLost_channel2","videoAverageJitter_channel2","videoRoundTripTime_channel2","videoOneWayDelay_channel2",
"videoReceptionMetrics_channel2","videoTransmissionMetrics_channel2"
INTEGER,INTEGER,INTEGER,INTEGER,VARCHAR(50),
INTEGER,INTEGER,INTEGER,INTEGER,INTEGER,INTEGER,INTEGER,INTEGER,UNIQUEIDENTIFIER,VARCHAR(50),VARCHAR(50),
VARCHAR(129),VARCHAR(600),INTEGER,VARCHAR(10),INTEGER,INTEGER,INTEGER,INTEGER,INTEGER,INTEGER,INTEGER,INTEGER,
INTEGER,VARCHAR(600),VARCHAR(600),VARCHAR(10),INTEGER,INTEGER,INTEGER,INTEGER,INTEGER,INTEGER,INTEGER,INTEGER,INTEGER,
VARCHAR(600),VARCHAR(600)
2,1,48553,1,"",29258891,1515145049,3775,649300,3775,604000,0,0,4,"50870a6d-193d-478f-8971-0dc641a6058a",
"","StandAloneCluster","sip_trunk3_to_camserv_2_DO","",98,"",,,,,,,,,,"","","",,,,,,,,,,"",""
2,1,48553,1,"11011",29258890,1515145049,8900,7676700,8998,7676767,0,2,0,"7526cf73-ae78-48b1-9640-7ea19b546321","",
"StandAloneCluster","SEPCD1111000011","",98,"main",0,0,0,0,0,0,0,0,0,"","TxFrameRate=0","",,,,,,,,,,"",""
```

In the preceding example, Unified Communications Manager inserts the call statistics into the CMRs per the communicated information in the P-RTP-Stat header. If a P-RTP-Stat header comprises partial field values or any field is absent, Unified Communications Manager generates CMRs with available field values.

✎

Note   Some of the fields in the CMRs are not populated due to fields unrelated to SIP trunk or if no call statistics are received from CUBE.

In the following scenarios, there are no CMRs written for the SIP trunk:

- P-RTP-Stat header is present without any fields in an incoming BYE message or 200 OK response to BYE message from CUBE.

- P-RTP-Stat header is not present in an incoming BYE message or 200 OK response to BYE message from CUBE.

- P-RTP-Stat header and fields are present in an incoming BYE message or 200 OK response to BYE message from CUBE but corresponding field values are empty.

CMRs for Headsets

Unified Communications Manager stores the call diagnostics details for Headsets. The details include call quality, packets lost, packets received, jitter, delay, and so on. Whenever there is a call between two phones using headsets, the diagnostics records for both the headsets populates separately in a column 'Headset-Stat'. You can view the Serial Number and Metrics of the particular Headset used.

Example

The following example shows the sample BYE message for Headsets:

```
BYE sip:1@10.77.29.46:5060;transport=tcp SIP/2.0
RTP-TxStat: Dur=13,Pkt=658,Oct=105280
```

```
Date: Thu, 10 Jan 2019 06:22:08 GMT
From: "1020" <sip:1020@10.77.29.46>;tag=e0899d9508fc00064e7fc5d0-264cc0f8
Content-Length: 0
User-Agent: Cisco-CP9971/9.4.2
User-Agent: Cisco-CP9971/9.4.2
To: <sip:1@10.77.29.46>;tag=38869~03b645d3-522f-428d-a380-425f3fdaed66-28473124
Call-ID: e0899d95-08fc0003-44f9a213-39b10eeb@10.77.36.21
Via: SIP/2.0/TCP 10.77.36.21:51918;branch=z9hG4bK7a47320e
CSeq: 102 BYE
Headset-Stat: SN=AAA111BBB222, Metrics="Key=value;Key1=Value1Key=value;"

Max-Forwards: 70
RTP-RxStat:
Dur=13,Pkt=657,Oct=113004,LatePkt=0,LostPkt=0,AvgJit=1,VQMetrics="MLQK=4.5000;MLQKav=4.5000;
MLQKmn=4.5000;MLQKmx=4.5000;MLQKvr=0.95;CCR=0.0000;ICR=0.0000;ICRmx=0.0000;CS=0;SCS=0"
```

CMRs for Headsets

Unified Communications Manager stores the call diagnostics details for Headsets. The details include call quality, packets lost, packets received, jitter, delay, and so on. Whenever there is a call between two phones using headsets, the diagnostics records for both the headsets populates separately in a column 'Headset-Stat'. You can view the Serial Number and Metrics of the particular Headset used.

Example

The following example shows the sample BYE message for Headsets:

```
BYE sip:1@10.77.29.46:5060;transport=tcp SIP/2.0
RTP-TxStat: Dur=13,Pkt=658,Oct=105280
Date: Thu, 10 Jan 2019 06:22:08 GMT
From: "1020" <sip:1020@10.77.29.46>;tag=e0899d9508fc00064e7fc5d0-264cc0f8
Content-Length: 0
User-Agent: Cisco-CP9971/9.4.2
User-Agent: Cisco-CP9971/9.4.2
To: <sip:1@10.77.29.46>;tag=38869~03b645d3-522f-428d-a380-425f3fdaed66-28473124
Call-ID: e0899d95-08fc0003-44f9a213-39b10eeb@10.77.36.21
Via: SIP/2.0/TCP 10.77.36.21:51918;branch=z9hG4bK7a47320e
CSeq: 102 BYE
Headset-Stat: SN=AAA111BBB222, Metrics="Key=value;Key1=Value1Key=value;"

Max-Forwards: 70
RTP-RxStat:
Dur=13,Pkt=657,Oct=113004,LatePkt=0,LostPkt=0,AvgJit=1,VQMetrics="MLQK=4.5000;MLQKav=4.5000;
MLQKmn=4.5000;MLQKmx=4.5000;MLQKvr=0.95;CCR=0.0000;ICR=0.0000;ICRmx=0.0000;CS=0;SCS=0"
```

Set Up CMRs

You can configure CMRs on the Service Parameters Configuration window in Cisco Unified CM Administration.

1. To access the **Service Parameters Configuration** window, open Cisco Unified CM Administration and choose **System** > **Service Parameters**.

2. Choose **Advanced** button.

3. Select the **Call Diagnostics Enabled** parameter.

This parameter determines whether the system generates CMRs, also called call diagnostic records. Valid values specify Disabled (do not generate CMRs), Enabled Only When CDR Enabled Flag is True (generate CMRs only when the CDR Enabled Flag service parameter is set to True), or Enabled Regardless of CDR Enabled Flag (generates CMRs without regard to the setting in the CDR Enabled Flag service parameter). This represents a required field. The default value specifies Disabled.

Feature Limitations

This feature is not supported for SME call flows:

- On receiving call statistics from CUBE/IOS GW on SME, Unified Communications Manager generates CMR (provided CMR is enabled) for the trunk side, but it won't be able to forward call statistics to other nodes in outgoing BYE or 200OK for BYE.

- Sample Call flow:

  Phone1 > **CUBE/IOS GW** > **SME** > **CUCM1** > **Phone2**

  For the above call scenario, SME generates the CMR for trunk side pointing to CUBE. These statistics are not forwarded to a leaf node. For Phone2, CMR is recorded on a leaf node.

CPU Utilization

Cisco has performed basic testing to measure CPU utilization when CDRs and/or CMRs are enabled. The CPU utilization testing was measured on subscribers and was not measured on the publishers. Your actual results can vary because of the CDR Loader settings and the CDR Management settings for external billing servers. The following table displays the results of these tests.

Note These tests were performed with Unified Communications Manager Release 8.0(1).

Table 102: CDR and CMR CPU Utilization

CDRs and CMRs Enabled/Disabled	Average % Increase in Cisco Unified CM CPU Utilization	Average % Increase in Total CPU Utilization	% Increase in Cisco Unified CM CPU	% Increase in CPU
CDRs disabled, CMRs disabled	6.17	11.15	-	-
CDRs enabled, CMRs disabled	6.99	12.10	13.18	8.57
CDRs disabled, CMRs enabled	6.38	11.24	3.43	0.86
CDRs enabled, CMRs enabled	7.71	13.04	24.92	17.02

CMR Field Descriptions

This chapter describes the field descriptions of the Call Management Records (CMRs).

CMR Field Descriptions

The following table contains the fields, range of values, and field descriptions of the CMRs in the order in which they appear in the CMR.

Table 103: CMR Field Descriptions

Field Name	Range of Values	Description
cdrRecordType	0, 1, or 2	Specifies the type of this specific record. The following valid values apply: • 0—Start call detail record (not used) • 1—End call detail record • 2—CMR record Default - For CMRs, this field always specifies 2.
globalCallID_callManagerId	Positive Integer	Specifies a unique Unified Communications Manager identity. This field makes up half of the Global Call ID. The Global Call ID comprises the following fields: • globalCallId_callId • globalCallID_callManagerID All records that are associated with a standard call have the same Global Call ID in them. Default - Ensure that this field is populated.

Field Name	Range of Values	Description
globalCallId_callId	Positive Integer	Specifies a unique call identity value that gets assigned to each call. The system allocates this identifier independently on each call server. Values get chosen sequentially when a call begins. Each call, successful or unsuccessful, receives value assignment. This field makes up half the Global Call ID. The Global Call ID comprises the following two fields: • globalCallId_callId • globalCallID_callManagerID All records that are associated with a standard call have the same Global Call ID in them. Default - Ensure that this field is populated.
nodeId	Positive Integer	Specifies the server or node within the Unified Communications Manager cluster, where this record gets generated. Default - Ensure that this field is populated.
directoryNumber	Integer	Specifies the directory number of the device from which these diagnostics are collected. Default - Ensure that this field is populated.
callIdentifier	Positive Integer	Identifies the call leg to which this record pertains. Default - Ensure that this field is populated.
dateTimeStamp	Integer	Represents the approximate time that the device goes on the hook. Unified Communications Manager records the time when the phone responds to a request for diagnostic information. Default - Ensure that this field is populated.
numberPacketsSent	Integer	Designates the total number of Routing Table Protocol (RTP) data packets that the device transmits since starting transmission on this connection. The value remains zero if the connection is set to "receive only" mode. Default - 0
numberOctetsSent	Integer	Specifies the total number of payload octets (that is, not including header or padding) that the device transmits in RTP data packets since starting transmission on this connection. The value remains zero if the connection is set to "receive only" mode. Default - 0

Field Name	Range of Values	Description
numberPacketsReceived	Integer	Specifies the total number of RTP data packets that the device has received since starting reception on this connection. The count includes packets that are received from different sources if this is a multicast call. The value remains zero if the connection is set in "send only" mode. Default - 0
numberOctetsReceived	Integer	Specifies the total number of payload octets (that is, not including header or padding) that the device has received in RTP data packets since starting reception on this connection. The count includes packets that are received from different sources if this is a multicast call. The value remains zero if the connection is set in "send only" mode. Default - 0
numberPacketsLost	Integer	Designates the total number of RTP data packets that have been lost since the beginning of reception. This number designates the number of packets that were expected, less the number of packets that were received, where the number of packets that were received includes any that are late or duplicates. Thus, packets that arrive late do not get counted as lost, and the loss may be negative if duplicate packets exist. The number of packets that are expected designates the extended last sequence number that was received, as defined next, less the initial sequence number that was received. The value remains zero if the connection was set in "send only" mode. For detailed information, see RFC 1889. Default - 0
jitter	Integer	Provides an estimate of the statistical variance of the RTP data packet interarrival time that is measured in milliseconds and expressed as an unsigned integer. The interarrival jitter J specifies the mean deviation (smoothed absolute value) of the difference D in the packet spacing at the receiver, compared to the sender for a pair of packets. RFC 1889 contains detailed computation algorithms. The value remains zero if the connection was set in "send only" mode. Default - 0

Field Name	Range of Values	Description
latency	Integer	Designates value that is an estimate of the network latency, expressed in milliseconds. This value represents the average value of the difference between the NTP timestamp that the RTP Control Protocol (RTCP) messages indicate and the NTP timestamp of the receivers, measured when these messages are received. Unified Communications Manager obtains the average by summing all estimates then dividing by the number of RTCP messages that have been received. For detailed information, see RFC 1889. Default - 0 **Note** CMR records will not show latency for all phone loads. For example, for SIP 9.2.1 and 9.2.2, the latency will not show, as it has not been implemented in these loads.
pkid	Text String	Identifies a text string that the database uses internally to uniquely identify each row. This text string provides no meaning to the call itself. Default - The system always populates this field with a unique ID.
directoryNumberPartition	Text String	Identifies the partition of the directory number. Default - Empty string "". This field may remain empty if no partition exists.
globalCallId_ClusterId	Text String	Designates a unique ID that identifies a single Unified Communications Manager, or a cluster of Unified Communications Managers. The system generates this field during installation, but Unified Communications Manager does not use it: globalCallId_ClusterId + globalCallId_callManagerId + globalCallId_callId. Default - Ensure that this field is populated.
deviceName	Text String	Identifies the name of the device. Default - Empty string "". This field may remain empty if no device name exists.

Field Name	Range of Values	Description
varVQMetrics	Text String	Contains a variable number of voice quality metrics. This field comprises a string of voice quality metrics that are separated by a semicolon. The format of the string follows: fieldName=value;fieldName=value.precision This example shows voice quality data, but the names may differ. "MLQK=4.5000;MLQKav=4.5000; MLQKmn=4.5000;MLQKmx=4.5000;MLQKvr=0.95; CCR=0.0000;ICR=0.0000;ICRmx=0.0000; CS=0;SCS=0" **Note** For more information on the K-Factor data that makes up the varVQMetrics record, see K-Factor Data, on page 376.
duration	Integer	Specifies the duration value of audio session that is expressed in seconds. This is reported only for SIP phones.
videoContentType	Text String	Identifies the type of video stream. It can be "main", "speaker" or "slides". For an audio-only call, no video metrics are populated.
videoDuration	Integer	Specifies the duration value of the first video session, expressed in seconds.
numberVideoPacketsSent	Integer	Specifies the total number of RTP data packets that are transmitted by the device since starting transmission on this connection.
numberVideoOctetsSent	Integer	Specifies the total number of payload octets (that is, not including header or padding) transmitted in RTP data packets by the device since starting transmission on this connection.
numberVideoPacketsReceived	Integer	Specifies the total number of RTP data packets received by the device since starting reception on this connection.
numberVideoOctetsReceived	Integer	Specifies the total number of payload octets (that is, not including header or padding) received in RTP data packets by the device since starting reception on this connection.
numberVideoPacketsLost	Integer	Specifies the total number of RTP data packets that have been lost since the beginning of reception on this connection.
videoAverageJitter	Integer	Provides an estimate of the statistical variance of the RTP data packet interarrival time for this connection that is measured in milliseconds and expressed as an unsigned integer. For detailed information, see RFC 3550 for details.
videoRoundTripTime	Integer	This is a measure of average round trip time between the two endpoints for this connection. It is expressed in milliseconds. For detailed information, see RFC 3550 and RFC 3611 for detail

Field Name	Range of Values	Description
videoOneWayDelay	Text String	This is a measure of the average one-way delay (OWD) between the endpoints for this connection. This is only available if endpoints are time synchronized (same NTP source) and is measured in milli-seconds; otherwise "NA"
videoTransmissionMetrics	Text String	Contains a variable number of Cisco defined metrics that are related to RTP transmission on this connection. These metrics are delimited by a semicolon. The format of this string is: CiscoTxVM="TxCodec=xxx; TxBw=xxx;TxBwMax=xxx; TxReso=xxx;TxFrameRate=xxx" TxCodec identifies the type of video codec used for the transmitted video stream. TxBw identifies the actual bandwidth that is used for the transmitted video stream. TxBwMax identifies the maximum negotiated bandwidth for the transmitted video stream. TxReso identifies the resolution of the transmitted video stream (for example, 640x480). TxFrameRate identifies the average frame rate that is measured in frames per second for the transmitted video stream.

Field Name	Range of Values	Description
videoReceptionMetrics	TextString	Contains a variable number of Cisco defined metrics that are related to RTP reception on this connection. These metrics are delimited by a semicolon. The format of this string is: CiscoRxVM="CS=xxx; SCS=xxx;DSCP=xxx; DSCPunad=xxx; RxFramesLost=xxx;RxCodec=xxx; RxBw=xxx;RxBwMax=xxx; RxReso=xxx;RxFrameRate=xxx" CS identifies the concealed seconds metrics for the received video stream. SCS identifies the severely concealed seconds for the received video stream. DSCP is useful in verifying the DSCP value of the received video stream marked by endpoint. DSCPunad is useful in verifying the DSCP value of the received video stream marked by endpoint. RxCodec identifies the type of video codec used for received video stream. RxBw identifies the actual bandwidth used for the received video stream. RxBwMax identifies the maximum negotiated bandwidth for the received video stream. RxReso identifies the resolution of the received video stream (for example, 640x480). RxFrameRate identifies the average frame rate measured in frames per second for the received video stream.
videoContentType_channel2	Text String	Identifies the type of second video stream if it exists. If it does not exist, the remaining metrics for the second video stream will not be populated.
videoDuration_channel2	Integer	Specifies the duration of the second video session, expressed in seconds.
numberVideoPacketsSent_channel2	Integer	Specifies the total number of RTP data packets that are transmitted by the device since starting transmission on this connection.
numberVideoOctetsSent_channel2	Integer	Specifies the total number of payload octets (that is, not including header or padding) transmitted in RTP data packets by the device since starting transmission on this connection.
numberVideoPacketsReceived_channel2	Integer	Specifies the total number of RTP data packets received by the device since starting reception on this connection.
numberVideoOctetsReceived_channel2	Integer	Specifies the total number of payload octets (that is, not including header or padding) received in RTP data packets by the device since starting reception on this connection.

Field Name	Range of Values	Description
numberVideoPacketsLost_channel2	Integer	The total number of RTP data packets that have been lost since the beginning of reception on this connection.
videoAverageJitter_channel2	Integer	Provides an estimate of the statistical variance of the RTP data packet interarrival time for this connection that is measured in milliseconds and expressed as an unsigned integer. For more information, see RFC 3550.
videoRoundTripTime_channel2	Integer	This is a measure of average round trip time between the two endpoints for this connection. It is expressed in milliseconds. For more information, see RFC 3550 and RFC 3611 for details.
videoOneWayDelay_channel2	Integer	This is a measure of the average one-way delay (OWD) between the endpoints for this connection. This is only available if endpoints are time synchronized (same NTP source) and is measured in milli-seconds; otherwise "NA".
videoReceptionMetrics_channel2	Text String	Contains a variable number of Cisco defined metrics that are related to RTP transmission on this connection. These metrics are delimited by a semicolon. The format of this string is: CiscoTxVM="TxCodec=xxx; TxBw=xxx ;TxBwMax=xxx; TxReso=xxx;TxFrameRate=xxx" TxCodec identifies the type of video codec used for the transmitted video stream. TxBw identifies the actual bandwidth used for the transmitted video stream. TxBwMax identifies the maximum negotiated bandwidth for the transmitted video stream. TxReso identifies the resolution of the transmitted video stream (for example, 640x480). TxFrameRate identifies the average frame rate measured in frames per second for the transmitted video stream.

Field Name	Range of Values	Description
videoTransmissionMetrics_channel2	Text String	Contains a variable number of Cisco defined metrics that are related to RTP reception on this connection. These metrics are delimited by a semicolon. The format of this string is: CiscoRxVM="CS=xxx; SCS=xxx;DSCP=xxx; DSCPunad=xxx; RxFramesLost=xxx;RxCodec=xxx; RxBw=xxx;RxBwMax=xxx; RxReso=xxx;RxFrameRate=xxx" CS identifies the concealed seconds metrics for the received video stream. SCS identifies the severely concealed seconds for the received video stream. DSCP is useful in verifying the DSCP value of the received video stream that is marked by endpoint. DSCPunad is useful in verifying the DSCP value of the received video stream marked by endpoint. RxCodec identifies the type of video codec used for the received video stream. RxBw identifies the actual bandwidth that is used for the received video stream. RxBwMax identifies the maximum negotiated bandwidth for the received video stream. RxReso identifies the resolution of the received video stream (for example, 640x480). RxFrameRate identifies the average frame rate that is measured in frames per second for the received video stream.
localSessionID	Text String	Indicates call Session ID of the local device. The system generates a CMR record for each call leg when the user disconnects the call from the user device. This field is populated with the local device Session ID of the particular call. The maximum length of this field is restricted to 127 characters. For example, localSessionID = ab303 l 7fla784dc48fl824d0d3715d86
remoteSessionID	Text String	Indicates call Session ID of the remote device. The system generates a CMR record for each call leg when the user disconnects the call from the user device. This field is populated with the remote device Session ID of the particular call. The maximum length of this field is restricted to 127 characters. For example, remoteSessionID = 47755a9de7794ba387653f2099600ef2

Field Name	Range of Values	Description
SN	Integer	Indicates the serial number of the headset used. The system generates a CMR record for the headset used with the phone and this field is populated with the serial number of the headset. The maximum length of this field is restricted to 129 characters. For example, SN=AAA111BBB222
SN	Integer	Indicates the serial number of the headset used. The system generates a CMR record for the headset used with the phone and this field is populated with the serial number of the headset. The maximum length of this field is restricted to 129 characters. For example, SN=AAA111BBB222
Metrics	Text String	Indicates the metrics of the particular headset used. The system generates a CMR record for the headset used with the phone and this field is populated with the diagnostics records of the headset. The maximum length of this field is restricted to 600 characters. For example, Metrics="Key=value;Key1=Value1Key=value;" **Note** The sub-fields within the Metrics field are not validated.
Metrics	Text String	Indicates the metrics of the particular headset used. The system generates a CMR record for the headset used with the phone and this field is populated with the diagnostics records of the headset. The maximum length of this field is restricted to 600 characters. For example, Metrics="Key=value;Key1=Value1Key=value;" **Note** The sub-fields within the Metrics field are not validated.

K-Factor Data

K-factor represents an endpoint mean opinion score (MOS) estimation algorithm that is defined in ITU standard P.VTQ. It represents a general estimator that is used to estimate the mean value of a perceptual evaluation of speech quality (PESQ) population for a specific impairment pattern.

MOS relates to the output of a well designed listening experiment. All MOS experiments use a five-point PESQ scale as defined in ITU standard P.862.1, which describes the PESQ as an objective method for end-to-end speech quality assessment of narrow-band telephone networks and speech codecs.

The MOS estimate provides a number that is inversely proportional to frame loss density. Clarity decreases as more frames are lost or discarded at the receiving end. Consider the loss or discarding of these frames as concealment. Concealment statistics measure packet (frame) loss and its effect on voice quality in an impaired network.

K-factor represents a weighted estimate of average user annoyance due to distortions that are caused by effective packet loss such as dropouts and warbles. It does not estimate the impact of delay-related impairments such as echo. It provides an estimate of listening quality (MOS-LQO) rather than conversational quality (MOS-CQO), and measurements of average user annoyance range from 1 (poor voice quality) to 5 (very good voice quality).

K-factor gets trained or conditioned by speech samples from numerous speech databases, where each training sentence or network condition that is associated with a P.862.1 value has a duration of 8 seconds. For more accurate scores, the system generates k-factor estimates for every 8 seconds of active speech.

Consider K-factor and other MOS estimators to be secondary or derived statistics because they warn a network operator of frame loss only after the problem becomes significant. Packet counts, concealment ratios, and concealment second counters represent primary statistics because they alert the network operator before network impairment has an audible impact or is visible through MOS.

The following table displays the K-factor date that is stored in the Unified Communications Manager CMRs.

Table 104: K-Factor Data Stored in Unified Communications Manager CMRs

Field Name	Phone Display Name	D&I User Interface Text and Description
CCR	Cum Conceal Ratio	Cumulative Conceal Ratio represents the cumulative ratio of concealment time over speech time that is observed after starting a call.
ICR	Interval Conceal Ratio	Interval Conceal Ratio represents an interval-based average concealment rate that is the ratio of concealment time over speech time for the last 3 seconds of active speech.
ICRmx	Max Conceal Ratio	Interval Conceal Ratio Max represents the maximum concealment ratio that is observed during the call.
CS	Conceal Secs	Conceal Secs represents the time during which some concealment is observed during a call.
SCS	Severely Conceal Secs	Severely Conceal Secs represents the time during which a significant amount of concealment is observed. If the concealment that is observed is usually greater than 50 milliseconds or approximately 5 percent, the speech probably does not seem very audible.
MLQK	MOS LQK	MOS Listening Quality K-factor provides an estimate of the MOS score of the last 8 seconds of speech on the reception signal path.

Field Name	Phone Display Name	D&I User Interface Text and Description
MLQKmn	Min MOS LQK	MOS Listening Quality K-factor Min represents the minimum score that is observed since the beginning of a call and represents the worst sounding 8-second interval.
MLQKmx	Max MOS LQK	MOS Listening Quality K-factor Max represents the maximum score that is observed since the beginning of a call and represents the best sounding 8-second interval.
MLQKav	Avg MOS LQK	MOS Listening Quality K-factor Avg8 represents the running average of scores that are observed since the beginning of a call.

Related Topics

Call Management Records

Cisco Call Management Record Field Descriptions

Documentation Related to CDR

Example Cisco Call Management Records

CMR Examples

This chapter provides examples of call management records (CMRs).

CMR Examples

The following examples of CMRs get generated during a normal call (IP phone to IP phone). Normal calls log three records per call: one CDR and two CMRs (one for each endpoint).

These examples represent a call between directory number 1010 and 1014. See related topics for a sample of the CDR that gets generated during a normal call.

Example 1: SCCP to SCCP Phone

A successful call between two Cisco IP Phones generates 2 CMRs at the end of the call, one for each endpoint. This example has both endpoints as SCCP phones that do not support the new video metrics. They are left at default.

✎

Note "Duration" field in CMR is filled only for SIP phones.

CMR 1

Field Names	Values
cdrRecordType	2
globalCallID_callManagerId	1
globalCallID_callId	96004
nodeId	1
directoryNum	1010
callIdentifier	28141535

Field Names	Values
dateTimeStamp	1202412060
numberPacketsSent	358
numberOctetsSent	61576
numberPacketsReceived	351
numberOctetsReceived	60372
numberPacketsLost	1
jitter	0
latency	0
pkid	e95df5b1-2914-4a03-befb-0f58bf16392d
directoryNumPartition	
globalCallIdClusterID	StandAloneCluster
deviceName	SEP003094C39BE7
varVQMetrics	MLQK=0.0000;MLQKav=0.0000; MLQKmn=0.0000;MLQKmx=0.0000;MLQKvr=0.95; CCR=0.0000;ICR=0.0000;ICRmx=0.0000;CS=0; SCS=0
duration	
videoContentType	
videoDuration	
numberVideoPacketsSent	
numberVideoOctetsSent	
numberVideoPacketsReceived	
numberVideoOctetsReceived	
numberVideoPacketsLost	
videoAverageJitter	
videoRoundTripTime	
videoOneWayDelay	
videoReceptionMetrics	
videoTransmissionMetrics	

Field Names	Values
videoContentType_channel2	
videoDuration_channel2	
numberVideoPacketsSent_channel2	
numberVideoOctetsSent_channel2	
numberVideoPacketsReceived_channel2	
numberVideoOctetsReceived_channel2	
numberVideoPacketsLost_channel2	
videoAverageJitter_channel2	
videoRoundTripTime_channel2	
videoOneWayDelay_channel2	
videoReceptionMetrics_channel2	
videoTransmissionMetrics_channel2	

CMR 2

Field Name	Values
cdrRecordType	2
globalCallID_callManagerId	1
globalCallID_callId	96004
nodeId	1
directoryNum	1004
callIdentifier	28141536
dateTimeStamp	1202412060
numberPacketsSent	352
numberOctetsSent	60544
numberPacketsReceived	356
numberOctetsReceived	61232
numberPacketsLost	1
jitter	0

Field Name	Values
latency	0
pkid	545ff25a-5475-4882-af09-c7b714802703
directoryNumPartition	
globalCallIdClusterID	StandAloneCluster
deviceName	SEP0007EBBA6376
varVQMetrics	MLQK=0.0000;MLQKav=0.0000; MLQKmn=0.0000; MLQKmx=0.0000;MLQKvr=0.95; CCR=0.0000; ICR=0.0000;ICRmx=0.0000;CS=0; SCS=0
duration	
videoContentType	
videoDuration	
numberVideoPacketsSent	
numberVideoOctetsSent	
numberVideoPacketsReceived	
numberVideoOctetsReceived	
numberVideoPacketsLost	
videoAverageJitter	
videoRoundTripTime	
videoOneWayDelay	
videoReceptionMetrics	
videoTransmissionMetrics	
videoContentType_channel2	
videoDuration_channel2	
numberVideoPacketsSent_channel2	
numberVideoOctetsSent_channel2	
numberVideoPacketsReceived_channel2	
numberVideoOctetsReceived_channel2	
numberVideoPacketsLost_channel2	

Field Name	Values
videoAverageJitter_channel2	
videoRoundTripTime_channel2	
videoOneWayDelay_channel2	
videoReceptionMetrics_channel2	
videoTransmissionMetrics_channel2	

Example 2: SIP to SIP Phone That Supports Main Video Metrics

The following CMR flat file is an example of SIP to SIP phone that supports video metrics.

Field Name	Values
cdrRecordType	2
globalCallID_callManagerId	1
globalCallID_callId	17001
nodeId	1
directoryNum	139098
callIdentifier	32216238
dateTimeStamp	1379591701
numberPacketsSent	170
numberOctetsSent	10370
numberPacketsReceived	169
numberOctetsReceived	12337
numberPacketsLost	0
jitter	2
latency	0
pkid	ea0cddd0-7ddd-4a4e-a697-ca405e39292c
directoryNumPartition	
globalCallId_ClusterID	StandAloneCluster
deviceName	SEPD0C7891411C3

Field Name	Values
varVQMetrics	MLQK=0.0000;MLQKav=0.0000;MLQKmn=0.0000; MLQKmx=0.0000;MLQKvr=;CCR=0.0000;ICR=0.0000; ICRmx=0.0000;CS=0;SCS=0
duration	3
videoContentType	main
videoDuration	3
numberVideoPacketsSent	140
numberVideoOctetsSent	126355
numberVideoPacketsReceived	141
numberVideoOctetsReceived	128214
numberVideoPacketsLost	0
videoAverageJitter	7
videoRoundTripTime	0
videoOneWayDelay	0
videoReceptionMetrics	RxCodec=H264;RxBw=377;RxReso=640x360; RxFrameRate=31;RxFramesLost=0
videoTransmissionMetrics	TxCodec=H264;TxBw=368;TxReso=640x360; TxFrameRate=30
videoContentType_channel2	
videoDuration_channel2	
numberVideoPacketsSent_channel2	
numberVideoOctetsSent_channel2	
numberVideoPacketsReceived_channel2	
numberVideoOctetsReceived_channel2	
numberVideoPacketsLost_channel2	
videoAverageJitter_channel2	
videoRoundTripTime_channel2	
videoOneWayDelay_channel2	
videoReceptionMetrics_channel2	

Field Name	Values
videoTransmissionMetrics_channel2	