



EMC® Watch4net®

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Cisco VoIP Collector Admin Guide

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Preface

Purpose

The *Cisco VoIP Collector* is a *Processing Element* designed to collect CDRs and CMRs from the *Cisco Unified Communications Manager (CUCM)* in order to generate events. It is fully compatible with versions 6.x, 7.x and 8.0 of the *CUCM*.

Intended Audience

This guide is intended for advanced *APG* Administrators that have a good knowledge of the *APG Event Processing* framework.

Prerequisites

The *Cisco VoIP Collector* can only be used within an instance of the *Event Processing Manager*. Both components must be configured to work together.

Document Organization

1. Product Overview	Overview of the product.
2. Installation	Instillation instructions for the product.
3. Configuration	How to configure the <i>Event Processing Manager</i> and the <i>Cisco VoIP Collector</i> .

Common Abbreviations and Acronyms

CDR	Call Detail Record
CMR	Call Management Record
CUCM	Cisco Unified Communications Manager
MOS	Mean Opinion Score
FTP	File Transfer Protocol
SFTP	SSH File Transfer Protocol
VoIP	Voice over Internet Protocol

Where to get help

EMC support, product, and licensing information can be obtained as follows:

PRODUCT INFORMATION - For documentation, release notes, software updates, or information about EMC products, go to EMC Online Support at:

<https://support.emc.com>

TECHNICAL SUPPORT - Go to EMC Online Support and click Service Center. You will see several options for contacting EMC Technical Support. Note that to open a service request, you must have a valid support agreement. Contact your EMC sales representative for details about obtaining a valid support agreement or with questions about your account.

1

Product Overview

The *Cisco VoIP Collector* periodically downloads CDRs and CMRs files from a *Billing Server* which, in turn, receives these files from the CUCM. The collector merges CMR files with their corresponding CDR to create an *Event* which is then sent to the next *Processing Element*.

1 CDR

A CDR is a CSV file that contains data about VoIP calls. The data includes origin and destination phone numbers, the duration of calls, source and destination IP addresses, etc. The CDR contains approximately 80 different data fields, depending on the version of the CUCM.

A VoIP call might generate more than one CDR if there is a transition in the call, for example a call transfer or a conference call.

CDRs are usually used for billing clients about their calls.

2 CMR

The CMR is also a CSV file. The CMR contains information about the quality (latency, packets loss, jitter, MOS, etc.) of a call.

Normally, each end of a call will generate a CMR. However, since not all Cisco devices support CMR generation, some normal calls will not generate CMRs.

3 Event

An *Event* is composed of one CDR and 0, 1 or 2 CMR(s). One CDR for the call and one CMR for each end of the call. It is the events that are sent to the next *Processing Element*.

Note: A call end refers to a telephone on the call, being managed on the CUCM, that generates a CMR.

Fields from the CMR are added to the CDR when the two files are merged. When there are matching fields—described in the following table—the CDR field is used and its equivalent CMR field is dropped.

CDR field	CMR field	Description
globalCallID_callManagerId	globalCallID_callManagerId	The call manager id.
globalCallID_callId	globalCallID_callId	The call id.
globalCallID_ClusterID	globalCallID_ClusterID	The cluster id.
origLegCallIdentifier or destLegIdentifier	callIdentifier	This will determine if the CMR relates to the origin or destination of the call.
dateTimeDisconnect	dateTimeStamp	The comparison of this parameter may have an offset. It is set by the parameter <i>timestamp-comparison-offset</i> in the <i>cisco-voip-collector.xml</i> file.

4 Timestamp

The timestamp field that is used within the APG reports (frontend) is the `dateTimeDisconnect`. Calls appearing for any particular day in a report are therefore calls that have been disconnected that day.

For example, if a call starts at 11h50 PM May 12 and ends at 12h05 AM May 13, then the call will appear on the report of May 13th.

5 CDR/CMR files

After the *CDR/CMR* files have been downloaded from the *Billing Server*, they are immediately deleted.

6 Fields

For a description of each field in CDR and CMR files, see the vendor's own documentation. In particular, it is recommended to see the *Call Detail Records Administration Guide* document for the appropriate version of your *Cisco Unified Communications Manager (CUCM)*.

Installation

1 Dependencies

The *Cisco VoIP Collector* can run on an APG-Datastore or on MySQL.

For the APG-Datastore, the following modules must be installed prior to installing the *Cisco VoIP Collector*:

- APG-Datastore
- APG-Datastore-Writer

For MySQL, the following modules must be installed prior to installing the *Cisco VoIP Collector*.

- MySQL
- Generic-Live-Writer

Note: The *Cisco VoIP Collector* copies some files into the directories of the prerequisite modules listed above

during its own installation, so it is important that these modules already be installed.

2 Frontend

After installing the collector, to be able to see the *CDR/CMR* in the frontend, you need to make some changes in the Tomcat configuration files.

Note: The syntax of the Tomcat files is documented fully in the Apache Tomcat documentation which you can refer to.

First you need to edit the **server.xml** file.

The path to this file is: `<APG>/Web-Servers/Tomcat/Default/conf/server.xml`.

You need to add the resource FLOW-CISCO-CDR for your type of installation, just as indicated below.

```
...
<!-- For an installation with the APG Datastore. -->
<Resource name="jdbc/FLOW-CISCO-CDR" auth="Container" type="javax.sql.DataSource"
    maxActive="30" maxIdle="5" validationQuery="SELECT 1" testOnBorrow="false"
    testWhileIdle="true" timeBetweenEvictionRunsMillis="10000"
    minEvictableIdleTimeMillis="60000" maxWait="10000" username="apg"
    password="watch4net" driverClassName="com.mysql.jdbc.Driver"
    removeAbandoned="true" removeAbandonedTimeout="60" logAbandoned="true"
    url="jdbc:mysql://localhost:53307/events?autoReconnect=true&tinyInt1isBit=false" />

<!-- For an installation with MySQL. -->
<Resource name="jdbc/FLOW-CISCO-CDR" auth="Container" type="javax.sql.DataSource"
    maxActive="30" maxIdle="5" validationQuery="SELECT 1" testOnBorrow="false"
    testWhileIdle="true" timeBetweenEvictionRunsMillis="10000"
    minEvictableIdleTimeMillis="60000" maxWait="10000" username="apg"
    password="watch4net" driverClassName="com.mysql.jdbc.Driver"
    removeAbandoned="true" removeAbandonedTimeout="60" logAbandoned="true"
    url="jdbc:mysql://localhost:53306/events?autoReconnect=true&tinyInt1isBit=false" />
...
```

You then need to edit the **APG.xml** file.

The path to this file is: `<APG>/Web-Servers/Tomcat/Default/conf/Catalina/localhost/apg.xml`

You need to add the ResourceLink to the file just as indicated below.

```
...  
<ResourceLink name="jdbc/FLOW-CISCO-CDR:{_mapping=FLOW-CISCO-CDR.xml,_table=cisco_cdr_}"  
  global="jdbc/FLOW-CISCO-CDR" type="javax.sql.DataSource" />  
...
```

Tip: *To view the data in a report, create a sub node with an 'Expand on every' pkid.*

Configuration

To configuring the *Cisco VoIP Collector* you modify 2 files.

1 *Event Processing Manager* configuration

The *Cisco VoIP Collector* can be used with an *APG Datastore* or a *MySQL Database*.

In both cases, the **processing.xml** file is modified accordingly as illustrated in the examples in this section.

The path to the file is:

<APG>/Event-Processing/Event-Processing-Manager/Default/conf/processing.xml

APG Datastore example :

```
...
<processing-element enabled="true" name="DATASTORE-DB" config="APG-Datastore-Writer/Default/
conf/datastore-cisco-cdr.xml" />

<processing-element enabled="true" name="CISCO-COLLECTOR" config="Cisco-VoIP-Collector/c5/conf/
cisco-voip-collector.xml" data="DATASTORE-DB" />
...
```

MySQL Database example :

```
...
<processing-element enabled="true" name="MYSQL-DB" config="Generic-Live-Writer/Default/conf/
mysql-cisco-cdr.xml" />

<processing-element enabled="true" name="CISCO-COLLECTOR" config="Cisco-VoIP-Collector/Default/
conf/cisco-voip-collector.xml" data="MYSQL-DB" />
...
```

2 Cisco VoIP Collector configuration

The second configuration file to edit is **cisco-voip-collector.xml**.

The path to the file is:

<APG>/Event-Processing/Cisco-VoIP-Collector/Default/conf/cisco-voip-collector.xml

The code below is a complete example of a configuration file; an explanation of each parameter follows.

```
<?xml version="1.0" encoding="utf-8"?>
<configuration xmlns="http://www.watch4net.com/Events/CiscoVoIPCollector"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://www.watch4net.com/Events/CiscoVoIPCollector_cisco-voip-collector
.xsd">

  <cache-directory>cache</cache-directory>

  <ftp-server>
    <host>hostname:port</host>
    <protocol>ftp</protocol>
```

```
<mode>passive</mode>
<connection-timeout>60000</connection-timeout>
<read-timeout>60000</read-timeout>
<mtime-threshold>5000</mtime-threshold>
<max-file>1000</max-file>
<username>username</username>
<password>password</password>
<remote-directory>cdr</remote-directory>
</ftp-server>

<collecting-period>60</collecting-period>
<timestamp-comparison-offset>100</timestamp-comparison-offset>
<time-to-wait-for-cmr>1</time-to-wait-for-cmr>
<retry-time-failure>7200</retry-time-failure>
<source>Cisco-CDR-Collector</source>

</configuration>
```

Parameters explanation:

- **cache-directory** : This is the cache directory in which will be copied the CDR/files when using the FTP or SFTP protocol.
- **ftp-server**: This is the *Billing server* where the *CDR/CMR* files will be downloaded. The Billing server is simply an FTP server on which the CUCM is sending its *CDR/CMR* while they are generated.
 - **host**: This is the host address of the FTP server. It can be the name of the machine or the IP address. The *port* may also be specified. If the *port* is not specified, then the default port number is used. For the *FTP* protocol the default port number is **21** and for the *SFTP* protocol the default port number is **22**.
 - **protocol**: This is the protocol used to get the *CDR/CMR* files from the FTP server. Supported protocols are **ftp**, **sftp** and **local**. If the local protocol is used, the *host*, *username* and *password* parameter can be left blank. The local protocol means that the *Cisco VoIP Collector* will try to retrieve the *CDR/CMR* files on the same machine as the collector. It is useful if the *Billing server* is on the same machine as the *Cisco VoIP Collector*.
 - **mode**: This is the connection mode used by the FTP protocol. Supported modes are **active** and **passive**. This parameter has no effect if the *protocol* is not equal to *ftp*.

- **connection-timeout**: This is the connection timeout (*in milliseconds*) used by the FTP and SFTP protocol.
 - **read-timeout**: This is the read timeout (*in milliseconds*) used by the FTP and SFTP protocol.
 - **mtime-threshold**: This is the time (*in milliseconds*) that the collector waits between polling intervals to determine whether the file is still being written. If the file size is stable between intervals then it is no longer growing and will be downloaded. Files that are still growing are only retrieved at the next collect which occurs according to the collecting-period parameter.
 - **max-file**: This is the maximum number of file that the collector will download on the same collect.
 - **username/password**: This is the credential to used for connecting on the FTP server.
 - **remote-directory**: This is the remote directory (on the FTP server or local machine) where the *CDR/CMR* is located.
 - **collecting-period**: This is the collecting delay (*in seconds*). It is the time that the collector will wait between each collects.
 - **timestamp-comparison-offset**: This parameter is used for matching a CMR to a CDR. Because the CUCM might not create the CDR and CMR of the same call at the exact same time, their respective timestamps are not guaranteed to be equal. So this parameters adds an allowable offset (*in seconds*) when comparing the timestamp of the CDR and CMR.
- * *Note that the timestamp is not the only field used to match the CDR/CMR.*
- **time-to-wait-for-cmr**: This parameter indicates how much time (*in minutes*) the *Cisco VoIP Collector* will wait for corresponding CMRs before sending the CDR as an *Event* to the next *Processing Element*.

If the CUCM is not configured to generates CMRs, then this parameter should be equal to 0. Otherwise this parameter should be equal to 1 or 2. CMR files may be generated up to a few seconds after their corresponding CDR. Therefore a CDR gathered in one collect, may have corresponding CMR files in the next collect.

- **retry-time-failure**: This parameter indicates how much time (*in seconds*) the *Cisco VoIP Collector* will try sending an *Event* to the next *Processing Element*, in case of a failure. The most likely cause of a failure is that the next *Processing Element* is the database, which is down. After the retry period has expired, the *Event* is dropped.

- **source:** The value of the source property, as it will appear in APG. The source property is used to identify the collector that pushed the given metric in APG.