INSTALL AND USER GUIDE

Call Analytics

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Company Information *Harmonic Engineering architects feature-rich, scalable, secure and maintainable enterprise applications with continuous attention to technical excellence. Whether it's your custom system design or our off-the-shelf productivity and compliance applications we deliver design. At Harmonic Engineering our highest priority is to satisfy our customers.*

Document Revisions

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1 Introduction

1.1 Product Overview

Call Analytics for Cisco UCM is an intuitive and powerful call data record (CDR) analysis solution. From summary data, down to the individual call data record detail, Call Analytics makes it a breeze to acquire the data users are after. It features call flow analysis with a graphic visualization that tracks all legs in the call, including supervised transfer legs and conferences, allowing easy navigation through the entire call.

Call Analytics offers secure communications and nearly unlimited scalability for large enterprises. Multi-level web administration allows users access to only the call data records and for which they have been authorized.

The web based architecture allows authenticated users secure access from any device connected to the internal network using standard web browsers.

This document will serve as an installation and configuration guide as well as a user manual.

1.2 Features

The major features of Call Analytics are stated in the following table:

Feature	Description
Summary Analytics	Quickly summarize data using dashboard analytics. Role Group filtering allows summaries for any conceivable combination of devices or users and data is presented in several advanced formats including pivot grids, graphs and dynamic charts.
CDR Detail View	A powerful data grid allows call detail records to be searched, filtered and grouped for fast access to the data users require. From hunt pilot details to termination causes, redirect reasons and media details, the data is just a few clicks away.
Call Flow Tracking	Track the entire call flow, including supervised transfer legs and conferences, with a modular call flow graph view that provides navigation to the various call legs of the recording. Each legs duration is provided along with the total duration and original ring duration for the call.
Call Costing	Calculate call costs using dialed number filters and associating cost per minute charges.
Reporting	Easily generate, view, filter and navigate call recording reports. Reports may be categorized by device or user. Export reports to many popular formats including PDF, XLS, RTF, and HTML.
Tagging	Tag call records with pertinent information for easy grouping and later review. Tag one or many records at a time.
Auto-Tagging	Automatically tag records that match device and number filter criteria.
Active Directory Integration	Users can be imported from your Active Directory server. AD administrators can automatically be made administrators of the Call Analytics web site by enabling the option.
Multi-Level Administration	Users of the website can be assigned to monitoring groups which determine the phone lines for which they are authorized to view recordings.

2 Requirements

2.1 System Requirements

The Call Analytics application has the following system requirements.

Requirement	Description
Cisco UCM	Cisco Unified Call Manager version 8 or greater.
Windows Server	Windows Server 2012 R2 or greater. Hardware Requirements: *2.4 GHz CPU and 8GB RAM minimum.* *Virtual Machines are supported.* Windows Roles and Features *Several windows roles and features are required for proper operation of the product (IIS, .NET 4.5, WAS, etc.). These are automatically installed by the installer program so a default Windows install is recommended.*
SQL Server	Microsoft SQL Server Express 2012 or greater. *Microsoft SQL Server Express 2016 is installed with the product if internet access is available and no other SQL instances exist locally.*

Administrative access to the various systems will be required during installation and configuration of the product.

2.2 Network Requirements

The Call Analytics system has the following network communication requirements.

Network Requirement	Description
FTP Port	The application FTP server will require port **21** be open.
HTTP Port 80	The application web server will require port **80** be open if non-secure mode is in use.
HTTPS Port 443	The application web server will require port **443** be open if secure mode is in use.

3 Installation Process

This section of the document outlines the installation process for quick reference. An attempt was made to layout the document in the required order so following it through should suffice, this section could also serve as a setup checklist.

Installation Process	Description
Verify Requirements	Verify the server and network meet the requirements in System Requirements and Network Requirements. *Note that internet access is required on the target application server for a fully automated installation experience.*
Run Installer	Run the product installer by following the procedure in the Installation section. *Note the installation process can take up to an hour depending on the application server and internet speeds, however highly performant systems accomplish the task in under 10 minutes.*
Run Configuration Program	After running the installer, you should be prompted to run the configuration program, simply click **Finish** in the installer with the checkbox to start configuration checked. The process is detailed in the Configuration Program section of this manual.
Configure CUCM	Configure the required entities on CUCM (Service Parameters, CDR Management) by following the procedures in the CUCM Setup section of this manual.
CDR Settings	Configure the application settings in the web administration interface as described in First Time Site Setup and Settings Management.
User Setup	Configure required users and role groups as described in Users and Role Groups.

4 Installation

Install the Call Analytics setup package by running the installer on the intended application server. Consult the System Requirements section of this document for application server requirement details.

Run the installer package and proceed through the forms as detailed in the following table:

Installation Step	Description
Run the Setup Application	Log into the application server as an administrator. Double click the installer that was downloaded to start the installation process.
Welcome Screen	Click the **Next** button to continue past the welcome screen.
License Agreement	Accept the license agreement and then click the **Next** button.
Program Requirements	Review the program requirements and then click the **Next** button. *Missing Windows features and required modules will be downloaded and or installed automatically.*
Select Destination Location	Browse for a folder to install the program to or accept the default. Only local drives are supported for the program installation. Click the **Next** button to proceed with installation.
Ready to Install	Review the information on the page and then click the **Install** button to install the application.
Finalize Installation	Once completed the program will prompt to run the configuration utility. Click the **Finish** button to proceed with the application configuration program.

5 Configuration

5.1 Configuration Program

After installation of the application it is necessary to run the configuration program. This is started automatically when the installer completes and can be reran at any time by selecting *Start>Programs>HarmonicEngineering>CallAnalytics>CallAnalytics Configuration* from the Windows start menu.

The following table describes the configuration process:

Configuration Step	Description
Run Configuration Application	Start the configuration program using the method described above or arrive here after successful installation.
Welcome Screen	Click the Next button (in the upper right) to proceed to the next step.
Application Setup Options	Select or enter the database options using the provided controls. • Local Database Instance – Select an SQL Server instance (Default: SQLEXPRESS). • Local IP Address – Enter the local adapter IP Address that the program should bind to. • Communication Port – Enter a communication port to be used by the application web site API (Default: 8008) *The program will continue to the next step once all details have been entered.*
Configure	Click the Configure button to start the configuration process.
Finish	Click the Exit button to exit the configuration program. *The application web site will open upon exit of the configuration program.*

5.2 CUCM Setup

The following sections describe the setup that must be performed by an administrator of the CUCM system. Several entities must first be configured to allow collection of CDR records by the application server.

Records will be delivered to the application server via FTP so the application server will need an FTP server setup, that process is also described in this section.

5.2.1 CUCM CDR Management Setup

The CUCM must be setup with the proper entities for collection of call data records. The process requires administrative access to CUCM.

The process consists of the following steps:

- Verify the FTP Server was properly installed on the application server.
- Adjust the CUCM Service Parameters to allow collection of CDR files.
- Create a Billing Application Server in CUCM serviceability to deliver CDR files to the FTP server.

The process is outlined in detail in the following sections.

5.2.1.1 FTP Server

An FTP server must be created on the application server to allow the CUCM to deliver the CDR flat files. The installation process will attempt to automatically configure the FTP Server so here we will verify that it is setup correctly.

FTP Server Verification Step	Description
IIS Management	Open the IIS Management interface on the application server.
Verify Site Exists	Expose the application server node and the sites folder in the left pane of IIS Management. Select the **CallAnalyticsCdr** site.
Verify Site is Running	Verify that the FTP site is running, on the right-hand side of IIS management the Start item should be gray.

5.2.1.2 CUCM Service Parameters Setup

The CUCM Service Parameters must be configured to enable CDR records to be captured by the Call Manager. The following table describes the pertinent service parameters.

Service Parameter Setup	Description
Service Parameters	Navigate to CCMAdmin and select System>Service Parameters.
Select Server and Service	Select a CUCM server that routes calls and then select the Cisco Call Manager service. Once the service parameters page appears select the **Advanced** button at the top of the page to expose advanced settings. Repeat the remaining steps for each call processing CUCM.
System	Under the System section the following settings are pertinent:
CDR Enabled Flag	Set the CDR Enabled Flag to **true**. *This is the only parameter that is required to be set to enable the capture of CDR records on a CUCM node.*
CDR Log Calls with Zero Duration Flag	Set the CDR Log Calls with Zero Duration Flag to true if you would like to capture zero duration records.
Clusterwide Parameters (Device - General)	Under the Clusterwide Parameters (Device - General) section
Display FAC in CDR	Set this setting to true if you would like the Forced Authorization Code to be displayed in the CDR records.
Show Line Group Member DN in finalCalledPartyNumber CDR Field	This parameter determines whether the finalCalledPartyNumber field in CDRs shows the directory number (DN) of the line group member who answered the call or the hunt pilot DN. Valid values specify True (the finalCalledPartyNumber in CDRs will show the DN of the phone that answered the call) or False (the finalCalledPartyNumber in CDRs will show the hunt pilot DN). This parameter applies only to basic calls that are routed through a hunt list without feature interaction such as transfer, conference, call park, and so on. If a feature is involved in the call, the hunt pilot DN will show in the finalCalledPartyNumber field regardless of the setting in this parameter. This parameter does not apply to Cisco Unified Communications Manager Attendant Console. The default value for this required field specifies False.
Clusterwide Parameters (Device - Phone)	Under the Clusterwide Parameters (Device - Phone) section
Add Incoming Number Prefix to	This parameter determines whether Cisco Unified Communications Manager adds the incoming prefix (as specified in the National Number

CDR	Prefix, International Number Prefix, Subscriber Number Prefix, and Unknown Number Prefix service parameters) to the calling party number in the CDRs for that call. If the prefix is applied on the inbound side of the call, it always will be added to the calling party number in the CDRs for that call, even if this parameter is set to False. If the prefix is applied on the outbound side, the prefix will be added to the calling party number in the CDR(s) for that call, only if this parameter is set to True. If the destination of the call is a gateway, Cisco Unified Communications Manager will not add the prefix to the CDRs even if this parameter is enabled. This parameter applies cluster wide. The default value for this required field specifies False.

5.2.1.3 CUCM Billing Application Server Setup

A Billing Application Server must be setup in CUCM Serviceability to allow the CUCM to deliver the CDR flat files to the application server. The following table describes the process of setting up the Billing Application Server. Perform these steps for each call processing CUCM in the system.

Billing Application Server	Description
CDR Management	Navigate to the CUCM Serviceability web interface. Select Tools>CDR Management from the serviceability interface.
Add New Billing Server	Press the Add New button at the bottom of the page to add a new Billing Application Server.
Enter FTP Details	Fill out the form with the appropriate details for the FTP Server on the Application server: • Host Name / IP Address: Enter the IP Address of the application server. • User Name: Enter a valid administrator user for the application server. • Password: Enter the password for the above user. • Protocol: Select **FTP** for the protocol. • Directory Path: Enter **** (backslash). • Resend on Failure: Check the checkbox so that records delivery will be retried on failure.
Save Changes	Press the **Add** button to complete the process. The connection to the FTP server will be validated by the CUCM.

5.3 First Time Site Setup

To navigate to the application web site, open a web browser while connected to the same network as the Call Analytics server (Google Chrome is preferred) and enter the following URL into the address bar:

http://<app-server-address>/CallAnalytics

Where <app-server-address> is the IP Address of the server that the Call Analytics software was installed on.

When accessing the application web site for the first time, such as after completing configuration for the first time, the web site will present the user with a standard login prompt for credentials.

The default credentials are listed in the table below:

Field	Value
User	admin
Password	default

NOTE: It is recommended that one now proceed to the User Profile page under the user menu (upper right) and change the admin password.

Once the site administrator credentials are set proceed to the next section, Settings Management, to continue first time application setup.

5.4 Settings Management

The system settings page allows management of the various application settings. CDR settings, User settings, CUCM settings, and Customer settings are included here and described in detail in the following sections.

Users must be associated with the Admin monitoring group to access this page.

Navigate to *Settings>System Settings* in the main menu to reach the settings page.

The Settings page is divided into sections as described in the following sections.

5.4.1 CDR Settings

CDR settings control the FTP site path that the application parses CDR flat files out of. This setting must be matched to both the FTP Site that has been created on the application server to receive the CDR records and the Billing Application Server from CUCM Setup.

Generally, this setting should not need to be changed unless one intends to move the FTP Site and billing application server to another folder.

The CDR settings are described in the following table:

Setting Field	Value
CDR Delivery Path	The folder path location of the FTP Site that is servicing the application. Generally, this setting will not need to be changed.

Click the **Save** button in the upper right-hand corner of the page to save any settings changes.

Changes to CDR settings should be verified immediately after the change. Verify that new CDR flat files are received in the stated folder or verify the CUCM Setup.

5.4.2 CUCM Settings

The CUCM settings control the applications ability to query the CUCM for data. This is done so agent phone details can be matched to the call information received in the recording process.

CUCM settings are described in the following table:

Setting Field	Value
IP Address	Enter the IP Address of the CUCM system to acquire the data from.
Version	Enter the version of the CUCM (IE 11.0)
AXL User	Enter a CUCM user with AXL permissions (see AXL User Setup for authentication requirement details).
AXL Password	Enter the password for the above AXL User.
Refresh Minutes	Enter the period in minutes to gather data from CUCM. (Default: 20)

Click the **Save** button in the upper right-hand corner of the page to save any settings changes.

5.4.3 User Settings

User settings control the application user modes, local and Active Directory (AD) integration mode. In local user mode only users that have been added using the Users page can access the system. In AD integration mode, valid domain users are allowed access while local users may still be created.

The user settings are described in the following table:

Setting Field	Value
Auth Mode	Select an authentication mode (Local or Active Directory). *The remaining settings pertain to Active Directory Mode only.*
Domain	The Active Directory domain name to authenticate against.
Directory Server	The Active Directory server IP Address. This field is only required if the application server is not a trusted domain server.
Container	AD container to authenticate against (Default: <blank>).
Read User	An Active Directory user with read access. This field is only required if the application server is not a trusted domain server.
Read Password	The password for the above Read User.
AD Admin Mode	Check the AD Admin Mode setting if AD administrator users should automatically be administrator users of this application.

Click the **Save** button in the upper right-hand corner of the page to save any settings changes.

5.4.6 Customer Settings

The customer settings control the application license retrieval and update feature. Enter the customer information received with your receipt of purchase here to enable the feature.

If there is no connection to the internet available, or customer information is not provided in the Customer Settings area, then the license CallAnalytics.license must be placed in the application base directory. Generally, the location is C:\Program Files (x86)\Harmonic Engineering\CallAnalytics but can vary if the location was changed during installation.

Customer settings are described in the following table:

Setting Field	Value
Customer Name	Enter the customer name received with initial purchase.
Customer Id	Enter the customer id received with initial purchase.
Current License	The current license is shown for reference if one exists.

Click the **Save** button in the upper right-hand corner of the page to save any settings changes.

⚠ *Changes to customer settings will force the system to gather a new license from the cloud. Verify the proper connectivity exists to www.harmonicengineering.com*

This completes the application setup portion of this document. The remaining sections describe the usage of the remainder of the system. Advanced setup will require visiting the Role Groups and Users pages to setup users and their security roles.

6 Site User Guide

6.1 User Menu

The user menu is presented in the upper right corner of the application and is denoted by the user icon ( ). The user menu contains various user options like the user profile page, logoff and style settings.

Hover over or click the icon to expose the menu.

The user menu has the following options:

User Menu Option	Description
User Profile	Navigates to the user profile page which allows users to manage their password and other details.
User Manual	Navigates to the user manual PDF file.
Logoff	Logs the current user out of the system.
Body	Toggles the body style between light and dark (default: light). *This setting is saved at the device level when changed.*
Compact	Toggles the compact mode on and off (default: off). *This setting is saved at the device level when changed.*

6.2 Dashboard

The Dashboard presents several data summary views for call data records of a selected date range. The summaries can also be filtered by role group, allowing for summaries of any combination of devices for which a role group exists. Individual call data record details are not presented on this page, they are presented on the Call Records page.

The dashboard is a standard user page so the users will only have authorization to review and edit records for phones which they have Role Group access to. See the Role Groups section of the manual for details on role group setup and management.

Navigate to *'Call Analytics'* in the main menu to reach the dashboard page.

The dashboard page consists of a date selector and role group filter at the top, followed by pivot grids and widgets that present the records for the selected date range in a several different summary views. These controls are described in detail in the following sections.

6.2.1 Date Selector

The top left of the Dashboard page contains a date selector that controls the range for the data displayed in the grids and other widgets. Select the range you would like to view and the page will load that range.

Note that selecting large ranges may result in increased load times due to the large number of records they may contain.

6.2.2 Role Groups Filter

The top right of the Dashboard page contains a role group filter that can be used to further filter the data being displayed on the page. Click in the tag box control and select one or more role groups then press **OK** to filter the data.

The role groups filter will only contain the role groups that a non-admin user has access to, while admin users will have visibility of all role groups.

6.2.3 Dashboard Widgets

Dashboard widgets consist of pivot grids as well as graphs and charts all of which summarize the CDR data specified by the date selector and role groups filter.

The various dashboard widgets are described in detail in the following table:

Dashboard Widget Title	Description
Call Summary	The Call Summary pivot grid is displayed in the upper left section of the page. It contains columns for average ring time, duration and costs for the selected range. The rows are broken down by call type: incoming, internal, outgoing and other. *The year column can be expanded to breakdown into quarters and the quarters column can be expanded to breakdown into months, simply click the headers to expose the data and the grid will reformat itself.*
Costs Graph	The Costs Graph is hidden by default in the upper right, opposite the Call Summary pivot grid. To expose the costs graph click it or slide it to the left. To hide the costs graph slide it to the right. The Costs Graph shows the costs breakdown by month in a simple graph.
User Summary	The User Summary pivot grid is displayed in the lower left section of the page. It contains columns for average ring time, duration and costs for the selected range. The rows are broken down by user and can be expanded to show the call type for each user. *The year column can be expanded to breakdown into quarters and the quarters column can be expanded to breakdown into months, simply click the headers to expose the data and the grid will reformat itself.*
Device Summary	The Device Summary pivot grid is displayed in the lower left section of the page and is hidden by default, select the Device View link to expose it and hide the User Summary. It contains columns for average ring time, duration and costs for the selected range. The rows are broken down by device and can be expanded to show the call type for each device. *The year column can be expanded to breakdown into quarters and the quarters column can be expanded to breakdown into months, simply click the headers to expose the data and the grid will reformat itself.*

Breakdowns	The Breakdowns section is hidden by default to the right of the User and Device summaries. To expose the Breakdowns section, click on it or slide it to the left. To hide the Breakdowns section, slide it to the right. The Breakdowns section contains several record breakdowns that can be selected from a select box at the top. The following breakdowns are available: • Destination Termination Cause • Last Redirect Reason • Originator Termination Cause • User Duration • User Cost

6.3 Call Records

The Call Records page presents the call data records available in the system in a grid view that can be searched and filtered in several different ways. A call rate by date range graph gives a visualization of the call flow per day. Navigate records, select and tag records and review records from this page.

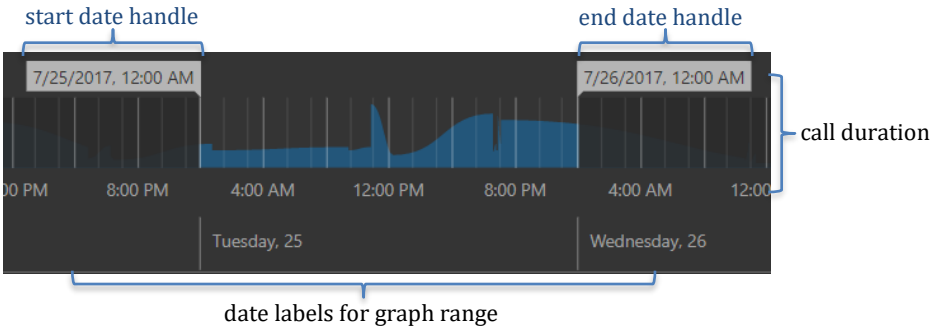
The call records page is a standard user page so the users will only have authorization to review and edit records for phones which they have Role Group access to. See the Role Groups section of the manual for details on role group setup and management.

Navigate to *Call Records* in the main menu to reach the Call Records page.

6.3.1 Date Range Selector and Call Graph

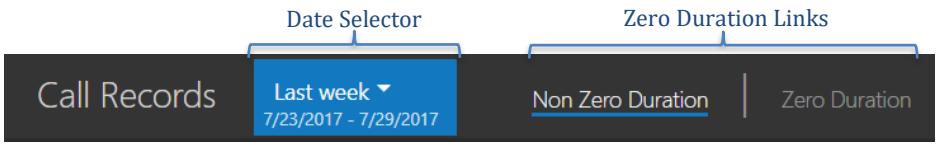
The top section of the Call Records page has a date range selector that sits above a graph of the call duration (y-axis) versus the date (x-axis). The graph provides a basic view of the call flow by date. The range selector is hidden by default, click the Show Range tab on the right-hand side of the page to show the range selector.

The date range selector handles (start date and end date) can be dragged left and right to form any date range to allow simple date range filtering of the records displayed in the grid.



6.3.2 Date Selector

Below the range selector the global date selector and zero duration filters are presented. The global date selector is used to reduce the number of records requested from the server and is set to 'This Month' by default as getting more than a month worth of records may be time consuming on certain systems.



Select another date range value from the selector to fetch more records. The range selector will automatically be filtered to the new range.

The zero duration filters are presented as two links next to the date selector. By default, the 'Non Zero Duration' link will be selected and no zero duration records will be fetched. To fetch the zero duration records, select the 'Zero Duration' link, zero duration records will be fetched for the timeframe specified by the date selector and the grid will be filtered to show only zero duration records.

6.3.3 Recordings Grid

The bottom portion of the Call Records page houses the data grid that contains the call records. The grid has the following functions:

- Add and remove columns using the column chooser (the icon above the grid header on the right). Click the column chooser icon and then drag columns out of the chooser into the header or out of the header and into the chooser.
- Reorder columns by dragging the column headers right and left to the desired position. Sort by a column by clicking on the column header.
- Filter columns using the filter icon in the header (the icon for columns that support it). Note that the icon will turn darker when a filter is active.
- Search the data by all fields using the *Search all* text box above the header.

The grid configuration is saved when the page is exited. This is important to remember as filters and search criteria are also saved with the grid settings.

6.3.3.1 Call Records Grid Default Columns

The table below describes the columns displayed in the call records grid by default. Fields that are not visible by default are included in a subsequent table and can be exposed using the column chooser in the header of the grid.

Recordings Grid Columns	Description
Connect Date	The start date and time of the call in local server time.
Duration	The duration of the call in seconds (displayed as HH:MM:SS).
Originator	This field provides a summary of originator details – participant number, device name, device description and termination cause.
Calling User	This field provides originator user details (if a user is associated with the device) – user name, email and cell phone number.
Destination	This field provides a summary of destination details – participant number, device name, device description and termination cause.
Called User	This field provides destination user details (if a user is associated with the device) – user name, email and cell phone number.
Last Redirect Reason	The last redirect reason states the reason for the call redirect if one was involved. Values like Recording, Conference and Transfer among many others appear in this field.
Type	The type of call [Internal, Incoming, Other, Outgoing].
Tags	The tags associated with the call record. *Note that this field is editable in the grid, simply click in the field to begin adding or removing tags.*
Call Cost	The cost of the call. If the record called number matches a row in the Call Costs configuration and is found to be an outgoing call, then the call will be costed and the costs will appear here. The cost, cost name and cost details (amount/minute) are provided in this field for calls that are costed.

6.3.3.2 Call Record Grid Additional Columns

Additional columns are hidden by default but can be exposed using the column chooser in the grid header. Drag column headers to or from the column chooser to alter the column layout of the grid.

Recordings Grid Columns	Description
Auth Code	The authorization code (FAC) if one was used to place this call and the option to show it has been enabled in CUCM Service Parameter Setup.
Caller Num	The callingPartyNumber field from the CDR.
Caller Partition	The route partition of the callingPartyNumber.
Client Matter Code	The client matter code associated with the call if one was used.
Dest Call ID	The destination call identifier. This is a unique number identifying the call leg, if present in other legs it represents that both legs are part of the same call flow.
Dest Cause	The destCause_value field of the CDR. This is the destination termination cause.
Dest IP	The destination device IP Address.
Dest Media	The destination media details. Codec type, media IP address and port, bandwidth and frames per packet appear in this field.
Dialed Num	The originalCalledPartyNumber field of the CDR. This represents the number dialed by the originator though it may not represent the final called number due to translations and other routing features.
Dialed Partition	The route partition of the originalCalledPartyNumber.
Disconnect Date	The stop date and time of the call in local server time.
Final Num	The finalCalledPartyNumber field from the CDR.
Final Partition	The route partition of the finalCalledPartyNumber.
Global Call ID	The global call identifier for the call.
Hunt Pilot	The hunt pilot number if a hunt pilot was part of the call routing.
Last Redirect Dn	The lastRedirectDn field of the CDR.
Last Redirect Partition	The route partition of the lastRedirectDn.
Last Redirect RoB	The lastRedirectRedirectOnBehalfOf field of the CDR. Values like Call Park, Conference and Call Forward among many others appear in this field.
Orig Call ID	The originators call identifier. This is a unique number identifying the call leg, if present in other legs it represents that both legs are part of the same call flow.
Orig Cause	The origCause_value field of the CDR. This is the originator termination

	cause.
Orig IP	The originator device IP Address.
Orig Media	The originator media details. Codec type, media IP address and port, bandwidth and frames per packet appear in this field.
Orig Redirect on Behalf	The origCalledPartyRedirectOnBehalfOf field of the CDR. Values like Call Park, Conference and Call Forward among many others appear in this field.
Orig Redirect Reason	The origCalledPartyRedirectReason field of the CDR. Values like Recording, Conference and Transfer among many others appear in this field.
Secured Status	The secure status of the call.

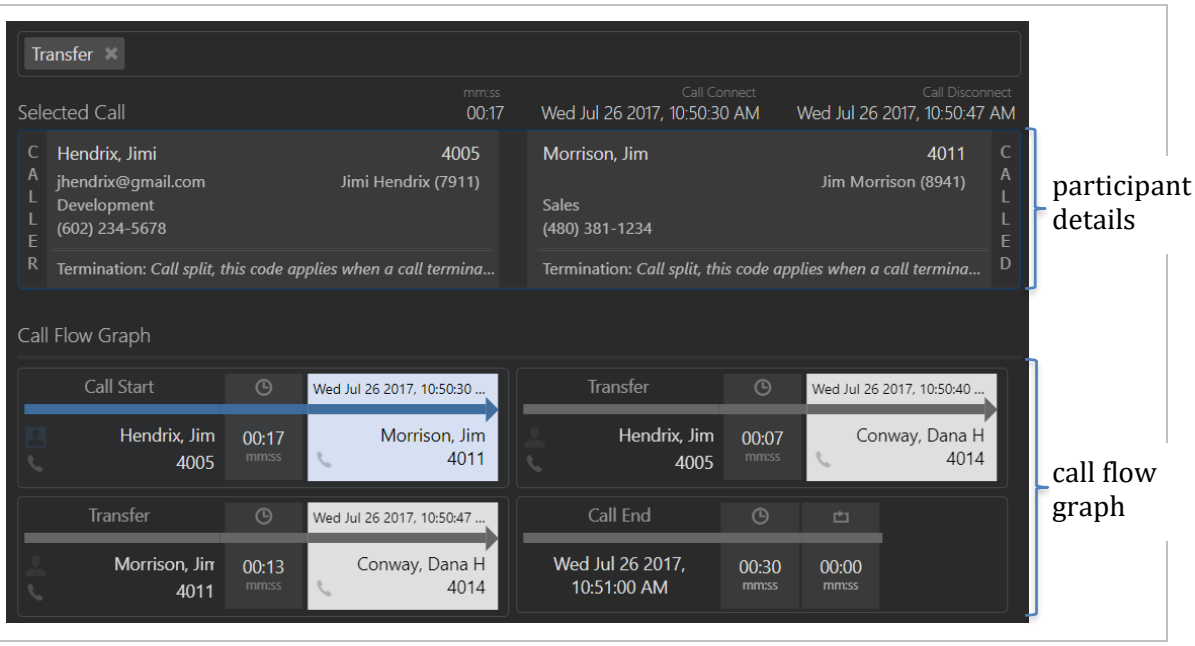
6.3.4 Record Viewer

The record viewer popup window displays details of individual call data records as well as a call flow graph showing all related call legs. It is presented when a user clicks a call data record on the Call Records page.

The viewer allows tags to be viewed and edited and shows caller and called participant details. Note that tags pertain to the selected leg only.

A Call Flow Graph is also included which shows the flow of the call through its various legs, if more than one leg is present. The currently selected leg (highlighted in a blue color) can be navigated away from by clicking on another leg in the call flow graph.

The record viewer is pictured below for a call with three total legs and one tag 'Transfer'



The different areas of the record viewer are described in the following table:

Recording Player Area	Description
Tags	Tags associated to the record are presented at the top of the viewer in a token box editor. Click in the tag editor box to gain focus and begin typing to add a new tag, a list of existing tags will be filtered based on your entry. When text entry is complete press enter and the text will be replaced with a tag representing the entry. Press the 'X' area on the right side of the tag to remove it.
Participant Details	The participant details are presented directly below the tag editor and are separated into Caller and Called sections on the right and left respectively. The following participant details fields are provided where available:

Display Name	[upper left] The name of the participant device is provided here. If the device is a CUCM phone device with associated user then the users name will be presented here.
Email	[upper left] The user's email address is provided if the device is a CUCM phone with associated user.
Department	[upper left] The user's department is provided if the device is a CUCM phone with associated user.
Mobile	[upper left] The user's mobile phone is provided if the device is a CUCM phone with associated user.
Termination Cause	[lower] The termination reason for the call is provided at the bottom of each participant area.
Participant Number	[upper right] The number of the calling/called device
Participant Name	[upper right] The name of the calling/called device (the device description is provided here if the device is a local CUCM device)

Call Flow Graph	The Call Flow Graph is located at the bottom of the recording player and presents the legs of the calls in a modular fashion. If more than one leg makes up the call then navigation will be active, click anywhere in the legs module to navigate the recording player to that leg. *The selected leg will be highlighted in blue and the unselected leg(s) will be shown in gray.*

6.4 Reports

The Reports page provides a standard template for printing and exporting records to file. Reports can be searched and filtered, they also have a document map option for easy navigation.

There are two reports types, by user and by device. Each report contains a header with a title and descriptive details about the report data such as number of entities and total records represented as well as the date range and other report filters. The header is followed by the report detail for each unique entity contained in the report.

Users must be associated with the Admin monitoring group to access this page.

Navigate to *Reports* in the main menu to reach the Reports page.

6.4.1 Report Types

The reports page has three report type options that can be selected in the top right of the report control bar (top of the Reports page).

The reports types are described in the following table:

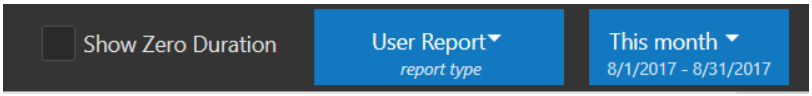
Report Type	Description
User Report	The User Report is arranged by local user. A report section is included for each user that has at least one record.
Device Report	The Device Report is arranged by device name. A report section is included for each unique device name in the reporting period.

6.4.2 Report Controls

6.4.2.1 Report Generation Controls

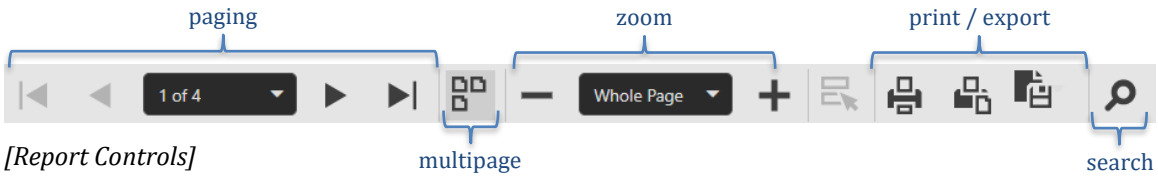
The top right of the reports page contains the report generation controls, a show zero duration checkbox, report type selector and a date range selector (pictured below). Adjusting any of these controls will fetch new report data and display the requested report.

[report generation controls]



6.4.2.2 Report Control Bar

Just above the report are the individual report controls or the report control bar. The report controls are pictured below with descriptions of the various areas.

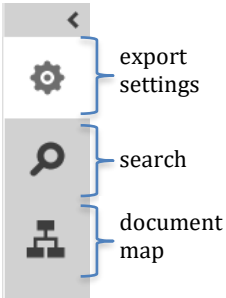


[Report Controls]

On the right-hand side of the page there are further report controls used for export settings, search and document map. *(controls pictured on the right)*

Select one of the icons to expose the menu options for any of the controls.

Export settings are generally not required but can be investigated using the gear icon. The search icon allows searching of the document. The document map is a table of contents of such and lists the report entities (user names or device descriptions), click an entry in the document map to navigate to it.



6.5 Role Groups

Role Groups facilitate user roles in the Call Analytics system and control which records users can access. A role group is a group of CUCM phone devices that is defined by filters. Once created, role groups can be assigned to users to allow the users access to records for those phones contained within them.

🔒	Users must be associated with the Admin role group to access this page.
🌐	Navigate to *Settings>Role Groups* in the main menu to reach the page.

*The **Admin** role group is a system group that is not available for editing, users assigned to this role group will have full access to all recordings and site settings.*

The Role Groups page contains editing controls at the top and a list of phones in the currently selected role group in a grid at the bottom.

6.5.1 Managing Role Groups

6.5.1.1 Role Group Management Tasks

Task	Description
Add New	To add a new role group, click the + button on the left-hand side of the page. Enter a new role group name in the Role Group Name field and press the **Save** button to save the new group. *Add a filter to the role group using the Create Group Filter link below the* role *group drop down selector. By default, the filter is blank which represents all devices. Filters are described in the following section in detail.*
Edit	To edit an existing role group, select it from the Role Group drop down list.
Delete	To delete the selected role group, click the ✕ button on the right-hand side of the page.

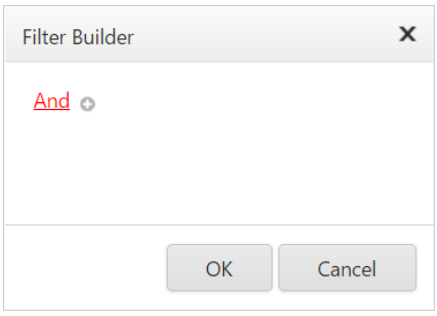
Filters and Automatic Tags are the only other options in a role group and are described in the following sections.

6.5.2 Role Group Filters

Role group filters control the phones contained within the role group and are accessed by clicking the **Create Group Filter** (or current filter text) link below the selected role group drop down. The Filter Builder popup will appear allowing a filter to be constructed for the phones in the group.

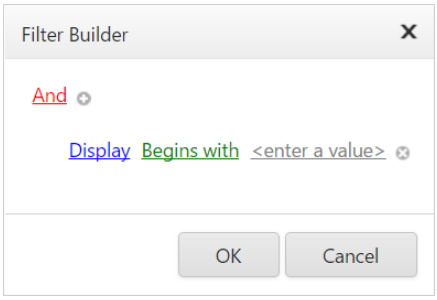
6.5.2.1 Filter Builder

The Filter Builder with no conditions has two links, the 'And' group condition link and the 'Add New Condition' (+) link. *(pictured on the right)*



Each group can have multiple conditions that are operated on according to the grouping condition (And, Or, Not And, Not Or). Group conditions bind the individual conditions listed under them.

Once a condition has been added it will have three link areas, the column area, the operator area and the value area. *(pictured on the right)*



Select the column to operate on in blue, the operator to use in green and <enter a value> in the provided field.

Use standard SQL wildcards (%) in the value field when necessary.

Click **OK** to save the changes when complete and the selected role group phone grid will update to reflect any changes to the filter.

6.5.3 Automatic Tagging

The Automatic Tag field of the role group allows records to be automatically tagged. All phones in the role group will have new records tagged with the tag or tags that exist in the Automatic Tag field.

For example, one could echo the device pool name here by adding it as a tag if the role group was for a specific CUCM device pool. It follows that all new recordings made for devices in this role group will have the device pool tag attached to them, this allows records to be easily filtered based on data that is important to the users.

Changes are automatically saved whenever the Automatic Tag field is updated.

Press <enter> when adding a new tag to the Automatic Tag field to complete the tag entry.

6.6 Users

The Users page allows management of the users of the Call Analytics system. The page presents a grid of the current users that can be searched using the provided search field.

🔒	Users must be associated with the Admin monitoring group to access this page.
🌐	Navigate to *Settings>Users* in the main menu to reach the user management page.

Users can be either local or Active Directory based (when the AD integration mode is turned on in User Settings). Local users can be added in either mode and only local users can have their details such as User Name and Password managed.

Active Directory based users will show up in the grid and be available for editing after their first login.

6.6.1 Managing Users

Add new users using the + button on the right-hand side of the page.

Edit existing users by clicking on their row in the grid.

When creating a new user or editing an existing user the Create / Edit User form will appear. The Create / Edit User form contains user detail fields as well as buttons to save changes, change password and delete user, it is described in the following section in detail.

The change password and delete user functions are only available for local users.

6.6.2 Create / Edit User Form

The Create / Edit User form fields are described in the below table:

User Form Field	Description
User Name	Edit or enter the user name for the user here.
Display Name	Edit of enter the display name for the user here.
Current Password New Password Confirm New Password	Use the **Change Password** button to change the password of local users, AD users do not have this option. After clicking the button three new fields will appear, Current Password, New Password and Confirm New Password. Fill in all three fields and press the save button to change the user's password.
Role Groups	Select the Role Groups that the user should belong to. Role groups control the recordings that users have access to, see the Role Groups section for details. *The **Admin** monitoring group will give a user full site access including all settings pages and all user's records.*

*Use the **Save** button to save any user changes.*

6.7 Call Costs

The Call Costs page allows cost assignments to be made based on dialed number filters. A grid is provided that allows call costs to be easily added and managed.

The call costs grid contains a row for each cost filter that has been assigned.

Call Cost Field	Description
Id	The Id of the call cost row. This field is read only.
Name	The name of the call cost row. This will help to categorize call costs so use a descriptive name such as local, long distance or international etc.
Match Pattern	The dialed number patter to match for this cost. This field is used with SQL LIKE syntax, enter dialed number digits or wildcards to match dialed numbers to the cost row. The standard SQL wildcards are '%' for any number of characters and '_' for a single character. *To determine if the pattern should contain the original dialed digits (IE including 9) or the translated pattern, inspect some existing CDR records.*
Cost per Minute	Enter the cost per minute that should be applied to records that match this call cost rows Match Pattern. *Calls that match will be costed at the cost per minute for the first minute and the cost per minute for every minute thereafter.*

6.7.1 Managing Call Costs

To edit existing rows simply click in the field you wish to edit and editing will begin. When editing is complete remove focus by clicking elsewhere on the page and changes will be saved.

To add a new call cost, press the + button in the grid header.

To delete an existing call cost, click the **Delete** link on the right-hand side of the row. A confirmation dialogue will appear, click **Yes** to verify deletion of the row.

Note: Call cost changes will automatically recalculate all call costs for existing records.

7 Appendix

7.1 Windows Server Required Roles and Features

If the installer does not properly configure the required Windows Server roles and features this section is provided for reference.

Section TBC. Contact support@harmonicengineering.com if you have questions concerning this section of the manual.

7.2 AXL User Setup

If a CUCM super user or another user is not readily available to use as the AXL user then a specific user can be created by an administrator on CUCM.

The AXL API access requires super user privileges however, Call Analytics only performs reads and all sensitive information is stored with AES256 government grade encryption.

The process of adding a new application user is described in the following table:

Add User Step	Description
Navigate	Navigate to *User Management>Application User* in the CUCM admin web interface.
Add User	Add a new Application User by clicking the 'Add New' button.
Complete Form	Complete the application user form by filling in the following fields: - **User Name**: <Enter a user name of your choosing> - **Password**: <Enter a password> - **Confirm Password**: <Enter password again> - **Permissions Information**: Click the '*Add to Access Control Group*' button, a new window will appear, click find and select the '*Standard CCM Super User*' group then click the **Add Selected** button, the window will close.
Save	Save the new application user by clicking the **Save** button.