Management Guide

NetIQ® AppManager® for Call Data Analysis

December 2018

Legal Notice

Contents

About this Book and the Library

The NetIQ AppManager product (AppManager) is a comprehensive solution for managing, diagnosing, and analyzing performance, availability, and health for a broad spectrum of operating environments, applications, services, and server hardware.

AppManager provides system administrators with a central, easy-to-use console to view critical server and application resources across the enterprise. With AppManager, administrative staff can monitor computer and application resources, check for potential problems, initiate responsive actions, automate routine tasks, and gather performance data for real-time and historical reporting and analysis.

Intended Audience

This guide provides information for individuals responsible for installing an AppManager module and monitoring specific applications with AppManager.

Other Information in the Library

The library provides the following information resources:

Installation Guide for AppManager

Provides complete information about AppManager pre-installation requirements and step-by-step installation procedures for all AppManager components.

User Guide for AppManager Control Center

Provides complete information about managing groups of computers, including running jobs, responding to events, creating reports, and working with Control Center. A separate guide is available for the AppManager Operator Console.

Administrator Guide for AppManager

Provides information about maintaining an AppManager management site, managing security, using scripts to handle AppManager tasks, and leveraging advanced configuration options.

Upgrade and Migration Guide for AppManager

Provides complete information about how to upgrade from a previous version of AppManager.

Management guides

Provide information about installing and monitoring specific applications with AppManager.

Help

Provides context-sensitive information and step-by-step guidance for common tasks, as well as definitions for each field on each window.

The AppManager library is available in Adobe Acrobat (PDF) format from the AppManager Documentation page of the NetIQ Web site.

About NetIQ Corporation

We are a global, enterprise software company, with a focus on the three persistent challenges in your environment: Change, complexity and risk—and how we can help you control them.

Our Viewpoint

Adapting to change and managing complexity and risk are nothing new

In fact, of all the challenges you face, these are perhaps the most prominent variables that deny you the control you need to securely measure, monitor, and manage your physical, virtual, and cloud computing environments.

Enabling critical business services, better and faster

We believe that providing as much control as possible to IT organizations is the only way to enable timelier and cost effective delivery of services. Persistent pressures like change and complexity will only continue to increase as organizations continue to change and the technologies needed to manage them become inherently more complex.

Our Philosophy

Selling intelligent solutions, not just software

In order to provide reliable control, we first make sure we understand the real-world scenarios in which IT organizations like yours operate — day in and day out. That's the only way we can develop practical, intelligent IT solutions that successfully yield proven, measurable results. And that's so much more rewarding than simply selling software.

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We place your success at the heart of how we do business. From product inception to deployment, we understand that you need IT solutions that work well and integrate seamlessly with your existing investments; you need ongoing support and training post-deployment; and you need someone that is truly easy to work with — for a change. Ultimately, when you succeed, we all succeed.

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1 Introducing AppManager for Call Data Analysis

This chapter introduces AppManager for Call Data Analysis and provides an overview of the module and its architecture.

1.1 What is AppManager for Call Data Analysis?

Many Voice over IP (VoIP) systems produce records about the calls they process. These records are known as call detail records (CDRs) and usually contain at least the following information:

- Call origination
- Call destination
- Call duration
- Call termination status (successful or unsuccessful)

Many VoIP systems also provide information about the quality of the calls they process. This information is contained in the same CDRs as mentioned above, or in separate CDRs. Call quality information can include such metrics as jitter and latency, as well as the number of packets sent, received, and lost.

AppManager for Call Data Analysis enables you to collect CDR data in a centralized repository. You use Knowledge Scripts to create and schedule reports that analyze the telephony traffic represented by the gathered data.

AppManager for Call Data Analysis supports CDRs produced by the following sources:

- Cisco Unified Communications Manager (once known as Cisco CallManager), which stores CDRs in a database called the Publisher
- Cisco H.323 gateways
- Cisco Unified Communications Manager Express routers

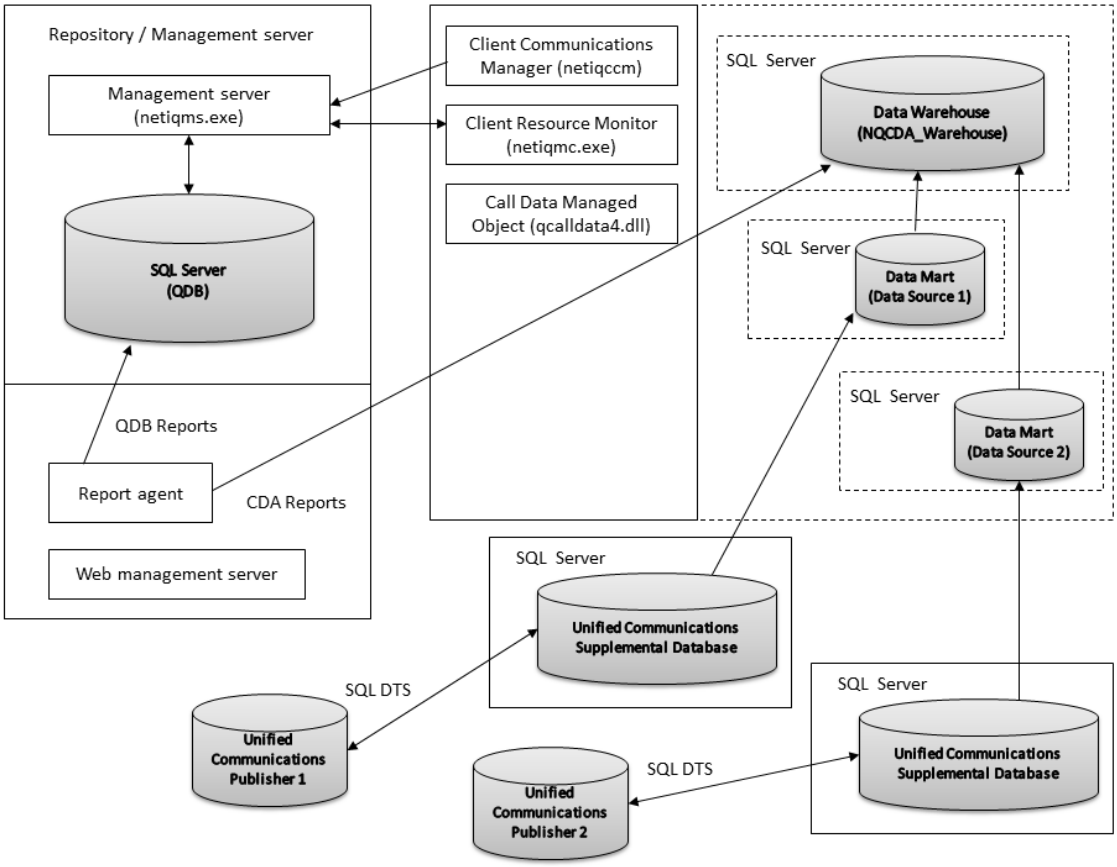
1.2 Module Architecture

The Call Data Analysis module uses a SQL Server database called the *Data Warehouse*, which is called `NQCDA_Warehouse` by default. The Data Warehouse provides the central view of the collected data and has links to the Data Mart databases. Running the Discovery_CallDataAnalysis Knowledge Script creates the Data Warehouse. For more information about running the Discovery script, see Section 2.7, “Discovering Call Data Analysis Resources,” on page 21.

A *Data Source*, such as a Cisco Unified Communications Manager Publisher, generates the raw call data records (CDRs). Each time you add a Data Source, Call Data Analysis creates a corresponding Data Mart database. A *Data Mart* is a SQL Server database, and it can reside on the same computer as the Data Warehouse or on its own computer. The Data Mart holds all of the configuration and CDR information it retrieves from the Data Source. A one-to-one correspondence exists between the Data Mart and the source from which it collects data. The data collection occurs according to a schedule you set when you run a CallData_AddDataSource Knowledge Script.

Data is collected from the Data Source by a SQL agent job running on the Data Mart computer. The SQL job makes use of SQL Server Integration Services (SSIS) to extract the configuration and call detail information from the Data Source and load it into the Data Mart database. All processing of the data, such as determining the call type, is performed on the Data Mart computer, and does not affect your Data Source.

The following diagram presents a sample deployment of the Call Data Analysis module, using a pair of Cisco Unified Communications Manager Publishers as Data Sources and a pair of Unified Communications supplemental databases for processing the CDRs:



When the Data Mart is on a separate computer, that computer must have a supported version of SQL Server installed; however, it does not need to have the NetIQ AppManager agent or the AppManager for Call Data Analysis module installed.

You can have multiple Data Warehouses, in which each provides a view into its own set of Data Sources. If you have multiple Data Warehouses, install the AppManager for Call Data Analysis module on each Data Warehouse computer.

AppManager for Call Data Analysis provides a variety of reports for viewing the collected data. When you run a CallData Report Knowledge Script, the Report agent retrieves the data from the Data Warehouse, rather than from the AppManager repository, which is the norm for other AppManager modules. The Data Warehouse database contains SQL stored procedures used by the CallData Report scripts and provides a consolidated picture of the data using SQL views that point to the Data Mart databases.

Because CallData Report scripts use Windows authentication to access the Data Warehouse, the AppManager Client Resource Monitor (`netiqmc`) service on the Report agent computer must be running under an account that has permissions on the Data Warehouse.

1.3 Understanding Data from Cisco Unified Communications Manager

AppManager for Call Data Analysis analyzes call activity for Cisco Unified Communications Manager version 5.x or later by means of the CiscoCM supplemental database. Cisco Unified Communications Manager 4.x does not use a supplemental database to process the CDRs.

The supplemental database is a SQL Server database you create as part of the monitoring functions for the AppManager for Cisco Unified Communications Manager module. AppManager for Call Data Analysis was designed to analyze the CDRs pushed to a supplemental database.

The Unified Communications Manager primary server pushes CDRs, which are flat files, to a folder on the AppManager for Cisco Unified Communications Manager (CiscoCM) proxy computer. From there, the CiscoCM_CDR_RetrieveCallRecords Knowledge Script retrieves the CDRs and saves them to tables in the Cisco CM supplemental database, from which Call Data Analysis can retrieve the data you requested. You can have more than one supplemental database on the CiscoCM proxy computer, and a one-to-one correspondence exists between each supplemental database and each CiscoCM publisher.

The AppManager for Call Data Analysis module requires the Unified Communications Manager configuration information retrieved by the CiscoCM_CDR_RetrieveConfigData Knowledge Script and stored in the supplemental database.

Run the CiscoCM_CDR_RetrieveConfigData and CiscoCM_CDR_RetrieveCallRecords scripts at least once before attempting to analyze data with the Call Data Analysis module. The supplemental database is not populated until you run these two scripts.

By default, the CiscoCM_CDR_RetrieveConfigData Knowledge Script runs daily at 1 AM, and the CiscoCM_CDR_RetrieveCallRecords Knowledge Script populates the supplemental database every five minutes. However, Call Data Analysis needs the configuration data before it can begin analyzing the CDR data in the supplemental database. Consider the schedule for the CiscoCM_CDR_RetrieveConfigData Knowledge Script when you set the *Configure Data Source Schedule* parameters for the AddDataSource_CiscoCM Knowledge Script.

1.4 Understanding Data from H.323 Gateways

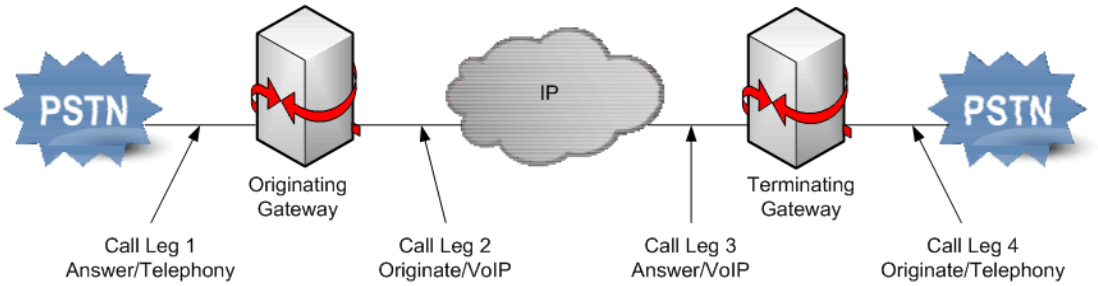
The CDRs from Cisco H.323 gateways are sent to a RADIUS server. RADIUS (Remote Authentication Dial-In User Services) is a standard security protocol based on clients and servers that provide authentication, authorization, and accounting (aaa) services.

AppManager employs Microsoft Internet Authentication Service (IAS) as a RADIUS server. The IAS/RADIUS server collects the call detail stop records the gateways send for each leg of a call. For more information, see Section 2.8.1, “Internet Authentication Service (IAS),” on page 22.

If you are using Windows Server 2008 or Windows Server 2008 R2 and want to set up a Cisco router as a RADIUS client, you first have to configure Network Policy Server (NPS). For more information, see Section 2.8.2, “Network Policy Server (NPS),” on page 23.

A *call leg* is a logical connection between the gateway and either a telephony endpoint (PSTN) or an IP endpoint. The call legs are always labeled from the point of view of the gateway. Each call processed through a gateway consists of one or more call legs.

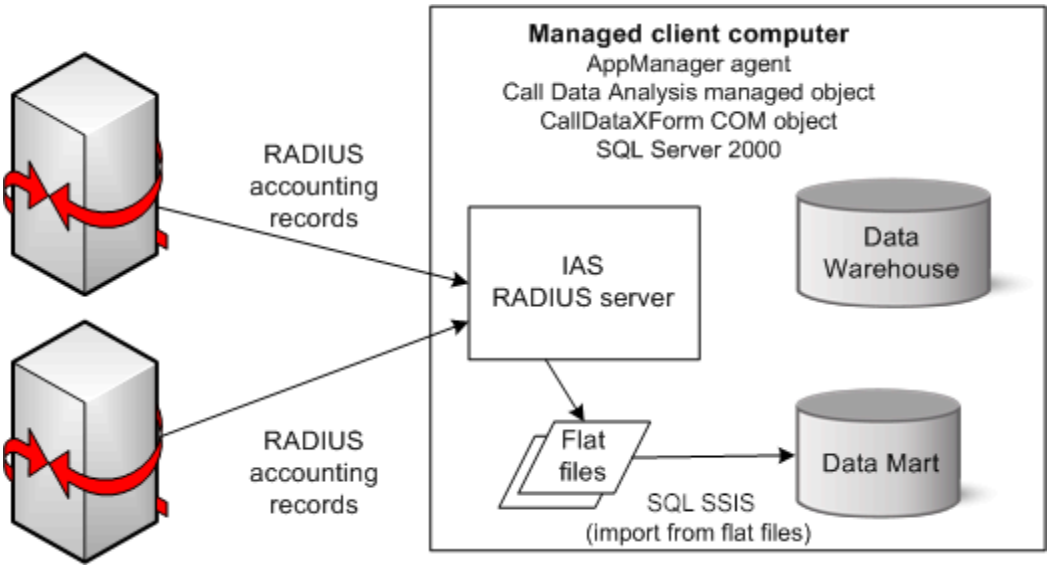
As illustrated in the following diagram, a call comes in from the PSTN to the originating gateway, which then initiates a connection into the IP network. A call from the IP network comes into the terminating gateway, which then initiates a connection to the PSTN.



The following summarize the call legs in a standard call:

- A call from the PSTN to an IP phone normally has two call legs: Answer/Telephony and Originate/VoIP, which are call legs 1 and 2 in the diagram.
- A call from an IP phone to the PSTN normally has two call legs: Answer/VoIP and Originate/Telephony, which are call legs 3 and 4 in the diagram.
- A call that traverses the IP network in a toll-bypass scenario (as shown above) has four call legs.
- Gateways generate CDRs for each call leg, resulting in multiple records per call.
- Gateways generate start records at the beginning of a call and stop records when the call is terminated. AppManager uses only stop records; it does not use data from calls that are in progress.
- VoIP quality statistics are available only from the VoIP legs of a call.

Call leg records are sent from the gateways to the RADIUS server (IAS), which in turn writes them to log files. AppManager employs SQL SSIS to import the data from the files into the Data Mart. As part of this process, AppManager correlates all the legs belonging to the same call to produce a single "flattened" call detail record for each call.



When the Data Mart is on a separate computer, that computer does not need to have the AppManager agent or the Call Data Analysis managed object installed. However, it must have SQL Server and the `CallDataXForm COM` object installed, as well as Windows Server 2003 and IAS.

To install the `CallDataXForm COM` object, copy and then run `CDA_StandaloneDatamartSetup.exe` on the Data Mart computer. You can find `CDA_StandaloneDatamartSetup.exe` in the `AppManager\bin\CDAfiles` folder on the Data Warehouse computer.

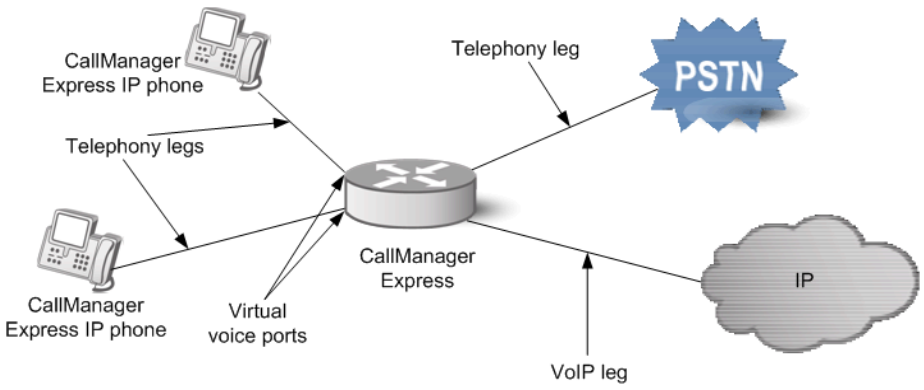
1.5 Understanding Data from Unified Communications Manager Express Routers

The process of retrieving CDRs from Cisco Unified Communications Manager Express routers is similar to that of retrieving CDRs from Cisco H.323 gateways, with several distinct differences.

Communications Manager Express routers generate call legs for calls to and from Cisco IP phones. Communications Manager Express considers these IP phones (or ephones) to be virtual voice ports (EFXS) and generates telephony call legs for them.

CDRs *do not* contain VoIP quality statistics for local calls between two Communications Manager Express phones or for calls incoming/outgoing between the PSTN and a Communications Manager Express phone.

CDRs *do* contain VoIP quality statistics for the call leg between the gateway and the remote IP media for incoming/outgoing calls between a Communications Manager Express phone and the IP cloud.



AppManager enables additional reporting on calls from Communications Manager Express phones by using configuration information retrieved directly from the Communications Manager Express router. The CCME_GetConfig Knowledge Script retrieves the configuration information using the Communications Manager Express AXL interface. The script then stores the information in tables in the Data Mart.

AppManager uses the configuration information when processing new CDRs from Communications Manager Express to provide correlation between the Communications Manager Express virtual voice port and the phone's device name and IP address. This same configuration information is required by the Report_CCME_StatsByEPhone and Report_UnusedPhones Knowledge Scripts. In fact, you must run CCME_GetConfig before you can run the StatsByEPhone report and before using the UnusedPhones report to summarize unused Communications Manager Express phones.

1.6 Counting AppManager Licenses

AppManager for Call Data Analysis consumes one license per phone, as reported by the AppManager for Cisco Unified Communications Manager module and the AppManager for Cisco Unified Communications Manager Express module.

2 Installing AppManager for Call Data Analysis

This chapter lists system requirements and describes how to install AppManager for Call Data Analysis.

This chapter assumes you have AppManager installed. For more information about installing AppManager or about AppManager system requirements, see the *Installation Guide for AppManager*, which is available on the AppManager Documentation page.

2.1 System Requirements

For the latest information about supported software versions and the availability of module updates, visit the AppManager Supported Products page. Unless noted otherwise, this module supports all updates, hotfixes, and service packs for the releases listed below.

AppManager for Call Data Analysis has the following system requirements:

Software/Hardware	Version
NetIQ AppManager installed on the AppManager repository (QDB) computer, on all console computers, and on all agent computers	8.0.3, 8.2, 9.1, 9.2, 9.5, or later One of the following AppManager agents are required: ◆ AppManager agent 7.0.4 with hotfix 72616 or later ◆ AppManager agent 8.0.3, 8.2, 9.1, 9.2, 9.5, or later
Microsoft operating system installed on the AppManager repository (QDB) computer, on all console computers, and on all AppManager agents	One of the following: ◆ Windows 10 (32-bit or 64-bit) ◆ Windows Server 2016 ◆ Windows Server 2012 R2 ◆ Windows Server 2012 ◆ Windows Server 2008 R2 ◆ Windows Server 2008 (32-bit or 64-bit) ◆ Windows 7 (32-bit or 64-bit)

Software/Hardware	Version
Microsoft SQL Server installed on the Data Warehouse and Data Mart computers	One of the following: ◆ SQL Server 2016, with Microsoft SQL Server Integration Services. ◆ SQL Server 2014, with Microsoft SQL Server Integration Services. ◆ SQL Server 2012, with Microsoft SQL Server Integration Services. ◆ SQL Server 2008 R2, with Microsoft SQL Server Integration Services. **Notes** ◆ The Extraction, Transformation, and Loading (ETL) process requires a minimum disk space of 1 GB on the drive where the Data Mart is located. ◆ This module supports named instances of SQL Server as well as cluster nodes.
NetIQ AppManager for Cisco Unified Communications Manager	Required for monitoring CDRs produced by Cisco Unified Communications Manager version 5.x through 8.6
Microsoft .NET Framework installed on the agent computers	4.0 or later
SQL Client Tools SDK on the agent computers	The version of SQL Client Tools SDK on the agent computers must be same as the corresponding SQL Servers hosting the Data Mart databases. **NOTE:** You can install Client Tools SDK from the Microsoft SQL Server iso file by running the Setup wizard.
Microsoft SQL Server Native Client 11.0 **(for TLS 1.2 support)**	11.3.6538.0 or later **NOTE:** The SQL Server Native client can be installed from this Microsoft download link.

NOTE: If you want TLS 1.2 support and are running AppManager 9.1 or 9.2, then you are required to perform some additional steps. To know about the steps, see the article.

2.2 Supported Data Sources

AppManager for Call Data Analysis supports CDRs produced by several Data Sources:

- Cisco Unified Communications Manager versions 8.6, 8.5, 8.0, 7.1(2), 7.0, 6.x, 5.x, 4.x
- Cisco H.323 gateways (using IOS aaa accounting and Microsoft IAS RADIUS server)
- Cisco Unified Communications Manager Express routers versions 4.x, and 3.x (using IOS aaa accounting and Microsoft IAS RADIUS server)

Although AppManager provides consolidated enterprise-level views of CDR data from different Data Sources, the CDRs themselves and the way they are produced vary by Data Source.

2.3 Installing the Module

Run the module installer only once on any computer. The module installer automatically identifies and updates all relevant AppManager components on a computer.

Access the `AM70-CallDataAnalysis-7.x.x.0.msi` module installer from the `AM70_CallDataAnalysis_7.x.x.0.exe` self-extracting installation package on the AppManager Module Upgrades & Trials page.

For Windows environments where User Account Control (UAC) is enabled, install the module using an account with administrative privileges. Use one of the following methods:

- Log in to the server using the account named Administrator. Then run `AM70-CallDataAnalysis_7.x.x.0.msi` from a command prompt or by double-clicking it.
- Log in to the server as a user with administrative privileges and run `CallDataAnalysis.x.x.0.msi` as an administrator from a command prompt. To open a command-prompt window at the administrative level, right-click a command-prompt icon or a Windows menu item and select `Run as administrator`.

You can install the Knowledge Scripts into local or remote AppManager repositories (QDBs). Install these components only once per QDB.

The module installer now installs Knowledge Scripts for each module directly into the QDB instead of to the `\AppManager\qdb\kp` folder as in previous releases of AppManager.

2.3.1 Manually Installing the Module

You can install the module manually, or you can use Control Center to deploy the module on a remote computer where an agent is installed. For more information, see Section 2.4, “Deploying the Module with Control Center,” on page 19. However, if you do use Control Center to deploy the module, Control Center only installs the *agent* components of the module. The module installer installs the QDB and console components as well as the agent components on the agent computer.

To install the module manually:

1. Double-click the module installer `.msi` file.
2. Accept the license agreement.
3. Review the results of the pre-installation check. You can expect one of the following three scenarios:
   - *No AppManager agent is present*. In this scenario, the pre-installation check fails, and the installer does not install agent components.
   - *An AppManager agent is present, but some other prerequisite fails*. In this scenario, the default is to not install agent components because of one or more missing prerequisites. However, you can override the default by selecting **Install agent component locally**. A missing application server for this particular module often causes this scenario. For example, installing the AppManager for Microsoft SharePoint module requires the presence of a Microsoft SharePoint server on the selected computer.
   - *All prerequisites are met*. In this scenario, the installer will install the agent components.
4. To install the Knowledge Scripts into the QDB:
   - **4a** Select **Install Knowledge Scripts** to install the repository components, including the Knowledge Scripts, object types, and SQL stored procedures.
   - **4b** Specify the SQL Server name of the server hosting the QDB, as well as the case-sensitive QDB name.

5 ***If you use Control Center 7.x,*** run the module installer for each QDB attached to Control Center.

6 ***If you use Control Center 8.x or later,*** run the module installer only for the primary QDB, and Control Center will automatically replicate this module to secondary QDBs.

7 Run the module installer on all console computers to install the Help and console extensions.

8 ***If the Data Mart is not located on the Data Warehouse computer***, run `CDA_StandaloneDatamartSetup.exe` on the H.323 RADIUS Data Mart computer. You can find this file in `\Program Files\NetIQ\AppManager\bin\CDAFiles`. Do not take this step if the Data Mart and Data Warehouse are on the same computer or if you will not use an H.323 RADIUS Data Source.

9 ***If you have not discovered Call Data Analysis resources***, run the Discovery_CallDataAnalysis Knowledge Script on the Data Warehouse computer. For more information, see Section 2.7, “Discovering Call Data Analysis Resources,” on page 21.

NOTE: If you are upgrading from version 7.4, you will need to perform additional steps to ensure that the Data Warehouse is properly configured for this version of the module, 7.5. For more information, see Section 2.3.2, “Upgrading from Version 7.4 of the Module,” on page 18.

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10 Run the Discovery_ReportAgent Knowledge Script to display all of the Report Knowledge Scripts on the CallData tab.

11 ***If you are using Cisco Unified Communications Manager 4.x as a Data Source,*** ensure AppManager can connect to it. For more information, see Section 2.11, “Connecting to a Unified Communications Manager 4.x Data Source,” on page 28.

12 ***If you are using Cisco H.323 gateways as Data Sources***, configure Microsoft Internet Authorization Service (IAS) on each Data Mart computer. For more information, see Section 2.8.1, “Internet Authentication Service (IAS),” on page 22.

13 For all Data Sources, ensure proper permissions have been set to allow AppManager to access the data you want to collect. For more information, see Section 2.8, “Configuring Required Services,” on page 22.

14 Run AddDataSource_CiscoCallMgr, AddDataSource_H323RADIUS, or AddDataSource_CiscoCM to enable data collection.

15 To get the updates provided in this release, upgrade any running Knowledge Script jobs. For more information, see Section 2.6, “Configuring Security Manager Settings,” on page 20.

After the installation has completed, the `CallDataAnalysis_Install.log` file, located in the `\NetIQ\Temp\NetIQ_Debug\`<*ServerName*> folder, lists any problems that occurred.

2.3.2 Upgrading from Version 7.4 of the Module

If you are upgrading from the previous release, version 7.4, you will need to perform additional steps to ensure that the Data Warehouse is properly configured for this version of the module, 7.5.

To upgrade from version 7.4 to version 7.5:

1 Start the upgrade by double-clicking the `AM70-CallDataAnalysis-7.x.x.0.msi` module installer file. For more information, see Section 2.3, “Installing the Module,” on page 17.

2 Propagate Knowledge Script changes. For more information, see Section 2.9.2, “Propagating Knowledge Script Changes,” on page 26.

3 Run the Discovery_CallDataAnalysis Knowledge Script again on all Call Data Analysis agents, leaving the *Database name* parameter set to the default of `NQCDA_Warehouse`. For more information, see Section 2.7, “Discovering Call Data Analysis Resources,” on page 21.

4 You are now ready to run the AppManager for Call Data Analysis Knowledge Scripts and reports for this release.

2.4 Deploying the Module with Control Center

You can use Control Center to deploy the module on a remote computer where an agent is installed. This topic briefly describes the steps involved in deploying a module and provides instructions for checking in the module installation package. For more information, see the *Control Center User Guide for AppManager*, which is available on the AppManager Documentation page.

2.4.1 Deployment Overview

This section describes the tasks required to deploy the module on an agent computer.

To deploy the module on an agent computer:

1 Verify the default deployment credentials.

2 Check in an installation package.

3 Configure an email address to receive notification of a deployment.

4 Create a deployment rule or modify an out-of-the-box deployment rule.

5 Approve the deployment task.

6 View the results.

2.4.2 Checking In the Installation Package

You must check in the installation package, `AM70-CallDataAnalysis-7.x.x.0.xml`, before you can deploy the module on an agent computer.

To check in a module installation package:

1 Log on to Control Center using an account that is a member of a user group with deployment permissions.

2 Navigate to the Deployment tab (for AppManager 8.x) or Administration tab (for AppManager 7.x).

3 In the Deployment folder, select **Packages**.

4 On the Tasks pane, click **Check in Deployment Packages** (for AppManager 8.x) or **Check in Packages** (for AppManager 7.x).

5 Navigate to the folder where you saved `AM70-CallDataAnalysis-7.x.x.0.xml` and select the file.

6 Click **Open**. The Deployment Package Check in Status dialog box displays the status of the package check in.

2.5 Silently Installing the Module

To silently (without user intervention) install a module using the default settings, run the following command from the folder in which you saved the module installer:

```
msiexec.exe /i "AM70-CallDataAnalysis-7.x.x.0.msi" /qn
```

where *x.x* is the actual version number of the module installer.

To create a log file that describes the operations of the module installer, add the following flag to the command noted above:

```
/L* "AM70-CallDataAnalysis-7.x.x.0.msi.log"
```

The log file is created in the folder in which you saved the module installer.

2.6 Configuring Security Manager Settings

To avoid an error message when running the Discovery_CallDataAnalysis script or the CallData_AddDataSource scripts, use AppManager Security Manager to store the SQL user name and password information for each SQL Server hosting a Call Data Analysis agent. You also need to create Security Manager entries for each SQL Server you are using, including the Data Source, Data Warehouse, and Data Mart.

Security Manager entries are only required if you add a name in the *SQL username* parameter in the Discovery_CallDataAnalysis script and the CallData_AddDataSource scripts. If you leave the *SQL username* parameter blank, Call Data Analysis will use Windows authorization, and you do not need to create Security Manager entries.

If the Data Warehouse and Data Mart are located in the *same* SQL Server instance, the Call Data Analysis agent can use the same SQL user name from the Security Manager settings to access both databases.

If the Data Warehouse, Data Mart, and Data Sources are on *different* SQL Servers, create separate Security Manager entries for the following:

- The Data Warehouse
- Every Data Mart, each of which may be on a different server
- Every Data Source, each of which may be on a different server, and that server does *not* need to be the same server as the Data Mart server

On the Custom tab in Security Manager, complete the following fields for each SQL Server you are using for this module:

Field	Description
Label	Specify the SQL Server name and the instance name of the SQL Server hosting the Call Data Analysis agent or the Data Warehouse, the Data Mart, or the Data Source database. sql$<*sql server virtual server or cluster name*> For example, type `sql$HOUSERVER22\CLUSTER`
Sub-Label	Specify the SQL Server username.
Value 1	Specify the SQL Server password.

Field	Description
Value 2	Leave this field blank.
Value 3	Leave this field blank.
Extended application support	Select this option to encrypt the new password in Security Manager. This option is required.

2.7 Discovering Call Data Analysis Resources

Use the Discovery_CallDataAnalysis Knowledge Script to identify Call Data Analysis resources for reporting on call detail records (CDRs).

This Knowledge Script creates the SQL Data Warehouse if one does not exist, or updates the Data Warehouse and associated security parameters if the warehouse has previously been created. Because this script accesses the Data Warehouse, you can supply a SQL username to use SQL authentication, or leave the parameter blank to use Windows authentication. The Data Warehouse provides the central view of the collected data, and has links to the Data Mart databases.

This script always raises an event if discovery fails. You can also enable events to notify you if discovery succeeds or if it is partially successful. By default, this script runs once.

Set the following parameters as needed:

Parameter	How to Set It
SQL Data Warehouse Access	
Data Warehouse SQL Server and instance name (leave blank for local server default instance)	Specify the SQL Server name and the instance name of the SQL Server hosting the Data Warehouse. You can leave this parameter blank to use the local server default instance. If you want the Data Warehouse to be on the local computer, but in a named instance, specify the full name of the SQL server and the instance name, such as `HOUSERVER22\INST2008`. If you put in only the instance name (`INST2008` in the above example), it will be interpreted as being the SQL server name and the process will fail.
Database name	Specify the name of the database for the Data Warehouse. The default is NQCDA_Warehouse.
SQL username (leave blank for Windows authentication)	Specify the SQL username required for access to the Data Warehouse computer. Leave this field blank to use Windows authentication. **NOTE:** To use a specific SQL Server login account, use AppManager Security Manager to update the AppManager repository with the SQL Server logins you want to use.
Event Notification	
Raise event if discovery succeeds?	Select **Yes** to raise an event when discovery is successful. The default is unselected. This Knowledge Script always raises an event when discovery fails.
Event severity when discovery succeeds	Set the severity level, from 1 to 40, to reflect the importance of an event in which discovery succeeds. The default is 25.

Parameter	How to Set It
Raise event if discovery partially succeeds?	This Knowledge Script always raises an event when discovery fails. Select **Yes** to raise an event when discovery is partially successful. The default is Yes.
Event severity when discovery partially succeeds	Set the severity level, from 1 to 40, to reflect the importance of an event in which discovery partially succeeds. The default is 15.
Event severity when discovery fails	Set the severity level, from 1 to 40, to reflect the importance of an event in which discovery fails. The default is 5.

2.8 Configuring Required Services

Several services and functions of the Call Data Analysis module require special database permissions or configuration. Unless specified, all permission and configuration requirements apply to all Data Source types.

2.8.1 Internet Authentication Service (IAS)

If you are using Cisco H.323 gateways as Data Sources, configure Microsoft Internet Authentication Service (IAS) on each Data Mart computer. IAS is a Windows component that provides a RADIUS server, which AppManager uses to receive the RADIUS accounting records sent by a Cisco H.323 gateway.

If you are using Windows Server 2008 or Windows Server 2008 R2, see the following procedure about Network Policy Server (NPS), which replaces IAS for those operating systems.

To configure IAS on the Data Mart computer:

1. Ensure IAS is installed on the Data Mart computer.
2. Navigate to the Control Panel, double-click **Administrative Tools**, and then double-click **Internet Authentication Service**.
3. Right-click **Internet Authentication Service** and select **Properties**.
4. Click the **Ports** tab.

   Although RADIUS in general can provide authentication as well as accounting, AppManager is interested only in the accounting part for purposes of analyzing call data.

   By default, UDP ports 1813 and 1646 are specified. UDP port 1813 is the RADIUS standard, although many network access servers use port 1646. If you make a change, your list of ports must include the port configured on the network access server (gateway).
5. Click **OK**.
6. Right-click **RADIUS Clients** and select **New RADIUS Client**.
7. In the **Friendly name** field, type the client-friendly name of the RADIUS client (gateway) that will send accounting records to IAS.
8. In the **Client address** field, type the client's IP address or DNS name. The IP address must match the IP address the gateway will actually use when sending the RADIUS records. It may not be the same as the IP address you get by doing a DNS lookup on the gateway name.
9. Click **Next**.
10. In the **Client-Vendor** field, select the vendor of your RADIUS client: **RADIUS Standard** or **Cisco**. AppManager does not support the other client-vendor options.

11 In the **Shared secret** and **Confirm shared secret** fields, type the password that matches the RADIUS secret configured on the gateway.

NOTE: Do not select **Request must contain the Message Authenticator attribute.**

---

12 Click **Finish**.

13 Repeat steps 5-12 to add a client for each gateway that will send RADIUS records.

14 Select **Remote Access Logging**. In the right pane, right-click **Local File**, and select **Properties**.

15 On the Settings tab, select **Accounting requests**.

16 On the Log File tab, in the **Directory** field, type or **Browse** to the log output folder.

17 Select **IAS** as the log format type.

NOTE: You must use **IAS** format because it provides full access to the Vendor-Specific Attributes contained in the RADIUS record. AppManager does not support logs files written with the **Database compatible** file format.

---

18 Select **Daily** as the new log time period.

19 Click **OK**.

2.8.2 Network Policy Server (NPS)

If you are using Windows Server 2008 or Windows Server 2008 R2 and want to set up a Cisco router as a RADIUS client, you first have to configure Network Policy Server (NPS). NPS is a replacement for Internet Authentication Service (IAS), which was available in Windows Server 2003.

To configure NPS on the Data Mart computer:

1 On the Data Mart computer, open Server Manager and click **Add Roles**.

2 On the Select Server Roles page of the Add Roles wizard, select **Network Policy and Access Services** and click **Next**.

3 On the Select Role Services page of the Add Roles wizard, select **Network Policy Server** and click **Next**.

4 On the Confirmation page of the Add Roles wizard, click **Install**.

5 After the role is installed, navigate to the Control Panel.

6 Double-click **Administrative Tools**, and then double-click **Network Policy Server**.

7 Right-click **NPS** and select **Properties**.

8 Click the **Ports** tab. Although RADIUS can provide authentication as well as accounting, AppManager is interested only in the accounting part for purposes of analyzing call data.

9 Specify a port number as needed. By default, UDP ports 1813 and 1646 are specified for accounting. UDP port 1813 is the RADIUS standard, although many network access servers use port 1646. If you make a change, your list of ports must include the port configured on the network access server (gateway).

10 Click **OK**.

11 Right-click **RADIUS Clients** and select **New RADIUS Client**.

12 In the **Friendly name** field, type the client-friendly name of the RADIUS client (gateway) that will send accounting records to NAS.

13 In the **Address** field, type the client IP address or DNS name. The IP address must match the IP address the gateway will actually use when sending the RADIUS records. It may not be the same as the IP address you get by doing a DNS lookup on the gateway name.

14 In the **Vendor name** field, select the vendor of your RADIUS client: **RADIUS Standard** or **Cisco**. AppManager does not support any other client-vendor options.

15 In the **Shared secret** and **Confirm shared secret** fields, type the password that matches the RADIUS secret configured on the gateway.

NOTE

- Do not select **Access-Request messages must contain the Message Authenticator attribute**.
- Do not select **Radius client is NAP-capable.**

16 Click **Finish**.

17 Repeat steps 7-16 to add a client for each gateway that will send RADIUS records.

18 Select **Accounting**. In the right pane, right-click **Configure Local File Logging**.

19 On the **Log File** tab, specify the location of the log output folder in the **Directory** field.

20 Select **IAS** as the log format type.

21 Select **Daily** as the new log time period.

22 Click **OK**.

23 Right-click **NPS** and select **Start NPS service**.

2.8.3 IOS aaa Accounting

In order for Cisco H.323 gateways to send RADIUS records, enable IOS aaa accounting on the gateway's router. For details, see your Cisco documentation.

The following IOS commands are relevant to AppManager for Call Data Analysis:

- `aaa new-model`; initiates the AAA script
- `aaa accounting connection h323 stop-only radius`
- `gw-accounting aaa`; enables gateway-specific accounting
- `acct-template callhistory-detail` (under gw-accounting-aaa); sends all voice Vendor-Specific Attributes (VSAs) for accounting. By default, all voice VSAs *are not sent*, so RADIUS records will not include such statistics as lost-packets and late-packets unless you issue this IOS command.
- `radius-server host N.N.N.N auth-port 1645 acct-port 1813`
- `radius-server key <XXX>`
- `radius-server vsa send accounting`

2.8.4 Client Resource Monitor Service

The AppManager Client Resource Monitor service (`netiqmc`) has different authentication requirements for the Data Warehouse computer and the Report agent computer.

- The `netiqmc` service on the Data Warehouse computer accesses the Data Warehouse and the Data Marts. It will use either Windows authentication or SQL authentication, depending on what you choose in the CallData_AddDataSource and Discovery_CallDataAnalysis Knowledge Scripts.

  If the Data Warehouse and Data Mart databases are located on the same computer and you choose Windows authentication, the service may run as `Local System`. If the Data Warehouse and Data Mart databases are located on different computers and you choose Windows authentication, the `netiqmc` service must be running as an account that has administrative privileges for both the local SQL Server and the SQL Server on the remote Data Mart computer.
- The `netiqmc` service on the Report agent computer uses Windows authentication to access SQL Server on the Data Warehouse computer. The `netiqmc` service should be running under a user account that has access to the `NQCDA_Warehouse` database on the Data Warehouse computer.

2.8.5 SQLSERVERAGENT Service

The `SQLSERVERAGENT` service on the Data Mart computer accesses the Data Warehouse and the Data Source. You can specify one type of authentication for accessing the Data Warehouse and a different type of authentication for accessing the Data Source. You specify which authentication to use in the AddDataSource_CiscoCallMgr and AddDataSource_CiscoCM Knowledge Scripts. Use AppManager Security Manager to update the authentication information.

The `SQLSERVERAGENT` service should be running under a user account that has access to the Data Warehouse database (`NQCDA_Warehouse`). Do not configure the service under the Local System account unless `NQCDA_Warehouse` and the Data Mart are on the same computer.

Cisco Unified Communications Manager version 4.x does not permit connections to SQL Server using SQL authentication. You must connect using Windows authentication. For more information, see Section 2.11, “Connecting to a Unified Communications Manager 4.x Data Source,” on page 28.

The `SQLSERVERAGENT` authentication requirement applies only to environments using Cisco Unified Communications Manager as a Data Source.

2.9 Upgrading Knowledge Script Jobs

This release of AppManager for Call Data Analysis may contain updated Knowledge Scripts. You can push the changes for updated scripts to running Knowledge Script jobs in one of the following ways:

- Use the AMAdmin_UpgradeJobs Knowledge Script.
- Use the Properties Propagation feature.

2.9.1 Running AMAdmin_UpgradeJobs

The AMAdmin_UpgradeJobs Knowledge Script can push changes to running Knowledge Script jobs. Your AppManager repository (QDB) must be at version 7.0 or later. In addition, the repository computer must have hotfix 72040 installed, or the most recent AppManager Repository hotfix. To download the hotfix, see the AppManager Suite Hotfixes Web page.

Upgrading jobs to use the most recent script version allows the jobs to take advantage of the latest script logic while maintaining existing parameter values for the job.

For more information, see the Help for the AMAdmin_UpgradeJobs Knowledge Script.

2.9.2 Propagating Knowledge Script Changes

You can propagate script changes to jobs that are running and to Knowledge Script Groups, including recommended Knowledge Script Groups and renamed Knowledge Scripts.

Before propagating script changes, verify that the script parameters are set to your specifications. Customized script parameters may have reverted to default parameters during the installation of the module. New parameters may need to be set appropriately for your environment or application.

You can choose to propagate only properties (specified in the Schedule and Values tabs), only the script (which is the logic of the Knowledge Script), or both. Unless you know specifically that changes affect only the script logic, you should propagate both properties and the script.

For more information about propagating Knowledge Script changes, see the “Running Monitoring Jobs” chapter of the *Operator Console User Guide for AppManager*.

Propagating Changes to Ad Hoc Jobs

You can propagate the properties and the logic (script) of a Knowledge Script to ad hoc jobs started by that Knowledge Script. Corresponding jobs are stopped and restarted with the Knowledge Script changes.

To propagate changes to ad hoc Knowledge Script jobs:

1. In the Knowledge Script view, select the Knowledge Script for which you want to propagate changes.
2. Click **Properties propagation** > **Ad Hoc Jobs**.
3. Select the components of the Knowledge Script that you want to propagate to associated ad hoc jobs:

Select	To propagate
Script	The logic of the Knowledge Script.
Properties	Values from the Knowledge Script Schedule and Values tabs, such as schedule, monitoring values, actions, and advanced options.

Propagating Changes to Knowledge Script Groups

You can propagate the properties and logic (script) of a Knowledge Script to corresponding Knowledge Script Group members.

After you propagate script changes to Knowledge Script Group members, you can propagate the updated Knowledge Script Group members to associated running jobs. For more information, see "Propagating Changes to Ad Hoc Jobs" on page 26.

To propagate Knowledge Script changes to Knowledge Script Groups:

1. In the Knowledge Script view, select the Knowledge Script Group for which you want to propagate changes.
2. On the KS menu, select **Properties propagation** > **Ad Hoc Jobs**.
3. ***If you want to exclude a Knowledge Script member from properties propagation***, deselect that member from the list in the Properties Propagation dialog box.
4. Select the components of the Knowledge Script that you want to propagate to associated Knowledge Script Groups:

Select	To propagate
Script	The logic of the Knowledge Script.
Properties	Values from the Knowledge Script Schedule and Values tabs, including the schedule, actions, and Advanced properties.

5. Click **OK**. Any monitoring jobs started by a Knowledge Script Group member are restarted with the job properties of the Knowledge Script Group member.

2.10 Configuring a SQL Server on a cluster to create a Data Source and its associated Data Mart

If you want to run AddDataSource_CiscoCallMgr, AddDataSource_CiscoCM, or AddDataSource_H323RADIUS to create a corresponding Data Source and its Data Mart on a SQL Server on a cluster environment for the first time, then perform the following steps on the SQL Server before running the Knowledge Script:

1. Install the SQL Server Integration Services.
2. Go to the `DTS\Binn` folder in the SQL Server installation folder and locate the `MsDtsSrvr.ini.xml` file. For example:
   - On a SQL Server 2012 computer, the `MsDtsSrvr.ini.xml` file is located in `SQL_Server_installation_folder\110\DTS\Binn` folder.
   - On a SQL Server 2014 computer, the `MsDtsSrvr.ini.xml` file is located in `SQL_Server_installation_folder\120\DTS\Binn` folder.
   - On a SQL Server 2016 computer, the `MsDtsSrvr.ini.xml` file is located in `SQL_Server_installation_folder\130\DTS\Binn` folder.
3. Open the `MsDtsSrvr.ini.xml` file in a notepad and specify one of the following based on the scenario:
   - If the Data Mart Virtual SQL Server is a named instance, then specify the `servername\instance` within the `<ServerName></ServerName>` tag as follows:

```
<ServerName>virtual_sql_server\instance</ServerName>
```

The `instance` refers to the server instance on which the Data Mart is created.

- If the Data Mart Virtual SQL Server is a default instance, then specify the instance name within the `<ServerName></ServerName>` tag as follows:

```
<ServerName>virtual_sql_server</ServerName>
```

4. Restart the SQL Server Integration Services.

NOTE: This configuration need to be performed only once before running the Knowledge Script for the first time on a SQL Server on a cluster.

2.11 Connecting to a Unified Communications Manager 4.x Data Source

Cisco Unified Communications Manager version 4.x does not permit connections to SQL Server using SQL authentication. You must connect using Windows authentication.

Before running the AddDataSource_CiscoCallMgr Knowledge Script, take the following steps to grant the *minimum* permissions that allow the Call Data Analysis module to function properly.

2.11.1 Setting Permissions on the Communications Manager Server

Use the following steps to create a user account that has minimal permissions on the CallManager server. The new account can access only specific databases in SQL Server, and has read-only permission. It cannot change data and has no other authority on the CallManager server.

To set permissions on the CallManager server:

1. Navigate to the Control Panel, double-click **Administrative Tools**, and then double-click **Computer Management**.
2. Expand **Local Users and Groups** and click **Users**.
3. In the right pane, right-click anywhere and select **New User**.
4. Type the user name and password of the user for whom you are setting permissions.
5. Ensure the **User must change password at next logon** option is *not* selected.
6. Click **Create** and then click **Close**.
7. Start the Microsoft SQL Server Enterprise Manager application.
8. In the left pane, expand **Microsoft SQL Servers > SQL Server Group > [*local computer name*] (Windows NT) > Security > Logins**.
9. In the right pane, right-click anywhere and select **New Login**.
10. In the **Name** field, select the name you added in steps 3 - 6.
11. Click **Add** and then click **OK**.
12. In the New Login dialog box, select **Windows Authentication**.
13. On the Database Access tab, select the options in the Permit column for the following databases:
    - master

- CDR
- All databases that begin with “CCM”

For each database you permit, select **db_datareader** in the Permit in Database Role list.

14 Click **OK**.

2.11.2 Setting Permissions on the Data Mart Computer

Use the following steps to set SQL Server Agent logon permissions for the same user account you created in Section 2.11.1, “Setting Permissions on the Communications Manager Server,” on page 28. Ensure you secure the password so no unauthorized person can log onto the Data Mart computer using the new account.

To set permissions on the Data Mart computer:

1 In Control Panel, double-click **Administrative Tools**, and then double-click **Computer Management**.

2 Expand **Local Users and Groups** and click **Users**.

3 In the right pane, right-click anywhere and select **New User**.

4 Type the user name and password of the user for whom you are setting permissions.

5 Ensure the **User must change password at next logon** option is *not* selected.

6 Click **Create** and then click **Close**.

7 In the left pane of the Computer Management window, click **Groups**, and then double-click **Administrators** in the right pane.

8 Click **Add**, select the new user name from the list, and then click **OK**.

9 Navigate to the Control Panel, double-click **Administrative Tools**, and then double-click **Services**.

10 Double-click **SQLSERVERAGENT**, and then click the **Log On** tab in the Properties dialog box.

11 Select **This account** and then click **Browse**.

12 In the list of names, double-click the new user name.

13 Type the new password in the **Password** and **Confirm password** fields, and then click **OK**.

14 In the Services window, right-click **SQLSERVERAGENT** and select **Restart**.

2.12 Importing Data from Backup Call Records

You can import data from backup call records into the Call Data Analysis Data Mart. This is a two-step process that requires you to configure settings in AppManager for Cisco Unified Communications Manager (CiscoCM) as well as AppManager for Call Data Analysis.

To configure AppManager for Cisco CM so you can import backup call records:

1 In Control Center or Operator Console, stop any CiscoCM_CDR_RetrieveCallRecords jobs that are currently running and retrieving call records for Cisco Unified Communications Manager.

2 In SQL Server Management Studio, navigate to **Tables** under the relevant CiscoCM supplemental database and open the **Variables** table.

3 In the CDR_DaysToKeep row, set the value in the **iValue** column to the number of days prior to the current date from which you wish to import data. For example, if this value is 30, the CiscoCM_CDR_RetrieveCallRecords Knowledge Script will process all CDR and CMR data from 30 days ago, up to the present day.

4 Click in any other row to save the updated value in the database.

5 Copy the archived CDR and CMR files to the directory that is processed by the CiscoCM_CDR_RetrieveCallRecords job.

6 In Control Center or Operator Console, run the CiscoCM_CDR_RetrieveCallRecords job with the schedule set to **Run once**.

NOTE: If you are importing a large quantity of archived call data, you may need to increase the SQL timeout settings in the CiscoCM_CDR_RetrieveCallRecords script. The default timeout is set to 300 seconds (5 minutes), but this can be adjusted by editing the PRM_SQL_COMMAND_TIMEOUT parameter in the script. You can only edit this value in the code of the script itself. The timeout parameter is not visible in the Operator Console or Control Center.

---

7 After all records have been processed, reset the value of the **iValue** column in the CDR_DaysToKeep row of the Variables table back to its original value.

8 Restart the CiscoCM_CDR_RetrieveCallRecords jobs that you stopped in Step 1.

To configure AppManager for Call Data Analysis so you can import backup call records:

1 In SQL Server Management Studio, navigate to **Tables** under the relevant CDA Data Mart.and open the **Variables** table.

2 In the Initial Load row, set the value in the **iValue** column to the number of days prior to the current date from which you wish to import data.

3 Click in any other row to save the value in the database.

4 In the **Variables** table, navigate to the **Load Historical Data** row and set the value in the **sValue** column to **TRUE**.

5 Click in any other row to save the value in the database.

NOTE: This value is always reset to FALSE following the next execution of the ETL job, regardless of whether the ETL job is launched manually or at its next scheduled iteration.

---

6 In Control Center or Operator Console, run the CallData_ExecuteDataCollection Knowledge Script to start the ETL job that extracts and transfers data from the CiscoCM supplemental database to the Data Mart. Any data in the supplemental database that has previously been imported will not be re-imported, so you will not have duplicate data.

2.13 Filtering Data with the Data Warehouse Variables Table

This release includes a new Variables table in the Data Warehouse that is similar to the Variables table in the Data Marts. This table contains values that are used when generating Call Data Analysis reports to automatically filter out bad data. For example, a Mean Opinion Score (MOS) is only allowed to be in the range of 1 through 5. If you get a call record from Cisco with a MOS value of 100, you will probably want to ignore that data point in the report.

The default filter or cutoff values for the Variables table in the Data Warehouse are:

Filter Type	Minimum	Maximum
Packets (Sent/Received/Lost/Discarded)	0	10000000
Jitter	0	120000 ms
Latency	0	120000 ms
MOS (Average/Minimum/Maximum/Last)	1	5
R-value	1	100
Calculated Planning Impairment Factor (ICPIF)	0	60

The Variables table contains these rows:

- ReportFilter_Max_NumberPacketsSent
- ReportFilter_Max_NumberPacketsReceived
- ReportFilter_Max_NumberPacketsLost
- ReportFilter_Max_NumberPacketsDiscarded
- ReportFilter_Max_Jitter
- ReportFilter_Max_Latency
- ReportFilter_Max_MOS
- ReportFilter_Max_RValue
- ReportFilter_Max_ICPIF
- ReportFilter_Min_NumberPacketsSent
- ReportFilter_Min_NumberPacketsReceived
- ReportFilter_Min_NumberPacketsLost
- ReportFilter_Min_NumberPacketsDiscarded
- ReportFilter_Min_Jitter
- ReportFilter_Min_Latency
- ReportFilter_Min_MOS
- ReportFilter_Min_RValue
- ReportFilter_Min_ICPIF

You can modify any of these values as needed. Each of these values applies globally to all related reports. These values do not alter the data collected, and they are only used for reporting.

If you find that a report is not filtering data correctly, you can edit the cutoff values in the Variables table and run the report again, with no change to the original data from Cisco.

The reports affected by these changes are:

- Report_CallDetails
- Report_CallDetails_H323Gateway
- Report_CallJitter
- Report_CallJitterLoss

- Report_CallMOS
- Report_CallPacketLoss
- Report_CallQualityByPhone
- Report_GatewayDialPeers

2.14 Uninstalling the Call Data Analysis Module

Use the Add or Remove Programs option or the Programs and Features option from the Control Panel to uninstall this module.

When you uninstall Call Data Analysis, the following actions occur:

- For each Data Mart added to the agent's Data Warehouse, all SQL Server Agent jobs are disabled, but not removed.

  NOTE: The Data Mart databases are not deleted. If you no longer want these databases, you must remove them manually using SQL Server.

- The Call Data Analysis managed object is unregistered, and the `qCallDataa4.dll` is removed.
- The Call Data Analysis files and the folder in which they live (`C:\Program Files\NetIQ\AppManager\bin\CDAfiles`) are removed.
- All registry keys associated with the Call Data Analysis module are removed.

To uninstall the Call Data Analysis module:

1. Stop the NetIQ AppManager Client Resource Monitor (`netiqmc`) service.
2. From a command prompt, navigate to the `C:\Program files\NetIQ\AppManager\bin` folder.
3. Run `Uninstall_CallDataAnalysis.exe`.
4. Delete `Uninstall_CallDataAnalysis.exe` to completely remove all files associated with the module.

   NOTE: If you do not completely remove all files associated with the module, when you next try to install the module, your computer may determine the Call Data Analysis module is already installed and reinstall it, rather than proceeding with a fresh installation.

5. Restart the NetIQ AppManager Client Resource Monitor (`netiqmc`) service.

3 CallData Knowledge Scripts

AppManager provides the following Knowledge Scripts. From the Knowledge Script view of Control Center, you can access more information about any NetIQ-supported Knowledge Script by selecting it and clicking **Help**. In the Operator Console, click any Knowledge Script in the Knowledge Script pane and press **F1**.

Knowledge Script	What It Does
AddDataSource_CiscoCallMgr	Adds a Unified Communications Manager version 4.x Data Source and its associated Data Mart.
AddDataSource_CiscoCM	Adds a Unified Communications Manager Data Source (version 5 or later) and its associated Data Mart.
AddDataSource_H323RADIUS	Adds an H.323 RADIUS Data Source and its associated Data Mart.
CancelDataCollection	Cancels the current execution of data collection.
CCME_GetConfig	Retrieves configuration information from one or more Communications Manager Express devices.
ChangeReportingState	Changes the state of a Data Mart to be included in or excluded from reporting.
ChangeSchedule	Changes, deactivates, or reactivates the data collection schedule associated with a Data Source.
ConfigureCallTypes	Configures the rules by which the Call Data Analysis module classifies the types of calls each CDR contains.
DataCollectionStatus	Checks the status of the last data collection job performed against a Data Source.
ExecuteDataCollection	Performs on-demand data collection regardless of the collection schedule.
RemoveDataSource	Removes a Data Source and its associated Data Mart.
Report_CallAuthorization	Summarizes the number and duration of calls that used a Forced Authorization Code or a Client Matter Code.
Report_CallCompletionRate	Summarizes the completion rate of calls recorded with the selected Data Source. The call completion rate takes into account failed calls and abandoned calls.
Report_CallDetail_CiscoCallMgr	Summarizes details for calls that match criteria you specify for a selected Communications Manager. Call details can include time, calling number, and called number.
Report_CallDetail_H323Gateway	Summarizes details for calls that match criteria you specify for a selected gateway. Call details can include time, calling number, and called number.
Report_CallFailureCauses	Analyzes the failure causes for calls that match criteria you specify.
Report_CallJitter	Categorizes calls as having good, acceptable, or poor jitter based on thresholds you specify.

Knowledge Script	What It Does
Report_CallJitterLoss	Categorizes jitter loss percentages as good, acceptable, or poor based on thresholds you specify.
Report_CallMOS	Categorizes calls as having good, acceptable, or poor MOS or R-value based on thresholds you specify.
Report_CallPacketLoss	Categorizes calls as having good, acceptable, or poor packet loss based on thresholds you specify.
Report_CallQualityByPhone	Identifies the directory numbers that are experiencing problems with call quality, such as jitter and packet loss.
Report_CallSuccessRate	Summarizes the success rate of calls recorded with the selected Data Source. A successful call is determined by the call's disconnect cause code.
Report_CallTraffic	Summarizes call traffic based on call type.
Report_CallVolume	Summarizes the number and duration of calls recorded with the selected Data Source.
Report_CallVolumeEDS	Summarizes the number and duration of calls recorded with the selected Data Source.
Report_CCME_StatsByEPhone	Summarizes call statistics per Communications Manager Express ephone.
Report_CCME_Summary	Summarizes call statistics per Communications Manager Express gateway.
Report_FrequentlyCalledNumbers	Summarizes phone numbers called frequently during a specified time range.
Report_GatewayDialPeers	Summarizes call statistics for POTS and VoIP dial peers for the gateways included in the report.
Report_TrunkGroupByHour	Summarizes the trunk group or gateway volume by hour for the selected Communications Manager cluster or H.323 RADIUS Data Source.
Report_UnusedPhones	Creates a list of unused phones based on phones registered to the selected Data Source.

3.1 AddDataSource_CiscoCallMgr

Use this Knowledge Script to add a Cisco Unified Communications Manager version 4.x Data Source. With this script, you configure the Data Source and its collection schedule, the associated Data Mart, and access to the Data Warehouse. This script raises an event if a Data Source is added successfully, if the Data Mart server is inaccessible, if warnings are raised during an attempt to add a Data Source, and if a Data Source is not added.

This script creates the Data Mart, which is the container for all configuration and CDR information it gathers from the Data Source according to a schedule you determine.

AppManager needs to wait for the Communications Manager Publisher to receive the CDRs for completed calls from the Subscribers and push them into the CDR database. This buffer time is one hour. Therefore, after a call completes, you need to wait a minimum of one hour before the call is available for collection.

NOTE: After you run AddDataSource_CiscoCallMgr, press **F5** to refresh AppManager and display the other Knowledge Scripts available in the AppManager for Call Data Analysis module.

3.1.1 Prerequisite

Set Windows authentication permissions on the Communications Manager server and the Data Mart computer.

3.1.2 Resource Object

Call Data server

3.1.3 Default Schedule

By default, this script runs once.

3.1.4 Setting Parameter Values

Set the following parameters as needed:

Parameter	How to Set It
Configure Data Source	
Server name	Specify the computer name of the Communications Manager Publisher that will be the source of the CDR data.
SQL username (blank for Windows authentication)	Specify the SQL username required to access the Communications Manager Publisher. Leave this field blank to use Windows authentication.
SQL password	Specify the SQL password associated with the username you entered in the previous parameter.
Configure Data Source Schedule	
Data source schedule type	Select the frequency with which you want the Data Mart to collect data from the Data Source: **Daily** or **Hourly**. The default is Daily.
Daily start time - Run daily at	If you selected **Daily** above, select the time of day at which you want data collected. Select from a list of hours based on a 24-hour clock. For instance, select 0100 for 1:00 AM. or select 1300 for 1:00 PM. The default is 0400. **Notes** ◆ No matter what start time you select, AppManager needs to wait for the Communications Publisher to receive the CDRs for completed calls from the Subscribers and populate them into the CDR database. This buffer time is 1 hour. Therefore, after a call completes, you will need to wait a minimum of 1 hour before the call is available for collection. For instance, if you select 0400, data is collected up through 0300 to ensure no data is missed if the Communications Manager database is behind in writing its CDRs. ◆ If you have multiple Data Sources, you may want to stagger your data collection times in order to balance the load on the Data Warehouse.

Parameter	How to Set It
Hourly time interval - Run every n hours	If you selected **Hourly** above, select the interval at which you want data collected, such as every 2 hours or every 8 hours. The default is 12 hours. **Notes** ◆ No matter what start time you select, AppManager needs to wait for the Communications Manager Publisher to receive the CDRs for completed calls from the Subscribers and populate them into the CDR database. This buffer time is 1 hour. Therefore, after a call completes, you will need to wait a minimum of 1 hour before the call is available for collection. For instance, perhaps you select every 2 hours, and the script collects data at 2 PM, 4 PM, and 6 PM. At 2 PM, data is gathered from 11 AM to 1 PM; at 4 PM, data is gathered from 1 PM to 3 PM; and at 6 PM, data is gathered from 3 PM to 5 PM to ensure no data is missed if the Communications Manager database is behind in writing its CDRs. ◆ If you have multiple Data Sources, you may want to stagger your data collection times in order to balance the load on the Data Warehouse.
Data Collection	
Initially load n days of data	Specify the number of days' worth of accumulated data you want the Data Mart to collect during its first instance of data collection. The default is 7 days' worth of data.
Start data collection immediately?	Select **Yes** if you want the Data Mart to collect data immediately, rather than waiting for the first scheduled collection. The default is unselected. The first time the data collection job runs, it collects data for the past *n* days. When deciding whether to start data collection immediately, consider the impact the first, possibly large, data collection might have on your Communications Manager Publisher computer. You should perform the initial collection at an off-peak time.
Start SQL Server Agent if it is stopped? (Supported on local Data Mart Server only)	Select **Yes** to start SQL Server Agent. SQL Server Agent must be running in order for data collection tasks to be performed. The default is unselected. **NOTE:** This feature is supported only when the Call Data Analysis agent and the SQL Server that hosts the Data Mart are on the same computer.
Keep data for n months	Specify the number of months' worth of collected data you want to keep in the database on the Data Mart. The data for the current month is always kept in the database. Therefore, if you choose to keep one month's worth of data, and it is December, the database will retain the data for December and November.
Customize SQL Server Access Configuration For Data Mart?	Select **Yes** to customize the SQL Server access configuration for the Data Mart. You will then need to specify the name of the Data Mart server in the *Server name* parameter below. If you do not select **Yes**, the Data Mart database will be created on the same SQL Server instance as the Data Warehouse.
Server name	Specify the name of the server on which the Data Mart database will be created.
SQL username (blank for Windows authentication)	Specify the SQL username required to access the Data Mart server. Leave this field blank to use Windows authentication.

Parameter	How to Set It
Database name (blank for default)	Specify a name for the Data Mart database. Leave this field blank to use the default Data Mart database name.
Customize SQL Server Access Configuration for Data Warehouse?	Select **Yes** if you want to customize the SQL username.
SQL username (blank for Windows authentication)	Specify the username required to access the SQL Server running on the Data Warehouse FROM the local NetIQ agent (`netiqmc` service) AND the SQL Server agent service running on the Data Mart computer. Leave this field blank to use Windows authentication. **NOTE:** If you leave this field blank, and the Data Mart is not located on the Data Warehouse computer, verify the `SQLSERVERAGENT` service on the Data Mart computer is running as a user that has access to the Data Warehouse database.
Event Notification	
Raise event if job succeeds?	Select **Yes** to raise an informational event when the AddDataSource job is successful. The default is Yes.
Event severity when job succeeds	Set the severity level, from 1 to 40, to reflect the importance of an event in which the AddDataSource job is successful. The default is 25.
Event severity when data mart server inaccessible	Set the severity level, from 1 to 40, to reflect the importance of an event in which the Data Mart server is inaccessible. The default is 10.
Event severity for warnings	Set the severity level, from 1 to 40, to reflect the importance of warnings raised during an attempt to add a Data Source. The default is 20.
Event severity when job fails	Set the severity level, from 1 to 40, to reflect the importance of an event in which the AddDataSource job fails. The default is 5.

3.2 AddDataSource_CiscoCM

Use this Knowledge Script to add a Cisco Unified Communications Manager (version 5 or later) Data Source. With this script, you configure the Data Source and its collection schedule, the associated Data Mart, and access to the Data Warehouse. This script raises an event if a Data Source is added successfully, if the Data Mart server is inaccessible, if warnings are raised during an attempt to add a Data Source, and if a Data Source is not added.

This script creates the Data Mart, which is the container for all configuration and CDR information it gathers from the Data Source according to a schedule you determine.

AppManager needs to wait for the Communications Manager primary server to push the CDRs to the Cisco CM managed object computer, and then for the CiscoCM_CDR_RetrieveCallRecords Knowledge Script to insert them into the Cisco CM supplemental database. To help ensure that all data is available, Call Data Analysis does not retrieve any call information within the past hour. Therefore, after a call completes, you need to wait a minimum of one hour before the call's CDR is available for collection.

NOTE: After you run AddDataSource_CiscoCM, press **F5** to refresh AppManager and display the other Knowledge Scripts available in the Call Data Analysis module.

3.2.1 Prerequisites

- Using the AppManager for Cisco Unified Communications Manager module, run the CiscoCM_SetupSupplementalDB Knowledge Script to create the Cisco CM supplemental database.
- Using the AppManager for Cisco Unified Communications Manager module, run the CiscoCM_CDR_RetrieveConfigData and CiscoCM_CDR_RetrieveCallRecords Knowledge Scripts to populate the supplemental database with configuration and call data from Communications Manager. After the supplemental database is populated, you can report on the data using the wide variety of Report Knowledge Scripts provided by AppManager for Call Data Analysis.

3.2.2 Resource Object

Call Data server

3.2.3 Default Schedule

By default, this script runs once.

3.2.4 Setting Parameter Values

Set the following parameters as needed:

Parameter	How to Set It
Configure Data Source	
Primary Cisco Unified CallManager Server	Specify the computer name of the Communications Manager primary server that is the source of the CDA data stored in the Cisco CM supplemental database. The computer name you specify for this parameter must match the cluster name on the root CiscoCM object in the TreeView.
Supplemental database SQL Server	Specify the computer name of the SQL Server computer that houses the Cisco CM supplemental database.
SQL username	Specify the SQL username required to access the Cisco CM supplemental database. Leave this field blank to use Windows authentication.
Configure Data Source Schedule	
Data source schedule type	Select the frequency with which you want the Data Mart to collect data from the Data Source: **Daily** or **Hourly**. The default is Daily.

Parameter	How to Set It
Daily start time - Run daily at	If you selected **Daily** above, select the time of day at which you want data collected. Select from a list of hours based on the 24-hour time system. For instance, select 0100 for 1:00 AM or select 1300 for 1:00 PM. The default is 0400. **Notes** ◆ No matter what start time you select, AppManager needs to wait for the Communications Manager primary server to push the CDRs to the Cisco CM managed object computer, and then for the CDR_RetrieveCallRecords script to insert them into the Cisco CM supplemental database. This buffer time is one hour. Therefore, after a call completes, you will need to wait a minimum of one hour before the CDR is available for collection. For instance, if you select 0400, data is collected up through 0300 to ensure no data is missed if the primary server is behind in writing its CDRs. ◆ If you have multiple Data Sources, you may want to stagger your data collection times in order to balance the load on the Data Warehouse.
Hourly time interval - Run every n hours	If you selected **Hourly** above, select the interval at which you want data collected, such as every 2 hours or every 8 hours. The default is 12 hours. **Notes** ◆ No matter what start time you select, AppManager needs to wait for the Communications Manager primary server to push the CDRs to the Cisco CM managed object computer, and then for the CDR_RetrieveCallRecords script to insert them into the Cisco CM supplemental database. This buffer time is one hour. Therefore, after a call completes, you will need to wait a minimum of one hour before the CDR is available for collection. For instance, if you select 0400, data is collected up through 0300 to ensure no data is missed if the primary server is behind in writing its CDRs. ◆ If you have multiple Data Sources, you may want to stagger your data collection times in order to balance the load on the Data Warehouse.
Data Collection	
Initially load n days of data	Specify the number of days' worth of accumulated data you want the Data Mart to collect during its first instance of data collection. The default is 7 days' worth of data.
Start data collection immediately?	Select **Yes** if you want the Data Mart to collect data immediately, rather than waiting for the first scheduled collection. The default is unselected. The first time the data collection job runs, it collects data for the past *n* days. When deciding whether to start data collection immediately, consider the impact the first, possibly large, data collection might have on the computer that houses the Cisco CM supplemental database. You should perform the initial collection at an off-peak time.
Start SQL Server Agent if it is stopped? (Supported on local Data Mart server only)	Select **Yes** to start SQL Server Agent. SQL Server Agent must be running in order for data collection tasks to be performed. The default is unselected. **NOTE:** This feature is supported only when the Call Data Analysis agent and the SQL Server that hosts the Data Mart are on the same computer.

Parameter	How to Set It
Keep data for n months	Specify the number of months' worth of collected data you want to keep in the database on the Data Mart. The data for the current month is always kept in the database. Therefore, if you choose to keep 1 month's worth of data, and it is December, the database will retain the data for December and November.
Customize SQL Server Access Configuration For Data Mart?	Select **Yes** to customize the SQL Server access configuration for the Data Mart. You will then need to specify the name of the Data Mart server in the *Server name* parameter below. If you do not select **Yes**, the Data Mart database will be created on the same SQL Server instance as the Data Warehouse.
Server name	Specify the name of the server on which the Data Mart database will be created.
SQL username	Specify the SQL username required to access the Data Mart server. Leave this field blank to use Windows authentication.
Database name (blank for default)	Specify a name for the Data Mart database. Leave this field blank to use the default Data Mart database name.
Customize SQL Server Access Configuration for Data Warehouse?	Select **Yes** if you want to customize the SQL username.
SQL username (blank for Windows authentication)	Specify the username required to access the SQL Server running on the Data Warehouse FROM the local NetIQ agent (`netiqmc` service) AND the SQL Server agent service running on the Data Mart computer. Leave this field blank to use Windows authentication. **NOTE:** If you leave this field blank, and the Data Mart is not located on the Data Warehouse computer, verify the `SQLSERVERAGENT` service on the Data Mart computer is running as a user that has access to the Data Warehouse database.
Event Notification	
Raise event if job succeeds?	Select **Yes** to raise an informational event when the AddDataSource job is successful. The default is Yes.
Event severity when job succeeds	Set the severity level, from 1 to 40, to reflect the importance of an event in which the AddDataSource job is successful. The default is 25.
Event severity when data mart server inaccessible	Set the severity level, from 1 to 40, to reflect the importance of an event in which the Data Mart server is inaccessible. The default is 10.
Event severity for warnings	Set the severity level, from 1 to 40, to reflect the importance of warnings raised during an attempt to add a Data Source. The default is 20.
Event severity when job fails	Set the severity level, from 1 to 40, to reflect the importance of an event in which the AddDataSource job fails. The default is 5.

3.3 AddDataSource_H323RADIUS

This script creates the Data Mart, which is the container for all configuration and CDR information it gathers from the Data Source according to a schedule you determine.

The H.323 RADIUS Data Source is the log (flat) files written by the IAS/RADIUS server when it receives call detail records generated by Cisco H.323 gateways and Communications Manager Express routers.

Cisco Communications Manager Express views the IP phones connected to it as virtual voice ports (EFXS) and generates telephony call legs to and from these phones. Therefore, call quality information is not available for a call from Communications Manager Express phones for which the call remains on Communications Manager Express or goes directly to the PSTN.

This script raises an event if a Data Source is added successfully, if the Data Mart server is inaccessible, if warnings are raised during an attempt to add a Data Source, and if a Data Source is not added.

You can re-run this Knowledge Script to change parameter settings, such as log file archiving. If you do so, you need to complete all parameters, not just those you are changing.

NOTE: After you run AddDataSource_H323RADIUS, press **F5** to refresh AppManager and display the other Knowledge Scripts available in the Call Data Analysis module.

3.3.1 Changing RADIUS Log Folder or Archive Settings

When you add a Data Source, you specify whether to archive RADIUS logs after processing. In addition, you indicate the location of the RADIUS logs and the location of the archive folder.

To change any of these settings for a Data Source you already added, rerun AddDataSource_H323RADIUS and complete all parameters, including those for which the setting is not changing:

- *Folder containing IAS RADIUS logs*. Use this parameter to specify the location on the Data Mart of the folder that houses the IAS RADIUS logs. This location is the one you set up when you configured IAS.
- *Archive RADIUS logs after processing?* Set this parameter to **Yes** if you want to archive the RADIUS logs after their data has been processed. If you set this parameter to **Yes**, you must use the *Archive folder* parameter to specify the location of the archive folder.
- *Archive folder*. Use this parameter to specify the location on the Data Mart of the folder in which you want to archive the processed RADIUS logs.

NOTE: If you rerun AddDataSource_H323RADIUS, all parameters are updated, not only the three discussed above. Therefore, if you originally added your Data Source with any non-default parameter values, ensure you set those parameters correctly when you run the script to change archive or log information.

3.3.2 Reviewing Call Quality Metrics for Gateways and Routers

Cisco H.323 gateways provide call quality information for the VoIP legs of a call. Using this information, AppManager calculates additional quality metrics.

MOS

The Mean Opinion Score is an overall score representing the quality of a call. The MOS is a number between 1 and 5. A MOS of 5 is excellent; a MOS of 1 is unacceptably bad. The MOS is calculated based on measured items plus jitter buffer size.

R-value

Can be mapped to an estimated MOS. R-values range from 100 (excellent) to 0 (poor).

Jitter loss

Calculated from the number of received and discarded packets. Discarded packets are those that arrive too early or too late to be stored in the jitter buffer.

Packet loss

Calculated from the number of received and lost packets.

Delay

One-way delay approximated by dividing the round-trip delay value (from the RADIUS record) by two.

Voice quality

The Cisco IOS software (which is installed on the router on which the H.323 gateway resides) measures call quality based on ITU G.113, which defines the term Calculated Planning Impairment Factor (ICPIF), a calculation based on network delay and packet loss. ICPIF yields a single value that can be used to gauge network impairment. ITU G.113 provides the following interpretations of specific ICPIF values:

- 5 - Very good
- 10 - Good
- 20 - Adequate
- 30 - Limiting case
- 45 - Exceptional limiting case
- 55 - Customers likely to react strongly

NOTE: Use the Report_CallDetail_H323Gateway script to see the ICPIF values for individual calls.

3.3.3 Resource Object

Call Data server

3.3.4 Default Schedule

By default, this script runs once.

3.3.5 Setting Parameter Values

Set the following parameters as needed:

Parameter	How to Set It
Configure Data Source	
Folder containing IAS RADIUS logs	Specify the location on the Data Mart of the folder that houses the IAS RADIUS logs. This location is the one you set up when you configured IAS.
Configure Data Source Schedule	
Data source schedule type	Select the frequency with which you want the Data Mart to collect data from the Data Source: **Daily** or **Hourly**. The default is Daily.
Daily start time - Run daily at	If you selected **Daily** above, select the time of day at which you want data collected. Select from a list of hours based on a 24-hour clock. For instance, select 0100 for 1:00 A.M. or select 1300 for 1:00 P.M. The default is 0400. **NOTE:** If you have multiple Data Sources, you may want to stagger your data collection times in order to balance the load on the Data Warehouse.
Hourly time interval - Run every n hours	If you selected **Hourly** above, select the interval at which you want data collected, such as every 2 hours or every 8 hours. The default is 12 hours. **NOTE:** If you have multiple Data Sources, you may want to stagger your data collection times in order to balance the load on the Data Warehouse.
Data Collection	
Archive RADIUS logs after processing?	Select **Yes** to archive the RADIUS logs after their data has been processed. The default is unselected. If you set this parameter to Yes, specify the location of the archive folder in the *Archive folder* parameter.
Archive folder	Specify the location on the Data Mart of the folder in which you want to archive the processed RADIUS logs.
Start data collection job immediately?	Select **Yes** if you want the Data Mart to collect data immediately, rather than waiting for the first scheduled collection. The default is unselected.
Start SQL Server Agent if it is stopped? (Supported on local Data Mart server only)	Select **Yes** to start SQL Server Agent. SQL Server Agent must be running in order for data collection tasks to be performed. The default is unselected. **NOTE:** This feature is supported only when the Call Data Analysis agent and the SQL Server that hosts the Data Mart are on the same computer.
Keep data for n months	Specify the number of months' worth of collected data you want to keep in the database on the Data Mart. The data for the current month is always kept in the database. Therefore, if you choose to keep 1 month's worth of data, and it is December, the database will retain the data for December and November.
Customize SQL Server Access Configuration For Data Mart?	Select **Yes** to customize the SQL Server access configuration for the Data Mart. You will then need to specify the name of the Data Mart server in the *Server name* parameter below. If you do not select **Yes**, the Data Mart database will be created on the same SQL Server instance as the Data Warehouse.
Server name	Specify the name of the server on which the Data Mart database will be created.

Parameter	How to Set It
SQL username	Specify the SQL username required to access the Data Mart server. Leave this field blank to use Windows authentication.
Database name (blank for default)	Specify a name for the Data Mart database. Leave this field blank to use the default Data Mart database name.
Customize SQL Server Access Configuration for Data Warehouse?	Select **Yes** if you want to customize the SQL username.
SQL username	Specify the username required to access the SQL Server running on the Data Warehouse FROM the local NetIQ agent (`netiqmc` service) AND the SQL Server agent service running on the Data Mart computer. Leave this field blank to use Windows authentication. **NOTE:** If you leave this field blank, and the Data Mart is not located on the Data Warehouse computer, verify the `SQLSERVERAGENT` service on the Data Mart computer is running as a user that has access to the Data Warehouse database.
Event Notification	
Raise event if job succeeds?	Select **Yes** to raise an informational event when the AddDataSource job is successful. The default is Yes.
Event severity when job succeeds	Set the severity level, from 1 to 40, to reflect the importance of an event in which the AddDataSource job is successful. The default is 25.
Event severity when data mart server inaccessible	Set the event severity level, from 1 to 40, to reflect the importance of an event in which the Data Mart server is inaccessible. The default is 10.
Event severity for warnings	Set the event severity level, from 1 to 40, to reflect the importance of warnings raised during an attempt to add a Data Source. The default is 20.
Event severity when job fails	Set the event severity level, from 1 to 40, to reflect the importance of an event in which the AddDataSource job fails. The default is 5.

3.4 CancelDataCollection

Use this Knowledge Script to stop any data collection currently being performed. If data is not currently being collected, this script takes no action. Running this script does not affect the data collection schedule.

This script raises an event if data cancellation succeeds or fails, and if data is not being collected.

3.4.1 Resource Objects

Call Data CallManager object

Call Data H.323 RADIUS object

Call Data CiscoCM object

3.4.2 Default Schedule

By default, this script runs once.

3.4.3 Setting Parameter Values

Set the following parameters as needed:

Parameter	How to Set It
Event Notification	
Event severity when cancellation succeeds	Set the severity level, from 1 to 40, to reflect the importance of an event in which cancellation succeeds. The default is 25.
Event severity when no data collection to cancel	Set the severity level, from 1 to 40, to reflect the importance of a situation in which there is no data collection to cancel. The default is 25.
Event severity when cancellation fails	Set the severity level, from 1 to 40, to reflect the importance of an event in which cancellation fails. The default is 5.

3.5 CCME_GetConfig

Use this Knowledge Script to retrieve configuration data from one or more Communications Manager Express devices and deposit that data into SQL tables located in the Data Mart. By default, this script retrieves configuration data for all Communications Manager Express devices that have sent RADIUS records to the Data Source and have EFXS (virtual voice) ports through which ephones are connected. However, you can choose to limit the devices by using the “Include” and “Exclude” parameters.

This script raises an event if configuration data is retrieved and deposited successfully, if no Communications Manager Express devices are found, if the retrieve and/or deposit processes fail for any Communications Manager Express device, or if the entire GetConfig job fails for any reason.

The collected configuration data helps AppManager associate the virtual voice port from the RADIUS records with the IP address and device name of the associated Communications Manager Express phone. The data is also required by the Report_CCME_StatsByEPhone and Report_UnusedPhones Knowledge Scripts.

3.5.1 Prerequisites

- Run AddDataSource_H323RADIUS.
- Configure your AXL passwords in AppManager Security Manager. AVVID XML Layer (AXL), a Cisco application programming interface (API), enables Communications Manager Express to access the Communications Manager Express HTTP server.

  If your AXL password information is the same for all Communications Manager Express devices, complete the following procedure once. If your AXL password information is different for different devices, complete the following procedure once for each different password.

  On the Custom tab in AppManager Security Manager, complete the following fields:

Field	Description
Label	`CiscoCME`

Field	Description
Sub-label	◆ For a single Communications Manager Express device, type the name of the device. ◆ For all Communications Manager Express devices, type `default`. **NOTE:** If you type a single device name, ensure the name is an exact match to the gateway name (`h323-gw-id`) or the `NAS-IP-Address` from the RADIUS records. If you are unsure of the gateway name or NAS IP address, run Discovery_CallDataAnalysis after IAS logs have been processed. The name of the gateway will appear in the TreeView pane under the H.323 Data Source object. To see the NAS IP address, click on the gateway name, and then click the **Details** tab.
Value 1	Type the AXL password you configured using the “og password” IOS command on the router. If you did not configure an AXL password, type the “Router privilege mode” password.
Extended application support	Enable to encrypt the AXL password. Do not leave this option unselected.

3.5.2 Resource Object

Call Data H.323 RADIUS object

3.5.3 Default Schedule

By default, this script runs once every day.

3.5.4 Setting Parameter Values

Set the following parameters as needed:

Parameter	How to Set It
General Settings	
Include only these CallManager Express devices	Specify which Communications Manager Express devices (gateways) to poll for configuration data. Use this parameter to limit the number of “learned” devices that are polled or to poll devices that are not yet “learned.” A learned device is one that has already sent RADIUS records to the Data Source. If you specify one or more unlearned devices, you must specify the gateway name that matches the name returned in the `h323_gw_id` field of the RADIUS record. Leave this parameter blank to poll all learned Communications Manager Express devices for configuration data. Separate the names of multiple devices with a comma and no space.
Exclude these CallManager Express devices	Specify which Communications Manager Express devices (gateways) to exclude from polling. Separate the names of multiple devices with a comma and no space. Leave this parameter blank to exclude no devices.

Parameter	How to Set It
Event Notification	
Raise event if retrieve/deposit process succeeds?	Select **Yes** to raise an event if the configuration data is retrieved and deposited (into the Data Mart SQL tables) successfully. The default is Yes.
Event severity when retrieve/deposit process succeeds	Set the severity level, from 1 to 40, to reflect the importance of an event in which configuration data is retrieved and deposited successfully. The default is 25.
Raise event if no CallManager Express devices found?	Select **Yes** to raise an event if AppManager cannot find any Communications Manager Express devices to poll for configuration data. The default is Yes.
Event severity when no CallManager Express devices found	Set the severity level, from 1 to 40, to reflect the importance of an event in which AppManager can find no Communications Manager Express devices to poll. The default is 15.
Event severity when retrieve/deposit process fails	Set the severity level, from 1 to 40, to reflect the importance of an event in which any part of the retrieve and deposit process fails for any individual Communications Manager Express device. This event is raised if the retrieve/deposit process fails for one or more Communications Manager Express devices, but succeeds for others. The default is 10.
Event severity when job fails	Set the severity level, from 1 to 40, to reflect the importance of an event in which the GetConfig Knowledge Script job fails.

3.6 ChangeReportingState

Call Data Analysis reports make use of SQL views that include all Data Marts associated with your Data Sources. The Call Data Analysis reports fail if even one of the Data Marts in a SQL view cannot be accessed from the Data Warehouse.

If you know a particular Data Mart cannot be accessed for some reason (such as being down for maintenance), use this Knowledge Script to exclude that Data Mart from reporting. Then, when the Data Mart is ready, use this Knowledge Script to change its reporting status so it is once again included in reporting.

NOTE: Highlight the Data Source object in the TreeView of the Operator Console to see the reporting state displayed on the **Details** tab. After changing the reporting state, you may need to click on a different object and then click back on the Data Source object to verify the change in the reporting state.

3.6.1 Resource Objects

Call Data CallManager object

Call Data H.323 RADIUS object

Call Data CiscoCM object

3.6.2 Default Schedule

By default, this script runs once.

3.6.3 Setting Parameter Values

Set the following parameters as needed:

Parameter	How to Set It
Change Reporting State	
Select the reporting state for the Data Mart	Use this parameter to change whether a Data Mart is included in reporting. Select **Include** to include the Data Mart associated with the Data Source on which you dropped this script. Select **Exclude** to exclude the Data Mart associated with the Data Source on which you ran this script.
Event Notification	
Event severity when reporting state change succeeds	Set the severity level, from 1 to 40, to indicate the importance of an event in which a change in the reporting state succeeds. The default is 25.
Event severity when reporting state change fails	Set the severity level, from 1 to 40, to indicate the importance of an event in which a change in the reporting state fails, most likely as the result of a SQL failure. The default is 5.

3.7 ChangeSchedule

Use this Knowledge Script to change, deactivate, or reactivate the data collection schedule associated with a Data Source. This script raises an event when a schedule change succeeds or fails, or when a schedule cannot be changed.

To change other data collection settings, such as how many days' worth of data to load, or how many months' worth of data to keep, run the appropriate AddDataSource Knowledge Script. You can run an AddDataSource Knowledge Script even after you added the Data Source.

3.7.1 Resource Objects

Call Data CallManager object

Call Data H.323 RADIUS object

Call Data CiscoCM object

3.7.2 Default Schedule

By default, this script runs once.

3.7.3 Setting Parameter Values

Set the following parameters as needed:

Parameter	How to Set It
Manage Schedule	
Select Schedule Action	Select the action you want this script to perform: ◆ **Change Schedule**. This default selection allows you to change the schedule type, the collection start time, or the hourly collection interval. If you select Change Schedule, you must set one or more of the parameters in the **Change Schedule Parameters** folder. ◆ **Deactivate Schedule**. Deactivates the data collection schedule. Data collection will not resume until you run this script again and select **Reactivate Schedule**. ◆ **Reactivate Schedule**. Reactivates the data collection schedule and collects data at the next scheduled instance. The Data Mart will collect all data that has accrued since the last collection instance.
Change Schedule Parameters	
Data source schedule type	Select the frequency with which you want the Data Mart to collect data from the Data Source: **Daily** or **Hourly**. The default is Daily.
Daily start time - Run daily at	If you selected **Daily** above (or when you added the Data Source), select the time of day at which you want data collected. Select from a list of hours based on a 24-hour clock. For instance, select 0100 for 1:00 AM or select 1300 for 1:00 PM. The default is 0400.
Hourly time interval - Run every n hours	If you selected **Hourly** above (or when you added the daily source), select the interval at which you want data collected, such as every 2 hours or every 8 hours. The default is 12 hours.
Event Notification	
Event severity when schedule change succeeds	Set the severity level, from 1 to 40, to reflect the importance of an event in which the schedule change succeeds. The default is 25.
Event severity when schedule change fails	Set the severity level, from 1 to 40, to reflect the importance of an event in which the schedule change fails. The default is 5.
Event severity when schedule cannot be changed	Set the severity level, from 1 to 40, to reflect the importance of a situation in which the changes you have selected already exist in the schedule. The default is 25.

3.8 ConfigureCallTypes

Use this Knowledge Script to configure the rules by which the Call Data Analysis module classifies the types of calls each CDR contains, such as configuring gateway rules that identify certain calls going through the gateway as local rather than long distance.

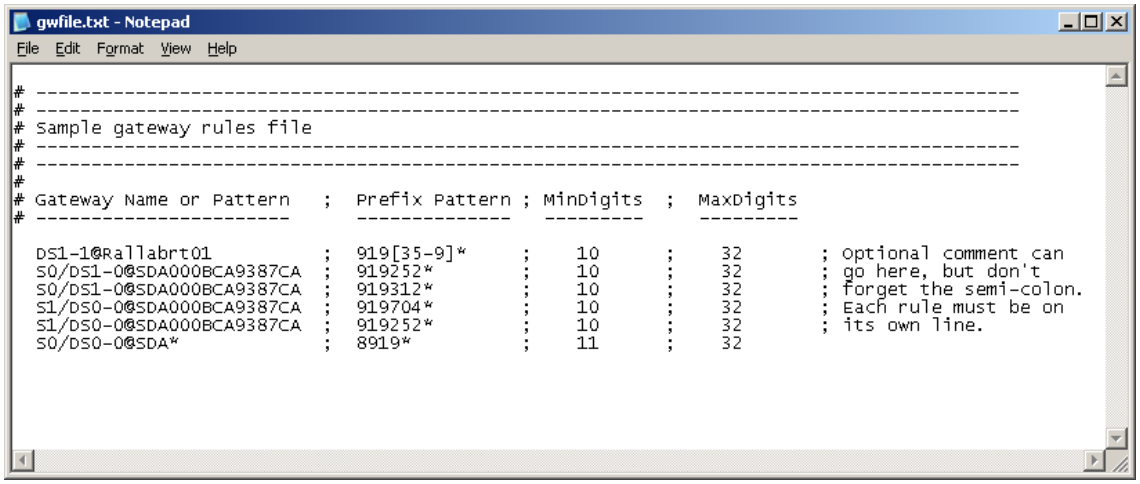
You specify the name of the gateway and the prefixes that indicate a call is local. The prefix is not limited to an area code, which helps in situations in which numbers within the same area code are treated differently. For example, if 919-767-0295 is a local call, but 919-252-7463 is long distance, specify 9197* or 919767* as the prefix pattern.

If all calls within an area code are to be classified as local, specify a “*” as the gateway pattern and specify 919* as the prefix pattern.

Because you may need to specify many gateways or gateway devices, you can create a file that contains a list of all gateways and devices. If you create a list, you do not have to specify each gateway and device separately in the *Gateway names or patterns* parameter. You can use the *Full path to gateway rules file* parameter to point to the file you created. You need to save this file on the Data Warehouse computer, *not* the Data Mart server.

You must create the gateway rules file in the following format:

- A number sign (#) in the first column identifies a comment line.
- The rule is four fields separated by semicolons (;).
- The first field is the Gateway Name or Pattern.
- The second field is the Prefix Pattern that identifies a local call.
- The third field is the minimum number of digits that must be found in order for a call to be classified as a gateway call.
- The fourth field is the maximum number of digits that can be found in order for a call to be classified as a gateway call.



You also use this script to specify external access codes. Most systems require an access code to be dialed before routing a call to a remote or local gateway. If you specify an access code, Call Data Analysis will remove it before determining a call’s classification. Keep this in mind when specifying other parameters. For example, if you want to add 1877* to the Toll Free call rules, and your external access code is 9, you need to add 1877* (not 91877*) as a pattern in the *Configure toll free call rules* parameters.

This script raises an event when the job succeeds or fails, when the Data Mart server is inaccessible, and when warnings are raised during an attempt to configure call types.

Resetting the ConfigureCallTypes Script

You can use SQL Query Analyzer on the Data Mart computer to return the parameters in the ConfigureCallTypes script to their original default values. In the **Database Selection** drop list in the Query Analyzer interface, select the Data Mart database for which you want to reset the call type rules. In the Query window, type the following command: `exec dbo.SetCallTypeDefaults`. To verify the call type rules have been reset, issue the following command in the Query window:

```
select * From CallTypeRules
```

Reviewing Call Classification Types

Use the ConfigureCallTypes Knowledge Script to configure the rules by which the Call Data Analysis module classifies the types of calls each CDR contains. The following table describes each classification type.

Classification Type	Description
Internal	Intracluster call that originated in the network and ended in the same network (no gateway was used). Both the called and calling numbers are internal numbers.
On-net	Call in which both the calling and called numbers are internal, and either the originating or destination device is a gateway.
Incoming	Call that originated outside of the network and whose called number is an internal number.
Conference bridge	Call whose destination device is a conference bridge.
Voice mail	Call whose destination device is a voice mail device.
Local	Call whose destination device is a gateway, and whose called number is not an internal number and does not have an area code (or includes one of the local area codes).
Tandem - local	Local call that originated outside of the network.
Long distance	Call whose destination device is a gateway, and whose called number is not an internal number and has an area code that is not one of the local area codes.
Tandem - long distance	Long distance call that originated outside of the network.
International	Call whose destination device is a gateway, and whose called number begins with the international access code.
Tandem - international	International call that originated outside of the network.
Tandem	If the Tandem Rule is “collapse,” this category is a combination of the Tandem - local, Tandem - long distance, and Tandem - international categories.
Service	Call to a service, usually three digits, such as 411 (Directory Service).
Emergency	Call to an emergency service, such as 911.
Toll free	Long distance call that is toll free, such as 1-800 calls.
Other	User-defined rule.
Unknown	Call that does not match any of the other categories.

Resource Objects

Call Data CallManager object

Call Data H.323 RADIUS object

Call Data CiscoCM object

Default Schedule

By default, this script runs once.

Setting Parameter Values

Set the following parameters as needed:

Parameter	How to Set It
Configure Call Classification Rules	
Configure External Access Code	
Action	Select whether you want to **Replace**, **Remove All**, or make **No Change** regarding the external access code. For more information, see Action Parameter. The default is No Change.
External access code	Specify the access code your system requires for routing calls to a remote or local gateway. The default is 9.
Configure Internal Call Rules	
Action	Select whether you want to **Append**, **Replace**, **Remove All**, or make **No Change** regarding internal call rules. For more information, see Action Parameter. The default is No Change.
Internal numbers or patterns	Specify numbers or patterns that identify an internal call. Separate multiple entries with a semicolon (;). The default is [2-7]XX;[1-8]XXX;[1-8]XXXX;[1-8]XXXXX.
Minimum digits dialed for internal calls	Specify the minimum number of digits that must be found in order for a call to be classified as internal. The default is 3.
Maximum digits dialed for internal calls	Specify the maximum number of digits that must be found in order for a call to be classified as internal. The default is 6.
Configure International Call Rules	
Action	Select whether you want to **Append**, **Replace**, or make **No Change** regarding international call rules. For more information, see Action Parameter. The default is No Change.
International dialing prefixes	Specify the prefix that identifies an international call. Do not include the external access code. The default prefixes are 011*;00*;010*. For more information, see Wildcard Characters.
Minimum digits dialed for international calls	Specify the minimum number of digits that must be found in order for a call to be classified as international. The default is 10.
Maximum digits dialed for international calls	Specify the maximum number of digits that must be found in order for a call to be classified as international. The default is 32. **NOTE:** You can specify a large value to indicate there is no maximum limit.
Configure Local Call Rules	
Action	Select whether you want to **Replace** or make **No Change** regarding local call rules. For more information, see Action Parameter. The default is No Change.
Minimum digits dialed for local calls	Specify the minimum number of digits that must be found in order for a call to be classified as local. The default is 7.
Maximum digits dialed for local calls	Specify the maximum number of digits that must be found in order for a call to be classified as local. The default is 10.
Configure Long Distance Call Rules	

Parameter	How to Set It
Action	Select whether you want to **Replace** or make **No Change** regarding long distance call rules. For more information, see Action Parameter. The default is No Change.
Minimum digits dialed for long distance calls	Specify the minimum number of digits that must be found in order for a call to be classified as long distance. The default is 10.
Maximum digits dialed for long distance calls	Specify the maximum number of digits that must be found in order for a call to be classified as long distance. The default is 32. **NOTE:** You can specify a large value to indicate there is no maximum limit.
Configure Long Distance Access Code	
Action	Select whether you want to **Remove All**, **Replace**, or make **No Change** regarding the long distance access code. For more information, see Action Parameter. The default is No Change.
Long distance dialing prefix	Specify the access code your system requires for routing long distance calls. The default is 1.
Configure Gateway Rules	
Action	Select whether you want to **Append**, **Remove All**, **Replace**, or make **No Change** regarding the gateway rules. For more information, see Action Parameter. The default is No Change.
Gateway Rules File	
Full path to gateway rules file	Type the fully qualified path to a file on the Data Warehouse computer that contains a list of gateway names, patterns, and prefixes that identify local calls.
Severity - File I/O problems	Set the severity level, from 1 to 40, to reflect the importance of an event in which the gateway rules file is inaccessible. The rules file could be unreachable for a number of reasons, including an incorrect fully qualified file path. The default is 20.
Gateway names or patterns	Specify the names or patterns of gateways to check. Use wildcards if necessary and use semicolons (;) to separate multiple entries. For more information, see Section 3.8.2, “Wildcard Characters,” on page 56. If you specified a gateway rules file, you do not need to complete this parameter, but you can if you have rules to add in addition to what is in the rules file.
Prefix patterns	Specify numbers or patterns that identify local calls. Use semicolons (;) to separate multiple entries. If you specified a gateway rules file, you do not need to complete this parameter, but you can if you have rules to add in addition to what is in the rules file.
Minimum digits dialed for these patterns	Specify the minimum number of digits that must be found in order for a call to fit the gateway rules. The default is 7.
Maximum digits dialed for these patterns	Specify the maximum number of digits that must be found in order for a call to fit the gateway rules. The default is 32. **NOTE:** You can specify a large value to indicate there is no maximum limit.
Configure Service Call Rules	

Parameter	How to Set It
Action	Select whether you want to **Append**, **Remove All**, **Replace**, or make **No Change** regarding service calls. For more information, see Action Parameter. The default is No Change.
Service numbers or patterns	Specify the numbers or patterns that identify a service call. Use semicolons (;) to separate multiple entries. The default is [2-8]11.
Minimum digits dialed for service calls	Specify the minimum number of digits that must be found in order for a call to be classified as service. The default is 3.
Maximum digits dialed for service calls	Specify the maximum number of digits that must be found in order for a call to be classified as service. The default is 3.
Configure Toll Free Call Rules	
Action	Select whether you want to **Append**, **Remove All**, **Replace**, or make **No Change** regarding toll free calls. For more information, see Action Parameter. The default is No Change.
Toll free numbers or patterns	Specify the numbers or patterns that identify a toll free call. Use semicolons (;) to separate multiple entries. The default is 1800*;1855*;1866*;1877*;1888. For more information, see Wildcard Characters.
Minimum digits dialed for toll free calls	Specify the minimum number of digits that must be found in order for a call to be classified as toll free. The default is 7.
Maximum digits dialed for toll free calls	Specify the maximum number of digits that must be found in order for a call to be classified as toll free. The default is 32. **NOTE:** You can specify a large value to indicate there is no maximum limit.
Configure Emergency Call Rules	
Action	Select whether you want to **Append**, **Remove All**, **Replace**, or make **No Change** regarding emergency calls. For more information, see Action Parameter. The default is No Change.
Emergency numbers or patterns	Specify the numbers or patterns that identify an emergency call. Use semicolons (;) to separate multiple entries. The default is 911.
Minimum digits dialed for emergency calls	Specify the minimum number of digits that must be found in order for a call to be classified as emergency. The default is 3.
Maximum digits dialed for emergency calls	Specify the maximum number of digits that must be found in order for a call to be classified as emergency. The default is 3.
Configure Other Call Rules	
Action	Select whether you want to **Append**, **Remove All**, **Replace**, or make **No Change** regarding other calls. For more information, see Action Parameter.The default is No Change.
Other numbers or patterns	Specify the numbers or patterns that identify other calls. Use semicolons (;) to separate multiple entries.
Minimum digits dialed for other calls	Specify the minimum number of digits that must be found in order for a call to be classified as other. The default is 3.
Maximum digits dialed for other calls	Specify the maximum number of digits that must be found in order for a call to be classified as other. The default is 24. **NOTE:** You can specify a large value to indicate there is no maximum limit.

Parameter	How to Set It
Configure Tandem Rule	
Action	Select whether you want to **Remove All** or make **No Change** regarding the tandem rule. For more information, see Action Parameter. The default is No Change. If you remove the tandem rule, calls are not classified as tandem. In other words, all Tandem-Local, Tandem-Long Distance, and Tandem-International calls will be classified simply as Local, Long Distance, and International.
Tandem rule	Set the tandem rule as follows: ◆ Select **Expand** to classify tandem calls as Tandem-Local, Tandem-Long Distance, and Tandem-International. The default is Expand. ◆ Select **Collapse** to classify tandem calls as Tandem, and not split into the three sub-categories.
Update Fact Data	
Update existing fact data using updated rules?	Select **Yes** to instruct the Data Mart to update data immediately using the new or revised rules. This update does not affect the next scheduled collection.
Update previous n days of data	Specify the number of days' worth of accumulated data you want the Data Mart to update using the new or revised rules. The default is 7 day's worth of data.
Update all data?	Select **Yes** to instruct the Data Mart to update all of the data in the database. **Caution** You may have several months' or years' worth of accumulated data. Select this option only with the understanding that the process of updating a lot of data can be lengthy.
Event Notification	
Event severity when job succeeds	Set the severity level, from 1 to 40, to reflect the importance of an event in which the ConfigureCallTypes job succeeds. The default is 25.
Event severity when data mart server inaccessible	Set the severity level, from 1 to 40, to reflect the importance of an event in which the Data Mart server is inaccessible. The default is 10.
Event severity for warnings	Set the severity level, from 1 to 40, to reflect the importance of warnings raised during an attempt to configure call types. The default is 20.
Event severity when job fails	Set the severity level, from 1 to 40, to reflect the importance of an event in which the ConfigureCallTypes job fails. The default is 5.

3.8.1 Action Parameter

In the list of parameters, each rule and access code folder contains an Action parameter you set to indicate the action you want to take regarding the rules and access codes for each call type. The following table describes the Action options you can select.

Action Parameter Option	Description
No Change	Indicates you do not want to change the rule or access code for this call type.

Action Parameter Option	Description
Append	Appends the new rule to any existing rules for this call type.
Replace	Replaces all existing rules with the new rule you are creating for this call type.
Remove All	Removes all existing rules for this call type. If you select this option, the Call Data Analysis module does not classify calls of this type.

3.8.2 Wildcard Characters

When specifying number patterns in parameters, you can use any of the following wildcards and special characters.

Character	Description	Example
X	The X wildcard matches any single digit in the range of 0 through 9.	70XXX matches numbers in the range of 70000 through 70999.
*	The asterisk (*) wildcard matches one or more digits in the range of 0 through 9. **NOTE:** You can use an exclamation point (!) in place of an asterisk.	011* matches any number beginning with 011, such as 011447968587655.
[ ]	Square brackets ([ ]) enclose a range of values.	[4578]11 matches 411, 511, 711, and 811.
-	The hyphen (-) can be used within square brackets to indicate a sequential range of values.	[4-8]11 matches 411, 511, 711, and 811.

3.9 DataCollectionStatus

Use this Knowledge Script to check the status of the last data collection job performed against a Data Source. This script raises an event when the data collection attempt fails, when the data collection job is cancelled, or when the DataCollectionStatus job itself fails.

3.9.1 Resource Objects

Call Data CallManager object

Call Data H.323 RADIUS object

Call Data CiscoCM object

3.9.2 Default Schedule

By default, this script runs daily.

3.9.3 Setting Parameter Values

Set the following parameters as needed:

Parameter	How to Set It
General Settings	
Show history for previous n jobs	Specify the number of previous data collection jobs for which you want to view the status. The default is 7.
Show job steps?	Select **Yes** to enable an event to display information about each of the eight individual steps in a data-collection job. Accept the default (unselected) to display only the outcome of the job in the event. **NOTE:** You probably do not need to see every step in a data collection job unless you are debugging a problem.
Event Notification	
Raise informational event?	Select **Yes** to raise an event that provides status information. The default is Yes.
Event severity for informational event	Set the severity level, from 1 to 40, to reflect the importance of the generation of an informational event. The default is 25.
Event severity when data collection fails	Set the severity level, from 1 to 40, to reflect the importance of an event in which the data-collection attempt fails. The default is 10. **NOTE:** This parameter differs from *Event severity when job fails* in that it indicates the Data Mart has failed to collect data. It does not indicate the Knowledge Script itself has failed to run.
Event severity when data collection is cancelled	Set the severity level, from 1 to 40, to reflect the importance of an event in which the data collection job is cancelled. The default is 15.
Event severity when job fails	Set the severity level, from 1 to 40, to reflect the importance of an event in which the DataCollectionStatus job fails. The default is 5. **NOTE:** This parameter differs from *Event severity when data collection fails* in that it indicates the Knowledge Script has failed to run. It does not indicate the Data Mart has failed to collect data.

3.10 ExecuteDataCollection

Use this Knowledge Script to perform on-demand data collection, regardless of the schedule. This script takes no action if data is currently being collected. Running this script does not affect the data collection schedule.

This script raises an event when the job success or fails, and when data is currently being collected.

3.10.1 Resource Objects

Call Data CallManager object

Call Data H.323 RADIUS object

Call Data CiscoCM object

3.10.2 Default Schedule

By default, this script runs once.

3.10.3 Setting Parameter Values

Set the following parameters as needed:

Parameter	How to Set It
Data Collection	
Start SQL Server Agent if it is stopped? (Supported on local Data Mart server only)	Select **Yes** to start SQL Server Agent. SQL Server Agent must be running in order for data collection tasks to be performed. The default is unselected. **NOTE:** This feature is supported only when the Call Data Analysis agent and the SQL Server that hosts the Data Mart are on the same computer.
Event Notification	
Event severity when job execution succeeds	Set the severity level, from 1 to 40, to reflect the importance of an event in which the ExecuteDataCollection job succeeds. The default is 25.
Event severity when job already executing	Set the severity level, from 1 to 40, to reflect the importance of a situation in which data is already being collected. The default is 25.
Event severity when job execution fails	Set the severity level, from 1 to 40, to reflect the importance of an event in which the ExecuteDataCollection job fails. The default is 5.

3.11 RemoveDataSource

Use this Knowledge Script to remove a Data Source and its associated Data Mart. This script raises an event when the removal succeeds or fails.

TIP: When this Knowledge Script job runs successfully, the Data Source object in the TreeView pane is deleted. In addition, the job itself is also deleted (a normal side-effect of removing a TreeView object). The event this job creates is not deleted because it is associated with the parent object (`CallDataAnalysis:WAREHOUSE` object). However, if you set the global preference to "Remove associated events when jobs are deleted," even the event is deleted when the object and job are deleted. To set global preferences, select **File > Preferences > Repository > Event** in the AppManager Operator Console.

3.11.1 Resource Objects

Call Data CallManager object

Call Data H.323 RADIUS object

Call Data CiscoCM object

3.11.2 Default Schedule

By default, this script runs once.

3.11.3 Setting Parameter Values

Set the following parameters as needed:

Parameter	How to Set It
Data Source Removal	
Check following box to confirm removal	
Confirm data source removal	Select **Yes** to confirm you want to remove the Data Source. The default is unselected. This script will not run unless you set this parameter to Yes.
Delete the data mart database?	Select **Yes** to delete the database from the Data Mart computer. The default is unselected. **NOTE:** You should not delete a database. After you delete a database, its data is lost and unavailable for use. If you do not delete the database, you can easily reconnect to it using the AddDataSource Knowledge Script.
Event Notification	
Raise event if job succeeds?	Select **Yes** to raise an event when the RemoveDataSource job succeeds. The default is Yes.
Event severity when job succeeds	Set the severity level, from 1 to 40, to reflect the importance of an event in which the RemoveDataSource job succeeds. The default is 25.
Event severity when job fails	Set the severity level, from 1 to 40, to reflect the importance of an event in which the RemoveDataSource job fails. The default is 5.

3.12 Report_CallAuthorization

Use this Knowledge Script to display the number and duration of calls that used a Forced Authorization Code (FAC) or a Client Matter Code. Both are features of Cisco Unified Communications Manager.

- An FAC is a code users must enter when attempting to make a priority phone call, such as an international call.
- A Client Matter Code is one users must enter to assign a phone call to a particular billing entity, such as a specific client or project.

This report supports only Unified Communications Manager Data Sources.

3.12.1 Identifying Unauthorized Usage

Your organization may use Forced Authorization Codes and Client Matter Codes to allow your employees to make long distance calls based on business need. However, authorization codes have a way of being shared. You can monitor authorization code usage with the Report_CallAuthorization Knowledge Script.

Let us say your billing records indicate a client account has been charged for what seems like excess telephone calls. Using Report_CallAuthorization, set the *Show calls by* parameter to **ClientMatterCode**. Set the *Show details by* parameter to **CallingLocation**. Your report will display a chart that groups calls by Client Matter Code and calling location, allowing you to easily identify which calling location is making the excess charges.

3.12.2 Resource Object

Report agent

3.12.3 Default Schedule

By default, this script runs once.

3.12.4 Setting Parameter Values

Set the following parameters as needed:

Parameter	How to Set It
Data Source	
Select data source(s)	Select the data for your report by **View Name**, **Data Warehouse**, or **Data Source**.
Select time range	Select a **Specific** or **Sliding** date/time range from which the report should pull data. The default is Sliding.
Minimum duration	Specify the minimum duration filter for calls selected by the script. Calls with a duration of less than the minimum will not be included in the report, even if all other criteria are satisfied. The default is 0 seconds.
Show calls by	Select the delimiter by which you want to group the calls in your report. You can choose from the following sorting options: ◆ **FAC Level** ◆ **FAC Name** ◆ **Client Matter Code**
Show details by	Select the details you want to show for each group of calls. You can choose from the following detail options: ◆ **CallManager Cluster** ◆ **Calling Partition** ◆ **Called Partition** ◆ **Calling Location** ◆ **Called Location** ◆ **Outbound Trunk Group** ◆ **Inbound Trunk Group** ◆ **Outbound Gateway** ◆ **Inbound Gateway** ◆ **Hour of Day** ◆ **Day of Week** ◆ **None**. If you select None, no time details are shown.
Report Settings	

Parameter	How to Set It
Include parameter help card?	Set to **y** to include a table in the report that lists parameter settings for the report script. The default is y.
Include table?	Set to **y** to include a table of data stream values in the report. The default is y.
Include chart?	Set to **y** to include a chart of data stream values in the report. The default is y.
Units for chart	Select the unit of measurement that should appear on the Y axis of the chart: **Duration** or **Number Of Calls**. The default is Number of Calls. If you select Duration, the duration unit measurement is determined by the value you select in the *Show duration in Erlangs or seconds?* parameter.

Show duration in Erlangs or seconds?	Select whether you want the duration measurement to display in **Erlangs** or **Seconds**. The default is Erlangs.
	
	Also known as a traffic unit, an Erlang is a measurement of traffic load during the busy hour, and is based on having 3600 seconds (60 minutes or one hour) of calls on the same circuit, trunk, or port. (In other words, one circuit is busy for one hour regardless of the number of calls or the average length of calls). For example, if a call center received 30 six-minutes calls in the busy hour, it received 180 call minutes, or three Erlangs. If a call center received 100 calls that averaged 36 seconds in the busy hour, it received 3600 call seconds or one Erlang.
	
	You can use the following formula to calculate an Erlang value:
	
	`Traffic in Erlangs =`
	`(Number of calls in the busy hour) * (AHT seconds)/3600`

Include “Unassigned” in summary chart?	Set to **y** to include all calls for which no FAC or Client Matter Code was used. The default is y.
Select chart style	Define the graphic properties for the charts in your report. The default style is Bar.
Select output folder	Set parameters for the output folder. The default folder name is CallAuthorization.
Add job ID to output folder name?	Set to **y** to append the job ID to the name of the output folder. The default is n. A job ID is helpful for making the correlation between a specific instance of a Report script and the corresponding report.
Select properties	Set miscellaneous report properties as desired. The default report name is Call Authorization.
Add time stamp to title?	Set to **y** to append a time stamp to the title of the report, making each title unique. The default is n. The time stamp is made up of the date and time the report was generated. Adding a time stamp is useful in order to run consecutive iterations of the same report without overwriting previous output.
Event Notification	
Raise event if report succeeds?	Set to **y** to raise an event if the report is successfully generated. The default is y.

Parameter	How to Set It
Event severity when report succeeds	Set the severity level, from 1 to 40, to indicate the importance of an event in which the report is successful. The default is 35.
Event severity when report has no data	Set the severity level, from 1 to 40, to indicate the importance of an event in which the report contains no data. The default is 25.
Event severity when report fails	Set the severity level, from 1 to 40, to indicate the importance of an event in which the report fails. The default is 5.

3.13 Report_CallCompletionRate

Use this Knowledge Script to determine the completion rate of calls recorded with the selected Data Source. The call completion rate takes into account failed calls (determined by the disconnect cause code) and abandoned calls (calls with a successful disconnect cause code, but having a duration of zero).

NOTE: Unlike other modules, for the Call Data Analysis module, the Report agent pulls data from the Data Warehouse rather than from the AppManager repository. The Report agent uses Windows authentication to access the Data Warehouse.

3.13.1 Resource Object

Report agent

3.13.2 Default Schedule

By default, this script runs once.

3.13.3 Setting Parameter Values

Set the following parameters as needed:

Parameter	How to Set It
Data Source	
Select data source(s)	Select the data for your report by **View Name**, **Data Warehouse**, or **Data Source**.
Select time range	Select a **Specific** or **Sliding** date/time range from which the report should pull data. The default is Sliding.

Parameter	How to Set It
Group by	Select the delimiter by which you want to group the calls in your report. You can choose from the following sorting options: ◆ **Data Publisher**. Choose this option to sort the report by the entity that generates the data: Communications Manager Publisher, Communications Manager primary server, or RADIUS gateway. ◆ **Calling Partition** (applies to Communications Manager Data Sources) ◆ **Called Partition** (applies to Communications Manager Data Sources) ◆ **Calling Location** (applies to Communications Manager Data Sources) ◆ **Called Location** (applies to Communications Manager Data Sources) ◆ **Outbound Trunk Group** (applies to Communications Manager Data Sources) ◆ **Inbound Trunk Group** (applies to Communications Manager Data Sources) ◆ **Outbound Gateway** (applies to all Data Sources) ◆ **Inbound Gateway** (applies to all Data Sources) ◆ **CallManager Cluster**. This option provides the same sorting results as Data Publisher. This option is maintained in the script to provide backwards compatibility to older versions of AppManager for Call Data Analysis. ◆ **None**. Choose this option to combine all calls into a single group. **NOTE:** If your *Select data source(s)* and *Group by* selections are incompatible (perhaps you selected an H.323 Data Source and a Communications Manager grouping), the report ignores your *Group by* selection and uses the default selection, which is Data Publisher.
Show time details by	Select the time details you want to show for each group of calls. You can choose from the following detail options: ◆ **Hour of Day** ◆ **Day of Week** ◆ **Day of Month** ◆ **None**. If you select None, no time details are shown.
Exclude these failure codes	Type a list of termination codes (separated by commas) that are not to be considered failures. See Section 3.16.1, “Termination Codes,” on page 82 for a list of available codes. **NOTE:** Codes 0, 16, 31, 126, and 393216 are automatically excluded. They are normal termination codes. However, these codes may appear in events if the other side of the call has a failure code that has not been excluded.
Report Settings	
Include parameter help card?	Set to **y** to include a table in the report that lists parameter settings for the report script. The default is y.
Include table?	Set to **y** to include a table of data stream values in the report. The default is y.

Parameter	How to Set It
Include chart?	Set to **y** to include a chart of data stream values in the report. The default is y.
Select chart style	Define the graphic properties for the charts in your report. The default style is Bar.
Select output folder	Set parameters for the output folder. The default folder name is CallDataCompletionRate.
Add job ID to output folder name?	Set to **y** to append the job ID to the name of the output folder. The default is n. A job ID is helpful for making the correlation between a specific instance of a Report script and the corresponding report.
Select properties	Set miscellaneous report properties as desired. The default report name is Call Completion Rate.
Add time stamp to title?	Set to **y** to append a time stamp to the title of the report, making each title unique. The default is n. The time stamp is made up of the date and time the report was generated. Adding a time stamp is useful in order to run consecutive iterations of the same report without overwriting previous output.
Event Notification	
Raise event if report succeeds?	Set to **y** to raise an event if the report is successfully generated. The default is y.
Event severity when report succeeds	Set the severity level, from 1 to 40, to indicate the importance of an event in which the report is successful. The default is 35.
Event severity when report has no data	Set the severity level, from 1 to 40, to indicate the importance of an event in which the report contains no data. The default is 25.
Event severity when report fails	Set the severity level, from 1 to 40, to indicate the importance of an event in which the report fails. The default is 5.

3.14 Report_CallDetail_CiscoCallMgr

Use this Knowledge Script to display details for calls that match criteria you specify for a selected Unified Communications Manager. Call details can include time, calling number, and called number. Any criteria parameter you leave blank is not included in the search.

NOTE: Unlike other modules, for the Call Data Analysis module, the Report agent pulls data from the Data Warehouse rather than from the AppManager repository. The Report agent uses Windows authentication to access the Data Warehouse.

3.14.1 Identifying Malicious Calls

This report can aid you in identifying malicious calls for a VoIP security assessment. Your company may have its own definition of what constitutes a malicious call, but in general, a malicious call is disturbing or harmful to the recipient. Examples of malicious calls include incoming fax calls, calls from telemarketers, or calls from external recruiters.

Cisco Unified Communications Manager provides a Malicious Call ID feature. When configured, this feature allows a user to identify a malicious call by pressing a soft key. Communications Manager stores information about the unwanted call in the CDR database. AppManager can filter the CDR database for any call flagged as malicious.

Using the Report_CallDetail_CiscoCallMgr Knowledge Script and the *Calls identified as malicious* parameter, you can create a report that identifies the time, number, and IP address of the malicious caller. By also specifying a **CalledNumber** or **CallingNumber** in the *Search Criteria* parameter, you can filter the report to display all malicious calls to or from a particular number.

Let us say your engineers were being plagued with calls from an outside recruiter. They identified the calls as malicious and you ran Report_CallDetails to pinpoint the calling number. After you identified the malicious calling number, you routed future calls from this number through your voice gateway to your main phone operator. Your operator quickly dispatched the recruiter and your engineers returned to their work.

What if one of your employees receives a disturbing or malicious call, but is using a phone that is not equipped to flag a malicious call? You can use the Report_CallDetails Knowledge Script and the time of the call to create a report that displays all calls within a certain time period. Use the *Select time range* parameter to indicate the time of the call. Then supply the employee's phone number in the *Search criteria - Called number* parameter. AppManager will search the CDR database for all calls to the employee's number that occurred during the period you specified.

3.14.2 Resource Object

Report agent

3.14.3 Default Schedule

By default, this script runs once.

3.14.4 Setting Parameter Values

Set the following parameters as needed:

Parameter	How to Set It
Data Source	
Select data source	Select the data for your report by **View Name**, **Data Warehouse**, or **Data Source**.
Select time range	Select a **Specific** or **Sliding** date/time range from which the report should pull data. The default is Sliding.

Parameter	How to Set It
Minimum duration	Specify a minimum duration for calls selected by the script. Calls with a duration of less than the minimum will not be included in the report, even if all other criteria are satisfied. Type 0 to indicate no limit.
Maximum duration	Specify a maximum duration for calls selected by the script. Calls with a duration of greater than the maximum will not be included in the report, even if all other criteria are satisfied. Type 0 to indicate no limit.
Search Criteria	
Note for entering search criteria: If you specify only the wildcard (*) for a field (such as calling number), AppManager matches *only* those calls that have a value for that field. Calls for which that field has no value (i.e., is NULL) will not be matched. For example, if you specify * in the *Calling partition name* parameter, the search matches only those calls that have some partition name configured. To match all calls (including calls that have no value for the selected field), leave the search criteria parameter blank.	
Calling number	Specify the calling number you want to find.
Called number	Specify the called number you want to find.
Calling device name	Specify the name of the calling device you want to find.
Called device name	Specify the name of the called device you want to find.
Calling device IP address	Specify the IP addresses of the calling devices you want to find. Use one of the following formats: ◆ Single dotted-decimal IP address, such as 10.41.2.31 ◆ Dotted-decimal IP address that includes a wildcard, such as 10.41.*.*, which would search for all IP addresses in the range of 10.41.0.0 to 10.41.255.255. ◆ Range of dotted-decimal IP addresses separated by a hyphen, such as 10.41.2.31-10.41.2.41. The first address indicates the beginning of the range; the second IP address marks the end of the range.
Called device IP address	Specify the IP addresses of the called devices you want to find. Use one of the following formats: ◆ Single dotted-decimal IP address, such as 10.41.2.31 ◆ Dotted-decimal IP address that includes a wildcard, such as 10.41.*.*, which would search for all IP addresses in the range of 10.41.0.0 to 10.41.255.255. ◆ Range of dotted-decimal IP addresses separated by a hyphen, such as 10.41.2.31-10.41.2.41. The first address indicates the beginning of the range; the second IP address marks the end of the range.
Calling device location name	Specify the name of the calling device location you want to find. Use the location configured on the Communications Manager.
Called device location name	Specify the name of the called device location you want to find. Use the location configured on the Communications Manager.
Calling partition name	Specify the name of the calling partition you want to find.
Called partition name	Specify the name of the called partition you want to find.

Parameter	How to Set It
Inbound trunk group name	Specify the name of the inbound trunk group you want to find.
Outbound trunk group name	Specify the name of the outbound trunk group you want to find.
Calls identified as malicious	Select **Yes** to search for calls identified as malicious by call recipients. The default is unselected.
Forced Authorization Code (FAC) level or range of levels	Specify the FAC level you want to find. Specify a single FAC level, such as `30`, or a range of levels separated by a hyphen, such as `30-50`. The maximum level is 255. To search for all levels above a certain point, specify a range that begins with the certain point and ends with 255, such as `30-255`. **NOTE:** An FAC is a code users must enter when attempting to make a priority phone call, such as an international call.
Forced Authorization Code (FAC) name	Specify the FAC name you want to find. An FAC is a code users must enter when attempting to make a priority phone call, such as an international call. The text string can contain the ***** wildcard.
Client Matter Code	Specify the client matter code you want to find. A client matter code is one users must enter to assign a phone call to a particular billing entity, such as a specific client or project. The text string can contain the ***** wildcard.
Comment field	Specify a string of text you want to find in the CDR Comment field. The text string can contain the ***** wildcard.

Custom SQL filter	Specify a SQL clause to filter the results in the report.
	
	NOTE: To use this parameter properly, the SQL clause must be designed so that it could be used in a WHERE clause. However, you do not need to mention the WHERE clause in the parameter text. Below are three examples:
	
	`Duration=0 and OrigNumberPacketsSent is null`
	
	`Duration=0`
	
	`Comment like 'C%'`

Call Details to Include in Report	
Call duration	Select to include call duration in the call details for each call in the report. The default is checked.
Call type	Select to include call classification type in the call details for each call in the report. The default is unselected. For more information, see “Reviewing Call Classification Types” on page 51.
Originator disconnect cause code	Select to include the disconnect cause code in the call details for each originator call included in the report. The default is checked.
Destination disconnect cause code	Select to include the disconnect cause code in the call details for each destination call included in the report. The default is checked.

Parameter	How to Set It
Call ID	Select to include the call ID in the call details for each call in the report. The default is unselected. The call ID is a globally unique identifier (GUID) that identifies the call. AppManager uses the call ID from the pkid field in the CallDetailRecord table in the Communications Manager CDR database.
Partition and Device Information	
Calling number partition name	Select to include the name of the calling number partition in the call details for each call in the report. The default is unselected.
Calling device location name	Select to include the name of the calling device location in the call details for each call in the report. Use the location configured on the Communications Manager. The default is unselected.
Originator IP address	Select to include the IP address of the originating phone in the call details for each call in the report. The default is unselected.
Originator device name	Select to include the name of the originating device in the call details for each call in the report. The default is unselected.
Originator media IP address	Select to include the IP address of the device that originated the media for the call. ◆ For Cisco IP calls, this selection returns the address of the Cisco IP phone. ◆ For PSTN calls, this selection returns the address of the gateway. ◆ For intercluster calls, this selection returns the address of the remote Cisco IP phone.
Originator media port	Select to include the IP port number associated with the originating media IP address.
Inbound trunk group name	Select to include the name of the inbound trunk group in the call details for each call in the report. The default is unselected. **NOTE:** This parameter is applicable only when a gateway is involved.
Called number partition name	Select to include the name of the called number partition in the call details for each call in the report. The default is unselected.
Called device location name	Select to include the name of the called device location in the call details for each call in the report. Use the location configured on the Communications Manager. The default is unselected.
Destination IP address	Select to include the IP address of the destination phone in the call details for each call in the report. The default is unselected.
Destination device name	Select to include the name of the destination device in the call details for each call in the report. The default is unselected.

Parameter	How to Set It
Destination media IP address	Select to include the IP address of the device that terminated the media for the call. ◆ For Cisco IP calls, this selection returns the address of the Cisco IP phone. ◆ For PSTN calls, this selection returns the address of the H.323 gateway. ◆ For intercluster calls, this selection returns the address of the remote Cisco IP phone.
Destination media port	Select to include the IP port number associated with the destination media IP address.
Outbound trunk group name	Select to include the name of the outbound trunk group in the call details for each call in the report. The default is unselected. **NOTE:** This parameter is applicable only when a gateway is involved.
Quality Metrics	
Originator ...	Select to include one or more originating phone metrics in the call details for each call in the report. The default is unselected. ◆ **Codec type** ◆ **Jitter** ◆ **Latency**
Destination ...	Select to include the following destination phone metrics in the call details for each call in the report. The default is unselected. ◆ **Codec type** ◆ **Jitter** ◆ **Latency**
Listening MOS	
Originator ...	Select to include one or more MOS-related (Mean Opinion Score) originating phone metrics in the call details for each call in the report. The default is unselected. ◆ **Average MOS** ◆ **Minimum MOS** ◆ **Maximum MOS** ◆ **Last MOS**
Destination ...	Select to include one or more MOS-related (Mean Opinion Score) destination phone metrics in the call details for each call in the report. The default is unselected. ◆ **Average MOS** ◆ **Minimum MOS** ◆ **Maximum MOS** ◆ **Last MOS**
Packets	

Parameter	How to Set It
Originator ...	Select to include one or more packet-related originating phone metrics in the call details for each call in the report. The default is unselected. ◆ **Packets sent** ◆ **Packets received** ◆ **Packets lost**
Destination ...	Select to include one or more packet-related destination phone metrics in the call details for each call in the report. The default is unselected. ◆ **Packets sent** ◆ **Packets received** ◆ **Packets lost**
Concealment	
Originator ...	Select to include one or more concealment-related originating phone metrics in the call details for each call in the report. Concealment metrics measure packet (frame) loss and its effect on voice quality in an impaired network. The default is unselected. ◆ **Cumulative conceal ratio**, the cumulative ratio of concealment time over speech time observed after starting a call. ◆ **Interval conceal ratio**, an interval-based average concealment rate, is the ratio of concealment time over speech time for the last three seconds of active speech. ◆ **Maximum conceal ratio**, the maximum concealment ratio observed during a call. ◆ **Conceal seconds**, the amount of time during which some concealment is observed during a call. ◆ **Severely conceal seconds**, the amount of time during which a significant amount of concealment is observed. If the concealment observed is usually greater than 50 milliseconds or approximately 5%, the speech is probably not very audible.

Parameter	How to Set It
Destination ...	Select to include one or more concealment-related destination phone metrics in the call details for each call in the report. Concealment metrics measure packet (frame) loss and its effect on voice quality in an impaired network. The default is unselected. ◆ **Cumulative conceal ratio**, the cumulative ratio of concealment time over speech time observed after starting a call. ◆ **Interval conceal ratio**, an interval-based average concealment rate, is the ratio of concealment time over speech time for the last three seconds of active speech. ◆ **Maximum conceal ratio**, the maximum concealment ratio observed during a call. ◆ **Conceal seconds**, the amount of time during which some concealment is observed during a call. ◆ **Severely conceal seconds**, the amount of time during which a significant amount of concealment is observed. If the concealment observed is usually greater than 50 milliseconds or approximately 5%, the speech is probably not very audible.
Security Information	
Forced Authorization Code (FAC) level	Select to include the FAC level in the call details for each call in the report. The default is unselected.
Forced Authorization Code (FAC) name	Select to include the FAC name in the call details for each call in the report. The default is unselected.
Client Matter Code	Select to include the client matter code in the call details for each call in the report. The default is unselected.
Comment field	Select to include the contents of the CDR Comment field in the call details for each call in the report. The default is unselected.
Report Settings	
Maximum number of calls to return	Specify the maximum number of calls to include in the report. The default is 1000 calls. **NOTE:** No matter how many calls you choose to include in the call details section of the report, the report will also include a small table that indicates how many calls actually met your search criteria. This number may, and probably will, exceed the number of calls you choose to return.

Parameter	How to Set It
Order rows by?	Select one of the following call detail options as the criterion for sorting the rows in the report: ◆ **Ascending Time** (oldest to most recent) ◆ **Descending Time** (most recent to oldest) ◆ **Longest Duration** (longest to shortest) ◆ **Shortest Duration** (shortest to longest) ◆ **Calling Number** ◆ **Called Number** ◆ **Calling Partition**. If you select this option, you must also check the *Calling number partition name* parameter under the Partition and device information section of this script. ◆ **Called Partition**. If you select this option, you must also check the *Called number partition name* parameter under the Partition and Device Information section of this script. ◆ **Calling Location**. If you select this option, you must also check the *Calling device location name* parameter under the Partition and Device Information section of this script. ◆ **Called Location**. If you select this option, you must also check the *Called device location name* parameter under the Partition and Device Information section of this script. ◆ **Ascending FAC Level** (lowest to highest number) ◆ **Descending FAC Level** (highest to lowest number) ◆ **FAC Name** ◆ **Client Matter Code**
Include parameter help card?	Set to **y** to include a table in the report that lists parameter settings for the report script. The default is y.
Select output folder	Set parameters for the output folder. The default folder name is CallDataDetails.
Add job ID to output folder name?	Set to **y** to append the job ID to the name of the output folder. The default is n. A job ID is helpful for making the correlation between a specific instance of a Report script and the corresponding report.
Select properties	Set miscellaneous report properties as desired. The default report name is Call Details.
Add time stamp to title?	Set to **y** to append a time stamp to the title of the report, making each title unique. The default is n. The time stamp is made up of the date and time the report was generated. Adding a time stamp is useful in order to run consecutive iterations of the same report without overwriting previous output.
Event Notification	
Raise event if report succeeds?	Set to **y** to raise an event if the report is successfully generated. The default is y.

Parameter	How to Set It
Event severity when report succeeds	Set the severity level, from 1 to 40, to indicate the importance of an event in which the report is successful. The default is 35.
Event severity when report has no data	Set the severity level, from 1 to 40, to indicate the importance of an event in which the report contains no data. The default is 25.
Event severity when report fails	Set the severity level, from 1 to 40, to indicate the importance of an event in which the report fails. The default is 5.

3.15 Report_CallDetail_H323Gateway

Use this Knowledge Script to display details for calls that match criteria you specify for a selected H.323 gateway. Call details can include time, calling number, and called number. Any criteria parameter you leave blank is not included in the search.

If you have Cisco Communications Manager Express gateways, run CCME_GetConfig to ensure the Data Collection process has access to configuration information when processing call detail records. Without the configuration information, the Data Collection process cannot determine the IP address of the Communications Manager Express phone and you will not be able to use the *Originating IP Address* and *Terminating IP Address* selection parameters in this Report script.

NOTE: Unlike other modules, for the Call Data Analysis module, the Report agent pulls data from the Data Warehouse rather than from the AppManager repository. The Report agent uses Windows authentication to access the Data Warehouse.

3.15.1 Resource Object

Report agent

3.15.2 Default Schedule

By default, this script runs once.

3.15.3 Setting Parameter Values

Set the following parameters as needed:

Parameter	How to Set It
Data Source	
Select data source	Select the data for your report by **View Name**, **Data Warehouse**, or **Data Source**.
Select time range	Select a **Specific** or **Sliding** date/time range from which the report should pull data. The default is Sliding.

Parameter	How to Set It
Minimum duration	Specify a minimum duration for calls selected by the script. Calls with a duration of less than the minimum will not be included in the report, even if all other criteria are satisfied. Type 0 to indicate no limit.
Maximum duration	Specify a maximum duration for calls selected by the script. Calls with a duration of greater than the maximum will not be included in the report, even if all other criteria are satisfied. Type 0 to indicate no limit.
Search Criteria	
Note for entering search criteria: If you specify only the wildcard (*) for a field (such as calling number), AppManager matches *only* those calls that have a value for that field. Calls for which that field has no value (i.e., is NULL) will not be matched. For example, if you specify * in the *Calling partition name* parameter, the search matches only those calls that have some partition name configured. To match all calls (including calls that have no value for the selected field), leave the search criteria parameter blank.	
Calling number	Specify the calling number you want to find.
Called number	Specify the called number you want to find.
Originating gateway name	Specify the name of the originating gateway you want to find.
Terminating gateway name	Specify the name of the terminating gateway you want to find.
Originating IP address	Specify the IP addresses of the originating gateways you want to find. Use one of the following formats: ◆ Single dotted-decimal IP address, such as 10.41.2.31 ◆ Dotted-decimal IP address that includes a wildcard, such as 10.41.*.*, which would search for all IP addresses in the range of 10.41.0.0 to 10.41.255.255. ◆ Range of dotted-decimal IP addresses separated by a hyphen, such as 10.41.2.31-10.41.2.41. The first address indicates the beginning of the range; the second IP address marks the end of the range. For calls through the gateway from the PSTN, this search criterion returns the actual IP address of the gateway. For calls through the gateway from Communications Manager Express phones, this search criterion returns the IP address of the Communications Manager Express phones. If this IP address cannot be determined from Communications Manager Express configuration information, this search criterion returns no information.

Parameter	How to Set It
Terminating IP address	Specify the IP addresses of the terminating gateways you want to find. You can use one of the following formats: ◆ Single dotted-decimal IP address, such as 10.41.2.31 ◆ Dotted-decimal IP address that includes a wildcard, such as 10.41.*.*, which would search for all IP addresses in the range of 10.41.0.0 to 10.41.255.255. ◆ Range of dotted-decimal IP addresses separated by a hyphen, such as 10.41.2.31-10.41.2.41. The first address indicates the beginning of the range; the second IP address marks the end of the range. For calls through the gateway to the PSTN, this search criterion returns the actual IP address of the gateway. For calls through the gateway to Communications Manager Express phones, this search criterion returns the IP address of the Communications Manager Express phones. If this IP address cannot be determined from Communications Manager Express configuration information, this search criterion returns no information.
Inbound trunk group name	Specify the name of the inbound trunk group you want to find.
Outbound trunk group name	Specify the name of the outbound trunk group you want to find.
Call Details to Include in Report	
Call duration	Select to include call duration in the call details for each call in the report. The default is checked.
Call type	Select to include call classification type in the call details for each call in the report. The default is unselected. For more information, see “Reviewing Call Classification Types” on page 51.
Originating gateway disconnect cause code	Select to include the disconnect cause code in the call details for each originating gateway call included in the report. The default is checked.
Terminating gateway disconnect cause code	Select to include the disconnect cause code in the call details for each terminating gateway call included in the report. The default is checked.
Call ID	Select to include the call ID in the call details for each call in the report. The default is unselected. The call ID is a globally unique identifier (GUID) that identifies the call. AppManager uses the call ID from the h323-conf-id field received in the RADIUS records; all H.323 call legs belonging to the same call will have the same h323-conf-id.
Gateway, Port, and IP Information	
Originating gateway name	Select to include the name of the originating gateway in the call details for each call in the report. The default is unselected.
Originating gateway voice port	Select to include the port number of the originating gateway voice port in the call details for each call in the report. The default is unselected.
Originating IP address	Select to include the IP address of the originating gateway or Communications Manager Express phone in the call details for each call in the report. The default is unselected.
Inbound trunk group name	Select to include the name of the inbound trunk group in the call details for each call in the report. The default is unselected.

Parameter	How to Set It
Terminating gateway name	Select to include the name of the terminating gateway in the call details for each call in the report. The default is unselected.
Terminating gateway voice port	Select to include the port number of the terminating gateway voice port in the call details for each call in the report. The default is unselected.
Terminating IP address	Select to include the IP address of the terminating gateway or Communications Manager Express phone in the call details for each call in the report. The default is unselected.
Outbound trunk group name	Select to include the name of the outbound trunk group in the call details for each call in the report. The default is unselected.
Quality Metrics	
Originating gateway ...	Select to include the following originating gateway metrics in the call details for each call in the report. The default is unselected. ◆ **Codec type** ◆ **MOS** ◆ **R-value** ◆ **ICPIF Voice Quality** ◆ **Packets sent** ◆ **Packets received** ◆ **Packets lost** ◆ **Packets early** ◆ **Packets late** ◆ **Delay**
Terminating gateway ...	Select to include the following terminating gateway metrics in the call details for each call in the report. The default is unselected. ◆ **Codec type** ◆ **MOS** ◆ **R-value** ◆ **ICPIF Voice Quality** ◆ **Packets sent** ◆ **Packets received** ◆ **Packets lost** ◆ **Packets early** ◆ **Packets late** ◆ **Delay**
Remote Session Protocol and IP Addresses	
Originating gateway session protocol	Select to include the protocol being used on the originating VoIP legs of a call. Cisco voice gateways set this information to “cisco” for the H.323 protocol.

Parameter	How to Set It
Originating gateway remote gateway IP address	Select to include the IP address of the originating gateway's terminating gateway in the call details for each call in the report. The default is unselected. For a call coming in through the voice gateway to an IP phone registered to a Communications Manager, the remote gateway IP address is that of the Communications Manager.
Originating gateway remote gateway port	Select to include the port number of the originating gateway's terminating gateway in the call details for each call in the report. The default is unselected. For a call coming in through the voice gateway to an IP phone registered to a Communications Manager, the remote gateway port is that of the Communications Manager.
Originating gateway remote media IP address	Select to include the IP address of the originating gateway's remote media in the call details for each call in the report. The default is unselected. The remote media address is the IP address to which media is streamed. For a call coming in through the voice gateway to an IP phone registered to a Communications Manager, the remote media IP address is that of the phone.
Originating gateway remote media port	Select to include the port number of the originating gateway's terminating media in the call details for each call in the report. The default is unselected. For a call coming in through the voice gateway to an IP phone registered to a Communications Manager, the remote gateway port is that of the phone.
Terminating gateway session protocol	Select to include the protocol being used on the terminating VoIP legs of a call. Cisco voice gateways set this information to "cisco" for the H.323 protocol.
Terminating gateway remote gateway IP address	Select to include the IP address of the terminating gateway's originating gateway in the call details for each call in the report. The default is unselected. For a call leaving the voice gateway from an IP phone registered to a Communications Manager, the originating gateway IP address is that of the Communications Manager.
Terminating gateway remote gateway port	Select to include the port number of the terminating gateway's originating gateway in the call details for each call in the report. The default is unselected. For a call leaving the voice gateway from an IP phone registered to a Communications Manager, the originating gateway port is that of the Communications Manager.
Terminating gateway remote media IP address	Select to include the IP address of the terminating gateway's remote media in the call details for each call in the report. The default is unselected. The remote media address is the IP address to which media is streamed. For a leaving the voice gateway from an IP phone registered to a Communications Manager, the remote media IP address is that of the phone.

Parameter	How to Set It
Terminating gateway remote media port	Select to include the port number of the terminating gateway's originating media port in the call details for each call in the report. The default is unselected. For a call leaving the voice gateway from an IP phone registered to a Communications Manager, the remote media port is that of the phone.
Report Settings	
Maximum number of calls to return	Specify the maximum number of calls to include in the report. The default is 1000 calls. **NOTE:** No matter how many calls you choose to include in the call details section of the report, the report will also include a small table that indicates how many calls actually met your search criteria. This number may, and probably will, exceed the number of calls you choose to return.
Order rows by?	Select one of the following call detail options as the criterion for sorting the rows in the report: ◆ Ascending Time (oldest to most recent) ◆ Descending Time (most recent to oldest) ◆ Longest Duration (longest to shortest) ◆ Shortest Duration (shortest to longest) ◆ Calling Number ◆ Called Number ◆ Orig Gateway Name. If you select this option, also check the Originating gateway name parameter under the Gateway and Port information folder of this script. ◆ Term Gateway Name. If you select this option, also check the Terminating gateway name parameter under the Gateway and Port Information folder of this script. ◆ Inbound Trunk Group. If you select this option, also check the Inbound trunk group name parameter under the Gateway and Port information folder of this script. ◆ Outbound Trunk Group. If you select this option, also check the Outbound trunk group name parameter under the Gateway and Port information folder of this script.
Include parameter help card?	Set to **y** to include a table in the report that lists parameter settings for the report script. The default is y.
Select output folder	Set parameters for the output folder. The default folder name is CallDetail_H323Gateway.
Add job ID to output folder name?	Set to **y** to append the job ID to the name of the output folder. The default is n. A job ID is helpful for making the correlation between a specific instance of a Report script and the corresponding report.
Select properties	Set miscellaneous report properties as desired. The default report name is Cisco H.323 Gateway Call Details.

Parameter	How to Set It
Add time stamp to title?	Set to **y** to append a time stamp to the title of the report, making each title unique. The default is n. The time stamp is made up of the date and time the report was generated. Adding a time stamp is useful in order to run consecutive iterations of the same report without overwriting previous output.
Event Notification	
Raise event if report succeeds?	Set to **y** to raise an event if the report is successfully generated. The default is y.
Event severity when report succeeds	Set the severity level, from 1 to 40, to indicate the importance of an event in which the report is successfully generated. The default is 35.
Event severity when report has no data	Set the severity level, from 1 to 40, to indicate the importance of an event in which the report contains no data. The default is 25.
Event severity when report fails	Set the severity level, from 1 to 40, to indicate the importance of an event in which the report cannot be generated. The default is 5.

3.16 Report_CallFailureCauses

Use this Knowledge Script to analyze the failure causes for calls matching criteria you specify. You can select more than one filter in the Search Criteria parameters.

NOTE: Unlike other modules, for the Call Data Analysis module, the Report agent pulls data from the Data Warehouse rather than from the AppManager repository. The Report agent uses Windows authentication to access the Data Warehouse.

Resource Object

Report agent

Default Schedule

By default, this script runs once.

Setting Parameter Values

Set the following parameters as needed:

Parameter	How to Set It
Data Source	
Select data source	Select the data for your report by **View Name**, **Data Warehouse**, or **Data Source**.
Select time range	Select a **Specific** or **Sliding** date/time range from which the report should pull data. The default is Sliding.

Parameter	How to Set It
Exclude these failure codes	Specify a list of termination codes (separated by commas) that are not to be considered failures. See Termination Codes for a list of available codes. **NOTE:** Codes 0, 16, 31, 126, and 393216 are automatically excluded. They are normal termination codes. However, these codes may appear in events if the other side of the call has a failure code that has not been excluded.
Minimum duration	Specify the minimum duration filter for calls selected by the script. Calls with a duration of less than the minimum will not be included in the report, even if all other criteria are satisfied. The default is 0 seconds.
Search Criteria	
Note for entering search criteria: If you specify only the wildcard (*) for a field (such as calling number), AppManager matches *only* those calls that have a value for that field. Calls for which that field has no value (i.e., is NULL) will not be matched. For example, if you specify * in the *Calling partition name* parameter, the search matches only those calls that have some partition name configured. To match all calls (including calls that have no value for the selected field), leave the search criteria parameter blank.	
Calling number	Specify the calling number you want to find.
Called number	Specify the called number you want to find.
Calling device name	Specify the name of the calling device you want to find.
Called device name	Specify the name of the called device you want to find.
Calling device IP address	Specify the IP addresses of the calling devices you want to find. Use one of the following formats: ◆ Single dotted-decimal IP address, such as 10.41.2.31 ◆ Dotted-decimal IP address that includes a wildcard, such as 10.41.*.*, which would search for all IP addresses in the range of 10.41.0.0 to 10.41.255.255. ◆ Range of dotted-decimal IP addresses separated by a hyphen, such as 10.41.2.31-10.41.2.41. The first address indicates the beginning of the range; the second IP address marks the end of the range.
Called device IP address	Specify the IP addresses of the called devices you want to find. Use one of the following formats: ◆ Single dotted-decimal IP address, such as 10.41.2.31 ◆ Dotted-decimal IP address that includes a wildcard, such as 10.41.*.*, which would search for all IP addresses in the range of 10.41.0.0 to 10.41.255.255. ◆ Range of dotted-decimal IP addresses separated by a hyphen, such as 10.41.2.31-10.41.2.41. The first address indicates the beginning of the range; the second IP address marks the end of the range.
Calling device location name	Specify the name of the calling device location you want to find. Use the location configured on the Communications Manager.
Called device location name	Specify the name of the called device location you want to find. Use the location configured on the Communications Manager.
Calling partition name	Specify the name of the calling partition you want to find.
Called partition name	Specify the name of the called partition you want to find.
Inbound trunk group name	Specify the name of the inbound trunk group you want to find.

Parameter	How to Set It
Outbound trunk group name	Specify the name of the outbound trunk group you want to find.
Report Settings	
Include parameter help card?	Set to **y** to include a table in the report that lists parameter settings for the report script. The default is y.
Include table?	Set to **y** to include a table of data stream values in the report. The default is y.
Include time details table?	Set to **y** to include the time details table in the report. The time details table presents a breakdown of the failure causes that occurred during each hour of the reporting period.
Include chart?	Set to **y** to include a chart of data stream values in the report. The default is y.
Select chart style	Define the graphic properties for the charts in your report. The default style is Pie.
Select output folder	Set parameters for the output folder. The default folder name is CallDataFailureCauses.
Add job ID to output folder name?	Set to **y** to append the job ID to the name of the output folder. The default is n. A job ID is helpful for making the correlation between a specific instance of a Report script and the corresponding report.
Select properties	Set miscellaneous report properties as desired. The default report name is Call Failure Causes.
Add time stamp to title?	Set to **y** to append a time stamp to the title of the report, making each title unique. The default is n. The time stamp is made up of the date and time the report was generated. Adding a time stamp is useful in order to run consecutive iterations of the same report without overwriting previous output.
Event Notification	
Raise event if report succeeds?	Set to **y** to raise an event if the report is successfully generated. The default is y.
Event severity when report succeeds	Set the severity level, from 1 to 40, to indicate the importance of an event in which the report is successful. The default is 35.
Event severity when report has no data	Set the severity level, from 1 to 40, to indicate the importance of an event in which the report contains no data. The default is 25.
Event severity when report fails	Set the severity level, from 1 to 40, to indicate the importance of an event in which the report fails. The default is 5.

3.16.1 Termination Codes

Use this list of termination codes (also known as call release cause codes) to complete the *Exclude these failure codes* parameter.

Termination Code	Description	Explanation
0	No error	No error.
1	Unallocated (unassigned) number	Indicates the called party cannot be reached because, although the called party number is in a valid format, it is not currently allocated (assigned).
2	No route to specified transit network (national use)	Indicates one of the following: ◆ The equipment sending this code has received a request to route the call through a transit network it does not recognize. The equipment does not recognize the transit network either because the transit network does not exist or because the transit network exists but does not serve the equipment sending the code. ◆ The prefix 0 is invalid for the entered number.
3	No route to destination	Indicates one of the following: ◆ The called party cannot be reached because the network through which the call has been routed does not service the desired destination. This cause is supported on a network-dependent basis. ◆ A 1 was dialed when not required. Redial without the 1.
4	Send special information tone	Indicates one of the following: ◆ The prefix 1 is not required for this number. ◆ The called party cannot be reached for reasons of a long-term nature. The special information tone should be returned to the calling party.
5	Misdialed trunk prefix (national use)	Indicates the erroneous inclusion of a trunk prefix in the called party number.
6	Channel unacceptable	Indicates a called user cannot negotiate for a B-channel other than that specified in the SETUP message.
7	Call awarded and being delivered in an established channel	Indicates the user has been awarded the incoming call and the call is being connected to a channel (such as packet mode or X.25 virtual calls) already established to that user for similar calls.
8	Preemption	Indicates a call has been preempted.
9	Preemption - circuit reserved for reuse	Indicates a call has been preempted because the circuit is reserved for reuse.
16	Normal call clearing	Indicates normal call clearing has occurred.

Termination Code	Description	Explanation
17	User busy	Indicates the called party is unable to accept another call because the user busy condition has been encountered. Code 17 may be generated by the called user or by the network. In the case of user-determined user busy, it is noted that the user equipment is compatible with the call.
18	No user responding	Indicates a called party does not respond to a call establishment message with an alerting or connect indication within the allotted prescribed period of time (before timer T303 or T310 has expired).
19	No answer from user (user alerted)	Indicates the called user has provided an alerting indication, but not a connect indication within a prescribed period of time (before timer T301 has expired).
20	Subscriber absent	Indicates one of the following:· ◆ A mobile station has logged off. ◆ Radio contact is not obtained with a mobile station. ◆ A personal telecommunications user is temporarily not addressable at any user-network interface.
21	Call rejected	Indicates one of the following: ◆ The equipment sending this cause does not want to accept the call, although it could have accepted the call because it is neither busy nor incompatible. ◆ May be generated by the network, indicating the call was cleared due to a supplementary service constraint.
22	Number changed	Indicates the called party number indicated by the calling party is no longer assigned. The new called party number may optionally be included in the diagnostic field. If a network does not support this cause, cause #1 shall be used.
26	Non-selected user clearing	Indicates the user has not been awarded the incoming call.
27	Destination out of order	Indicates the destination indicated by the user cannot be reached because the interface to the destination is not functioning correctly. The term "not functioning correctly" indicates a signal message was unable to be delivered to the remote party, as in the following examples: ◆ Physical layer or data link layer failure at the remote party ◆ User equipment off-line
28	Invalid number format (address incomplete)	Indicates one of the following: ◆ The called party cannot be reached because the called party number is not in a valid format or is not complete. ◆ The user should be returned a Special Intercept Announcement.

Termination Code	Description	Explanation
29	Facility rejected	Indicates one of the following: ◆ The network cannot provide the requested facility. ◆ A user in a special business group, such as a Centrex, dialed an undefined code.
30	Response to STATUS ENQUIRY	Indicates one of the following: ◆ This cause is included in the Status Message when the reason for sending the Status Message was the previous receipt of a Status Enquiry message. ◆ A user from outside a basic business group, such as a Centrex, has violated an access restriction feature.
31	Normal, unspecified	Used to report a normal event only when no other cause in the normal class applies.
34	No circuit/channel available	Indicates no appropriate circuit or channel is available to handle the call.
38	Network out of order	Indicates the network is not functioning correctly and the condition is likely to last a relatively long time. Immediately re-attempting the call is not likely to be successful.
39	Permanent frame mode connection out of service	Indicates a permanent connection was terminated, probably due to equipment failure.
40	Permanent frame mode connection operational	Indicates a permanent connection is operational again. The connection was previously terminated, probably due to equipment failure.
41	Temporary failure	Indicates the network is not functioning correctly and the condition is not likely to last a long time. The user may want to attempt another call almost immediately. May also indicate a data link layer malfunction locally or at the remote network interface, or a call was cleared due to protocol error(s) at the remote network interface.
42	Switching equipment congestion	Indicates the switching equipment generating this cause is experiencing a period of high traffic.
43	Access information discarded	Indicates the network is unable to deliver user information (such as user-to-user information, low-level compatibility, or sub-address) to the remote users as requested.
44	Requested circuit/channel not available	Indicates the other side of the interface cannot provide the circuit or channel indicated by the requesting entity.
46	Precedence call blocked	Indicates the remote device that was called is busy.
47	Resource unavailable, unspecified	Indicates one of the following: ◆ No other cause in the resource unavailable class applies. ◆ The original destination is unavailable. Invoke redirection to a new destination.
49	Quality of Service not available	Indicates the network cannot provide the requested Quality of Service. May be a subscription problem.

Termination Code	Description	Explanation
50	Requested facility not subscribed	Indicates this facility is unavailable because the user has not subscribed to it.
53	Service operation violated	Indicates the user has violated the service operation.
54	Incoming calls barred	Indicates the user will not accept the call delivered in the SETUP message.
55	Incoming calls barred within Closed User Group (CUG)	Indicates the network does not allow the user to receive calls.
57	Bearer capability not authorized	Indicates the user has requested a bearer capability implemented by the equipment that generated this cause. However, the user is not authorized to use it. This common problem is caused by incorrect Telco provisioning of the line at the time of installation.
58	Bearer capability not presently available	Indicates the user has requested a bearer capability implemented by the equipment that generated this cause. However, bearer capability is unavailable at the present time. This problem may be due to a temporary network problem or a subscription problem.
62	Inconsistency in designated outgoing access information and subscriber class	Indicates an inconsistency in the designated outgoing access information and subscriber class.
63	Service or option not available, unspecified	Indicates a service or option is not available. Used only when no other cause in this class applies.
65	Bearer capability not implemented	Indicates the equipment sending this cause does not support the requested bearer capability.
66	Channel type not implemented	Indicates the called party has reached an unsupported channel type.
69	Requested facility not implemented	Indicates the network (or node) does not support the requested bearer capability and therefore cannot be accessed at this time.
70	Only restricted digital information bearer capability available (national use)	Indicates the calling party has requested an unrestricted bearer service. However, the equipment sending this cause supports only the restricted version of the requested bearer capability.
79	Service or option not implemented, unspecified	Indicates a service or option was not implemented. Used only when no other cause in this class applies.
81	Invalid call reference value	Indicates the equipment sending this cause has received a message with a call reference not currently in use on the user-network interface. This value applies only if the call reference value is 1 or 2 octets long and is not the global call reference.
82	Identified channel does not exist	Indicates the equipment sending this cause has received a request to use a channel not active on the interface for a call.
83	A suspended call exists, but this call identity does not	Indicates a suspended call exists but the call's identity does not.
84	Call identity in use	Indicates a call identity is in use.
85	No call suspended.	Indicates no call is suspended.

Termination Code	Description	Explanation
86	Call having the requested call identity has been cleared	Indicates the call having the requested call identity has cleared.
87	User not member of Closed User Group (CUG)	Indicates the call was not completed, probably due to one of the following reasons: ◆ The dialed number is incorrect ◆ The user is not authorized to use (or has not subscribed to) the requested service ◆ User is using a service the remote device is not authorized to use
88	Incompatible destination	Indicates the equipment sending this cause has received a request to establish a call that has low layer compatibility, high layer compatibility, or other compatibility attributes (such as data rate or DN subaddress), which cannot be accommodated. This call can be returned by a switch to a CPE when trying to route a call to an incompatible facility, or one without a data rate.
90	Destination number missing and DC not subscribed	Indicates the call was not completed, probably due to one of the following reasons: ◆ The dialed number is incorrect ◆ The user is not authorized to use (or has not subscribed to) the requested service ◆ User is using a service the remote device is not authorized to use
91	Invalid transit network selection (national use)	Indicates an invalid transit network selection has been requested.
95	Invalid message, unspecified	Indicates the entity sending this cause has received an invalid message. Used when no other cause in this class applies.
96	Mandatory information element is missing	Indicates the equipment sending this cause has received a message that is missing an information element that must be present in the message before the message can be processed.
97	Message type non-existent or not implemented	Indicates one of the following: ◆ The equipment sending this cause has received a message type it does not recognize. Either the message is not defined, or it is defined and not implemented by the equipment sending this cause. ◆ A problem with the remote configuration or with the local D-channel.
98	Message not compatible with the call state, or the message type is non-existent or not implemented	Indicates one of the following: ◆ Message received is not compatible with the call state ◆ Message type is non-existent or not implemented

Termination Code	Description	Explanation
99	An information element or parameter non-existent or not implemented	Indicates the equipment sending this cause has received a message that includes information elements not recognized because either the information element identifier is not defined, or it is defined but not implemented by the equipment sending the cause. However, the information element is not required for the equipment sending the cause to process the message.
100	Invalid information element contents	Indicates the equipment sending this cause has received an information element it has implemented. However, one or more fields of the information elements are coded in such a way (such as truncated, invalid extension bit, invalid field values) that the information element has not been implemented by the equipment sending this cause.
101	The message not compatible with the call state	Indicates one of the following: ◆ The equipment sending this cause has received a message that procedures indicate is not a permissible message to receive at this time. ◆ The switch sending this cause is clearing the call because a threshold has been exceeded for multiple protocol errors during an active call.
102	Call terminated when timer expired; a recovery routine executed to recover from the error	Indicates a procedure has been initiated by the expiration of a timer in associated with error-handling procedures.
103	Parameter non-existent or not implemented - passed on (national use)	Indicates the equipment sending this cause has received a message that includes parameters not recognized because the parameters are defined but not implemented by the equipment sending the cause. The parameters were ignored. In addition, if the equipment sending this cause is an intermediate point, this cause indicates the parameters were passed on unchanged.
110	Message with unrecognized parameter discarded	Indicates the equipment sending this cause has discarded a received message that includes a parameter that is not recognized.
111	Protocol error, unspecified	Reports a protocol error event only when no other cause in this class applies. This cause may be displayed if the user failed to dial a 9 or an 8 for an outside line. In addition, this cause may be returned in the event of certain types of restrictions as to number of calls.
122	Precedence level exceeded	Indicates users attempted to make a call with a higher level of precedence than the highest precedence level authorized for their line.

Termination Code	Description	Explanation
123	Device not preemptable	Indicates one of the following: ◆ The dialed number is non-preemptable. That is, the dialed number registers as busy and has no call waiting, no call forwarding, and no alternate party designations. ◆ The dialed number has a higher precedence level (or priority) than the dialing number and cannot be preempted.
125	Out of bandwidth	Indicates not enough bandwidth was found to connect a call to the destination location.
126	Call split	A Cisco-specific code used by Communications Manager. Indicates a call was terminated during a transfer operation because it was split off and terminated (not part of the final transferred call). This code can help determine which calls were terminated as part of a feature operation.
127	Interworking, unspecified	Indicates an interworking call (usually a call to SW56 service) has ended. May also be seen in the event of a non-specific rejection by a long distance carrier.
129	Precedence out of bandwidth	Indicates not enough bandwidth was found to connect a precedence call to the destination location.
262144 0x40000	Conference full	A Cisco-specific code. Indicates a conference is at full capacity and can accept no new callers.
393216 0x60000	Call split	A Cisco-specific code used by Unified Communications Manager. Indicates a call was terminated during a transfer operation because it was split off and terminated (not part of the final transferred call). This code can help determine which calls were terminated as part of a feature operation.
458752 0x70000	Drop any party/drop last party	A Cisco-specific code. Indicates a call was dropped from a conference by the new feature "drop any party/drop last party."

3.17 Report_CallJitter

Use this Knowledge Script to categorize calls as having good, acceptable, or poor jitter based on thresholds you set. Calls that do not have a jitter measurement are categorized as having “no data.”

You can select only Unified Communications Manager Data Sources for this report. H.323 gateways do not provide jitter measurements.

NOTE: Unlike other modules, for the Call Data Analysis module, the Report agent pulls data from the Data Warehouse rather than from the AppManager repository. The Report agent uses Windows authentication to access the Data Warehouse.

3.17.1 Resource Object

Report agent

3.17.2 Default Schedule

By default, this script runs once.

3.17.3 Setting Parameter Values

Set the following parameters as needed:

Parameter	How to Set It
Data Source	
Select data source(s)	Select the data for your report by **View Name**, **Data Warehouse**, or **Data Source**.
Select time range	Select a **Specific** or **Sliding** date/time range from which the report should pull data. The default is Sliding.
Minimum duration	Specify the minimum duration filter for calls selected by the script. Calls with a duration of less than the minimum will not be included in the report, even if all other criteria are satisfied. The default is 1 second. **NOTE:** Calls that are not completed (i.e., have a duration of 0 seconds) do not generate call jitter data. Therefore, the minimum duration default is 1 second.
Group by	Select the delimiter by which you want to group the calls in your report. You can choose from the following sorting options: ◆ **Data Publisher**. Choose this option to sort the report by the Communications Manager Publisher or the Unified Communications Manager primary server. ◆ **Calling Partition** ◆ **Called Partition** ◆ **Calling Location** ◆ **Called Location** ◆ **Outbound Trunk Group** ◆ **Inbound Trunk Group** ◆ **Outbound Gateway** ◆ **Inbound Gateway** ◆ **CallManager Cluster**. This option provides the same sorting results as Data Publisher. This option is maintained in the script to provide backwards compatibility to older versions of AppManager for Call Data Analysis. ◆ **None**. Choose this option to combine all calls into a single group.
Show time details by	Select the time details you want to show for each group of calls. You can choose from the following detail options: ◆ **Hour of Day** ◆ **Day of Week** ◆ **Day of Month** ◆ **None**. If you select None, no time details are shown.

Parameter	How to Set It
Thresholds	
Threshold - Good-Acceptable jitter	Specify the value below which the call is acceptable and equal to or above which the call is good. The default is 40 ms.
Threshold - Acceptable-Poor jitter	Specify the value below which the call is poor and above which the call is acceptable. The default is 60 ms.
Report Settings	
Include parameter help card?	Set to **y** to include a table in the report that lists parameter settings for the report script. The default is y.
Include table?	Set to **y** to include a table of data stream values in the report. The default is y.
Include chart?	Set to **y** to include a chart of data stream values in the report. The default is y.
Select chart style	Define the graphic properties for the charts in your report. The default style is Bar_Stacked. **NOTE:** To create a chart that indicates the percentage for each category, select **Pie**.
Select output folder	Set parameters for the output folder. The default folder name is CallDataJitter.
Add job ID to output folder name?	Set to **y** to append the job ID to the name of the output folder. The default is n. A job ID is helpful for making the correlation between a specific instance of a Report script and the corresponding report.
Select properties	Set miscellaneous report properties as desired. The default report name is Call Jitter.
Add time stamp to title?	Set to **y** to append a time stamp to the title of the report, making each title unique. The default is n. The time stamp is made up of the date and time the report was generated. Adding a time stamp is useful in order to run consecutive iterations of the same report without overwriting previous output.
Event Notification	
Raise event if report succeeds?	Set to **y** to raise an event if the report is successfully generated. The default is y.
Event severity when report succeeds	Set the severity level, from 1 to 40, to indicate the importance of an event in which the report is successful. The default is 35.
Event severity when report has no data	Set the severity level, from 1 to 40, to indicate the importance of an event in which the report contains no data. The default is 25.
Event severity when report fails	Set the severity level, from 1 to 40, to indicate the importance of an event in which the report fails. The default is 5.

3.18 Report_CallJitterLoss

Use this Knowledge Script to categorize the percentage of calls lost due to jitter as being good, acceptable, or poor based on thresholds you set. Only calls from H.323 RADIUS Data Sources can be included in this report because only these Data Sources provide information about discarded packets.

Jitter loss calculations are based on the number of packets received and the number of packets discarded. Discarded packets are those that arrive too early or too late to be stored in the jitter buffer.

Calls that contain no information about received and discarded packets are placed into a “no data” category. In addition, calls that are not completed are not included in the report; they do not contain information about received and discarded packets.

NOTE: Unlike other modules, for the Call Data Analysis module, the Report agent pulls data from the Data Warehouse rather than from the AppManager repository. The Report agent uses Windows authentication to access the Data Warehouse.

3.18.1 Resource Object

Report agent

3.18.2 Default Schedule

By default, this script runs once.

3.18.3 Setting Parameter Values

Set the following parameters as needed:

Parameter	How to Set It
Data Source	
Select data source(s)	Select the data for your report by **View Name**, **Data Warehouse**, or **Data Source**.
Select time range	Select a **Specific** or **Sliding** date/time range from which the report should pull data. The default is Sliding.
Minimum duration	Specify the minimum duration filter for calls selected by the script. Calls with a duration of less than the minimum will not be included in the report, even if all other criteria are satisfied. The default is 1 second. **NOTE:** Calls that are not completed (i.e., have a duration of zero seconds) do not generate data about received and discarded packets. Therefore, the minimum duration default is 1 second.

Parameter	How to Set It
Group by	Select the delimiter by which you want to group the calls in your report. You can choose from the following sorting options: ◆ **Data Publisher**. Choose this option to sort the report by RADIUS gateway. ◆ **Outbound Gateway** ◆ **Inbound Gateway** ◆ **None**. Choose this option to combine all calls into a single group.
Show time details by	Select the time details you want to show for each group of calls. You can choose from the following detail options: ◆ **Hour of Day** ◆ **Day of Week** ◆ **Day of Month** ◆ **None**. If you select None, no time details are shown.
Thresholds	
Threshold - Good-Acceptable percent jitter loss	Specify the percentage below which the jitter loss is acceptable and equal to or above which the jitter loss is good. The default is 0.5%.
Threshold - Acceptable-Poor percent jitter loss	Specify the percentage below which the jitter loss is poor and above which the jitter loss is acceptable. The default is 1.0%.
Report Settings	
Include parameter help card?	Set to **y** to include a table in the report that lists parameter settings for the report script. The default is y.
Include table?	Set to **y** to include a table of data stream values in the report. The default is y.
Include chart?	Set to **y** to include a chart of data stream values in the report. The default is y.
Select chart style	Define the graphic properties for the charts in your report. The default style is Bar_Stacked. **NOTE:** To create a chart that indicates the percentage for each category, select **Pie**.
Select output folder	Set parameters for the output folder. The default folder name is CallDataJitterLoss.
Add job ID to output folder name?	Set to **y** to append the job ID to the name of the output folder. The default is n. A job ID is helpful for making the correlation between a specific instance of a Report script and the corresponding report.
Select properties	Set miscellaneous report properties as desired. The default report name is Call Jitter Loss.

Parameter	How to Set It
Add time stamp to title?	Set to **y** to append a time stamp to the title of the report, making each title unique. The default is n. The time stamp is made up of the date and time the report was generated. Adding a time stamp is useful in order to run consecutive iterations of the same report without overwriting previous output.
Event Notification	
Raise event if report succeeds?	Set to **y** to raise an event if the report is successfully generated. The default is y.
Event severity when report succeeds	Set the severity level, from 1 to 40, to indicate the importance of an event in which the report is successfully generated. The default is 35.
Event severity when report has no data	Set the severity level, from 1 to 40, to indicate the importance of an event in which the report contains no data. The default is 25.
Event severity when report fails	Set the severity level, from 1 to 40, to indicate the importance of an event in which the report cannot be generated. The default is 5.

3.19 Report_CallMOS

Use this Knowledge Script to categorize calls as having good, acceptable, or poor MOS or R-value based on thresholds you set.

Calls for which a MOS cannot be calculated are categorized as having “no data.” In addition, a MOS is not calculated for calls that are not completed.

MOS is calculated by AppManager (using the E-model) for H.323 RADIUS Data Sources; it is calculated by Cisco (using a Cisco algorithm) for Unified Communications Manager Data Sources.

NOTE: Unlike other modules, for the Call Data Analysis module, the Report agent pulls data from the Data Warehouse rather than from the AppManager repository. The Report agent uses Windows authentication to access the Data Warehouse.

3.19.1 Resource Object

Report agent

3.19.2 Default Schedule

By default, this script runs once.

3.19.3 Setting Parameter Values

Set the following parameters as needed:

Parameter	How to Set It
Data Source	

Parameter	How to Set It
Select data source(s)	Select the data for your report by **Type**, **View Name**, **Data Warehouse**, or **Data Source**.
Select time range	Select a **Specific** or **Sliding** date/time range from which the report should pull data. The default is Sliding.
Minimum duration	Specify the minimum duration filter for calls selected by the script. Calls with a duration of less than the minimum will not be included in the report, even if all other criteria are satisfied. The default is 1 second. **NOTE:** Calls that are not completed (i.e., have a duration of 0 seconds) do not generate MOS data. Therefore, the minimum duration default is 1 second.
Group by	Select the delimiter by which you want to group the calls in your report. You can choose from the following sorting options: ◆ **Data Publisher**. Choose this option to sort the report by RADIUS gateway or Communications Manager Publisher. ◆ **Calling Partition** ◆ **Called Partition** ◆ **Calling Location** ◆ **Called Location** ◆ **Outbound Trunk Group** ◆ **Inbound Trunk Group** ◆ **Outbound Gateway** ◆ **Inbound Gateway** ◆ **CallManager Cluster** ◆ **None**. Choose this option to combine all calls into a single group.
Show time details by	Select the time details you want to show for each group of calls. You can choose from the following detail options: ◆ **Hour of Day** ◆ **Day of Week** ◆ **Day of Month** ◆ **None**. If you select None, no time details are shown.
Thresholds	
Metric	Select whether to analyze call **MOS** or **R-value**. The R-value is calculated from the MOS score. For more information, see Section 3.3.2, “Reviewing Call Quality Metrics for Gateways and Routers,” on page 42. If your Data Source is a Communications Manager, do *not* select R-value. Communications Managers provide only a Listening MOS value; an R-value cannot be accurately calculated from a Listening MOS value.
Threshold - Good-Acceptable	Specify the MOS score below which a call is acceptable and equal to or above which a call is good. The default is 4.03.
Threshold - Acceptable-Poor	Specify the MOS score below which a call is poor and above which a call is acceptable. The default is 3.6.

Parameter	How to Set It
Report Settings	
Include parameter help card?	Set to **y** to include a table in the report that lists parameter settings for the report script. The default is y.
Include table?	Set to **y** to include a table of data stream values in the report. The default is y.
Include chart?	Set to **y** to include a chart of data stream values in the report. The default is y.
Select chart style	Define the graphic properties for the charts in your report. The default style is Bar_Stacked. **NOTE:** To create a chart that indicates the percentage for each category, select **Pie**.
Select output folder	Set parameters for the output folder. The default folder name is CallDataMOS.
Add job ID to output folder name?	Set to **y** to append the job ID to the name of the output folder. The default is n. A job ID is helpful for making the correlation between a specific instance of a Report script and the corresponding report.
Select properties	Set miscellaneous report properties as desired. The default report name is Call MOS.
Add time stamp to title?	Set to **y** to append a time stamp to the title of the report, making each title unique. The default is y. The time stamp is made up of the date and time the report was generated. Adding a time stamp is useful in order to run consecutive iterations of the same report without overwriting previous output.
Event Notification	
Raise event if report succeeds?	Set to **y** to raise an event if the report is successfully generated. The default is y.
Event severity when report succeeds	Set the severity level, from 1 to 40, to indicate the importance of an event in which the report is successfully generated. The default is 35.
Event severity when report has no data	Set the severity level, from 1 to 40, to indicate the importance of an event in which the report contains no data. The default is 25.
Event severity when report fails	Set the severity level, from 1 to 40, to indicate the importance of an event in which the report cannot be generated. The default is 5.

3.20 Report_CallPacketLoss

Use this Knowledge Script to categorize calls as having a good, acceptable, or poor packet loss percentage based on thresholds you set. Calls that do not have a packet loss measurement are categorized as having “no data.”

NOTE: Unlike other modules, for the Call Data Analysis module, the Report agent pulls data from the Data Warehouse rather than from the AppManager repository. The Report agent uses Windows authentication to access the Data Warehouse.

3.20.1 Resource Object

Report agent

3.20.2 Default Schedule

By default, this script runs once.

3.20.3 Setting Parameter Values

Set the following parameters as needed:

Parameter	How to Set It
Data Source	
Select data source(s)	Select the data for your report by **View Name**, **Data Warehouse**, or **Data Source**.
Select time range	Select a **Specific** or **Sliding** date/time range from which the report should pull data. The default is Sliding.
Minimum duration	Specify the minimum duration filter for calls selected by the script. Calls with a duration of less than the minimum will not be included in the report, even if all other criteria are satisfied. The default is 1 second. **NOTE:** Calls that are not completed (i.e., have a duration of 0 seconds) do not generate packet loss data. Therefore, the minimum duration default is 1 second.

Parameter	How to Set It
Group by	Select the delimiter by which you want to group the calls in your report. You can choose from the following sorting options: ◆ **Data Publisher**. Choose this option to sort the report by the entity that generates the data: Communications Manager Publisher, Unified Communications Manager primary server, or RADIUS gateway. ◆ **Calling Partition** (applies to Communications Manager Data Sources) ◆ **Called Partition** (applies to Communications Manager Data Sources) ◆ **Calling Location** (applies to Communications Manager Data Sources) ◆ **Called Location** (applies to Communications Manager Data Sources) ◆ **Outbound Trunk Group** (applies to Communications Manager Data Sources) ◆ **Inbound Trunk Group** (applies to Communications Manager Data Sources) ◆ **Outbound Gateway** (applies to all Data Sources) ◆ **Inbound Gateway** (applies to all Data Sources) ◆ **CallManager Cluster**. This option provides the same sorting results as Data Publisher. This option is maintained in the script to provide backwards compatibility to older versions of AppManager for Call Data Analysis. ◆ **None**. Choose this option to combine all calls into a single group. **NOTE:** If your *Select data source(s)* and *Group by* selections are incompatible (perhaps you selected an H.323 data source and a Communications Manager grouping), the report ignores your *Group by* selection and uses the default selection, which is Data Publisher.
Show time details by	Select the time details you want to show for each group of calls. You can choose from the following detail options: ◆ **Hour of Day** ◆ **Day of Week** ◆ **Day of Month** ◆ **None**. If you select None, no time details are shown.
Thresholds	
Threshold - Good-Acceptable percent packet loss	Specify the value below which the call is acceptable and equal to or above which the call is good. The default is 0.5%.
Threshold - Acceptable-Poor percent packet loss	Specify the value below which the call is poor and above which the call is acceptable. The default is 1.0%.
Report Settings	
Include parameter help card?	Set to **y** to include a table in the report that lists parameter settings for the report script. The default is y.
Include table?	Set to **y** to include a table of data stream values in the report. The default is y.

Parameter	How to Set It
Include chart?	Set to **y** to include a chart of data stream values in the report. The default is y.
Select chart style	Define the graphic properties for the charts in your report. The default style is Bar_Stacked.
Select output folder	Set parameters for the output folder. The default folder name is CallDataPacketLoss.
Add job ID to output folder name?	Set to **y** to append the job ID to the name of the output folder. The default is n. A job ID is helpful for making the correlation between a specific instance of a Report script and the corresponding report.
Select properties	Set miscellaneous report properties as desired. The default report name is Call Packet Loss.
Add time stamp to title?	Set to **y** to append a time stamp to the title of the report, making each title unique. The default is n. The time stamp is made up of the date and time the report was generated. Adding a time stamp is useful in order to run consecutive iterations of the same report without overwriting previous output.
Event Notification	
Raise event if report succeeds?	Set to **y** to raise an event if the report is successfully generated. The default is y.
Event severity when report succeeds	Set the severity level, from 1 to 40, to indicate the importance of an event in which the report is successful. The default is 35.
Event severity when report has no data	Set the severity level, from 1 to 40, to indicate the importance of an event in which the report contains no data. The default is 25.
Event severity when report fails	Set the severity level, from 1 to 40, to indicate the importance of an event in which the report fails. The default is 5.

3.21 Report_CallQualityByPhone

Use this Knowledge Script to identify the directory numbers (extensions) experiencing problems with call quality. AppManager calculates call metrics for calls in which the specified directory number originated the call and for calls in which the specified directory number was the destination.

- *Jitter* is an estimate of the statistical variance of the RTP data packet interarrival time, measured in milliseconds and expressed as an unsigned integer. Interarrival jitter is the mean deviation (smoothed absolute value) of the difference in packet spacing at the receiver compared to the sender for a pair of packets.
- *Latency* is the average value of the difference between the time stamp indicted by the senders of the messages and the timestamp of the receivers, measured when the messages are received.

- *MOS* (Mean Opinion Score) is an overall score representing the quality of a call. The MOS is a number between 1 and 5. A MOS of 5 is excellent; a MOS of 1 is unacceptably bad. AppManager uses the MOS Cisco has already calculated using its own algorithm.
- *Packet loss* equals the percentage of data packets lost since the beginning of reception. This number is calculated based on the number of packets expected and the number of packets actually received. The number of packets received includes those that were late or duplicates. Packets that arrive late are not counted as lost; the presence of duplicate packets could result in a negative lost data amount.

You can sort the rows in this report according to its various columns:

- Directory Number
- Duration of Originated Calls
- Average MOS
- Average Jitter
- Average Latency
- Average Packet Loss
- Duration of All Calls
- Success Rate
- Worst MOS
- Worst Jitter
- Worst Latency
- Worst Packet Loss

You can select only Unified Communications Manager Data Sources for this report. H.323 gateways cannot provide the required list of configured directory numbers.

NOTE: Unlike other modules, for the Call Data Analysis module, the Report agent pulls data from the Data Warehouse rather than from the AppManager repository. The Report agent uses Windows authentication to access the Data Warehouse.

3.21.1 Resource Object

Report agent

3.21.2 Default Schedule

By default, this script runs once.

3.21.3 Setting Parameter Values

Set the following parameters as needed:

Parameter	How to Set It
Data Source	
Select data source	Select the data for your report by **View Name**, **Data Warehouse**, or **Data Source**.
Select time range	Select a **Specific** or **Sliding** date/time range from which the report should pull data. The default is Sliding.
Minimum duration	Specify the minimum duration filter for calls selected by the script. The default is 0 seconds.

Parameter	How to Set It
Exclude these failure codes	Specify a list of termination codes (separated by commas) that are not to be considered failures. For more information, see Section 3.16.1, "Termination Codes," on page 82. **NOTE:** Codes 0, 16, 31, 126, and 393216 are automatically excluded. They are normal termination codes. However, these codes may appear in events if the other side of the call has a failure code that has not been excluded.
Search Criteria	
Note for entering search criteria: If you specify only the wildcard (*) for a field (such as calling number), AppManager matches *only* those calls that have a value for that field. Calls for which that field has no value (i.e., is NULL) will not be matched. For example, if you specify * in the *Calling partition name* parameter, the search matches only those calls that have some partition name configured. To match all calls (including calls that have no value for the selected field), leave the search criteria parameter blank.	
Directory number	Specify the directory numbers for which you want to identify call quality problems.
Device name	Specify the device names for which you want to identify call quality problems.
Device IP address	Specify the IP address of the devices you want to find. Use one of the following formats: ◆ Single dotted-decimal IP address, such as 10.41.2.31 ◆ Dotted-decimal IP address that includes a wildcard, such as 10.41.*.*, which would search for all IP addresses in the range of 10.41.0.0 to 10.41.255.255. ◆ Range of dotted-decimal IP addresses separated by a hyphen, such as 10.41.2.31-10.41.2.41. The first address indicates the beginning of the range; the second IP address marks the end of the range.
Device location name	Specify the names of the device locations for which you want to identify call quality problems. Use the location configured on the Unified Communications Manager.
Partition name	Specify the partition names for which you want to identify call quality problems.
Report Settings	
Order rows by?	Select the column by which you want to sort the rows in the report.
MOS type?	Select whether to display **Average** or **Minimum** MOS in your report. ◆ Average MOS is the running average of scores observed since the beginning of a call. ◆ Minimum MOS is the minimum score observed since the beginning of a call, and represents the worst-sounding eight-second interval.
Include parameter help card?	Set to **y** to include a table in the report that lists parameter settings for the report script. The default is y.
Select output folder	Set parameters for the output folder. The default folder name is CallQualityByPhone.

Parameter	How to Set It
Add job ID to output folder name?	Set to **y** to append the job ID to the name of the output folder. The default is n. A job ID is helpful for making the correlation between a specific instance of a Report script and the corresponding report.
Select properties	Set miscellaneous report properties as desired. The default report name is Call Quality By Phone.
Add time stamp to title?	Set to **y** to append a time stamp to the title of the report, making each title unique. The default is n. The time stamp is made up of the date and time the report was generated. Adding a time stamp is useful in order to run consecutive iterations of the same report without overwriting previous output.
Event Notification	
Raise event if report succeeds?	Set to **y** to raise an event when the report is successfully generated. The default is y.
Event severity when report succeeds	Set the severity level, from 1 to 40, to indicate the importance of an event in which the report is successful. The default is 35.
Event severity when report has no data	Set the severity level, from 1 to 40, to indicate the importance of an event in which the report contains no data. The default is 25.
Event severity when report fails	Set the severity level, from 1 to 40, to indicate the importance of an event in which the report fails. The default is 5.

3.22 Report_CallSuccessRate

Use this Knowledge Script to determine the success rate of calls recorded with the selected Data Source. A successful call is determined by the call's disconnect cause code.

NOTE: Unlike other modules, for the Call Data Analysis module, the Report agent pulls data from the Data Warehouse rather than from the AppManager repository. The Report agent uses Windows authentication to access the Data Warehouse.

3.22.1 Resource Object

Report agent

3.22.2 Default Schedule

By default, this script runs once.

3.22.3 Setting Parameter Values

Set the following parameters as needed:

Parameter	How to Set It
Data Source	
Select data source(s)	Select the data for your report by **View Name**, **Data Warehouse**, or **Data Source**.
Select time range	Select a **Specific** or **Sliding** date/time range from which the report should pull data. The default is Sliding.
Group by	Select the delimiter by which you want to group the calls in your report. You can choose from the following sorting options: ◆ **Data Publisher**. Choose this option to sort the report by the entity that generates the data: Communications Manager Publisher, Unified Communications Manager primary server, or RADIUS gateway. ◆ **Calling Partition** (applies to Communications Manager Data Sources) ◆ **Called Partition** (applies to Communications Manager Data Sources) ◆ **Calling Location** (applies to Communications Manager Data Sources) ◆ **Called Location** (applies to Communications Manager Data Sources) ◆ **Outbound Trunk Group** (applies to Communications Manager Data Sources) ◆ **Inbound Trunk Group** (applies to Communications Manager Data Sources) ◆ **Outbound Gateway** (applies to all Data Sources) ◆ **Inbound Gateway** (applies to all Data Sources) ◆ **CallManager Cluster**. This option provides the same sorting results as Data Publisher. This option is maintained in the script to provide backwards compatibility to older versions of AppManager for Call Data Analysis. ◆ None. Choose this option to combine all calls into a single group. **NOTE:** If your *Select data source(s)* and *Group by* selections are incompatible (perhaps you selected an H.323 data source and a Communications Manager grouping), the report ignores your *Group by* selection and uses the default selection, which is Data Publisher.
Show time details by	Select the time details you want to show for each group of calls. You can choose from the following detail options: ◆ **Hour of Day** ◆ **Day of Week** ◆ **Day of Month** ◆ **None**. If you select None, no time details are shown.

Parameter	How to Set It
Exclude these failure codes	Specify a list of termination codes (separated by commas) that are not to be considered failures. For more information, see Section 3.16.1, “Termination Codes,” on page 82. **NOTE:** Codes 0, 16, 31, 126, and 393216 are automatically excluded. They are normal termination codes. However, these codes may appear in events if the other side of the call has a failure code that has not been excluded.
Report Settings	
Include parameter help card?	Set to **y** to include a table in the report that lists parameter settings for the report script. The default is y.
Include table?	Set to **y** to include a table of data stream values in the report. The default is y.
Include chart?	Set to **y** to include a chart of data stream values in the report. The default is y.
Select chart style	Define the graphic properties for the charts in your report. The default style is Bar.
Select output folder	Set parameters for the output folder. The default folder name is CallDataSuccessRate.
Add job ID to output folder name?	Set to **y** to append the job ID to the name of the output folder. The default is n. A job ID is helpful for making the correlation between a specific instance of a Report script and the corresponding report.
Select properties	Set miscellaneous report properties as desired. The default report name is Call Success Rate.
Add time stamp to title?	Set to **y** to append a time stamp to the title of the report, making each title unique. The default is n. The time stamp is made up of the date and time the report was generated. Adding a time stamp is useful in order to run consecutive iterations of the same report without overwriting previous output.
Event Notification	
Raise event if report succeeds?	Set to **y** to raise an event when the report is successfully generated. The default is y.
Event severity when report succeeds	Set the severity level, from 1 to 40, to indicate the importance of an event in which the report is successful. The default is 35.
Event severity when report has no data	Set the severity level, from 1 to 40, to indicate the importance of an event in which the report contains no data. The default is 25.
Event severity when report fails	Set the severity level, from 1 to 40, to indicate the importance of an event in which the report fails. The default is 5.

3.23 Report_CallTraffic

Use this Knowledge Script to summarize call traffic by call type.

NOTE: Unlike other modules, for the Call Data Analysis module, the Report agent pulls data from the Data Warehouse rather than from the AppManager repository. The Report agent uses Windows authentication to access the Data Warehouse.

3.23.1 Resource Object

Report agent

3.23.2 Default Schedule

By default, this script runs once.

3.23.3 Setting Parameter Values

Set the following parameters as needed:

Parameter	How to Set It
Data Source	
Select data source(s)	Select the data for your report by **View Name**, **Data Warehouse**, or **Data Source**.
Select time range	Select a **Specific** or **Sliding** date/time range from which the report should pull data. The default is Sliding.
Minimum duration	Specify the minimum duration filter for calls selected by the script. Calls with a duration of less than the minimum will not be included in the report, even if all other criteria are satisfied. The default is 0 seconds.

Parameter	How to Set It
Group by	Select the delimiter by which you want to group the calls in your report. You can choose from the following sorting options: ◆ **Data Publisher**. Choose this option to sort the report by the entity that generates the data: Communications Manager Publisher, Unified Communications Manager primary server, or RADIUS gateway. ◆ **Calling Partition** (applies to Communications Manager Data Sources) ◆ **Called Partition** (applies to Communications Manager Data Sources) ◆ **Calling Location** (applies to Communications Manager Data Sources) ◆ **Called Location** (applies to Communications Manager Data Sources) ◆ **Outbound Trunk Group** (applies to Communications Manager Data Sources) ◆ **Inbound Trunk Group** (applies to Communications Manager Data Sources) ◆ **Outbound Gateway** (applies to all Data Sources) ◆ **Inbound Gateway** (applies to all Data Sources) ◆ **CallManager Cluster**. This option provides the same sorting results as Data Publisher. This option is maintained in the script to provide backwards compatibility to older versions of AppManager for Call Data Analysis. ◆ **None**. Choose this option to combine all calls into a single group. **NOTE:** If your *Select data source(s)* and *Group by* selections are incompatible (perhaps you selected an H.323 data source and a Communications Manager grouping), the report ignores your *Group by* selection and uses the default selection, which is Data Publisher.
Report Settings	
Include parameter help card?	Set to **y** to include a table in the report that lists parameter settings for the report script. The default is y.
Include table?	Set to **y** to include a table of data stream values in the report. The default is y.
Include chart?	Set to **y** to include a chart of data stream values in the report. The default is y.

Parameter	How to Set It

Show duration in Erlangs or seconds?	Select whether to display call duration in **Erlangs** or **Seconds**. The default is Erlangs.
	
	Also known as a traffic unit, an Erlang is a measurement of traffic load during the busy hour, and is based on having 3600 seconds (60 minutes or one hour) of calls on the same circuit, trunk, or port. (In other words, one circuit is busy for one hour regardless of the number of calls or the average length of calls). For example, if a call center received 30 six-minutes calls in the busy hour, it received 180 call minutes, or three Erlangs. If a call center received 100 calls that averaged 36 seconds in the busy hour, it received 3600 call seconds or one Erlang.
	
	You can use the following formula to calculate an Erlang value:
	
	`Traffic in Erlangs =`
	`(Number of calls in the busy hour) * (AHT seconds)/3600`

Select chart style	Define the graphic properties for the charts in your report. The default style is Bar_Stacked. **NOTE:** To create a chart that indicates the percentage of each type of call, select **Pie**.
Select output folder	Set parameters for the output folder. The default folder name is CallDataTraffic.
Add job ID to output folder name?	Set to **y** to append the job ID to the name of the output folder. The default is n. A job ID is helpful for making the correlation between a specific instance of a Report script and the corresponding report.
Select properties	Set miscellaneous report properties as desired. The default report name is Call Traffic.
Add time stamp to title?	Set to **y** to append a time stamp to the title of the report, making each title unique. The default is n. The time stamp is made up of the date and time the report was generated. Adding a time stamp is useful in order to run consecutive iterations of the same report without overwriting previous output.
Event Notification	
Raise event if report succeeds?	Set to **y** to raise an event when the report is successfully generated. The default is y.
Event severity when report succeeds	Set the severity level, from 1 to 40, to indicate the importance of an event in which the report is successful. The default is 35.
Event severity when report has no data	Set the severity level, from 1 to 40, to indicate the importance of an event in which the report contains no data. The default is 25.
Event severity when report fails	Set the severity level, from 1 to 40, to indicate the importance of an event in which the report fails. The default is 5.

3.24 Report_CallVolume

Use this Knowledge Script to summarize the number and duration of calls recorded with the selected Data Source.

In this report, calls that have an originating gateway and a terminating gateway that are different are associated with the originating gateway. For a clearer view of incoming and outgoing calls on a per-gateway basis, use the Report_TrunkGroupByHour report.

NOTE: Unlike other modules, for the Call Data Analysis module, the Report agent pulls data from the Data Warehouse rather than from the AppManager repository. The Report agent uses Windows authentication to access the Data Warehouse.

3.24.1 Resource Object

Report agent

3.24.2 Default Schedule

By default, this script runs once.

3.24.3 Setting Parameter Values

Set the following parameters as needed:

Parameter	How to Set It
Data Source	
Select data source(s)	Select the data for your report by **View Name**, **Data Warehouse**, or **Data Source**.
Select time range	Select a **Specific** or **Sliding** date/time range from which the report should pull data. The default is Sliding.
Minimum duration	Specify the minimum duration filter for calls selected by the script. Calls with a duration of less than the minimum will not be included in the report, even if all other criteria are satisfied. The default is 0 seconds.

Parameter	How to Set It
Group by	Select the delimiter by which you want to group the calls in your report. You can choose from the following sorting options: ◆ **Data Publisher**. Choose this option to sort the report by the entity that generates the data: Communications Manager Publisher, Unified Communications Manager primary server, or RADIUS gateway. ◆ **Calling Partition** (applies to Communications Manager Data Sources) ◆ **Called Partition** (applies to Communications Manager Data Sources) ◆ **Calling Location** (applies to Communications Manager Data Sources) ◆ **Called Location** (applies to Communications Manager Data Sources) ◆ **Outbound Trunk Group** (applies to Communications Manager Data Sources) ◆ **Inbound Trunk Group** (applies to Communications Manager Data Sources) ◆ **Outbound Gateway** (applies to all Data Sources) ◆ **Inbound Gateway** (applies to all Data Sources) ◆ **CallManager Cluster**. This option provides the same sorting results as Data Publisher. This option is maintained in the script to provide backwards compatibility to older versions of AppManager for Call Data Analysis. ◆ **None**. Choose this option to combine all calls into a single group. **NOTE:** If your *Select data source(s)* and *Group by* selections are incompatible (for instance, if you selected an H.323 data source and a Communications Manager grouping), the report ignores your *Group by* selection and uses the default selection, which is Data Publisher.
Show time details by	Select the time details you want to show for each group of calls. Choose from the following detail options: ◆ **Hour of Day** ◆ **Day of Week** ◆ **Day of Month** ◆ **None**. If you select None, no time details are shown.
Group time details based on	Select the way in which you want to group the time details for calls. Choose one of the following: ◆ **Start time** - to group entire calls by the time periods in which the calls start. For example, you choose to group calls by Hour of Day. Five calls begin during the 12:00 hour. Regardless of the duration of the calls, the report will show five calls during the 12:00 hour. ◆ **Call duration** - to split calls into multiple groups based on the duration of the calls. For example, you choose to group calls by Hour of Day. Five calls begin during the 12:00 hour. Three of the calls complete during the 12:00 hour, two calls complete during the 1:00 hour, and one call that began at 11:45 completes during the 12:00 hour. The report will show four calls during the 12:00 hour and two calls during the 1:00 hour.

Parameter	How to Set It
Report Settings	
Include parameter help card?	Set to **y** to include a table in the report that lists parameter settings for the report script. The default is y.
Include table?	Set to **y** to include a table of data stream values in the report. The default is y.
Include chart?	Set to **y** to include a chart of data stream values in the report. The default is y.
Units for chart	Select the unit of measurement that should appear on the Y axis of the chart: **Duration** or **Number Of Calls**. The default is Number of Calls. If you select Duration, the duration unit measurement is determined by the value you select in the *Show duration in Erlangs or seconds?* parameter.

Show duration in Erlangs or seconds?	Select whether you want the duration measurement to display in Erlangs or seconds. The default is Erlangs.
	
	Also known as a traffic unit, an Erlang is a measurement of traffic load during the busy hour, and is based on having 3600 seconds (60 minutes or one hour) of calls on the same circuit, trunk, or port. (In other words, one circuit is busy for one hour regardless of the number of calls or the average length of calls). For example, if a call center received 30 six-minutes calls in the busy hour, it received 180 call minutes, or three Erlangs. If a call center received 100 calls that averaged 36 seconds in the busy hour, it received 3600 call seconds or one Erlang.
	
	You can use the following formula to calculate an Erlang value:
	
	`Traffic in Erlangs =`
	`(Number of calls in the busy hour) * (AHT seconds)/3600`

Select chart style	Define the graphic properties for the charts in your report. The default style is Bar.
Select output folder	Set parameters for the output folder. The default folder name is CallDataVolume.
Add job ID to output folder name?	Set to **y** to append the job ID to the name of the output folder. The default is n. A job ID is helpful for making the correlation between a specific instance of a Report script and the corresponding report.
Select properties	Set miscellaneous report properties as desired. The default report name is Call Volume.
Add time stamp to title?	Set to **y** to append a time stamp to the title of the report, making each title unique. The default is n. The time stamp is made up of the date and time the report was generated. Adding a time stamp is useful in order to run consecutive iterations of the same report without overwriting previous output.
Event Notification	
Raise event if report succeeds?	Set to **y** to raise an event when the report is successfully generated. The default is y.

Parameter	How to Set It
Event severity when report succeeds	Set the severity level, from 1 to 40, to indicate the importance of an event in which the report is successful. The default is 35.
Event severity when report has no data	Set the severity level, from 1 to 40, to indicate the importance of an event in which the report contains no data. The default is 25.
Event severity when report fails	Set the severity level, from 1 to 40, to indicate the importance of an event in which the report fails. The default is 5.

3.25 Report_CallVolumeEDS

Use this Knowledge Script to summarize the number and duration of calls recorded with the selected Data Source.

In this report, calls that have an originating gateway and a terminating gateway that are different are associated with the originating gateway. For a clearer view of incoming and outgoing calls on a per-gateway basis, use the Report_TrunkGroupByHour report.

NOTE: Unlike other modules, for the Call Data Analysis module, the Report agent pulls data from the Data Warehouse rather than from the AppManager repository. The Report agent uses Windows authentication to access the Data Warehouse.

3.25.1 Resource Object

Report agent

3.25.2 Default Schedule

By default, this script runs once.

3.25.3 Setting Parameter Values

Set the following parameters as needed:

Parameter	How to Set It
Data Source	
Select data source(s)	Select the data for your report by **View Name**, **Data Warehouse**, or **Data Source**.
Select time range	Select a **Specific** or **Sliding** date/time range from which the report should pull data. The default is Sliding.
Minimum duration	Specify the minimum duration filter for calls selected by the script. Calls with a duration of less than the minimum will not be included in the report, even if all other criteria are satisfied. The default is 0 seconds.

Parameter	How to Set It
Group by	Select the delimiter by which you want to group the calls in your report. You can choose from the following sorting options: ◆ **Data Publisher**. Choose this option to sort the report by the entity that generates the data: Communications Manager Publisher, Unified Communications Manager primary server, or RADIUS gateway. ◆ **Calling Partition** (applies to Communications Manager Data Sources) ◆ **Called Partition** (applies to Communications Manager Data Sources) ◆ **Calling Location** (applies to Communications Manager Data Sources) ◆ **Called Location** (applies to Communications Manager Data Sources) ◆ **Outbound Trunk Group** (applies to Communications Manager Data Sources) ◆ **Inbound Trunk Group** (applies to Communications Manager Data Sources) ◆ **Outbound Gateway** (applies to all Data Sources) ◆ **Inbound Gateway** (applies to all Data Sources) ◆ **CallManager Cluster**. This option provides the same sorting results as Data Publisher. This option is maintained in the script to provide backwards compatibility to older versions of AppManager for Call Data Analysis. ◆ **None**. Choose this option to combine all calls into a single group. **NOTE:** If your *Select data source(s)* and *Group by* selections are incompatible (for instance, if you selected an H.323 data source and a Communications Manager grouping), the report ignores your *Group by* selection and uses the default selection, which is Data Publisher.
Show time details by	Select the time details you want to show for each group of calls. Choose from the following detail options: ◆ **Hour of Day** ◆ **Day of Week** ◆ **Day of Month** ◆ **None**. If you select None, no time details are shown.
Group time details based on	Select the way in which you want to group the time details for calls. Choose one of the following: ◆ **Start time** - to group entire calls by the time periods in which the calls start. For example, you choose to group calls by Hour of Day. Five calls begin during the 12:00 hour. Regardless of the duration of the calls, the report will show five calls during the 12:00 hour. ◆ **Call duration** - to split calls into multiple groups based on the duration of the calls. For example, you choose to group calls by Hour of Day. Five calls begin during the 12:00 hour. Three of the calls complete during the 12:00 hour, two calls complete during the 1:00 hour, and one call that began at 11:45 completes during the 12:00 hour. The report will show four calls during the 12:00 hour and two calls during the 1:00 hour.

Parameter	How to Set It
Report Settings	
Include parameter help card?	Set to **y** to include a table in the report that lists parameter settings for the report script. The default is y.
Include table?	Set to **y** to include a table of data stream values in the report. The default is y.
Include chart?	Set to **y** to include a chart of data stream values in the report. The default is y.
Units for chart	Select the unit of measurement that should appear on the Y axis of the chart: **Duration** or **Number Of Calls**. The default is Number of Calls. If you select Duration, the duration unit measurement is determined by the value you select in the *Show duration in Erlangs or seconds?* parameter.

Show duration in Erlangs or seconds?	Select whether you want the duration measurement to display in Erlangs or seconds. The default is Erlangs.
	
	Also known as a traffic unit, an Erlang is a measurement of traffic load during the busy hour, and is based on having 3600 seconds (60 minutes or one hour) of calls on the same circuit, trunk, or port. (In other words, one circuit is busy for one hour regardless of the number of calls or the average length of calls). For example, if a call center received 30 six-minutes calls in the busy hour, it received 180 call minutes, or three Erlangs. If a call center received 100 calls that averaged 36 seconds in the busy hour, it received 3600 call seconds or one Erlang.
	
	You can use the following formula to calculate an Erlang value:
	
	`Traffic in Erlangs =`
	`(Number of calls in the busy hour) * (AHT seconds)/3600`

Select chart style	Define the graphic properties for the charts in your report. The default style is Bar.
Select output folder	Set parameters for the output folder. The default folder name is CallDataVolume.
Add job ID to output folder name?	Set to **y** to append the job ID to the name of the output folder. The default is n. A job ID is helpful for making the correlation between a specific instance of a Report script and the corresponding report.
Select properties	Set miscellaneous report properties as desired. The default report name is Call Volume.
Add time stamp to title?	Set to **y** to append a time stamp to the title of the report, making each title unique. The default is n. The time stamp is made up of the date and time the report was generated. Adding a time stamp is useful in order to run consecutive iterations of the same report without overwriting previous output.
Event Notification	
Raise event if report succeeds?	Set to **y** to raise an event when the report is successfully generated. The default is y.

Parameter	How to Set It
Event severity when report succeeds	Set the severity level, from 1 to 40, to indicate the importance of an event in which the report is successful. The default is 35.
Event severity when report has no data	Set the severity level, from 1 to 40, to indicate the importance of an event in which the report contains no data. The default is 25.
Event severity when report fails	Set the severity level, from 1 to 40, to indicate the importance of an event in which the report fails. The default is 5.

3.26 Report_CCME_StatsByEPhone

Use this Knowledge Script to summarize the call statistics for Cisco Communications Manager Express phones (ephones) based on configuration information retrieved by the CCME_GetConfig Knowledge Script. You must run GetConfig and the Data Collection job before you can run StatsByEPhone.

This report can summarize the following call statistics:

- Communications Manager Express
- Total Duration
- Duration of Originated Calls
- Completed Calls
- Completion Rate
- Total Calls
- Originated Calls
- Failed Calls
- Success Rate

You can sort the rows in this report according to its various columns:

- Directory Number
- Duration of Originated Calls
- Completion Rate
- Duration of All Calls
- Number of Originated Calls
- Success Rate

NOTE: Unlike other modules, for the Call Data Analysis module, the Report agent pulls data from the Data Warehouse rather than from the AppManager repository. The Report agent uses Windows authentication to access the Data Warehouse.

3.26.1 Resource Object

Report agent

3.26.2 Default Schedule

By default, this script runs once.

3.26.3 Setting Parameter Values

Set the following parameters as needed:

Parameter	How to Set It
Data Source	
Select data source	Select the data for your report by **View Name**, **Data Warehouse**, or **Data Source**. You may select only one H.323 RADIUS data source.
Select time range	Select a **Specific** or **Sliding** date/time range from which the report should pull data. The default is Sliding.
Minimum duration	Specify the minimum duration filter for calls selected by the script. The default is 0 seconds.
Exclude these failure codes	Type a list of termination codes (separated by commas) that are not to be considered failures. For more information, see Section 3.16.1, “Termination Codes,” on page 82. **NOTE:** Codes 0, 16, 31, 126, and 393216 are automatically excluded. They are normal termination codes. However, these codes may appear in events if the other side of the call has a failure code that has not been excluded.
Search Criteria	
Note for entering search criteria: If you specify only the wildcard (*) for a field (such as calling number), AppManager matches *only* those calls that have a value for that field. Calls for which that field has no value (i.e., is NULL) will not be matched. For example, if you specify * in the *Calling partition name* parameter, the search matches only those calls that have some partition name configured. To match all calls (including calls that have no value for the selected field), leave the search criteria parameter blank.	
Gateway name	Specify the name of the Communications Manager Express gateway for which you want to gather call statistics. Leave this field blank to gather statistics for *all* Communications Manager Express gateways.
Directory number	Specify the directory number for which you want to gather call statistics.
Device name	Specify the name of the device for which you want to gather call statistics.
Device IP address	Specify the IP addresses of the devices you want to find. Use one of the following formats: ◆ Single dotted-decimal IP address, such as 10.41.2.31 ◆ Dotted-decimal IP address that includes a wildcard, such as 10.41.*.*, which would search for all IP addresses in the range of 10.41.0.0 to 10.41.255.255. ◆ Range of dotted-decimal IP addresses separated by a hyphen, such as 10.41.2.31-10.41.2.41. The first address indicates the beginning of the range; the second IP address marks the end of the range.
Report Settings	
Order rows by?	Select the column by which you want to sort the rows in the report. The default is DirectoryNumber.
Include parameter help card?	Set to **y** to include a table in the report that lists parameter settings for the report script. The default is y.
Select output folder	Set parameters for the output folder. The default folder name is CCME_StatsByEPhone.

Parameter	How to Set It
Add job ID to output folder name?	Set to **y** to append the job ID to the name of the output folder. The default is n. A job ID is helpful for making the correlation between a specific instance of a Report script and the corresponding report.
Select properties	Set miscellaneous report properties as desired. The default report name is Cisco CME Call Statistics By EPhone.
Add time stamp to title?	Set to **y** to append a time stamp to the title of the report, making each title unique. The default is n. The time stamp is made up of the date and time the report was generated. Adding a time stamp is useful in order to run consecutive iterations of the same report without overwriting previous output.
Event Notification	
Raise event if report succeeds?	Set to **y** to raise an event when the report is successfully generated. The default is y.
Event severity when report succeeds	Set the severity level, from 1 to 40, to indicate the importance of an event in which the report is successful. The default is 35.
Event severity when report has no data	Set the severity level, from 1 to 40, to indicate the importance of an event in which the report contains no data. The default is 25.
Event severity when report fails	Set the severity level, from 1 to 40, to indicate the importance of an event in which the report fails. The default is 5.

3.27 Report_CCME_Summary

Use this Knowledge Script to summarize the following call statistics for Cisco Communications Manager Express gateways:

- Number of calls
- Completed calls
- Abandoned calls
- Completion rate
- Total duration
- Failed calls
- Success rate

By default, these statistics are broken down by incoming vs. outgoing calls from and to Communications Manager Express phones — details are shown for outgoing, incoming, and local Communications Manager Express calls.

In addition, you can choose to break down the statistics by Communications Manager Express calls to and from the PSTN vs. calls to and from the IP network. If you choose this option, details are shown for calls outgoing to the PSTN, outgoing to the IP, incoming from the PSTN, and incoming from the IP, and for local Communications Manager Express calls.

NOTE: Unlike other modules, for the Call Data Analysis module, the Report agent pulls data from the Data Warehouse rather than from the AppManager repository. The Report agent uses Windows authentication to access the Data Warehouse.

3.27.1 Resource Object

Report agent

3.27.2 Default Schedule

By default, this script runs once.

3.27.3 Setting Parameter Values

Set the following parameters as needed:

Parameter	How to Set It
Data Source	
Select data source	Select the data for your report by **View Name**, **Data Warehouse**, or **Data Source**. You may select only one H.323 RADIUS data source.
Select time range	Select a **Specific** or **Sliding** date/time range from which the report should pull data. The default is Sliding.
Gateway name	Specify the name of the Communications Manager Express gateway for which you want to gather call statistics. Leave this field blank to gather statistics for *all* Communications Manager Express gateways.
Minimum duration	Specify the minimum duration filter for calls selected by the report. The default is 0 seconds.
Exclude these failure codes	Type a list of termination codes (separated by commas) that are not to be considered failures. For more information, see Section 3.16.1, “Termination Codes,” on page 82. **NOTE:** Codes 0, 16, 31, 126, and 393216 are automatically excluded. They are normal termination codes. However, these codes may appear in events if the other side of the call has a failure code that has not been excluded.
Report Settings	
Include parameter help card?	Set to **y** to include a table in the report that lists parameter settings for the report script. The default is y.
Include table?	Set to **y** to include a table of call statistics in the report. The default is y.
Include chart?	Set to **y** to include a chart of call statistics in the report. The default is y. If you choose to include a chart, use the *Select call statistic for chart* parameter to select the statistic you want to display in the chart.
Show breakdown of PSTN calls vs. IP calls?	Set to **y** to include a breakdown of statistics by Communications Manager Express calls to/from the PSTN vs. calls to/from the IP network. If you choose this option, details are shown for calls outgoing to the PSTN, outgoing to the IP, incoming from the PSTN, and incoming from the IP, and for local Communications Manager Express calls. The default is n.

Parameter	How to Set It
Select call statistic for chart	Select the call statistic you want to display, per gateway, in a chart in the report. You can choose from: ◆ **Number of Calls** (default) ◆ **Duration** ◆ **Success Rate** ◆ **Completion Rate**

Show duration in Erlangs or seconds?	Select whether to display call duration in **Erlangs** or **Seconds**. The default is Erlangs.
	Also known as a traffic unit, an Erlang is a measurement of traffic load during the busy hour, and is based on having 3600 seconds (60 minutes or one hour) of calls on the same circuit, trunk, or port. (In other words, one circuit is busy for one hour regardless of the number of calls or the average length of calls). For example, if a call center received 30 six-minutes calls in the busy hour, it received 180 call minutes, or three Erlangs. If a call center received 100 calls that averaged 36 seconds in the busy hour, it received 3600 call seconds or one Erlang.
	You can use the following formula to calculate an Erlang value:
	`Traffic in Erlangs =`
	`(Number of calls in the busy hour) * (AHT seconds)/3600`

Select chart style	Define the graphic properties for the charts in your report. The default style is Bar.
Select output folder	Set parameters for the output folder. The default folder name is CCME_CallSummary.
Add job ID to output folder name?	Set to **y** to append the job ID to the name of the output folder. The default is n. A job ID is helpful for making the correlation between a specific instance of a Report script and the corresponding report.
Select properties	Set miscellaneous report properties as desired. The default report name is Cisco CME Call Summary.
Add time stamp to title?	Set to **y** to append a time stamp to the title of the report, making each title unique. The default is n. The time stamp is made up of the date and time the report was generated. Adding a time stamp is useful in order to run consecutive iterations of the same report without overwriting previous output.
Event Notification	
Raise event if report succeeds?	Set to **y** to raise an event when the report is successfully generated. The default is y.
Event severity when report succeeds	Set the severity level, from 1 to 40, to indicate the importance of an event in which the report is successful. The default is 35.
Event severity when report has no data	Set the severity level, from 1 to 40, to indicate the importance of an event in which the report contains no data. The default is 25.
Event severity when report fails	Set the severity level, from 1 to 40, to indicate the importance of an event in which the report fails. The default is 5.

3.28 Report_FrequentlyCalledNumbers

Use this Knowledge Script to display any destination phone numbers called frequently during a specified time range. The report contains three columns: Called Number, Total Calls, and Total Duration.

3.28.1 Identifying Toll Fraud

The concept of toll fraud encompasses two separate but related security problems: frequently called numbers and the inappropriate use of long-distance capabilities, such as overly long calls to foreign countries or 900 numbers.

You can use the Report_FrequentlyCalledNumbers Knowledge Script to discover whether any particular phone number is being called more often than seems reasonable. Perhaps a once-a-month call to a European client is acceptable, but ten calls in one week indicates a problem.

The Report_FrequentlyCalledNumbers Knowledge Script creates a table that identifies the destination number, the number of calls made to the destination number, and the total duration of all calls made to the destination number. You set the threshold for “too many” calls — the report will display data for every destination phone number that received more calls than that threshold. Then use the Report_CallDetail_CiscoCallMgr Knowledge Script to identify the originating phone number of all calls made to the phone number in question.

The CallDetail_CiscoCallMgr Knowledge Script can also help your efforts to identify overly long calls. For instance, while making rounds, a courier went from office to office, picked up a phone in a public area, dialed a premium number, and then left, leaving the call active. The companies were billed for several hours of charges to the premium number.

With the Report_CallDetail_CiscoCallMgr Knowledge Script, you can create a report that looks for trends in overly long calls. Set the *Maximum duration* parameter to the maximum length of an acceptable call. Acceptable durations will vary by company, but for this scenario, let us say ten minutes. The report will present a list of calls that exceed the ten-minute limit.

3.28.2 Resource Object

Report agent

3.28.3 Default Schedule

By default, this script runs once.

3.28.4 Setting Parameter Values

Set the following parameters as needed:

Parameter	How to Set It
Data Source	
Select data source	Select the data for your report by **View Name**, **Data Warehouse**, or **Data Source**.
Select time range	Select a **Specific** or **Sliding** date/time range from which the report should pull data. The default is Sliding.

Parameter	How to Set It
Search Criteria	
Called number pattern	Specify the phone number pattern you want to find. The pattern can include the * wildcard. For example, to search for external calls, type 9*. Leave this parameter blank to include all calls in the report, as long as all other criteria are satisfied.
Minimum duration of each call	Specify the minimum duration filter for calls selected by the script. Calls with a duration of less than the minimum will not be included in the report, even if all other criteria are satisfied. Accept the default of 0 to indicate no limit.
Minimum number of calls	Specify the minimum number of times a number must be called before it can be included in your report. For example, if you type 5, your report will include only those numbers called five or more times. The default is 2 calls.
Report Settings	
Maximum number of rows to return	Specify the maximum number of rows to include in the table in the report. The default is 1000 rows. **NOTE:** No matter how many rows you choose to include in the report, the report will indicate how many rows actually met your search criteria. This number may, and probably will, exceed the number of rows you choose to return.
Order rows by?	Select the delimiter by which you want to sort the calls in your report. You can choose from the following sorting options: ◆ **Total Calls** (default) ◆ **Total Duration** ◆ **Called Number**

Show duration in Erlangs or seconds?	Select whether to display call duration in **Erlangs** or **Seconds**. The default is Seconds.
	
	Also known as a traffic unit, an Erlang is a measurement of traffic load during the busy hour, and is based on having 3600 seconds (60 minutes or one hour) of calls on the same circuit, trunk, or port. (In other words, one circuit is busy for one hour regardless of the number of calls or the average length of calls). For example, if a call center received 30 six-minutes calls in the busy hour, it received 180 call minutes, or three Erlangs. If a call center received 100 calls that averaged 36 seconds in the busy hour, it received 3600 call seconds or one Erlang.
	
	You can use the following formula to calculate an Erlang value:
	
	`Traffic in Erlangs =`
	`(Number of calls in the busy hour) * (AHT seconds)/3600`

Include parameter help card?	Set to **y** to include a table in the report that lists parameter settings for the report script. The default is y.
Select output folder	Set parameters for the output folder. The default folder name is FrequentlyCalledNumbers.

Parameter	How to Set It
Add job ID to output folder name?	Set to **y** to append the job ID to the name of the output folder. The default is n. A job ID is helpful for making the correlation between a specific instance of a Report script and the corresponding report.
Select properties	Set miscellaneous report properties as desired. The default report name is Frequently Called Numbers.
Add time stamp to title?	Set to **y** to append a time stamp to the title of the report, making each title unique. The default is n. The time stamp is made up of the date and time the report was generated. Adding a time stamp is useful in order to run consecutive iterations of the same report without overwriting previous output.
Event Notification	
Raise event if report succeeds?	Set to **y** to raise an event if the report is successfully generated. The default is y.
Event severity when report succeeds	Set the severity level, from 1 to 40, to indicate the importance of an event in which the report is successful. The default is 35.
Event severity when report has no data	Set the severity level, from 1 to 40, to indicate the importance of an event in which the report contains no data. The default is 25.
Event severity when report fails	Set the severity level, from 1 to 40, to indicate the importance of an event in which the report fails. The default is 5.

3.29 Report_GatewayDialPeers

Use this Knowledge Script to summarize call statistics for the POTS (Plain Old Telephone System) and VoIP dial peers of the gateways included in the report. By default, these statistics include total calls, total duration, failed calls, and success rate. You can choose to include call quality statistics for VoIP dial peers.

A dial peer is the association of a dialed sequence of numbers with a device in a telephone network. In a POTS network, a dial peer maps to a specific voice port on a local router or gateway. In a VoIP network, a dial peer maps to a remote network device, such as a router, a gateway, or a Cisco Unified Communications Manager. There is a one-to-one correspondence between a dial peer and a call leg.

A call leg is a component of the accounting records generated by a Cisco H.323 gateway. A call leg represents a logical connection between the gateway and a telephony or IP endpoint. Each call processed through a gateway consists of one or more call legs.

3.29.1 Resource Object

Report agent

3.29.2 Default Schedule

By default, this script runs once.

3.29.3 Setting Parameter Values

Set the following parameters as needed:

Parameter	How to Set It
Data Source	
Select data source	Select the data for your report by **View Name**, **Data Warehouse**, or **Data Source**. You can select only one H.323 RADIUS Data Source.
Select time range	Select a **Specific** or **Sliding** date/time range from which the report should pull data. The default is Sliding.
Gateway name	Indicate the name of the gateway for which you want to summarize call statistics. Leave this field blank to summarize statistics for *all* gateways associated with the Data Source
Direction of calls	Select the direction of the calls for which you want to summarize statistics. Choose from **Inbound Only**, **Outbound Only**, or **Inbound and Outbound**. The default is Inbound and Outbound.
Type of dial peer	Select the dial peer for which you want to summarize call statistics. Choose from **POTS Only**, **VoIP Only**, or **POTS and VoIP**. The default is POTS and VoIP.
Minimum duration	Specify the minimum duration filter for calls selected by the script. Calls with a duration of less than the minimum will not be included in the report, even if all other criteria are satisfied. The default is 0 seconds.
Exclude these failure codes	Specify a list of termination codes (separated by commas) you do not want to include in the report. In other words, any call that terminates with one of the listed codes will not be included in the report. For more information, see Section 3.16.1, “Termination Codes,” on page 82. **NOTE:** Codes 0, 16, 31, 126, and 393216 are automatically excluded. They are normal termination codes. However, these codes may appear in events if the other side of the call has a failure code that has not been excluded.
Report Settings	
Include quality metrics?	Select whether to include call quality metrics in the report. You can choose from **Metrics with a MOS**, **Metrics with an R-value**, or **No Metrics**. For more information, see Section 3.3.2, “Reviewing Call Quality Metrics for Gateways and Routers,” on page 42.

Parameter	How to Set It

Show duration in Erlangs or seconds?	Select whether to display call duration in **Erlangs** or **Seconds**. The default is Seconds.
	
	Also known as a traffic unit, an Erlang is a measurement of traffic load during the busy hour, and is based on having 3600 seconds (60 minutes or one hour) of calls on the same circuit, trunk, or port. (In other words, one circuit is busy for one hour regardless of the number of calls or the average length of calls). For example, if a call center received 30 six-minutes calls in the busy hour, it received 180 call minutes, or three Erlangs. If a call center received 100 calls that averaged 36 seconds in the busy hour, it received 3600 call seconds or one Erlang.
	
	You can use the following formula to calculate an Erlang value:
	
	`Traffic in Erlangs =`
	`(Number of calls in the busy hour) * (AHT seconds)/3600`

Order rows by?	Select the delimiter by which you want to sort the calls in your report. You can choose from the following sorting options: ◆ **Dial Peer** (default) ◆ **Number of Calls** ◆ **Duration of Calls** ◆ **Success Rate**
Include parameter help card?	Set to **y** to include a table in the report that lists parameter settings for the report script. The default is y.
Select output folder	Set parameters for the output folder. The default folder name is GatewayDialPeers.
Add job ID to output folder name?	Set to **y** to append the job ID to the name of the output folder. The default is n. A job ID is helpful for making the correlation between a specific instance of a Report script and the corresponding report.
Select properties	Set miscellaneous report properties as desired. The default report name is Cisco Voice Gateway Dial Peers.
Add time stamp to title?	Set to **y** to append a time stamp to the title of the report, making each title unique. The default is n. The time stamp is made up of the date and time the report was generated. Adding a time stamp is useful in order to run consecutive iterations of the same report without overwriting previous output.
Event Notification	
Raise event if report succeeds?	Set to **y** to raise an event if the report is successfully generated. The default is y.
Event severity when report succeeds	Set the severity level, from 1 to 40, to indicate the importance of an event in which the report is successful. The default is 35.
Event severity when report has no data	Set the severity level, from 1 to 40, to indicate the importance of an event in which the report contains no data. The default is 25.
Event severity when report fails	Set the severity level, from 1 to 40, to indicate the importance of an event in which the report fails. The default is 5.

3.30 Report_TrunkGroupByHour

Use this Knowledge Script to display the trunk group or gateway volume by hour for the selected Cisco Unified Communications Manager clusters or to display the gateway, trunk group, or interface volume for the selected H.323 RADIUS Data Source. The report includes a breakdown of calls that are inbound, outbound, or both (tandem).

A Communications Manager trunk group points to a series of devices (gateways or intercluster trunks to remote Communications Managers) through which calls are to be routed.

An H.323 gateway trunk group consists of a set of interfaces on the gateway configured to belong to the trunk group.

NOTE: Unlike other modules, for the Call Data Analysis module, the Report agent pulls data from the Data Warehouse rather than from the AppManager repository. The Report agent uses Windows authentication to access the Data Warehouse.

3.30.1 Resource Object

Report agent

3.30.2 Default Schedule

By default, this script runs once.

3.30.3 Setting Parameter Values

Set the following parameters as needed:

Parameter	How to Set It
Data Source	
Select data source(s)	Select the data for your report by **Data Source Type**, **View Name**, **Data Warehouse**, and **Data Source**.
Select time range	Select a **Specific** or **Sliding** date/time range from which the report should pull data. The default is Sliding.
Show results by	Select whether to show results for **Trunk Groups**, **Gateways**, or **Interfaces**. The default is Trunk Groups. The Interfaces option is valid only for H.323 RADIUS Data Sources.
Gateway name	Use this parameter to specify which gateways to include in the report. Specify the name of the gateway you want to include in the report. To include multiple gateways, use the * as a wildcard character. For example, type RAL* to include the gateways named RAL001, RAL003, and RAL010. Leave this parameter blank to include all gateways. This parameter is valid only for H.323 RADIUS Data Sources.
Minimum duration	Specify the minimum duration filter for calls selected by the script. Calls with a duration of less than the minimum will not be included in the report, even if all other criteria are satisfied. The default is 0 seconds.

Parameter	How to Set It
Report Settings	
Include parameter help card?	Set to **y** to include a table in the report that lists parameter settings for the report script. The default is y.
Include table?	Set to **y** to include a table of data stream values in the report. The default is y.
Include chart?	Set to **y** to include a chart of data stream values in the report. The default is y.
Units for chart and peak hour calculation	Select the unit of measurement that should appear on the Y axis of the chart: **Duration** or **Number Of Calls**. The default is Number of Calls. If you select Duration, the duration unit measurement is determined by the value you select in the *Show duration in Erlangs or seconds?* parameter.

Show duration in Erlangs or seconds?	Select whether to display call duration in **Erlangs** or **Seconds**. The default is Erlangs.
	
	Also known as a traffic unit, an Erlang is a measurement of traffic load during the busy hour, and is based on having 3600 seconds (60 minutes or one hour) of calls on the same circuit, trunk, or port. (In other words, one circuit is busy for one hour regardless of the number of calls or the average length of calls). For example, if a call center received 30 six-minutes calls in the busy hour, it received 180 call minutes, or three Erlangs. If a call center received 100 calls that averaged 36 seconds in the busy hour, it received 3600 call seconds or one Erlang.
	
	You can use the following formula to calculate an Erlang value:
	
	`Traffic in Erlangs =`
	`(Number of calls in the busy hour) * (AHT seconds)/3600`

Select chart style	Define the graphic properties for the charts in your report. The default style is Bar_Stacked.
Select output folder	Set parameters for the output folder. The default folder name is TrunkGroupByHour.
Add job ID to output folder name?	Set to **y** to append the job ID to the name of the output folder. The default is n. A job ID is helpful for making the correlation between a specific instance of a Report script and the corresponding report.
Select properties	Set miscellaneous report properties as desired. The default report name is Trunk Group By Hour.
Add time stamp to title?	Set to **y** to append a time stamp to the title of the report, making each title unique. The default is n. The time stamp is made up of the date and time the report was generated. Adding a time stamp is useful in order to run consecutive iterations of the same report without overwriting previous output.
Event Notification	
Raise event if report succeeds?	Set to **y** to raise an event when the report is successfully generated. The default is y.

Parameter	How to Set It
Event severity when report succeeds	Set the severity level, from 1 to 40, to indicate the importance of an event in which the report is successful. The default is 35.
Event severity when report has no data	Set the severity level, from 1 to 40, to indicate the importance of an event in which the report contains no data. The default is 25.
Event severity when report fails	Set the severity level, from 1 to 40, to indicate the importance of an event in which the report fails. The default is 5.

3.31 Report_UnusedPhones

Use this Knowledge Script to create a list of unused phones. This script bases the report on the list of phones configured on Cisco Unified Communications Manager or Unified Communications Manager Express. It looks at the phones configured at the time of the most recent successful data collection, and then, using the criteria you set in the parameters, creates a list of phones that have been unused for *n* days.

When running this script, keep in mind how far back the data goes, including the initial data load. If you specify an initial data load of seven days, and then run this script, any phone whose last call was at least eight days ago will show up on the report as having no calls — in other words, as unused.

You can select Communications Managers or H.323 gateways as Data Sources for this report. Before using this report to identify unused Communications Manager Express phones (based on the H.323 gateways you select), run the CCME_GetConfig Knowledge Script, which provides meaningful data for all Communications Manager Express phones.

3.31.1 Resource Object

Report agent

3.31.2 Default Schedule

By default, this script runs once.

3.31.3 Setting Parameter Values

Set the following parameters as needed:

Parameter	How to Set It
Data Source	
Select data source	Select the data for your report by **View Name**, **Data Warehouse**, or **Data Source**. To work with Communications Manager Express phones, select **H.323 Gateways**.
Select time range	Select a **Specific** or **Sliding** date/time range from which the report should pull data. The default is Sliding.

Parameter	How to Set It
Gateway name	Use this parameter *only* if you selected **H.323 Gateways** as a data source. Specify the name of the Communications Manager Express gateway for which you want to find unused phones. Alternatively, type a partial name and the * wildcard to indicate Communications Manager Express names that match a pattern. Leave this field blank to gather statistics for *all* Communications Manager Express gateways known by the data source.
Minimum days since last call	Specify the minimum unused days filter for calls selected by the script. Phones unused for less than the minimum will not be included in the report, even if all other criteria are satisfied. Type 0 to include all unused phones in the report.
Minimum duration when looking for calls	Specify the minimum duration filter for calls selected by the script. Calls with a duration of less than the minimum will not be included in the report, even if all other criteria are satisfied. The default is 0 seconds.
Direction of calls	Specify the direction filter for calls selected by the script. You can choose to include calls that are **Outbound Only**, **Inbound Only**, or both **Inbound and Outbound**.
Report Settings	
Order rows by?	Select the criterion by which you want to sort the rows in the report: ◆ **Most Recently Used**. In order by date from the most recently used phone to the least recently used phone. ◆ **Least Recently Used**. In order by date from the least recently used phone to the most recently used phone. All phones used on any given day are sorted by directory number. For example, the report may show 10 phones used on April 4, 7 phones used on April 3, and 12 phones used on April 2. April 4th's 10 phones are sorted by directory number, as are the phones for April 3 and April 2.
Include parameter help card?	Set to **y** to include a table in the report that lists parameter settings for the report script. The default is y.
Select output folder	Set parameters for the output folder. The default folder name is UnusedPhones.
Add job ID to output folder name?	Set to **y** to append the job ID to the name of the output folder. The default is n. A job ID is helpful for making the correlation between a specific instance of a Report script and the corresponding report.
Select properties	Set miscellaneous report properties as desired. The default report name is Unused Phones.
Add time stamp to title?	Set to **y** to append a time stamp to the title of the report, making each title unique. The default is n. The time stamp is made up of the date and time the report was generated. Adding a time stamp is useful in order to run consecutive iterations of the same report without overwriting previous output.
Event Notification	

Parameter	How to Set It
Raise event if report succeeds?	Set to **y** to raise an event when the report is successfully generated. The default is y.
Event severity when report succeeds	Set the severity level, from 1 to 40, to indicate the importance of an event in which the report is successful. The default is 35.
Event severity when report has no data	Set the severity level, from 1 to 40, to indicate the importance of an event in which the report contains no data. The default is 25.
Event severity when report fails	Set the severity level, from 1 to 40, to indicate the importance of an event in which the report fails. The default is 5.

4 Troubleshooting AppManager for Call Data Analysis

This chapter describes how to troubleshoot AppManager for Call Data Analysis.

4.1 Call Data Analysis Module Installed on Repository Server

Problem: You accidentally installed the Call Data Analysis module on the AppManager repository server.

Solution: You can remove the module without uninstalling AppManager. For more information, see Section 2.14, “Uninstalling the Call Data Analysis Module,” on page 32.

4.2 Checking Log Files

You can find three helpful logs in the `\NetIQ\Temp\NetIQ_Debug\<`*computer*`>` directory, where <*computer*> is the computer where you installed the AppManager component (the Data Warehouse):

- `mo.log`
- `mctrace.log`
- `NQCallData.log`

4.3 Knowledge Scripts Do Not Appear in CallData Tab

Problem: Several scripts do not appear in the **CallData** tab in the Knowledge Script pane:

- CancelDataCollection
- ChangeSchedule
- ConfigureCallTypes
- DataCollectionStatus
- ExecuteDataCollection
- RemoveDataSource

Reason: Operator Console needs to be refreshed.

Solution: After you run the CallData_AddDataSource script, press **F5** to refresh AppManager and add the missing scripts to the tab.

4.4 Data Mart Files Not Removed

Problem: The Data Mart files were not completely removed after you uninstalled the AppManager agent or after you ran the RemoveDataSource Knowledge Script.

Reason: Either the Data Mart database was in use when you uninstalled, or there were authentication problems between the Data Warehouse and the Data Mart computer.

Solution: Use SQL Enterprise Manager on the Data Mart and Data Warehouse computers to confirm the following items were removed. Refresh each folder in SQL Enterprise Manager to see the most recent information.

On the Data Mart Computer	Remove These Items
	All databases with the following names: ◆ `DM_[data mart_server]_[data source computer]_CDR` ◆ `DM_[data mart_server]_H323RADIUS`
Under **Data Transformation Services > Local Packages**	All packages that begin with the following: ◆ `DS_[data mart server]_[publisher]_CDR` ◆ `DS_[data mart server]_CiscoH323RADIUS`
Under **Management > SQL Server Agent > Jobs**	All jobs that begin with the following: ◆ `[DS_[data mart server]_[publisher]_CDR]ETL` ◆ `[DS_[data mart server]_CiscoH323RADIUS]ETL`
Under **Security > Logins**	All logins named as follows: ◆ `DMAGENT_DS_[data mart server]_[publisher]_CDR` ◆ `DMAGENT_DS_[data mart server]_CiscoH323RADIUS`
On the Data Warehouse Computer	**Remove These Items**
Under **Security > Linked Servers**	All links named as follows: ◆ `DW_DS_[data mart server]_[publisher]_CDR` ◆ `DW_DS_[data mart server]`
Under Security > Logins	All logins named DWAGENT_[datawarehouse_computer]

4.5 Next Run Date is Unavailable

Problem: The DataCollectionStatus Knowledge Script job shows a “Next Run Date” is “Not Available.”

Reason: More than likely, the `SQLServerAgent` service on the Data Mart computer has been stopped.

Solution: If the Data Mart computer has an AppManager agent installed, use the General_ServiceDown Knowledge Script to check the status of, and restart, the `SQLServerAgent` service. Otherwise, manually restart the `SQLServerAgent` service on the Data Mart computer, or use the ExecuteDataCollection Knowledge Script.

4.6 No RADIUS Records Sent from Gateway

Problem: You configured the H.323 gateway IP address when you configured IAS on the Data Mart computer, yet you are not receiving any RADIUS records.

Reason: You may have configured the IP address you discovered using a DNS lookup. However, this address is not necessarily the address the gateway uses when sending RADIUS records.

Solution: Check the Windows Event Log under **System Events**. Look for events with a source of IAS that have the following description: “A request was received from the invalid Client IP address `N.N.N.N`.” The specified IP address may be the correct IP address is for the gateway.

For more information, see Section 2.8.1, “Internet Authentication Service (IAS),” on page 22.

4.7 Data Collection for Cisco Unified Communications Manager Data Source Fails

Problem: The data collection job for a Cisco Unified Communications Manager Data Source fails on step 3 (Extract Dimension Data). The error message in the step details indicates no configuration data was found in the Cisco CM supplemental database.

Reason: To process CDRs, Call Data Analysis requires configuration information to be retrieved from Unified Communications Manager and deposited into the Cisco CM supplemental database. The CiscoCM_CDR_RetrieveConfigData Knowledge Script performs this task. If you have not run this script, no configuration data was deposited in the supplemental database.

Solution: Run CiscoCM_CDR_RetrieveConfigData, which runs daily at 1 AM by default. This scheduled run time is, by design, earlier than the default run time for the data collection SQL job initiated by the AddDataSource_CiscoCM Knowledge Script. If you alter the schedule for either script,

ensure you schedule RetrieveConfigData to run before the data collection job.

4.8 A Data Mart is No Longer Accessible

Problem: Report jobs fail because one or more Data Mart databases are not accessible.

Reason: Certain activities, such as running the CallData_AddDataSource and CallData_RemoveDataSource scripts, build a "view" in the Data Warehouse database that refers to the set of Data Marts being managed by that particular warehouse. That view is used at reporting time. If you try to run a report, and one of the Data Marts in that view is not accessible at that time, the report fails. The report will fail even if the inaccessible Data Mart is not one of the databases that you wanted to query for your report.

Resolution: Exclude the unresponsive Data Mart or Data Marts from your reports, and then run discovery again to prevent problems with reports not running because of the unresponsive Data Marts.

To exclude an unresponsive Data Mart database:

1. Run Discovery_CallDataAnalysis to raise an event that lists a Data Mart database that is not accessible. Use the list of unresponsive databases in the event for the next step.
2. Run CallData_ChangeReportingState to exclude the Data Mart that was listed in the Discovery_CallDataAnalysis event from the previous step.
3. Run Discovery_CallDataAnalysis again.

4 Repeat steps 2 and 3 until the Discovery job runs without errors.

5 Run your reports as needed.

6 Use SQL Server tools as needed to figure out why the SQL servers listed as not accessible in Step 1 were not responding.

7 If one or more of these unresponsive SQL servers go back online and become accessible, run CallData_ChangeReportingState again to include them.

4.9 Unable to Connect to an Existing Data Mart After Migration

Problem: You are unable to connect Call Data Analysis to an existing Data Mart for a particular Data Source after you have migrated the Data Mart to another computer or a drive.

Solution: To connect to an existing Data Mart that is migrated to another computer or a drive, perform the following:

1 On the Call Data Analysis agent computer, open the AddDataSource Knowledge Script for the particular Data Source to which the existing Data Mart points and specify the name of the existing Data Mart database in the *Database name (blank for default)* parameter.

2 Run the AddDataSource Knowledge Script.

3 On the Data Mart computer, stop and disable the ETL job corresponding to the Data Source.

4 On the Data Mart computer, execute the following query:

```
SELECT [Name]
      ,[sValue]
      ,[iValue]
 FROM [dbo].[Variables]
```

5 Copy the `Data Source UUID` from the `sValue` column that corresponds to the `Data Source UUID` in the `Name` column and paste in a notepad for reference.

6 On the Data Warehouse computer, execute the following query:

```
SELECT [idDBInfo]
      ,[idDataSourceUUID]
      ,[Server]
      ,[DBname]
FROM [dbo].[CFG_DBInfo]
```

7 Verify that `idDataSourceUUID` retrieved in step 6 is same as `sValue` retrieved in step 4. If the values are not same, update `idDataSourceUUID` in the `[dbo].[CFG_DBInfo]` table. Ignore the curly brackets {} displayed in `sValue`.

8 On the Data Warehouse computer, execute the following query:

```
SELECT [idDataSourceUUID]
       ,[DataSourceName]
       ,[idSourceDBInfo]
FROM [dbo].[CFG_DataSource]
```

9 Verify that `idDataSourceUUID` retrieved in step 8 is same as `idDataSourceUUID` retrieved in step 6. If the values are not same, update the `idDataSourceUUID` value in the `[dbo].[CFG_DataSource]` table.

10 On the agent computer, run the AddDataSource Knowledge Script for the particular Data Source again. Before running the Knowledge Script, ensure that the name of the existing Data Mart database is specified in the *Database name (blank for default)* parameter.

4.10 CDA Data Mart or Data Warehouse Fails to Connect to Call Manager Data Source

Problem: A CDA Data Mart or Data Warehouse with TLS 1.2 enabled fails to communicate with a Cisco Call Manager Data Source without TLS 1.2 enabled. The following error message is displayed:

```
The client and server cannot communicate, because they do not possess a common algorithm.
```

Solution: In the SQL Server on which the CDA database is installed, do the following:

1 In the Control Panel, click **Administrative Tools**.

2 Double-click **Local Security Policy**.

3 Click **Local Policies** > **Security Options**.

4 In the right pane, locate and double-click the **System cryptography: Use FIPS compliant algorithms for encryption, hashing, and signing** policy.

5 Click **Enabled** and then click **OK**.

6 In the Command Prompt, run `gpupdate/force`.

7 Restart the SQL Server Service.

If the above workaround fails, do the following:

1 In the SQL Server on which the CDA database is installed, go to `C:\ProgramData\Microsoft\Crypto\RSA`.

2 Enable the `Network Services` read permission for the system files in the `MachineKey` folder.

3 Restart the SQL Server Service.