CHAPTER 1

Welcome [to DMS-Admin]

Revised: April 4, 2012
OL-15762-04

- Concepts, page 1-1
- Procedures, page 1-4
- Reference, page 1-8

Audience

We prepared this material with specific expectations of you.

- You will administer Cisco DMS.

Concepts

- Glossary, page 1-2
- Logical Ports That Cisco DMS Components Use, page 1-2

Glossary

Timesaver **Go to terms that start with...** [**A** | **D**].

A

AAI *Appliance Administration Interface*. Text-based, menu-driven user interface and command shell on all Cisco DMS appliances. Administrators use AAI to set up, connect, and maintain an appliance.

D

Return to Top

DMS-Admin *Digital Media Suite Administration*. Web-based graphical user interface on a DMM appliance. Administrators use DMS-Admin to:

- Activate and monitor features throughout the full range of Cisco DMS products.
- Exchange information with network entities outside Cisco DMS.
- Centrally manage user accounts for Cisco DMS products.

Logical Ports That Cisco DMS Components Use

Make sure to keep these logical ports open to traffic exchanged among Cisco DMS components.

Port No.	From	To	Bidir?	Protocol	Description
20	Show and Share	deployment server	N	FTP	Show and Share server deploying content to content hosting location using FTP
20	DMM	DMP	N	FTP	DMM server deploying content to DMP using FTP
20	DMP	FTP server	Y	FTP	transfer of content files
21	Show and Share	deployment server	N	FTP	Show and Share server deploying content to content hosting location using FTP
21	DMM	DMP	N	FTP	DMM server deploying content to DMP using FTP
21	DMP	FTP server	Y	FTP	transfer of content files
22	Show and Share	deployment server	N	SFTP	Show and Share server deploying content to content hosting location using SFTP
22	DMM	DMP	N	SFTP	DMM server deploying content to DMP using SFTP
53	DMP	DNS server	N	DNS	DNS services
80	DME	Show and Share	N	HTTP	communication between Show and Share and DME
80	User	Show and Share	N	HTTP	user requesting content from Show and Share
80	User	deployment server	N	HTTP	user requesting content from external server
80	DMP	content server	N	HTTP	

Port No.	From	To	Bidir?	Protocol	Description
123	DMP	NTP server	Y	NTP	NTP services
139	DMP	content server	N	CIFS	CIFS services
161	SNMP client	DMM	N	SNMP	SNMP services
389	DMM	Active Directory (LDAP)	N	LDAP	user database creation or updates
443	Admin Client	DMP	N	SSL	
443	User	Show and Share	N	HTTPS	
443	User	DMM	N	HTTPS	
445	DMP	content server	N	CIFS	CIFS services
514	DMM	Show and Share	N	syslog	syslog services
514	DMP	syslog server	N	syslog	syslog services
554	User	deployment server	N	RTSP	User requesting WMV streaming from external Windows Media Streaming Server
554	DMP	content server	N	RTSP	DMP requesting WMV streaming from external Windows Media Streaming Server
636	DMM	Active Directory (LDAPS)	N	LDAPS	user database creation or updates
694	DMM primary	DMM secondary	Y		(UDP) Heartbeat for failover health monitoring
695	Show and Share primary	Show and Share secondary	Y		(UDP) Heartbeat for failover health monitoring
843	User	DMM	N		proof of play
1935	User	Show and Share	N	RTMP	User requesting Flash or H.264 streaming from Show and Share
1935	User	deployment server	N	RTMP	User requesting Flash or H.264 streaming from external Flash or H.264 streaming server
5432	DMM	Show and Share	Y	PostGres	PostGres between DMM and Show and Share
7777	Admin Client	DMP	N	SSL	
7777	DMM	DMP	Y	SSL	
7849	DMM primary	DMM secondary	Y		DRBD (failover)
7850	Show and Share primary	Show and Share secondary	Y		DRBD (failover)
8080	User	Show and Share	N	HTTP	User uploading content to Show and Share
8443	DMM	Show and Share	Y	HTTPS	DMM <--> Show and Share peering
8443	User	Show and Share	N	HTTPS	Access to the Show and Share secured GUI
9161			Y	SNMP	SNMP services
9999	DMM	Show and Share	Y		JMX communication
30865	All four nodes (Failover)	All four nodes (Failover)	Y	CSYNC	synchronize config files between nodes in a cluster (failover).

Port No.	From	To	Bidir?	Protocol	Description
45001	DMM	Show and Share	Y		inventory/deployment
46001	DMM	Show and Share	Y		inventory/deployment
61616	Show and Share	DMM	Y		Activemq
User Config	User	deployment server	N	HTTP	user requesting content from external server
User Config	DME	media server	Y	HTTP	signaling between DME and media server
User Config	DMP	content server	N	HTTP	

Legend

DME=Digital Media Encoder
DMM=Digital Media Manager
DMP=Digital Media Player

Procedures

- Learn Your DMM Appliance Serial Number, page 1-4
- Start DMS-Admin, page 1-5

Learn Your DMM Appliance Serial Number

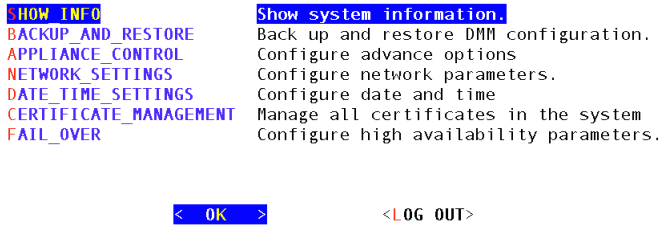
Caution **You cannot obtain any Cisco DMS software feature licenses until you know your DMM appliance serial number.**

Procedure

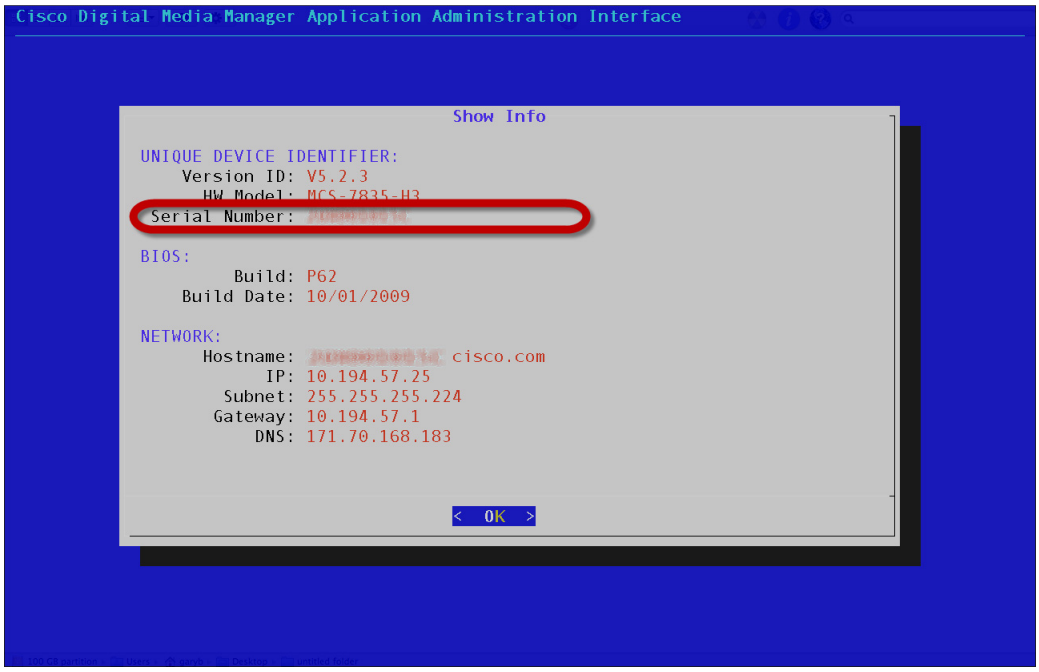
Step 1 Use SSH (or a keyboard connected your DMM appliance) to log in to the **admin** account in AAI.

Note **You alone know the password for this account.**

In the top-level menu for AAI, the SHOW_INFO option is highlighted by default.



Step 2 Press **Enter** to load the Show Info screen.



Step 3 Write down the appliance serial number that AAI shows to you.

Step 4 Stop. You have completed this procedure.

Start DMS-Admin

Procedure

Step 1 Point your browser at your DMM appliance.

- Use **HTTPS** and specify port **8443**

  OR

  Use **HTTP** and specify port **8080**—*which redirects immediately to the secured HTTPS connection.*
- Be sure to use the fully qualified appliance DNS name and not merely its IP address.

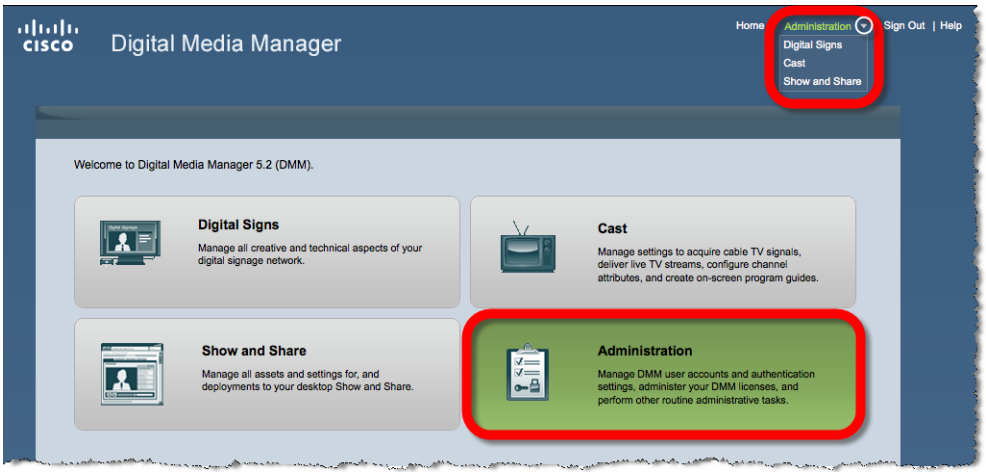
For example, **`https://dmm.example.com:8443`**.

Step 2 When the login page loads, sign in to your account.

Note **The appearance of the login screen can differ from this illustration.** Its actual appearance depends on which Cisco DMS software release you use and which user authentication method (embedded, LDAP, or federation) Cisco DMS uses in your network.

Step 3 Click **Log In**.

Step 4 Choose **Administration** from the global navigation or click **Administration** on the landing page.



What happens next depends on what happened before.

- *Is your appliance factory-new or recently restored?*

  No licenses are installed.

  We take you first to the page where you can install a license key.

- *Have you activated even one licensed feature?*

  At least one license is installed.

  We take you first to the DMS-Admin Dashboard, whose gauges can inform you at a glance.

Step 5 Stop. You have completed this procedure.

Related Topics

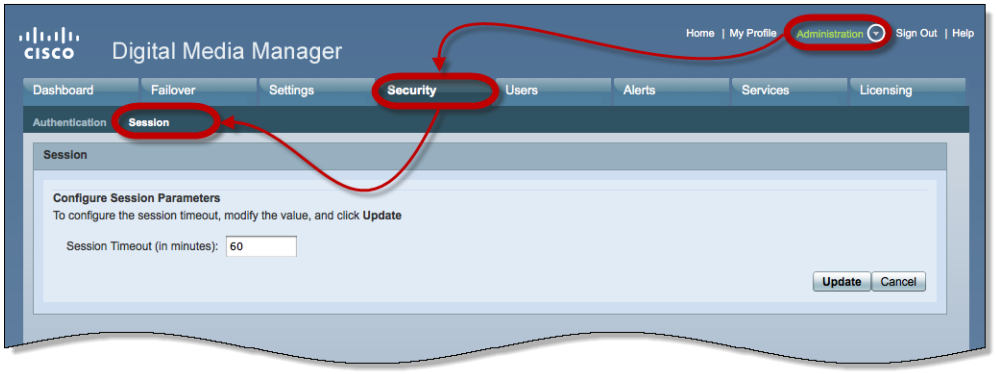
- Chapter 2, "DMS-Admin Dashboard"
- Chapter 3, "Licenses"

Set a User Session Timeout for Components of Cisco DMS

We log inactive users out of their sessions automatically after an interval, which you set, has elapsed. This interval applies to all users without exception.

Procedure

Step 1 Choose **Administration > Security > Session**.



Step 2 Use the Session Timeout (in minutes) field to enter or edit a session timeout value.

Step 3 Click **Update**.

Step 4 Stop. You have completed this procedure.

Reference

- FAQs and Troubleshooting, page 1-8

FAQs and Troubleshooting

- FAQs, page 1-8

FAQs

Q. What might prevent me from logging in?

A. Check the following, and then try again to log in.

- Is your username wrong or mistyped?
- Is your password wrong, mistyped, or expired?
- Is your user account suspended?
- Is your user account locked after too many failed login attempts?

CHAPTER 2

DMS-Admin Dashboard

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- Concepts, page 2-1
- Procedures, page 2-4

Audience

We prepared this material with specific expectations of you.

- You will administer Cisco DMS.
- You have already installed at least the license key to activate one Cisco DMS software feature module.

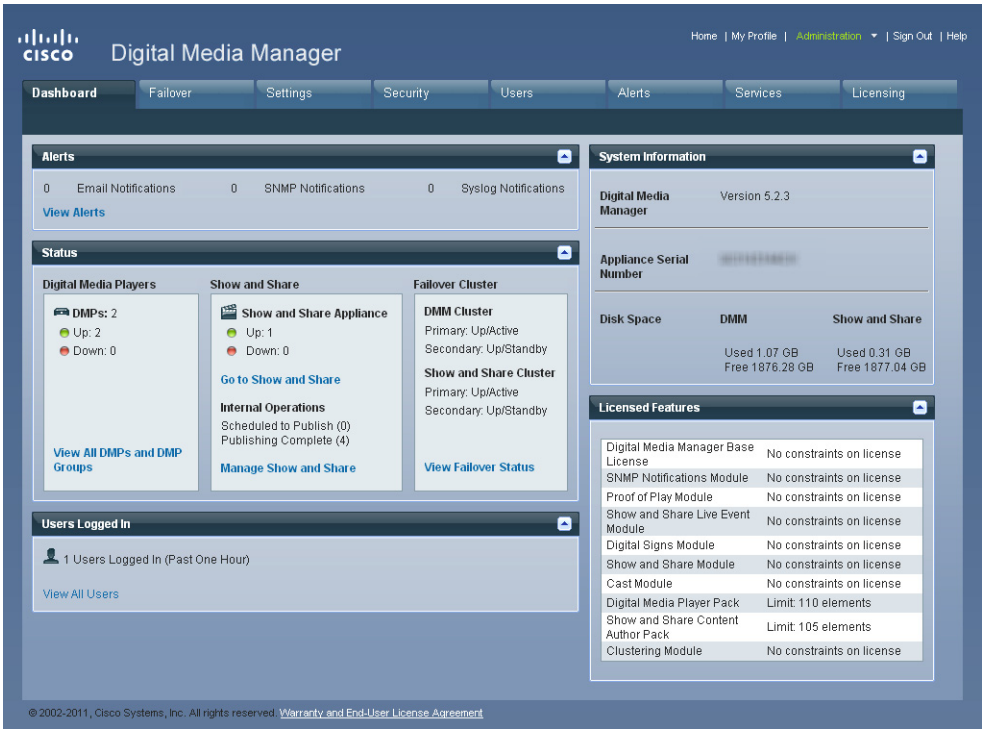
Concepts

- Dashboard Overview, page 2-1

Dashboard Overview

The dashboard for DMS-Admin centralizes many features for system monitoring and log collection. When problems of any kind interfere with the data-collection processes that populate its gauges, they show question marks in addition to the best available data. In this case, check that your systems and network are configured and working correctly.

These are the dashboard gauges.



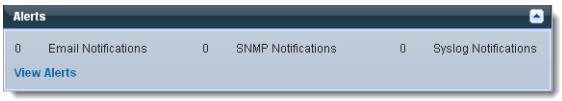
The Failover Cluster gauge monitors your use, if any, of failover.

Note **Sometimes, a monitoring gauge might leave out a value that you expect it to show.** When this occurs, we mark any missing values with a placeholder symbol (⚠) to indicate which values we could not show.

Tip **Until you install at least one license key, the DMS-Admin dashboard cannot retrieve data to populate its gauges.**

Understand the Alerts Gauge

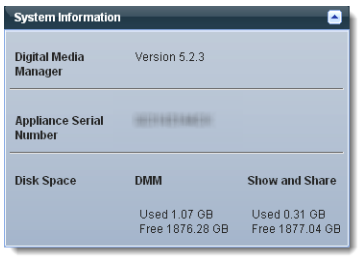
This gauge shows the total count of notification messages delivered in the past 1 hour.



Timesaver Click **View Alerts** to open the Alerts page.

Understand the System Information Gauge

The System Information gauge:



- Tells you the installed release version of your DMM server software.
- Tells you the serial number of your DMM appliance.
- Measures free space and used space for:
  - The content partition on your DMM appliance hard drive.
  - The content partition on your *Show and Share* appliance hard drive.

Understand the Status Gauge

Tip **Refresh your browser to update the data that this gauge shows.**

Have you set up the hardware and activated the separately licensed software features for server failover, Show and Share, and your DMPs?

If so, this gauge summarizes their current state in three summaries, side-by-side.

Digital Media Players

- Counts the total number of registered DMPs.
- Specifies how many DMPs were reachable or unreachable when this gauge loaded in your browser.

***Show and Share* Appliance**

- States whether your *Show and Share* appliance was unreachable at any time in the past 1 hour. (This release supports your use of only one *Show and Share* appliance.)
- Counts the number of *Show and Share* publishing operations that were pending or completed when this gauge loaded in your browser.

Failover Cluster

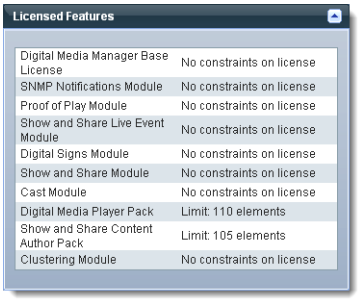
- Indicates the status of Cisco DMS appliances in your failover cluster.

Timesaver Click...

- **View All DMPs and DMP Groups** to open the DMP Manager page.
- **Go to Show and Share** to open Show and Share.
- **Manage Show and Share** to open Show and Share Administration.
- **View Failover Status** to open the Failover Configuration page.

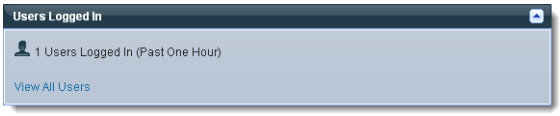
Understand the Licensed Features Gauge

This gauge lists software feature module licenses that are installed on your DMM appliance and describes constraints that your licenses impose.



Understand the Users Logged In Gauge

Counts the total number of users who logged in to your Cisco DMS appliances over the past 1 hour.



Timesaver Click **View All Users** to open the Users page in DMS-Admin.

Procedures

- View Dashboard Gauges, page 2-4

View Dashboard Gauges

Procedure

Step 1 Click the **Dashboard** tab.

Step 2 Stop. You have completed this procedure.

CHAPTER 3

Licenses

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- Concepts, page 3-1
- Procedures, page 3-2
- Reference, page 3-4

Audience

We prepared this material with specific expectations of you.

- You will administer Cisco DMS.
- You have already purchased at least the license key to activate one Cisco DMS software feature module.

Concepts

- Understand Licenses, page 3-1

Understand Licenses

Features of Cisco DMS are licensed and activated separately. Until you obtain and install license keys, their corresponding features are hidden from all users—*including you, the administrator.*

Note **Even then, some features remain hidden from users whose privilege levels are low.**

What to Do Next

- **OPTIONAL**—*Would you like to learn which feature licenses we sell?*
  See http://www.cisco.com/go/dms.
- **MANDATORY**—*Would you like to obtain license keys?*
  Proceed to the "Request License Keys" section on page 3-2.
- **MANDATORY**—*Would you like to install feature licenses?*
  Proceed to the "Install License Keys" section on page 3-3.

Procedures

- Request License Keys, page 3-2
- Install License Keys, page 3-3
- View Installed Licenses, page 3-3
- Check the Dashboard Gauge for Licenses, page 3-4

Request License Keys

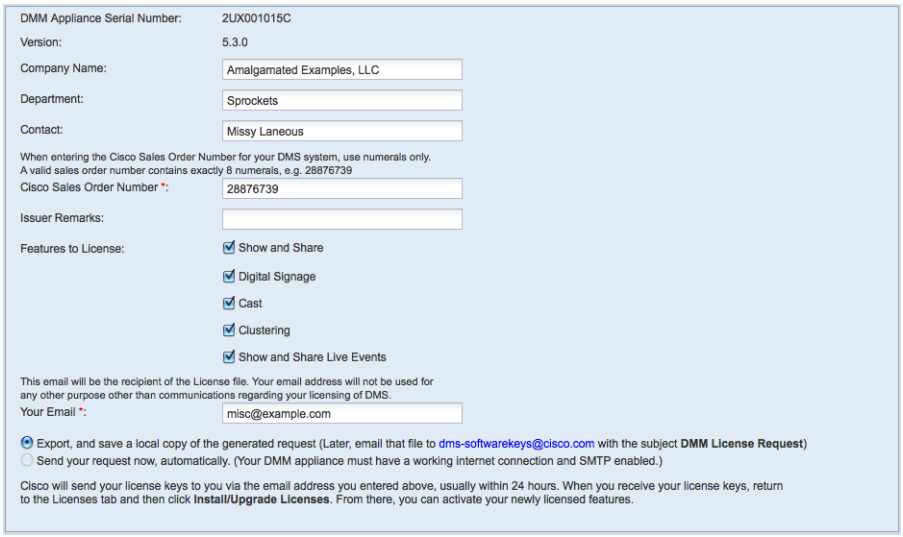
Features of Cisco DMS are sold and licensed separately. After you purchase the right to use a feature, you must request and install a unique license key. Your key activates the feature on your server.

Procedure

Step 1 Start DMS-Admin.

Step 2 Choose **Licenses > Request Licenses**.

Step 3 Enter all requested values in the Request Licenses form.



Step 4 Choose a method to send your license request as an email message to dms-softwarekeys@cisco.com.

- Export your request to a file that you can email later.
- Send your request immediately, assuming that your DMM server is configured to enable SMTP.

Step 5 After you receive a license key file from Cisco, save a local copy of it.

Note **Make sure that your local copy does not include any spaces in its filename.** (CSCtj60727)

Step 6 Stop. You have completed this procedure.

What to Do Next

- **MANDATORY**—Install License Keys, page 3-3

Related Topics

- Learn Your DMM Appliance Serial Number, page 1-4
- View Installed Licenses, page 3-3

Install License Keys

Procedure

Step 1 Start DMS-Admin.

Step 2 Choose **Licenses > Install/Upgrade Licenses**.

Step 3 Click **Browse** or **Choose File**, depending on your installed browser.

Step 4 Find and click the license file where you saved it.

Step 5 Click **Open**.

Step 6 Click **Install License**.

Step 7 Repeat these steps until all of your licenses are installed.

Features that you licensed are now activated.

Step 8 Stop. You have completed this procedure.

Related Topics

- Start DMS-Admin, page 1-5
- View Installed Licenses, page 3-3

View Installed Licenses

Before You Begin

- Install license keys.

Procedure

Step 1 Start DMS-Admin.

Step 2 Choose **Licenses > View Licenses**.

Step 3 Stop. You have completed this procedure.

Tip **The License Features gauge on the DMS-Admin dashboard summarizes this information.**

Related Topics

- Start DMS-Admin, page 1-5
- Install License Keys, page 3-3

Check the Dashboard Gauge for Licenses

Before You Begin

- Install license keys.

Procedure

Step 1 Start DMS-Admin.

Step 2 Choose **Administration > Dashboard**.

Step 3 Check the License Features gauge.

It tells you which of your:

- Licensed features are activated.
- Feature licenses impose restrictions.

Step 4 Stop. You have completed this procedure.

Reference

- Base Licenses for Cisco DMS Appliances and Endpoints, page 3-5
- Optional Module Licenses, page 3-6

Base Licenses for Cisco DMS Appliances and Endpoints

We include a base license at no additional cost with the purchase of any Cisco DMS appliance or endpoint. These licenses are unit-specific and perpetual. We do not impose any non-support fees and do not obligate you to purchase other licenses.

DMM appliance

With a DMM appliance base license, you can:

- Install feature licenses for components of Cisco DMS[1].
- Gain access to features after you license them.
- Create user accounts and user groups for components of Cisco DMS[1].
- Configure a user authentication framework for use throughout Cisco DMS[1].
- Configure event notifications and alarms for components of Cisco DMS[1].
- Check processes remotely.
- Monitor and restart servers remotely[1].

Show and Share appliance

With a *Show and Share* appliance base license (**and a DMM appliance**), you can set up a *Show and Share* site.

- Authors: **5**
- Viewers: *Unlimited*
- Category managers: *Unlimited*
- Featured video managers: *Unlimited*
- Video reviewers/publishers: *Unlimited*

DMP endpoint

With a DMP endpoint base license, you can set up the DMP itself[2] from its embedded device manager, *DMPDM*.

1. Including *Show and Share*, if you have and use it.
2. Managed in isolation, without involving DMM or any other DMPs.

Optional Module Licenses

Note **To obtain and activate any license for any component of Cisco DMS, you must have a DMM appliance.**

Module or Pack		Part Number[1]	Description
Show and Share Author License Packs	10 authors	• **DV-AUTHOR-FL-10** • *DV-AUTHOR-FL-10=*	Author licenses are cumulative. For example, the base license for *Show and Share* includes 5 authors—so, if you purchase and install a 10-author pack, your *Show and Share* will support as many as 15 authors.
	50 authors	• **DV-AUTHOR-FL-50** • *DV-AUTHOR-FL-50=*	
	500 authors	• **DV-AUTHOR-FL-500** • *DV-AUTHOR-FL-500=*	
	1,000 authors	• **DV-AUTHOR-FL-1000** • *DV-AUTHOR-FL-1000=*	
	10,000 authors	• **DV-AUTHOR-FL-10000** • *DV-AUTHOR-FL-10000=*	
	25,000 authors	• **DV-AUTHOR-FL-25000** • *DV-AUTHOR-FL-25000=*	
Show and Share Features	Live Event Module	• **DMM-LEM52-K9** • *DMM-LEM52-K9=*	Activates *Show and Share* abilities to host and produce managed, live webcasts—including audience polling, moderated Q&A, audio, video, and synchronized slides.
DMS-Admin Features	SNMP Notifications	• **DMM-SNMP52-K9** • *DMM-SNMP52-K9=*	Activates support for SNMP interaction with network monitoring applications. Also activates support for event notifications and alerts.
DMM Features	Digital Signs Module	• **DMM-SIGNSM52-K9** • *DMM-SIGNSM52-K9=*	Activates DMM baseline features to centrally manage and operate a digital signage network with Cisco DMPs.
	Cast Module	• **DMM-CAST52-K9** • *DMM-CAST52-K9=*	Activates DMM abilities to deliver on-demand video and live broadcast TV channels over IP networks to DMPs and their attached presentation systems.
Centralized DMP Management	1 DMP	• **DMP-FL-1** • *DMP-FL-1=*	To centrally manage DMPs from DMM, you must combine a Digital Signs Module license with at least one DMP feature license. DMP feature licenses are cumulative. If you are already licensed to manage 500 DMPs before you install an additional 50-unit license, your DMM installation will support managing as many as 550 DMPs.
	10 DMPs	• **DMP-FL-10** • *DMP-FL-10=*	
	50 DMPs	• **DMP-FL-50** • *DMP-FL-50=*	
	500 DMPs	• **DMP-FL-500** • *DMP-FL-500=*	
	1,000 DMPs	• **DMP-FL-1000** • *DMP-FL-1000=*	

1. **During your initial order, use part numbers that omit the = character.** Only later, when you want to extend what you ordered initially, should you use part numbers that end with =.

CHAPTER 4

Server Operations

Revised: April 4, 2012
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- Procedures, page 4-1
- Reference, page 4-3

Audience

We prepared this material with specific expectations of you.

- You administer Cisco DMS.

Procedures

- Check Processes Remotely, page 4-1
- Restart Appliances Remotely, page 4-2

Check Processes Remotely

Procedure

Step 1 Start DMS-Admin.

Step 2 Choose **Administration > Services**.

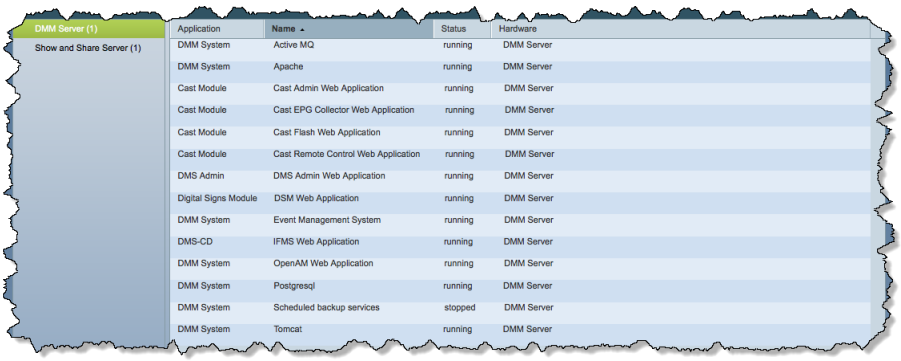
Step 3 Do one of the following.

- *Would you like to check server processes on your DMM appliance?*

  View the processes for DMM

  Click **DMM Server** in the far-left column.

  A list tells you which processes are running or stopped.

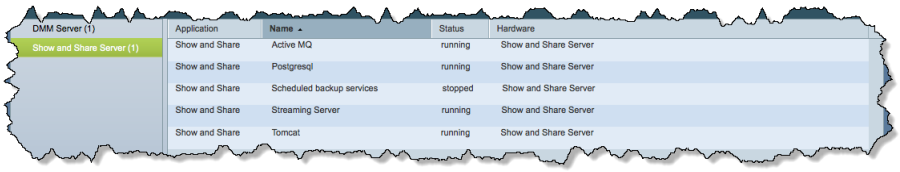


- *Would you like to check server processes on a Show and Share appliance?*

  View the processes for Show and Share

  Click **Show and Share Server** in the far-left column.

  A list tells you which processes are running or stopped.



Step 4 Stop. You have completed this procedure.

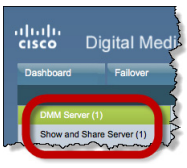
Restart Appliances Remotely

Procedure

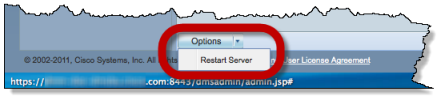
Step 1 Start DMS-Admin.

Step 2 Choose **Administration > Services**.

Step 3 Click a server name in the far-left column.



Step 4 Choose **Options > Restart Server**.



Step 5 Stop. You have completed this procedure.

Reference

- Server Processes, page 4-3

Server Processes

Each of these server processes runs on at least one type of Cisco DMS appliance.

- ActiveMQ
- Apache
- Cast Web Application
- Cast Admin Web Application
- Cast EPG Collector Web Application
- Cast Flash Web Application
- Cast Remote Control Web Application
- DMS-Admin Web Application
- DSM Web Application
- Event Management System
- IFMS Web Application
- OpenAM Web Application
- Postgresql
- Scheduled Backup Services
- Streaming Server
- Tomcat

CHAPTER 5

Analyze Cisco DMS System Logs

Revised: April 4, 2012
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- Procedures, page 5-1

Audience

We prepared this material with specific expectations of you.

- You have a working syslog server and you understand its operation.

Procedures

- Enable Syslog Analysis, page 5-1
- Disable Syslog Analysis, page 5-2

Enable Syslog Analysis

Procedure

Step 1 Start DMS-Admin.

Step 2 Choose **Settings > External Servers > Syslog**.

Step 3 Click **Enabled**.

Step 4 Enter the routable IP address or DNS-resolvable hostname of your syslog server.

Step 5 Enter the logical port number where your syslog server accepts incoming logfiles.

The standard port number, **514**, is prepopulated for your convenience.

Step 6 Click **Save**.

Step 7 Stop. You have completed this procedure.

Disable Syslog Analysis

Procedure

Step 1 Start DMS-Admin.

Step 2 Choose **Settings > External Servers > Syslog**.

Step 3 Click **Disabled**.

Step 4 Click **Save**.

Step 5 Stop. You have completed this procedure.

CHAPTER 6

Allow or Disallow Video Transcoding

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- Procedures, page 6-1

Audience

We prepared this material with specific expectations of you.

- You have installed a feature license to administer Cisco Show and Share.
- Your Cisco Show and Share setup should use a Cisco Media Experience Engine (MXE) to transcode video.

Procedures

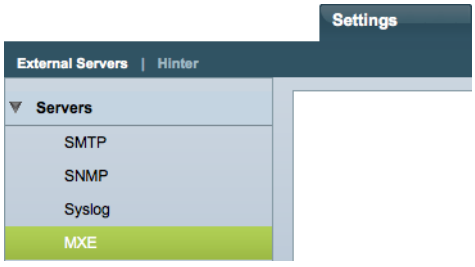
- Enable Show and Share Use of MXE Features, page 6-1
- Disable Show and Share Use of MXE Features, page 6-2

Enable Show and Share Use of MXE Features

Procedure

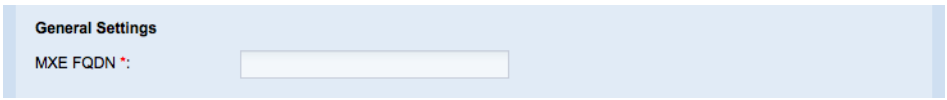
Step 1 Start DMS-Admin.

Step 2 Choose **Settings > External Servers > MXE**.



Step 3 Click **Enabled**.

Step 4 Enter the fully qualified (DNS-resolvable) domain name of your MXE appliance.



Step 5 Enter the ftp login credentials for your MXE appliance.

Step 6 Enter the MXE-relative directory paths where MXE should:

- Find incoming video files from Show and Share (“input”).
- Save its transcoded versions of these files (“output”).

The factory-default directory locations are prepopulated for your convenience.

Step 7 Click **Save**.

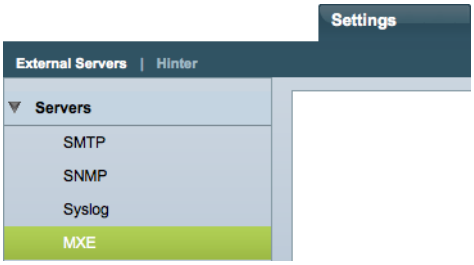
Step 8 Stop. You have completed this procedure.

Disable Show and Share Use of MXE Features

Procedure

Step 1 Start DMS-Admin.

Step 2 Choose **Settings > External Servers > MXE**.



Step 3 Click **Disabled**.

Step 4 Click **Save**.

Step 5 Stop. You have completed this procedure.

CHAPTER 7

Cisco Hinter for RTSP

Revised: April 4, 2012
OL-15762-04

- Concepts, page 7-1
- Procedures, page 7-3
- Reference, page 7-5

Audience

We prepared this material with specific expectations of you.

- You administer Cisco DMS.

Concepts

- Overview, page 7-1
- Workflow, page 7-2
- Restrictions, page 7-2

Overview

A streaming media framework called *RTP over RTSP* makes it possible for DMPs to play streaming video on demand through RTSP connections. This framework prevents data loss inside streams and maintains proper synchronization of audio to video, even in high-definition.

You must maintain two data files for each VoD that you will stream in this way.

- An MPEG2-TS source file, which uses the filename extension **MPG**. Its program stream might be encoded as MPEG-1, MPEG-2, or MPEG-4 Part 10 (H.264).
- A "hinted" **MOV** file, which is derived from your MPG source file and imposes order upon it.

You must use our *Cisco Hinter* utility to output each hinted MOV file.

Cisco Hinter prepares MPEG2-TS files for interleaved RTP transmission through open source software called *Darwin Streaming Server* (DSS). Hinter adds delivery information to a media track, which tells DSS how to pack and stream (*multiplex*, or *mux*) data from the audio channel and the video channel. This method improves audiovisual synchronization because these channels traverse the network together. Your DSS can then deliver such hinted video to your DMPs upon demand, after you stage the MPG-MOV pair to its media serving directory.

Cisco Hinter versions for Windows and Linux users are downloadable from your DMM appliance.

Note **We do not develop, maintain, sell, or support Darwin Streaming Server.** Nor do we warrant its suitability for any purpose.

Workflow

1. Download and set up Cisco Hinter.
2. Download Darwin Streaming Server (DSS).

   Note **The official repository for DSS is http://dss.macforge.org.** Alternatively, you can use http://developer.apple.com/opensource/server/streaming/index.html.

3. Install and configure DSS on **equipment *other than* any Cisco DMS server appliance**.
4. Process each of your MPG files with Cisco Hinter to output a small, hinted MOV file.
5. Stage your MPG and MOV files together in the DSS serving directory.
6. Request streams from **rtsp://**<*DSS_IP_address*>**:**<*optional_port_number*>**/**<*filename*>**.mov**.

In DMPDM

a. Enter your stream's address in the URL field at Display Actions > Media URL.
b. Click **Start**.

In Digital Signs

a. Click the URL (recommended) radio button on the Simple property sheet in the Add Asset dialog box.
b. Enter your stream's address in the URL field.
c. Choose **RTSP** from the File Type list.
d. Click **Save**.

Restrictions

RTSP Variants

- There are many variants of RTSP and **we support only one of them**. You must use *RTP over RTSP*, which is also called *RTP over TCP* or *Interleaved TCP*. In this variant, RTP, RTCP, and RTSP data stream together over one logical port—typically, port 554.
- Our RTSP does not support live streaming (multicast or unicast) in this release.
- Our RTSP does not support "trick mode." This means that you cannot pause video during playback, fast-forward through it, or fast-rewind through it. You can merely start or stop playback.

Darwin Streaming Server

- DSS cannot read any file whose file size is greater than 2.1 GB. You must split such large files into smaller ones before you derive hinted MOV output from them. (CSCtb27324)
- Although DSS is an open source streaming media platform and available for multiple operating systems, **we have tested DSS on Linux exclusively**.

Cisco Hinter

- *Cisco Hinter* software is available for Windows and Linux, exclusively.
- We do not support any other hinter.
- We do not support playback of hinted files that you output from any other hinter.

Protocols

- We do not support *User Datagram Protocol* (UDP).
- We do not support *Session Announcement Protocol* (SAP).
- We do not support *Session Description Protocol* (SDP) or its announcements.

Procedures

- Download Cisco Hinter, page 7-3
- Windows, page 7-4
- Linux, page 7-5

Download Cisco Hinter

Procedure

Step 1 Start DMS-Admin.

Step 2 Choose **Settings > Hinter**.

Step 3 Click to download either the Windows or the Linux version.

- **Cisco-Hinter-Windows.zip**
- **Cisco-Hinter-Linux.tar.gz**

Step 4 Decompress the archive.

Step 5 Stop. You have completed this procedure.

Windows

- Install Cisco Hinter on Windows, page 7-4
- Run Cisco Hinter on Windows, page 7-4

Install Cisco Hinter on Windows

Procedure

Step 1 Open a command prompt where you decompressed the archive.

Step 2 Type the command **cd CiscoHinter**, and then press **Enter**.

Step 3 Type the command **install.bat**, and then press **Enter**.

Step 4 Stop. You have completed this procedure.

Run Cisco Hinter on Windows

Procedure

Step 1 Open a command prompt where you decompressed the archive.

Step 2 Type the command **runHinter.bat**, and then press **Enter.**

Step 3 Enter the MPEG2-TS filename in the Source MPEG field.

OR

Click **Browse** or **Choose File** (depending on which browser you use) to find your MPEG2-TS file.

We populate the Output Name field automatically. It is identical to the name in the Source MPEG field, except that the filename extension is MOV and not MPG.

Step 4 Click **Generate**, and then wait for the “Hinting finished successfully” message.

Step 5 Find your hinted MOV output file in the **..\hinted-files** subdirectory.

Step 6 Move or copy both the MPG file and its MOV derivative to the DSS root directory.

Step 7 Stop. You have completed this procedure.

Linux

- Install Cisco Hinter on Linux, page 7-5
- Run Cisco Hinter on Linux, page 7-5

Install Cisco Hinter on Linux

Procedure

Step 1 Open a command prompt where you decompressed the archive.

Step 2 Type the command **run Install.sh**, and then press **Enter**.

Step 3 Stop. You have completed this procedure.

Run Cisco Hinter on Linux

Procedure

Step 1 Open a command prompt where you decompressed the archive.

Step 2 Type the command **run runHinter.sh**, and then press **Enter**.

Step 3 Enter the MPEG2-TS filename in the Source MPEG field.

OR

Click **Browse** or **Choose File** (depending on your browser) to find your MPEG2-TS file.

We populate the Output Name field automatically. It is identical to the name in the Source MPEG field except that the filename extension is MOV and not MPG.

Step 4 Click **Generate**, and then wait for the "Hinting finished successfully" message.

Step 5 Find your hinted MOV output file in the **..\hinted-files** subdirectory.

Step 6 Move or copy both the MPG file and its MOV derivative to the DSS root directory.

Step 7 Stop. You have completed this procedure.

Reference

- FAQs and Troubleshooting, page 7-5

FAQs and Troubleshooting

- Troubleshoot RTP Over RTSP, page 7-6

Troubleshoot RTP Over RTSP

These general troubleshooting ideas might help you to diagnose and resolve problems with this feature.

- Verify that both the MPG source file and its hinted MOV derivative are present together in the media root directory on your DSS.
- Use a utility like openRTSP to test both the MPG source file and its hinted MOV derivative. The correct Linux command line syntax in this case is **openRTSP -V -v -t rtsp://***DSS_server_IP_address*/*filename*.**mov**
- Use **HexEdit**, **WinHex**, or a similar utility to open your hinted MOV file and verify that it contains:
  - An explicit reference to the full and literal filename of your MPG source.
  - The signature for MOV output from Cisco Hinter:
    ```
    Hinted MPEG1 Muxed Track
    ```
  - The signature for interleaved RTP:
    ```
    m=OTHER 0 RTP/AVP 96
    ```
- Check the system logs on your DSS.

Note
- **openRTSP**—http://www.live555.com/openRTSP/
- **HexEdit**—http://hexedit.sourceforge.net/
- **WinHex**—http://www.winhex.com/winhex/

CHAPTER 8

Authentication and Federated Identity

Revised: September 2013
OL-15762-04

- Concepts, page 8-1
- Procedures, page 8-22
- Reference, page 8-50

Audience

We prepared this material with specific expectations of you.

- **Embedded Mode**—You understand fundamental principles of user authentication.
- **LDAP Mode**—YOU ARE A MICROSOFT ACTIVE DIRECTORY EXPERT with real-world experience in its configuration and administration.
- **Federation Mode**—YOU ARE A SAML 2.0 EXPERT with real-world experience in its configuration and administration, including import and export of SAML 2.0-compliant IdP and SP configuration files.

Concepts

- Overview, page 8-1
- Glossary, page 8-2
- Understand the Requirement to Authenticate Users, page 8-9
- Decide Which Authentication Method to Use, page 8-10
- LDAP and Active Directory Concepts, page 8-10
- Federated Identity and Single Sign-on (SSO) Concepts, page 8-17
- Migration Between Authentication Methods, page 8-20

Overview

User authentication features of DMS-Admin help you to:

- Authenticate **all** user sessions. (*We prevent you from disabling mandatory authentication, even though we allowed this in Cisco DMS 5.1.x and prior releases.*)
- Choose and configure an authentication method.
- Import user account settings from an Active Directory server.

- Synchronize user groups from an Active Directory server. Microsoft Active Directory is the only LDAP implementation that we support in this release.
- Use federation services with a SAML 2.0-compliant IdP to support SP-initiated "single sign-on" login authentication in your network (following an initial synchronization to a Microsoft Active Directory Server that populates the DMM user database).

Note **We support your use of one—and only one—IdP server with Cisco DMS 5.3.**

Glossary

Timesaver **Go to terms that start with...** [**A** | **C** | **D** | **F** | **I** | **L** | **O** | **P** | **R** | **S** | **U** | **X**].

A

Active Directory Microsoft implementation of LDAP. A central authentication server and user store. Active Directory is the only LDAP implementation that we support in this release.

Active Directory forest A domain-straddling combination of Active Directory trees within an organization that operates multiple Internet domains. Thus, the forest at "Amalgamated Examples, LLC" might straddle all trees across example.**com**, example.**net**, and example.**org**.

Or, to use Cisco as a real-world case-study, one forest could straddle **cisco.com** and **webex.com**, among others.

Note **Cisco DMS Release 5.3.x does not support Active Directory forests.**

Cisco Show and Share Release 5.3.12 does support Active Directory forests. See this white paper on Cisco.com:

http://www.cisco.com/en/US/prod/collateral/video/ps9901/ps6682/white_paper_c11-727483.html

Active Directory tree A subdomain-straddling combination of IdPs throughout one Internet domain. These IdPs operate collectively on behalf of the Internet domain's constituent subdomains. Thus, the "tree" at **example.com** might encompass all of the IdPs to authenticate user sessions within subdomains such as these:

- **legal**.example.com
- **sales**.example.com
- **support**.example.com

Active Directory Federation Services Active Directory Federation Services (AD FS) 2.0 is supported in Cisco Show and Share Release 5.3.12.

AD FS 2.0 is a software component that you can install on Windows Server operating systems to provide users with single sign-on access to systems and applications located across organizational boundaries.

administrator DN The DN to authenticate your Active Directory server's administrator.

Note This release is more strict than most prior releases in its enforcement of proper LDAP syntax. Now, when you specify the administrator DN, **you must use proper syntax, which conforms exactly to LDIF grammar**.

- Proper syntax: `CN=admin1,OU=Administrators,DC=example,DC=com`
- Poor syntax: `EXAMPLE\admin1`

OTHERWISE

When you use poor syntax here for the first time while your DMM appliance runs DMS 5.3, we show you, the administrator, this error message: "Invalid username or password."

But if you used and validated poor syntax here before ***upgrading*** to Cisco DMS 5.3, we do not repeat the validation process. Therefore—*even though we do not show an error message to anyone*—**LDAP users simply cannot log in**.

Note **An LDAP expression must never include a space immediately to either side of a "=" sign.** Similarly, it must never include a space immediately to either side of an "objectClass" attribute. Otherwise, validation fails.

authentication The process to verify if a directory service entity has correctly claimed its own identity.

C

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CA *certification authority*. Authority that issues and manages security credentials and public keys, which any directory service entity relies upon to encrypt and decrypt messages exchanged with any other directory service entity. As part of a public key infrastructure (PKI), a CA checks with a registration authority (RA) to verify information that certificate requestors provide. After the RA verifies requestor information, the CA can then issue a certificate.

CN *common name*. An attribute-value pair that names one directory service entity but indicates nothing about its context or position in a hierarchy. For example, you might see `cn=administrator`. But `cn=administrator` is so commonplace in theory that it might possibly recur many times in an Active Directory forest, while referring to more than just one directory service entity. An absence of context means that you cannot know which device, site, realm, user group, or other entity type requires the implied "administration" or understand why such "administration" should occur.

Therefore, use of a standalone CN is limited in the LDIF grammar. Absent any context, a standalone CN is only ever useful as an RDN.

Note **An LDAP expression must never include a space immediately to either side of a "=" sign.** Similarly, it must never include a space immediately to either side of an "objectClass" attribute. Otherwise, validation fails.

CoT *circle of trust*. The various SP that all authenticate against one IdP in common.

D

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DC

domain component. An attribute to designate one constituent part of a *fully-qualified domain name* (FQDN). Suppose for example that you manage a server whose FQDN is **americas.example.com**. In this case, you would link together three DC attribute-value pairs: `DC=Americas,DC=example,dc=com.`

Note **An LDAP expression must never include a space immediately to either side of a "=" sign.** Similarly, it must never include a space immediately to either side of an "objectClass" attribute. Otherwise, validation fails.

digital certificate

Uniquely encrypted digital representation of one directory service entity, whether physical or logical. This trustworthy representation certifies that the entity is not an imposter when it sends or receives data through a secured channel. The CA normally issues the certificate upon request by the entity or its representative. The requestor is then held accountable as the "certificate holder." To establish and retain credibility, a certificate must conform to requirements set forth in International Organization for Standardization (ISO) standard X.509. Most commonly, a digital certificate includes the following.

- One DN to authenticate the directory service entity.
- One DN to authenticate the CA.
- A serial number to identify the digital certificate itself.
- An expiration date, after which any entity that receives the certificate should reject it.
- A copy of the certificate holder's public key.
- The CA's digital signature, so recipients can verify that the certificate is not forged.

directory service entity

Any single, named unit at any level within a nested hierarchy of named units, relative to a network. An entity's essence depends upon its context. This context, in turn, depends upon interactions between at least two service providers—one apiece for the naming service and the directory service—in your network. Theoretically, an entity might represent any tangible thing or logical construct.

- By "tangible thing," we mean something that a person could touch, which occupies real space in the physical world. For example, this entity type might represent one distinct human being, device, or building.
- By "logical construct," we mean a useful abstraction whose existence is assumed or agreed upon but is not literally physical. For example, this entity type might represent one distinct language, subnet, protocol, time zone, or ACL.

An entity's purpose is broad and flexible within the hierarchical context that defines it.

DN

distinguished name. A sequence of attributes that help a CA to distinguish a particular directory service entity uniquely for authentication. Distinct identity in this case arises from a text string of comma-delimited attribute-value pairs. Each attribute-value pair conveys one informational detail about the entity or its context. The comma-delimited string *is* the actual DN. It consists of the entity's own CN, followed by at least one OU, and then concludes with at least one DC. For example:

```
CN=username,OU=California,OU=west,OU=sales,DC=Americas,DC=example,DC=com
```

Note **An LDAP expression must never include a space immediately to either side of a "=" sign.** Similarly, it must never include a space immediately to either side of an "objectClass" attribute. Otherwise, validation fails.

Thus, each DN represents more than merely one isolated element. A DN also associates the element to its specific context within the Active Directory user base that your IdP depends upon.

Tip **Any DN might change over the lifespan of its corresponding entity.** For example, when you move entries in a tree, you might introduce new OU attributes or deprecate old ones that are elements of a DN. However, you can assign to any entity a reliable and unambiguous identity that persists beyond such changes to its context. To accomplish this, merely include a *universally unique identifier* (UUID) among the entity's set of operational attributes.

F

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federation

The whole collection of authentication servers that synchronize their user bases to one IdP in common and thereby make SSO possible within a network. This mutualized pooling of user bases bestows each valid user with a "federated identity" that spans an array of your SPs.

I

↑ *Return to Top*

IdP

identity provider. One SAML 2.0-compliant server (synchronized to at least one Active Directory user base), that authenticates user session requests upon demand for SPs in one network subdomain. Furthermore, an IdP normalizes data from a variety of directory servers (user stores).

Users send their login credentials to an IdP over HTTPS, so the IdP can authenticate them to whichever SPs they are authorized to use. As an example, consider how an organization could use three IdPs.

- An IdP in **legal**.example.com might authenticate user sessions for one SP, by comparing user session requests to the user base records from one Active Directory server.
- An IdP in **sales**.example.com might authenticate user sessions for 15 SPs, by comparing user session requests to the user base records from three Active Directory servers.
- An IdP in **support**.example.com might authenticate user sessions for four SPs, by comparing user session requests to the user base records from two Active Directory servers.

Caution **Only a well known CA can issue the digital certificate for your IdP.** Otherwise, you cannot use SSL, HTTPS, or LDAPS in Federation mode and, thus, all user credentials are passed in the clear.

Tip **We have tested Cisco DMS federation features successfully against OpenAM, PingFederate, and Shibboleth.** We recommend that you use an IdP that we have tested with Cisco DMS. We explicitly DO NOT support Novell E-Directory or Kerberos-based custom directories.

If your IdP fails, you can switch your authentication mode to LDAP or Embedded.

L

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LDAP

Lightweight Directory Access Protocol. A highly complex data model and communications protocol for user authentication. LDAP provides management and browser applications with access to directories whose data models and access protocols conform to X.500 series (ISO/IEC 9594) standards.

Note **Microsoft Active Directory is the only LDAP implementation that we support in this release.**

LDAPS

Secure LDAP. The same as ordinary LDAP, but protected under an added layer of SSL encryption.

Note **Before you try to configure SSL encryption and before you let anyone log in with SSL, you MUST:**

- Activate SSL on your Active Directory server and then export a copy of the server's digital certificate.
- Import into DMM the SSL certificate that you exported from Active Directory.
- Restart Web Services (Tomcat) in AAI.

Caution **Is your DMM appliance one half of a failover pair?**
If so, you will trigger immediate failover when you submit the command in AAI to restart Web Services. This occurs by design, so there is no workaround.

LDIF

LDAP Data Interchange Format. A strict grammar that SPs and IdPs use to classify and designate named elements and levels in Active Directory.

O

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OpenAM SAML 2.0-compliant identity and access management server platform written in Java. OpenAM is open source software available under the Common Development and Distribution (CDDL) license. OpenAM is derived from and replaces OpenSSO Enterprise, which also used CDDL licensing. See http://www.forgerock.com/openam.html.

OU *organizational unit*. An LDIF classification type for a logical container within a hierarchical system. In LDIF grammar, the main function of an OU value is to distinguish among superficially identical CNs that might otherwise be conflated. For example:

- `CN=John Doe,OU=sales,DN=example,DN=com`
- `CN=John Doe,OU=marketing,DN=example,DN=com`

Note **An LDAP expression must never include a space immediately to either side of a "=" sign.** Similarly, it must never include a space immediately to either side of an "objectClass" attribute. Otherwise, validation fails.

P

↑ *Return to Top*

PingFederate SAML 2.0-compliant identity and access management server platform written in Java. PingFederate is proprietary, commercial software. See http://www.pingidentity.com.

R

↑ *Return to Top*

RDN *relative distinguished name*. The CN for a directory service entity, as used exclusively (and still without any explicit context) by the one IdP that has synchronized this entity against an Active Directory user base. When an IdP encounters any RDN attribute in an LDIF reference, the IdP expects implicitly that its SAML 2.0-synchronized federation is the only possible context for the CN. It expects this because an IdP cannot authenticate—and logically should never encounter—a directory service entity whose RDN is meaningful to any other federation.

S

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SAML *Security Assertion Markup Language*. XML-based open standard that security domains use to exchange authentication and authorization data, including assertions and security tokens. **We support SAML 2.0.**

Shibboleth A SAML 2.0-compliant architecture for federated identity-based authentication and authorization.

SP *service provider*. Server that requests and receives information from an IdP. For example, SPs in Cisco DMS include your DMM server and your *Show and Share* server.

SSO *single sign on*. (And sometimes *"single sign **off**."*) The main user-facing benefit of federation mode is that SPs begin—and end, in some implementations—user sessions on behalf of their entire federation. SSO is a convenience for users, who can log in only once per day as their work takes them between multiple servers that are related but independent. Furthermore, SSO is a convenience to IT staff, who spend less time on user support, password fatigue, compliance audits, and so on.

- We DO NOT support single sign **off** in Cisco DMS 5.3.
- We support only **SP-initiated** SSO in Cisco DMS 5.3.

U

↑ *Return to Top*

user base The location of the user subtree in the LDAP directory tree. For example, `DC=ad,DC=com`.

Note **An LDAP expression must never include a space immediately to either side of a "=" sign.** Similarly, it must never include a space immediately to either side of an "objectClass" attribute. Otherwise, validation fails.

user base DN The DN for an Active Directory user base.

Note **An LDAP expression must never include a space immediately to either side of a "=" sign.** Similarly, it must never include a space immediately to either side of an "objectClass" attribute. Otherwise, validation fails.

user filter A user filter limits the scope of an agreement to import filtered records from an Active Directory user base.

Note **An LDAP expression must never include a space immediately to either side of a "=" sign.** Similarly, it must never include a space immediately to either side of an "objectClass" attribute. Nor can a group name include any spaces. Otherwise, validation fails.

X

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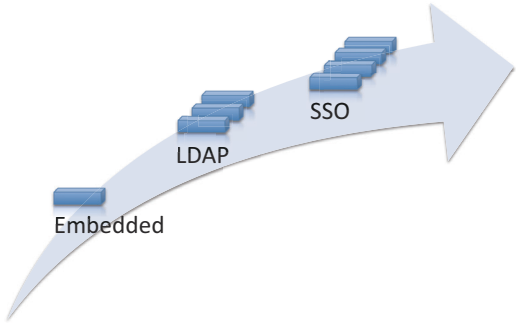
X-509 A standard for public key infrastructure. X.509 specifies, among other things, standard formats for public key certificates and a certification path validation algorithm.

Understand the Requirement to Authenticate Users

Although Cisco DMS always authenticates users, we support three authentication methods.

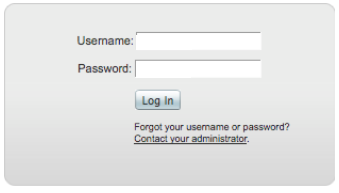
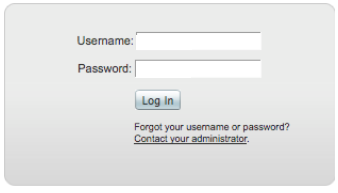
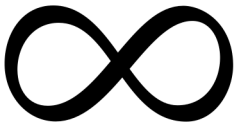


- *Embedded authentication* is completely native to Cisco DMS. It does not depend on any external servers.
- *LDAP authentication* causes Cisco DMS products to rely on one—and only one—Microsoft Active Directory server and a Microsoft Internet Information Server (IIS). Thus, setup and operation with this method are more complex than with embedded authentication.
- *Federation mode—also known as single sign-on* (SSO) causes Cisco DMS products to rely on a SAML 2.0-compliant IdP in combination with a Microsoft Active Directory server and IIS. Thus, setup and operation with this method are more complex than with LDAP authentication.

Note **You must choose one of these methods.** The method that you use determines which login screen your users will see.

Tip

- **After a user session times out, we prompt the affected user to log in twice.**
- **Migration from one mode to another takes as long as 1 minute to finish (CSCtn22370).**
- **An unresponsive Active Directory server can hang a login prompt for 20 minutes without any error message.**

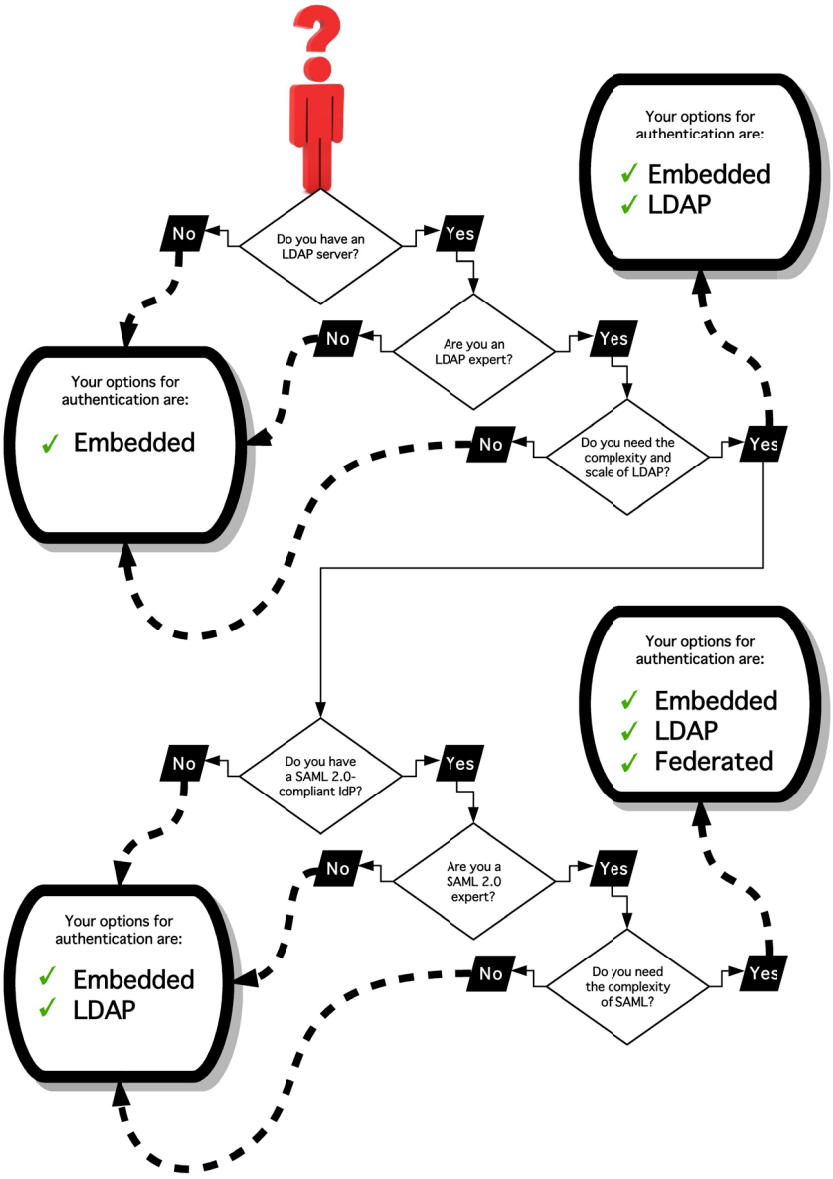
EMBEDDED MODE	LDAP MODE	FEDERATION (SSO) MODE [1]
		
		IdP-specific login screen

1. When any of your federation servers uses a self-signed certificate, we show your users **two SSL warnings** during login.

Related Topics

- LDAP and Active Directory Concepts, page 8-10
- Federated Identity and Single Sign-on (SSO) Concepts, page 8-17

Decide Which Authentication Method to Use



LDAP and Active Directory Concepts

Note **Microsoft Active Directory is the only LDAP implementation that we support in this release.**

- LDAP is Highly Complex, page 8-11
- Plan Ahead, page 8-11
- Restrictions, page 8-11
- Synchronization Concepts, page 8-11

- LDAP Concepts, page 8-14
- Password Concepts, page 8-16
- Understand Authentication Property Sheets for LDAP, page 8-17

LDAP is Highly Complex

Caution **LDAP-related features of Cisco DMS are meant for use by qualified and experienced administrators of Microsoft Active Directory.** Unless you are an Active Directory and LDAP expert, we recommend that you use embedded authentication.

Plan Ahead

- Install and configure Active Directory and Internet Information Services (IIS) before you try to configure LDAP authentication mode or federation mode in DMS-Admin.

Tip **We support IIS 6 on Windows Server 2003.**

- Pair your DMM appliance and your Show and Share appliance in AAI before you configure Cisco DMS to use LDAP authentication. Otherwise, video tutorials for Show and Share are not loaded onto your Show and Share appliance.
- Make sure that you have generated or imported certificates as necessary and activated SSL on the Active Directory server before you try to configure SSL encryption.

Restrictions

Cisco DMS Release	Support for Active Directory	
	Trees	Forests
5.3.0	Yes	No

Synchronization Concepts

- Synchronization (Replication) Overview, page 8-12
- Synchronization Types, page 8-12
- Understand Manual Synchronization, page 8-13
- Understand Automatic Synchronization, page 8-13
- Guidelines for Synchronization, page 8-14

Synchronization (Replication) Overview

Note **Microsoft Active Directory is the only LDAP implementation that we support in this release.**

When you choose LDAP authentication or SSO authentication, user account data originates from your Active Directory server. However, Cisco DMS *does not* synchronize (replicate) this data automatically, in real time. Instead, we cache it. Therefore, you must resynchronize user account data when you think it is appropriate to do so. You can:

- Resynchronize manually.
- Schedule synchronizations to recur in the future at set intervals.

Note **Features of *Digital Signs* and *Show and Share Administration* help you to manage user access privileges and permissions for Cisco DMS.**

DMS-Admin synchronizes all user accounts in the Active Directory "user base" that your filter specifies, **except users whose accounts are disabled** on your Active Directory server.

Synchronization Types

Note **Microsoft Active Directory is the only LDAP implementation that we support in this release.**

We support four types of Active Directory synchronization in LDAP mode or federation mode.

Initial	Update	Overwrite	Delete
Runs a one-time synchronization for a new filter that you never synchronized previously.	Runs an incremental, fast update to find and make up for any differences between user accounts that match your Active Directory filter and your local copy of those user accounts.	Overwrites your local copy of user accounts that correspond to your Active Directory filter with new copies of those user accounts. In addition, deletes your local copy of each user account that has been deleted from Active Directory since the last time that you ran a synchronization.	Deletes your local copy of user accounts that correspond to a defined Active Directory filter and deletes the entry for that filter from DMS-Admin.

Understand Synchronization of a DMM Group to an LDAP Filter

Note **Microsoft Active Directory is the only LDAP implementation that we support in this release.**

Is the Active Directory Filter Associated to a DMM User Group?	We Sync All Matching LDAP User Accounts to the	
	'All Users' Group in DMM	Associated User Group in DMM
Yes	Yes	Yes
No	Yes	N.A.

- In most cases, you can associate one LDAP filter apiece to one DMM user group. Likewise, in most cases, you can associate one DMM user group apiece to one LDAP filter. **The Digital Signs user group is an exception to both of these principles.** It is built-in to Cisco DMS.
- After you associate a DMM user group to an LDAP filter, you cannot use features on the Users tab to delete the DMM user group until after you delete the LDAP filter. However, even when you delete an LDAP filter, there is no requirement to delete its associated DMM user group. **Furthermore, there is no way for you to delete the Digital Signs user group.** It is built-in to Cisco DMS.

Understand Manual Synchronization

Note **Microsoft Active Directory is the only LDAP implementation that we support in this release.**

Manual synchronization mode requires you to choose Administration > Settings > Authentication > Synchronize Users > LDAP Bookmarks during all future synchronizations. Afterward, you must click Update.

Manual synchronization mode deletes your schedule for automatic synchronizations.

Understand Automatic Synchronization

Note **Microsoft Active Directory is the only LDAP implementation that we support in this release.**

Automatic synchronization mode automates and schedules incremental updates to user accounts that match Active Directory filters that you defined in DMS-Admin. When you use automatic synchronization mode, new fields and elements become available to you. These help you to configure the settings for automatic synchronization.

See the "Understand Synchronization of a DMM Group to an LDAP Filter" section on page 8-13.

Guidelines for Synchronization

Note **Microsoft Active Directory is the only LDAP implementation that we support in this release.**

We recommend that you synchronize your LDAP bookmarks periodically. Synchronization ensures that user and group membership associations are current and correct.

Sync Type	Best Practices
Initial	The *Initial* option is CPU-intensive for your DMM appliance and might lower performance temporarily. We recommend that you use it during *off-peak* hours only.
Update	We recommend that you use the *Update* option whenever: • A new user account in Active Directory should have login access to DMM or Show and Share. • User attributes[1] change in Active Directory for a user account in DMM or Show and Share. • A user account is disabled in Active Directory and should be deleted from DMM and Show and Share.
Overwrite	**Note** **The *Overwrite* option is CPU-intensive for your DMM appliance and might lower its performance temporarily.** We recommend that you use this option during off-peak hours only. • After a user account is deleted from Active Directory, this option deletes the corresponding user account from DMM and Show and Share. • After a user account is associated to a new first name, last name, or username, this option overwrites the outdated user account attributes.
Delete	**Caution** **The *Delete* option is destructive by design.** We advise that you use it sparingly and with great caution. Among other effects, your deletion of an LDAP bookmark can affect user access to videos in Show and Share. **Note** **Typically, the deletion process takes about 1 minute to finish.** However, when there are more than 50,000 users in the Active Directory database, this process might run in the background and take about 30 minutes to finish. In this case, the user interface in DMS-Admin can show that a bookmark was deleted even though the actual process has not finished. If you observe this behavior, simply allow 30 minutes for the operation to finish.

1. Attributes that you entered on the Manage Attributes property sheet in DMS-Admin.

Related Topics

- Manage LDAP (Active Directory) Attributes, page 8-26

LDAP Concepts

- Understand LDAP Attributes, page 8-15
- Guidelines for LDAP Filters, page 8-15

Understand LDAP Attributes

Note **Microsoft Active Directory is the only LDAP implementation that we support in this release.**

Ordinarily, DMS-Admin *will not* import any user account record from your Active Directory server when the value in it is blank for any of these attributes:

- **Login User Name**—This required value always must be unique.
- **First Name**—This required value might be identical for multiple users.
- **Last Name**—This required value might also be identical for multiple users.

However, you can import and synchronize all of the Active Directory user account records that match your filters. You can do this even when some of the user account records are incomplete because one or more of their attributes have blank values.

To prevent these undefined attributes from blocking the import of the user accounts they are meant to describe, you can enter generic values for most attributes in the Values to Use by Default column. DMS-Admin takes the generic values that you enter, and then inserts them automatically where they are needed.

Tip **Nonetheless, you cannot enter a default value for the Login User Name attribute.** Usernames are unique.

Guidelines for LDAP Filters

Note **Microsoft Active Directory is the only LDAP implementation that we support in this release.**

- Use “OU” values to impose rough limits on a filter, page 8-15
- Use “memberOf” values to pinpoint a filter more precisely, page 8-16
- Use “objectClass” values to match all user records, page 8-16

Use “OU” values to impose rough limits on a filter

- Never use a filter that defines the user base at the domain level. For example, this filter is not acceptable.

```
DC=example,DC=com
```

- Instead, use filters that define the user base at a lower level, as this one does.

```
OU=SanJose,DC=example,DC=com
```

- LDAP returns matched records **from all levels** within the user base that your filter defines.

Would a filter for "`OU=SanJose,DC=example,DC=com`" ever include any users from...?	
`OU=RTP,DC=example,DC=com`	No[1]
`OU=Milpitas,OU=SanJose,DC=example,DC=com`	**Yes**[2]
`OU=Sunnyvale,OU=SanJose,DC=example,DC=com`	**Yes**[2]

1. Research Triangle Park, NC, does not have any physical connection to San José, CA.
2. Milpitas, CA and Sunnyvale, CA, are suburbs of San José, CA, which affects them directly and in multiple ways.

Use "memberOf" values to pinpoint a filter more precisely

- But what if you did not want to include any members of Milpitas or Sunnyvale? If your Active Directory server considered these cities (organizational units) to be subsets of San José, how could you exclude their members? To do so, you would use the

  `memberOf`

  attribute. It stops LDAP from matching records at any lower level than the one you name explicitly. In this scenario for example, you would use

  `memberOf=OU=SanJose,DC=example,DC=com`

  to match only the direct members of the "SanJose" OU.

Use "objectClass" values to match all user records

- You can define a comprehensive filter that matches all user records.

  `objectClass=user`

Password Concepts

- Understand the Effects of a Changed Password in Active Directory, page 8-16
- Understand the Effects of a Blank Password in Active Directory, page 8-17

Understand the Effects of a Changed Password in Active Directory

Note **Microsoft Active Directory is the only LDAP implementation that we support in this release.**

After you change a user password on your Active Directory server, there is no requirement to resynchronize the affected user account in DMS-Admin.

Understand the Effects of a Blank Password in Active Directory

Note **Microsoft Active Directory is the only LDAP implementation that we support in this release.**

- Even though it is possible in Active Directory to use a blank value for a password, Cisco DMS does not allow it.
- When you choose LDAP authentication, any user whose Active Directory password is blank is prevented from logging in to any component of Cisco DMS.
- Access is enabled or restored after the password is populated on the Active Directory server.

Understand Authentication Property Sheets for LDAP

Note **Microsoft Active Directory is the only LDAP implementation that we support in this release.**

The Authentication page contains four tabbed property sheets.

Select Mode[1]		*Embedded, LDAP or SSO* Select Mode is by default the only active tab. Your choices on the Select Mode property sheet determine whether you have access to the other three property sheets.
Define Filter		*LDAP or SSO* Your choices on the Define Filter property sheet help you to configure and add a new agreement.
Synchronize Users		*LDAP or SSO* Your choices on the Synchronize Users property sheet help you to submit a new agreement.
Manage Attributes		*LDAP or SSO*

1. In most production environments, you can expect to use the Select Mode property sheet only one time.

Federated Identity and Single Sign-on (SSO) Concepts

- IdP Requirements, page 8-17
- Configuration Workflow to Activate Federation (SSO) Mode, page 8-18
- Authentication Scenarios for User Sessions in Federation (SSO) Mode, page 8-18

IdP Requirements

To use federation (SSO) mode in Cisco DMS, you must have access to an IdP that meets our requirements. Your IdP must meet **ALL OF THESE CRITERIA IN COMBINATION**:

- Support SAML 2.0.
- Support these two SAML profiles:
  - Web Browser SSO Profile
  - Enhanced Client or Proxy (ECP) Profile

- Generate assertions in which the SAML "UID" attribute is mapped to the local portion of an authenticated user's username.
- Generate SAML responses that are no larger than 16K bytes. (CSCua10799)
- Use a digital certificate from a well-known CA (but only if you will use HTTPS).
- Include a "<SingleSignOnService>" entry with SOAP binding in its IdP metadata. For example:

```
<SingleSignOnService Location=http://idp.example.com/idp/SSO.sml2"
Binding="urn:oasis:names:tc:SAML:2.0:bindings:SOAP"/>
```

In practice, these requirements limit your IdP to ones that we certify and NO OTHER. We certify OpenAM, PingFederate, and Shibboleth. (CSCua29696)

Configuration Workflow to Activate Federation (SSO) Mode

1. Configure and set up an Active Directory server.
2. Configure and set up a SAML 2.0-compliant IdP.

   Note When you use a "**fresh install**" of Cisco DMS 5.3 (as opposed to an upgrade), your DMM appliance is configured to use **embedded authentication mode** by default. But when you **upgrade** a DMM server that was already configured for an earlier Cisco DMS release, it might use **either embedded mode or LDAP mode**.

3. Obtain a digital certificate from a trusted CA and install it on your IdP.
4. Use DMS-Admin to configure Cisco DMS for federation mode.
5. Export SAML 2.0-compliant metadata from your DMM server and import it into your IdP.
6. Export SAML 2.0-compliant metadata from your IdP and import it into your DMM server.
7. Configure Active Directory exactly as you would in LDAP mode.
8. Click **Update** to save your work, and then advance to the Synchronize Users property sheet.
9. Synchronize DMM with your Active Directory server to populate the DMM user database.

   Note **You MUST configure at least one LDAP bookmark.**

10. Synchronize users exactly as you would in LDAP mode.

    Note **Whenever you change any setting or value on your IdP or any of your SPs, you must reestablish their pairing to restore mutual trust among them.**

11. Click **Update** to save your work.

Authentication Scenarios for User Sessions in Federation (SSO) Mode

- SSO Scenario 1—Trusted + Valid + Authorized
- SSO Scenario 2—Trusted + Valid + NOT Authorized
- SSO Scenario 3—Nothing Known

SSO Scenario 1—Trusted + Valid + Authorized

1. A web browser requests access to a protected resource on an SP.

   Your federation will not approve or deny this request until it knows more.
2. The SP asks its IdP if the browser is currently authenticated to any valid user account in the CoT.
3. The IdP verifies that:
   - The browser is already connected to an SP elsewhere in the CoT, having authenticated successfully to a valid user account and having received a SAML “token” or “passport” that authorizes at least some access.
   - **The user account has sufficient permissions to access the protected resource.**
4. The IdP acts on the SP’s behalf and redirects the browser immediately to the protected resource.

SSO Scenario 2—Trusted + Valid + NOT Authorized

1. A web browser requests access to a protected resource on an SP.

   Your federation will not approve or deny this request until it knows more.
2. The SP asks its IdP if the browser is currently authenticated to any valid user account in the CoT.
3. The IdP verifies that:
   - The browser is already connected to an SP elsewhere in the CoT, having authenticated successfully to a valid user account and having received a SAML “token” or “passport” that authorizes at least some access.
   - **The user account DOES NOT have sufficient permissions.**
4. The IdP redirects the browser to the SP, where an **HTTP 403 Forbidden** message states that the user is not authorized to access the protected resource.

SSO Scenario 3—Nothing Known

1. A web browser requests access to a protected resource on an SP.

   Your federation will not approve or deny this request until it knows more.
2. The SP asks its IdP if the browser is currently authenticated to any valid user account in the CoT.
3. The IdP reports that:
   - The browser is not yet connected to any SP in the CoT.
   - The browser is not yet authenticated to any valid user account.
   - **We cannot tell if the browser's human operator is a valid and authorized user, a valid but confused user, or an intruder.**
4. The SP redirects the browser automatically to an HTTPS login prompt on the IdP, where one of the following occurs.
   - **The browser's human operator successfully logs in to a valid user account.** The IdP attaches a SAML "token" or "passport" to the browser session, authorizing at least some access. And:
     - The user account has permission to access the protected resource. So, the IdP acts on the SP's behalf and redirects the browser immediately to the protected resource.

     OR

     - The user account DOES NOT have permission to access the protected resource. So, the IdP redirects the browser to the SP, where an **HTTP 403 Forbidden** message states that the user is not authorized to access the protected resource.
   - **The browser's human operator fails to log in.** So, lacking any proof that this person is authorized, we block access to every protected resource until the human operator can log in successfully.

Migration Between Authentication Methods

- Understand Migration (from Either LDAP or SSO) to Embedded, page 8-20
- Understand Migration (from Embedded) to Either LDAP or SSO, page 8-21

Understand Migration (from Either LDAP or SSO) to Embedded

When you migrate from LDAP (via Active Directory) or federation mode to embedded authentication mode, you must explicitly choose whether to keep local copies of the:

- User accounts that were associated to LDAP filters.
- Groups and policies that were associated to LDAP filters.

Note

- **Unless you choose explicitly to keep the local copy of a user, a group, or a policy, we discard the local copy.**
- **Migration from one mode to another takes as long as 1 minute to finish (CSCtn22370).**

The result varies according to the combination of your choices.

When You Keep Local Copies of			The Result
Users	Groups	Policies	
Yes	**Yes**	**Yes**	• We preserve all local information. • We overwrite all LDAP-derived user account passwords with *CiscoDMMvp99999*. [1]
Yes	No	No	• We preserve all local user accounts. However, we overwrite all LDAP-derived user account passwords with *CiscoDMMvp99999*. [1] • We discard all LDAP-derived groups. • We discard all LDAP-derived policies.
No	**Yes**	**Yes**	• We discard all LDAP-derived user accounts. • We preserve all LDAP-derived groups. However, they are empty. • We preserve all LDAP-derived policies. Although they no longer apply to anyone, you can reuse them and apply them to any remaining user accounts and any future user accounts as you see fit.
No	No	No	• We discard all LDAP-derived users, groups, and policies.

1. This security feature protects your network and user data. If anyone gains unauthorized access to the exported file and tries to use it, Active Directory rejects the invalid passwords.

Understand Migration (from Embedded) to Either LDAP or SSO

Note

- **Before you migrate from embedded authentication mode to federation mode, you must install a digital certificate from a trusted CA on your IdP server.** Otherwise, you cannot migrate to federation mode at all.
- After you migrate from embedded authentication mode to either LDAP (Active Directory) mode or federation mode, the locked property sheets become unlocked. **You must use them.**
- **Migration from one mode to another takes as long as 1 minute to finish (CSCtn22370).**

Procedures

- Export the Root CA X.509 Certificate from Your Active Directory Server, page 8-22
- Configure DMM to Trust the Active Directory Root CA, page 8-22
- Choose an Authentication Method, page 8-23
- Configure LDAP (Active Directory) Settings, page 8-23
- Configure Federation Services for SSO, page 8-29
- Configure Active Directory Federation Services for Cisco Show and Share Release 5.3.12, page 8-41

Export the Root CA X.509 Certificate from Your Active Directory Server

Procedure

Step 1 Open a web browser on your Active Directory server and connect to **http://localhost/certsrv**.

Step 2 Click **Download a CA certificate**.

Step 3 Choose the current CA certificate.

Step 4 Choose **DER encoded**.

The X.509 certificate that you export must be DER-encoded, and it can be binary or printable (Base64). However, when you use Base64, the certificate file must include these lines:

```
-----BEGIN CERTIFICATE-----

-----END CERTIFICATE-----
```

Step 5 Click **Download CA certificate**.

Step 6 Save this certificate in a file.

For example, you might call the certificate **ADcertificate.cer**.

Step 7 Stop. You have completed this procedure.

Configure DMM to Trust the Active Directory Root CA

Procedure

Step 1 Choose **Administration > Security > Authentication > Select Mode**.

Step 2 Enter the details for your Active Directory server.

Tip **Be sure to use the logical port where your Active Directory server listens for SSL connections.** The port number, by default, is **636**.

Step 3 Upload the root CA certificate file that you saved locally.

a. Click **Upload**, and then click **Add**.

b. Browse to the file on a local volume.

c. Click the filename and press **Enter**.

d. Click **OK** to save your work and dismiss the dialog box.

Step 4 As prompted, use DMS-Admin to restart Web Services (Tomcat).

The installed certificate cannot take effect until after you restart Tomcat.

Step 5 Stop. You have completed this procedure.

Choose an Authentication Method

Procedure

Step 1 Choose **Administration > Security > Authentication**.

Step 2 Use elements on the Select Mode property sheet to choose an authentication mode.

Step 3 Click **Update**.

Note **Migration from one mode to another takes as long as 1 minute to finish (CSCtn22370).**

The authentication settings that you changed are now in effect.

Step 4 Stop. You have completed this procedure.

What to Do Next

- **OPTIONAL**—*Did you choose LDAP (Active Directory) or SSO?*
  Proceed to the "Define LDAP (Active Directory) Filters" section on page 8-24

Related Topics

- Elements to Choose and Enable an Authentication Mode, page 8-50

Configure LDAP (Active Directory) Settings

- Define LDAP (Active Directory) Filters, page 8-24
- Define LDAP (Active Directory) Bookmarks, page 8-24
- Define the LDAP (Active Directory) Synchronization Schedule, page 8-26
- Manage LDAP (Active Directory) Attributes, page 8-26
- Configure Automatic LDAP (Active Directory) Synchronization, page 8-27
- Derive LDAP (Active Directory) Group Membership Dynamically from a Query, page 8-28

Define LDAP (Active Directory) Filters

Before You Begin

- Choose LDAP or federation as your authentication method.

Procedure

Step 1 Choose **Administration > Security > Authentication**.

Step 2 Click **Define Filter**.

Step 3 Do the following.

a. Use elements on the Define Filter property sheet to define, validate, and add one LDAP filter.

b. Click **Update**.

c. Repeat this step for each filter to be added.

The authentication settings that you changed are now in effect.

Step 4 Stop. You have completed this procedure.

Related Topics

- Elements to Define, Validate, and Add LDAP Filters, page 8-53

Define LDAP (Active Directory) Bookmarks

Before You Begin

- Choose LDAP or SSO as your authentication method.
- Define LDAP filters.

Procedure

Step 1 Choose **Administration > Security > Synchronize Users > LDAP Bookmarks**,

Tip **Is the Synchronize Users tab disabled (dimmed), so that you cannot click it?** If so, refresh your browser.

Step 2 Do any or all of the following.

- *Would you like to import user accounts to Cisco DMS because they correspond to an Active Directory filter that you will define?* If so:
  - Choose the synchronization type for these user accounts.
  - Specify which default access privileges you will assign to them.
- *Should Cisco DMS synchronize user accounts that correspond to a defined Active Directory filter?* If so, use the synchronization type that you chose.

- *Would you like to sever your ties to a User Base or Active Directory server?* If so:
  - Delete from Cisco DMS all user accounts that correspond to a defined Active Directory filter.
  - Delete the entry for that filter from DMS-Admin.
- *Would you like to create a new group in DMM?*

  AND

  Populate it automatically with user accounts that correspond to an Active Directory filter that you defined previously?

  If so, delete the entry for that filter from DMS-Admin, and then recreate it while associating it to the new group.

Step 3 Validate the filter.

Step 4 Validate the DMM group name.

- Group names in DMM can include alphanumeric characters (`0-9`; `a-z`; `A-Z`), hyphens (`-`), underscores (_), and periods (`.`).
- Spaces are forbidden.
- Other forbidden characters include:

```
~`!@#$%^&*()+={[}]|\:;"'<>?/
```

Step 5 Click **Update**.

Note **Please wait. Your request might take as long as 1 minute to process (CSCtn22370).**

The authentication settings that you changed are now in effect.

Step 6 Stop. You have completed this procedure.

What to Do Next

- **OPTIONAL**—*Would you like to associate a set of imported users with a new group?* Proceed to the "Derive LDAP (Active Directory) Group Membership Dynamically from a Query" section on page 8-28.
- **OPTIONAL**—*Would you like to configure the schedule for synchronization?* Proceed to the "Define the LDAP (Active Directory) Synchronization Schedule" section on page 8-26.

Related Topics

- Define LDAP (Active Directory) Filters, page 8-24
- Derive LDAP (Active Directory) Group Membership Dynamically from a Query, page 8-28
- Elements to Use LDAP Bookmarks for Synchronization, page 8-54

Define the LDAP (Active Directory) Synchronization Schedule

Before You Begin

- Choose LDAP or SSO as your authentication method.
- Define LDAP filters.
- Define LDAP bookmarks.

Procedure

Step 1 Choose **Administration > Security > Synchronize Users > Scheduling**,

Step 2 Choose between manual synchronization and automatic synchronization.

Note **You will not see any of the elements that the "Elements for Bookmarks" table describes until after you define at least one filter on the Define Filter property sheet.**

Step 3 Click **Update**.

The authentication settings that you changed are now in effect.

Step 4 Stop. You have completed this procedure.

What to Do Next

- **OPTIONAL**—*Would you like to associate attribute names in DMS-Admin and Active Directory?* If so, proceed to the "Manage LDAP (Active Directory) Attributes" section on page 8-26.
- **OPTIONAL**—*Should Cisco DMS expect that your Active Directory server uses factory-preset attribute names?* If so, proceed to the "Manage LDAP (Active Directory) Attributes" section on page 8-26.
- **OPTIONAL**—*Should Cisco DMS expect that your Active Directory server uses custom attribute names?* If so, proceed to the "Manage LDAP (Active Directory) Attributes" section on page 8-26.

Related Topics

- Define LDAP (Active Directory) Bookmarks, page 8-24
- Elements to Schedule Synchronization, page 8-55

Manage LDAP (Active Directory) Attributes

Before You Begin

- Choose LDAP or SSO as your authentication method.
- Define LDAP filters.

- Define LDAP bookmarks.
- Configure the LDAP synchronization schedule.

Procedure

Step 1 Click **Administration > Security > Authentication > Manage Attributes**.

Tip **Is the Manage Attributes tab disabled (dimmed), so that you cannot click it?** If so, refresh your browser.

Step 2 Use elements on the Manage Attributes property sheet to:

- Set the associations between DMS-Admin attribute names and their corresponding Active Directory attribute names.
- Use the predefined and typical names for Active Directory attributes (shown in grey text) or edit those attribute names so they match the names that your Active Directory server uses.
- Enter the values to use by default in DMS-Admin when a user account attribute is not defined on your Active Directory server.

You must enter a value for each mandatory attribute. You cannot enter a value to use by default for user names, because each user name is unique.

Step 3 Click **Update**.

The authentication settings that you changed are now in effect.

Step 4 Stop. You have completed this procedure.

Related Topics

- Define the LDAP (Active Directory) Synchronization Schedule, page 8-26
- Elements to Manage Attributes, page 8-56

Configure Automatic LDAP (Active Directory) Synchronization

Procedure

Step 1 Click the calendar icon ( ) to choose the start date for synchronization.

Step 2 Choose the hour and minute when synchronization should begin, and then choose either **AM** or **PM** as the period.

Step 3 From the Repeat Interval list, choose the interval of recurrence:

Interval	Description
Never	Synchronization occurs once and does not recur.
Every Day	Synchronization recurs once every 24 hours. You must set the hour and minute when it should start.
Every Week	Synchronization recurs once every 7 days. You must set the hour and minute when it should start.

Interval	Description
Every Month	Synchronization recurs once each month. You must set the hour and minute when it should start.
Custom	Synchronization recurs at an interval of your choosing. You must set the hour and minute when it should start. Choose **Days**, **Weeks**, or **Months** as the interval type. • Choose a day of the month from 1 to 30 when the interval type is Days. • Choose a day of the week when the interval type is Weeks. • Choose an interval of recurrence from 1 to 6 when the interval type is Months.

Step 4 (**Optional**)

- *Did you click the Automatic Synchronization radio button?*
- *And should a one-time synchronization start immediately, in addition to the start date and time that you specified?*

If so, check the **Synchronize users immediately** check box.

Step 5 Click **Update**.

The authentication settings that you changed are now in effect.

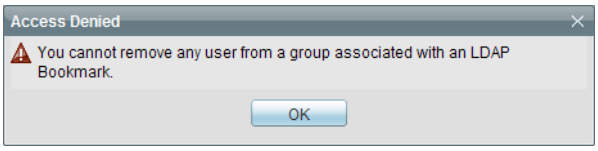
Step 6 Stop. You have completed this procedure.

Derive LDAP (Active Directory) Group Membership Dynamically from a Query

You can populate a user group with the returned output from a User Base DN query. However, a group of this kind differs in important ways from a group that you populate manually.

Note

- **Membership of such groups is dynamic—based on shared characteristics among the group of Active Directory users who match your query.**
- We update and clean these groups automatically during synchronization. **Their membership will change after synchronization runs**, when the corresponding records in Active Directory show that a user's membership should start or stop.
- An imported Active Directory group is always **read-only** in DMS-Admin. By protecting it, we ensure that it is always correct, relative to the original and subject to any delay between synchronizations. For this reason, you cannot edit their memberships rolls manually.
- When you try to delete a user from a group of this type, DMS-Admin shows an error message.



Before You Begin

- Choose LDAP as your authentication method.

Procedure

Step 1 Choose **Administration > Security > Authentication**.

Step 2 Click **Define Filter**,

Step 3 Use elements on the Define Filter property sheet to define, validate, and add one LDAP filter.

Step 4 *Would you like to add users to a group that exists already?* If so, choose that group name from the User Group (in DMM) list.

OR

Would you like to create and populate an entirely new group? If so, choose **Create a New User Group** from the User Group (in DMM) list. Then, use the Group Name field to enter a name for the new group.

Step 5 *Would you like to check your filter's syntax?* If so, click **Validate**.

Step 6 Click **Update**.

Step 7 Stop. You have completed this procedure.

Configure Federation Services for SSO

- IdP Configuration Examples, page 8-29
- Export SP Metadata from DMM, page 8-39
- Import IdP Metadata into DMM, page 8-39
- Bypass External Authentication During Superuser Login, as Needed, page 8-40

IdP Configuration Examples

This section includes configuration examples from IdP implementations that have passed internal Cisco tests for interoperability with Cisco DMS.

Note

- **We provide these rough examples as a courtesy only.** We do not endorse any IdP by name, including any whose setup we mention by name in these examples. Likewise, we do not influence the development of any IdP. We do not know when or how its configuration workflows, daily operation, or overall quality might change in the future. For these reasons, we cannot know beforehand when or how the natural course of its ongoing development might invalidate one or more of the examples in this section. Therefore: Obtain all necessary IdP documentation from your IdP vendor, not Cisco.
- **You are free to choose, configure, and use an IdP at your own discretion—and your own risk.** We do not develop, maintain, or support any IdP. Nor do we warrant that your choice of IdP is free of defects, non-infringing, or fit for any purpose.

- Example: Configure OpenAM to Interoperate with Cisco DMS, page 8-30
- Example: Configure Shibboleth to Interoperate with Cisco DMS, page 8-32
- Example: Configure PingFederate to Interoperate with Cisco DMS, page 8-36

Example: Configure OpenAM to Interoperate with Cisco DMS

Before You Begin

- Obtain a digital identity certificate from a well-known CA, install it on your IdP host system, and then enable SSL.

Procedure

Step 1 Configure OpenAM to use a datastore from Active Directory, unless it already does so.

Note **In Federation mode, we use a *synchronization* process to learn which usernames are valid in your organization.** Later and separately, we use an *authentication* process to verify user-login credentials. And even though we expect most IdPs will source both of these services from a Microsoft Active Directory server, your organization might use some other other LDAP system to authenticate user sessions. When this is the case, **you must install and configure an Active Directory server for synchronization use by Cisco DMS**. Otherwise, we cannot learn which usernames are valid. In turn, ordinary users cannot log in to Cisco DMS. To prevent this outcome, you must replicate and synchronize a datastore between your new Active Directory server and your existing LDAP server. Afterward, Cisco DMS can synchronize with the Active Directory datastore.

a. In OpenAM Web, choose **Access Control > Top Level Realm > Data Stores**.

b. Enter values to define the attributes of your Active Directory DataStore.

You might enter values for some of the attributes (like these ones, for example)...

```
LDAP Server: <IP_ADDRESS>:389
LDAP Bind DN: CN=Administrator,CN=Users,DC=win2003esx,DC=example,DC=com
LDAP Bind Password: *********
LDAP Organization DN: OU=SystemTest,DC=win2003esx,DC=example,DC=com
LDAP Users Search Attribute: sAMAccountName
LDAP Users Search Filter: (objectclass=user)
Authentication Naming Attribute: sAMAccountName
```

... while leaving other attribute values undefined.

```
Attribute Name Mapping: <Empty>
LDAP Groups Search Attribute: <Empty>
LDAP Groups Search Filter: <Empty>
LDAP Groups container Naming Attribute: <Empty>
LDAP Groups Container Value: <Empty>
Attribute Name of Unqiue Member: <Empty>
LDAP People Container Naming Attribute: <Empty>
LDAP People Container Value: <Empty>
Persistent Search Base DN: <Empty>
Persistent Search Filter: <Empty>
```

Note **These are merely examples.**

c. Click **Federation**, and then click your IdP server instance—for example, **dmsIdp**.

d. Click **Assertion Processing**.

e. Change the IDP Attribute Map value from UID=uid to **UID=sAMAccountName**.

Step 2	Install *Enhanced Client or Proxy* (ECP), a SAML profile plugin, if you will make API system calls to OpenAM[1].	**a.** Log in to your Cisco.com user account. **b.** Go to http://cisco.com/cisco/software/release.html?mdfid=280171249&softwareid=282100271&release=5.3&rellifecycle=&relind=AVAILABLE&reltype=all, navigate to the download page for our implementation of ECP[2], and then download it. **c.** Use Maven or another method to download release 1.2.14 of the open source logging framework called **log4j**. **d.** Copy your downloaded ECP and log4j files to **`/$OPENSSO_HOME/WEB-INF/lib`**, . **e.** Restart your servlet container—for example, tomcat. **f.** In OpenAM Web, click **Federation**, and then click your IdP server instance—for example, **dmsIdp**. **g.** Click **Advanced**. **h.** In the ECP Configuration area, set the IDP Session Mapper value to **com.cisco.dms.core.security.aaa.sso.saml2.ecp.idp.plugin.DmsIDPECPSessionMapper**. **i.** Click **Save**.
Step 3	Export SP metadata from Cisco DMS.	Export metadata from each SP that will participate in your OpenAM CoT. **Tip** For Cisco DMS, see the "Export SP Metadata from DMM" topic.
Step 4	Import SP metadata from Cisco DMS.	**a.** Go to the console page and click **Register Remote Service Provider**. **b.** Check the File check box. **c.** Click **Upload**, and then navigate to the SP metadata that you exported from DMS-Admin and saved as **dms_sp_config.xml**. **d.** Click **Configure**, and then click **Federation**. **e.** Make sure that *dmsServiceProvider (SAMLv2 SP Remote)* has a defined value.
Step 5	Make sure that OpenAM is configured to issue the *Principal* attribute.	**a.** In OpenAM Web, click **Federation**, and then click your IdP server instance—for example, **dmsIdp**. **b.** Click **Assertion Processing**. **c.** In the Attribute Mapper area, set the Attribute Map value to **UID=uid**. **d.** Click **Back**. **e.** Click the SP entity instance for your DMM appliance. The Assertion Content tab is selected automatically. **f.** In the Request/Response Signing area, check both of these check boxes: • Authentication Requests Signed • Assertions Signed **g.** Choose **Access Control > / (Top Level Realm) > Authentication**. **h.** Click **All Core Settings**. **i.** Make sure that the User Profile value is set to **Required**. This will cause OpenAM to pass the user IDs of logged-in users to DMM and your other SPs. **j.** Click **Save**, and then click **Back to Authentication**. **k.** Log out of OpenAM Web.

Step 6	Cause Cisco DMS to trust OpenAM.	See the "Import IdP Metadata into DMM" topic.
Step 7	Use the Linux CLI to export IdP metadata.	**wget --no-check-certificate https://**<*IdP_serverip*>**:**<*service_port*>**/opensso/saml2/jsp/exportmetadata.jsp -O dms_idp_config.xml**
Step 8	Stop.	You have completed this procedure.

1. Also, DMS-Admin includes a feature to test the configuration of your IdP. In the case of OpenAM, this testing feature uses ECP and fails in its absence.
2. We provide a downloadable ECP implementation as a courtesy to you. Alternatively, you can obtain ECP from another source at your discretion.

Example: Configure Shibboleth to Interoperate with Cisco DMS

Before You Begin

- Obtain a digital identity certificate from a well-known CA, install it on your IdP host system, and then enable SSL.

Procedure

Step 1 Obtain and install Shibboleth.

a. Go to http://www.shibboleth.net/downloads/identity-provider/latest/.

b. Download the latest Identity Provider software package, such as **shibboleth-identityprovider-2.3.0-bin.zip**.

c. Extract the downloaded archive, and then make the installer script within it, named *install.sh*, executable. For example:

```
$ unzip shibboleth-identityprovider-2.3.0-bin.zip
$ cd shibboleth-identityprovider-2.3.0
$ chmod u+x install.sh
```

d. Run the script to install Shibboleth.

```
$ ./install.sh
```

- The installer will prompt you to specify the installation directory. Its default is **/opt/shibboleth-idp**.
- In addition, it will prompt you to enter your Shibboleth system's FQDN, such as **shibboleth.example.com**.

Respond appropriately to these prompts.

Shibboleth is now installed and you have completed its basic configuration. Your new Shibboleth system contains these subfolders.

```
/opt/shibboleth-idp/bin/
/opt/shibboleth-idp/conf/
/opt/shibboleth-idp/credentials/
/opt/shibboleth-idp/lib/
/opt/shibboleth-idp/logs/
/opt/shibboleth-idp/metadata/
/opt/shibboleth-idp/war/
```

Step 2	Export SP metadata from Cisco DMS.	Export metadata from each SP that will participate in your Shibboleth CoT. **Tip** For Cisco DMS, see the "Export SP Metadata from DMM" topic.
Step 3	Import SP metadata from Cisco DMS.	Use SFTP or another method to save imported metadata where Shibboleth will access it: **/opt/shibboleth-idp/metadata/**.
Step 4	Log in remotely.	Use SSH, remote desktop, VNC, or a direct console connection to log in remotely to the system where you installed Shibboleth.
Step 5	Edit the attribute filter file.	**a.** Open **/opt/shibboleth-idp/conf/attribute-filter.xml** for editing. **b.** Change the attributeID value (at or near line 24) to **uid**. `<afp:AttributeRule attributeID="uid">`
Step 6	Edit the attribute resolver file.	**a.** Open **/opt/shibboleth-idp/conf/attribute-resolver.xml** for editing. **b.** Find this section: `<!- ========================================== ->` `<!-  Attribute Definitions  ->` `<!- ========================================== ->` **c.** Enter these lines after the Attribute Definitions section heading, at or near line 29. `<resolver:AttributeDefinition xsi:type="ad:Simple" id="uid" sourceAttributeID="sAMAccountName">` `<resolver:Dependency ref="myLDAP" />` `<resolver:AttributeEncoder xsi:type="enc:SAML2String" name="urn:oid:0.9.2342.19200300.100.1.1" friendlyName="uid" />` `<resolver:AttributeEncoder xsi:type="enc:SAML2StringNameID" nameFormat="urn:oasis:names:tc:SAML:2.0:nameid-format:transient" />` `</resolver:AttributeDefinition>` **d.** Find this section: `<!- ========================================== ->` `<!-  Data Connectors  ->` `<!- ========================================== ->` **e.** Enter these lines after the Data Connectors section heading, at or near line 288. `<resolver:DataConnector id="myLDAP" xsi:type="dc:LDAPDirectory" xmlns="urn:mace:shibboleth:2.0:resolver:dc" ldapURL="ldap://<YOUR_ACTIVE_DIRECTORY_SERVER_IP>" baseDN="cn=<USERBASE>, dc=<HOSTNAME>, dc=<EXAMPLE>, dc=<COM>" principal="cn=<ADMINISTRATOR_CN>, cn=<USERBASE>, dc=<HOSTNAME>, dc=<EXAMPLE>, dc=<COM>" principalCredential="<ADMINISTTRATOR_PASSWORD>">` `<dc:FilterTemplate>` `<![CDATA[` `(sAMAccountName=$requestContext.principalName)` `]]>` `</dc:FilterTemplate>` `<LDAPProperty name="java.naming.referral" value="follow"/>` `</resolver:DataConnector>`

Step 7 Edit the handler file.

a. Open **/opt/shibboleth-idp/conf/handler.xml** for editing.

b. Uncomment line 109.

```
<!--  Username/password login handler -->
<ph:LoginHandler xsi:type="ph:UsernamePassword"
jaasConfigurationLocation="file:///opt/shibboleth-idp/conf/login.config">
<ph:AuthenticationMethod>urn:oasis:names:tc:SAML:2.0:ac:classes:PasswordProtect
edTransport</ph:AuthenticationMethod>
</ph:LoginHandler>
```

Step 8 Edit the login config file.

a. Open **/opt/shibboleth-idp/conf/login.config** for editing.

b. Find this string, at or near line 45:

```
};
```

c. Enter this material immediately before **};** .

```
edu.vt.middleware.ldap.jaas.LdapLoginModule optional
ldapUrl="ldap://<YOUR_ACTIVE_DIRECTORY_SERVER_IP>:389"
bindDn="cn=<ADMINISTRATOR_CN>, cn=<USERBASE>, dc=<HOSTNAME>, dc=<EXAMPLE>,
dc=<COM>"
bindCredential="<ADMINISTTRATOR_PASSWORD>"
baseDn="cn=<USERBASE>, dc=<HOSTNAME>, dc=<EXAMPLE>, dc=<COM>"
ssl="false"
tls="false"
userFilter="sAMAccountName={0}";
```

Step 9 Edit the replying party file.

a. Open **/opt/shibboleth-idp/conf/replying-party.xml** for editing.

b. Find this section:

```
<!-- ========================================== -->
<!-           Metadata Configuration            ->
<!-- ========================================== -->
```

c. Enter these lines after the Metadata Configuration section heading, at or near line 123.

```
<metadata:MetadataProvider
id="<HOSTNAME_ONLY_FOR_YOUR_SP>"
xsi:type="FilesystemMetadataProvider"
xmlns="urn:mace:shibboleth:2.0:metadata"
metadataFile="/opt/shibboleth-idp/metadata/<EXPORTED_SP_SETTINGS_FILENAME>.xml"
maintainExpiredMetadata="true"
/>
</metadata:MetadataProvider>
```

Step 10	Prepare your Shibboleth config for use by Cisco DMS.	**a.** Open **/opt/shibboleth-idp/metadata/opt/shibboleth-idp/metadata/Idp-metadata.xml** for editing.
		b. Delete lines 9 through 11.
		`<Extensions>`
		`<shibmd:Scope regexp="false">`*<EXAMPLE>*`.`*<COM>*`</shibmd:Scope>`
		`</Extensions>`
		c. Delete lines 67 through 69.
		`<Extensions>`
		`<shibmd:Scope regexp="false">`*<EXAMPLE>*`.`*<COM>*`</shibmd:Scope>`
		`</Extensions>`
		d. Find this string:
		`</IDPSSODescriptor>`
		e. Enter this new binding immediately before **</IDPSSODescriptor>**.
		`<SingleSignOnService Binding="urn:oasis:names:tc:SAML:2.0:bindings:SOAP" Location="https://`*`<YOUR_SHIBBOLETH_SERVER_FQDN>`***`:8443/idp/profile/SAML2/SOAP/ECP" />`**
		f. Append **:8443** to the end of every FQDN in this file.
		g. Save your edited copy of this file to your local system.
		Be sure to use your Shibboleth hostname in the local filename. For example, you might name this local copy **idp-shibboleth.xml**.

Step 11	Cause Cisco DMS to trust Shibboleth.	See the "Import IdP Metadata into DMM" topic. **Note** Make sure that before importing the IDP_metadata.xml file into the DMM, first remove the <*Extensions*><*/Extensions*> tag.
Step 12	Deploy Shibboleth.	**`cp /opt/shibboleth-idp/war/idp.war /usr/local/tomcat/webapps/`**
Step 13	Test your work.	**a.** Restart Tomcat. **b.** Check for the "OK" message at **http://**<*hostname*>**:8080/idp/profile/Status**.
Step 14	Stop.	You have completed this procedure.

Example: Configure PingFederate to Interoperate with Cisco DMS

Before You Begin

- Install PingFederate and configure it with at least one Adapter instance to your authentication server, such as LDAP or OAM.

Procedure

Step 1	Export SP metadata from Cisco DMM.	Export metadata from each SP that will participate in your PingFederate CoT. **Tip** For Cisco DMS, see the "Export SP Metadata from DMM" topic.
Step 2	Import SP metadata into PingFederate.	**a.** Log in to PingFederate as its administrator. **b.** Find the SP Connections area in the My IdP Configuration column and click **Create New**. **c.** Click **Do not use a template for this connection** on the *Configuring SP Connection/Connection Template* page, and then click **Next**. **d.** Check the Browser SSO Profiles check box on the *Configuring SP Connection/Connection Type* page, choose **SAML 2.0** from the Protocols list, and then click **Next**. **e.** Check the Browser SSO check box, and then click **Next**. **f.** Click **Choose File** on the *Configuring SP Connection/Import Metadata* page, and then navigate to the SP metadata that you exported from DMS-Admin as **dms_sp_config.xml**. **g.** Click **Open**, and then click **Next** THREE TIMES.

Step 3	Configure SAML profile settings and IdP assertions.	**a.** Click **Configure Browser SSO** on the *Configuring SP Connection/Browser SSO* page. **b.** Check the SP Initiated SSO check box on the *Browser SSO/SAML Profiles* page, and then click **Next** TWO TIMES. **c.** Click **Configure Assertion Creation** on the *Browser SSO/Assertion Creation* page. **d.** Click **Transient** on the *Assertion Creation/Identity Mapping* page, check the Include attributes in addition to the transient identifier check box, and then click **Next**. **e.** Set these attribute-value relationships in the Extend the Contract area on the *Assertion Creation/Attribute Contract* page. • **SAML_AUTHN_CTX** `urn:oasis:names:tc:SAML:2.0:attrname-format:uri` • **UID** `urn:oasis:names:tc:SAML:2.0:attrname-format:uri` • **SAML_NAME_FORMAT** `urn:oasis:names:tc:SAML:2.0:attrname-format:uri` **f.** Click **Next**. **g.** Click **Map New Adapter Instance** on the *Assertion Creation/IdP Adapter Mapping* page. **h.** Choose your appropriate authentication type and adapter instance from the next two pages. **i.** Click **Next**. The username attribute that you need next is probably part of the adapter contract. Therefore: **j.** Click **Use only the Adapter Contract values in the SAML assertion** on the *IdP Adapter Mapping/Assertion Mapping* page, and then click **Next**. **k.** On the *IdP Adapter Mapping/Attribute Contract Fulfillment* page: • Set the source to **Text** for the SAML_AUTHN_CTX attribute contract. Then, set its value to `urn:oasis:names:tc:SAML:2.0:ac:classes:PasswordProtectedTransport` • Set the source to **Adapter** for the UID attribute contract. Then: – Locate an adapter value, such as **subject** or **userId**, that maps to the username. – Set the UID attribute contract value to match the adapter value that you just found. **l.** Click **Next** > **Done** > **Next** > **Done** > **Next**.
Step 4	Configure protocol settings.	**a.** Click **Configure Protocol Settings** on the *Browser SSO/Protocol Settings* page. **b.** Make sure that the default binding value is set to **POST** on the *Protocol Settings/Assertion Consumer Service URL* page, delete all other bindings, and then click **Next**. **c.** Clear the Artifact check box on the *Protocol Settings/Allowable SAML Bindings* page, and then click **Next**. **d.** Check these check boxes on the *Protocol Settings/Signature Policy* page, and then click **Next**. • Require AuthN requests to be signed when received via the POST or Redirect bindings. • Always sign the SAML Assertion. **e.** Click **None** on the *Protocol Settings/Encryption Policy* page. **f.** Click **Next > Done > Next > Done > Next**.

Step 5	Configure credentials and their digital signatures.	**a.** Click **Configure Credentials** on the *SP Connection/Credentials* page.
		b. Click **Configure** on the *Credentials/Back-Channel Authentication* page.
		c. Check the Use Digital Signatures to guarantee payload in Browser SSO profile check box on the *Back-Channel Authentication/Inbound SOAP Authentication Type* page, and then click **Next**.
		d. Click **Done** on the *Back-Channel Authentication/Summary* page.
		e. Choose the appropriate certificate on the *Credentials/Digital Signature Settings* page, check the Include the certificate in the signature <KeyInfo> Element check box, and then click **Next**.
		f. Click **Manage Signature Verification Settings...** on the *Credentials/Signature Verification Settings* page.
		g. Click **Unanchored** on the *Signature Verification/Trust Model* page, and then click **Next**.
		h. Choose your DMM certificate (example: **dmm.example.com**) from the Primary list on the *Signature Verification/Signature Verification Certificate* page, and then click **Next**.
		Note DO NOT choose any secondary certificate.
		OR
		If the Primary list does not include your DMM certificate, do the following.
		1. Click **Manage Certificates** on the *Signature Verification/Signature Verification Certificate* page.
		2. Click **Choose File** on the *Import Certificate/Import Certificate* page, and then navigate to the X509 digital certificate file (*.cer) that you output from DMM.
		Note Make sure that your certificate file includes the preamble and postscript that are mandatory for PEM-formatted certificates. The preamble and postscript look like this.
		`-----BEGIN CERTIFICATE-----`
		`-----END CERTIFICATE-----`
		3. Click **Open**, and then click **Next** THREE TIMES.
		4. Check the Make this the active certificate check box on the *Import Certificate/Summary* page, and then click **Done**.
		i. Click **Done** on the *Certificate Management/Manage Digital Verification Certificates* page.
		j. Click **Next** on the *Signature Verification/Signature Verification Certificate* page.
		k. Click **Done** on the *Signature Verification/Summary* page.
		l. Click **Next** on the *Credentials/Signature Verification Settings* page.
		m. Click **Done** on the *Credentials/Summary* page.
		n. Click **Next** on the *SP Connection* page.

Step 6	Activate and save the new settings.	Set the Connection Status to **Active** on the *SP Connection/Activation & Summary* page, and then click **Save**.
Step 7	Stop.	You have completed this procedure.

Export SP Metadata from DMM

Before you can use Cisco DMS in federation mode, you must export data from DMS-Admin in the form of an SP configuration file. Later, you will import this file into your IdP.

Procedure

Step 1 Make sure that your DMM appliance is running in embedded authentication mode or LDAP mode.

Step 2 Log in as **superuser**.

Step 3 Choose **Administration > Security > Authentication**.

Step 4 Check the Federation check box.

Step 5 Click **Export**.

Step 6 Save the exported file to your client PC or laptop computer as **dms_sp_config.xml**.

Note **See the technical documentation or tutorials for your IdP to understand how it imports SP configuration files.** Alternatively, see the topic for your IdP platform in this chapter's "IdP Configuration Examples" section.

Step 7 Stop. You have completed this procedure.

Related Topics

- Import IdP Metadata into DMM, page 8-39

Import IdP Metadata into DMM

Before you can use Cisco DMS in federation mode, you must export data from your IdP in the form of an IdP configuration file. This topic explains how to use the exported file after you generate and save it.

Before You Begin

- See the technical documentation or tutorials for your IdP to understand how it exports configuration files for an SP (such as DMM) to import. Alternatively, see the topic for your IdP platform this chapter's "IdP Configuration Examples" section.
- Rename the exported IdP configuration file **idp_**<type>**.xml**. For example:
  - idp_*openam*.xml
  - idp_*shibboleth*.xml
  - idp_*pingfederate*.xml

Procedure

Step 1 Make sure that your DMM appliance is running in embedded authentication mode or LDAP mode.

Step 2 Log in as **superuser**.

Step 3 Choose **Administration > Security > Authentication**.

Step 4 Click **Federation** to choose it as your authentication mode.

Step 5 Click **Import**.

Step 6 Choose and upload the IdP file (**idp_**<type>**.xml**) that you saved previously.

Step 7 Enter the necessary LDAP information to use your Active Directory server.

Step 8 Stop. You have completed this procedure.

Related Topics

- Define LDAP (Active Directory) Filters
- Export SP Metadata from DMM, page 8-39

Bypass External Authentication During Superuser Login, as Needed

Your DMM server features a special login form, **which rejects every username except *superuser***. You use this special form whenever Cisco DMS runs in federation mode or an error has prevented migration from one authentication mode to another.

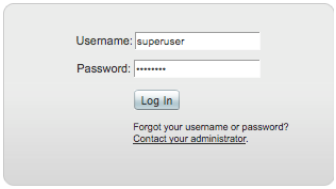
Procedure

Step 1 Go to **http://**<FQDN>**:8080/dmsadmin/admin/login**.

a. Enter **superuser** in the Username field.

b. Enter the corresponding password in the Password field.

c. Click **Log In**.



Step 2 Stop. You have completed this procedure.

Related Topics

- Federation Mode (SSO) FAQs, page 8-65

Configure Active Directory Federation Services for Cisco Show and Share Release 5.3.12

This section describes how to install and configure Active Directory Federation Services (AD FS) 2.0 for use with Cisco Show and Share Release 5.3.12. This section contains the following sections:

- Installing Active Directory Federation Services, page 8-41
- Integrating Active Directory Federation Services with Cisco DMM, page 8-42
- Testing Single Sign On, page 8-49

AD FS 2.0 is a software component that you can install on Windows Server operating systems to provide users with single sign-on access to systems and applications located across organizational boundaries. It uses a claims-based access control authorization model to maintain application security and implement federated identity.

By enabling AD FS, users can log in to the identity provider (IdP) which is AD FS. After logging in, they can access resources at one or more service providers (known as relying parties) without needing to log in at each service provider (SP). Users can also access system resources by initiating a SP login.

Note The Cisco Show and Share iOS mobile application is not supported when the AD FS feature is enabled in Show and Share Release 5.3.12.

AD FS 2.0 integrates with Active Directory Domain Services, using it as an identity provider. AD FS can interact with other Security Assertion Markup Language (SAML) 2.0-compliant federation services as federation partners.

AD FS 2.0 is a downloadable Windows Server 2008 update that is the successor to AD FS 1.0.

SAML version 2.0 is the standard for cross-domain web single sign-on in the enterprise space. Microsoft introduced SAML support in AD FS version 2.0.

Note Windows Server 2008 R2 includes AD FS 1.0, which does not support SAML 2.0. You need to download the AD FS 2.0 release to web (RTW) package.

Installing Active Directory Federation Services

Follow these steps:

Step 1 Start with Windows Server 2008 (R2) Domain Joined.

Step 2 Create a DNS name for AD FS and point it to your AD FS server. For example, *adfs-bbb.local*.

Step 3 Download and install Active Directory Federation Services 2.0 RTW.

Step 4 In the IIS manager, create a SSL certificate for your DNS name, or use SelfSSL from the IIS 6.0 resource kit to create a self-signed certificate. Bind the SSL certificate with HTTPS port 443.

Step 5 Run the AD FS Server Configuration Wizard to complete the following:

a. **Create a new Federation Service**.

b. Choose **Stand-alone federation server**.

c. **Select the certificate** that you created for your DNS name.

Step 6 Create a service principal name for the DNS name so that Kerberos authentication between the browser and the AD FS IIS instance works correctly:

```
1 setspn -a HOST/adfs-bbb.test.local test\ADFSSVR01
2 setspn -a HOST/adfs-bbb test\ADFSSVR01
```

Step 7 These certificates are automatically generated by the AD FS 2.0 installation process on the AD FS server:

- Service Communication
- AD FS Token Signing
- AD FS Token Encryption

Export the **Service Communication** certificate, name the file *idp01.cer* and save it.

Integrating Active Directory Federation Services with Cisco DMM

To build a federation between two parties you need to establish a trust by exchanging some metadata. The metadata for the AD FS 2.0 instance is entered through the Federation Metadata.xml file into the DMM configuration. The DMM metadata is downloaded as an XML file that is used by AD FS 2.0.

For this configuration, there are two network domains:

- Network A (*https://dmm-aaa.cisco.com*) is the Cisco DMM
- Network B (*https://adfs-bbb.local.cisco.com*) is the Microsoft Active Directory Domain and holds the Identity Provider

SAML 2.0 defines several roles for parties involved in single sign-on:

- Service provider/relying party (DMM)
- Identity provider (AD FS server)
- User that authenticates to access services

This is the process for an IdP-initiated login into dmm.cisco.com:

1. The user authenticates to the AD FS server by using Integrated Windows Authentication (Kerberos tokens over HTTP) and requests login to dmm.cisco.com.
2. AD FS returns a SAML assertion to the user's browser
3. The browser automatically submits the assertion to dmm.cisco.com, which logs the user in.

To integrate AD FS with Cisco DMM, see these sections:

- Configure Active Directory Federation Services, page 8-43
- Add a New Relying Party Trust, page 8-44
- Add a New Rule, page 8-45
- Configure Cisco DMM, page 8-48
- Enable SP-Initiated Login, page 8-49

Configure Active Directory Federation Services

Follow these steps:

Step 1 Generate a template with the Microsoft AD FS server details. You can access a Microsoft AD FS web page to generate XML files. Generate the AD FS output by navigating to:

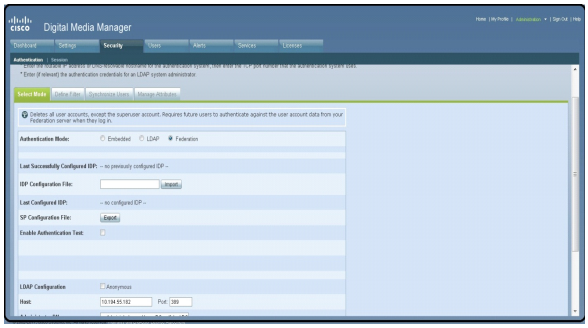
https://<*adfs-bbb.local.cisco.com*>/federationmetadata/2007-06/federationmetadata.xml

```
<?xml version="1.0" encoding="UTF-8"?>
- <EntityDescriptor xmlns="urn:oasis:names:tc:SAML:2.0:metadata" entityID="http://adfs.bbb:local.cisco.com/adfs/services/trust" ID="_0fd36f6e-f09d-4
c7e4b92783ba">
  - <IDPSSODescriptor protocolSupportEnumeration="urn:oasis:names:tc:SAML:2.0:protocol">
    - <KeyDescriptor use="encryption">
      - <KeyInfo xmlns="http://www.w3.org/2000/09/xmldsig#">
        - <X509Data>
            <X509Certificate>MIIC9DCCAdygAwIBAgIQbneqlV0kcIpMauUgD0oLwTANBgkqhkiG9w0BAQsFADA2MTQwMgYDVQQDEytBREZTIEVuY3
          </X509Data>
        </KeyInfo>
      </KeyDescriptor>
    - <KeyDescriptor use="signing">
      - <KeyInfo xmlns="http://www.w3.org/2000/09/xmldsig#">
        - <X509Data>
            <X509Certificate>MIIC7jCCAdagAwIBAgIQMavR8Jfyn4BC3xfkeljQYzANBgkqhkiG9w0BAQsFADAzMTEwLwYDVQQDEyhBREZTIFNpZ25p
          </X509Data>
        </KeyInfo>
      </KeyDescriptor>
      <ArtifactResolutionService index="0" Location="https://adfs.bbb:local.cisco.com/adfs/services/trust/artifactresolution"
        Binding="urn:oasis:names:tc:SAML:2.0:bindings:SOAP"/>
      <SingleLogoutService Location="https://adfs.bbb:local.cisco.com/adfs/ls/" Binding="urn:oasis:names:tc:SAML:2.0:bindings:HTTP-Redirect"/>
      <SingleLogoutService Location="https://adfs.bbb:local.cisco.com/adfs/ls/" Binding="urn:oasis:names:tc:SAML:2.0:bindings:HTTP-POST"/>
      <NameIDFormat>urn:oasis:names:tc:SAML:1.1:nameid-format:emailAddress</NameIDFormat>
      <NameIDFormat>urn:oasis:names:tc:SAML:2.0:nameid-format:persistent</NameIDFormat>
      <NameIDFormat>urn:oasis:names:tc:SAML:2.0:nameid-format:transient</NameIDFormat>
      <SingleSignOnService Location="https://adfs.bbb:local.cisco.com/adfs/ls/" Binding="urn:oasis:names:tc:SAML:2.0:bindings:HTTP-Redirect"/>
      <SingleSignOnService Location="https://adfs.bbb:local.cisco.com/adfs/ls/" Binding="urn:oasis:names:tc:SAML:2.0:bindings:HTTP-POST"/>
      <SingleSignOnService Location="https://dmsperf8-ilo.cisco.com/adfs/ls/" Binding="urn:oasis:names:tc:SAML:2.0:bindings:SOAP"/>
      <Attribute xmlns="urn:oasis:names:tc:SAML:2.0:assertion" FriendlyName="E-Mail Address" NameFormat="urn:oasis:names:tc:SAML:2.0:attrname-f
        Name="http://schemas.xmlsoap.org/ws/2005/05/identity/claims/emailaddress"/>
      <Attribute xmlns="urn:oasis:names:tc:SAML:2.0:assertion" FriendlyName="Given Name" NameFormat="urn:oasis:names:tc:SAML:2.0:attrname-forn
        Name="http://schemas.xmlsoap.org/ws/2005/05/identity/claims/givenname"/>
      <Attribute xmlns="urn:oasis:names:tc:SAML:2.0:assertion" FriendlyName="Name" NameFormat="urn:oasis:names:tc:SAML:2.0:attrname-format:uri
        Name="http://schemas.xmlsoap.org/ws/2005/05/identity/claims/name"/>
```

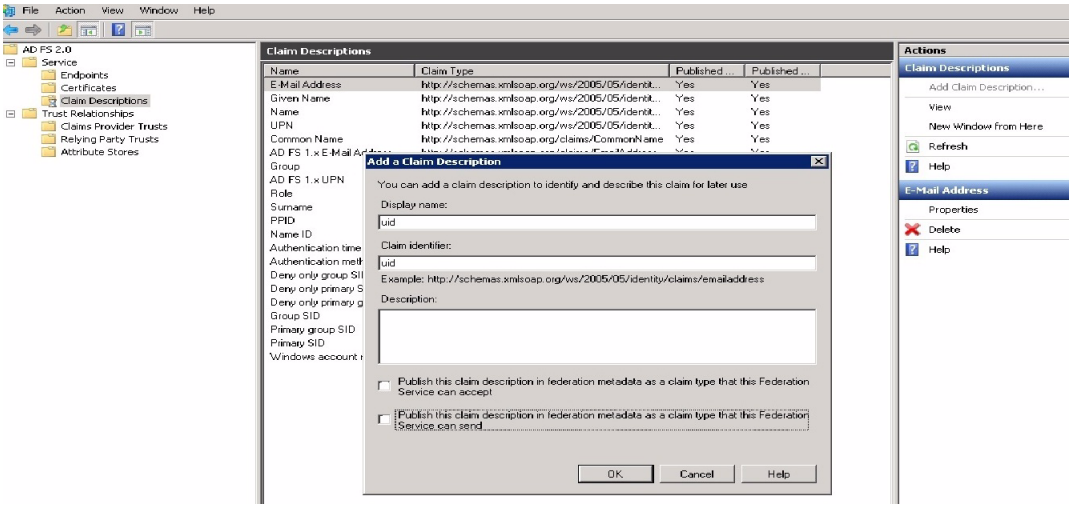
Step 2 (Optional) If using a self-signed certificate, import the Service Communication certificate that was generated by the AD FS server AAI interface. Navigate to **AAI > Certificate Management**. Select **IMPORT_ADFS_CERTS**.

Step 3 Log in to DMM as superuser. Navigate to **Administration > Security > Select Mode**.

Step 4 Click the SP Configuration File **Export** button to export the *dms_config_sp* file.



Step 5 Navigate to **AD FS management console > Service > Claim Description > Add**. In the Claim description and identifier fields, enter **uid**. Click **OK**.



Add a New Relying Party Trust

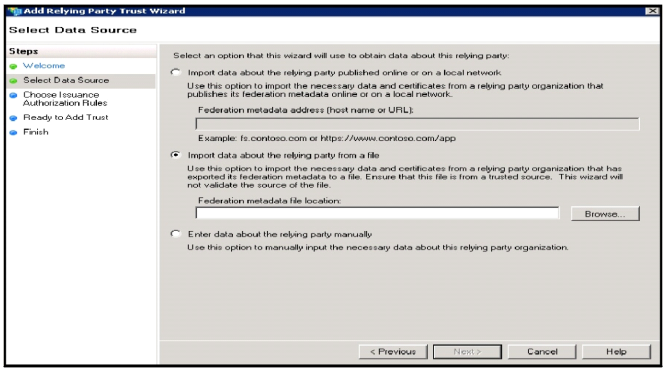
Follow these steps:

Step 1 Click **Add Relying Party Trust** in the Actions window.

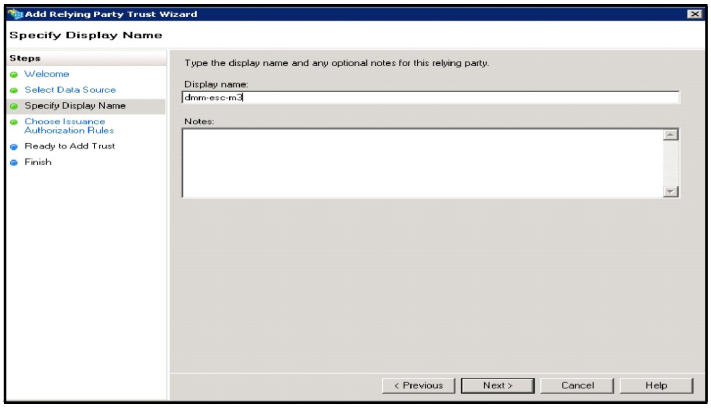
Step 2 In the Overview window, click **Required: add a trusted relying party** to start the setup wizard. Enter these When the welcome screen appears, click **Start**.

Step 3 Run the AD FS Relying Party Trust Wizard to complete the following:

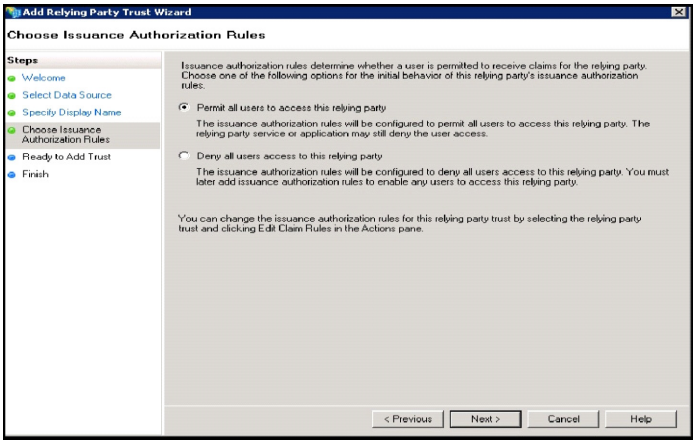
a. Select Data Source: choose **Import data about the relying party from a file** and browse to select the Federation metadata file.



b. Specify Display Name: enter relying party display name.



c. Issuance Authorization Rules: choose **Permit all users to access this relying party**.



Step 4 After importing the metadata, review the following properties:

a. On the Encryption Tab, verify that the encryption Certificate is selected.

b. On the Signature Tab, verify that the signing Certificate is selected.

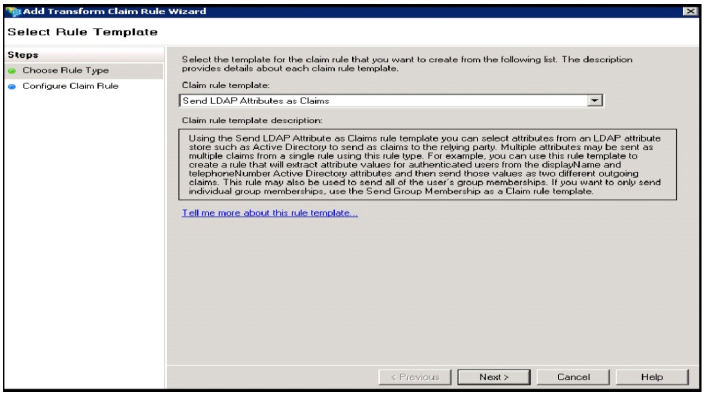
c. On the Advanced Tab, make sure that the SHA1 algorithm is selected.

Add a New Rule

Follow these steps:

Step 1 In the Claim Rules editor select the **Issuance Transform Rules** tab. Click **Add Rule**.

Step 2 In the Choose Rule Type window, choose **Send LDAP Attributes as Claims** in the Claim rules template drop-down list. Click **Next**.



Step 3 In the Edit Rule window:

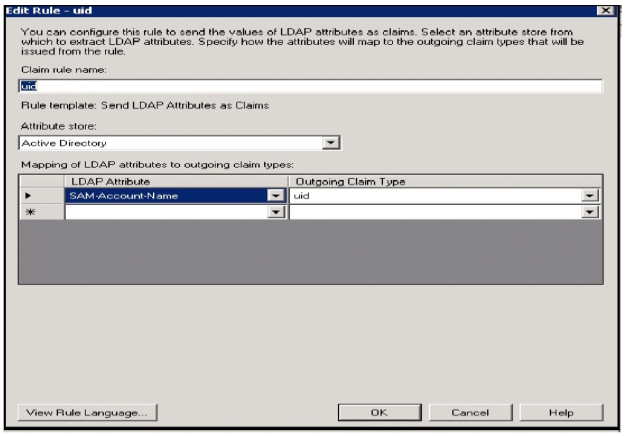
a. Add a Claim Description.

b. Enter **uid** in the Claim rule name field.

c. In the LADP Attribute drop-down list, choose **SAM-Account-Name**.

d. In the Outgoing Claim Type drop-down list, choose **uid**.

e. Click **OK**.



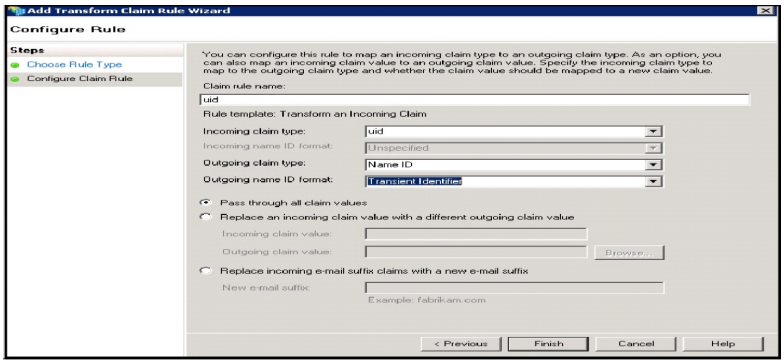
Step 4 In the Claim rule template drop-down list, choose **Transform an Incoming Claim** and click **Next**.

Step 5 In the Configure Claim Rule window:

a. In the Outgoing claim type, choose **NameID**.

b. In the Outgoing name ID format, choose **Transient Identifier**.

c. Click **Finish**.



Step 6 Click **Add Rule**. Choose **Send Claims Using a Custom Rule** and click **Next**. In the Edit Rule window:

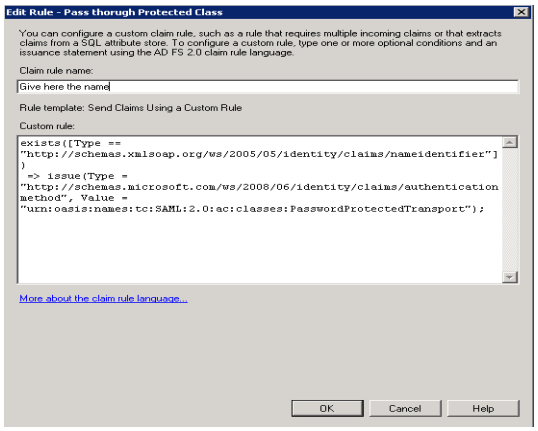
a. Enter the *Claim rule name*.

b. In the Custom Rule area, enter:

exists([Type == "http://schemas.xmlsoap.org/ws/2005/05/identity/claims/nameidentifier"]) => issue (Type = "http://schemas.microsoft.com/ws/2008/06/identity/claims/authenticationmethod", Value = "urn:oasis:names:tc:SAML:2.0:ac:classes:PasswordProtectedTransport");

c. Click **OK**.

Note For the form-based authentication, you need to provide the appropriate value in the relying party response by checking for the presence of *NameID* and then parsing *urn:oasis:names:tc:SAML:2.0:ac:classes:PasswordProtectedTransport* in the SAML response.



Configure Cisco DMM

Before you begin:

- Confirm that LDAP is configured.
- Make sure that the DMM Authentication Attribute is set to **minimum** to enable form-based authentication.
- The *SPAuthnContextMapper* is configured for the DMM (Service Provider) and maps the parameters in the incoming HTTP requests to an authentication context. For more information about the *AuthncontextComparisonType* attributes, go to:

  http://docs.oracle.com/cd/E19681-01/820-3748/ggidh/index.html

Follow these steps:

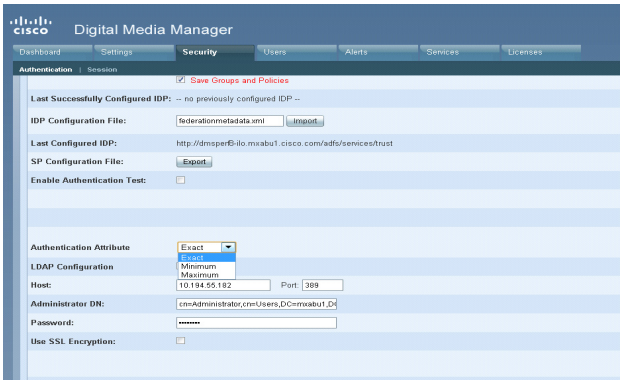
Step 1 Log in to the Cisco DMM as superuser. Navigate to **Administration > Security**.

Step 2 Click the **Save LDAP User Groups and Policies** check box.

Step 3 Import the *federationmetadata.xml* file.

Step 4 Select Authentication Attributes. (The Authentication Attributes option is visible after importing the federationmetadata.xml file.)

Step 5 Click **Update**.



Enable SP-Initiated Login

With identity provider (IdP)-initiated login you will configure a link on the company intranet that users click to access the Cisco DMM. A service provider (SP)-initiated login happens when a user clicks a direct link to Cisco DMM. For SP-initiated login to work, you need to set the AD FS Secure Hash Algorithm parameter to SHA-1. This is because the DMM uses the SHA-1 algorithm when signing SAML requests, and AD FS defaults to SHA-256.

Follow these steps:

Step 1 Log in to DMM as superuser. Navigate to **Relying Party Trust > DMM Properties > Advanced** tab.

Step 2 Set the secure hash algorithm to **SHA1**.

If you do not change the secure hash algorithm, the following message will appear in the AD FS event log:

```
1 Event ID: 378
2 SAML request is not signed with expected signature algorithm. SAML request is signed
with signature algorithm http://www.w3.org/2001/04/xmldsig-more#rsa-sha256 . Expected
signature algorithm is http://www.w3.org/2000/09/xmldsig#rsa-sha1
```

Testing Single Sign On

Before testing the AD FS single sign-on solution, confirm that the user exists in both the AD FS and DMM user database. In the DMM, navigate to in User tab. The user should appear in the DMM user database list.

Testing the Configuration

For an SP-initiated login, you can navigate directly to the entity ID. For example, *https://dmm-aaa.cisco.com*.

For an IdP-initiated login, access *dmm-server.cisco.com* which will navigate to *adfs.aaa.local.cisco.com* and ask for authentication. After logging in to the AD FS server, it will directly navigate to the DMM Administration page.

Follow these steps:

Step 1 Bookmark a link from inside *dmm-aaa.cisco.com* then log out of the system.

Step 2 Reload your browser and select the bookmark. You should be redirected to your IdP, authenticated and then redirected back to the bookmarked link.

If you get an error from AD FS then check the AD FS logs in **Server Manager > Diagnostics > Applications and Services Logs > AD FS 2.0 > Admin**. You can also access *MSDN Claims-Identity blog* for more information about AD FS 2.0 diagnostic tools.

Reference

- Software UI and Field Reference Tables, page 8-50
- Sample SP Configuration File from DMM, page 8-57
- Sample IdP Metadata, page 8-61
- FAQs and Troubleshooting, page 8-64

Software UI and Field Reference Tables

- Elements to Choose and Enable an Authentication Mode, page 8-50
- Elements to Define, Validate, and Add LDAP Filters, page 8-53
- Elements to Use LDAP Bookmarks for Synchronization, page 8-54
- Elements to Schedule Synchronization, page 8-55
- Elements to Manage Attributes, page 8-56

Elements to Choose and Enable an Authentication Mode

Navigation Path

Administration > Security > Authentication > Select Mode

Table 8-1 Elements for Authentication Modes

Element	Description
Authentication Mode Area	
Embedded	Requires users who log in to DMM or Show and Share to authenticate against a user account database that is native to DMM. This database is independent of every other type of authentication that you might use in your network.
LDAP	Automatically deletes all user accounts except ***superuser***. Requires future users to authenticate against the user account data from your Active Directory server when they log in to DMM or Show and Share. Microsoft Active Directory is the only LDAP implementation that we support in this release.
Federation	Automatically deletes all user accounts except ***superuser***. Requires future users to authenticate themselves to your IdP when they log in to DMM or Show and Share.
Federation Mode Elements Area	
Last Successfully Configured IdP	This value becomes populated for the first time after you **succeed** at least once in importing configuration metadata into DMM from your IdP. This element is visible in federation mode only.
IdP Configuration File	Provides the means to import configuration metadata that you previously exported from your IdP and saved to a file. Click **Import** to browse for the file, which you can then import. This element is visible in federation mode only.

Table 8-1 Elements for Authentication Modes (continued)

Element	Description
Last Configured IdP	(CSCtn15472) While it names an IdP explicitly, this value does not necessarily identify the IdP in current use. Instead, this value describes only your most recent *attempt* to import configuration metadata from an IdP, without regard for whether the attempt failed or succeeded. This element is visible only in federation mode. It becomes populated for the first time after you attempt at least once to import IdP metadata. **Tip** **Compare this value to the "Last Successfully Configured IdP" value.** When they differ, you know that your latest such attempt actually failed.
(SP Configuration File) **Export**	Provides the means to export configuration metadata from DMM. Click **Export** to begin browsing for a folder on a locally mounted drive where you can save the exported config file. Later, you will import this file into your IdP. This element is visible in federation mode only.
Enable Authentication Test	Helps you to test whether your federation mode settings are correct and will allow SSO for your ordinary users. Check this check box to expose UI elements that are otherwise hidden. Clear this check box to hide such elements.
Test Username	Enter a username that your IdP already knows. **Do not use the "superuser" username.** This element is visible only while the Enable Authentication Test check box is checked.
Test User Password	Enter the password that corresponds to the test username. This element is visible only while the Enable Authentication Test check box is checked.
LDAP Configuration Area	
Anonymous	Enables or disables an anonymous connection between your DMM appliance and your Active Directory server. • An anonymous connection is suitable when you want to see or use *public* information on the Active Directory server. • In contrast, when you want to see or use *privileged* information on your Active Directory server, the server will require you to enter login credentials to prove that you have sufficient access rights. In the latter case, your Active Directory server will reject any attempt to log in anonymously. This check box is available to you only when you choose LDAP mode or federation mode.
Host	Enter the routable IP address or DNS-resolvable hostname for the Active Directory server. This field is available to you only when you choose LDAP mode or federation mode.
Port	Enter the TCP port number that your Active Directory server uses for communications. This field is available to you only after you choose LDAP mode or federation mode. The Active Directory port number by default is: • **389** for LDAP communications. • **636** for LDAPS (*Secure LDAP*, or *LDAP over SSL*) and SSO communications.

Table 8-1 Elements for Authentication Modes (continued)

Element	Description
Administrator DN	Enter the distinguished name of the Active Directory server administrator. This field is available to you only after you choose LDAP mode or federation mode and uncheck the Anonymous check box. **Tip** **See administrator DN, page 8-3.**
Password	Enter the password that is associated with the Administrator DN. This field is available to you only after you choose LDAP mode or federation mode and uncheck the Anonymous check box.
Use SSL Encryption	The check box to enable or disable encrypted sign-on. This check box is available to you only when you use LDAP mode or federation mode. **Note** **Whenever you enable SSL or install a new SSL certificate for LDAP, you must restart Web Services (Tomcat) from AAI.** Otherwise, LDAP users cannot log in and the new (or newly enabled) SSL certificate cannot take effect. Also—if your DMM server is one half of a failover pair—the Tomcat restart will trigger immediate failover. (CSCtl09696) • Check the check box to enable encryption. • Uncheck it to disable encryption. Enabling SSL causes the connections between your DMM appliance and your Active Directory server to use LDAPS. An LDAPS connection is suitable when you want to prevent untrusted third parties from reading credentials that the servers exchange.
Active Directory Certificate File	Helps you to upload the digital certificate that your Active Directory server uses for LDAPS communications. This field is available to you only while the Use SSL Encryption check box is checked.

Command Buttons

Update	Saves and applies your work on the Authentication Mode property sheet.
Cancel	Discards your work on the Authentication Mode property sheet and resets all values to their previous configuration.

Related Topics

- Choose an Authentication Method, page 8-23
- Elements to Define, Validate, and Add LDAP Filters, page 8-53
- Elements to Use LDAP Bookmarks for Synchronization, page 8-54
- Elements to Manage Attributes, page 8-56

Elements to Define, Validate, and Add LDAP Filters

Navigation Path

Administration > Security > Authentication > Define Filter

Table 8-2 Elements for Filters

Element	Description
Description	Enter a human-readable description for the filter.
User Base DN	Enter the distinguished name of the Active Directory user base that you will search.
User Filter	Enter a user filter to limit the number of matching user accounts to import from the user base that you specified.
User Group (in DMM)	Choose or create a user group to associate with the filter. At the very least, the list includes these options. • All Users Group • Create a New User Group • Digital Signage Users
Command Buttons	
Add	Adds the filter, exactly as entered, without first validating it.
Validate	Validates the filter to confirm, before you add it, that it will return meaningful results.
Clear	Clears all entries from the Define Filters property sheet.

Related Topics

- Choose an Authentication Method, page 8-23
- Elements to Choose and Enable an Authentication Mode, page 8-50
- Elements to Use LDAP Bookmarks for Synchronization, page 8-54
- Elements to Manage Attributes, page 8-56

Elements to Use LDAP Bookmarks for Synchronization

Navigation Path

Administration > Security > Authentication > Synchronize Users

Table 8-3 Elements for Bookmarks

Element	Description
LDAP Bookmarks property sheet	
Synchronization	One of the following types. • Initial • Update • Overwrite • Delete **Note** **When you click Delete on the LDAP Bookmarks sub-tab, we ask you whether to delete groups and policies.** When you choose Yes, we delete all of the following from Cisco DMS. • **All user accounts that match the filter.** • The particular user group that is associated to the filter. • All access policies associated to the particular user group. **The deletion process can take as long as 1 minute to finish.** (CSCtn22370)
Command Buttons	
Update	Submits your selections for the type of synchronization and the scope of access that you chose and configured. Synchronization of the specified type starts immediately.
Cancel	Resets all entries to their previous values on the LDAP Bookmarks property sheet. • Discards all changes to the configuration of behaviors for synchronizations. • Discards all changes to the scope of access.

Related Topics

- Choose an Authentication Method, page 8-23
- Elements to Choose and Enable an Authentication Mode, page 8-50
- Elements to Define, Validate, and Add LDAP Filters, page 8-53
- Elements to Manage Attributes, page 8-56

Elements to Schedule Synchronization

Navigation Path

Administration > Security > Authentication > Synchronize Users

Table 8-4 Elements for Scheduling

Element	Description
Scheduling property sheet	
Synchronization Mode	Enables one synchronization mode to receive updated user account information from an Active Directory server. We support two such modes but they are mutually exclusive. Whenever you enable one, you disable the other. Click either **Manual Synchronization** or **Automatic Synchronization**.
Command Buttons	
Update	Submits your selections for the type of synchronization and the scope of access that you chose and configured. Synchronization of the specified type starts immediately.
Cancel	Resets all entries to their previous values on the Scheduling property sheet. • Discards all changes to the configuration of behaviors for synchronizations. • Discards all changes to the scope of access.

Related Topics

- Configure Automatic LDAP (Active Directory) Synchronization, page 8-27
- Choose an Authentication Method, page 8-23
- Elements to Choose and Enable an Authentication Mode, page 8-50
- Elements to Define, Validate, and Add LDAP Filters, page 8-53
- Elements to Manage Attributes, page 8-56

Elements to Manage Attributes

Navigation Path

Administration > Security > Authentication > Manage Attributes

Table 8-5 Elements for Attributes Management

Element	Description
DMM Attribute Name	Values that DMS-Admin uses to describe and identify various attributes that it associates with each user account. You cannot change the values in this column. They are for your reference only, to help you enter suitable values (and recognize suitable values when you see them) in the LDAP Attribute Name column and the Values to Use by Default column.
LDAP Attribute Name	Values that your Active Directory server uses—which correspond one-to-one with values in the DMM Attribute Row column—to describe and identify attributes of each user account. In its factory-default configuration, DMS-Admin prepopulates all fields in this column with the most commonplace values that Active Directory servers use for this purpose. When the values for these attributes differ on your Active Directory server or when you prefer to import objects that use other Active Directory attributes, you can edit the values in this column.
Values to Use by Default	Enter text to insert automatically when the value is blank for the corresponding attribute in an Active Directory user account that you import or synchronize. To ensure that DMS-Admin imports each valid user account that matches a filter, we recommend that you enter values for these attributes: • First Name • Last Name For your convenience, you can also enter values to insert automatically when the values are blank for other attributes—such as Company, Department, or Phone Number—but this is optional. **Note You cannot enter a value to use by default as the Login User Name value.**
Ignore User Account Control Flags	Tells DMM to ignore whether your Active Directory server makes use of the User Account Control Flags attribute. DMM expects to find this attribute on your Active Directory server and, when the attribute is not present, authentication fails.

Command Buttons

Reset to Factory Default	Returns all values in the LDAP Attribute Name column to the most commonplace values that Active Directory servers use. If you entered different values manually because the labels for these attributes differ on your Active Directory server or because you prefer to import user accounts that use other Active Directory attributes, DMS-Admin deletes what you entered.
Update	Saves and applies your work in the Manage Attributes property sheet.

Related Topics

- Choose an Authentication Method, page 8-23
- Elements to Choose and Enable an Authentication Mode, page 8-50
- Elements to Define, Validate, and Add LDAP Filters, page 8-53
- Elements to Use LDAP Bookmarks for Synchronization, page 8-54

Sample SP Configuration File from DMM

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<!--
 !            DMS SAML2 Service Provider Metadata
 !
 !   Actual Service Provider configuration for the IDP will be instantiated
 !   from this template and be deposited onto the IDP.
 !      (Auto-generated on/at: Wed May 11 16:58:14 PDT 2011)
 !
 !           Copyright (c) 2011 Cisco Systems, Inc.
 !-->
<EntityDescriptor entityID="http://DMMSP.example.com:8080/opensso"
xmlns="urn:oasis:names:tc:SAML:2.0:metadata">
    <SPSSODescriptor AuthnRequestsSigned="true" WantAssertionsSigned="true"
protocolSupportEnumeration="urn:oasis:names:tc:SAML:2.0:protocol"
xmlns:ds="http://www.w3.org/2000/09/xmldsig#">

     <KeyDescriptor>
       <ds:KeyInfo>
         <ds:KeyName>tomcat</ds:KeyName>
         <ds:X509Data>

<ds:X509SubjectName>/C=US/ST=CA/L=SJ/O=CISCO/OU=CISCO/CN=DMMSP.example.com</ds:X509Subject
Name>
           <ds:X509IssuerSerial>
             <ds:X509IssuerName>DMMSP.example.com</ds:X509IssuerName>
             <ds:X509SerialNumber>1304558251</ds:X509SerialNumber>
           </ds:X509IssuerSerial>

<ds:X509Certificate>Mk6g1VAwAIGUk0QTNwaEzqUECAczVzAMCSDsUIgAQELICqwFQhOABhGJiQwgBBYCkAHAIB
9DGMQE COBEcGAAT0Qg4wBBMMVTzVzC1DEQAM8KlAQVKNDwDMBGF0TxWJACA0YNENgQxCSADEVNlQUwQxDV
BDbAQ0M8pvGTNUFyMtzwTYxTAMVTMMAxx3EMLEcTDDFMvzNEmwcTMNco2LmhgTVw2MTaMAmvx1ALMOQADBkjVwACMB
GNTh0F1BQVJJQAAUM1BSDQwTHAsxAVgMlNMjTCVEQEEgzCwEUCAAQxh8Y0GkMMBZZgTwSVNX0EUBglbgRvgwJrADA5
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cCzUI2aNCNyK+D99sLujKL/kjyCBZ9lqKPeCArxWfKycC3/QqgO/SNz33b8JSh6iG35kVwA3OMZplEtLX4CfBkdsXY
TVaKIRPRLMSOH9u9vH6ELFgSzl8dH/tL1o3aJADhnG4gcFA8tGE8QIXZBdBQdNwlDYj1AAAARYsKS6wV2vCZEgTNEI
MAQbvD A87sb03cvDpQUCJ5SQ0O/ 4xQA531HhBHSCDOFbUlq+ PeTKB4dkGsIst9BPaIr43bWO3zfkMbrU2A WNu+
dPcBZpO1raWmP2I8ZErlDYPJSEstzmaC30kkeXg4nfe10KCx1QH8BAQusegy38+ oh8NLYw3N dzQl5vs=
</ds:X509Certificate>
         </ds:X509Data>
       </ds:KeyInfo>
     </KeyDescriptor>

     <SingleLogoutService Binding="urn:oasis:names:tc:SAML:2.0:bindings:HTTP-Redirect"
Location="http://DMMSP.example.com:8080/opensso/SPSloRedirect/metaAlias/sp"
ResponseLocation="http://DMMSP.example.com:8080/opensso/SPSloRedirect/metaAlias/sp"/>
     <SingleLogoutService Binding="urn:oasis:names:tc:SAML:2.0:bindings:HTTP-POST"
Location="http://DMMSP.example.com:8080/opensso/SPSloPOST/metaAlias/sp"
ResponseLocation="http://DMMSP.example.com:8080/opensso/SPSloPOST/metaAlias/sp"/>
     <SingleLogoutService Binding="urn:oasis:names:tc:SAML:2.0:bindings:SOAP"
Location="http://DMMSP.example.com:8080/opensso/SPSloSoap/metaAlias/sp"/>
     <ManageNameIDService Binding="urn:oasis:names:tc:SAML:2.0:bindings:HTTP-Redirect"
Location="http://DMMSP.example.com:8080/opensso/SPMniRedirect/metaAlias/sp"
ResponseLocation="http://DMMSP.example.com:8080/opensso/SPMniRedirect/metaAlias/sp"/>
     <ManageNameIDService Binding="urn:oasis:names:tc:SAML:2.0:bindings:HTTP-POST"
Location="http://DMMSP.example.com:8080/opensso/SPMniPOST/metaAlias/sp"
ResponseLocation="http://DMMSP.example.com:8080/opensso/SPMniPOST/metaAlias/sp"/>
     <ManageNameIDService Binding="urn:oasis:names:tc:SAML:2.0:bindings:SOAP"
Location="http://DMMSP.example.com:8080/opensso/SPMniSoap/metaAlias/sp"
ResponseLocation="http://DMMSP.example.com:8080/opensso/SPMniSoap/metaAlias/sp"/>
     <NameIDFormat>urn:oasis:names:tc:SAML:2.0:nameid-format:transient</NameIDFormat>
     <NameIDFormat>urn:oasis:names:tc:SAML:1.1:nameid-format:emailAddress</NameIDFormat>
```

```
     <NameIDFormat>urn:oasis:names:tc:SAML:1.1:nameid-format:unspecified</NameIDFormat>

<NameIDFormat>urn:oasis:names:tc:SAML:1.1:nameid-format:WindowsDomainQualifiedName</NameID
Format>
     <NameIDFormat>urn:oasis:names:tc:SAML:2.0:nameid-format:kerberos</NameIDFormat>

<NameIDFormat>urn:oasis:names:tc:SAML:1.1:nameid-format:X509SubjectName</NameIDFormat>
     <AssertionConsumerService index="0" isDefault="true"
Binding="urn:oasis:names:tc:SAML:2.0:bindings:HTTP-POST"
Location="http://DMMSP.example.com:8080/opensso/Consumer/metaAlias/sp"/>
     <AssertionConsumerService index="1"
Binding="urn:oasis:names:tc:SAML:2.0:bindings:HTTP-Artifact"
Location="http://DMMSP.example.com:8080/opensso/Consumer/metaAlias/sp"/>
     <AssertionConsumerService index="2"
Binding="urn:oasis:names:tc:SAML:2.0:bindings:PAOS"
Location="http://DMMSP.example.com:8080/opensso/Consumer/ECP/metaAlias/sp"/>
    </SPSSODescriptor>
</EntityDescriptor>
```

Summary Configuration Sample (PingFederate)

SP Connection

Connection Type	*Connection Role:*	**SP**
	Browser SSO Profiles:	**true**
	Protocol:	**SAML 2.0**
	Connection Template:	**No Template**
	WS-Trust STS:	**false**
Connection Options	*Browser SSO:*	**true**
	Attribute Query:	**false**
	SaaS Provisioning:	**false**
General Info	*Partner's Entity ID (Connection ID):*	**http://example.cisco.com:8080/opensso**

Browser SSO

SAML Profiles	*IdP-Initiated SSO:*	**false**
	IdP-Initiated SLO:	**false**
	SP-Initiated SSO:	**true**
	SP-Initiated SLO:	**false**

Assertion Lifetime	*Assertion Minutes Before:*	**5**
	Assertion Minutes After:	**5**

Assertion Creation

Identity Mapping	*Enable Transient Identifier:*	**true**
	Include additional attributes:	**true**
Attribute Contract	*Attribute:*	**SAML_AUTHN_CTX**
	Attribute:	**UID**
	Attribute:	**SAML_NAME_FORMAT**
IdP Adapter Mapping	*Adapter instance name:*	**LDAP** [1]
Authentication Type	*Authentication Type:*	**Single-Factor Authentication**
Adapter Instance	*Selected adapter:*	**LDAP** [1]
Assertion Mapping	*Adapter:*	**LDAP Authentication Service 2.2**
	Data Store or Assertion:	**Use only the Adapter Contract values in the SAML assertion**
Attribute Contract Fulfillment	*SAML_AUTHN_CTX:*	**urn:oasis:names:tc:SAML:2.0:ac:classes:PasswordProtectedTransport (Text)**
	UID:	**subject**[2] **(Adapter)**

Protocol Settings

Assertion Consumer Service URL	*Endpoint URL:*	**https://example.cisco.com:8443/opensso/Consumer/metaAlias/sp (POST)**

Allowable SAML Bindings	*Artifact:*	**false**
	POST:	**true**
	Redirect:	**true**
	SOAP:	**true**

Protocol Settings

Signature Policy	*Require digitally signed AuthN requests:*	**true**
	Always sign the SAML Assertion:	**true**
Encryption Policy	*Status:*	**Inactive**

Credentials

Inbound SOAP Authentication Type	*SOAP Authentication Type:*	**Use Digital Signatures to guarantee payload in Browser SSO profile**
	SSL required:	**true**
Digital Signature Settings	*Selected Certificate:*	**CN=**<your_organization>**,** **O=**<your_department>**,** **L=**<your_city_or_village>**,** **ST=**<your_state_or_province>**,** **C=**<your_country>
	Include Certificate in KeyInfo:	**true**
	Selected Signing Algorithm:	**RSA SHA1**

Signature Verification

Trust Model	*Trust Model:*	**Unanchored**
Signature Verification Certificate	*Selected Certificate:*	**CN=**<*FQDN_of_your_DMM_SP*>**,** **OU=**<*your_organization*>**,** **O=**<*your_department*>**,** **L=**<*your_city_or village*>**,** **ST=**<*your_state_or_province*>**,** **C=**<*your_country*>

1. Although we use this name value in our testbed, you might use some other name.
2. “Sample” is merely an example.

Sample IdP Metadata

- Exported IdP Metadata Sample from OpenAM, page 8-61
- Exported IdP Metadata Sample from Shibboleth, page 8-62
- Exported IdP Metadata Sample from PingFederate, page 8-64

Exported IdP Metadata Sample from OpenAM

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<EntityDescriptor entityID="dmsIdp" xmlns="urn:oasis:names:tc:SAML:2.0:metadata">
    <IDPSSODescriptor WantAuthnRequestsSigned="false"
protocolSupportEnumeration="urn:oasis:names:tc:SAML:2.0:protocol">
        <KeyDescriptor use="signing">
            <ds:KeyInfo xmlns:ds="http://www.w3.org/2000/09/xmldsig#">
                <ds:X509Data>
                    <ds:X509Certificate>
MJEwVFggTTQ1MUwD9w0kQACIQNICQQWBGBYlAqqAMBGUzAwAEkVsiagAELKkCBkDCADdhAUIQIGE
CYABEMTxwVzNBKQlNQZDMAlNCEQ1ADJzAKC0E4QgQSBExwGGVwzM0AAgQOVDUDT0A8cCNTxMFBVV
BxxjNambbJAQRbThnMxjlMNFYMm8cpT2mDovLMTvENv4pAJIw2yNDRAYDMMTAG0wOyET3MLExgMw
ZEMAAVk80JDVMVT1TSghThEMxBwjAU1zkwFMYEODCAQgH0MGQQGAJCNLEUNBQEBsCCBAwQVMlQAx
DGgwkJ5EAY9vMADP2y0NbJIQo0jV5RaXw8YbsQsTVQDjx5ZNKNZaUgMBByUDjhcYjN2wJBSWQ0bNABmAo2eD4JQ1QA
hEVyPDgAQEMZBUIAtNdgrxA0BcYIB9QuG4aWYHGX/ LcxHcYOES0MIYciud6KmI+/ kq/ YpRbA30QYctD0uax/
0M7BUD/SMT+P1kQhA9dCLiOeu2WB2dKFWWOwcLIhgne7omCI+ozijrImy+4C3fz9zC/VrBA3bQZMcnsE6YbZJDC7Ih
AjNAEAoQNZ5gGAKxBYEABzXjgAQwcDpvFYK1yNqr wArSlA7b3Vkhn42iQVjvj8I3No2ssay4LZyBsffkrm+
gATatC/ HvyyNGoapGS9K4fLZNzBaXDW99/ 728x7bGciRWFdx4VOdPABkis+ a1Had9Blj8uCupvRp/ wkRkP+
6hldOYEWQyVmrwid02g3S5Gtb+ ErQO7KA5G1wKvrw=
                    </ds:X509Certificate>
                </ds:X509Data>
            </ds:KeyInfo>
        </KeyDescriptor>
        <ArtifactResolutionService index="0" isDefault="true"
Binding="urn:oasis:names:tc:SAML:2.0:bindings:SOAP"
Location="http://OpenAM.example.com:8080/opensso/ArtifactResolver/metaAlias/idp"/>
        <SingleLogoutService Binding="urn:oasis:names:tc:SAML:2.0:bindings:HTTP-Redirect"
Location="http://OpenAM.example.com:8080/opensso/IDPSloRedirect/metaAlias/idp"
ResponseLocation="http://OpenAM.example.com:8080/opensso/IDPSloRedirect/metaAlias/idp"/>
        <SingleLogoutService Binding="urn:oasis:names:tc:SAML:2.0:bindings:HTTP-POST"
Location="http://OpenAM.example.com:8080/opensso/IDPSloPOST/metaAlias/idp"
ResponseLocation="http://OpenAM.example.com:8080/opensso/IDPSloPOST/metaAlias/idp"/>
        <SingleLogoutService Binding="urn:oasis:names:tc:SAML:2.0:bindings:SOAP"
Location="http://OpenAM.example.com:8080/opensso/IDPSloSoap/metaAlias/idp"/>
        <ManageNameIDService Binding="urn:oasis:names:tc:SAML:2.0:bindings:HTTP-Redirect"
Location="http://OpenAM.example.com:8080/opensso/IDPMniRedirect/metaAlias/idp"
ResponseLocation="http://OpenAM.example.com:8080/opensso/IDPMniRedirect/metaAlias/idp"/>
        <ManageNameIDService Binding="urn:oasis:names:tc:SAML:2.0:bindings:HTTP-POST"
Location="http://OpenAM.example.com:8080/opensso/IDPMniPOST/metaAlias/idp"
ResponseLocation="http://OpenAM.example.com:8080/opensso/IDPMniPOST/metaAlias/idp"/>
        <ManageNameIDService Binding="urn:oasis:names:tc:SAML:2.0:bindings:SOAP"
Location="http://OpenAM.example.com:8080/opensso/IDPMniSoap/metaAlias/idp"/>
        <NameIDFormat>urn:oasis:names:tc:SAML:2.0:nameid-format:persistent</NameIDFormat>
        <NameIDFormat>urn:oasis:names:tc:SAML:2.0:nameid-format:transient</NameIDFormat>

<NameIDFormat>urn:oasis:names:tc:SAML:1.1:nameid-format:emailAddress</NameIDFormat>
        <NameIDFormat>urn:oasis:names:tc:SAML:1.1:nameid-format:unspecified</NameIDFormat>

<NameIDFormat>urn:oasis:names:tc:SAML:1.1:nameid-format:WindowsDomainQualifiedName</NameID
Format>
        <NameIDFormat>urn:oasis:names:tc:SAML:2.0:nameid-format:kerberos</NameIDFormat>

<NameIDFormat>urn:oasis:names:tc:SAML:1.1:nameid-format:X509SubjectName</NameIDFormat>
```

```
        <SingleSignOnService Binding="urn:oasis:names:tc:SAML:2.0:bindings:HTTP-Redirect"
Location="http://OpenAM.example.com:8080/opensso/SSORedirect/metaAlias/idp"/>
        <SingleSignOnService Binding="urn:oasis:names:tc:SAML:2.0:bindings:HTTP-POST"
Location="http://OpenAM.example.com:8080/opensso/SSOPOST/metaAlias/idp"/>
        <SingleSignOnService Binding="urn:oasis:names:tc:SAML:2.0:bindings:SOAP"
Location="http://OpenAM.example.com:8080/opensso/SSOSoap/metaAlias/idp"/>
        <NameIDMappingService Binding="urn:oasis:names:tc:SAML:2.0:bindings:SOAP"
Location="http://OpenAM.example.com:8080/opensso/NIMSoap/metaAlias/idp"/>
        <AssertionIDRequestService Binding="urn:oasis:names:tc:SAML:2.0:bindings:SOAP"
Location="http://OpenAM.example.com:8080/opensso/AIDReqSoap/IDPRole/metaAlias/idp"/>
        <AssertionIDRequestService Binding="urn:oasis:names:tc:SAML:2.0:bindings:URI"
Location="http://OpenAM.example.com:8080/opensso/AIDReqUri/IDPRole/metaAlias/idp"/>
    </IDPSSODescriptor>
</EntityDescriptor>
```

Exported IdP Metadata Sample from Shibboleth

```
<EntityDescriptor entityID="https://sso.example.com/idp/shibboleth"
                  xmlns="urn:oasis:names:tc:SAML:2.0:metadata"
                  xmlns:ds="http://www.w3.org/2000/09/xmldsig#"
                  xmlns:shibmd="urn:mace:shibboleth:metadata:1.0"
                  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">

    <IDPSSODescriptor protocolSupportEnumeration="urn:mace:shibboleth:1.0
urn:oasis:names:tc:SAML:1.1:protocol urn:oasis:names:tc:SAML:2.0:protocol">

        <KeyDescriptor>
            <ds:KeyInfo>
                <ds:X509Data>
                    <ds:X509Certificate>
MIICRTCCAa6gAwIBAgIETOrk+jANBgkqhkiG9w0BAQUFADBmMQswCQYDVQQGEwJVUzELMAkGA1UE
CBMCQ0ExCzAJBgNVBAcTAlNKMQ4wDAYDVQQKEwVDSVNDTzEOMAwGA1UECxMFQ0lTQ08xHTAbBgNV
BAMTFGZydWl0bG9vcHMuY2lzY28uY29tMCAXDTEwMTEyMjIxNDczOFoYDzIxMTAxMDI5MjE0NzM4
WjBmMQswCQYDVQQGEwJVUzELMAkGA1UECBMCQ0ExCzAJBgNVBAcTAlNKMQ4wDAYDVQQKEwVDSVND
TzEOMAwGA1UECxMFQ0lTQ08xHTAbBgNVBAMTFGZydWl0bG9vcHMuY2lzY28uY29tMIGfMA0GCSqG
SIb3DQEBAQUAA4GNADCBiQKBgQCX0tTliXR7pGh9NNEKbIkChNB0t/H+2ysm4xr1Y60+hFssJGGx
qnNv8UEqH7SIk7Z9eDBW6lJreiH3KtSWIJBvtV1hLGZAlwPTu/b6GzVHGX9uZaj3Jyw0N8ru18k8
BoTsdNag7ZhQ7vIfcQ1HjLw9RT3u+n5ZkD+hbwEKtKePEwIDAQABMA0GCSqGSIb3DQEBBQUAA4GB
AA932Gf5lEY1c3w/ALuEXiDdtLnzRrNZxF7ZneDPfnjygNMOLgYTwCARdjdW40Xurd2RGSJC3MYJ
bhqMIStSTbYPBB6KLuEWkk+AW+/uprX5T49SY6hS918tcErmWdW0CYFlIiRa2hMaJz6AbWAqKR80
+n5IWxwEOlkmOPdWd1B/
                    </ds:X509Certificate>
                </ds:X509Data>
            </ds:KeyInfo>
        </KeyDescriptor>

        <ArtifactResolutionService
Binding="urn:oasis:names:tc:SAML:1.0:bindings:SOAP-binding"

Location="http://sso.example.com:8080/idp/profile/SAML1/SOAP/ArtifactResolution"
                                    index="1"/>

        <ArtifactResolutionService Binding="urn:oasis:names:tc:SAML:2.0:bindings:SOAP"

Location="http://sso.example.com:8080/idp/profile/SAML2/SOAP/ArtifactResolution"
                                    index="2"/>

        <NameIDFormat>urn:mace:shibboleth:1.0:nameIdentifier</NameIDFormat>
        <NameIDFormat>urn:oasis:names:tc:SAML:2.0:nameid-format:transient</NameIDFormat>

        <SingleSignOnService Binding="urn:mace:shibboleth:1.0:profiles:AuthnRequest"
```

```
Location="http://sso.example.com:8080/idp/profile/Shibboleth/SSO" />

        <SingleSignOnService Binding="urn:oasis:names:tc:SAML:2.0:bindings:HTTP-POST"

Location="http://sso.example.com:8080/idp/profile/SAML2/POST/SSO" />

        <SingleSignOnService
Binding="urn:oasis:names:tc:SAML:2.0:bindings:HTTP-POST-SimpleSign"

Location="http://sso.example.com:8080/idp/profile/SAML2/POST-SimpleSign/SSO" />

        <SingleSignOnService Binding="urn:oasis:names:tc:SAML:2.0:bindings:HTTP-Redirect"

Location="http://sso.example.com:8080/idp/profile/SAML2/Redirect/SSO" />

        <SingleSignOnService Binding="urn:oasis:names:tc:SAML:2.0:bindings:SOAP"

Location="http://sso.example.com:8080/idp/profile/SAML2/SOAP/SSO"/>

    </IDPSSODescriptor>

    <AttributeAuthorityDescriptor
protocolSupportEnumeration="urn:oasis:names:tc:SAML:1.1:protocol
urn:oasis:names:tc:SAML:2.0:protocol">

        <KeyDescriptor>
            <ds:KeyInfo>
                <ds:X509Data>
                    <ds:X509Certificate>
MIICRTCCAa6gAwIBAgIETOrk+jANBgkqhkiG9w0BAQUFADBmMQswCQYDVQQGEwJVUzELMAkGA1UE
CBMCQ0ExCzAJBgNVBAcTAlNKMQ4wDAYDVQQKEwVDSVNDTzEOMAwGA1UECxMFQ0lTQ08xHTAbBgNV
BAMTFGZydWl0bG9vcHMuY2lzY28uY29tMCAXDTEwMTEyMjIxNDczOFoYDzIxMTAxMDI5MjE0NzM4
WjBmMQswCQYDVQQGEwJVUzELMAkGA1UECBMCQ0ExCzAJBgNVBAcTAlNKMQ4wDAYDVQQKEwVDSVND
TzEOMAwGA1UECxMFQ0lTQ08xHTAbBgNVBAMTFGZydWl0bG9vcHMuY2lzY28uY29tMIGfMA0GCSqG
SIb3DQEBAQUAA4GNADCBiQKBgQCX0tTliXR7pGh9NNEKbIkChNB0t/H+2ysm4xr1Y60+hFssJGGx
qnNv8UEqH7SIk7Z9eDBW6lJreiH3KtSWIJBvtV1hLGZAlwPTu/b6GzVHGX9uZaj3Jyw0N8rul8k8
BoTsdNag7ZhQ7vIfcQ1HjLw9RT3u+n5ZkD+hbwEKtKePEwIDAQABMA0GCSqGSIb3DQEBBQUAA4GB
AA932Gf5lEY1c3w/ALuEXiDdtLnzRrNZxF7ZneDPfnjygNMOLgYTwCARdjdW40Xurd2RGSJC3MYJ
bhqMIStSTbYPBB6KLuEWkk+AW+/uprX5T49SY6hS918tcErmWdW0CYFlIiRa2hMaJz6AbWAqKR80
+n5IWxwEOlkmOPdWd1B/
                    </ds:X509Certificate>
                </ds:X509Data>
            </ds:KeyInfo>
        </KeyDescriptor>

        <AttributeService Binding="urn:oasis:names:tc:SAML:1.0:bindings:SOAP-binding"

Location="http://sso.example.com:8080/idp/profile/SAML1/SOAP/AttributeQuery" />

        <AttributeService Binding="urn:oasis:names:tc:SAML:2.0:bindings:SOAP"

Location="http://sso.example.com:8080/idp/profile/SAML2/SOAP/AttributeQuery" />

        <NameIDFormat>urn:mace:shibboleth:1.0:nameIdentifier</NameIDFormat>
        <NameIDFormat>urn:oasis:names:tc:SAML:2.0:nameid-format:transient</NameIDFormat>

    </AttributeAuthorityDescriptor>

</EntityDescriptor>
```

Exported IdP Metadata Sample from PingFederate

```
<md:EntityDescriptor entityID="saml2" cacheDuration="PT1440M"
    ID="OUEOtB9WV9lj-tGu57Lzdbwmah." xmlns:md="urn:oasis:names:tc:SAML:2.0:metadata">
    <md:IDPSSODescriptor
protocolSupportEnumeration="urn:oasis:names:tc:SAML:2.0:protocol">
        <md:KeyDescriptor use="signing">
            <ds:KeyInfo xmlns:ds="http://www.w3.org/2000/09/xmldsig#">
                <ds:X509Data>
                    <ds:X509Certificate>
                        MIICUzAgI0xCzAJBgNVGATL3DQEBBQUA6reRuMA0GCSqGSIbCCAbygAwIBMGBAYTAl
                        VTMRMwEQYDVQQIEwpDYWxpZm9ybmlhMREwDwYDVQQHEwhTYW4gSm9zZTEeMBwGA1UE
                        ChMVRGln0ZW1zMRYwFAYaNZWRpYSBTeXNDVQQXRhbCBDEw1DaXNjbyBTeXN0ZW1zMB
                        4XDTExMTAxMzAwMjgxMloXDTEyMTAxMjAwMjgxMlowbTELMAkGA1UEBhMCVVMxEzAR
                        BgNVBAgTCkNhbGlmb3JuaWExETAPBgNVBAcTCFNhbiBKb3NlMR4wHAYDVQQKExVEaW
                        dpdGFsIE1lZGlhIFN5c3RlbXMxFjAUBgNVBAMTDUNpc2NvIFN5c3RlbXMwgZ8wDQYJ
                        KoZIhvJAoGBALaYHMXD2DcNAQEBBQADgY0AMIGrFA+B1GubRCQIsqtpv0sHHdmLiJ8
                        CpuGtIgpHGBYHyKhPPS506YUbpduEViHM4MAqO0c0TKG8JCdhpXgoHI+/suo6zgkm6
                        x6UOZsW36+FxlUOgO4hsGG3rpNtgkLSd4YrnlwVCdb0FPgsvE58zbptosAQKF5R8iq
                        NLAgMBAAEwDQYJKoZIhvcNAQEFBQADgYEAedOWz2UZctWwUxSVhTZ1pE39wDTaf40X
                        0yN9vZiV2O3naP7rwkwles1svozpz5Cw/GJITznvRM2ez3agYaOsnz4FuDARjv3/cz
                        SED+6uMlv8xsk6gQ1zD3dJmyN2bJL/ENc+6bw8jepPGzyZBv+GwJwLeobKTgcCUI6X
                        1rIDn1U=
                    </ds:X509Certificate>
                </ds:X509Data>
            </ds:KeyInfo>
        </md:KeyDescriptor>

<md:NameIDFormat>urn:oasis:names:tc:SAML:2.0:nameid-format:transient</md:NameIDFormat>
        <md:SingleSignOnService
            Location="https://idp.example.com:9031/idp/SSO.saml2"
Binding="urn:oasis:names:tc:SAML:2.0:bindings:HTTP-POST" />
        <md:SingleSignOnService
            Location="https://idp.example.com:9031/idp/SSO.saml2"
Binding="urn:oasis:names:tc:SAML:2.0:bindings:HTTP-Redirect" />
        <md:SingleSignOnService
            Location="https://idp.example.com:9031/idp/SSO.saml2"
Binding="urn:oasis:names:tc:SAML:2.0:bindings:SOAP" />
        <saml:Attribute NameFormat="urn:oasis:names:tc:SAML:2.0:attrname-format:uri"
            Name="SAML_AUTHN_CTX" xmlns:saml="urn:oasis:names:tc:SAML:2.0:assertion" />
        <saml:Attribute NameFormat="urn:oasis:names:tc:SAML:2.0:attrname-format:uri"
            Name="UID" xmlns:saml="urn:oasis:names:tc:SAML:2.0:assertion" />
        <saml:Attribute NameFormat="urn:oasis:names:tc:SAML:2.0:attrname-format:uri"
            Name="SAML_NAME_FORMAT" xmlns:saml="urn:oasis:names:tc:SAML:2.0:assertion" />
    </md:IDPSSODescriptor>
</md:EntityDescriptor>
```

FAQs and Troubleshooting

- LDAP (Active Directory) FAQs, page 8-65
- Federation Mode (SSO) FAQs, page 8-65
- Error Message FAQs, page 8-65
- Network Policy FAQs, page 8-66
- User Exclusion FAQs, page 8-66

LDAP (Active Directory) FAQs

Q. Which Active Directory releases does Cisco DMS support?

A. Our completed tests succeeded as follows.

Windows Active Directory Server 2000

- Cisco DMS 5.3

Windows Active Directory Server 2003

- Cisco DMS 5.3

Windows Active Directory Server 2008R2

- Cisco DMS 5.3

Federation Mode (SSO) FAQs

Q. Are there any special APIs to use federation mode?

A. No. We support one set of API calls that work identically across all supported authentication modes. See http://developer.cisco.com.

Q. Does DMM perform trust validation of certificates that it imports with IdP metadata?

A. Yes.

Q. Do you support any use of certificate revocation lists?

A. No. Not in this release.

Q. Can I use one browser to connect simultaneously to more than one DMM appliance or more than one Show and Share appliance?

A. No. Each time that you connect to an additional instance, you are logged out of any prior instance in that browser. However, you can use multiple browsers together for this purpose.

Q. Why would user sessions time out for Show and Share or DMM users after a different interval than I set in DMM?

A. This can happen when session timeout values differ between your DMM appliance and your IdP. Reconfigure these servers to share one identical session timeout value.

Error Message FAQs

Q. Why does an error message state that an Active Directory password is not valid?

Explanation A "User must change password at next login" flag might be set on your Active Directory server. While this flag is set, the affected user cannot log in to any Cisco DMS component. DMS-Admin cannot change any password on your Active Directory server.

Recommended Action Use features that your Active Directory server provides for this purpose.

Q. Why does an error message state that filter validation has failed?

Explanation Filters fail when they point to empty containers. They also fail in response to filter expressions that includes any spaces.

Recommended Action Make sure on your Active Directory server that your filter did not refer to an empty organizational unit (OU) container. **Confirm also that your filter expression does not contain even one space.**

Q. Why would my API calls receive an HTTP 401 Unauthorized error?

Recommended Action When you use federation mode, enable ECP on your IdP server.

Network Policy FAQs

Q. When I use LDAP authentication with Cisco DMS, which ports must remain open in my network?

A. Your DMM appliance accepts user authentication requests securely through **port 443**. DMM then passes these requests securely to your Active Directory server through **port 389**. Also, SSL uses **port 636**.

User Exclusion FAQs

Q. Can I block Cisco DMS access to one particular Active Directory user account, when it is among the matched results for an otherwise useful LDAP filter?

A. Yes. Extend your query to include a logical NOT (`!`) operator for an attribute whose value is unique to this user. This example uses the LDAP "`samAccountName`" attribute name, which DMM uses by default to populate the corresponding login name for DMM. However, if your Active Directory server uses any other attribute name than "`samAccountName`" for this purpose, you must update the example syntax accordingly when you extend your query.

```
(&(currentFilter)(samAccountName!=username-to-be-excluded))
```

Tip **Information on the Manage Attributes property sheet in DMS-Admin confirms whether your Active Directory server uses the "`samAccountName`" attribute name.**

CHAPTER 9

Users and Groups

Revised: April 4, 2012
OL-15762-04

- Concepts, page 9-1
- Procedures, page 9-2
- Reference, page 9-9

Audience

We prepared this material with specific expectations of you.

- You manage user accounts and user groups for components of Cisco DMS..

Concepts

- Understand User Accounts, page 9-1
- Understand User Roles, page 9-2

Understand User Accounts

You can create user accounts manually or you can import them from an Active Directory server. Imported accounts and created accounts can coexist.

You cannot create any new user accounts manually while your authentication method is LDAP.

Understand User Roles

User roles in DMS-Admin are the automatic result of a logical operation. You cannot use DMS-Admin to assign a user role directly to any user.

In some cases, users who are authorized to use more than one licensed feature of Cisco DMS. The DMS-Admin user role that you see for a user account is based on *all* privileges and access settings that the user has, combined across *all* of your licensed and activated features.

Table 9-1 Logic That Determines User Role Designations in DMS-Admin

User Role	Logic
Admin	This user role is assigned automatically to any user who is an administrator in any DMM software module. These users have full read/write access to all users and user groups in DMS-Admin and can manage settings for them.
Group Admin	This user role is assigned automatically to any user who is a content author for *Show and Share* but is not an administrator in any DMM software module. These users cannot see information about user accounts and groups in DMS-Admin, nor can they create, edit, or delete them. However, these users can create user groups as part of the workflow in Show and Share Administration when they assign the rights to view a new or preexisting video.
ReadOnly	⚠ **Caution** **Each user account has only the user role "ReadOnly" until you assign additional access rights and privileges.** User accounts with this role have severely limited access. This user role in DMS-Admin is assigned automatically to any user who has not been granted any explicit access settings or privileges in any DMM software module, or who can log in to *Show and Share* but has no other privileges. These users are prevented from logging in to any DMM software module.

Procedures

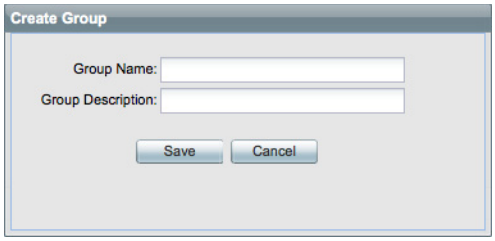
- Create User Groups, page 9-3
- Delete User Groups, page 9-4
- Create User Accounts, page 9-4
- Assign Users to Groups, page 9-6
- Edit User Accounts, page 9-6
- Delete User Accounts, page 9-8
- Assign User Access Rights and Permissions, page 9-8

Create User Groups

Procedure

Step 1 Choose **Administration > Users.**

Step 2 Click **Create Group**.



Step 3 Enter values to name and describe the group.

Tip **The name that you enter for a user group must not contain any spaces or special characters.**

Step 4 Click **Save** to save your work.

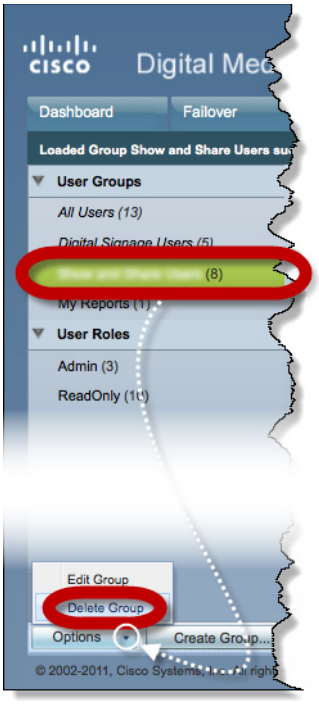
Step 5 Stop. You have completed this procedure.

Delete User Groups

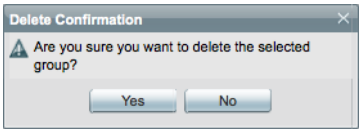
Procedure

Step 1 Choose **Administration > Users.**

Step 2 Click a group name to highlight it.



Step 3 Choose **Options > Delete Group**.



Step 4 Click **Yes** in the Delete Confirmation dialog box.

Step 5 Stop. You have completed this procedure.

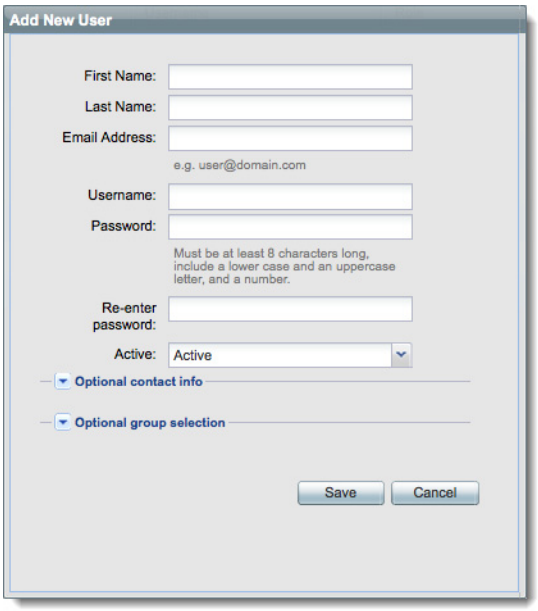
Create User Accounts

Procedure

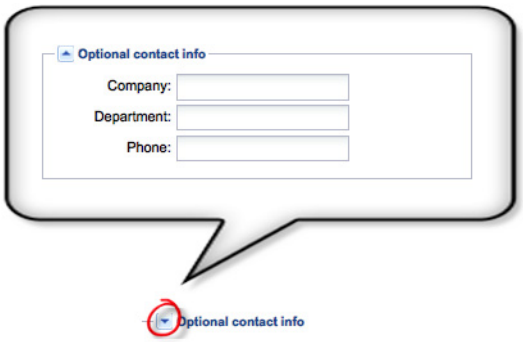
Step 1 Choose **Administration > Users.**

Step 2 Click **Add New User**.

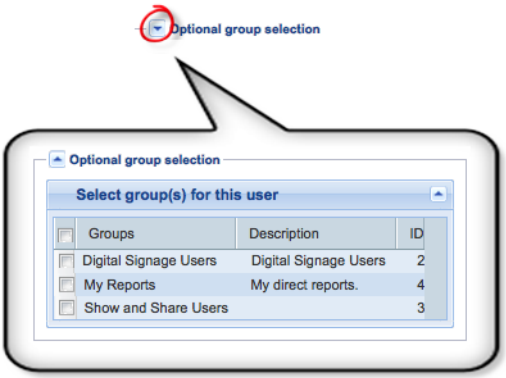
Step 3 Enter the required values in the Add New User dialog box.



Step 4 (**Optional**) Enter contact information.



Step 5 (**Optional**) Assign the user to a user group.



Step 6 Click **Save**.

Step 7 Stop. You have completed this procedure.

Related Topics

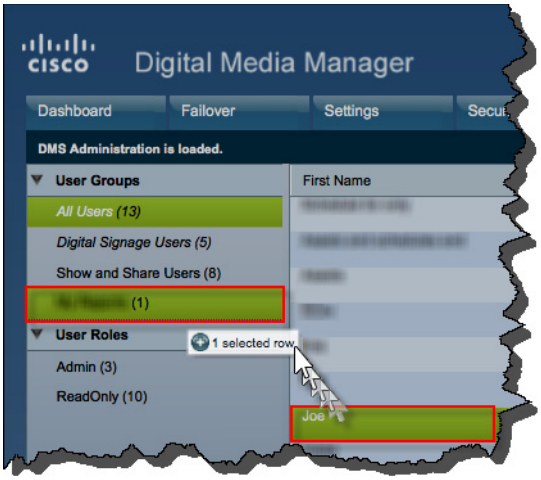
- Elements to Configure User Account Settings, page 9-9
- Delete User Accounts, page 9-8

Assign Users to Groups

When you first create a user account in DMS-Admin, you can associate the account with a user group immediately or you can do so after you assign access rights and permissions to the user.

Procedure

Step 1 Drag a user from the table to the group name.



OR

Use the Edit User dialog box.

Step 2 Stop. You have completed this procedure.

Edit User Accounts

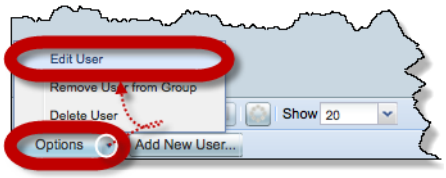
You can edit user account settings manually.

Procedure

Step 1 Choose **Administration > Users.**

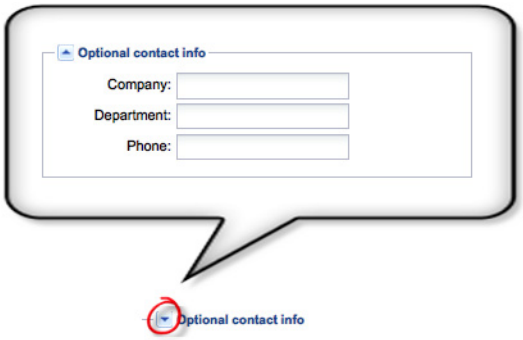
Step 2 Click an entry in the untitled table that describes all user accounts.

Step 3 Choose **Options > Edit User**.

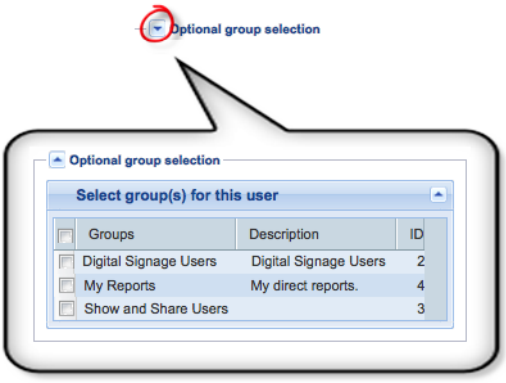


Step 4 Make changes to its values in the Edit User dialog box.

Step 5 (**Optional**) Enter contact information.



Step 6 (**Optional**) Assign the user to a user group.



Step 7 Click **Save**.

Step 8 Stop. You have completed this procedure.

Related Topics

- Elements to Configure User Account Settings, page 9-9
- Delete User Accounts, page 9-8

Delete User Accounts

Note **You cannot delete the superuser account.** However, you can delete any other user account.

Procedure

Step 1 Choose **Administration > Users.**

Step 2 Click an entry in the untitled table that describes all user accounts.

To mark multiple user accounts for deletion, Ctrl-click.

Step 3 Choose **Options > Delete User**.

Step 4 Stop. You have completed this procedure.

Related Topics

- Create User Accounts, page 9-4
- Elements to Configure User Account Settings, page 9-9

Assign User Access Rights and Permissions

Note **User rights and privileges are feature-specific.** You cannot use DMS-Admin to assign rights or privileges to any user.

Before You Begin

- Obtain and install the license keys to activate licensed features.
- Create or import user accounts.

Procedure

Step 1 Assign access rights and privileges to users in the individually licensed features they will use.

Step 2 Stop. You have completed this procedure.

Reference

- Software UI and Field Reference Tables, page 9-9
- FAQs and Troubleshooting, page 9-10

Software UI and Field Reference Tables

- Elements to Configure User Account Settings, page 9-9

Elements to Configure User Account Settings

Navigation Path

Administration > Users

Table 9-2 Elements for Creating and Editing User Accounts Manually

Element	Description
First Name	This required value might be identical for multiple users. **Note** **We do not validate that this value is strictly alphanumeric.** Specifically, we support your use of opening and closing quotation marks, forward slashes, and back slashes.
Last Name	This required value might also be identical for multiple users. **Note** **We do not validate that this value is strictly alphanumeric.** Specifically, we support your use of opening and closing quotation marks, forward slashes, and back slashes.
Email Address	The email address to be associated with this user account.
Username	A unique username. The name is unique in the sense that you have not used it as the name for any other user account for any component of Cisco DMS. You must enter the username. **Note** **Usernames are now case-insensitive and the minimum username length is lowered to two characters.** (Previously, the minimum username length was four characters.)
Password	The password for the user account. You must enter a password, then reenter it.
Re-enter password	
Active list	Signifies whether the account holder is an active or inactive user of Cisco DMS. Alternatively, signifies whether the account holder is active in your organization.
Optional Contact Info	
Company	The agency, corporation, nonprofit organization, or other such institution to be associated with this user account.
Department	The department within the institution.
Phone	The telephone number to be associated with this user account.
Optional Group Selection	
Unlabeled check box	Marks the groups to which this user should belong.
Groups column	Shows the group name.
Description column	Optional, brief description of the group and its purpose.

FAQs and Troubleshooting

- FAQs, page 9-10

FAQs

Q. What might prevent a user from logging in to DMM with an account that I created in DMS-Admin?

A. By default, DMS-Admin assigns all newly created user accounts to a user role called “ReadOnly.” Users with this role cannot log in to DMM. To grant this right to users, you must assign module-specific rights to them in *Digital Signs* or *Show and Share Administration*. Afterward, their user role changes to “Admin.”

CHAPTER 10

Events and Notifications

Revised: April 4, 2012
OL-15762-04

- Concepts, page 10-1
- Procedures, page 10-5
- Reference, page 10-8

Audience

We prepared this material with specific expectations of you.

- You monitor events for components of Cisco DMS..

Concepts

- Overview, page 10-1
- Restrictions, page 10-2
- Understand SNMP Concepts, page 10-2
- Understand MIB and NMS Concepts, page 10-2
- Understand IP Address Conflict Events, page 10-3
- Understand Supported Event Types, page 10-3
- Understand Notification Methods, page 10-4
- Workflow, page 10-4

Overview

DMS-Admin supports email (SMTP) natively.

In addition, you can purchase and install a license key to activate our *SNMP Notifications Module*. After you activate this module, you can start to use:

- A network management MIB file called *CISCO-DIGITAL-MEDIA-SYSTEMS-MIB.my*.
- The *agent capabilities* file that describes which MIB objects we support in this release.

In this framework, you can define alarms that associate system events with methods to deliver notification messages.

Timesaver The Alerts gauge at Administration > Dashboard shows the total count of notification messages delivered in the past 1 hour. Click **View Alerts** to jump directly to the Alerts page.

Restrictions

- **SNMP features in this release are read-only.**
  - Your NMS can use SNMP to submit queries to DMS-Admin but cannot use SNMP to edit the configuration of any Cisco DMS component.
  - You cannot edit the (default) community string of your DMM appliance.
- **SNMPv1 and SNMPv2c are not secure protocols.** You cannot use a firewall to secure SNMP traffic.
- In this release, the SNMP Notification Module does not support:
  - The SNMPv3 protocol.
  - Any monitoring of Cisco Digital Media Encoders (DMEs).

Understand SNMP Concepts

Your fully licensed and equipped DMS-Admin software can use *SNMPv1* or *SNMPv2c* to:

- Respond to Cisco DMS MIB schema-compliant queries from your NMS.
- Send notification messages automatically to your NMS whenever predefined system event types occur.

Understand MIB and NMS Concepts

Any dedicated NMS that supports SNMP can load *CISCO-DIGITAL-MEDIA-SYSTEMS-MIB.my* into its MIB browser. CiscoWorks is one example. Your NMS can then send SNMP queries to DMS-Admin and represent its responses correctly to monitor objects from our MIB schema.

- Cisco DMS server appliances.
- Cisco DMPs—*in the sense that, when your DMPs report their events to your DMM appliance, it forwards the appropriate SNMP alerts*.
- Cisco Digital Media Manager software.
- Cisco Show and Share software.

Our MIB schema models three object groups.

Object Group	Description
DMS Systems Group	Models all distributed component parts of this Cisco DMS installation as a single, abstract system.
DMS Features Group	Categorizes licensed and unlicensed features.
DMS Inventory Group	Lists the devices that constitute your Cisco DMS installation and describes their operational status.

Understand IP Address Conflict Events

An address conflict occurs when a DHCP server assigns to one registered DMP the exact dynamic IP address that some other registered DMP used previously.

When the DMP that previously used the address is no longer in active use, you should delete the record of it in *Digital Signs*.

When the DMP that previously used the address is one that should remain active, confirm that it is still running and still connected to the network, then restart it and confirm that its DHCP server does not assign IP addresses with expiration dates.

Understand Supported Event Types

- Global Event Categories, page 10-3
- DMP Event Categories, page 10-3
- Show and Share Event Categories, page 10-4
- Failover Cluster Event Categories, page 10-4
- WAAS Event Categories, page 10-4

Global Event Categories

Categories	Notification Messages
All Internal Events	List all signals exchanged between and among the internal components of Cisco DMS. **Note Most users attribute little or no significance to these events.**
All Notifiable Events	List all.
Deployment Failures	Messages list recently failed deployments of content for all components of Cisco DMS.
Deployment Successes	Messages list recently failed deployments of content for all components of Cisco DMS.

DMP Event Categories

Categories	Notification Messages
Outages	List all registered but unreachable DMPs.
Restarts	List all registered DMPs that restarted recently.
IP Conflicts	List all registered DMPs with IP address conflicts.
IP Registrations	List all newly registered DMPs.

Show and Share Event Categories

Categories	Notification Messages
Show and Share Outages	List registered but unreachable *Show and Share* appliances.
Show and Share Restarts	List registered *Show and Share* appliances that restarted recently.
Show and Share Content Publishing Failures	List recently failed deployments of content for use on *Show and Share*.
Show and Share Content Publishing Successes	List recently successful deployments of content for use on *Show and Share*.

Failover Cluster Event Categories

Categories	Notification Messages
Cluster Node Outages	List instances when either node in any failover pair is not responsive.
Cluster Node Activations	List instances when either node in any failover pair becomes responsive.

WAAS Event Categories

Categories	Notification Messages
WAAS Connections	Lists instances when DMM established a connection to a WAAS share.
WAAS Disconnections	Lists instances when DMM lost its connection to a WAAS share.
WAAS Low Disk Space	Lists instances when the WAAS share was low on disk space.

Understand Notification Methods

Email

Activates automatic delivery of email notification messages for all corresponding event types.

SNMP

Activates automatic delivery of SNMPv2c notification messages to your NMS for all corresponding event types.

Syslog

Activates automatic delivery of notification messages to your Syslog collector.

All

All of the above.

Workflow

1. Configure SNMP Server Settings for Your DMM Appliance, page 10-5
2. Populate the MIB Browser in Your NMS, page 10-6

Procedures

- Enable or Disable Email, page 10-5
- Configure Alert Reports and Notification Settings, page 10-6

Enable or Disable Email

You can enable or disable the email service (SMTP) on your DMM appliance. When this service is enabled, DMS-Admin can send email notifications automatically to you or other interested parties whenever system events of predefined types occur.

Before You Begin

- To see and use the Settings tab, you must be logged in as an administrator.

Procedure

Step 1 Choose **Settings > External Servers > SMTP**.

Step 2 Enter the required values to start or stop email service on your DMM appliance.

You must enter these values or you cannot send notification messages:

Value	Description
Server Status	Click the radio button to enable or disable the email service.
Host	The routable IP address or DNS-resolvable hostname.
Port	The number to identify which TCP port is reserved for SMTP traffic.

Step 3 Click **Save**.

Step 4 Stop. You have completed this procedure.

Configure SNMP Server Settings for Your DMM Appliance

Cisco DMS can convey its notifications to an external SNMP server.

Procedure

Step 1 Choose **Settings > SNMP**.

Step 2 Click the Server Status radio button to enable or disable SNMP monitoring.

Step 3 Enter in the Host field the routable IP address or DNS-resolvable hostname of your NMS.

Step 4 Enter in the Port field the numeric UDP port assignment reserved for SNMP traffic.

Step 5 Apply the community string.

Step 6 Enter in the Community String field the password to identify that community.

Tip **The default Community String value is *public*.**

Step 7 Click **Save**.

Step 8 Stop. You have completed this procedure.

Populate the MIB Browser in Your NMS

Procedure

Step 1 Log in to your Cisco.com account on **ftp.cisco.com**.

Step 2 Navigate to ftp://ftp-sj.cisco.com/pub/mibs/v2/.

Timesaver **Alternatively, go to http://cisco.com/go/dms/mib.**

Step 3 Download these files:

```
09/23/2008 12:00AM          2,392 CISCO-DIGITAL-MEDIA-SYSTEMS-CAPABILITY.my
06/02/2008 12:00AM         43,053 CISCO-DIGITAL-MEDIA-SYSTEMS-MIB.my
```

Step 4 Load both files into your network management system (NMS).

Tip **Manufacturer documentation for your NMS should tell you how to do this.**

Step 5 When your NMS prompts you to enter the SNMP port number for your DMM appliance, use the port number **161**.

Step 6 Stop. You have completed this procedure.

Configure Alert Reports and Notification Settings

- Define Alert Report Parameters, page 10-6
- Define Notification Rules, page 10-7

Define Alert Report Parameters

Procedure

Step 1 Click the **Alerts** tab.

Step 2 Click **Alert Reports**, .

Step 3 Click the radio button to choose a monitoring mode.

- In *Live Monitor Mode*, we refresh displayed values in something close to real time.
- In *Snapshot Mode*, we do not refresh displayed values.

Step 4 Choose the range of dates.

Step 5 Choose an event type from the Type list, and then click **Apply**.

Step 6 Click **Save**.

Step 7 Stop. You have completed this procedure.

Define Notification Rules

Before You Begin

- Before you can deliver notification messages to any email recipent, you must configure SMTP and enable notification operations for it.
- Before you can deliver notification messages to any NMS, you must purchase and install a license key that activates the SNMP Notification Module. Then, you must configure SNMP and enable both notification operations **and** query operations for it.
- Before you can deliver notification messages to any Syslog collector, you must configure Syslog and enable notification operations for it.

Procedure

Step 1 Choose **Alerts > Notification Rules**.

Step 2 Check the check boxes to turn On one or more notification methods for each listed event type.

OR

Uncheck every check box for an event type to stop its delivery of notication messages through any medium or channel.

Step 3 (**Optional**) *Did you check Email?*

If so, you activated the Recipent field, which is now editable. Enter the email address that should receive notification messages.

Note **Enter only one email address in this field.** It rejects any entry that contains multiple email addresses (**CSCts96411**).

Tip **You can enter a unique recipient address for each notification rule.**

Step 4 Click **Save**.

Step 5 Stop. You have completed this procedure.

Reference

- FAQs and Troubleshooting, page 10-8

FAQs and Troubleshooting

- FAQs, page 10-8

FAQs

- SMTP FAQs, page 10-8
- SNMP and MIB FAQs, page 10-8

SMTP FAQs

Q. What might interfere with the delivery of configured email notifications for events that the Alert Browser shows?

Explanation This might happen when DMM cannot connect to your SMTP server—due to either a misconfiguration or a service outage (SMTP error 421). To determine the cause, get copies of your DMM system logs from AAI and inspect /var/log/dms/EmsService.log file.

Recommended Action Make sure the SMTP server configuration is correct in DMS-Admin. If the configuration is correct, test with a different mail server.

SNMP and MIB FAQs

Q. Which SNMP versions does the MIB support?

A. *SNMPv1* and *SNMPv2*.

Note **This release does not support *SNMPv3*.**

Q. If multiple DMPs become unreachable at the same time, will I receive separate SNMP notifications for each?

A. Maybe. This can occur when you configure DMS-Admin to send SNMP notifications for unreachable DMPs.

Note **This release does not support notification throttling.**

Q. Where can I download the MIB and its agent capabilities file?

A. Log in to your Cisco.com account and go to ftp://ftp.cisco.com/pub/mibs/v2/. Alternatively, go to http://cisco.com/go/dms/mib.

Q. Which object groups does the MIB support?

A. This release supports:

- *cdmsSystem*
- *cdmsFeatures*
- *cdmsInventory*

To understand these object groups, see the agent capabilities file.

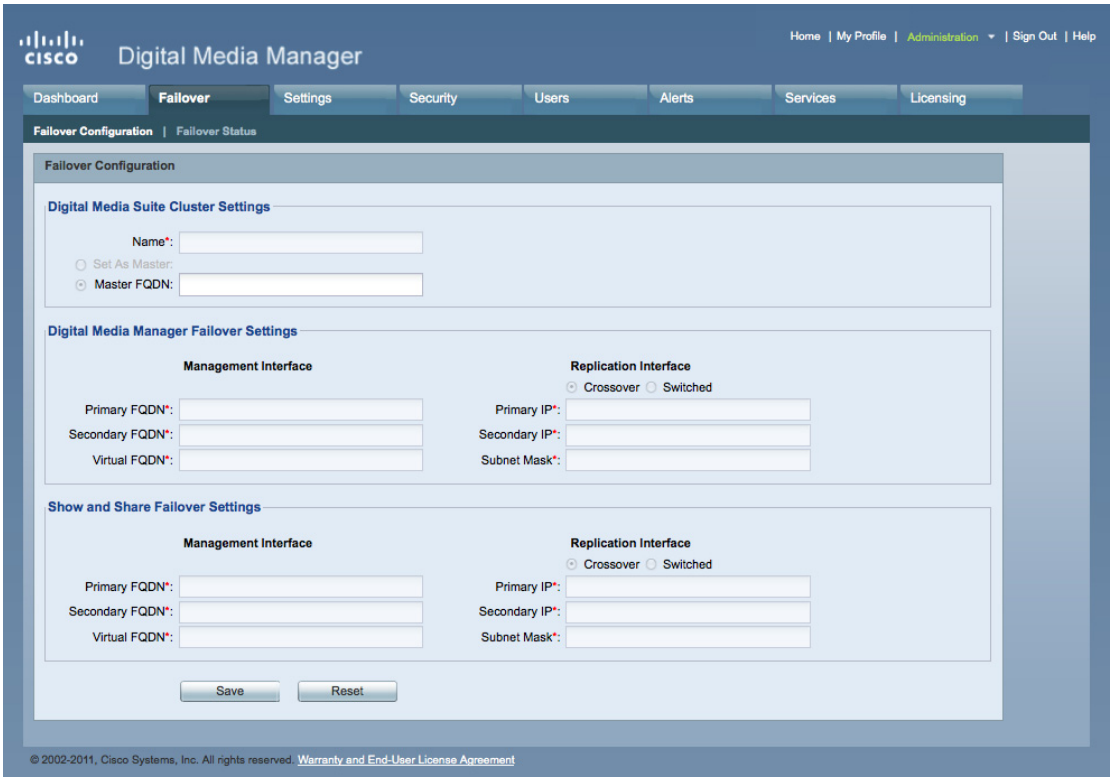
Q. Can I configure the community for my...

• ... SNMP agent to accept 'get' requests?	**A.** Yes, from the public community.
• ... SNMP agent to accept 'set' requests?	**A.** No, not in this release.
• ... external SNMP server, which receives traps?	**A.** No, not in this release.

CHAPTER 3

Configure Failover

Revised: May 31, 2011
OL-15762-03



You can use features of DMS-Admin to configure failover for Cisco Show and Share. See *Failover Configuration Guide for Cisco Digital Media Suite 5.2.x* at http://tools.cisco.com/squish/AaDa3.

CHAPTER 11

Welcome [to Centralized DMP Management]

Revised: April 4, 2012
OL-15762-04

- Concepts, page 11-1
- Procedures, page 11-1

Audience

We prepared this material with specific expectations of you.

- You want to manage Cisco DMPs and their attached presentation systems centrally.

Concepts

- Overview, page 11-1

Overview

Although we sell and license features separately for *Cisco Digital Signs* and *Cisco Cast*, they rely on a shared set of common services that help you to:

- Discover DMPs in your network.
- Create and populate DMPs groups.
- Organize a library of digital assets.
- Distribute assets to content engines, storage servers, or DMP local storage.
- Schedule events to occur on DMPs.
- Manage presentation systems that are connected to your DMPs.
- And more.

Procedures

- Start Digital Signs, page 11-2

Start Digital Signs

Procedure

Step 1 Point your browser at your DMM appliance.

- When you use **HTTP**, be sure to specify port **8080**.
- When you use **HTTPS**, be sure to specify port **8443**.
- Be sure to use the fully qualified appliance DNS name and not merely its IP address.

For example, `https://dmm.example.com:8443`

Step 2 Choose **Digital Signs** from the global navigation or click **Digital Signs** on the DMM landing page.

Step 3 Stop. You have completed this procedure.

CHAPTER 12

DMP Dashboard

Revised: November 4, 2011
OL-15762-04

- Concepts, page 12-1
- Procedures, page 12-4
- Reference, page 12-8

Audience

We prepared this material with specific expectations of you.

- You want a fast way to assess the health and performance of your DMPs.

Concepts

- Overview, page 12-1
- Understand the Media and Schedules Gauge, page 12-1
- Understand the Digital Media Players Gauge, page 12-2
- Understand the Cast Gauge, page 12-3
- Understand the Settings Gauge, page 12-4

Overview

Cisco Digital Signs and *Cisco Cast* share a dashboard that shows various gauges. This shared dashboard summarizes and centralizes important features to monitor DMPs, schedules, assets, and settings for content delivery. Gauge data is not updated in real time; you must refresh your browser to refresh the data.

When problems of any kind interfere with the data-collection processes that populate these gauges, they show question marks in addition to the best data that is available.

Understand the Media and Schedules Gauge

The Media and Schedules gauge represents differing types of data on its left and right sides.

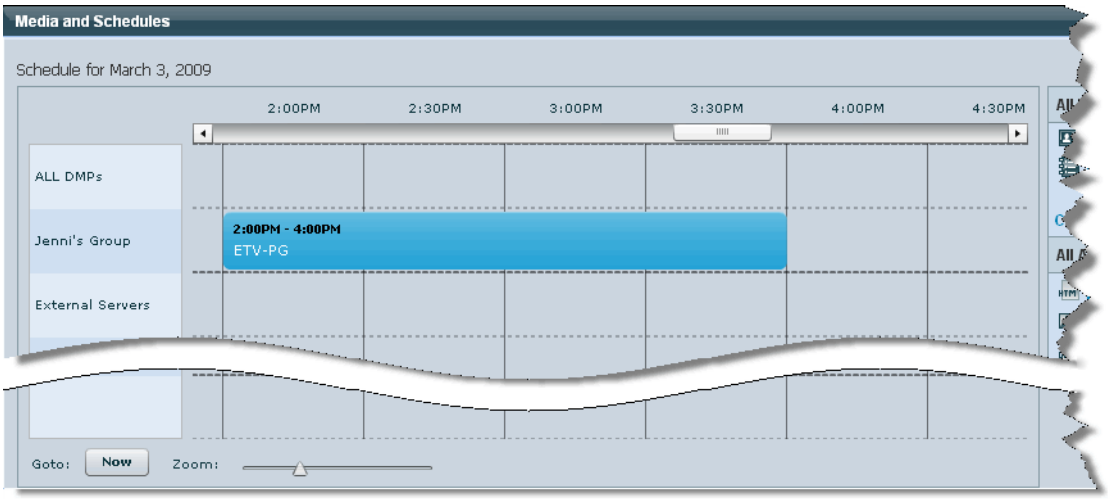
- Understand the Left Side of the Media and Schedules Gauge, page 12-2

- Use the Left Side of the Media and Schedules Gauge, page 12-5
- Use the Right Side of the Media and Schedules Gauge, page 12-6
- Elements on the Right Side of the Media and Schedules Gauge, page 12-8

Understand the Left Side of the Media and Schedules Gauge

The left side of the Media and Schedules gauge shows a read-only version of the deployment schedule that *Cisco Digital Signs* and *Cisco Cast* share. You can browse through the schedule timeline here and increase or decrease the magnification level for the range of hours that the gauge shows without your ever scrolling.

Figure 12-1 The Left Side of the Media and Schedules Gauge



This gauge describes only the midnight-to-midnight, 24-hour schedule for today. You can center it on the current hour and you can filter it to show only the events that are scheduled for a particular DMP group.

Related Topics

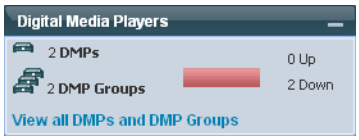
- Use the Left Side of the Media and Schedules Gauge, page 12-5
- Understand the Digital Media Players Gauge, page 12-2
- Understand the Cast Gauge, page 12-3
- Understand the Settings Gauge, page 12-4

Understand the Digital Media Players Gauge

The Digital Media Players gauge shows a colored bar chart to summarize the health of registered DMPs in your network and counts the number of configured DMP groups.

- The color green represents registered DMPs that are reachable.
- The color red represents registered DMPs that are unreachable. A registered DMP might become unreachable when it receives a new dynamic IP address from the DHCP server at its deployment site. In this case, you should restart the DMP or edit the IP address record that DMM maintains for the DMP.

Figure 12-2 The Digital Media Players Gauge



Tip **DMM might report temporarily that a newly added DMP is unreachable.** Most commonly, this occurs before the first polling session. The interval between DMP polling cycles is 5 minutes. In this case, wait a few minutes, and then check again.

Note **Configure your DHCP servers to expire leased IP addresses for DMPs only when DMPs are restarted.** A registered DMP might become unavailable for centralized management if it receives a new dynamic IP address from the DHCP server at its deployment site. In this case, you should restart the DMP or edit the IP address record that DMM maintains for the DMP.

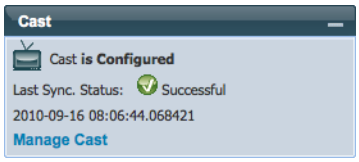
Related Topics

- Understand the Media and Schedules Gauge, page 12-1
- Use the Cast Gauge, page 12-7
- Use the Settings Gauge, page 12-7

Understand the Cast Gauge

The Cast gauge shows whether *Cisco Cast* is configured and tells you whether the most recent synchronization succeeded with your preferred EPG provider.

Figure 12-3 The Cast Gauge



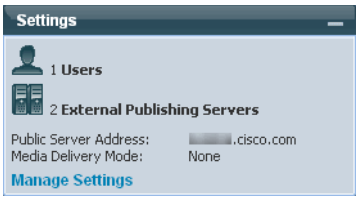
Related Topics

- Understand the Media and Schedules Gauge, page 12-1
- Use the Digital Media Players Gauge, page 12-7
- Use the Settings Gauge, page 12-7

Understand the Settings Gauge

The Settings gauge summarizes the most basic attributes of configured settings for your DMM appliance and your content delivery network.

Figure 12-4 The Settings Gauge



Related Topics

- Understand the Media and Schedules Gauge, page 12-1
- Use the Digital Media Players Gauge, page 12-7
- Use the Cast Gauge, page 12-7

Procedures

- View Dashboard Gauges for DMPs, page 12-4
- Use the Digital Media Players Gauge, page 12-7
- Use the Cast Gauge, page 12-7
- Use the Settings Gauge, page 12-7

View Dashboard Gauges for DMPs

Procedure

Step 1 Choose **Digital Signs > Dashboard**.

OR

Choose **Cast > Dashboard**.

Step 2 Work with gauges, as needed.

- Click + in the title bar of a collapsed gauge to expand it.
- Click − in the title bar of an expanded gauge to collapse it.
- Drag a gauge by its title bar to rearrange the dashboard.

Tip

- All gauges are made **wide** that load on the left side.
- All gauges are made **narrow** that load on the right side.

Step 3 Stop. You have completed this procedure.

Related Topics

- Understand the Media and Schedules Gauge, page 12-1
- Use the Digital Media Players Gauge, page 12-7
- Use the Cast Gauge, page 12-7
- Use the Settings Gauge, page 12-7

Use the Left Side of the Media and Schedules Gauge

Before You Begin

- You must be logged in an administrator or as a user who has at least read-only permissions for the schedule.

Procedure

Step 1 Examine the gauge.

Step 2 Do any of the following.

- Click **Now** to center the timeline on the current hour.
- Move the slider left or right to adjust magnification of the schedule timeline:
  - The far left position “zooms out” to show schedule magnification in 6-hour increments.
  - The far right position “zooms in” to show schedule magnification in 5-minute increments.
- When your browser window is small enough that it shows a horizontal scrollbar above the timeline, use this scrollbar to scroll the timeline left or right, where left is earlier in the day and right is later in the day.

Step 3 Stop. You have completed this procedure.

Related Topics

- Understand the Left Side of the Media and Schedules Gauge, page 12-2
- Use the Digital Media Players Gauge, page 12-7
- Use the Cast Gauge, page 12-7
- Use the Settings Gauge, page 12-7

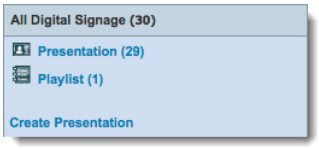
Use the Right Side of the Media and Schedules Gauge

Procedure

Step 1 Examine the gauge.

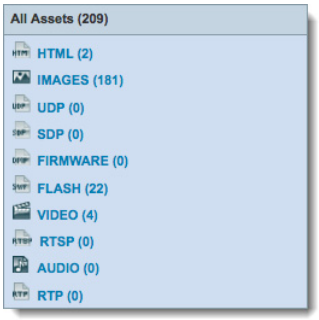
Step 2 Do any of the following.

In the *All Digital Signage* area...



- Click **Presentation** to jump to Digital Signage > Presentations.
- Click **Playlist** to jump to Digital Signage > Playlist.
- Click **Create Presentation** to start Digital Media Designer.

In the *All Assets* area...



- Click **HTML** to list HTML URLs only.
- Click **IMAGES** to list image files only.
- Click **UDP** to list UDP URLs only.
- Click **SDP** to list SDP URLs only.
- Click **FIRMWARE** to list DMP firmware and kernel files only.
- Click **FLASH** to list SWF files only.
- Click **VIDEO** to list MPEG videos only.
- Click **RTSP** to list RTSP videos only.
- Click **AUDIO** to list audio assets only.
- Click **RTP** to list RTP URLs only.

Step 3 (**Optional**) *Would you like to populate your media library with assets or URLs?* If so, click **Add Asset**.

Step 4 Stop. You have completed this procedure.

Related Topics

- Elements on the Right Side of the Media and Schedules Gauge, page 12-8
- Use the Digital Media Players Gauge, page 12-7
- Use the Cast Gauge, page 12-7
- Use the Settings Gauge, page 12-7

Use the Digital Media Players Gauge

Before You Begin

- You must be logged in as an administrator or as a user with sufficient permissions to see at least one DMP or one DMP group.

Procedure

Step 1 Examine the gauge.

Step 2 (**Optional**) *Would you like to learn more?* If so, click **View All DMPs and DMP Groups**.

Step 3 Stop. You have completed this procedure.

Related Topics

- Understand the Media and Schedules Gauge, page 12-1
- Use the Cast Gauge, page 12-7
- Use the Settings Gauge, page 12-7

Use the Cast Gauge

Procedure

Step 1 Examine the gauge.

Step 2 Click **Manage Cast** to learn more.

Step 3 Stop. You have completed this procedure.

Related Topics

- Understand the Media and Schedules Gauge, page 12-1
- Use the Digital Media Players Gauge, page 12-7
- Use the Settings Gauge, page 12-7

Use the Settings Gauge

Procedure

Step 1 Examine the gauge.

Step 2 Click **Manage Settings** to learn more.

Step 3 Stop. You have completed this procedure.

Related Topics

- Understand the Media and Schedules Gauge, page 12-1
- Use the Digital Media Players Gauge, page 12-7
- Use the Cast Gauge, page 12-7

Reference

- Software UI and Field Reference Tables, page 12-8

Software UI and Field Reference Tables

- Elements on the Right Side of the Media and Schedules Gauge, page 12-8

Elements on the Right Side of the Media and Schedules Gauge

The right side of the Media and Schedules gauge counts and categorizes assets of various types that are saved in your media library, and also counts the playlists and presentations that are saved. In addition, it shows 10 categorized shortcuts.

Shortcut	Description
All Digital Signage area	
All Digital Signage	Shows the sum total count of how many assets, presentations, and playlists are saved.
Presentations	Counts the number of presentations that your organization has designed and saved in DMD. Also, a shortcut to Digital Signage > Presentations. The dashboard does not show this information to you unless you are logged in as an administrator or as a user with sufficient permissions to see presentations.
Playlists	Counts the number of ordinary playlists that your organization has populated and saved in DMM. Also, a shortcut to selecting Digital Signage > Playlists. The dashboard does not show this information to you unless you are logged in as an administrator or as a user with sufficient permissions to see playlists.
Create Presentation	A shortcut that starts Digital Media Designer. The dashboard does not show this information to you unless you are logged in as an administrator or as a user with sufficient permissions to create presentations.

Shortcut	Description
All Assets area	
• HTML • IMAGES • UDP • SDP • FIRMWARE • FLASH • VIDEO • RTSP • AUDIO • RTP	Shortcuts to open your media library, filtering it to describe assets of only one type. Also counts how many assets of each type are saved in your media library. The dashboard does not show this element to you unless you are logged in as an administrator or as a user with sufficient permissions to see assets in the media library.
Add Asset	Opens the Add Asset dialog box, from which you can add assets to your media library. The dashboard does not show this element to you unless you are logged in as an administrator or as a user with sufficient permissions to add assets to at least one category within the media library.

Related Topics

- Use the Right Side of the Media and Schedules Gauge, page 12-6
- Use the Digital Media Players Gauge, page 12-7
- Use the Cast Gauge, page 12-7
- Use the Settings Gauge, page 12-7

CHAPTER 13

Register DMPs

Revised: April 4, 2012
OL-15762-04

- Concepts, page 13-1
- Procedures, page 13-13
- Reference, page 13-21

Audience

We prepared this material with specific expectations of you.

- **Everyone**—You understand IP addresses, subnets, and other LAN fundamentals.
- **Everyone**—Your user account permissions allow you to manage DMPs.
- **Medianet Users**—You understand Medianet fundamentals and have hands-on experience in its configuration and use. Or, because you lack this specialization, you will study technical materials on Cisco.com as needed.

Concepts

- Overview, page 13-1
- Glossary, page 13-2
- Restrictions, page 13-10
- Guidelines, page 13-11
- Understand the Sequence of Operations for Non-Medianet Autoregistration, page 13-12

Overview

Before you can start to manage DMPs centrally for use with the features of *Cisco Digital Signs* or *Cisco Cast*, you must register them with DMM. You can automate this registration process or run it manually for one DMP at a time.

- Cisco DMS-native autoregistration finds every DMP in the subnets that you specify and then configures these DMPs to recognize and trust your DMM appliance. It restarts the DMPs and then registers them in DMM for centralized management.
- Medianet autoregistration finds any DMP automatically when you attach it to a Medianet-ready switch in your Enterprise. This method optimizes the switch port for rich media delivery, and then registers the DMP in DMM for centralized management.

Glossary

Timesaver Go to terms that start with... [A | C | D | L | M].

A

autoregistration *See* MSI registration service.

Auto Smartports[1] A collection of interface-level switch commands bundled together as a macro that configures a switchport without human intervention. Upon detecting a connection to one of its physical interfaces (or "ports"), a Medianet-ready switch uses CDP packets or a similar mechanism[2]—in tandem with a *port-based network access control* (PNAC) standard such as 802.1x/MAB—to learn what type of device has connected to it. Device identification triggers the appropriate Auto Smartports macro to run automatically on the switch and configure its interface appropriately for the detected device type. This behavior eases the administrative burden of configuring multiple switchports manually. (Similarly, when there is a "link-down" event on the port, the switch removes the macro.) In the ITU model and framework for network management, known as *FCAPS*, Auto Smartports macros act in support of what's called *configuration management*.

See *Auto Smartports Configuration Guide, Release 12.2(58)SE* at http://cisco.com/en/US/docs/switches/lan/auto_smartports/12.2_58_se/configuration/guide/aspcg.html.

1. Infrequently abbreviated as *ASP*.
2. Such as Link-Level Discovery Protocol (LLDP) packets, packets that include specific MAC addresses or Organizational Unique Identifiers (OUIs), or attribute-value pairs within a RADIUS response.

C

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CDP *Cisco Discovery Protocol*. DMPs and other devices that support CDP can communicate facts about themselves, amongst themselves, over any physical network medium that supports *Subnetwork Access Protocol* (SNAP) encapsulation. CDP uses the *data link layer*, which connects physical network media to upper-layer protocols. And because CDP operates at this level, two or more CDP devices that support different network layer protocols (for example, IP and *Novell IPX*) can learn about each other.

Specifically, CDP causes devices to advertise not only their existence, but also their platform types, protocols, IP addresses, and SNMP-agent addresses to neighboring devices on their LAN switch or WAN. And when their connected switch is Medianet-ready, device identification can also trigger an Auto Smartports macro to run automatically.

Thus, CDP facilitates discovery—by network management applications—of Cisco devices that are neighbors of known devices. And this is particularly useful when such previously undiscovered neighbors use lower-layer, transparent protocols. After they possess information about such devices, network management applications can send SNMP queries to them.

In addition, CDP detects native VLAN and port duplex mismatches.

D

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DHCP

Dynamic Host Configuration Protocol. A standard method for devices to request, and servers to allocate, IP addresses in a network without human intervention.

DHCP option 125

An optional DHCP relay class that:

- Injects “vendor-identifying, vendor-specific information” into the request (within a DHCP DISCOVER message) to receive a dynamic IP address.
- Identifies the type of client sending the DHCP DISCOVER message.

In turn, a DHCP server that is configured to support Option 125 can relay the client-generated request to some other DHCP server. This mechanism allows an organization to designate DHCP servers for clients that meet particular criteria. For example, you might want all of your DMPs to receive their IP addresses from a DHCP server that you reserve for this purpose exclusively.

L

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Location Services

Mechanism by which a device can learn its actual physical ("civic") location through its connection to a Medianet-ready switch. Upon learning its location, the device can then share this information with peers, management servers, and other equipment on its network. The physical location of a DMP is almost always an important factor in which central management server it should trust, which assets it should play, which commands it should run, and which schedule it should follow.

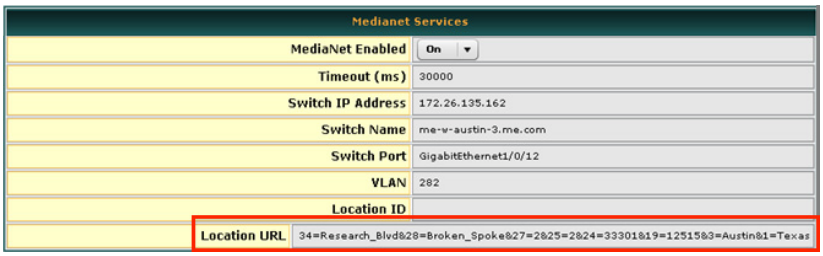
Someone must configure two essential values on your Medianet-enabled switch: "*civic-location-id*" and "*additional-location-information*." These values are encapsulated into a CDP message that endpoints receive.

civic-location-id

This value describes the physical site—including the municipality, street address, floor designation, and so on—where a switch and its attached nodes are deployed.

additional-location-information

This value describes any additional details to inject into the encapsulated CDP message. As this is a data injection, it depends wholly on the presence of a defined *civic-location-id* value. Absent **that** value, there is no way for **this** value to reach any endpoint (CSCti85043). Later, when you plug a Medianet-ready DMP into a properly configured switch, the Location Services feature of MSI populates the Location URL field automatically in DMPDM.



Note **CDP and LLDP constrain how much location information you can store on a Medianet-enabled switch.** Make sure that this information never exceeds 255 bytes.

Note **A DMP 4400G cannot receive or use Location Services information over Wi-Fi.** Its connection type to your Medianet-enabled switch must be Ethernet.

Tip ***Is the Location ID value blank in DMPDM?*** If so, make sure that a civic-location-id value is defined correctly on your switch. (CSCti85043).

M

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Medianet

End-to-end intelligent architecture for optimized delivery of rich media to a variety of endpoints throughout an enterprise. Cisco Medianet is media-aware, endpoint-aware, and network-aware.

MSI

Media Services Interface. Announces services to a DMP or any other Medianet-ready device that you connect to a Medianet-enabled switch. MSI tells devices about their neighbors and their civic location.

MSI registration service

Medianet feature by which:

- Devices send encrypted registration requests to management servers.
- Servers receive such requests, respond to them, and store records in a local database.

MSI service discovery

Mechanism that applies DHCP option 125 packets to advertise—and poll for—the availability of particular services in a network. Service Discovery also notes which hosts provide these services. For your purposes as a DMP administrator, Medianet should know that a DMM server is available and know exactly which addressable node it is on your network. So naturally, you must configure your DHCP server to facilitate this information-sharing model. Configuration methods vary among platforms and implementations.

An example here shows entries in the **dhcpd.conf** file for a Linux-based DHCP server called *dhcpd*. Entries like these advertise the IP address of your authoritative DMM appliance—converted here from decimal to hex and shown in red—to any DMPs that should trust its directives implicitly.

```
option domain-name "example.com";
option domain-name-servers 192.168.1.1;
option option-125 code 125 = string;
default-lease-time 600;
max-lease-time 7200;
authoritative;
log-facility local7;
subnet 192.168.1.0 netmask 255.255.255.0 {
  range 192.168.1.200 192.168.1.210;
  option routers 192.168.1.1;
  option subnet-mask 255.255.255.0;
}
class "DMM" {
match if option option-125 = "\x00\x00\x00\x09\x06\x13\x04\x01\x44\x4d\x4d";
option option-125
"\x00\x00\x00\x09\x0b\x14\x09\x01\x80\x6b\xe0\xbc\x1f\x90\x00\x01";
}
```

Tip **The Linux CLI can easily convert IP address octets from decimal to hexadecimal.**

`$ echo 'ibase=10;obase=16;` octet `' | bc` ← *(Remember to use a closing quote mark before the pipe.)*

And so, in keeping with the previous conversion example, shown in red....

- **128** becomes **x80**
- **107** becomes **x6b**
- **224** becomes **xe0**
- **188** becomes **xbc**

In contrast, the DHCP offering in Windows Server 2008 (and, likewise, Windows Server 2003) cannot handle DHCP option 125 queries natively. Therefore, you must install a "callout" DLL that injects this ability into the server before you can configure it to advertise the availability of any service.

Note For **32-bit** Windows Server, the DLL filename is DHCPSDDLL**x86**.DLL.
For **64-bit** Windows Server, the DLL filename is DHCPSDDLL**x64**.DLL.

Afterward, you must edit **\Medianet\msi\apps\dhcpsddll\src\dhcpsdconfig.reg** to include a *3-tuple* (**IP,port,transport**), converted to hexadecimal, that identifies your DMM appliance as a provider of centralized management for DMPs.

```
[HKEY_LOCAL_MACHINE\SOFTWARE\Cisco]

[HKEY_LOCAL_MACHINE\SOFTWARE\Cisco\DhcpSd\Settings]
"DebugLevel"=dword:00000000
"IgnoreProcessItFromChain"=dword:00000001

[HKEY_LOCAL_MACHINE\SOFTWARE\Cisco\DhcpSd\Records\1]
"DMM"=hex:0a,c2,33,2a,1f,90,00,01
```

And finally, you must add two keys to the Windows registry, under

`\HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\DHCPServer\Paramters`

- **CalloutEnabled REG_DWORD 1**
- **CalloutDlls REG_MULTI_SZ** <*full_path_to_DLL*>

Note **See the Medianet documentation on Cisco.com for detailed instructions.**

Partial Support for Cisco Medianet 2.1 Features

Some DMP endpoints support some Cisco Medianet 2.1 features.

Note **We do not support any Medianet features on DMP 4305G endpoints.**

Tip

- **To assess your network for Medianet readiness, see http://cisco.com/go/mra.**
- **To review solution reference network designs (SRNDs) for Medianet, see http://www.cisco.com/en/US/solutions/ns340/ns414/ns742/ns819/landing_vid_medianet.html.**

DMP 4310G	DMP 4310G endpoints support discovery via DHCP and can learn their physical location. In addition, they know and can broadcast their product type, model, and software version. Through their use of your Medianet, they can receive their IP address, VLAN assignment, and network configuration settings automatically. Furthermore, they receive information from Medianet through DHCP[1] that helps them to autoregister themselves with your DMM server. Later, after a successful autoregistration, the splash screen on these DMPs includes key parameters and states explicitly that setup succeeded.
DMP 4400G	Medianet 2.1 feature support by DMP 4400G endpoints is equivalent to support by DMP 4310G endpoints, **with just one exception**. Ordinarily, a DMP 4400G can participate in networks via either an Ethernet connection or a Wi-Fi connection. **However:** A Wi-Fi connection by a DMP 4400G prevents it from obtaining or using any Location Services information that Medianet might be configured to provide.

1. With DHCP option 125 (V-I Vendor-Specific Information) for service discovery, after you configure your supported DHCP server to support this option. See **RFC 3925**.

Understand Medianet Autoconfiguration for DMPs

DMP 4310G and 4400G endpoints can use CDP to announce and identify themselves on networks. And you might use Ethernet cables to connect such DMPs to switches where the autoconfiguration (Auto Smartports) features of Medianet are enabled. When you do, these switches recognize from the CDP announcements that the newly connected devices are DMPs.

After recognizing that a DMP is attached to one of its Ethernet ports, the switch can apply to this port a set of built-in configuration macros (Auto Smartports) that are optimized specifically for DMPs. By configuring so many settings automatically, Medianet can accelerate and simplify DMP mass deployments, QoS configuration, and asset tracking. In turn, these simplified deployments can lower your operating costs.

Information That Medianet and DMPs Exchange

Medianet and a DMP can exchange these types of data.

- name of the chassis
- system name
- system object
- hardware revision
- firmware revision
- software revision
- serial number
- manufacturing name
- model name
- asset identifier
- CDP timeout
- VLAN assignment
- switch port assignment
- switch name and model
- switch IP address
- location string

If you would like to learn more about Medianet, see http://cisco.com/go/medianet.

Medianet Activation Workflow for a DMP 4310G or 4400G

Medianet support is enabled by default on DMPs in Cisco DMS release 5.3. However, you can turn this support Off or back On again at your discretion.

Note **We do not support any Medianet features on DMP 4305G endpoints.**

Tip **You can deactivate Medianet support on one or more DMPs.** Simply reverse step **3b** in this workflow.

1. Issue the command to enable Medianet 2.1 on a supported network switch that runs Cisco IOS 12.2(55.0.36)SE).

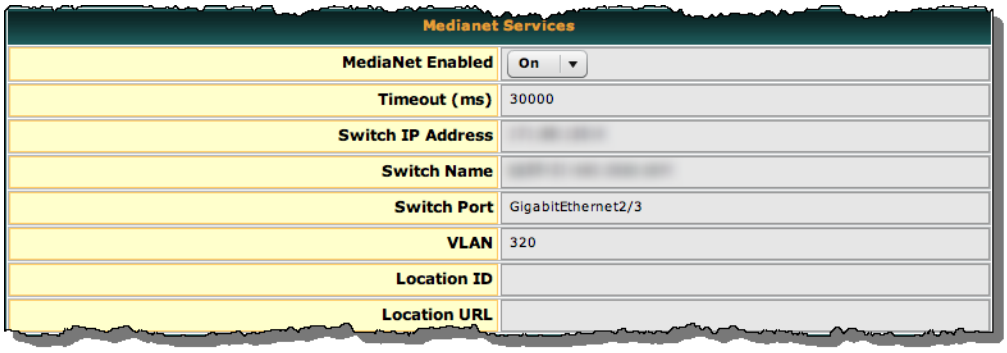
   ```
   Switch(config)#macro auto global processing
   ```

2. Enable the Auto Smartports feature globally on the switch.
3. Use either DMPDM or Digital Signs to enable Medianet features on your DMP 4310G or 4400G.

   DMPDM

   a. Click **Network** in the Settings area. ‘

   b. Choose **On** from the Medianet Enabled list in the Medianet Services area.

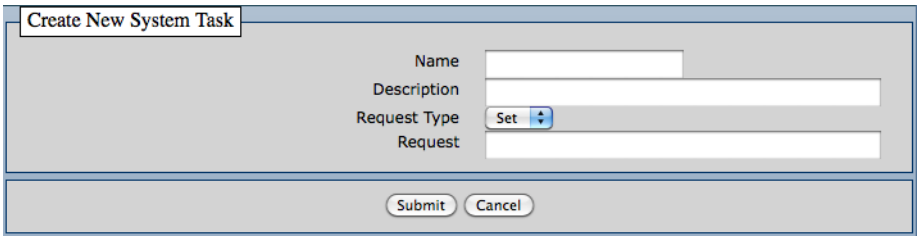
   

   c. Save this changed setting, and then restart your DMP.

Digital Signs

a. Create and save a system task that uses:

- **Set** as its request type.
- `init.startService_msi=yes&mib.save=1&mng.reboot=1` as its request string.



b. Schedule and deploy the system task to run on your DMP 4310G or 4400G.

The request string includes a command to restart your DMP.

Restrictions

Non-Medianet Autoregistration

- DMM-native autoregistration **does not** use any Medianet technologies. It uses NMAP (CSCtk02451).

DHCP

- As of May 2011, these DHCP servers have passed our tests for using Medianet with DMPs.
  - Linux ISC dhcpd
  - The DHCP implementation in Windows Server 2003
  - The DHCP implementation in Windows Server 2008
  - Cisco Network Registrar

Note **This Cisco DMS release does not support any DHCP server that runs on any Cisco router or switch.**

Login Credentials

- All DMPs that you manage centrally in DMM must share one identical set of DMPDM login credentials.

Medianet

- A DMP 4310G might come to use the wrong IP address when it relies upon a Medianet switch where more than one VLAN uses DHCP. For the switch to bungle IP address assignment in this way, temporary conditions that do not sever the DMP's AC power connection must nonetheless interrupt its network connection through the switch. (Thus, this problem cannot possibly occur while the DMP uses PoE.) Specifically, the Medianet switch assigns its default VLAN to your DMP. But then—after your DMP's network connection is interrupted and restored—your Medianet switch assigns to your DMP a dynamic IP address from another VLAN on this same switch. The mismatch disrupts centralized management of your DMP.

  To prevent this problem or to recover from it, you must run a shell script on your switch. See the "Prevent DHCP Address Assignments to the Wrong VLAN" section on page 13-24.

Guidelines

- Limit Your Use of Manual Registration, page 13-11
- General Best Practices for Non-Medianet Autoregistration, page 13-11
- Best Practices to Schedule Non-Medianet Autoregistration Events, page 13-11

Limit Your Use of Manual Registration

Caution **In addition to our support for Medianet features to autoregister your DMPs, DMM includes an efficient, timesaving feature of its own to autoregister your DMPs. Despite the presence of two robust and largely automated methods, you can register a DMP manually for testing purposes.**

We recommend that you never use the method to register a DMP manually, except in a lab for testing purposes. Manual registration is neither suitable for, nor scalable in, a production network.

Eventually, when autoregistration finds and adds a DMP that you registered manually, the device inventory database develops multiple records for the one device. We see this duplication as an IP address conflict, which interferes with normal operation and triggers an alarm in DMS-Admin.

General Best Practices for Non-Medianet Autoregistration

Choose Network Ranges Cautiously

When you autoregister DMPs that are new to your DMM appliance, they restart immediately even when they are known already to another DMM appliance, and even when they are running an event. Therefore, when your organization uses more than one DMM appliance, be careful to autoregister only those DMPs that you are not already managing centrally elsewhere. Otherwise, you might temporarily disrupt media playback for the signs in your network.

Best Practices to Schedule Non-Medianet Autoregistration Events

Stagger Deployment Schedules

DMP autoregistration operations that are native to DMM (as opposed to the superficially similar operations in a Medianet) occur in a sequence that does not tolerate disruption.

- You can schedule multiple DMP autoregistration operations to run simultaneously only when they will all search the same one subnet.
- **However**, when you define DMP autoregistration operations to search **more than one** subnet, you must not schedule them to run simultaneously, or even to overlap. When they overlap, only the first of them can run at all. Furthermore, DMM does not show any error message to explain why the similar operations all failed.

- Therefore, you should plan to stagger the start times by at least 35 minutes apiece when you schedule DMP autoregistration tasks that will search multiple subnets.

Note **In a very large network that contains thousands of DMPs, the necessary interval might be longer than 35 minutes.**

- We recommend that you autoregister DMPs after normal business hours. Autoregistration of 5,000 DMPs takes approximately 4 minutes in a fast network and does not use polling.

Set Events to Recur as Needed

DMM runs any non-Medianet autoregistration job once each time that you schedule it to run.

DMM does not scan the specified network range continuously for DMPs that you might add in the future. Therefore, when you plan to add DMPs frequently, you should schedule a non-Medianet autoregistration event to recur accordingly.

- Your DMPs must all share identical user credentials for their respective accounts. Otherwise, non-Medianet autoregistration cannot occur. Nor can DMM centrally manage DMPs whose passwords differ from your universal DMP password.

Note **Special characters, including exclamation points (!), question marks (?), ampersands (&), at signs (@), and asterisks (*) are forbidden in DMP passwords.** (CSCsq41233; CSCsw47873; CSCub67295)

- Verify that the routers, switches, and firewalls between your DMM appliance and the NMAP address range for non-Medianet autoregistration allow TCP port 7777 to send and receive packets (CSCtk02451). Verify also that ICMP (ping) traffic is allowed to pass from your DMM appliance to your DMPs on this port. When any of this traffic is blocked anywhere along its route, non-Medianet autoregistration cannot occur.

Caution **You can stop untrusted DMM appliances from seizing control of your DMPs.** Simply configure your network firewall to restrict which devices can send inbound traffic to your DMPs over TCP port 7777.

Understand the Sequence of Operations for Non-Medianet Autoregistration

DMM-native (non-Medianet) autoregistration operations follow this sequence.

1. DMM scans every device in the specified address range, looking for devices where TCP port 7777 is open.
2. DMM confirms which such devices are DMPs.
3. DMPs receive information about your DMM server, and are then instructed to restart.
4. Upon restarting, DMPs transmit updated information about themselves to DMM and set their own status to “Up.”
5. DMM generates new database records for all DMPs that are newly autoregistered.
6. DMM assigns newly registered DMPs to any DMP groups that match the address range that you entered.
7. DMM assigns newly registered DMPs to the “All DMPs” group.

Related Topics

- Add or Edit Address Ranges for Non-Medianet Autoregistration, page 13-17
- Elements to Autoregister DMPs, page 13-22

Procedures

- Use DMPDM to Prepare a DMP for Manual Registration, page 13-13
- Use a System Task to Normalize DMP Passwords, page 13-14
- Establish Trust Between Digital Signs and your Centrally Managed DMPs, page 13-16
- Add or Edit Address Ranges for Non-Medianet Autoregistration, page 13-17
- Delete Address Ranges for Non-Medianet Autoregistration, page 13-18
- Add or Edit One DMP Manually, page 13-19
- Delete DMPs Manually from Your Device Inventory, page 13-20

Use DMPDM to Prepare a DMP for Manual Registration

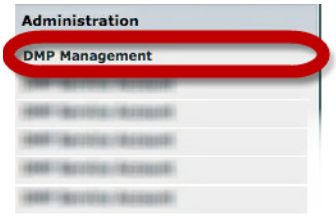
When somehow neither autoregistration type is suitable, such as for testing purposes, you can perform the required steps manually to register a DMP in DMM. However, you must first prepare the DMP.

Procedure

Step 1 Point your browser to the IP address of a DMP that you will manage centrally.

Step 2 At the DMPDM login prompt, enter the username and password that you configured for the DMP.

Step 3 Click **DMP Management** in the Administration area, and then enter the required values.

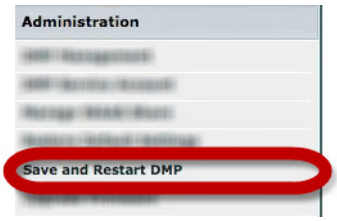


a. Enter in the DMM Appliance IP Address field the full and correct IP address of your DMM appliance.

b. Enter in the DMM Server Timeout (in seconds) field the maximum number of seconds that your DMP should wait for a response from your DMM appliance.

Step 4 Click **Apply** to confirm your entries.

Step 5 Click **Save and Restart DMP** in the Administration area, and then click to confirm.



Step 6 Stop. You have completed this procedure.

Related Topics

- Add or Edit Address Ranges for Non-Medianet Autoregistration, page 13-17
- Add or Edit One DMP Manually, page 13-19

Use a System Task to Normalize DMP Passwords

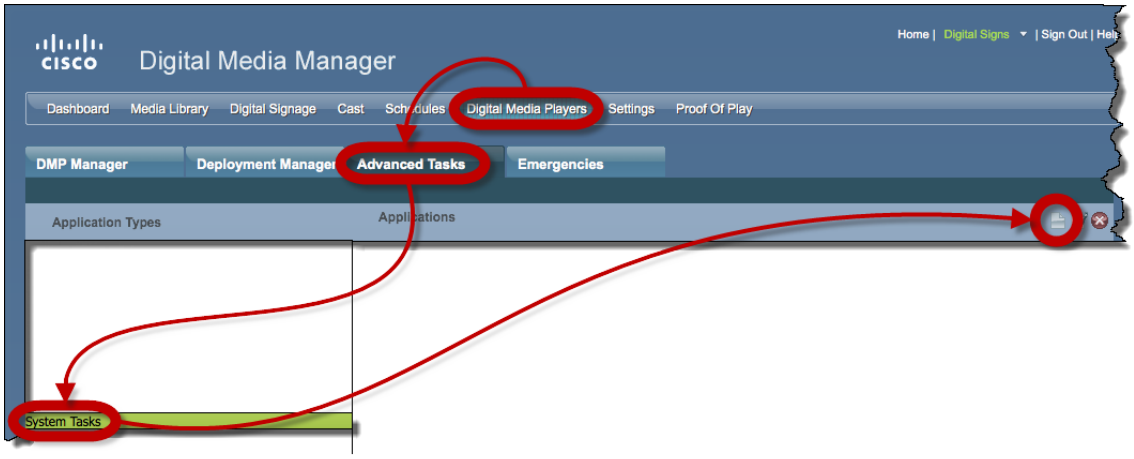
Do the management passwords on any of your DMPs differ from your norm for DMPs? Or do any DMP passwords include forbidden characters?

If so, you must edit these values to normalize them. Centralized management of DMPs is possible in DMM only when your DMPs all use one identical username (**admin**) and one identical password.

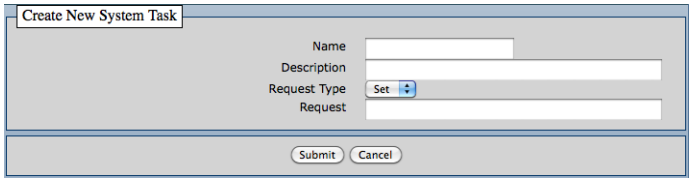
Note **Special characters, including exclamation points (!), question marks (?), ampersands (&), at signs (@), and asterisks (*) are forbidden in DMP passwords.** (CSCsq41233; CSCsw47873; CSCub67295)

Procedure

Step 1 Choose **Digital Media Players > Advanced Tasks > System Tasks**, and then click the blank page icon to create a new system task.



The Create New System Task form opens.



Step 2 Enter a name and description for your new task.

Step 3 Choose **Set** from the Request Type list.

Step 4 Enter this command string in the Request text box.

```
init.WEB_password=new_password&mib.save=1&mng.reboot=1
```

Step 5 Click **Submit** to save the task and make it available to use.

Step 6 Send the password-changing instruction simultaneously to multiple DMPs in your network.

a. Choose **Schedules > Play Now**.

b. Choose a group from the DMP Groups object selector.

c. Check the check box for each DMP where the DMP Web Account password should change.

d. Choose from the Select an Event Type list the system task that you named in Step 2.

e. Click **Submit**.

Note **After your targeted DMPs restart, you must update DMM user credential entries at Settings > Server Settings.**

Step 7 Stop. You have completed this procedure.

What to Do Next

- **MANDATORY**—Establish Trust Between Digital Signs and your Centrally Managed DMPs, page 13-16

Establish Trust Between Digital Signs and your Centrally Managed DMPs

You must tell *Cisco Digital Signs* what user credentials to use at 5-minute intervals when it polls your DMPs and at any other time when it sends commands, queries, schedules or assets to your DMPs. Also, you must tell your DMPs which one DMM appliance to trust with this authority.

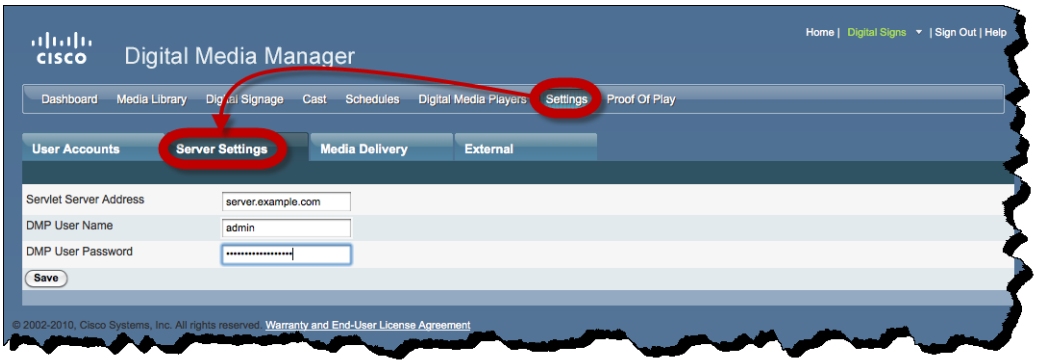
Note **This procedure assumes that you manage your DMPs centrally.** Furthermore, it assumes that you use *Cisco Digital Signs* and not *Cisco StadiumVision* for this purpose.

Before You Begin

- Verify that your DMPs all use identical credentials.

Procedure

Step 1 Choose **Settings > Server Settings**.



Step 2 Enter the required values.

- **Servlet Server Address**—If you have not already done so, enter the DNS-resolvable hostname and domain (together, these are the *FQDN*) for your DMM appliance, such as **dmm.example.com**.

  Note **YOUR ENTRY HERE MUST BE DNS-RESOLVABLE!** Otherwise your DMPs cannot load any media assets or other deployments from DMM. (**CSCtx15347**)

- **DMP User Name**—Enter **admin** or, when you have changed the DMP Web Account username from the default value, enter the new username that you assigned.
- **DMP User Password**—Enter the password that corresponds to the username.

Step 3 Click **Save**.

Step 4 Stop. You have completed this procedure.

Caution **DMP credentials must match exactly in DMPDM and *Cisco Digital Signs*.** If you ever use a system task in *Cisco Digital Signs* to change DMP credentials, you must then return here and enter matching values. Otherwise, *Cisco Digital Signs* will use the wrong credentials when it tries to communicate with your DMPs. Then, after communication fails, it will consider your DMPs to be unreachable and unmanageable.

Add or Edit Address Ranges for Non-Medianet Autoregistration

Even without access to Cisco Medianet technologies, you can autoregister all of the DMPs in any NMAP address range that you specify (CSCtk02451). Afterward, the registered DMPs support centralized management from DMM.

Procedure

Step 1 Choose **Digital Media Players > Advanced Tasks**.

Step 2 Click the **DMP Discovery** row in the Application Types list.

Step 3 Do one of the following.

- *Would you like to define an NMAP range?*

  When you will define a new range for autoregistration

  a. Click **Add New Application**.

  b. The page is refreshed.

  c. Name and describe the deployable event that should use these settings.

- *Would you like to edit an NMAP range?*

  When you will edit a saved range for autoregistration

  a. Click the Applications list row whose settings should be edited.

  b. Click **Edit Application**.

  c. The page is refreshed.

Step 4 Set the necessary values.

Step 5 Click **Submit** to save your work.

OR

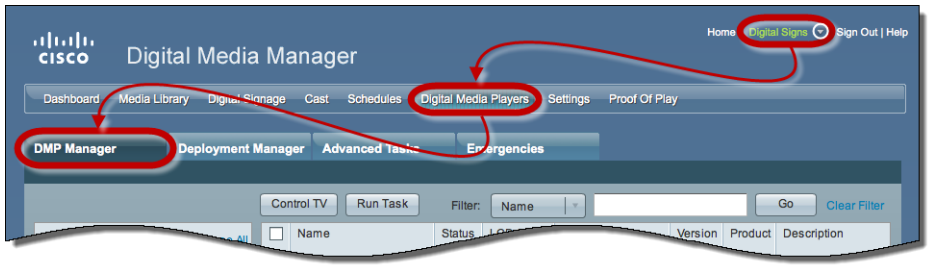
Click **Cancel** to discard your work.

Step 6 Schedule when to deliver or run this event.

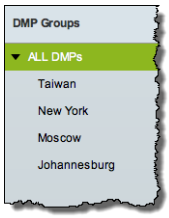
Step 7 Stop. You have completed this procedure.

Timesaver **Alternatively, you can use DMM-native (non-Medianet) autoregistration to populate a DMP group.**

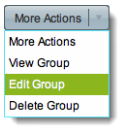
1. Choose **Digital Media Players > DMP Manager.**



2. Click a group to highlight it.



3. Choose **More Actions > Edit Group.**



4. Proceed as you would with any other non-Medianet autoregistration.

Related Topics

- Understand the Sequence of Operations for Non-Medianet Autoregistration, page 13-12
- Elements to Autoregister DMPs, page 13-22
- Elements to Configure Non-Medianet Autoregistration, page 13-23

Delete Address Ranges for Non-Medianet Autoregistration

You can delete network range definitions you saved for DMP autoregistration events.

Procedure

Step 1 Choose **Digital Media Players > Advanced Tasks**.

Step 2 Click the **DMP Discovery** row in the Application Types list.

Step 3 Click the Applications list row whose settings should be deleted.

Step 4 Click **Delete Application**.

Step 5 Click **Submit** to save your work.

OR

Click **Cancel** to discard your work.

Step 6 Schedule when to deliver or run this event.

Step 7 Stop. You have completed this procedure.

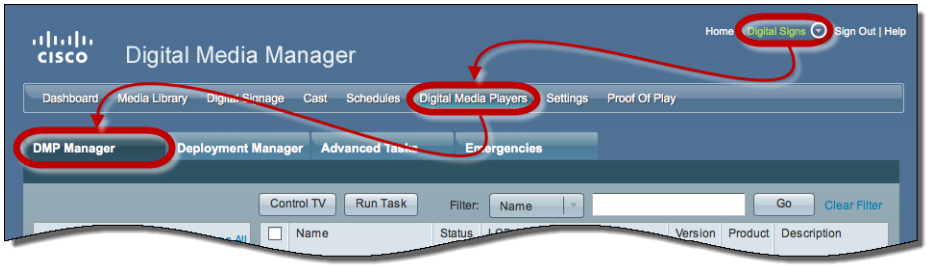
Related Topics

- Elements to Configure Non-Medianet Autoregistration, page 13-23

Add or Edit One DMP Manually

Procedure

Step 1 Choose **Digital Media Players > DMP Manager**.



Step 2 *Do either of the following.*

- Click the **Add DMP** icon above the DMP List table.

  OR

- Click the name of a DMP group to choose it in the object selector, and then click the **Edit DMP** icon above the DMP List table.

Tip **Is the Add DMP button missing from your DMP Manager page?** If so, something has blocked port 843 on your switch or router. Open port 843 and try again.

Step 3 Choose options and enter required values for the DMP.

Note **After you register a DMP manually, its Description value in DMP Manager might be blank, even though your other DMPs show "registered" as their Description value.** This happens only when you have not entered anything in the Description field. (CSCtr51123)

Step 4 Click **Submit** to save your work. Alternatively, click **Clear** to discard your work.

Step 5 (Optional) Add the DMP to a DMP group.

Step 6 Schedule when to deliver or run this event.

Step 7 Stop. You have completed this procedure.

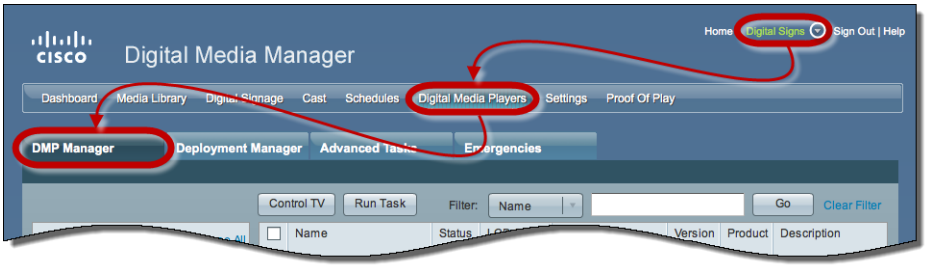
Related Topics

- Elements to Add or Edit One DMP Manually, page 13-22
- Add or Edit Address Ranges for Non-Medianet Autoregistration, page 13-17

Delete DMPs Manually from Your Device Inventory

Procedure

Step 1 Choose **Digital Media Players > DMP Manager**.



Step 2 *Do either of the following.*

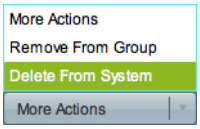
- Browse the DMP Groups tree until you find the parent group whose member DMP should be deleted. Then, click the name of this DMP group.

  OR

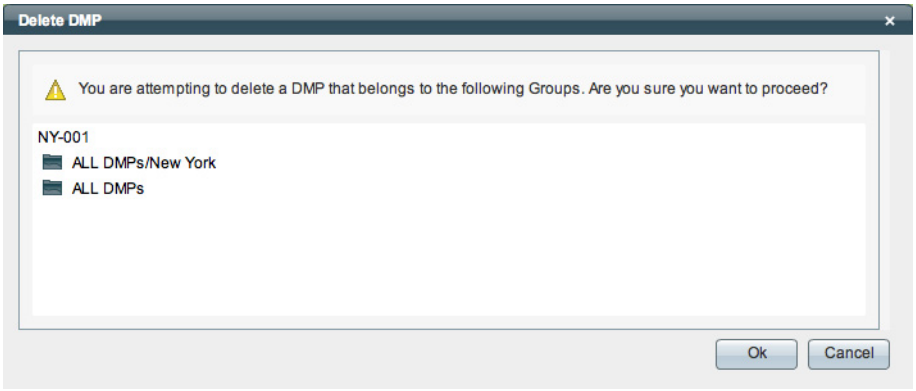
- Choose an option from the Filter list to restrict which DMPs the DMP List table describes.

Step 3 Click to highlight the DMP to be deleted.

Step 4 Choose **More Actions > Delete from System**.



DMM shows a warning message and asks that you either confirm or cancel your request.



Step 5 Click **OK** to save your work.

OR

Click **Cancel** to discard your work.

Step 6 Schedule when to deliver or run this event.

Step 7 Stop. You have completed this procedure.

Related Topics

- Elements to Delete One DMP Manually, page 13-23

Reference

- Software UI and Field Reference Tables, page 13-21
- FAQs and Troubleshooting, page 13-28

Software UI and Field Reference Tables

- Elements to Autoregister DMPs, page 13-22
- Elements to Add or Edit One DMP Manually, page 13-22
- Elements to Delete One DMP Manually, page 13-23
- Elements to Configure Non-Medianet Autoregistration, page 13-23

Elements to Autoregister DMPs

Navigation Path

Either of these.

- Digital Media Players > DMP Manager > *Create Group*
- Digital Media Players > DMP Manager > More Actions > *Edit Group*

Table 13-1 Elements to Add and Edit DMP Groups

Element	Description
Name	A unique and human-readable name for the group.
Description	A brief description of the group and its purpose.
Add Range	IP address subnet ranges in which to find and autoregister DMPs. • Add the IP address subnet range you have inserted in the Range (CIDR) field
Delete a Range	Deletes the range that you highlighted.
Range (CIDR)	The field where you add/edit one IP address subnet range that should be automatically added to the group. • Only CIDR format (IP address/netmask) is valid/acceptable
Automatic Grouping Range	Shows a list of all the defined CIDR address ranges. Click a range to edit it.

Related Topics

- Add or Edit Address Ranges for Non-Medianet Autoregistration, page 13-17
- Understand the Sequence of Operations for Non-Medianet Autoregistration, page 13-12

Elements to Add or Edit One DMP Manually

Navigation Path

Either of these.

- Digital Media Players > DMP Manager > *Add DMP*
- Digital Media Players > DMP Manager > *Edit DMP*

Tip **Is the Add DMP button missing from your DMP Manager page?** If so, something has blocked port 843 on your switch or router. Open port 843 and try again.

Table 13-2 Elements to Add and Edit One DMP

Element	Description
Name	A unique and human-readable name for the DMP. Do not use any name that includes the '&' character.
IP Address	The public IP address that receives instructions and data from DMM.
MAC Address	The MAC address that the DMP NIC uses.

Table 13-2 Elements to Add and Edit One DMP (continued)

Description	**Note** **After you register a DMP manually, its Description value in DMP Manager might be blank, even though your other DMPs show "registered" as their Description value.** This happens only when you have not entered anything in the Description field. (CSCtr51123) Optional, brief description of the DMP, its deployment site, or other details that are relevant or meaningful to you.
WLAN	The WLAN address of a DMP 4400G. **Note** **We do not provide this value for other DMP models.**
Serial No.	The serial number of a DMP 4310G. **Note** **We do not provide this value for other DMP models.**

Elements to Delete One DMP Manually

Navigation Path

Digital Media Players > DMP Manager > *Delete DMPs*

Table 13-3 Elements to Delete One DMP

Element	Description
Delete DMP	Deletes from your inventory database all records of the DMP that you highlighted.

Related Topics

- Delete DMPs Manually from Your Device Inventory, page 13-20

Elements to Configure Non-Medianet Autoregistration

Navigation Path

Digital Media Players > Advanced Tasks > *DMP Discovery*

Table 13-4 Elements to Configure Autoregistration

Element	Description
Name	A unique and human-readable name for this autoregistration IP address range task. You must enter a name. The name is unique in the sense that you have not used it previously as the name for anything that can be scheduled.
Description	A brief description. The description is optional.
Discovery IP Range	The NMAP syntax to describe one or multiple ranges of IP addresses.
WLAN	The WLAN address of a DMP 4400G. **Note** **We do not provide this value for other DMP models.**
Serial No.	The serial number of a DMP 4310G. **Note** **We do not provide this value for other DMP models.**

Prevent DHCP Address Assignments to the Wrong VLAN

Note **You can run the following shell script** ("mandatory.cdp.sh") **on a Cisco Catalyst 3750 Series switch. This shell script can prevent a type of DHCP-VLAN misalignment problem that we describe under the "Medianet" heading in the "Restrictions" section on page 13-10.**

Tip **To learn about shell script execution on your switch, see the documentation for your switch on Cisco.com.**

\

```
##::cisco::eem::event_register_neighbor_discovery interface .* cdp update
#------------------------------------------------------------------
#
# February 2009, Cisco EEM team
#
# Copyright (c) 2009-2010 by Cisco Systems, Inc.
# All rights reserved.
#------------------------------------------------------------------
fetch IS_MASTER /oper/platform/stack/manager/all/role
if [[ $IS_MASTER -eq NO ]]; then
    return 0
fi

INTERFACE=$_nd_local_intf_name
fetch IS_ASP_ENABLED /config/interface{$INTERFACE}/macro/auto/processing/enabled
if [[ $IS_ASP_ENABLED -eq NO ]]; then
    return 0
fi

fetch IS_AUTH_ENABLED /config/interface{$INTERFACE}/macro/auto/processing/auth-enabled
if [[ $IS_AUTH_ENABLED -eq YES ]]; then
    fetch CDP_CHECK_ENABLED
/config/interface{$INTERFACE}/macro/auto/processing/cdp-fallback
    if [[ $CDP_CHECK_ENABLED -eq NO ]]; then
        return 0
    fi
fi

DETECTION_CDP="cdp"
ROUTER="CISCO_ROUTER_EVENT"
SWITCH="CISCO_SWITCH_EVENT"
LWAP="CISCO_WIRELESS_LIGHTWEIGHT_AP_EVENT"
AP="CISCO_WIRELESS_AP_EVENT"
PHONE="CISCO_PHONE_EVENT"
IPVSC="CISCO_IPVSC_EVENT"
LAST_RESORT="last-resort"
DMP="CISCO_DMP_EVENT"

fetch IS_CDP_DETECTION_ENABLED
/config/interface{$INTERFACE}/detection_method{$DETECTION_CDP}/macro_auto_detection_cntrl
if [[ $IS_CDP_DETECTION_ENABLED -eq NO ]]; then
    return 0
fi

fetch CURRENT_TRIGGER /config/interface{$INTERFACE}/macro/description
fetch CURRENT_AP125X /config/interface{$INTERFACE}/macro/device_descr

# Predefine the trigger in case no capabilities match
DEVICE_TYPE="Default device"
```

```
NEW_TRIGGER=CISCO_CDPDEVICE_EVENT
if [[ $_nd_cdp_capabilities_bit_4 -eq YES ]]; then
    DEVICE_TYPE="Host"
    NEW_TRIGGER=CISCO_HOST_EVENT
    if [[ $_nd_cdp_platform =~ ^(CIVS-IPC-2[45]|CIVS-IPC-4[35]) ]]; then
        DEVICE_TYPE="Camera"
        NEW_TRIGGER=CISCO_IPVSC_EVENT
        fetch IS_IPVSC_DETECTION_ENABLED
/config/interface{$INTERFACE}/device_trigger{$IPVSC}/macro_auto_device_cntrl
        if [[ $IS_IPVSC_DETECTION_ENABLED -eq NO ]]; then
           return 0
        fi
    fi
    if [[ $_nd_cdp_platform =~ ^(CTS[13]000) ]]; then
        DEVICE_TYPE="CTS"
        NEW_TRIGGER=CISCO_CTS_EVENT
    fi
    if [[ $_nd_cdp_platform =~ "((Cisco DMP 4305G)|(Cisco DMP 4400G)|(Cisco DMP 4310G))"
]]; then
            NEW_TRIGGER=CISCO_DMP_EVENT
            DEVICE_TYPE="DMP"
            fetch IS_DMP_DETECTION_ENABLED
/config/interface{$INTERFACE}/device_trigger{$DMP}/macro_auto_device_cntrl
            if [[ $IS_DMP_DETECTION_ENABLED -eq NO ]]; then
                return 0
            fi
    fi
    if [[ $_nd_cdp_platform =~ "^((Cisco IP Phone)|(Cisco IP Confe))" ]]; then
        DEVICE_TYPE="Phone"
        NEW_TRIGGER=CISCO_PHONE_EVENT
        fetch IS_PHONE_DETECTION_ENABLED
/config/interface{$INTERFACE}/device_trigger{$PHONE}/macro_auto_device_cntrl
        if [[ $IS_PHONE_DETECTION_ENABLED -eq NO ]]; then
           return 0
        fi
    fi
fi
if [[ $_nd_cdp_capabilities_bit_7 -eq YES ]]; then
    DEVICE_TYPE="Phone"
    NEW_TRIGGER=CISCO_PHONE_EVENT
    fetch IS_PHONE_DETECTION_ENABLED
/config/interface{$INTERFACE}/device_trigger{$PHONE}/macro_auto_device_cntrl
    if [[ $IS_PHONE_DETECTION_ENABLED -eq NO ]]; then
       return 0;
    fi
fi
if [[ $_nd_cdp_qos_tlv_bandwidth -eq "" ]]; then
   BANDWIDTH_LIMIT=0
else
   BANDWIDTH_LIMIT=$_nd_cdp_qos_tlv_bandwidth
fi
IS_AP125X=""
LIMIT=0

if [[ $_nd_cdp_platform =~ "^(cisco AIR-LAP)" ]]; then
   if [[ $_nd_cdp_platform =~ "^(cisco AIR-LAP125)" ]]; then
      IS_AP125X=AP125X
   else
      IS_AP125X=""
   fi
   DEVICE_TYPE="LightWeight Access Point"
   NEW_TRIGGER=CISCO_WIRELESS_LIGHTWEIGHT_AP_EVENT
   LIMIT=$BANDWIDTH_LIMIT
```

```
   fetch IS_LWAP_DETECTION_ENABLED
/config/interface{$INTERFACE}/device_trigger{$LWAP}/macro_auto_device_cntrl
   if [[ $IS_LWAP_DETECTION_ENABLED -eq NO ]]; then
      return 0
   fi
fi
if [[ $_nd_cdp_platform =~ "^(cisco AIR-AP)" ]]; then
   if [[ $_nd_cdp_platform =~ "^(cisco AIR-AP125)" ]]; then
      IS_AP125X=AP125X
   else
      IS_AP125X=""
   fi
   DEVICE_TYPE="Autonomous Access Point"
   NEW_TRIGGER=CISCO_WIRELESS_AP_EVENT
   LIMIT=$BANDWIDTH_LIMIT
   fetch IS_AP_DETECTION_ENABLED
/config/interface{$INTERFACE}/device_trigger{$AP}/macro_auto_device_cntrl
   if [[ $IS_AP_DETECTION_ENABLED -eq NO ]]; then
      return 0
   fi
fi
if [[ $_nd_cdp_platform =~ "^(cisco AIR-SAP)" ]]; then
   DEVICE_TYPE="Autonomous Access Point"
   NEW_TRIGGER=CISCO_WIRELESS_AP_EVENT
   LIMIT=$BANDWIDTH_LIMIT
   fetch IS_AP_DETECTION_ENABLED
/config/interface{$INTERFACE}/device_trigger{$AP}/macro_auto_device_cntrl
   if [[ $IS_AP_DETECTION_ENABLED -eq NO ]]; then
      return 0
   fi
fi
if [[ $_nd_cdp_capabilities_bit_0 -eq YES ]]; then
    DEVICE_TYPE="Router"
    NEW_TRIGGER=CISCO_ROUTER_EVENT
    fetch IS_ROUTER_DETECTION_ENABLED
/config/interface{$INTERFACE}/device_trigger{$ROUTER}/macro_auto_device_cntrl
    if [[ $IS_ROUTER_DETECTION_ENABLED -eq NO ]]; then
       return 0
    fi
fi
if [[ $_nd_cdp_capabilities_bit_3 -eq YES ]]; then
    DEVICE_TYPE="Switch"
    NEW_TRIGGER=CISCO_SWITCH_EVENT
    fetch IS_SWITCH_DETECTION_ENABLED
/config/interface{$INTERFACE}/device_trigger{$SWITCH}/macro_auto_device_cntrl
    if [[ $IS_SWITCH_DETECTION_ENABLED -eq NO ]]; then
       return 0
    fi
fi
if [[ $DEVICE_TYPE =~ "^((Default device)|Host)$"  ]]; then
   NEW_TRIGGER=CISCO_LAST_RESORT_EVENT
   fetch IS_LASTRESORT_TRIGGER_ENABLED
/config/interface{$INTERFACE}/trigger_type{$LAST_RESORT}/macro_auto_trigger_cntrl
   if [[ $IS_LASTRESORT_TRIGGER_ENABLED -eq NO ]]; then
      return 0
   fi
fi

# With config persistency the macro applied interface commands
# are not removed on linkdown. But when interface comes up and a
# new device has been detected the config should change.
# Checks for current_trigger, new_trigger and triggers being null
# are required so that the new trigger event is generated
# and configs applied without having changing configs when
```

```
# multiple devices are connected to the same interface.
# Configs for only the first device that is detected will be applied.

fetch SW_POE /oper/interface{$INTERFACE}/switch_poe_support
if [[ $NEW_TRIGGER -eq $CURRENT_TRIGGER ]]; then
   if [[ $SW_POE -eq YES ]];then
      if [[ $CURRENT_AP125X -eq $IS_AP125X ]]; then
         set_oper /oper/interface{$INTERFACE}/macro_cfg_reset_pending_state NO
         return 0;
      else
         set_oper /oper/interface{$INTERFACE}/macro_cfg_reset_pending_state YES
      fi
   else
      set_oper /oper/interface{$INTERFACE}/macro_cfg_reset_pending_state NO
      return 0;
   fi
fi

DEF_TRIGGER=CISCO_CUSTOM_EVENT

# trigger $DEF_TRIGGER TRIGGER=$DEF_TRIGGER INTERFACE=$INTERFACE LINKUP=YES
AUTH_ENABLED=$IS_AUTH_ENABLED

# Apply the new trigger as there is none already applied on interface


if [[ $CURRENT_TRIGGER -eq "" ]]; then
    set_oper /oper/interface{$INTERFACE}/macro_cfg_reset_pending_state NO
    fetch ACCESS_VLAN /config/trigger{$NEW_TRIGGER}/vlan_access
    fetch VOICE_VLAN /config/trigger{$NEW_TRIGGER}/vlan_voice
    fetch NATIVE_VLAN /config/trigger{$NEW_TRIGGER}/vlan_native
    if [[ $NEW_TRIGGER -eq CISCO_WIRELESS_AP_EVENT ]]; then
       trigger $NEW_TRIGGER TRIGGER=$NEW_TRIGGER INTERFACE=$INTERFACE LINKUP=YES
LIMIT=$LIMIT SW_POE=$SW_POE AP125X=$IS_AP125X NATIVE_VLAN=$NATIVE_VLAN
       send log facility AUTOSMARTPORT severity 5 mnemonics INSERT Device $DEVICE_TYPE
detected on interface $INTERFACE, executed $NEW_TRIGGER
       return 0;
    fi
    if [[ $NEW_TRIGGER -eq CISCO_WIRELESS_LIGHTWEIGHT_AP_EVENT ]]; then
         trigger $NEW_TRIGGER TRIGGER=$NEW_TRIGGER INTERFACE=$INTERFACE LINKUP=YES
LIMIT=$LIMIT SW_POE=$SW_POE AP125X=$IS_AP125X ACCESS_VLAN=$ACCESS_VLAN
    else
         trigger $NEW_TRIGGER TRIGGER=$NEW_TRIGGER INTERFACE=$INTERFACE LINKUP=YES
AUTH_ENABLED=$IS_AUTH_ENABLED LIMIT=$LIMIT ACCESS_VLAN=$ACCESS_VLAN VOICE_VLAN=$VOICE_VLAN
NATIVE_VLAN=$NATIVE_VLAN
    fi
    send log facility AUTOSMARTPORT severity 5 mnemonics INSERT Device $DEVICE_TYPE
detected on interface $INTERFACE, executed $NEW_TRIGGER
    trigger $DEF_TRIGGER TRIGGER=$DEF_TRIGGER INTERFACE=$INTERFACE LINKUP=YES
AUTH_ENABLED=$IS_AUTH_ENABLED
    return 0;
fi

# Check the reset pending state and only then trigger the new event
# to apply new device configurations.

fetch IS_CFG_RESET_PENDING_STATE /oper/interface{$INTERFACE}/macro_cfg_reset_pending_state
fetch IS_INT_MACRO_CFG_STICKY /config/interface{$INTERFACE}/auto/sticky
STICKY=$IS_INT_MACRO_CFG_STICKY

if [[ $IS_CFG_RESET_PENDING_STATE -eq YES ]]; then
    set_oper /oper/interface{$INTERFACE}/macro_cfg_reset_pending_state NO
    fetch ACCESS_VLAN /config/trigger{$NEW_TRIGGER}/vlan_access
    fetch VOICE_VLAN /config/trigger{$NEW_TRIGGER}/vlan_voice
```

```
    fetch NATIVE_VLAN /config/trigger{$NEW_TRIGGER}/vlan_native
    trigger $CURRENT_TRIGGER TRIGGER=$CURRENT_TRIGGER INTERFACE=$INTERFACE LINKUP=NO
AUTH_ENABLED=$IS_AUTH_ENABLED LIMIT=$LIMIT SW_POE=$SW_POE AP125X=$CURRENT_AP125X
STICKY=$STICKY
    send log facility AUTOSMARTPORT severity 5 mnemonics REMOVE Device on interface
$INTERFACE executed $CURRENT_TRIGGER to remove the configuration
    if [[ $NEW_TRIGGER -eq CISCO_WIRELESS_AP_EVENT ]]; then
       trigger $NEW_TRIGGER TRIGGER=$NEW_TRIGGER INTERFACE=$INTERFACE LINKUP=YES
LIMIT=$LIMIT SW_POE=$SW_POE AP125X=$IS_AP125X NATIVE_VLAN=$NATIVE_VLAN
       send log facility AUTOSMARTPORT severity 5 mnemonics INSERT Device $DEVICE_TYPE
detected on interface $INTERFACE, executed $NEW_TRIGGER
       return 0;
    fi
    if  [[ $NEW_TRIGGER -eq CISCO_WIRELESS_LIGHTWEIGHT_AP_EVENT ]]; then
          trigger $NEW_TRIGGER TRIGGER=$NEW_TRIGGER INTERFACE=$INTERFACE LINKUP=YES
LIMIT=$LIMIT SW_POE=$SW_POE AP125X=$IS_AP125X ACCESS_VLAN=$ACCESS_VLAN
    else
       trigger $NEW_TRIGGER TRIGGER=$NEW_TRIGGER INTERFACE=$INTERFACE LINKUP=YES
AUTH_ENABLED=$IS_AUTH_ENABLED ACCESS_VLAN=$ACCESS_VLAN VOICE_VLAN=$VOICE_VLAN
NATIVE_VLAN=$NATIVE_VLAN
    fi
    send log facility AUTOSMARTPORT severity 5 mnemonics INSERT Device $DEVICE_TYPE
detected on interface $INTERFACE, executed $NEW_TRIGGER
fi
```

FAQs and Troubleshooting

- FAQs, page 13-28

FAQs

Q. Why does DMM report that a DMP is down within 5 minutes of my registering the DMP successfully in DMM?

A. Make sure that the "Servlet Server Address" value is correct in DMM. See the "Establish Trust Between Digital Signs and your Centrally Managed DMPs" section on page 13-16.

Q. Can I take advantage of DMM autoregistration without any Medianet-ready switch?

A. Yes. You can use the DMM-native autoregistration that we have always supported or you can configure your DHCP server to support option 125, and thereby advertise to your DMPs the IP address of their trusted DMM appliance.

Q. Can I use a Cisco switch or router as my DHCP server?

A. No. Cisco switches and routers do not support DHCP configurations that include option 125.

Q. Can a DMP that uses a static IP address autoregister itself to DMM?

A. It depends. Although a DMP with a static IP address does not communicate with any DHCP server—and, thus, is blind to information that it might otherwise receive via DHCP option 125—it should still be possible to use DMM native-autoregistration, as described elsewhere in this chapter.

Q. Can I obtain the serial number of a DMP?

A. Yes, you can—*but only for a **DMP 4310G** whose installed firmware version is at least **5.2.3***. There are two methods.

- **Use DMM**

  1. Define an advanced task in DMM.
  2. Choose **Get** as its request type.
  3. Enter exactly this request string.

     ```
     init.serial
     ```

  4. Name and save your advanced task.
  5. Send your advanced task to one or more DMP 4310G endpoints.

- **Use HTTP**

  Follow exactly this syntax.

  http:// DMP_IP_address **:7777/get_param?p=init.serial**

CHAPTER 14

Organize DMPs in Groups

Revised: April 4, 2012
OL-15762-04

- Concepts, page 14-1
- Procedures, page 12-4
- Reference, page 14-6

Audience

We prepared this material with specific expectations of you.

- You want to manage and organize your DMPs and presentation systems centrally and effectively.

Concepts

- Overview, page 14-1
- Understand the Effect of Nesting One DMP Group Inside Another, page 14-2

Overview

Features of the DMP Manager page can help you to:

- Organize your DMPs in groups.
- Manage DMPs collectively instead of managing only one DMP at a time.
- Deploy assets or instructions to DMPs immediately.
- Manage the presentation systems in your network.

When you choose options anywhere on the DMP Manager page, it is updated automatically to show the options and features that are relevant to your selection.

Table 14-1 Tasks That You Can Perform on the DMP Manager Page

Task	To Learn More
DMP Group Management Tasks	
View the group hierarchy and collapse or expand any of its levels	• Click a group in the DMP Groups tree to list its member DMPs in the DMP table. • Click a closed group to expand its level in the object selector. • Click an opened group to collapse its level in the object selector.
Add a new group	• Add and Edit DMP Groups, page 14-3.
Edit an existing group	• Understand the Effect of Nesting One DMP Group Inside Another, page 14-2.
Populate a group with DMPs	• Automatically, in a production network: Add and Edit DMP Groups, page 14-3. • Manually, in a lab: Add DMPs Manually to DMP Groups, page 14-4.
Delete a group	Delete DMP Groups, page 14-4.
Remove DMPs from groups	Remove DMPs Manually from DMP Groups, page 14-5.

Related Topics

- Top-Level Elements to Manage DMPs and DMP Groups, page 14-6

Understand the Effect of Nesting One DMP Group Inside Another

We recommend that you create DMP groups to organize your DMPs according to characteristics that they have in common, such as where or how you will use them, according to whatever logic works best for you. For example, the logical basis for your DMP groups might be geographic or corporate.

One DMP group can contain another. Each choice that you make for centralized management propagates from parent (DMP group), to child (DMP subgroup *or* DMP), to grandchild (DMP). There is no maximum number of levels that you can add to the hierarchy, but a simpler organization is more scalable than an unreasonably complex one would be.

We recommend that you do not assign any DMP to the root level in the hierarchy, due to the complexity of management, but we do not prevent you from doing this.

Procedures

- Add and Edit DMP Groups, page 14-3
- Delete DMP Groups, page 14-4
- Add DMPs Manually to DMP Groups, page 14-4
- Remove DMPs Manually from DMP Groups, page 14-5
- Filter the DMP List Table, page 14-5

Add and Edit DMP Groups

Note **DMM uses TCP port 7777 to communicate with DMPs.** This port is open on DMPs. You cannot close it.

When you create or edit a DMP group, the least that you must do is name the group. In addition, you can populate the group automatically with all of the DMPs in any NMAP address range that you specify, or you can manually add DMPs to a group.

Tip **You can save a named group for use in the future, even if you have not yet assigned any DMPs to it.**

Procedure

Step 1 Choose **Digital Media Players > DMP Manager**.

Step 2 Do either of the following.

- Click **Create Group**.
- Click a group to highlight it in the tree, and then choose **More Actions > Edit Group**.

Step 3 Enter a name and a description for the group.

Step 4 Define the network ranges from which to autoregister DMPs that should join this DMP group.

OR

You can skip this step if you will not autoregister DMPs now.

Tip **DMM runs each autodiscovery job one time.** It does not look continually in the specified network range for DMPs that you might add in the future. When you plan to add DMPs to your network continually, you can schedule an autodiscovery event to recur as often as necessary.

Step 5 Click **OK** to save your work.

Step 6 Stop. You have completed this procedure.

Related Topics

- Elements to Add or Edit DMP Groups, page 14-7

Delete DMP Groups

Procedure

Step 1 Choose **Digital Media Players > DMP Manager**.

Step 2 Navigate in the DMP Groups tree, expanding levels until you find the group.

Step 3 Click the group name in the tree.

Step 4 Choose **More Actions > Delete Group**.

Step 5 Click **OK** to delete the group.

OR

Click **Cancel** to stop this deletion.

Step 6 Stop. You have completed this procedure.

Related Topics

- Remove DMPs Manually from DMP Groups, page 14-5

Add DMPs Manually to DMP Groups

Procedure

Step 1 Choose **Digital Media Players > DMP Manager**.

Step 2 Navigate in the DMP Groups tree, expanding levels until you find a group that already includes the DMP.

Step 3 Click to highlight this group in the tree.

The DMP List table is refreshed. It now describes DMPs in your highlighted group.

Step 4 Click **Edit** in the row whose DMP should join a group.

The Edit DMP dialog box opens.

Step 5 Navigate in the DMP Groups tree, expanding levels until you find the group that should contain the DMP.

Step 6 Check that group's check box in the tree.

Step 7 Click **OK**.

Step 8 Stop. You have completed this procedure.

Related Topics

- Elements to Add DMPs Manually to a DMP Group, page 14-8

Remove DMPs Manually from DMP Groups

Procedure

Step 1 Choose **Digital Media Players > DMP Manager**.

Step 2 Navigate in the DMP Groups tree, expanding its levels until you find a group that should no longer include a DMP.

Step 3 Click to highlight this group in the tree.

The DMP List table is refreshed. It now describes DMPs in your highlighted group.

Step 4 Click **Delete** in the row whose DMP should leave a group.

Step 5 Choose **Remove DMP from Group**.

Step 6 Click **OK**.

Step 7 Stop. You have completed this procedure.

Related Topics

- Elements to Remove a DMP from a DMP Group, page 14-8

Filter the DMP List Table

Procedure

Step 1 Choose **Digital Media Players > DMP Manager**.

Step 2 Click the entry in the DMP Group tree for a group whose list of member DMPs you will filter.

Step 3 Choose one option from the Filter list, above the DMP List table.

The DMP List table straddles multiple pages when there are more DMPs than there are rows per page.

Step 4 (**Optional**) *Would you like to specify how many rows of data the table should load per page?* If so, choose the number of rows from the list below the table.

Step 5 (**Optional**) *Does the table straddle multiple pages?* If so, use pagination controls above the table to move between pages.

Step 6 Click **Go**.

Step 7 Stop. You have completed this procedure.

Related Topics

- Top-Level Elements to Manage DMPs and DMP Groups, page 14-6

Reference

- Software UI and Field Reference Tables, page 14-6
- FAQs and Troubleshooting, page 14-9

Software UI and Field Reference Tables

- Top-Level Elements to Manage DMPs and DMP Groups, page 14-6
- Elements to Add or Edit DMP Groups, page 14-7
- Elements to Delete DMP Groups, page 14-8
- Elements to Add DMPs Manually to a DMP Group, page 14-8
- Elements to Remove a DMP from a DMP Group, page 14-8

Top-Level Elements to Manage DMPs and DMP Groups

Navigation Path

Digital Media Players > DMP Manager

Table 14-2 Elements for Managing DMPs and DMP Groups

Element	Icon and Description
DMP Groups	
A hierarchical tree of DMP groups and subgroups. Here, you can create new groups, edit existing groups, and choose which DMPs the DMP List table should describe.	
Create Group	Shows the Create DMP Group pane.
Edit DMP Group	Shows the Edit DMP Group pane, where you can edit attributes of the group that you highlighted.
Delete Group	Deletes the group that you highlighted.
DMP List	
All DMPs at (or below) a level that you highlight in the DMP Groups tree. Or, the DMPs that match your filtering criteria. To see every registered DMP in your network, click the group that represents the root level. (By default, its name is "All DMPs" but this name is editable.) When there are more DMPs than there are rows, the list might straddle multiple pages. In this case, use pagination controls under the table to move from one page to another.	
Run Task	Opens a dialog box where you can choose commands or assets for delivery to DMPs.
Add DMP	Shows the Add New DMP pane.
Edit DMP	Shows the Edit DMP pane.
Delete DMP	Deletes the DMP that you highlighted.
Control TV	Opens the LCD Control dialog box.
Assign DMP to Group	Creates an association between at least one DMP and at least one group.
Remove DMP from Group	Severs the association between at least one DMP and at least one group.
Filter	A method to redraw the DMP List table, so that it includes only the DMPs that match your filter.

Table 14-2 Elements for Managing DMPs and DMP Groups (continued)

Element	Icon and Description
Display Number	The maximum number of rows that the table should show per page if it straddles multiple pages.
Status	Says whether a DMP is reachable. • A green icon tells you that the DMP is connected to a power source, uses a known IP address, and is reachable. • A red icon tells you that the DMP is unreachable.
Name	A unique and human-readable name that you entered or that DMM chose; If DMM chose the name, it is either the DMP IP address or MAC address.
IP	The public IP address at which the DMP receives instructions and data from DMM.
Version	The release number for the installed firmware version on the DMP.
Description	The description that you entered.
Internal Storage MB. (Total/Free)	Measures the total storage capacity of the internal flash drive, and then measures the available capacity.
External Storage MB. (Total/Free)	Measures the total storage capacity of the external USB drive, if the DMP is connected to one, and then measures the available capacity.
WAAS Status	Says that a DMP has mounted a CIFS share, or does not say anything.

Related Topics

- Add and Edit DMP Groups, page 14-3

Elements to Add or Edit DMP Groups

Navigation Path

Digital Media Players > DMP Manager

Table 14-3 Elements to Add and Edit DMP Groups

Element	Icon and Description
These elements load when you click Create Group or Edit Group under the DMP Groups tree.	
Name	A unique and human-readable name for the group.
Description	A brief description of the group and its purpose.

Related Topics

- Top-Level Elements to Manage DMPs and DMP Groups, page 14-6
- Add and Edit DMP Groups, page 14-3

Elements to Delete DMP Groups

Navigation Path

Digital Media Players > DMP Manager

Table 14-4 Element to Delete DMP Groups

Element	Icon and Description
This element loads above the DMP Groups object selector.	
Delete DMP Group	Deletes the group that you highlighted.

Related Topics

- Top-Level Elements to Manage DMPs and DMP Groups, page 14-6

Elements to Add DMPs Manually to a DMP Group

Navigation Path

Digital Media Players > DMP Manager

Table 14-5 Elements to Associate DMPs with a DMP Group

Element	Icon and Description
This element loads above the DMP List table.	
Assign DMP to Group	Creates an association between at least one DMP and at least one group.

Related Topics

- Top-Level Elements to Manage DMPs and DMP Groups, page 14-6
- Add DMPs Manually to DMP Groups, page 14-4

Elements to Remove a DMP from a DMP Group

Navigation Path

Digital Media Players > DMP Manager

Table 14-6 Elements to Remove a DMP from a DMP Group

Element	Icon and Description
This element loads above the DMP List table.	
Remove DMP from Group	Deletes the association between at least one DMP and at least one group.

Related Topics

- Top-Level Elements to Manage DMPs and DMP Groups, page 14-6
- Remove DMPs Manually from DMP Groups, page 14-5

FAQs and Troubleshooting

- FAQs, page 14-9

FAQs

Q. How many DMPs can I centrally manage from one DMM appliance?

A. Approximately 4,000. However, it is not possible to pinpoint an exact count that is correct for every organization. The ways that you use your DMPs affect their cumulative load on a DMM appliance.

CHAPTER 15

Configure DMP Wi-Fi Settings

Revised: April 4, 2012
OL-15762-04

- Concepts, page 15-1
- Procedures, page 15-5
- Reference, page 15-8

Audience

We prepared this material with specific expectations of you.

- You have deployed DMP 4400G endpoints at sites with WLANs.

Concepts

- Glossary, page 15-1
- ASCII Passphrases and Hexadecimal Keys for WEP, page 15-3

Glossary

Timesaver

Go to terms that start with... [**numerals** | **A** | **C** | **E** | **P** | **S** | **T** | **W**].

numerals

802.11b A wireless networking standard that specifies a maximum data transfer rate of 11Mbps and an operating frequency of 2.4GHz.

802.11g A wireless networking standard that specifies a maximum data transfer rate of 54Mbps, an operating frequency of 2.4GHz, and backward compatibilitywith 802.11b devices.

A

AAA Authentication, Authorization, and Accounting.

See also EAP-FAST, EAP-MD5 server, LEAP server, and PEAP server.

access point A device that allows wireless-equipped computers and other devices to communicate with a wired network. Also used to expand the range of a wireless network.

C

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CCMP Based on the Advanced Encryption Standard (AES) defined in the National Institute of Standards and Technology's FIPS Publication 197, AES-CCMP is a symmetric block cipher that can encrypt and decrypt data using keys of 128, 192, and 256 bits. AES-CCMP is superior to WEP encryption and is defined in the IEEE 802.11i standard.

See also WEP keys.

E

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EAP *Extensible Authentication Protocol*. A protocol that WPA uses to authorize user access to wireless networks. Common implementations include EAP-FAST and EAP-MD5.

EAP-FAST EAP-FAST is a two-phase implementation of the EAP authentication protocol:

- Phase 0, provisioning. Provision client with a credential called PAC (Protected Access Credentials).
- Phase 1, authentication. Use the PAC to establish a tunnel with the server and authenticate the username and password.

See also AAA and EAP.

EAP-MD5 server Servers that use EAP to provide dynamic, session-specific wireless encryption keys, central user administration, and authentication between clients and access points. EAP-MD5 uses MD5 hashing on client and challenge passwords.

See also AAA and EAP.

P

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PEAP server *Protected EAP* server, which combines centralized two-way authentication with dynamically generated wireless equivalent privacy keys or WEP keys.

See also AAA, EAP-MD5 server, and WEP keys.

PSK Pre-Shared Key.

S

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SSID

Service Set ID. It is a unique identifier that client devices use to associate with the access point. The SSID helps client devices distinguish among multiple wireless networks in the same vicinity. The SSID can be any alphanumeric entry up to 32 characters long.

Caution **The Broadcast SSID setting must be enabled on your wireless access points.** Otherwise, your DMPs are prevented from connecting to your WLAN or obtaining IP addresses.

Caution **When you change SSID settings for your WLAN, your DMPs lose their wireless network connections.** Because they are disconnected, they cannot reconnect automatically. In this case, affected DMPs will appear to associate to your WLAN access point but will not receive any IP address.

T

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TKIP

Temporal Key Integrity Protocol, also known as key hashing, is used as part of server-based EAP authentication.

W

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WEP

Wired Equivalent Privacy is a method to encrypt data transmitted on a wireless network.

WEP keys

Wired equivalent privacy (WEP) keys are the IEEE 802.11b standard that offers a mechanism for securing wireless LAN data streams. The goals of WEP include access control to prevent unauthorized users who lack a correct WEP key from gaining access to the network, and privacy to protect wireless LAN data streams by encrypting them and allowing de-encryption only by users with the correct WEP keys.

WPA

Wi-Fi Protected Access. WPA is a standards-based, interoperable security enhancement that strongly increases the level of data protection and access control for existing and future wireless LAN systems. It is derived from and will be forward-compatible with the upcoming IEEE 802.11i standard. WPA leverages TKIP for data protection and 802.1X for authenticated key management.

ASCII Passphrases and Hexadecimal Keys for WEP

Tip **You can ignore this topic if your Wi-Fi network uses WPA and not WEP.**

Many Wi-Fi access points (wireless routers) accept only a hexadecimal passphrase for WEP-64 and WEP-128. And yet, DMPs accept only an ASCII passphrase for WEP. For this reason, it might be necessary at times to translate your WEP passphrase from ASCII to hexadecimal.

Note **Many third-party converters are available.** We do not offer any Cisco converter for this purpose.

The typical workflow is as follows.

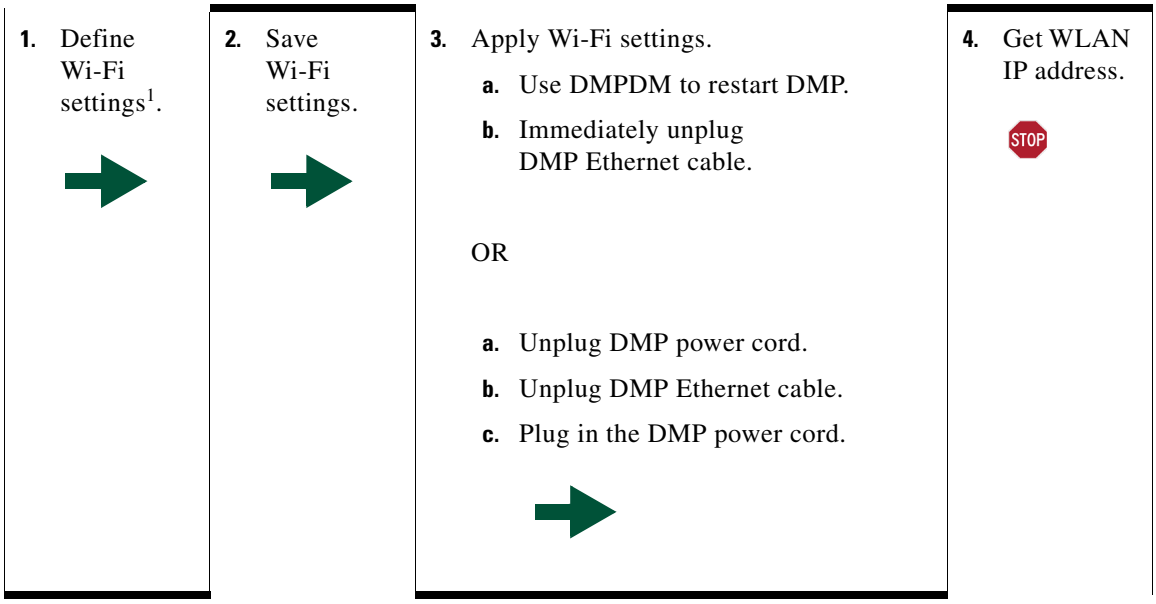
1. Pick an ASCII passphrase. For example, *PassphraseWEP128*.
2. Convert your string of ASCII characters to the hexadecimal key or keys for your network.
   - WEP-64 uses four short hexadecimal keys.
   - WEP-128 uses one long hexadecimal key.
3. Configure your DMP to use the ASCII from which you derived the hexadecimal.
4. Configure your wireless router to use the appropriate hexadecimal key or keys.

Related Topics

- Establish a Wireless Network Connection (802.11), page 15-6

Workflow

It is not necessary, useful, or correct to restart a DMP immediately after you define its Wi-Fi settings. Instead, the typical workflow is as follows.



1. Verify that the Broadcast SSID setting is enabled on your wireless access points. Otherwise, your DMPs are prevented from obtaining IP addresses.

Restrictions

- **Ethernet connections take priority over Wi-Fi connections on DMPs where both are active.**
- The Broadcast SSID setting must be enabled on your wireless access points (also known as *wireless routers* or *WLAN controllers*). Otherwise, your DMPs cannot connect to your WLAN and are prevented from obtaining IP addresses.
- We do not support "open" Wi-Fi networks. They are a security risk.
- We do not support multicast or other streams over Wi-Fi.
- DMP 4305G endpoints and DMP 4310G endpoints do not support Wi-Fi.
- When your wireless DMP will not have access to any DHCP server, you must configure its wireless access point to issue a static IP address. You cannot use DMM or DMPDM for this purpose.

Procedures

- Establish a Wired Network Connection, page 15-5
- Establish a Wireless Network Connection (802.11), page 15-6

Establish a Wired Network Connection

Note **See the printed documentation that shipped with your DMP to understand its reliance on DHCP.**

A DMP must already be reachable before it can receive Wi-Fi settings. Therefore, you must establish a wired connection before you can deploy Wi-Fi settings.

Before You Begin

- Verify that the Broadcast SSID setting is enabled on your wireless access points. Otherwise, your DMPs cannot connect to your WLAN and are prevented from obtaining IP addresses.
- Does a security policy in your network restrict DHCP address assignments to known MAC addresses? If so, locate the **MAC** address printed on a sticker that is affixed to your DMP. Then, share this address with your security policy administrator.

Procedure

Step 1 Plug one end of a standard Ethernet cable into the corresponding socket on your DMP.

Step 2 Plug the other end of this cable into a network hub, network switch, or router that participates in an IP network that uses DHCP for dynamic address allocation.

Step 3 Stop. You have completed this procedure.

What to Do Next

- Go to the "Establish a Wireless Network Connection (802.11)" section on page 15-6.

Related Topics

- DMP Network Interfaces, page 15-8

Establish a Wireless Network Connection (802.11)

You can create and save applications that describe the important attributes of wireless 802.11 networks throughout your organization. After you define and save these settings, you can deploy them to centrally managed DMPs individually or to any of your DMP groups.

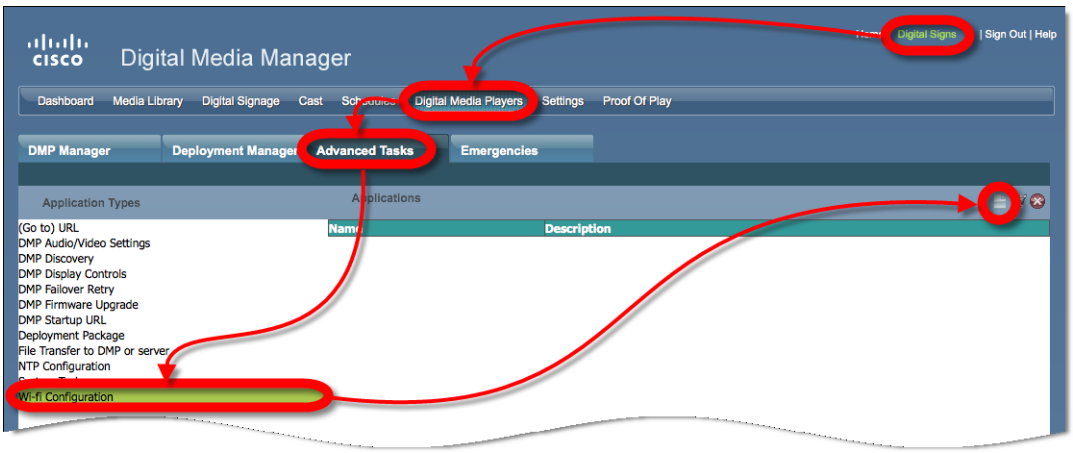
Before You Begin

- Do your DMPs all support wireless connectivity? Some models do not. See their datasheets on Cisco.com.
- Verify that the Broadcast SSID setting is enabled on your wireless access points. Otherwise, your DMPs cannot connect to your WLAN and are prevented from obtaining IP addresses.
- Does a security policy in your network restrict DHCP address assignments to known MAC addresses? If so, locate the **WLAN** address printed on a sticker that is affixed to your DMP. Then, share this address with your security policy administrator.
- Verify that your wireless network is working correctly, is available, and you understand how it authenticates connection requests.
- Complete all steps in the "Establish a Wired Network Connection" section on page 15-5.

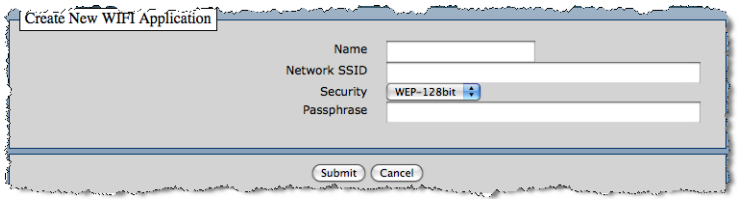
Procedure

Step 1 Choose **Digital Signs** from the global navigation.

Step 2 Choose **Digital Media Players > Advanced Tasks > Wi-fi Configuration > Add New Application**.



The Create New WIFI Application page opens.



Step 3 Enter a meaningful name for the Wi-Fi network that this application describes.

For example, you might use a name that specifies the locale, the building, and the security method for this network.

Step 4 Enter in the Network SSID field the SSID for the network that this application describes.

Tip **In the future, if you reconfigure SSID settings in your WLAN, your DMPs will lose their network connections.** If this occurs, simply restart your DMPs to restore normal operation.

Step 5 Choose from the Security list the security method for your network. The options are:

- WEP-64bit
- WEP-128bit
- WPA-PSK
- WPA-EAP
- WPA2-PSK
- WPA2-EAP

The security method that you choose controls, in part, which other fields and options you see.

Step 6 Do the following, as needed.

- Did you choose a WEP-based security method? And do you see the Passphrase field? If so, enter in it the key from which your 64-bit or 128-bit passphrase is cryptographically derived.
- Did you choose a WPA-based or WPA-2-based security method? And do you see the Passphrase field? If so, enter in it the pre-shared key for your network.
- Do you see the Encryption list? If so, choose from it either **TKIP** or **CCMP**.
- Do you see the EAP list? If so, choose from it either **FAST**, **MD5**, or **PEAP (ver.0)**.
- Do you see the Username and Password fields? If so, enter in them respectively a valid username for your wireless network and the password to authenticate that username.

Step 7 Click **Submit** to save this application.

Step 8 Deploy this application to your DMPs, as appropriate.

- *Immediately*—Click the **DMP Manager** tab, choose which DMPs to reconfigure, choose this named application from the "W-Fi Configuration" options in the Actions list, and then click **Go**.
- *In the future*—Click the **Schedules** tab and define deployment parameters for this application.

Step 9 Verify that your DMPs have IP addresses as nodes on the wireless network.

Step 10 After the deployment is successful, **unplug the Ethernet cables** from your DMPs.

Otherwise, their Ethernet connections will take priority over their Wi-Fi connections.

Step 11 After you unplug their Ethernet cables, restart these DMPs.

Step 12 Stop. You have completed this procedure.

Related Topics

- Establish a Wired Network Connection, page 5

Reference

- DMP Network Interfaces, page 15-8
- FAQs and Troubleshooting, page 15-8

DMP Network Interfaces

Table 15-1 Network Interfaces

Category	Subcategory	Chassis Label
Wired[1]	Gigabit Ethernet (10/100/1000)	• RJ45
Wireless (WiFi)	802.11b/g Antenna	• Antenna

1. Category 5 or better. Maximum length: 328 ft (100 m). For any distance greater than 165 ft (50 m), we recommend that you use Category 5e or Category 6 certified Ethernet cabling. We do not ship any Ethernet cable with any DMP model. You must obtain this cable separately.

FAQs and Troubleshooting

- FAQs, page 15-8

FAQs

Q. What configuration errors might cause the following combination of symptoms to occur simultaneously?

- I cannot ping DMPs on my WLAN.
- I cannot open any instances of DMPDM for DMPs on my WLAN.
- Digital Signs software on my DMM appliance shows that DMPs are rea on my WLAN.
- I can deploy commands and assets from my Digital Signs software to DMPs in my WLAN.

A. It is likely that your DMPs are configured correctly. Please check for errors in the network security settings for your WLAN.

Q. What might prevent my DMPs from connecting to my WLAN or obtaining IP addresses?

A. The Broadcast SSID setting must be enabled on your wireless access points.

Q. Why did my DMPs lose their wireless network connectivity?

A. This can occur after you change SSID settings for your WLAN. Please restart your DMPs to restore their connections.

Q. Can I overcome the SSID broadcast requirement if I wait until my DMP is connected before I turn off the SSID broadcast?

A. No. Your DMP will lose its connection to your WLAN.

Q. What prevents my DMPs from receiving IP addresses even after they have associated to my WLAN access point?

A. This can occur whenever you change SSID settings for your WLAN. Please restart your DMPs to restore their connections.

Q. How can my wireless DMP use a static IP address?

A. Configure your wireless access point to assign the address.

Q. Why might I see references to TKIP after I configure my DMPs to use WPA2-EAP with AES CCMP?

A. This is a known issue. Although the Digital Signs software user interface might state that you use TKIP, your DMP uses WPA2-EAP with AES CCMP successfully, just as you configured it to do.

Q. Why might I see references to DHCP after I configure my DMPs to use static IP addresses on my WLAN?

A. This is a known issue. Although the Digital Signs software user interface might state that you use DHCP, your DMPs continue to use the static IP addresses that you configured.

CHAPTER 16

Touchscreens, Projectors, and Displays

Revised: April 4, 2012
OL-15762-04

- Concepts, page 16-1
- Procedures, page 16-6
- Reference, page 16-34

Audience

We prepared this material with specific expectations of you.

- *You manage and operate presentation systems that are connected to remote DMP endpoints.*

Concepts

- Overview, page 16-1
- Presentation System Concepts, page 16-2

Overview

A DMP transmits signals to a public presentation system that you choose, such as a flat-panel display or projector that is connected to the DMP.

- This system might use projection or display technologies that are analog or digital.
- It might support Standard Definition (SD), High Definition (HD), or both.
- Its output fidelity depends in part upon which signal cables (and adapters) connect it to your DMP.
  - With most modern, digital presentation systems, you can use an HDMI cable for both video and audio. Other such systems—including the 40-inch and 52-inch models in our LCD Professional Series—might not connect until you combine the HDMI cable with an HDMI-to-DVI adapter for video. However, DVI does not support the transmission of audio signals. In this case, you can use the provided audio cable for audio.
  - When you use a Cisco-branded LCD display, a feature of Cisco Digital Signs software can detect automatically when your display is turned On or Off. **To connect one of these models to your DMP, you must use an RS-232 serial cable in addition to the video signal cable.**

Our centralized management features help you to manage a global IP network of digital signs for any purpose—in conference rooms, public venues, or executive offices.

Presentation System Concepts

- Understand Which Displays Work Best with DMPs, page 16-2
- Understand How to Choose Media Signal Cables, page 16-3
- Understand and Prevent Image Retention (Burn-in), page 16-5

Understand Which Displays Work Best with DMPs

We certify that DMPs work as designed with Cisco LCD flat-screen displays. All displays in this series are engineered for intensive use in public settings. See their technical documentation (CSCti35199) at http://cisco.com/en/US/products/ps10099/tsd_products_support_series_home.html.

In most cases, DMPs can use displays that comply with modern, international standards. We recommend the following if you must use a third-party display.

- **Digital, not analog.**
- **High-definition, not standard-definition.**
- **Professional-grade, not consumer-grade.** Digital signs and public IPTV installations run many more hours each day than a consumer-grade display is engineered to run. A consumer-grade system is likely to fail years sooner than a professional-grade system would under these circumstances.
- **LCD, not plasma.** Digital signage uses static images more often than it uses full-motion video. Most often, content is web-based or animated in Flash. The nature of these media types means that some pixels are not updated frequently in digital signage. LCDs are less susceptible to burn-in than plasma displays are. Even though image persistence is sometimes a problem on LCD displays, it is almost always self-correcting and is unlikely to occur when you follow manufacturer guidelines for managing your displays correctly.
- **Built-in support for RS-232 signalling.** This recommendation is important in direct proportion to the number of displays that you will manage.

Understand How to Choose Media Signal Cables

Caution **Poorly shielded cable can sometimes promote undesired signal leakage (*egress*), interference from over-the-air signals (*ingress*), or crosstalk between cables that are in close physical proximity.**

Special considerations apply when you obtain a signal cable that is longer or of a different type than cables that we included in your product kit. For DMP models that support the following signal cable types, the maximum supported lengths are:

- Composite—10 ft (approximately 3 m)
- HDMI 1.1—16 ft (approximately 5 m)
- RCA—10 ft (approximately 3 m)
- S-Video—10 ft (approximately 3 m)
- SPDIF—10 ft (approximately 3 m)

Note

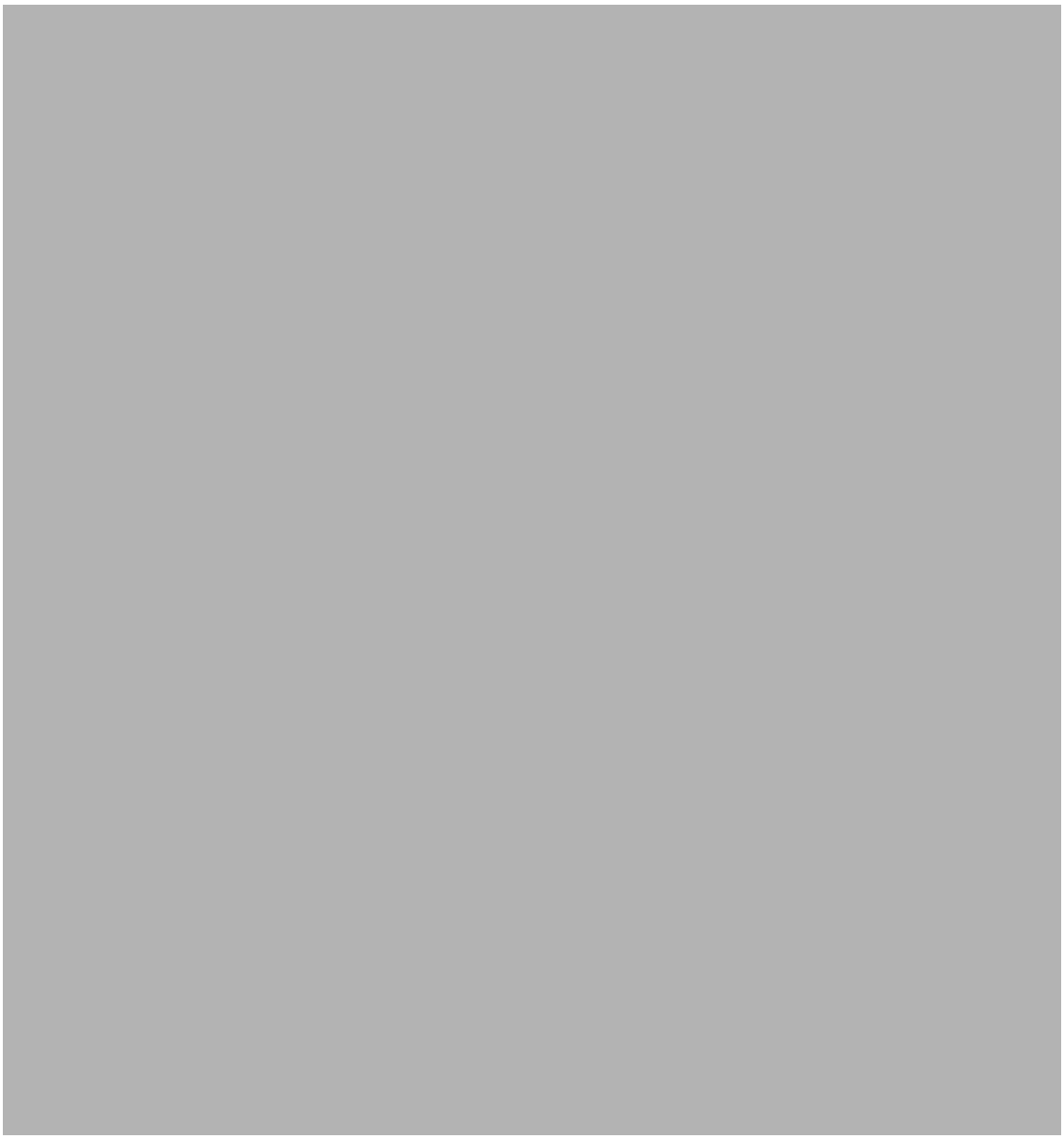
- **When image signals are transmitted through a composite cable, image quality suffers.** When you use a composite cable and your DMP shows any web-based media, small text might be difficult to read in TVzilla (the web browser that runs on some DMP models). To work around this limitation, you can lower the browser resolution setting in DMPDM.
- **Shockwave Flash (SWF) text is blurred during playback when a component video cable connects your DMP to its presentation system** (CSCsx48899)**.** To work around this limitation, avoid the use of component video cable.

Cable Quality

The best signal cables objectively are those with the lowest signal resistance. Factors that affect signal resistance include wire gauge, cable shielding quality, and cable connector quality. However, the same materials and engineering designs that reduce signal resistance add to the cost of manufacturing. This added cost is passed along to a consumer. So, it is useful to understand when signal resistance is not relevant. Knowing this can help you to manage and reduce expenses without necessarily lowering your standards. High cost is not inevitable. Nor is it proof of high quality. Sometimes, in fact, high quality (low signal resistance) is irrelevant.

Even mediocre signal cables are sometimes sufficient, and such cables are often very affordable. Figure 16-1 illustrates the most important factors to consider when you choose signal cables.

Figure 16-1 Signal Cable Purchasing Factors to Consider



Beyond the general guidelines that Figure 16-1 illustrates, two additional factors might constrain which types of signal cable you can use.

- **The technology, brand, and model of your display**—Check its product documentation to understand its compatibility with various signal cable types.
- **Your DMP model**—See its datasheet at http://www.cisco.com/go/dms/dmp/datasheets. Also, your packing list states which signal cables Cisco planned to ship with your DMP.

Related Topics

- Connect to an Analog Display or Projector, page 16-9
- Connect to a Digital Display or Projector, page 16-6
- Connect to a Touchscreen, page 16-7

Understand and Prevent Image Retention (Burn-in)

After any LCD panel shows a fixed pattern for more than 12 hours, slight voltage differences can develop among electrodes that power the liquid crystals. Therefore, after you show a fixed image for an extended period of time, it might become blurred or might leave a residual image on an LCD display. This occurs when charged liquid crystal becomes "stuck" in one position.

Nonetheless, image retention should not occur when you follow our recommended best practices.

Turn off your display at regular intervals	• After using your display for 20 hours, turn it off for 4 hours. • After using your display for 12 hours, turn it off for 2 hours.
Rotate colors and color schemes at regular intervals	Cycle between colors every 30 minutes.
Avoid extreme differences in luminance	• Do not use foreground and background colors that differ greatly in their luminance. • Do not use gray. • Use bright colors that are identical in their luminance or that differ only slightly in their luminance. • Apply motion every 30 minutes to regions that show text. • Apply 1 minute of motion to any region that has shown a logo for 4 hours.
Use built-in features to prevent image retention	**Tip Some Cisco LCD models support these features while others do not. Check your Cisco LCD documentation.** • Use the **Scroll** feature to move a solid black bar up and down the display. – Set its interval in the rage from 1 to 10 hours. We recommend a 1-hour interval. – Set its duration in the range from 1 to 5 seconds. We recommend a 5-second duration. • Use the **Pixel Shift** feature to move a dotted black rectangle from top to bottom. – Set its interval in the rage from 1 to 10 hour. We recommend a 1-hour interval. – Set its duration in the range from 10 to 50 seconds. We recommend a 50-second duration. • Use the **Bar** feature to move a black crosshair around your display. – Set its interval in the range from 1 to 10 hours. We recommend a 1-hour interval. – Set its duration in the range from 10 to 50 seconds. We recommend a 50-second duration.

Procedures

- Connect to a Digital Display or Projector, page 16-6
- Connect to a Touchscreen, page 16-7
- Connect to an Analog Display or Projector, page 16-9
- Prepare Cisco Displays to Support RS-232 Syntax, page 16-11
- Use Predefined Tasks to Configure and Manage Equipment, page 16-28

Connect to a Digital Display or Projector

Timesaver **Is your display a touchscreen? If so, this topic is not for you.** Instead, see the "Connect to a Touchscreen" section on page 16-7.

HDMI and DVI differ in their support for audio signals and use connectors that are shaped differently, but otherwise are identical. Thus, an adapter can help you to connect to your DMP any presentation system that supports DVI but not HDMI. When you do this, however, you must also use a separate, additional signal cable to transmit audio signals, or playback will be silent.

Tip ***Is playback silent even though your signal cable type is HDMI?*** If so, make sure that your DMP has attributed an authentically HDMI-standard resolution value—such as "HDMI_1080p60"—to your presentation system (CSCsk29797). The HDMI standard does not support audio playback through any system whose settings ignore or contradict HDMI standards. Thus, you cannot use HDMI to play audio through a presentation system whose resolution setting is, for example, "VESA_1360x768x60."

Before You Begin

- Obtain an HDMI-to-DVI adapter if your presentation system uses DVI.

Procedure

Step 1 Do only one of the following.

- *Does your presentation system use HDMI?*

  When you will use HDMI

  a. Connect the HDMI cable to the **HDMI** interface on the back panel of your DMP.
  b. Connect the other end of the cable to your presentation system.
  c. Procced to Step 2.

- *Does your presentation system use DVI?*

  When you will use DVI

  a. Connect the HDMI cable to the **HDMI** interface on the back panel of your DMP.
  b. Fasten an HDMI-to-‘DVI adapter to the free end of the cable.
  c. Connect the free end of the DVI adapter to the corresponding interface on your presentation system.
  d. Plug the 3.5mm audio jack into the **Audio** interface on the back panel of your DMP.
  e. Connect the other end of the audio cable to the corresponding interface on your presentation system.
  f. Pproceed to Step 2.

Step 2 If the presentation system is not already turned on, turn it **On** now.

Step 3 Stop. You have completed this procedure.

Related Topics

- Video and Audio Signal Interfaces, page 16-35
- Connect to a Digital Display or Projector, page 16-6

Connect to a Touchscreen

Tip **Some touchscreens work as designed only after they are calibrated manually.** If your touchscreen is one of these, its calibration occurs during a later stage of DMP setup. The list of related topics for this procedure states where you can learn about calibration.

DMP connections to a touchscreen are mostly the same as for other digital displays. However, touchscreens employ a special cable that supports interactivity through touch. This might be either an RS-232 serial cable or a USB cable, depending on the touchscreen model. Although some models support both cable types for interactivity, you can use only one type at a time.

Before You Begin

- Verify that your DMP model supports touchscreen technologies and that we support the touchscreen brand, model, and device driver that you will use.
- Check the documentation for your touchscreen to learn whether it requires a serial connection or a USB connection to your DMP, or if it supports both.

Procedure

Step 1 Do only one of the following.

- *Does your touchscreen use HDMI?*

  When you will use HDMI

  a. Connect the HDMI cable to the **HDMI** interface on the back panel of your DMP.

  b. Connect the other end of the cable to your touchscreen.

  c. Proceed to Step 2.

- *Does your touchscreen use DVI?*

  When you will use DVI

  a. Connect the HDMI cable to the **HDMI** interface on the back panel of your DMP.

  b. Fasten an HDMI-to-DVI adapter to the free end of the cable.

  c. Connect the free end of the DVI adapter to the corresponding interface on your touchscreen.

  d. Plug the 3.5mm audio jack into the **Audio** interface on the back panel of your DMP.

  e. Connect the other end of the audio cable to the corresponding interface on your touchscreen.

  f. Proceed to Step 2.

Step 2 Do only one of the following.

- *Does your touchscreen use USB?*

  When touchscreen interaction relies on USB

  a. Connect a USB cable to the **USB** interface on the back panel of your DMP.

  b. Connect the other end of the cable to your touchscreen.

  c. Proceed to Step 3.

  Note If your DMP model has only one USB connector, you might prefer to connect an external hard drive there for added local storage. In this case, an RS-232 serial cable would be the better choice for connecting a touchscreen to your DMP.

- *Does your touchscreen use RS-232?*

  When touchscreen interaction relies on RS-232

  a. Connect an RS-232 serial cable to the **RS232** interface on the back panel of your DMP.

  b. Connect the other end of the cable to your touchscreen.

  c. Proceed to Step 3.

Step 3 Turn **On** the touchscreen.

Tip **Does a message on the touchscreen say that it must download a "characterization" file?** This happens only when your touchscreen uses technologies from Elo TouchSystems and when you have never turned it On previously (or after its CF card is reformatted). When you see this message, please disregard it. The touchscreen will obtain its characterization file automatically during a later stage of DMP setup.

Step 4 Stop. You have completed this procedure.

Related Topics

- Video and Audio Signal Interfaces, page 16-35

Connect to an Analog Display or Projector

Tip **DMPs support connections to analog presentation systems.** However, we recommend strongly that you use digital presentation systems whenever possible.

Procedure

Step 1 Make connections for video.

a. Plug one yellow jack from the RCA video cable into the **CVBS** interface on the back panel of your DMP.

b. Connect the free end of this cable to the corresponding interface on your presentation system.

Step 2 Make connections for audio.

a. Plug the 3mm jack on the RCA audio cable into the **AUDIO** interface on the back panel of your DMP.

b. Connect the free end of this cable to the corresponding interface on your presentation system.

Step 3 If the presentation system is not already turned on, turn it **On** now.

Step 4 Stop. You have completed this procedure.

Related Topics

- Video and Audio Signal Interfaces, page 16-35

Use RS-232 Signals to Control Presentation Systems

No international agency exists to tell all of the world's video equipment manufacturers which commands and methods (such as RS-232) a presentation system must support. Likewise, no global authority exists to state exactly which hexadecimal string—if any—must invoke a particular command.

So when manufacturers implement RS-232 commands, they do so as they see fit. Thus, RS-232 command syntax differs among manufacturers and sometimes differs even among equipment models that share a manufacturer in common.

Tip **Check the manufacturer's product documentation for your LCD display to learn about its RS-232 support and syntax.**

So, how is RS-232 useful to me?

Your digital signs run in the real world because your organization expects to tell someone something. But when you, the administrator, are half a world away from a sign, or even just a few buildings away, how can you be *absolutely sure* that your sign is doing anything—let alone everything—correctly?

- Is its power turned Off when it should be turned On?
- Is its audio muted during an exclusive musical performance?
- Does it ignore a valid video input signal while listening on some other, but disconnected, interface?

Meanwhile, how can you recognize and fix any such misconfiguration from miles away? Situations like these are perfect for RS-232, whose technology passes properly constructed "command-and-control" instructions through a DMP and into its attached presentation system.

A case in point: Cisco Digital Signs software can tell you automatically and in real-time which of your centrally managed Cisco LCD displays are turned On or Off. You can learn at a glance when one (or more) of these remote units is in the wrong power state, and then issue a simple command to correct the mistake. But even so, your ability to turn remote equipment On or Off so easily through the Internet is just one benefit of feeding RS-232 commands through a DMP to its attached LCD display.

This section includes these topics.

- Prepare Cisco Displays to Support RS-232 Syntax, page 16-11
- Bootstrap DMTech Displays to Enable Their RS-232 Support, page 16-16
- Bootstrap NEC Displays to Enable Their RS-232 Support, page 16-19
- Delete Equipment Settings That Use RS-232 Syntax, page 16-25

- Use RS-232 Signals to Control Presentation Systems, page 16-10
- Use RS-232 Syntax to Control Digital Signs, page 16-21

Prepare Cisco Displays to Support RS-232 Syntax

Note **This material pertains to multiple Cisco LCD display models.**

32-inch	40-inch	42-inch	47-inch	52-inch	55-inch
(LCD-100L-PRO-32N)	(LCD-100-PRO-40N)	(LCD-110L-PRO-42)	(LCD-110L-PRO-47)	(LCD-110-PRO-52S)	(LCD-110Q-PRO-55Q)

Individual Cisco LCD display models each support dozens of RS-232 commands, covering the range of their configurable features.

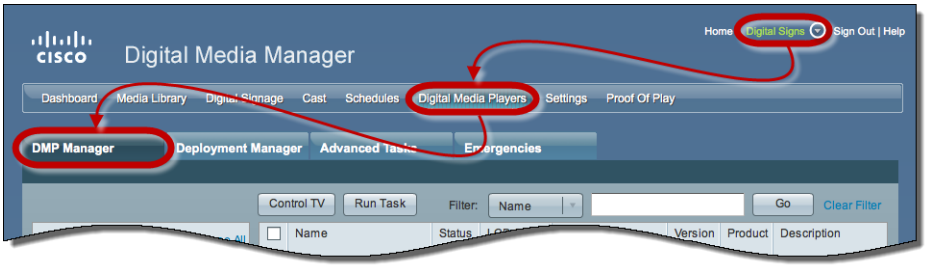
This topic explains various steps that you must complete before a Cisco LCD display supports RS-232 signaling for centralized management.

Before You Begin

- Connect your Cisco LCD display to the DMP that will drive it.
- Plug in your LCD display and turn it On.

Procedure

Step 1 Choose **Digital Media Players > DMP Manager**.



Step 2 Use one of these methods, at your discretion, to limit the scope of what the DMP List table shows to you.

- *Limit the scope by filtering.* (Optional)

  When you will filter against an attribute value

  a. Choose a DMP attribute type from the Filter list.

  You can filter by DMP name, description, IP address, MAC address, or any other supported attribute.

  b. Enter an actual value to filter against the attribute type that you chose.

  Had you chosen to filter against the Description attribute, for example, you might now enter a word like '**classroom**' or '**billboard**' as the value to match.

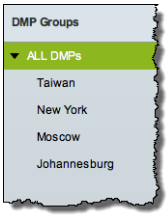
  c. Click **Go**.

  d. Proceed to Step 3.

- *Limit the scope by browsing.* (Optional)

  When you will browse by DMP group

  a. Browse in the DMP Groups tree to restrict what the DMP List table shows.

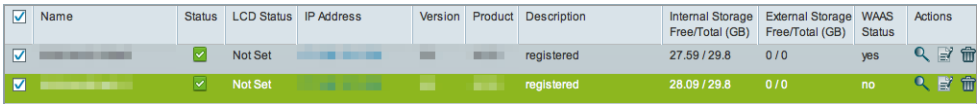
  

  b. Proceed to Step 3.

Step 3 Click one DMP in the table to choose it exclusively.

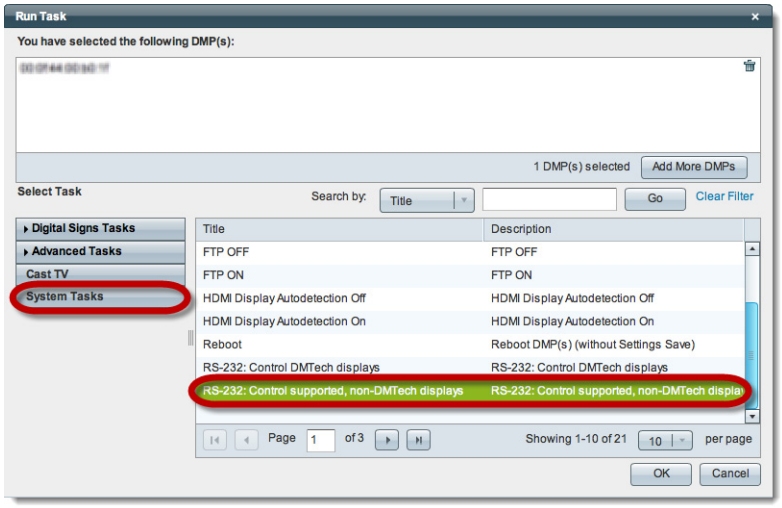
OR

Use check boxes to choose multiple DMPs whose attached presentation systems are all identical.



Step 4 Click Run Task, above the DMP List table.

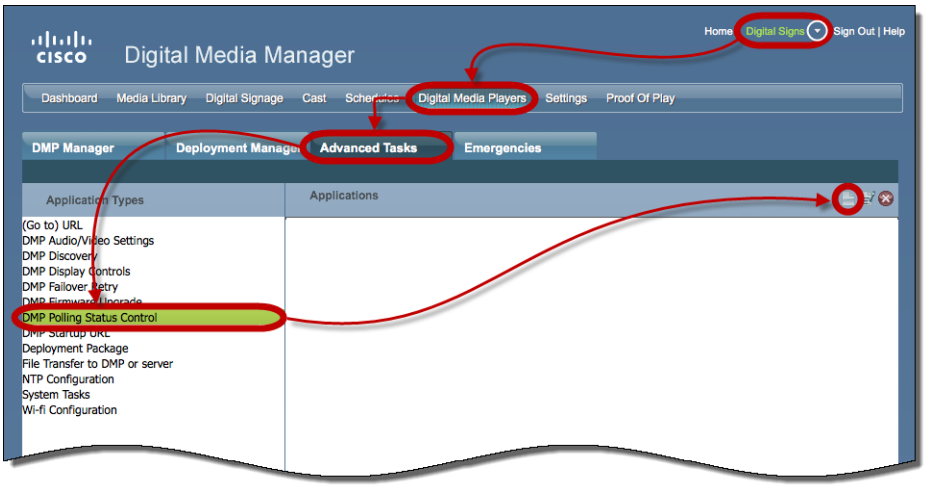
Step 5 Click **RS-232: Control supported, non-DMTech displays** in the System Tasks drawer.



Step 6 Click **OK**.

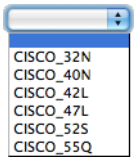
A message loads under the DMP Manager tab, confirming that DMM received your submission.

Step 7 Choose **Digital Media Players > Advanced Tasks > DMP Polling Status Control**.



Step 8 Click **Add New Application**.

a. Choose your Cisco Professional Series LCD display model from the TV Type list.



Note **This variation of our standard TV Type list includes Cisco models exclusively.** These are the only presentation system models whose electrical power On/Off state this Cisco DMS release can poll in real-time.

ALSO: *Is your Cisco LCD display the 32-inch model?* If so, see the "Do you use our 32-inch LCD display?" section, elsewhere in this procedure. It might be necessary for you to disable a feature that all other users enable.

b. Choose **On** from the Polling list, and then click **Submit**.

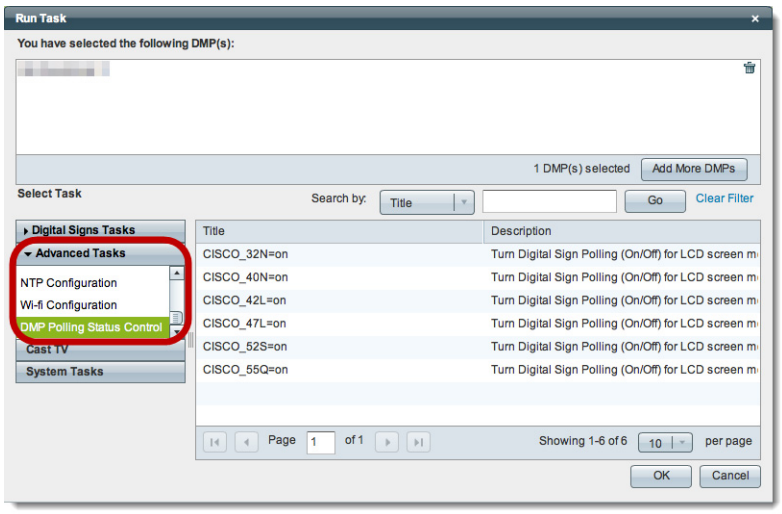
We generate a concise name for this application automatically. We are able to do this because your selections have already defined the purpose and scope of your new polling control application. Its generated name is always one of these:

- **`CISCO_32N=on`**
- **`CISCO_40N=on`**
- **`CISCO_42L=on`**
- **`CISCO_47L=on`**
- **`CISCO_52S=on`**
- **`CISCO_55Q=on`**

After we show the name to you, your new polling control application is ready for use.

Step 9 Click Run Task, again.

Step 10 Click **DMP Polling Status Control** in the Advanced Tasks drawer.



Step 11 Click the same "**=on**" application that you saved for your Cisco LCD model, and then click **OK**.

A message loads under the DMP Manager tab, confirming that DMM received your submission.

Note **As many as 5 minutes might pass before the LCD Status column updates its value to show the real-time power state of your Cisco LCD display.** Ultimately, this value will say either "Display On" or "Display Off." Until then, however, it will say "Not Set."

Please check the next step in this procedure, however, to learn if another step is necessary here to configure your LCD Professional Series model.

Step 12 Compensate, as needed, for model-specific exceptions to basic RS-232 setup.

- *Do you use our 42-inch or 47-inch LCD display?*

  When you will poll the On/Off status of a 42- or 47-inch Cisco LCD display

  Factory-default settings for this equipment save power by turning Off most of its support for remote management and polling. Almost any attempt to use such features can fail while the energy-saving settings remain in effect.[1] **So, before you can reliably manage or poll this equipment from Cisco DMS, YOU**[2] **MUST explicitly prepare the RS-232 service for use.** Later, at your discretion, you can either turn Off[3] this support or leave it turned On[4] continuously.

  a. Press **Menu** on the handheld remote control unit.

     Your LCD display shows its OSD menu.

  b. Use buttons on the remote control to choose **Option > Set > Set ID**, and then change the Set ID value (from "Off") to **1**.

  c. Press **Exit** on the remote control.

1. CSCts44188; CSCtl83984.
2. Or the on-site operator for this equipment.
3. Which decreases power consumption but complicates remote management.
4. Which simplifies remote management but increases power consumption.

Related Topics

- Bootstrap DMTech Displays to Enable Their RS-232 Support, page 16-16
- Bootstrap NEC Displays to Enable Their RS-232 Support, page 16-19
- Elements to Activate RS-232 for Supported LCD Display Brands (except DMTech), page 16-40

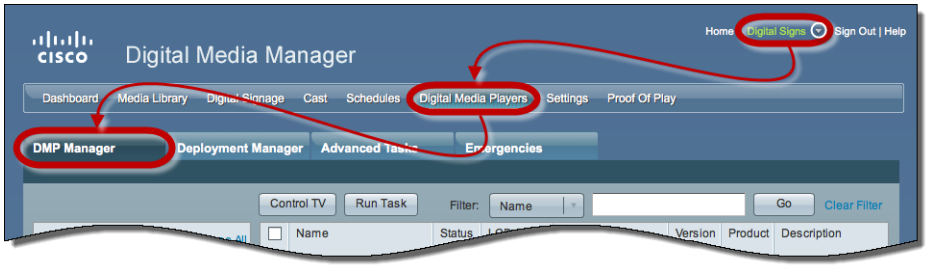
Bootstrap DMTech Displays to Enable Their RS-232 Support

You can use our Digital Signs software to transmit instruction codes through your DMPs, and into their attached presentation systems.

Note **We do not maintain or control the RS-232 commands for any third-party equipment.** Please check the manufacturer documentation for your non-Cisco presentation systems to learn which RS-232 strings are engineered to manage them.

Procedure

Step 1 Choose **Digital Media Players > DMP Manager**.



Step 2 Use one of these methods, at your discretion, to limit the scope of what the DMP List table shows to you.

- *Limit the scope by filtering.* (Optional)

  When you will filter against an attribute value

  a. Choose a DMP attribute type from the Filter list.

  You can filter by DMP name, description, IP address, MAC address, or any other supported attribute.

  b. Enter an actual value to filter against the attribute type that you chose.

  Had you chosen to filter against the Description attribute, for example, you might now enter a word like '**classroom**' or '**billboard**' as the value to match.

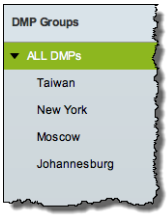
  c. Click **Go**.

  d. Proceed to Step 3.

- *Limit the scope by browsing.* (Optional)

  When you will browse by DMP group

  a. Browse in the DMP Groups tree to restrict what the DMP List table shows.

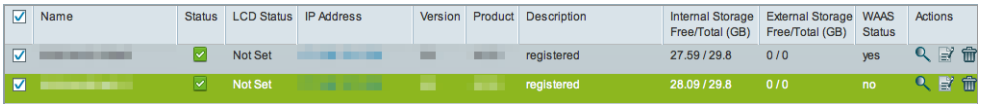
  

  b. Proceed to Step 3.

Step 3 Click one DMP in the table to choose it exclusively.

OR

Use check boxes to choose multiple DMPs whose attached presentation systems are all identical.

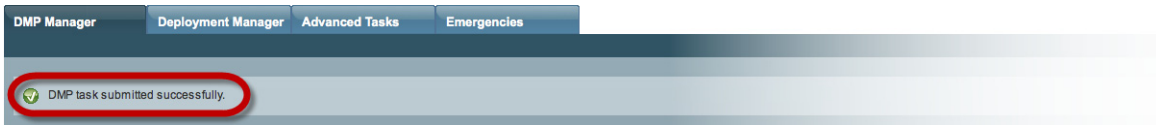


Step 4 Click Run Task, above the DMP List table.

Step 5 Click **RS-232: Control DMTech Displays** in the System Tasks drawer.

Step 6 Click **OK**.

A message loads under the DMP Manager tab, confirming that DMM received your submission.



Step 7 Stop. You have completed this procedure.

Related Topics

- Elements to Activate RS-232 for LCD Displays by DMTech, page 16-41

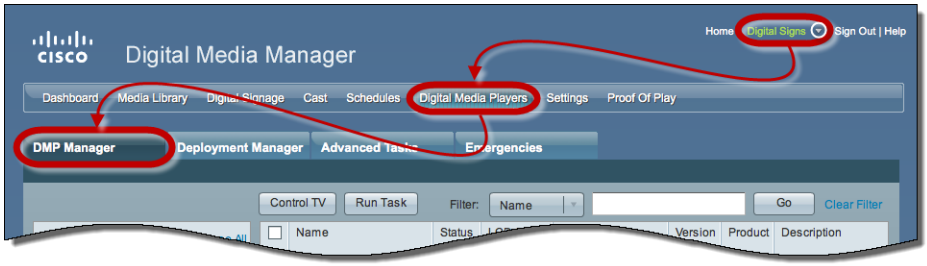
Bootstrap NEC Displays to Enable Their RS-232 Support

You can use our Digital Signs software to transmit instruction codes through your DMPs, and into their attached presentation systems.

Note **We do not maintain or control the RS-232 commands for any third-party equipment.** Please check the manufacturer documentation for your non-Cisco presentation systems to learn which RS-232 strings are engineered to manage them.

Procedure

Step 1 Choose **Digital Media Players > DMP Manager**.



Step 2 Use one of these methods, at your discretion, to limit the scope of what the DMP List table shows to you.

- *Limit the scope by filtering.* (Optional)

  When you will filter against an attribute value

  a. Choose a DMP attribute type from the Filter list.

  You can filter by DMP name, description, IP address, MAC address, or any other supported attribute.

  b. Enter an actual value to filter against the attribute type that you chose.

  Had you chosen to filter against the Description attribute, for example, you might now enter a word like '**classroom**' or '**billboard**' as the value to match.

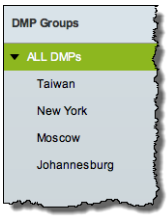
  c. Click **Go**.

  d. Proceed to Step 3.

- *Limit the scope by browsing.* (Optional)

  When you will browse by DMP group

  a. Browse in the DMP Groups tree to restrict what the DMP List table shows.

  b. Proceed to Step 3.

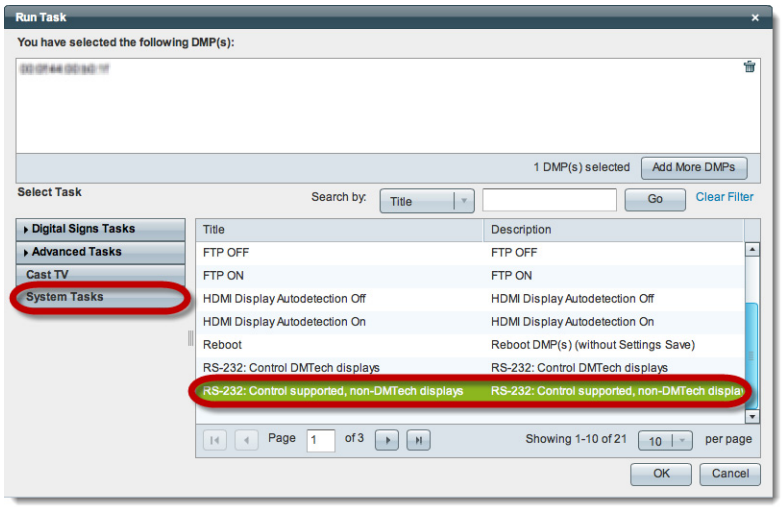
Step 3 Click one DMP in the table to choose it exclusively.

OR

Use check boxes to choose multiple DMPs whose attached presentation systems are all identical.

Step 4 Click Run Task, above the DMP List table.

Step 5 Click **RS-232: Control supported, non-DMTech displays** in the System Tasks drawer.



Step 6 Click **OK**.

A message loads under the DMP Manager tab, confirming that DMM received your submission.

Step 7 Stop. You have completed this procedure.

Related Topics

- Elements to Activate RS-232 for Supported LCD Display Brands (except DMTech), page 16-40

Use RS-232 Syntax to Control Digital Signs

You can add and edit RS-232 commands that operate LCD displays or other presentation system types.

Before You Begin

- Prepare your displays for centralized management via RS-232 commands.
- Activate RS-232 command access for your displays.

Procedure

Step 1 Choose **Digital Media Players > Advanced Tasks**.

Step 2 Click **System Tasks** in the Application Types list.

Step 3 Do one of the following.

- *Are you adding (creating) a command?*

  When you will define and save a new RS-232 command

  a. Click **Add New Application**.

  The page is refreshed so that you can choose options and enter values.

  b. Enter a name.

  c. Choose **Set** from the Request Type list.

  d. Enter an RS-232 command string in the Request field.

- *Are you editing a command that you saved previously?*

  When you will edit a saved command

  a. Find your editing target in the Applications table.

  b. Click its named row in the Applications table.

  c. Click **Edit Application**.

  The page is refreshed so that you can choose options and enter values.

  d. As needed:
  - Edit the name.
  - Edit the RS-232 command string in the Request field.

For example, the hexadecimal strings in Table 16-1 convey many of the RS-232 commands that you can send in this way to a Cisco LCD Professional Series display.

Table 16-1 RS-232 Commands to Manage Cisco LCD Displays

Task	Hexadecimal RS-232 Command Strings					
	32-inch LCD-PRO	**40-inch LCD-PRO**	**42-inch LCD-PRO**	**47-inch LCD PRO**	**52-inch LCD-PRO**	**55-inch LCD-PRO**
Power						
On	*rs232.tx_hex=* 6B612030312030310D	*rs232.tx_hex=* AA11FF010112	*rs232.tx_hex=* 6B612030312030310D	*rs232.tx_hex=* 6B612030312030310D	*rs232.tx_hex=* AA11FF010112	*rs232.tx_hex=* 3462303131303030310D
Off	*rs232.tx_hex=* 6B612030312030300D	*rs232.tx_hex=* AA11FF010011	*rs232.tx_hex=* 6B612030312030300D	*rs232.tx_hex=* 6B612030312030300D	*rs232.tx_hex=* AA11FF010011	*rs232.tx_hex=* 3462303131303030300D

Table 16-1 RS-232 Commands to Manage Cisco LCD Displays (continued)

Task	Hexadecimal RS-232 Command Strings					
	32-inch LCD-PRO	**40-inch LCD-PRO**	**42-inch LCD-PRO**	**47-inch LCD PRO**	**52-inch LCD-PRO**	**55-inch LCD-PRO**
Input Source						
HDMI	*rs232.tx_hex=* 6B622030312030380D	*rs232.tx_hex=* AA14FF012135	*rs232.tx_hex=* 6B622030312030380D	*rs232.tx_hex=* 6B622030312030380D	*rs232.tx_hex=* AA14FF012135	*rs232.tx_hex=* 3462303131303130303 00D
DVI	—	*rs232.tx_hex=* AA14FF01182C	—	—	*rs232.tx_hex=* AA14FF01182C	*rs232.tx_hex=* 3462303131303130303 10D
Component	*rs232.tx_hex=* 6B622030312030340D	—	*rs232.tx_hex=* 6B622030312030340D	*rs232.tx_hex=* 6B622030312030340D	*rs232.tx_hex=* AA14FF01081C	*rs232.tx_hex=* 3462303131303130303 60D
AV	*rs232.tx_hex=* 6B622030312030320D	*rs232.tx_hex=* AA14FF010C20	*rs232.tx_hex=* 6B622030312030320D	*rs232.tx_hex=* 6B622030312030320D	*rs232.tx_hex=* AA14FF010C20	*rs232.tx_hex=* 3462303131303130303 80D
PC	*rs232.tx_hex=* 6B622030312030370D	*rs232.tx_hex=* AA14FF011428	*rs232.tx_hex=* 6B622030312030370D	*rs232.tx_hex=* 6B622030312030370D	*rs232.tx_hex=* AA14FF011428	*rs232.tx_hex=* 3462303131303130303 30D
S-Video	—	—	—	—	—	*rs232.tx_hex=* 3462303131303130303 70D
BNC	—	—	—	—	*rs232.tx_hex=* AA14FF011E32	—
Mute						
On	*rs232.tx_hex=* 6B6520303120300D	*rs232.tx_hex=* AA13FF010114	*rs232.tx_hex=* 6B6520303120300D	*rs232.tx_hex=* 6B6520303120300D	*rs232.tx_hex=* AA13FF010114	*rs232.tx_hex=* 3462303135353030310D
Off	*rs232.tx_hex=* 6B6520303120310D	*rs232.tx_hex=* AA13FF010013	*rs232.tx_hex=* 6B6520303120310D	*rs232.tx_hex=* 6B6520303120310D	*rs232.tx_hex=* AA13FF010013	*rs232.tx_hex=* 3462303135353030300D
Volume						
0%	*rs232.tx_hex=* 6B662030312030300D	*rs232.tx_hex=* AA12FF010012	*rs232.tx_hex=* 6B662030312030300D	*rs232.tx_hex=* 6B662030312030300D	*rs232.tx_hex=* AA12FF010012	*rs232.tx_hex=* 3462303131353030300 0D
25%	*rs232.tx_hex=* 6B662030312031390D	*rs232.tx_hex=* AA12FF01192B	*rs232.tx_hex=* 6B662030312031390D	*rs232.tx_hex=* 6B662030312031390D	*rs232.tx_hex=* AA12FF01192B	*rs232.tx_hex=* 3462303131353030323 50D
50%	*rs232.tx_hex=* 6B662030312033320D	*rs232.tx_hex=* AA12FF013244	*rs232.tx_hex=* 6B662030312033320D	*rs232.tx_hex=* 6B662030312033320D	*rs232.tx_hex=* AA12FF013244	*rs232.tx_hex=* 3462303131353030350 0D
75%	*rs232.tx_hex=* 6B662030312034620D	*rs232.tx_hex=* AA12FF014b5D	*rs232.tx_hex=* 6B662030312034620D	*rs232.tx_hex=* 6B662030312034620D	*rs232.tx_hex=* AA12FF014b5D	*rs232.tx_hex=* 3462303131353030373 50D
100%	*rs232.tx_hex=* 6B662030312036340D	*rs232.tx_hex=* AA12FF016476	*rs232.tx_hex=* 6B662030312036340D	*rs232.tx_hex=* 6B662030312036340D	*rs232.tx_hex=* AA12FF016476	*rs232.tx_hex=* 3462303131353031303 00D
Brightness						
25%	*rs232.tx_hex=* 6B6820312031390D	*rs232.tx_hex=* AA25FF01193E	*rs232.tx_hex=* 6B6820312031390D	*rs232.tx_hex=* 6B6820312031390D	*rs232.tx_hex=* AA25FF01193E	*rs232.tx_hex=* 3462303131313030323 50D
50%	*rs232.tx_hex=* 6B6820312033320D	*rs232.tx_hex=* AA25FF013257	*rs232.tx_hex=* 6B6820312033320D	*rs232.tx_hex=* 6B6820312033320D	*rs232.tx_hex=* AA25FF013257	*rs232.tx_hex=* 3462303131313030350 0D
75%	*rs232.tx_hex=* 6B6820312034620D	*rs232.tx_hex=* AA25FF014B70	*rs232.tx_hex=* 6B6820312034620D	*rs232.tx_hex=* 6B6820312034620D	*rs232.tx_hex=* AA25FF014B70	*rs232.tx_hex=* 3462303131313030373 50D
100%	*rs232.tx_hex=* 6B6820312036340D	*rs232.tx_hex=* AA25FF016489	*rs232.tx_hex=* 6B6820312036340D	*rs232.tx_hex=* 6B6820312036340D	*rs232.tx_hex=* AA25FF016489	*rs232.tx_hex=* 3462303131313031303 00D
Contrast						
25%	*rs232.tx_hex=* 6B672030312031390D	*rs232.tx_hex=* AA24FF01193D	*rs232.tx_hex=* 6B672030312031390D	*rs232.tx_hex=* 6B672030312031390D	*rs232.tx_hex=* AA24FF01193D	*rs232.tx_hex=* 3462303131313130323 50D
50%	*rs232.tx_hex=* 6B672030312033320D	*rs232.tx_hex=* AA24FF013256	*rs232.tx_hex=* 6B672030312033320D	*rs232.tx_hex=* 6B672030312033320D	*rs232.tx_hex=* AA24FF013256	*rs232.tx_hex=* 3462303131313130350 0D
75%	*rs232.tx_hex=* 6B672030312034620D	*rs232.tx_hex=* AA24FF014B6F	*rs232.tx_hex=* 6B672030312034620D	*rs232.tx_hex=* 6B672030312034620D	*rs232.tx_hex=* AA24FF014B6F	*rs232.tx_hex=* 3462303131313130373 50D
100%	*rs232.tx_hex=* 6B672030312036340D	*rs232.tx_hex=* AA24FF016488	*rs232.tx_hex=* 6B672030312036340D	*rs232.tx_hex=* 6B672030312036340D	*rs232.tx_hex=* AA24FF016488	*rs232.tx_hex=* 3462303131313131303 00D

Table 16-1 RS-232 Commands to Manage Cisco LCD Displays (continued)

Task	Hexadecimal RS-232 Command Strings					
	32-inch LCD-PRO	**40-inch LCD-PRO**	**42-inch LCD-PRO**	**47-inch LCD PRO**	**52-inch LCD-PRO**	**55-inch LCD-PRO**
Sharpness						
25%	*rs232.tx_hex=* 6B6B2030312031390D	*rs232.tx_hex=* AA26FF01193F	*rs232.tx_hex=* 6B6B2030312031390D	*rs232.tx_hex=* 6B6B2030312031390D	*rs232.tx_hex=* AA26FF01193F	*rs232.tx_hex=* 3462303131313230323 50D
50%	*rs232.tx_hex=* 6B6B2030312033320D	*rs232.tx_hex=* AA26FF013258	*rs232.tx_hex=* 6B6B2030312033320D	*rs232.tx_hex=* 6B6B2030312033320D	*rs232.tx_hex=* AA26FF013258	*rs232.tx_hex=* 3462303131313230353 00D
75%	*rs232.tx_hex=* 6B6B2030312034620D	*rs232.tx_hex=* AA26FF014b71	*rs232.tx_hex=* 6B6B2030312034620D	*rs232.tx_hex=* 6B6B2030312034620D	*rs232.tx_hex=* AA26FF014b71	*rs232.tx_hex=* 3462303131313230373 50D
100%	*rs232.tx_hex=* 6B6B2030312036340D	*rs232.tx_hex=* AA26FF01648A	*rs232.tx_hex=* 6B6B2030312036340D	*rs232.tx_hex=* 6B6B2030312036340D	*rs232.tx_hex=* AA26FF01648A	*rs232.tx_hex=* 3462303131313231303 00D
Colorfulness[1] (Saturation)						
25%	*rs232.tx_hex=* 6B692030312031390D	*rs232.tx_hex=* AA27FF011940	*rs232.tx_hex=* 6B692030312031390D	*rs232.tx_hex=* 6B692030312031390D	*rs232.tx_hex=* AA27FF011940	*rs232.tx_hex=* 3462303131313630323 50D
50%	*rs232.tx_hex=* 6B692030312033320D	*rs232.tx_hex=* AA27FF013259	*rs232.tx_hex=* 6B692030312033320D	*rs232.tx_hex=* 6B692030312033320D	*rs232.tx_hex=* AA27FF013259	*rs232.tx_hex=* 3462303131313630353 00D
75%	*rs232.tx_hex=* 6B692030312034620D	*rs232.tx_hex=* AA27FF014B72	*rs232.tx_hex=* 6B692030312034620D	*rs232.tx_hex=* 6B692030312034620D	*rs232.tx_hex=* AA27FF014B72	*rs232.tx_hex=* 3462303131313630373 50D
100%	*rs232.tx_hex=* 6B692030312036340D	*rs232.tx_hex=* AA27FF01648B	*rs232.tx_hex=* 6B692030312036340D	*rs232.tx_hex=* 6B692030312036340D	*rs232.tx_hex=* AA27FF01648B	*rs232.tx_hex=* 3462303131313631303 00D
Tint						
25%	*rs232.tx_hex=* 6B6A2030312031390D	*rs232.tx_hex=* AA28FF011941	*rs232.tx_hex=* 6B6A2030312031390D	*rs232.tx_hex=* 6B6A2030312031390D	*rs232.tx_hex=* AA28FF011941	*rs232.tx_hex=* 3462303131313530323 50D
50%	*rs232.tx_hex=* 6B6A2030312033320D	*rs232.tx_hex=* AA28FF01325A	*rs232.tx_hex=* 6B6A2030312033320D	*rs232.tx_hex=* 6B6A2030312033320D	*rs232.tx_hex=* AA28FF01325A	*rs232.tx_hex=* 3462303131313530353 00D
75%	*rs232.tx_hex=* 6B6A2030312034620D	*rs232.tx_hex=* AA28FF014B73	*rs232.tx_hex=* 6B6A2030312034620D	*rs232.tx_hex=* 6B6A2030312034620D	*rs232.tx_hex=* AA28FF014B73	*rs232.tx_hex=* 3462303131313530373 50D
100%	*rs232.tx_hex=* 6B6A2030312036340D	*rs232.tx_hex=* AA28FF01648C	*rs232.tx_hex=* 6B6A2030312036340D	*rs232.tx_hex=* 6B6A2030312036340D	*rs232.tx_hex=* AA28FF01648C	*rs232.tx_hex=* 3462303131313531303 00D
Remote Control Lock[2]						
On	—	AA36FF010036	—	—	AA36FF010036	—
Off	—	AA36FF010037	—	—	AA36FF010037	—
Panel Lock[3]						
On	—	*rs232.tx_hex=* AA5FFF010160	—	—	*rs232.tx_hex=* AA5FFF010160	*rs232.tx_hex=* 3462303131303330303 10D
Off	—	*rs232.tx_hex=* AA5FFF01005F	—	—	*rs232.tx_hex=* AA5FFF01005F	*rs232.tx_hex=* 3462303131303330303 00D
Safety Lock[4]						
On	*rs232.tx_hex=* 6B6D2030312030310D	*rs232.tx_hex=* AA5DFF01015E	*rs232.tx_hex=* 6B6D2030312030310D	*rs232.tx_hex=* 6B6D2030312030310D	*rs232.tx_hex=* AA5DFF01015E	—
Off	*rs232.tx_hex=* 6B6D2030312030300D	*rs232.tx_hex=* AA5DFF01005D	*rs232.tx_hex=* 6B6D2030312030300D	*rs232.tx_hex=* 6B6D2030312030300D	*rs232.tx_hex=* AA5DFF01005D	—

1. An image with a colorfulness value of zero percent is grayscale, while the same image with a colorfulness value of 100 percent has vivid colors.
2. The display ignores its handheld remote control but still responds to other commands.
3. The display ignores its built-in buttons but still responds to other commands.
4. Control the display exclusively through your DMP. Neither the handheld remote control nor buttons on the display can override your off-site management.

Step 4 Set other, optional values as needed.

Step 5 Click **Submit** to save your work, so that you might someday use it.

OR

Click **Cancel** to discard your work.

Step 6 Stop. You have completed this procedure.

What to Do Next

- *Would you like to **delete** a saved command?*
  Proceed to the "Delete Equipment Settings That Use RS-232 Syntax" section on page 16-25.

Delete Equipment Settings That Use RS-232 Syntax

You can delete any of your named and saved RS-232 command strings.

Procedure

Step 1 Choose **Digital Media Players > Advanced Tasks**.

Step 2 Click **System Tasks** in the Application Types list.

Step 3 Find your editing target in the Applications table.

Step 4 Click its named row in the Applications table.

Step 5 Click **Delete Application**.

Step 6 Click **Submit** to commit this deletion.

OR

Click **Cancel** to abandon this deletion.

Step 7 Stop. You have completed this procedure.

Related Topics

- RS-232 Commands to Manage Cisco LCD Displays

DVI

Support DVI Management

- Prepare a 40- or 52-inch Cisco LCD to Support Centralized Management through DVI, page 16-26

Prepare a 40- or 52-inch Cisco LCD to Support Centralized Management through DVI

Note **Only our 40-inch and 52-inch LCD display models support DVI connections.**

When you use an HDMI cable or a DVI cable to connect your DMP to a 40- or 52-inch Cisco LCD display, you can use Digital Signs to centrally manage the LCD display.

When unmodified HDMI is the connection type from a DMP to either of these display models, centralized management from DMM works immediately, without any prerequisites. However, when you combine HDMI with a DVI adapter, you must complete a simple task **at the physical installation site** for your display before you can start to centrally manage it.

Before You Begin

- Activate RS-232 command access for your 40-inch or 52-inch display.

Procedure

Step 1 Press **Menu** on the remote control for your 40-inch or 52-inch LCD display.

OR

Press **Menu** on the LCD display front panel.

Step 2 Choose **Input > Source List > DVI**, and then press **Enter**.

Step 3 Choose **Input > Edit Name > DVI > HD STB**, and then press **Enter**.

Step 4 Stop. You have completed this procedure.

Related Topics

- Elements to Activate RS-232 for Supported LCD Display Brands (except DMTech), page 16-40
- RS-232 Commands to Manage Cisco LCD Displays
- Use Predefined Tasks to Configure and Manage Equipment, page 16-28

HDMI

Support Autodetection

- Activate or Deactivate HDMI Autodetection, page 16-27
- Activate or Deactivate Resolution Autodetection, page 16-27

Activate or Deactivate HDMI Autodetection

Procedure

Step 1 Deploy the System Task event called **HDMI Display Autotection On**.

OR

Deploy the System Task event called **HDMI Display Autodetection Off**.

Step 2 Stop. You have completed this procedure.

Related Topics

- Elements to Control HDMI Display Autodetection, page 16-39

Activate or Deactivate Resolution Autodetection

Before You Begin

- Activate HDMI autodetection.

Procedure

Step 1 Deploy the System Task event called **Screen Resolution Autotection On**.

OR

Deploy the System Task event called **Screen Resolution Autodetection Off**.

Step 2 Stop. You have completed this procedure.

Related Topics

- Elements to Control Screen Resolution Autodetection, page 16-40

Use Predefined Tasks to Configure and Manage Equipment

Configure DMP Output

- Define or Edit DMP Output Settings for A/V, page 16-28
- Delete DMP Output Settings for A/V, page 16-30

Manage Presentation Systems

- Use Simple Menus to Control A/V Settings, page 16-31
- Edit A/V Settings That You Chose from Menus, page 16-33
- Delete A/V Settings That You Chose from Menus, page 16-34

Define or Edit DMP Output Settings for A/V

You can configure the audio and video signals that DMPs send to their attached presentation systems.

Procedure

Step 1 Choose **Digital Media Players > Advanced Tasks**.

Step 2 Click **DMP Audio/Video Settings** in the Application Types list.

Step 3 Do one of the following.

- *Are these new settings?*

When your A/V settings are new

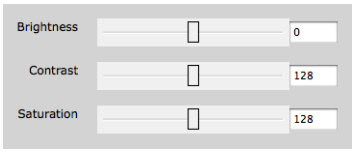
a. Click **Add New Application**.

The page is refreshed so that you can choose options and enter values.

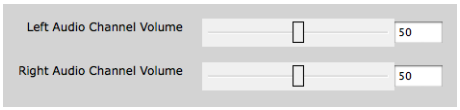
b. Enter a name.

For example, the name might identify a locale where the lighting is dim, for which you must adjust the brightness.

c. Set values for brightness, contrast, and saturation.



d. Set values for the Left and Right audio channels.



e. Set any other, optional values as needed.

f. Proceed to Step 4.

- *Are you editing saved settings?*

When your A/V settings should change

a. Find your editing target in the Applications table.

a. Click its named row in the Applications table.

b. Click **Edit Application**.

The page is refreshed so that you can choose options and enter values.

c. As needed:
- Edit the name.
- Edit values for brightness, contrast, or saturation.
- Edit values for the Left or Right audio channels.
- Edit other, optional values as needed.

d. Proceed to Step 4.

Step 4 Click **Submit** to save your work, so that you might someday use it.

OR

Click **Cancel** to discard your work.

Step 5 Stop. You have completed this procedure.

Related Topics

- Elements to Configure DMP Audio/Video Settings, page 16-39

Delete DMP Output Settings for A/V

You can delete any of your named and saved settings for DMP audio and video output.

Procedure

Step 1 Choose **Digital Media Players > Advanced Tasks**.

Step 2 Click **DMP Audio/Video Settings** in the Application Types list.

Step 3 Find your deletion target in the Applications table.

Step 4 Click its named row in the Applications table.

Step 5 Click **Delete Application**.

Step 6 Click **Submit** to commit this deletion.

OR

Click **Cancel** to abandon this deletion.

Step 7 Stop. You have completed this procedure.

Related Topics

- Elements to Configure DMP Audio/Video Settings, page 16-39

Use Simple Menus to Control A/V Settings

You can define and save a customized bundle of device configuration settings for certain popular presentation system models. We provide this option for models that pass our tests for DMP compatibility.

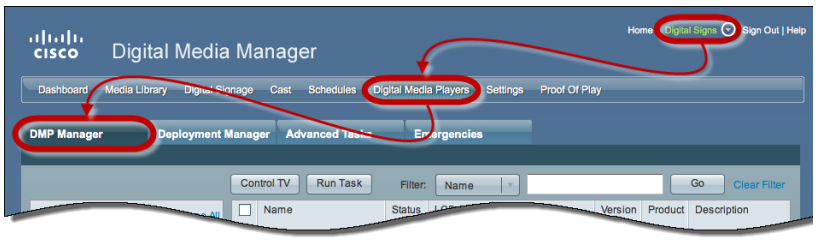
Procedure

Step 1 Do one of the following.

- *Would you prefer to start from your DMP inventory?*

When you will start from your DMP inventory

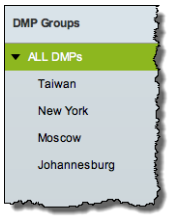
a. Choose **Digital Media Players > DMP Manager**.



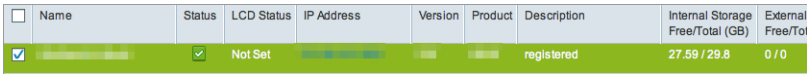
b. Choose an option from the Filter list to restrict which DMPs the table describes.

OR

Browse in the DMP Groups tree to restrict which DMPs the table describes.

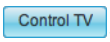


c. Click a DMP in the table to choose it.



OR

Use check boxes to choose multiple DMPs whose attached presentation systems are identical.

d. Click 

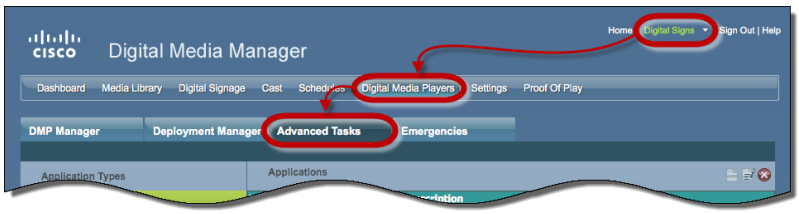
, above the DMP List table..

e. Proceed to Step 2.

- *Would you prefer to start from your collection of advanced tasks?*

When you will start from your collection of advanced tasks

a. Choose **Digital Media Players > Advanced Tasks**.



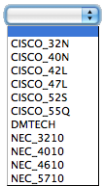
b. Click **DMP Display Controls** in the Application Types list.

c. Click **Add New Application**.

The page is refreshed so that you can choose options and enter values.

d. Proceed to Step 2.

Step 2 Choose your display's make and model from the TV Type list.



Note We provide preconfigured tasks for only the presentation system models that pass our tests for DMP compatibility.

Step 3 Enter a name for the bundle of device configuration settings that you are about to define.

Step 4 Set values for video attributes.

Step 5 Set values for audio attributes.

Step 6 Set other, optional values as needed.

Step 7 Click **Submit** to save your work, so that you might someday use it.

OR

Click **Cancel** to discard your work.

Step 8 Stop. You have completed this procedure.

What to Do Next

- *Would you like to **edit** what you saved?*
  Proceed to the "Edit A/V Settings That You Chose from Menus" section on page 16-33.
- *Would you like to **delete** what you saved?*
  Proceed to the "Delete A/V Settings That You Chose from Menus" section on page 16-34.

Related Topics

- Prepare a 40- or 52-inch Cisco LCD to Support Centralized Management through DVI, page 16-26
- Elements to Choose A/V Settings from Menus, page 16-36
- Elements to Activate RS-232 for Supported LCD Display Brands (except DMTech), page 16-40
- Elements to Activate RS-232 for LCD Displays by DMTech, page 16-41

Edit A/V Settings That You Chose from Menus

You can edit any of your named and saved RS-232 command string bundles.

Procedure

Step 1 Choose **Digital Media Players > Advanced Tasks**.

Step 2 Click **DMP Display Controls** in the Application Types list.

Step 3 Find your editing target in the Applications table.

Step 4 Click its named row in the Applications table.

Step 5 Click **Edit Application**.

The page is refreshed so that you can choose options and enter values.

Step 6 As needed.:

- Edit the name.
- Edit values for contrast, brightness, sharpness, color, or tint.
- Edit values for audio.
- Edit other, optional values.

Step 7 Click **Submit** to save your work, so that you might someday use it.

OR

Click **Cancel** to discard your work.

Step 8 Stop. You have completed this procedure.

What to Do Next

- *Would you like to **delete** what you edited?*
  Proceed to the "Delete A/V Settings That You Chose from Menus" section on page 16-34.

Related Topics

- Prepare a 40- or 52-inch Cisco LCD to Support Centralized Management through DVI, page 16-26
- Elements to Choose A/V Settings from Menus, page 16-36

Delete A/V Settings That You Chose from Menus

You can delete any of your named and saved RS-232 command strings.

Procedure

Step 1 Choose **Digital Media Players > Advanced Tasks**.

Step 2 Click **DMP Display Controls** in the Application Types list.

Step 3 Find your deletion target in the Applications table.

Step 4 Click its named row in the Applications table.

Step 5 Click **Delete Application**.

Step 6 Click **Submit** to commit this deletion.

OR

Click **Cancel** to abandon this deletion.

Step 7 Stop. You have completed this procedure.

Related Topics

- Use RS-232 Syntax to Control Digital Signs, page 16-21

Reference

- Video and Audio Signal Interfaces, page 16-35
- Supported Touchscreen Drivers, page 16-36
- Software UI and Field Reference Tables, page 16-36
- FAQs and Troubleshooting, page 16-41

Video and Audio Signal Interfaces

DMP 4305G

DMP 4310G

DMP 4400G

Table 16-2 Media Signal Interfaces

Category		Chassis Label	DMP 4305G	DMP 4310G	DMP 4400G
Video connectors	HDMI 1.1	• HDMI	**1**	0	**1**
	HDMI 1.3[1]		0	**1**	0
	Component[2]	• YPbPr/S-Video	0	**1**	0
		• S-VIDEO/YPbPr	**1**	0	0
		• S-Video	0	0	**1**
	Composite	• CVBS	**1**	0[3]	**1**
Audio connectors	3.5mm jack[4]	• Audio	0	**1**	**1**
	RCA	• SPDIF	0	0	**1**
		• RIGHT	**1**	0	0
		• LEFT	**1**	0	0

1. Backward-compatible to HDMI 1.1.
2. Use an S-Video signal cable with a YPbPr-to-S-Video adapter to transmit and receive YPbPr data signals.
3. There is no Composite CVBS connector on a DMP 4310G. Its YPbPr/S-Video connector supports Composite CVBS via an S-Video-to-Composite adapter.
4. Stereo audio output, irrespective of the cable type for video output.

Supported Touchscreen Drivers

DMP Model	Supported Drivers
DMP 4400G	• 3M MicroTouch • ELO Acoustic Pulse Recognition systems and non-APR systems • ELO non-Acoustic Pulse Recognition systems • GeneralTouch ST6001S and ST6201 • Zytronic Zybrid
DMP 4310G	• 3M Touch Systems Capacitive Pulse SCT • 3M Dispersive Signal DST • 3M Projected Capacitive PCT (with single touch) • ELO non-Acoustic Pulse Recognition systems • GeneralTouch ST6001S and ST6201

Software UI and Field Reference Tables

- Elements to Choose A/V Settings from Menus, page 16-36
- Elements to Configure DMP Audio/Video Settings, page 16-39
- Elements to Control HDMI Display Autodetection, page 16-39
- Elements to Control Screen Resolution Autodetection, page 16-40
- Elements to Activate RS-232 for Supported LCD Display Brands (except DMTech), page 16-40
- Elements to Activate RS-232 for LCD Displays by DMTech, page 16-41

Elements to Choose A/V Settings from Menus

Navigation Path

Either of these:

- Digital Media Players > DMP Manager > Control TV
- Digital Media Players > Advanced Tasks > DMP Audio/Video Settings

Table 16-3 Elements for Menu-driven Settings

Element	Description
TV Type	Choose the manufacturer and the model. **Tip** **Other elements on this page:** • Are not available until after you choose an option from this list. • Vary according to your choice from this list.
Name	A unique and human-readable name for these settings. It is unique in the sense that you have not used it previously as the name for anything that can be scheduled. You must enter a name.
Description	A brief description. The description is optional.
Contrast	A contrast setting value in the range from 0 to 100. Set the contrast. Then, check **Apply**.

Table 16-3 Elements for Menu-driven Settings (continued)

Element	Description
Brightness	A brightness setting value in the range from 0 to 100. Set the brightness. Then, check **Apply**.
Sharpness	A sharpness (clarity) setting value in the range from 0 to 100. Set the sharpness. Then, check **Apply**.
Color	A color setting value in the range from 0 to 100. Set the color. Then, check **Apply**.
Tint	A tint setting value in the range from 0 to 100. Set the tint. Then, check **Apply**.
TV Channel	An analog TV signal frequency value in the range from 0 to 99. Set the signal. Then, check **Apply**.
Audio Volume	An audio volume level setting value in the range from 0 to 100. Set the volume. Then, check **Apply**.
Mute	Choose whether to mute your presentation system.
Input	Choose the method that corresponds to your video signal cable, such as HDMI or S-Video.
Power	Choose whether to power your presentation system.
Cisco Displays Only	
Safety Lock	• Choose **On** to lock the front panel controls and the remote control buttons for your LCD Professional Series display. When anyone at its physical location presses buttons on the remote control or uses controls on the display front panel while they are locked, an on-screen message explains that the lock is engaged. There is no effect when anyone at its physical location uses the remote control unit to enter the safety lock PIN. • Choose **Off** to unlock these controls. It does not matter how you locked them. When you use Digital Signs to remotely unlock the remote control unit and controls on the display front panel, it is not necessary to enter the safety lock PIN. **Note** **Any option that you choose from this list clears your choice, if any, in the Remote Control Lock and Panel Lock lists.** You can choose only one option among all three of these lists, which are hidden unless you chose CISCO_40N or CISCO_52S from the TV Type list.

Table 16-3 Elements for Menu-driven Settings (continued)

Element	Description
Remote Control Lock	• Choose **On** to lock the remote control unit for your LCD Professional Series display. When anyone at its physical location presses buttons on the remote control while it are locked, an on-screen message explains that the lock is engaged. There is no effect when anyone at its physical location uses the remote control unit to enter the safety lock PIN. • Choose **Off** to unlock the remote control. It does not matter how you locked it. When you use Digital Signs to remotely unlock a remote control, it is not necessary to enter the safety lock PIN. **Note** **Any option that you choose from this list clears your choice, if any, in the Safety Lock and Panel Lock lists.** You can choose only one option among all three of these lists, which are hidden unless you chose CISCO_40N or CISCO_52S from the TV Type list.
Panel Lock	• Choose **On** to lock the front panel controls for your LCD Professional Series display. When anyone at its physical location uses controls on the display front panel while they are locked, an on-screen message explains that the lock is engaged. • Choose **Off** to unlock the front panel controls. It does not matter how you locked them. When you use Digital Signs to remotely unlock these controls, it is not necessary to enter the safety lock PIN. **Note** **Any option that you choose from this list clears your choice, if any, in the Safety Lock and Remote Control Lock lists.** You can choose only one option among all three of these lists, which are hidden unless you chose CISCO_40N or CISCO_52S from the TV Type list. **Tip** Alternatively, anyone at its physical location can use the remote control unit to unlock front panel controls on your LCD Professional Series Display, by entering the safety lock PIN correctly when prompted to enter it.

Related Topics

- Use Simple Menus to Control A/V Settings, page 16-31

Elements to Configure DMP Audio/Video Settings

Navigation Path

Digital Media Players > Advanced Tasks > DMP Audio/Video Settings

Table 16-4 Elements to Manage DMP A/V Settings

Element	Description
Name	A unique and human-readable name for these settings. It is unique in the sense that you have not used it previously as the name for anything that can be scheduled. You must enter a name.
Description	A brief description. The description is optional.
Brightness	The setting to compensates for deficiencies in on-screen brightness. Brightness compensation values can range from –128 to 127.
Contrast	The setting to compensate for any deficiencies in on-screen contrast. Contrast compensation values can range from 0 to 255. The default is 128.
Saturation	The setting to compensate for any deficiencies in on-screen color saturation. Saturation compensation values can range from 0 to 255. The default is 128.
Left Audio Channel Volume	The setting to control how loudly or softly your DMP outputs sound in the left audio channel. Volume can range from 0 to 100, where 0 is silent. The default is 50.
Right Audio Channel Volume	The setting to control how loudly or softly your DMP outputs sound in the left audio channel. Volume can range from 0 to 100, where 0 is silent. The default is 50.

Related Topics

- Define or Edit DMP Output Settings for A/V, page 16-28

Elements to Control HDMI Display Autodetection

Navigation Path

Digital Media Players > Advanced Tasks > System Tasks > HDMI Display Autodetection...

Table 16-5 Elements to Activate or Deactivate Attribute Autodetection

Application Name	Description, Icons, and Options
HDMI Display Autodetection...	Enable or disable DMP display type autodetection. • HDMI Display Autodetection On • HDMI Display Autodetection Off

Related Topics

- Activate or Deactivate HDMI Autodetection, page 16-27

Elements to Control Screen Resolution Autodetection

Navigation Path

Digital Media Players > Advanced Tasks > System Tasks > Screen Resolution Autodetection...

Table 16-6 Elements to Activate or Deactivate Screen Resolution Autodetection

Application Name	Description, Icons, and Options
Screen Resolution Autodetection...	Enable or disable autodetection of the resolutions that your DMP displays support. • Screen Resolution Autodetection On • Screen Resolution Autodetection Off

Related Topics

- Activate or Deactivate Resolution Autodetection, page 16-27

Elements to Activate RS-232 for Supported LCD Display Brands (except DMTech)

Tip **Before you pass RS-232 commands through your DMPs and to your DMP displays, first confirm that each DMP is connected to its display by a signal cable that supports RS-232 signals.** Otherwise, your displays will never receive the commands that you define for them.

Navigation Path

Digital Media Players > Advanced Tasks > System Tasks >
RS-232: Control Supported, Non-DMTech Displays

Table 16-7 Elements to Activate DMP Support for RS-232 for non-DMTech Displays

Element	Description
RS-232: Control supported, non-DMTech displays	Cause DMPs to send RS-232 management instructions to an LCD display manufactured by Cisco, Samsung, LG, NEC, or other supported manufacturers.

Related Topics

- Prepare Cisco Displays to Support RS-232 Syntax, page 16-11

Elements to Activate RS-232 for LCD Displays by DMTech

Tip **Before you pass RS-232 commands through your DMPs and to your DMP displays, first confirm that each DMP is connected to its display by a signal cable that supports RS-232 signals. Otherwise, your displays will never receive the commands that you define for them.**

Navigation Path

Digital Media Players > Advanced Tasks > System Tasks > RS-232: Control DMTech Displays

Table 16-8 Elements to Activate DMP Support for RS-232 for DMTech Displays

Application Name	Description, Icons, and Options
System Tasks	
RS-232: Control DMTech displays	Cause DMPs to send RS-232 management instructions to an LCD display manufactured by DMTech.

Related Topics

- Bootstrap DMTech Displays to Enable Their RS-232 Support, page 16-16

FAQs and Troubleshooting

- FAQs, page 16-41
- Troubleshoot Cisco Professional Series LCD Displays, page 16-43

FAQs

- FAQs About Cleaning and Maintenance, page 16-41
- FAQs About Daily Operation, page 16-42
- FAQs About RS-232, page 16-42
- FAQs About Touchscreens, page 16-42
- FAQs About Product Quality, page 16-42

FAQs About Cleaning and Maintenance

- *How should I clean and maintain a Professional Series display?*

Q. How should I clean and maintain a Professional Series display?

A. For cleaning and maintenance guidelines, see the Safety Instructions section called “Cleaning the Display, Its Plug, and Its Outlet Safely” in *User Guide for Cisco LCD Professional Series Displays* on Cisco.com.

FAQs About Daily Operation

- *How long does display autodetection take?*
- *Why might display autodetection fail?*

Q. How long does display autodetection take?

A. Autodetection takes less than 8 seconds in most cases and less than 2 seconds in some cases.

Q. Why might display autodetection fail?

A. The display autodetection feature fails unless you use an HDMI signal cable (with or without a DVI adapter) to connect a presentation system to your DMP.

FAQs About RS-232

- *Why does my DMP 4400G run very slowly while its RS-232 features are enabled?*

Q. Why does my DMP 4400G run very slowly while its RS-232 features are enabled?

A. The likeliest explanation is that your signal cable is faulty. Try substituting the equivalent cable from a DMP that operates as expected when RS-232 features are enabled. If doing this has no effect, restore your DMP to its factory-default settings and then configure it once more to support RS-232.

FAQs About Touchscreens

- *What should I do when a message states that my touchscreen must download a characterization file?*
- *When is it necessary to repeat the calibration of a touchscreen?*
- *What can cause a properly calibrated touchscreen to operate as if it is not calibrated?*

Q. What should I do when a message states that my touchscreen must download a characterization file?

A. Do not disturb or interrupt the automated process. It occurs only once, and takes approximately 10 minutes to finish. When it is finished, your touchscreen will clear the message automatically.

Q. When is it necessary to repeat the calibration of a touchscreen?

A. You must repeat this calibration whenever you:

- Rotate a touchscreen or change its resolution.
- Replace a touchscreen.

Q. What can cause a properly calibrated touchscreen to operate as if it is not calibrated?

A. If this happens to you, unplug the serial cable (or USB cable) that connects this touchscreen to your DMP. Then, plug that cable back in again.

FAQs About Product Quality

- *Why are some pixels unexpectedly bright, or black?*

Q. Why are some pixels unexpectedly bright, or black?

A. Cisco LCD displays use advanced semiconductor technology with extremely high precision. Nonetheless, the red, green, blue and white pixels might seem unexpectedly bright sometimes, or you might notice some black pixels. This is not the result of low quality or a malfunction and you can continue to use your display without incident.

Troubleshoot Cisco Professional Series LCD Displays

- Troubleshoot the Power Indicator, page 16-43
- Troubleshoot Image Quality, page 16-43
- Troubleshoot Audio Quality, page 16-44
- Troubleshoot the Handheld Remote Control Unit, page 16-44
- Run a Diagnostic Self-Test on a 40- or 52-inch Cisco LCD Display, page 16-44

Troubleshoot the Power Indicator

Problem The screen is blank AND the power indicator is off.

Solution Ensure that the power cord is firmly connected and the display is turned on.

Problem The power indicator blinks.

Solution Wait for less than 1 minute. The display is saving changes made to its settings.

Troubleshoot Image Quality

Problem A message states, "Check Signal Cable."

Solution Make sure that the:

- Signal cable is firmly connected to the video sources.
- Video sources are turned on.

Problem The image rolls vertically.

Solution Make sure that the signal cable is securely connected.

Problem The image is intermittently black (CSCtw78742; CSCts83613)**.**

Solution Avoid incompatible combinations.

- Have you used a DVI connector while our HDMI resolution autodetect feature was enabled on your DMP? And then, was the reported resolution called "1920 x 1080?" If so, you must disable the autodetection feature. Cisco DMP models support DVI connections only in combination with VESA-standard resolution values—and VESA standards do not include "1920 x 1080." Instead, their equivalent is called "VESA_1080p." You must choose and apply this resolution value manually.
- Do not enable HDMI autodetection with a display whose resolution is "DVI_1920p."
- Disable our HDMI resolution autodetect feature on your DMP when it reports that any 1080p presentation system characterizes its resolution as "VESA_1080p." Then, impose the resolution value manually that DMPs use: "HDMI_1080p."

Problem **The image is blurred.**

Solution Try these possible workarounds.

- Run Frequency Coarse and Fine tuning.
- Turn Off the display, remove its accessories and signal cables, and then turn it On again.
- Set the resolution and frequency to the recommended ranges.

Problem **The image is too light OR too dark.**

Solution Adjust the brightness and contrast.

Problem **Colors are not consistent, OR shadows are too dark, OR white areas are too white.**

Solution Adjust the color.

Troubleshoot Audio Quality

Problem **Sound is too quiet OR is not audible.**

Solution Check the volume level.

Problem **Sound frequency is too high OR too low.**

Solution Check the levels for treble and bass.

Troubleshoot the Handheld Remote Control Unit

Problem **Buttons do not respond.**

Solution Check...

- Battery polarities (+/-).
- If batteries have lost their charge.
- If the power is turned On.
- If the power cord is connected securely.
- If a fluorescent or neon lamp is turned On nearby.

Note **When you use Digital Signs to lock your remote control and the front panel controls for your display, the remote control cannot unlock them.** Instead, you must switch the Safety Lock, Remote Control Lock, and Panel Lock toggles all to Off in Digital Signs.

Note **When you use Digital Signs to lock your remote control, the remote control cannot unlock itself.** Instead, you must switch the Safety Lock and Remote Control Lock toggles both to Off in Digital Signs.

Run a Diagnostic Self-Test on a 40- or 52-inch Cisco LCD Display

Procedure

Step 1 Turn **Off** your display and turn **Off** every device connected to it.

Step 2 Disconnect all devices from your display.

Step 3 Turn **On** your display.

The self-test runs immediately.

- **PASS**—The LED power indicator remains green.
- **FAIL**—An on-screen message moves around on the screen, which says “Check Signal Cable.”

Step 4 Stop. You have completed this procedure.

CHAPTER 17

DMP Remote Control and Its Emulation

Revised: April 4, 2012
OL-15762-04

- Concepts, page 17-1
- Procedures, page 17-4

Audience

We prepared this material with specific expectations of you.

- You want to emulate the DMP remote control on mobile phones or Cisco IP phones.

Concepts

- Overview, page 17-1
- Restrictions, page 17-2
- Workflow to Provision Emulator Service for IP Phones, page 17-3

Overview

Topics in this section describe a software-based emulator that you can use in place of, or in addition to, the remote control unit for a DMP.

Note

- **Although Cisco sells a physical remote control device for use with DMPs that deliver Cisco Cast programming to their attached displays, the remote control unit is an optional accessory for a DMP.**
- To learn about the remote control unit, see its documentation on Cisco.com.
- The emulated remote control supports changing channels for Cisco Cast, navigating in the Cisco Cast menu system, and adjusting audio volume settings for a DMP.

Restrictions

- Audio Muting Restrictions, page 17-2
- Channel-Changing Restrictions, page 17-2
- DMP 4310G Support, page 17-2
- User Permissions Restrictions, page 17-2

Audio Muting Restrictions

When your DMP 4400G connects from its SPDIF audio interface to an external display or receiver, your DMP remote control cannot mute the audio. (**CSCty77943**; **CSCth12215**)

Channel-Changing Restrictions

- When you use a handheld or emulated remote control to operate the Cisco Cast EPG for a DMP 4400G, avoid changing channels more than once in 3 seconds. Otherwise, the DMP must queue your repeated commands to a buffer and then call them sequentially for processing. This operation can cause a visible lag, during which your display goes black for a split-second (**CSCtn04167**).
- Remote control keymapping falls out of sync when you change a button's "keypress" MIB value more than 208 times without restarting your DMP (**CSCsr61876**). Until you have restarted your DMP, any subsequent attempts to change the "keypress" MIB of the affected button will not have any effect.

DMP 4310G Support

The DMP 4310G does not support remote control emulation. This is primarily due to a hardware limitation within the DMP 4310G which cannot process/convert the commands sent by a hand-held remote into keypreses.

Solution Switch to the DMP 4400G or DMP 4305G devices which both support remote control emulation.

User Permissions Restrictions

Note **Features of Cisco Cast are hidden from you until your user role assignment is APPLICATION MANAGER and you have explicit WRITE permissions** (CSCtr05337)**.**

Workflow to Provision Emulator Service for IP Phones

You can provision a service from Cisco Unified Communications Manager that emulates the handheld DMP remote control unit on Cisco IP phones. This workflow assumes that you are experienced as an administrator in Cisco Unified Communications Manager and that you use it already to manage a network of IP phones.

Tip **Skip this workflow if you will not use any IP phones to emulate the remote control.**

1. **Complete these tasks in CUCM.**
   a. Activate Services, page 17-4
   b. Start Services, page 17-5
   c. Configure URL Parameters, page 17-5
   d. Enable IP Phone Autoregistration, page 17-6
   e. Define IP Phone Service Attributes, page 17-6
   f. Expose the Service to IP Phones, page 17-7

   Note **Emulator-related configuration changes that you make on your Cisco Unified Communications Manager server do not become useful until after you also configure Cisco Cast to serve the emulator, and configure at least one IP phone to run the emulator.**

2. **Complete these tasks in Cisco Cast.**
   - Configure Emulator Settings in Cast, page 17-8

3. **Complete these tasks on phones, as needed.**
   a. Configure an IP Phone to Emulate the Remote Control, page 17-9
   b. Start the Emulator on an IP Phone, page 17-10
   c. Start the Emulator on a Mobile Phone, page 17-11
   d. Use the Emulator on an IP Phone or a Mobile Phone, page 17-11

Note **This workflow is based on Cisco Unified Communications Manager release 6.1.** When you use any other release, the workflow might differ slightly in your network. We recommend that you read on Cisco.com the particular revisions of these guides that apply to your network.

- *Cisco Unified Communications Manager Administration Guide*
- *Cisco Unified Serviceability Administration Guide*

Procedures

In Cisco Unified Communications Manager

- Activate Services, page 17-4
- Start Services, page 17-5
- Configure URL Parameters, page 17-5
- Enable IP Phone Autoregistration, page 17-6
- Define IP Phone Service Attributes, page 17-6
- Expose the Service to IP Phones, page 17-7

In Cisco Cast

- Configure Emulator Settings in Cast, page 17-8

On Phones

- Configure an IP Phone to Emulate the Remote Control, page 17-9
- Start the Emulator on an IP Phone, page 17-10
- Start the Emulator on a Mobile Phone, page 17-11
- Use the Emulator on an IP Phone or a Mobile Phone, page 17-11

Activate Services

Procedure

Step 1 Log in to Cisco Unified Communications Manager Administration.

Step 2 Choose **Cisco Unified Serviceability** from the Navigation list, and then click **Go**.

Step 3 Choose **Tools > Service Activation**.

Step 4 Examine the Server list.

Step 5 Choose from it a server that should support remote control emulation.

Step 6 Click **Go**.

Step 7 Check the **Check All Services** check box.

Step 8 Click **Save**, and then click **OK**.

Step 9 Stop. You have completed this procedure.

What to Do Next

- Proceed to the "Start Services" section on page 17-5.

Start Services

Before You Begin

- Activate services.

Procedure

Step 1 Choose **Tools > Control Center - Feature Services**.

Step 2 Click the Server list and choose from among its options the server where the remote control emulation service should be started for *Cisco Cast*.

Step 3 Click **Go**.

Step 4 *Repeat as many times as necessary until every service is running*:
Click the radio button for any service that is not yet running, and then click **Start**.

Step 5 Stop. You have completed this procedure.

What to Do Next

- Proceed to the "Configure URL Parameters" section on page 17-5.

Related Topics

- Activate Services, page 17-4

Configure URL Parameters

Before You Begin

- Start services.

Procedure

Step 1 Choose **Cisco Unified CM Administration** from the Navigation list, and then click **Go**.

Step 2 Choose **System > Enterprise Parameters**., and then scroll to the Phone URL Parameters area.

Step 3 Verify that you have not changed the factory-default values for these parameters.

- URL Authentication
- URL Directories
- URL Information
- URL Services

Step 4 Click **Save**.

Step 5 Stop. You have completed this procedure.

What to Do Next

- Proceed to the "Enable IP Phone Autoregistration" section on page 17-6.

Related Topics

- Start Services, page 17-5

Enable IP Phone Autoregistration

Before You Begin

- Configure URL parameters.

Procedure

Step 1 Choose **System > Cisco Unified CM**, and then click **Find**.

Step 2 Click the name of the server whose managed IP phones should be autoregistered.

Step 3 Uncheck the Auto-registration disabled on this Cisco Unified Communications Manager check box.

Step 4 Edit the range of values that starts in the Starting Directory Number field and ends in the Ending Directory Number field.

Step 5 Click **Save**.

Step 6 Stop. You have completed this procedure.

What to Do Next

- Proceed to the "Define IP Phone Service Attributes" section on page 17-6.

Related Topics

- Configure URL Parameters, page 17-5

Define IP Phone Service Attributes

Before You Begin

- Enable IP phone autoregistration.

Procedure

Step 1 Choose **Cisco Unified CM Administration** from the Navigation list, and then click **Go**.

Step 2 Choose **Device > Device Settings > Phone Services**.

Step 3 Click **Add New**.

Step 4 Enter **Cast** in these fields.

- Service Name
- ASCII Service Name

Step 5 Enter this URL in the Service URL field:
http://<*DMM_hostname*>**:8080/etv-remotecontrol-webapp/app/getpin**

Step 6 Click **Save**.

Step 7 Stop. You have completed this procedure.

What to Do Next

- Proceed to the "Expose the Service to IP Phones" section on page 17-7.

Related Topics

- Enable IP Phone Autoregistration, page 17-6

Expose the Service to IP Phones

Before You Begin

- Define IP phone service attributes.

Procedure

Step 1 Choose **Cisco Unified CM Administration** from the Navigation list, and then click **Go**.

Step 2 Choose **Device > Phone**.

Step 3 Click **Find**.

Step 4 Repeat this sequence of actions for each phone that should subscribe to the emulator:

a. Click the name—in the Device Name (Line) column—of the managed IP phone that you will configure.

By default, this name is just **SEP** prefixed to the MAC address of the phone. However, your server might be configured to use some other naming format.

b. When the page refreshes, choose **Subscribe/Unsubscribe Services** from the Related Links list.

A popup window opens.

c. Choose **Cast** from the Select a Service List, and then click **Next**.

d. Choose **Cast** from the ASCII Service Name list, and then click **Subscribe**.

e. Verify that the message in the Status area says, "Add successful," and that the Subscribed Services area includes "Cast."

f. Close the popup window.

Step 5 Click **Go**.

Step 6 Stop. You have completed this procedure.

What to Do Next

- Proceed to the "Configure Emulator Settings in Cast" section on page 17-8.

Related Topics

- Enable IP Phone Autoregistration, page 17-6

Configure Emulator Settings in Cast

Note **Options on the Remote Control page might sometimes be dimmed and not available to you.**

- Click **Save** to activate dimmed options if this occurs during Step 1.
- This occurs during Step 2 only when your choice is None. Choose either **All DMPs** or **Selected DMPs** to reactivate options that your choice dimmed.

Before You Begin

Complete the workflow in Cisco Unified Communications Manager to provision the emulator to your IP phones.

Procedure

Step 1 Choose **Cast > Remote Control**.

Step 2 Choose an option from the Display Security PIN on screen list, to set how many of your DMPs should support the emulator.

- All DMPs
- Selected DMPs
- None

Step 3 (**As Needed**) *Did you choose Selected DMPs in Step 2?*

If so, click **Display DMP Selections** to refine your list of which DMPs should support the emulator.

a. Use check boxes to select and deselect DMPs.

b. Click **Save Selection Changes** to save your work.

c. Click **Close** to dismiss the dialog box.

Step 4 Choose an option from the Security PIN behavior list.

Although *Cisco Cast* randomly generates all of its emulator PINs, the fixed and dynamic types differ in their persistence.

- **Fixed**—These PINs persist until the PIN management type is changed.
- **Dynamic**—These PINs expire and are then regenerated after an update interval that you define.

No two DMPs in your network will use the same PIN at any one time.

Step 5 (**As Needed**) *Did you choose the dynamic PIN type in Step 4?*

If so, enter at least one digit in the Security PIN update interval (minutes) field.

The interval cannot be any less than 2 min. When you do not enter any value, *Cisco Cast* uses its factory-default interval of 5 min.

Step 6 Enter a shortened URL in the Access URL field for a page that will redirect ultimately to **http://**<*DMM_hostname*>**:8080/etv-remotecontrol-webapp/app/index.htm**.

Note **The shortened URL must not be more than 24 characters long.**

Step 7 Click **Save**.

OR

Click **Cancel** to discard your selections and start over again.

Step 8 Deploy the new emulator settings to your DMPs.

a. Choose **Digital Media Players > DMP Manager**.

b. Choose the DMP or DMP group that should use these settings.

c. Choose **Cast** from the Actions list, and then click **Go**.

Step 9 Stop. You have completed this procedure.

Related Topics

- Workflow to Provision Emulator Service for IP Phones, page 17-3
- Configure an IP Phone to Emulate the Remote Control, page 17-9
- Start the Emulator on an IP Phone, page 17-10
- Start the Emulator on a Mobile Phone, page 17-11
- Use the Emulator on an IP Phone or a Mobile Phone, page 17-11

Configure an IP Phone to Emulate the Remote Control

You can configure a Cisco IP Phone from the 7960 series or the 7970 series to emulate the remote control for *Cisco Cast*, and then use keys drawn on its touchscreen to choose options from the electronic program guide, change channels, and adjust audio volume levels.

Before You Begin

Complete the workflow in Cisco Unified Communications Manager to provision the emulator to your IP phones.

Procedure

Step 1 Press **Settings** on your Cisco IP phone.

Step 2 Press ****#**.

A confirmation message at the bottom of the touchscreen says, “Settings Unlocked!”

Step 3 Go to **Network Configuration**, and then press **Select**.

Step 4 Go to **Alternate TFTP**, and then press **Yes**.

Tip **If Alternate TFTP is not an option in the Network Configuration menu, contact the administrator for Cisco Unified Communications Manager.**

Step 5 Click **Save**.

The IP phone is restarted automatically, so that its configuration changes can take effect.

Step 6 Stop. You have completed this procedure.

Related Topics

- Workflow to Provision Emulator Service for IP Phones, page 17-3
- Use the Emulator on an IP Phone or a Mobile Phone, page 17-11

Start the Emulator on an IP Phone

Before You Begin

- Provision the emulator for use on Cisco IP phones.
- Configure emulator settings in *Cisco Cast*.
- Configure your IP phone to emulate the remote control.
- Make note of the generated PIN code in the top-right corner of a DMP display that is showing *Cisco Cast*. The emulator cannot control the corresponding DMP without this PIN.

Procedure

Step 1 Press **Services** on your Cisco IP phone.

Step 2 Highlight the remote control option in the services list, and then press **Select**.

Step 3 Tap the **PIN** field on your touchscreen.

Step 4 Use the keypad to enter the PIN code.

Step 5 Tap **Submit** on the touchscreen.

The touchscreen is refreshed and the emulator starts.

Step 6 Stop. You have completed this procedure.

Related Topics

- Workflow to Provision Emulator Service for IP Phones, page 17-3
- Configure Emulator Settings in Cast, page 17-8
- Use the Emulator on an IP Phone or a Mobile Phone, page 17-11

Start the Emulator on a Mobile Phone

Before You Begin

- Configure emulator settings in *Cisco Cast*.
- Make note of the generated PIN code in the top-right corner of a DMP display that is showing *Cisco Cast*. The emulator cannot control the corresponding DMP without this PIN.
- This procedure assumes that you are using a supported platform. To learn which mobile phone platforms we support in this release, see our release notes on Cisco.com. An unsupported platform might not be capable of running the emulator.

Procedure

Step 1 Start the Internet browser on your mobile phone.

Step 2 Go to the URL that you see on the DMP display that is showing *Cisco Cast*.

You are prompted to enter the PIN.

Step 3 Enter the PIN, and then click **Go**.

The emulator starts.

Step 4 Stop. You have completed this procedure.

Related Topics

- Configure Emulator Settings in Cast, page 17-8
- Use the Emulator on an IP Phone or a Mobile Phone, page 17-11

Use the Emulator on an IP Phone or a Mobile Phone

Before You Begin

- (**When you will use the emulator on an IP phone**) Complete the workflow in Cisco Unified Communications Manager to provision the emulator to your IP phones.
- Configure emulator settings in *Cisco Cast*.
- Start the emulator on your phone.

Procedure

Step 1 Consult DMP remote control documentation on Cisco.com and pay particular attention to sections that describe button behaviors. These descriptions apply equally to the physical unit and its emulator.

Note **The emulator has fewer buttons than the physical remote control has.** You cannot invoke behaviors from the emulator which correspond to any buttons that it does not have.

Step 2 Stop. You have completed this procedure.

Related Topics

- Workflow to Provision Emulator Service for IP Phones, page 17-3
- Configure Emulator Settings in Cast, page 17-8
- Start the Emulator on an IP Phone, page 17-10
- Start the Emulator on a Mobile Phone, page 17-11

CHAPTER 18

DMP User Permissions

Revised: April 4, 2012
OL-15762-04

- Concepts, page 18-1
- Procedures, page 18-8
- Reference, page 18-9

Audience

We prepared this material with specific expectations of you.

- You want to manage access rights precisely for particular uses of particular DMPs.

Concepts

- Overview, page 18-1
- Scenarios That Illustrate Specialized User Permissions, page 18-2

Overview

After you assign users to the Digital Signage user group in DMS-Admin, you can manage their access rights and permission levels that pertain to *Cisco Digital Signs* and *Cisco Cast*.

You can restrict the permissions that you grant to particular user accounts in DMM. For example, you might grant a user the permission to use only the advanced tasks that you choose or to deploy presentations to only the DMPs that you choose.

Note **Each Cisco Cast user must have at least read-only permission to the "Cast" application, which pertains to the electronic program guide.**

Scenarios That Illustrate Specialized User Permissions

You can assign highly specialized permissions to any DMM user. Examples in this section state how you might customize user permissions in various scenarios.

- Scenario 1: Permission to Manage Content but Not Schedules, page 18-2
- Scenario 2: Permission to Manage One DMP Group but No Content, page 18-3
- Scenario 3: Permission to Manage One DMP Group, Assets, and Schedules, page 18-5
- Scenario 4: Permission to Manage Only the Schedule for One DMP Group, page 18-7

Scenario 1: Permission to Manage Content but Not Schedules

To restrict user permissions as they should be restricted in this scenario, you would do the following.

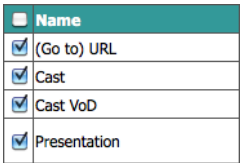
1. **Assign permissions to view DMPs.**
   a. From the Role list, choose DMP Manager.
   b. Check the **All** check box in the Read column, but uncheck every other check box.

2. **Assign permissions to manage content.**
   a. From the Role list, choose Content Manager.
   b. Check the **All** check box in every column.

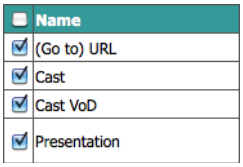
3. **Assign permissions to use the advanced tasks that pertain to content.**
   a. From the Role list, choose Application Manager.
   b. Check the **Selected** check box in every column.

   c. Do all of the following in the table that associates permissions with advanced tasks.

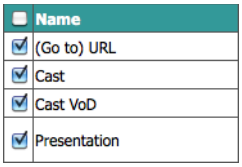
   - Click Create.
     Then, repeat your selection.



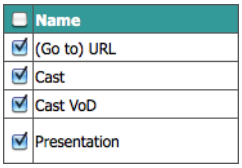
   - Click Read.
     Then, repeat your selection.



- Click Write.
  Then, repeat your selection.



- Click Delete.
  Then, repeat your selection.



4. **Assign permissions to view the schedule.**
   a. From the Role list, choose Publisher Manager.
   b. Check the **All** check box in the Read column, but uncheck every other check box.

5. Click **Submit**.

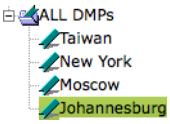
Scenario 2: Permission to Manage One DMP Group but No Content

To restrict user permissions as they should be restricted in this scenario, you would do the following.

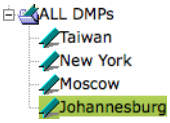
1. **Assign permissions to manage DMPs.**
   a. From the Role list, choose DMP Manager.
   b. Check the **Selected** check box in every column.

   c. Do all of the following in the selection tree that catalogues your DMP groups.

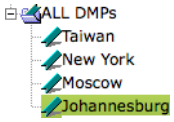
- Click Create.
  Then, click and highlight only the one DMP group that this user should be empowered to manage.



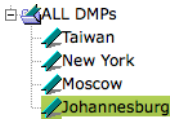
- Click Read.
  Then, repeat your selection.



- Click Write.
  Then, repeat your selection.



- Click Delete.
  Then, repeat your selection.

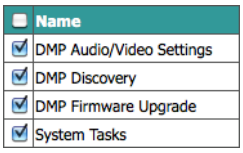


2. **Assign permissions to manage content.**
   a. From the Role list, choose Content Manager.
   b. Uncheck every check box.

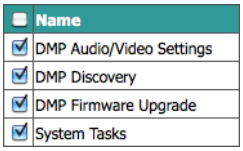
   A message explains that this user has "No permissions" to manage content.

3. **Assign permissions to use advanced tasks for content.**
   a. From the Role list, choose Application Manager.
   b. Do all of the following in the table that associates permissions with advanced tasks.

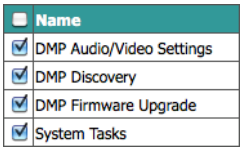
- Click Create.
  Then, check only these check boxes.



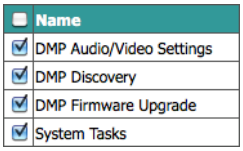
- Click Read.
  Then, repeat your selection.



- Click Write.
  Then, repeat your selection.



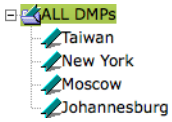
- Click Delete.
  Then, repeat your selection.



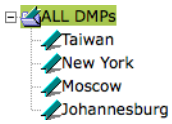
4. **Configure permissions to manage the schedule.**
   a. From the Role list, choose Publisher Manager.
   b. Check the **Selected** check box in every column.

c. Do all of the following in the selection tree that catalogues your DMP groups.

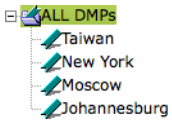
- Click Create.
  Then, click and highlight a DMP group whose schedule this user should be empowered to manage.



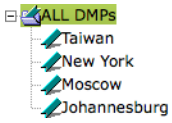
- Click Read.
  Repeat your selection.



- Click Write.
  Repeat your selection.



- Click Delete.
  Repeat your selection.



5. Click **Submit**.

Scenario 3: Permission to Manage One DMP Group, Assets, and Schedules

To restrict user permissions as they should be restricted in this scenario, you would do the following.

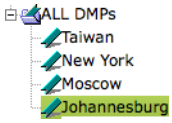
1. **Configure permissions to manage DMPs.**

a. From the Role list, choose DMP Manager.

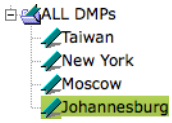
b. Check the **Selected** check box in every column.

c. Do all of the following in the selection tree that catalogues your DMP groups.

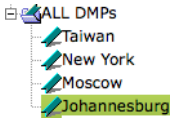
- Click Create.
  Then, click and highlight a DMP group whose schedule this user should be empowered to manage.



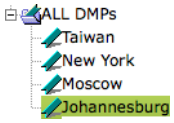
- Click Read.
  Repeat your selection.



- Click Write.
  Repeat your selection.



- Click Delete.
  Repeat your selection.



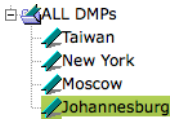
2. **Configure permissions to manage content.**
   a. From the Role list, choose Content Manager.
   b. Check the **All** check box in every column.

3. **Configure permissions to manage advanced tasks.**
   a. From the Role list, choose Application Manager.
   b. Check the **All** check box in every column.

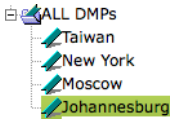
4. **Configure permissions to manage the schedule.**
   a. From the Role list, choose Publisher Manager.
   b. Check the **Selected** check box in every column.

   c. Do all of the following in the selection tree that catalogues your DMP groups.

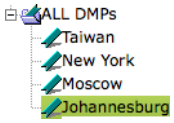
- Click Create.
  Then, click and highlight the same DMP group that you highlighted for the DMP Manager role.



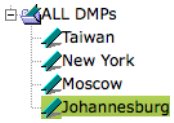
- Click Read.
  Repeat your selection.



- Click Write.
  Repeat your selection.



- Click Delete.
  Repeat your selection.



5. Click **Submit**.

Scenario 4: Permission to Manage Only the Schedule for One DMP Group

To restrict user permissions as they should be restricted in this scenario, you would do the following.

1. **Configure permissions to manage DMPs.**
   a. From the Role list, choose DMP Manager.
   b. Check the **All** check box in the Read column, but uncheck every other check box.

2. **Configure permissions to manage content.**
   a. From the Role list, choose Content Manager.
   b. Uncheck every check box.

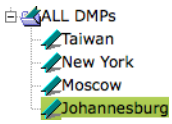
   A message explains that this user has "No permissions" to manage content.

3. **Configure permissions to manage advanced tasks.**
   a. From the Role list, choose Application Manager.
   b. Check the **All** check box in the Read column, but uncheck every other check box.

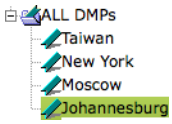
4. **Configure permissions to manage the schedule.**
   a. From the Role list, choose Publisher Manager.
   b. Check the **Selected** check box in every column.

   c. Do all of the following in the selection tree that catalogues your DMP groups.

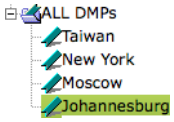
   - Click Create.
     Then, click and highlight a DMP group whose schedule this user should be empowered to manage.



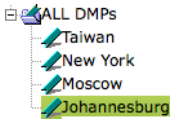
   - Click Read.
     Repeat your selection.



- Click Write.
  Repeat your selection.



- Click Delete.
  Repeat your selection.



5. Click **Submit**.

Procedures

- Configure User Rights and Permissions, page 18-8

Configure User Rights and Permissions

Before You Begin

- To see and use the Settings tab, you must be logged in an administrator.

Procedure

Step 1 Choose **Settings > User Accounts**.

Step 2 Click a username to highlight it in the Users list.

DMM automatically shows the Change User pane for the corresponding user account, where you can edit the permissions that apply to the user.

Step 3 Choose options to limit any or all of the permissions that you will grant to the user.

Step 4 Click **Submit**.

Step 5 Stop. You have completed this procedure.

Related Topics

- Elements to Configure User Rights and Permissions for DMPs, page 18-9

Reference

- Software UI and Field Reference Tables, page 18-9

Software UI and Field Reference Tables

- Elements to Configure User Rights and Permissions for DMPs, page 18-9

Elements to Configure User Rights and Permissions for DMPs

Navigation Path

- Settings > User Accounts

Table 18-1 Elements for Configuring User Rights and Permissions

Element	Description
Users List	
Choose an account whose digital signage or Cisco Cast access rights and permission levels you will edit. When you click a username, DMM automatically shows the Change User pane for the corresponding user account.	
Change User pane	
A worksheet where you edit attributes of the selected user account.	
Name	A unique username. The name is unique in the sense that you have not used it as the name for any other user account that you created in DMM. You must enter the username.
Description	Optional, brief description of the user account and its purpose.
Password | Repeat	The password for the user account. You must enter a password, and then reenter it.
Administrator	The check box to check if this account belongs to an administrator. When a user account belongs to an administrator, the corresponding user is granted full permissions to create, read, write, and delete every object type without limitation. Otherwise, uncheck this check box. After you uncheck it, you must manually change the permissions for each user role and each object type that pertain to this user account. Because we recommend that you follow a best practice in which you create only a few users, this check box is checked by default each time that you add a user account.

Table 18-1 Elements for Configuring User Rights and Permissions (continued)

Element	Description
Role	The list of user role types. Each type of role is associated with some of the features in DMM. Choose a role to see or change the corresponding permissions for the user whose account you are adding or editing. After you choose a role, you can set the permissions to create, read, write, and delete objects that are relevant to that role. Depending on the role that you choose, an object might be a registered DMP, a registered FTP server, a category in your digital media library, an application that you configured, or the target device (DMP or FTP server) to receive a scheduled deployment. • **DMP Manager**—A user with permissions to manage every DMP in your digital signage network, only the DMPs within particular DMP groups that you specify, or no DMPs whatsoever. • **Content Manager**—A user with permissions to manage every category in your media library, only the particular categories that you specify, or none of the categories. • **Application Manager**— A user with permissions to work with every application type, only the particular application types that you specify, or no applications of any kind. • **Publisher Manager**—A user with permissions to schedule media deployments to all of your registered DMPs and external (FTP) deployment servers, only the particular DMPs and FTP servers that you specify, or none of the registered DMPs or FTP servers.

untitled table

Rows in the untitled table describe user account permissions.	
Objects	Contains the Create, Read, Write, and Delete buttons. To see or edit any one of these types of permissions as it applies to the specified user, you must first click the corresponding button. If you uncheck both the All check box and the Selected check box in the column under a button, DMM automatically shows the words "No permissions" in red, to signify that the user does not have any permissions of that type in relation to the objects that are relevant to the role that you selected from the Role list.
All	Contains the check box that you select to assign global permissions to the user, so that he or she can always create, see, edit, and delete objects that pertain to whichever user role you selected from the Role list. Click the relevant button, and then check the corresponding check box in the All row.
Selected	Contains the check box that you select to assign limited permissions to the user, so that he or she can create, see, edit, and delete only a subset of the objects that pertain to the user role that you selected from the Role list. Click the relevant button, select the corresponding check box in the Selected row, and then choose the subset where the user permissions should apply. Depending on the object type, you might choose the subset by clicking its name in an object selector or clicking its name in a table; DMM automatically shows either an object selector or a table from which to choose the subset.

CHAPTER 19

Media Assets and Embedded Software

Revised: April 4, 2012
OL-15762-04

- Concepts, page 19-1
- Procedures, page 19-6
- Reference, page 19-9

Audience

We prepared this material with specific expectations of you.

- You will populate and manage a library of DMP-compatible media assets for playback, as well as firmware and kernel files that expose and expand upon DMP features.

Concepts

- Overview, page 19-1
- Restrictions, page 19-2

Overview

To simplify management, you can organize your assets for *Cisco Digital Signs* and *Cisco Cast*.

We recommend that you create categories for sets of characteristics that your assets have in common—such as their file type, intended audience, or genre.

Restrictions

- User Permission Restrictions, page 19-2
- Media Restrictions, page 19-2
- File Size and Storage Restrictions, page 19-5

User Permission Restrictions

- To see and use the Media Library, you must be logged in with at least read-only permissions for at least one category.
- The “ftp” user account on a DMP has limited access to the DMP file directory structure. It cannot navigate to any higher level than /tmp/ftproot. This is by design (**CSCsq49612**).

Media Restrictions

- Audio-Video Sync on a DMP 4305G, page 19-2
- Misidentified Codecs Can Trigger a Gray Screen, and Then Restart a DMP 4310G, page 19-2
- Component Signal Cables Prevent DMP 4310G Playback of 1080p60 Video, page 19-3
- SDP Support and Restrictions, page 19-3
- Shockwave Flash (SWF) Support and Restrictions, page 19-4
- MP3 Support and Restrictions, page 19-4
- MPEG-4 Support and Restrictions, page 19-4
- Bitmapped/Raster Image (JPG, GIF, PNG) Support and Restrictions, page 19-4
- URL and Website Support and Restrictions, page 19-5

Audio-Video Sync on a DMP 4305G

- In some cases, after a DMP 4305G plays a multicast video stream for 24 hours, audio and video from the stream are no longer perfectly synchronized. (**CSCsy37539**; **CSCty77956**)
- When a DMP 4305G is restarted, video playback might begin even before the DMP has cleared its splash screen (**CSCtb48195**). Although audio plays correctly in this case, the lingering splash screen hides a video temporarily.

Tip **You can use DMPDM to shorten the splash screen duration.**

Misidentified Codecs Can Trigger a Gray Screen, and Then Restart a DMP 4310G

A misconfigured or malfunctioning encoder might output video in which the PMT table names a different codec than was used. When you then try to play this asset through a DMP 4310G, the DMP might restart suddenly after rendering only a gray screen on your digital sign (**CSCth61274**).

Tip **You can use free or open source software—such as MediaInfo (see http://mediainfo.sourceforge.net/en)—to check if the PMT table is wrong.** If so, you can use other tools to re-encode or transcode the video properly for playback.

A DMP 4400G Might Not Output Audio After Finishing the Playback of a WMV File

After a DMP 4400G renders a Windows Media video asset for playback, you might find that subsequent assets play without any audible sound (**CSCtb09480**). Our testing suggests that this behavior can occur only when encoding of the WMV asset's audio track has combined lossy compression with the following attributes.

- Format: WMA
- Codec ID: 162
- Codec Info: Windows Media Audio 3

Tip **You can use free or open source software—such as MediaInfo (see http://mediainfo.sourceforge.net/en)—to check if the audio track is encoded like this.** If so, you can use other tools to re-encode or transcode the audio properly for playback.

Component Signal Cables Prevent DMP 4310G Playback of 1080p60 Video

When a Component Video signal cable connects your DMP 4310G to its presentation system, the DMP cannot render 1080p60 (progressive-scan) video for playback (**CSCtf01345**). However, the DMP 4310G in this case can render 1080i60 (interlaced-scan) video correctly.

SDP Support and Restrictions

We support ECDS live streams for digital signage, through the use of SDP files. However, our support for SDP is limited.

- We can play MPEG-TS/RTP/UDP multicast streams over Cisco ECDS networks when the multicast host is a Cisco MDE 1100.
- Alternatively, we can play other MPEG-TS/RTP/UDP multicast streams whose protocol is HTTP.
- The SDP file must be generated by Cisco ECDS.

We do not support SDP optional values **e**, **k**, **p**, **r**, **u**, or **z**. Nor do we support **SAP**.

Note **When you tell DMM the location of an SDP file on an ECDS server, you must enter the ECDS Delivery Service "Service Routing Domain Name." Do not enter the real host FQDN or the real host IP address.**

Also, you must specify the TCP port.

Shockwave Flash (SWF) Support and Restrictions

Note **This release does not support audio in Shockwave Flash media.** If your media library contains any Shockwave Flash files that use audio, their playback will be silent.

- The filename extension must be SWF and you must enter the estimated duration.
- On a DMP 4305G, avoid playing MP3 audio at the same time as a SWF. Otherwise, the SWF plays approximately 50 percent slower than it should. The cause is a hardware limitation. (**CSCty77918**; **CSCtg15314**)
- When a SWF asset has a memory leak that depletes DMP memory, the DMP will not necessarily reboot automatically, as it is designed to do in some other low-memory scenarios. Instead, if you have enabled DMP failover (content substitution) and if the alternative content is loadable, your DMP will load it. But if this attempt fails, your DMP will restart itself automatically, as it does in those other low-memory scenarios. (**CSCty84687**; **CSCtt29360**; **CSCtw90991**)

MP3 Support and Restrictions

- This release does not support DMP playback of any MP3 file that contains embedded cover art (**CSCtw78806**).
- This release does not support DMP 4305G playback of any MP3 file with a 24000 sample rate (**CSCtb79824**).
- On a DMP 4305G, avoid playing MP3 audio at the same time as a SWF. Otherwise, the SWF plays approximately 50 percent slower than it should. The cause is a hardware limitation. (**CSCty77918**; **CSCtg15314**)

MPEG-4 Support and Restrictions

Our support for MPEG-4 requires that you use the MPEG-4 Part 2 or Part 10 (H.264) codec and that you multiplex audio and video in an MPEG-2 Transport Stream.

- When your DMP is a 4400G, we support MPEG-4 Part 10/H.264 video in MPEG-2 TS.
- Neither the 4300G nor the 4305G supports MPEG-4 Part 10/H.264.

The filename extension must be MPG or MPEG and you must enter the estimated duration.

Bitmapped/Raster Image (JPG, GIF, PNG) Support and Restrictions

- A DMP 4305G in this release does not support use of PNG images.
- The maximum supported file size per bitmapped image asset is 450 KB on a DMP 4305G and 1 MB on a DMP 4400G.
- When your designs for digital signage call for an image with fixed dimensions, such as 640 x 480, import a bitmap asset of exactly these dimensions. Do not import a larger or smaller version. Otherwise, your DMP must resize the wrong-sized bitmap on-the-fly for rendering. This work is computationally expensive, and degrades DMP performance over time. (**CSCtx99460**; **CSCty83930**)

URL and Website Support and Restrictions

- The URL for a media asset cannot be any more than 128 characters long. (**CSCts62766**)
- To render a Twitter page correctly on your digital sign, do not add the Twitter page URL to your media library. Instead, use the Go To URL system task. Otherwise, the dynamic center column on the Twitter page, which is coded to refresh itself every 2 seconds, is blank. (**CSCtw78817**)
- DMPs cannot render webpages from servers that use self-signed certificates (**CSCtt01371**).
- Some webpages with embedded SWF content use JavaScript code that includes multiple `getElementById()` calls or multiple timers, such as `setDuration` or `setInterval`. After a DMP 4305G renders such pages continuously for as little as 12 hours, the DMP can run out of memory and reboot automatically, or it might render only a white screen instead of the SWF. Such cases are the combined result of a Flash 7 memory leak and an over-reliance on JavaScript. (**CSCsy01098**; **CSCty77900**)

File Size and Storage Restrictions

- The media library can store assets for your digital signs temporarily on the same disk partition that DMM uses for webserver swap space (**CSCsi66683; CSCtt27032**). If this entire partition becomes filled before your media library can move its assets to their permanent location:
  - **LICENSE VERIFICATION MIGHT FAIL**, preventing any access to UI pages for licensed features.
  - **LICENSE INSTALLATIONS MIGHT FAIL** with a spurious message that a license is not valid.
  - **UPLOAD OF ADDITIONAL ASSETS MIGHT FAIL.**
  - **CHARTING SERVICES MIGHT FAIL**.
  - **ANY OTHER SERVER OPERATION MIGHT FAIL** that requires swap or temp space.

Tip **So, before you bulk-import assets, use the DMS-Admin dashboard to check available space!**

- Before you add any asset, confirm that its file size is not more than 1.9 GB, which is the maximum stream size for any asset that you include in the layout for a DMD presentation.
- For purposes of stage-one failover, the combined size of all assets cannot exceed the capacity of the SD card in a DMP.

Local Storage Restrictions

- Locally Stored Presentations Should Not Include Remote Assets, page 19-6
- Local Storage Restrictions for DMP 4310G, page 19-6

Locally Stored Presentations Should Not Include Remote Assets

We recommend as a best practice that you avoid calling upon any remote assets from a playlist or presentation to you store locally to a DMP. Otherwise, any network disruptions will interfere with playback of media that should be impervious to all such disruptions.

Local Storage Restrictions for DMP 4310G

A DMP 4310G that uses an attached USB storage volume might corrupt or erase data on this attached volume. Likewise, a DMP 4310G might lose its ability to mount this attached volume. After the DMP reaches this general state, it sometimes reports incorrectly that the attached volume is still mounted and working.

These problems can occur when you disconnect the external volume from the upper USB interface on a DMP 4310G and then, without any delay, plug it immediately into the lower USB interface on the same DMP. However, these problems do not occur in every such case. In our tests, they occurred approximately 1 percent of the time.

To reduce your possible exposure to these problems, wait no less than 3 seconds after you connect or disconnect an attached volume, before you do the reverse. In our tests, this best practice eliminated the risk.

Restart the DMP if it merely unmounts its attached volume.

There is no workaround after the attached volume is erased or its data becomes corrupted. All that you can do after the fact is reformat the volume and restore its data from a recent backup.

Procedures

- Work with Assets and Categories in Your Media Library, page 19-6
- Add One Asset at a Time to Your Media Library, page 19-7
- Add Multiple Assets Simultaneously to Your Media Library, page 19-8

Work with Assets and Categories in Your Media Library

Procedure

Step 1 Click the **Media Library** tab.

A tree on the left side of the Media Library page names the types of media that are supported and shows the hierarchy of categories that you have created to organize assets without regard for their media type.

Step 2 Click the name of a media type or of a category.

An untitled table on the right side of the page is updated automatically to describe assets of the relevant type that your library contains.

Step 3 Enter the values and choose the options that meet your requirements.

Step 4 Stop. You have completed this procedure.

Related Topics

- Elements to Manage Assets and Categories, page 19-9

Add One Asset at a Time to Your Media Library

Note

- **After you start to import an asset, do not click any browser button or navigate away from this page until the import is finished.** When you do, the import will not finish successfully.
- **We recommend that you do not use your DMM appliance as if it is a storage server.** It has limited capacity to store files and DMM might not function as designed when space runs low.

Procedure

Step 1 Click the **Single** tab.

Step 2 Do one of the following in the Source area to specify the full local pathname or remote HTTP URL of the asset.

- Click **URL**, enter the URL, and then check or uncheck the **Download URL** check box to control whether you download a local copy of the asset or use the version of it that is stored remotely.

  Note **The URL must be encoded properly (using "%20" instead of spaces, for example), according to the principles set forth in RFC 2396.**

- Click **Local File**, and then click **Browse** or enter the full local pathname.

Step 3 Choose the option in the File Type area that best describes the asset.

Step 4 Enter a title for the asset.

Step 5 Enter the estimated duration for playback.

Caution **Before a DMP 4305G or 4400G will render any video asset for playback, make sure that the video duration is at least 3 seconds.** Otherwise, the extreme brevity triggers DMP failover, which unloads the current playlist or presentation and causes your DMP to render its failover URL instead.

- To avoid this behavior altogether, use only video clips whose full duration is 3 seconds or more.
- To prevent this behavior temporarily when extremely brief video is somehow essential, disable video failover.
- To recover from this behavior, restart the application.

A DMP 4310G does not exhibit this behavior.

Note **The user interface in Cisco Digital Signs sometimes shows a mistaken estimate of 0 (zero) seconds as the full duration of a video playlist.** Even though the estimate is wrong, the error does not have any practical consequences. Playback starts and stops as scheduled, without disruption.

This occurs after you set any video asset in the playlist to use 0 seconds as its planned duration. A video asset whose planned duration is 0 (zero) seconds will play from beginning to end.

When you want to skip a video instead of playing it, you must remove it from the playlist. Any playlist's constituent nonvideo assets must have a planned duration of at least 1 second.

Step 6 Choose at least one category.

Step 7 (**Optional**) Enter a description.

Step 8 (**Optional**) Enter an owner for the asset.

Step 9 Click **Save**.

OR

Click **Cancel**.

Step 10 Stop. You have completed this procedure.

Add Multiple Assets Simultaneously to Your Media Library

The amount of time that a batch download operation requires depends on the speed of your connection, the number of directory levels that you search for downloadable files, and the total combined file size of all files that you transfer.

Note

- **After you start to import an asset, do not click any browser button or navigate away from this page until the import is finished.** When you do, the import will not finish successfully.
- **We recommend that you do not use your DMM appliance as if it is a storage server.** It has limited capacity to store files and DMM might not function as designed when space runs low.

Before You Begin

- Use the DMS-Admin dashboard to check available space. For details, see File Size and Storage Restrictions, page 19-5.

Procedure

Step 1 Click the **Batch** tab.

Step 2 Enter, in the Base URL area, the root-level URL for the batch download operation.

We do not support any use of spaces in URLs.

Step 3 Enter, in the Pattern area, a filename pattern that identifies which files to download.

For example, to download every file that uses the three-letter MPG filename extension, the pattern is ***.MPG**.

Note **Do not enter the filename pattern to use any unsupported file type.**

Step 4 Make choices and enter values to add assets to your library.

Step 5 Click **Save**.

OR

Click **Cancel** to discard your work.

Step 6 Stop. You have completed this procedure.

Reference

- Software UI and Field Reference Tables, page 19-9

Software UI and Field Reference Tables

- Elements to Manage Assets and Categories, page 19-9
- Elements to Add Categories and Rename Them, page 19-12
- Elements to Add Assets and Edit Their Attributes, page 19-12
- Elements To Describe and Preview One Asset, page 19-14

Elements to Manage Assets and Categories

Navigation Path

Digital Signage > Media Library

Table 19-1 Elements for Managing a Media Library

Element	Icon and Description
Media Types	A complete list of the types of assets that are supported. The supported assets are: • DMP Firmware[1] () • Audio () • HTML () • Images () • Shockwave Flash () • UDP () • Video () • RTSP () • RTP () • SDP () When you click the name of a media type, an untitled table on the right side of the page is updated automatically to describe assets of the relevant type that your library contains.
Categories	A hierarchical list of categories in your media library. A category can contain assets or it might be empty. You can create new categories, edit existing categories, delete categories, or click a category whose assets the untitled table should describe. You can add almost any number of nested categories to your media library.
	Options—A menu from which you can choose among these options: • **Create Category**—Opens the Add Category dialog box. • **Rename Category**—Opens the Edit Category dialog box. • **Delete Category**—Deletes the category that you highlighted.
	Create Category—Opens the Add Category dialog box.

Filter by

*Methods by which you can cause the untitled table to describe only the assets from your media library that match parameters you have specified. Choose the filtering method, specify the parameters, and then click **Go**. You can use only one filter per query. You cannot apply a second filter to results that are already filtered.*

Title	Enter at least one word that the title contains.
Filename	Enter a string of characters that the filename contains.
Description	Enter at least one word that the description contains.
File Type	Enter the file type to be matched.
Estimated Duration	Enter in hours, minutes, and seconds, the duration to be matched.
Date Modified	Click the first calendar icon () to choose the start date for the range of modification dates to be matched, and then click the second calendar icon to choose the end date for the range.
Owner	Enter the DMM username for the asset owner to be matched.
Source	Choose whether the asset is stored locally (File) or remotely (URL).
Path	Enter a string of characters that the path contains.

Table 19-1 Elements for Managing a Media Library (continued)

Element	Icon and Description
untitled table	
Describes all assets contained in the category, or of the media type, that you clicked in the list. The table sorts information into columns.	
Asset Title	A unique and human-readable title that you entered.
Filename	The filename for this asset.
File Type	Identifies the format of the asset that the corresponding row describes.
Size	The file size in bytes.
Estimated Duration	⚠ **Caution** **NEW IN CISCO DMS 5.2.3—Before a DMP 4305G or 4400G will render any video asset for playback, make sure that the video duration is at least 3 seconds.** Otherwise, the extreme brevity triggers DMP failover, which unloads the current playlist or presentation and causes your DMP to render its failover URL instead. • To avoid this behavior altogether, use only video clips whose full duration is 3 seconds or more. • To prevent this behavior temporarily when extremely brief video is somehow essential, disable video failover. • To recover from this behavior, restart the application. **A DMP 4310G does not exhibit this behavior.** The duration value that you entered when you added this asset to your media library, or when you edited attributes of this asset.
Date Last Modified	Time stamp (in the format `DD-MM-YYYY hh:mm:ss`) that says when the file was last modified.
pagination controls	
Buttons and fields clustered under a table, by which you: • Set how many rows a table should show per page before it starts to span multiple pages. • Move from one page to another in a table that spans multiple pages. • Cause the table to show refreshed data.	
Options	
Choose the option, if any, that meets your requirements	
Add Media Asset	Opens the Add Asset dialog box.
View Media Asset	Opens the View Asset dialog box.
Edit Media Asset	Opens the Edit Asset dialog box.
Remove Media Asset	Deletes the asset that you highlighted.
Add Media Asset	Opens the Add Asset dialog box.
Create Playlist	Opens the New Playlist dialog box in a popup window.

1. Or kernel.

Related Topics

- Elements to Add Categories and Rename Them, page 19-12

- Elements to Add Assets and Edit Their Attributes, page 19-12

Elements to Add Categories and Rename Them

The Add Category and Rename Category dialog boxes help you to manage the categories for organizing assets in your media library.

Navigation Path

- Digital Signage > Media Library > Create Category
- Digital Signage > Media Library > Options > Create Category
- Digital Signage > Media Library > Options > Rename Category

Table 19-2 Elements for Managing Media Library Categories

Element	Description
Name	A unique and human-readable name for a category.
Description	A brief description of the category and its purpose.

Elements to Add Assets and Edit Their Attributes

Features of the Add Media Asset and Edit Media Asset dialog boxes help you to populate and manage your media library. Options are sorted under two tabs, *Single* and *Batch*, which help you to manage either one asset or multiple assets, respectively.

Navigation Path

- Digital Signage > Media Library > Add Media Asset
- Digital Signage > Media Library > Options > Add Media Asset
- Digital Signage > Media Library > Options > Edit Media Asset

Table 19-3 Elements for Adding and Editing Assets

Element	Description
Single tab	
Elements to add or edit one asset.	
Source	The full local pathname or remote HTTP URL of the asset. We do not support any use of spaces in filenames or URLs.

Table 19-3 Elements for Adding and Editing Assets (continued)

Element	Description
File Type	Choose the type that best describes the asset: • **Video**—A video file in MPEG-1, MPEG-2, or MPEG-4 format. • **Shockwave Flash**—An Adobe Shockwave Flash 6, or 7 file if your DMP is a 4300G or a 4305G. Alternatively, if your DMP is a 4400G, and then a file in the format of Shockwave Flash 6, 7, 8, 9, or 10. • **Images**—A standard image file, such as a nonprogressive JPEG image. The filename extension must be JPG, JPEG, GIF, or PNG. • **HTML**—A web page. The filename extension must be HTM or HTML. • **Firmware**—A firmware or kernel image for the DMP. The filename extension must be FWIMG or BIN for firmware, or TIVELLA for kernels. • **UDP**—The routable IP address and UDP port for a streaming server.
Title	A unique and human-readable name for the asset.
Estimated Duration	The estimated duration for playback, counted in hours, minutes, and seconds.
Category	Describes each of the categories that should contain this asset. To add a category to the list, click **Select Category**.
Description	Optional, brief description of the asset.
Owner	Your name or the name of the person who added the asset.
Batch tab	
Elements to add or edit multiple assets simultaneously.	
Base URL	An HTTP URL that points to a directory on a server. The directory that you point to serves as the root-level URL for the batch download operation; every file that you download is retrieved from this directory or from one of its children at a lower level. We do not support any use of spaces in URLs.
Pattern	The filename pattern that identifies which files to download. We do not support any use of spaces in filenames.
File Type	Choose the type that best describes these assets: • **Video**[1]—A video file in MPEG-1, MPEG-2, or MPEG-4 format. • **Shockwave Flash**[2]—Any Adobe Shockwave Flash 6, or 7 file if your DMP is a 4300G or a 4305G. Alternatively, if your DMP is a 4400G, any Adobe Shockwave Flash 6, 7, 8, 9, or 10 file. • **Images**—Any standard image file, such as a nonprogressive JPEG image. The filename extension must be JPG, JPEG, GIF, or PNG. • **HTML**—Any web page. The filename extension must be HTM or HTML. • **Firmware**—Any firmware image for the DMP. The filename extension must be FWIMG or BIN for firmware, or TIVELLA for kernels. • **UDP**—The routable IP address and UDP port for a streaming server.
Levels	The number of levels below the specified base URL to search for (and download) files with filenames that match the specified pattern.
Category	Click the name of the one category that should contain these assets.

1. See the "MPEG-4 Support and Restrictions" section on page 19-4.
2. See the "Shockwave Flash (SWF) Support and Restrictions" section on page 19-4.

Elements To Describe and Preview One Asset

The View Asset dialog box describes the attributes of one asset in your Media Library and, in some cases, shows a preview. Attribute information is sorted under two tabs, *Overview* and *Usage*. Click a tab to see the asset attributes that it describes. To close the View Asset dialog box, click **Close**.

Navigation Path

Digital Signage > Media Library > Options > View Media Asset

Table 19-4 Elements for Viewing Asset Attributes

Element	Description
Overview tab	
Attributes that are derived from information in your media library include the elements with these field labels: Title, Description, File Type, Estimated Duration, Owner, Category Names, and Source. To understand these elements, see Elements to Add Assets and Edit Their Attributes, page 19-12. Other elements on the Overview tab are as follows.	
Preview	Either a generic icon that represents the asset type or a thumbnail that you can click to view this asset, assuming that its file type is viewable in your browser.
Path	The full HTTP pathname for this asset.
Size	The file size.
Playlist Count	The total count of playlists that contain and are dependent upon this asset. To learn more about these playlists, click the **Usage** tab.
Presentation Count	The total count of presentations that contain and are dependent upon this asset. To learn more about these presentations, click the **Usage** tab.
Date Modified	Time stamp (in the format `DD-MM-YYYY hh:mm:ss`) that says when the file was last modified.
Usage tab	
*Shows either the Playlists for Asset table or the Presentations for Asset table, depending on whether you click **Playlist** or **Presentation**, respectively. The table sorts information into the following columns.*	
Name	The name of the presentation or the playlist that is dependent upon this asset.
Time Referenced	The total count of instances when the described presentation or playlist includes this asset.
Date Modified	Time stamp (in the format `DD-MM-YYYY hh:mm:ss`) that says when the described presentation or playlist was last modified.

CHAPTER 20

Schedule Media to Play and Commands to Run

Revised: April 4, 2012
OL-15762-04

- Concepts, page 20-1
- Procedures, page 20-7
- Reference, page 20-10

Audience

We prepared this material with specific expectations of you.

- You work in the centralized DMP schedule to render media for timed playback, issue commands that operate and maintain equipment, guide your audiences to safety during public emergencies, and so on.

Concepts

- Overview, page 20-1
- Guidelines, page 20-3
- Restrictions, page 20-4
- Scenarios, page 20-6

Overview

Our scheduling service helps you to control exactly when particular DMPs play your choice of assets or execute your saved commands. You can schedule these events to occur at any time. You can even set them to recur as often as needed. Moreover, you can schedule hundreds of future events.

Now

You can trigger such events to start manually and run only once. We call this method “Play Now.”

Later

Or, you can set them to run automatically from a schedule, with or without recurrence. (We call this method “Play in Future.”)

Topics in this section tell you how to plan deliveries of assets and commands that you prepare for DMPs.

The schedule can manage multiple deployments simultaneously and—assuming that a DMP has a fast network connection and you send deployments to it that are not mutually exclusive—a DMP can receive multiple deployments simultaneously.

You can schedule future time slots for elements that you will deploy once or repeatedly to:

- One registered DMP, if it belongs to a DMP group which does not contain any other DMPs.
- Multiple registered DMPs that all use the same one DMP group as their parent.
- All of your registered external (FTP) deployment servers; the schedule treats all of your registered external servers identically.

Understand Future Deployments for Presentations

You can deploy only one presentation at a time if the assets that it uses should be stored directly on your DMPs. To check the free space on the SD memory card in a DMP, choose **Digital Media Players > DMP Manager**, and then look in the DMP List table for the amounts of free space in internal and external storage. Alternatively, log in to the local instance of DMPDM, and then click **Internal Storage**.

Understand Time Zones in the Schedule

Displayed times for deployments in the schedule are relative to the time zone where you deployed your DMM appliance, not the time zone where you deployed any DMP, and not the time zone for any other locale. You set the time zone value for your DMM appliance when you used AAI to configure it and you can use AAI to correct the time zone value if it is wrong.

Future time slots that the schedule describes will always designate hours in boldface numerals according to the UTC time zone offset for the locale where your DMM appliance is installed.

When you work from any other time zone and view the schedule, this offset will differ from the offset at your location and the difference might be confusing. Furthermore, the offset might be confusing even when you and your DMM appliance are together in one time zone but you want to schedule time slots for a DMP that is in some other time zone.

Tip **In either of these scenarios, you can cause the schedule to designate hours from two time zones simultaneously.** One of these time zones is always the one for your DMM appliance. To choose the second time zone (whether it is for your personal locale or the locale of a DMP), select a named UTC offset option, such as "America/Los Angeles," from the untitled list above the schedule. The schedule is then updated immediately to show designated hours from the second time zone that you selected, in addition to the designated hours that it always shows for your DMM appliance.

- Small, plain numerals designate hours for the UTC-offset locale that you selected.
- Large, boldface numerals designate hours for the locale where your DMM appliance is installed.

Understand Tooltips in the Schedule Timeline

Whenever your pointer hovers over a event in the timeline, the schedule shows a tooltip. Information in the tooltip describes the current status of the corresponding event and summarizes its most important attributes. Information in the tooltip is organized as follows.

Related Topics

- Elements of a Tooltip in the Schedule Timeline, page 20-10

Understand Inline Status Messages for Deployed Events in the Schedule

Whenever you let your pointer hover over a scheduled deployment in the timeline, we describe the current status and summarize its most important attributes.

Related Topics

- Elements to Describe the Status of Deployed Events, page 20-11

Guidelines

- Best Practices to Prevent Unscheduled DMP Restarts, page 20-3
- Best Practices to Manage and Maintain the Schedule, page 20-3
- Best Practices to Stop Playback of a Scheduled Job, page 20-4

Best Practices to Prevent Unscheduled DMP Restarts

We designed DMPs to restart gracefully when they run out of free memory. This is the fastest and most effective way to purge memory on a DMP.

For this reason, we recommend that you restart your DMPs deliberately from time to time, according to a schedule that you control. Doing so can reduce or prevent unscheduled restarts, which could otherwise occur at inconvenient or inopportune times.

Determine first if unexpected restarts occur at a predictable interval, as is likely. If you notice, for example, that your DMPs seem to restart unexpectedly after your playlists or presentations run for approximately 7 days, then you could schedule a controlled restart to run once every 6 days.

The interval that's best for one network could be unsuitable for another. Your assets and how you combine them are the greatest predictor of how much time can elapse before your DMPs run out of free memory.

The syntax is **`mng.reboot=1`**.

Best Practices to Manage and Maintain the Schedule

Avoid placing entries in your schedule that recur often and persist for an unreasonably long time, and also avoid all other practices that might cause your schedule to become too large. Otherwise, DMM might not generate your manifest files quickly enough and your ACNS CDM or root CE might time out. We recommend that you apply this rough algorithm:

- An entry that recurs daily should persist in your schedule for no more than 3 days.
- An entry that recurs weekly should persist in your schedule for no more than 3 weeks.
- Almost never schedule event instances that extend more than 60 days into the future. The exceptions to this rule are:
  - An entry that recurs monthly can persist in your schedule for as long as 3 months.
  - An entry that recurs annually can persist in your schedule for as long as 3 years.

Furthermore, we recommend these additional best practices:

- Avoid deploying assets to any given DMP more than once per day. Ideally, all deployments should occur outside your normal business hours. You can schedule a deployment package that contains assets for more than one presentation if the target DMP has sufficient local storage to save the entire package. Applied outside normal business hours, this simple method reduces your dependence on daytime deployments, which might otherwise disrupt your digital signage temporarily.
- Avoid having any more than approximately 200 events (of all kinds, combined) saved in your schedule at any one time.
- Avoid having any more than approximately 100 presentations saved in DMD at any one time. If your presentations database grows too large, you might be prevented from designing, saving, and deleting presentations, and the start time might be disrupted for your scheduled events.
- Instead of creating a presentation that is similar to one that used to be in your schedule, simply modify the old presentation and reschedule it.
- Avoid extending the playback window for your customer-facing presentations and playlists beyond the actual hours when customers will see them.
- If you are not sure when or how many times a task or presentation occurs in your schedule, you can use the Schedule Reports feature.

Best Practices to Stop Playback of a Scheduled Job

Caution **Do not delete an event from your schedule to stop a presentation from playing on your DMPs.**

When you do this, your DMPs continue to use the presentation as if nothing has changed. This occurs because each deployment job includes an instruction to stop, which you delete along with the job that contains it.

Instead, use Play Now to deliver the Stop All Applications command.

Restrictions

- Daylight Savings Time Restrictions, page 20-4
- External Server Restrictions, page 20-5
- Content Delivery Network Restrictions, page 20-5

Daylight Savings Time Restrictions

Daylight Savings Time (DST) introduces a 1-hour clock offset that might disrupt the programming schedule for your digital signs. To avoid and prevent such disruptions, do ONLY the following:

- Set the DMP timezone to its correct value.
- Configure the DMP to use an NTP server.

A timezone file on your DMP then compensates correctly and automatically for all DST effects. **DO NOT otherwise and separately enable DST.** If you do so despite this guidance, your DMP schedule will be wrong by 1 hour.

(**CSCty77974**; **CSCtb79876**)

External Server Restrictions

Caution **It is important to understand all possible limitations and effects of deploying to an FTP server, as well as the exact circumstances that lead to these effects.** Files are sometimes unplayable or deleted automatically; subdirectories are sometimes created automatically; and values that you enter in DMM are sometimes changed automatically.

- You cannot use the Schedules > Play Now feature with external deployment servers.
- All deployments to external servers require that you use Schedules > Play in Future.
- Video files do not play at all when you deploy to an FTP server a presentation whose MPEG files are:
  - Requested through Microsoft Proxy Server.
  - Requested through Microsoft Internet Security and Acceleration Server.
- When your media library in DMM is the source for a file that you deploy as part of a presentation, and when you choose an FTP server as the target to receive that file, DMM transfers copies of the relevant file to *all* of the FTP servers that you have registered. After the transfer is completed, DMM *deletes* the original file from its media library, and then changes the relevant presentation so that it uses a URL instead of a local path. The URL that DMM enters automatically is specific to whichever FTP server you registered first.
- When an HTTP URL is the source for a deployed file, and when the pathname on the source server contains subdirectories that do not exist on the target FTP server, DMM automatically creates the required subdirectories on the FTP server.

Content Delivery Network Restrictions

ACNS

- We recommend that you avoid using immediate deployments with ACNS, due to the amount of time required to distribute assets throughout your network and to its edge. If you do so despite this recommendation, DMM always uses the default ACNS channel. You cannot use any other channel.

ECDS

- We recommend that you avoid using immediate deployments with ECDS, due to the amount of time required to distribute assets throughout your network and to its edge. If you do so despite this recommendation, DMM always uses the default ECDS channel. You cannot use any other channel.

WAAS

- We recommend that you avoid using immediate deployments with WAAS, due to the amount of time required to distribute assets throughout your network and to its edge.

Scenarios

- Methods to Pre-empt Only One Instance of a Recurring Event, page 20-6

Methods to Pre-empt Only One Instance of a Recurring Event

In some cases, you might want to do something one time, or for a limited time, that overlaps with a recurring event. For example, you might schedule a presentation to run from 9:00 a.m. to 6:00 p.m. every weekday in the month of March, but want to show a different presentation on the second Tuesday in March.

The challenge is that your DMP cannot prioritize contradictory events that are scheduled to start simultaneously. However, there are several ways to pre-empt a recurring event.

- Method One, page 20-6
- Method Two, page 20-6
- Method Three, page 20-7

Method One

Workflow

1. Schedule and deploy a recurring event for the first uninterrupted span of dates.
2. Schedule and deploy the one-time event.
3. Schedule and deploy a copy of the first recurring event for the second uninterrupted span of dates.

Method Two

Background

Assume that you have created two DMP groups. This scenario calls them Group_A and Group_B.

- For Group_A, schedule an event that recurs throughout the entire span of dates.
- For Group_B, schedule the one-time event.

Workflow

1. Move targeted DMPs from Group_A to Group_B when the one-time event should begin.
2. Return the DMPs to Group_A when the one-time event should end.
3. Choose **Schedules > Play Now**.
4. Click **Group_A** in the DMP Groups tree.
5. Ctrl-click each DMP that should start again to show the recurring presentation.
6. Choose **Select an Event Type > Digital Signs**.
7. Click **Select Digital Signage**.
8. Click the name of the recurring presentation name.
9. Click **OK**.

Method Three

Background

Assume that the one-time event is live streaming video of an important meeting or conference. You can schedule the interruption far ahead of time and simply set it to occur once.

Workflow

1. Schedule a recurring event to run every weekday, as you might expect, from 9:00 a.m. to 6:00 p.m.
2. Schedule the (Go to) URL command to start at 9:05 a.m., so that it interrupts the recurring event **but does not conflict with its start time**.
3. Schedule the (Go to) URL command to stop at 6:00 p.m.

The recurring event begins again, as expected, at 9:00 a.m. the next day.

Procedures

- Use ‘Play Now’ to Transmit Assets or Commands Immediately, page 20-7
- Use the ‘Run Task’ Feature to Transmit Assets or Commands Immediately, page 20-8
- Schedule the Time Slot for a Future Event, page 20-9

Use ‘Play Now’ to Transmit Assets or Commands Immediately

You can deploy immediately to one DMP or to one DMP group.

Before You Begin

- You must already have created and saved what you will deploy.
- You must already have created the group whose member DMPs should receive the deployment.

Procedure

Step 1 Choose **Schedules > Play Now**.

Step 2 Choose one of these from the Event Type list, according to your need.

- **Digital Signs**
- **Cast**
- **System Tasks**

Your choice reveals a button whose name is derived from your choice.

Step 3 Click the button to choose particular assets or particular commands.

A dialog box opens. Its name and elements vary by event type.

Step 4 Click the name of the command or asset to be deployed.

Step 5 Click **OK** to confirm your selection and close the dialog box.

OR

Click **Cancel** to discard your selection and close the dialog box.

Step 6 Expand a group in the **DMP Groups** tree to list its member DMPs.

Step 7 Ctrl-click in this list the name of each DMP that should receive the deployment.

Step 8 Click **Submit** to confirm your selections and deploy the element immediately.

OR

Click **Cancel** to discard your work for this deployment.

Step 9 Stop. You have completed this procedure.

Related Topics

- Understand Future Deployments for Presentations, page 20-2
- Use the 'Run Task' Feature to Transmit Assets or Commands Immediately, page 20-8

Use the 'Run Task' Feature to Transmit Assets or Commands Immediately

Procedure

Step 1 Choose **Digital Media Players > DMP Manager**.

Step 2 Navigate in the DMP Groups object selector, expanding its levels as necessary until you find in its hierarchy the parent group for a DMP that should receive assets or instructions. Then, click the name of this DMP group in the object selector.

OR

Choose an option from the Filter list to restrict which DMPs the DMP List table describes.

Step 3 (**Optional**) If DMP data in the table straddles multiple pages, use pagination controls above the table to move between pages.

Step 4 Choose which DMPs in the DMP List table should receive the assets or instructions that you will deploy.

Step 5 Choose an action from the Action list, above the DMP List table.

Step 6 Click **Go**. The specified action starts immediately.

Step 7 Stop. You have completed this procedure.

Related Topics

- Schedule Media to Play and Commands to Run, page 20-1
- Use 'Play Now' to Transmit Assets or Commands Immediately, page 20-7

Schedule the Time Slot for a Future Event

Before You Begin

- You must already have created and saved the elements that you will deploy.
- You must already have created the DMP group that should receive a deployment.

Procedure

Step 1 Choose **Schedules > Play in Future**.

Step 2 From the calendar, choose the year, month, and day when the deployment should start.

The timeline is updated automatically, so that it shows the schedule for that day.

Step 3 From the Event Type list, under the timeline, choose the deployment type.

Step 4 When the Schedule Task dialog box opens, complete these steps:

a. Click **Select Group**, click the group name for the DMPs or the external (FTP) deployment servers that should receive this deployment, and then click **OK**.

b. Click the **Select** <*event_type*> **Tasks** button, click the name of the specific event to be deployed, and then click **OK**.

c. To designate the start and stop times for this event:

- In the Start Time area—For the deployment date that you chose in Step 2, enter the hour (numeric, in the range from 1 to 12) and minute (numeric, in the range from 00 to 59) when DMPs should start this event, and then enter either AM or PM as the period.
- In the Stop Time area—Use the same method to specify when DMPs should stop this event.

Step 5 From the Repeat list, choose the recurrence interval for this event. The intervals are:

- Never
- Every Day
- Every Week
- Every Month
- Every Year

Step 6 To save your selections, click **Save All**.

Note

- If you do not click Save All, the schedule discards your selections immediately after you refresh your browser or load any other page.
- You must click Save All even if you do not plan to deploy the event right away. Later, when you are ready to deploy the event, click Publish All.

Step 7 (**Optional**) To make copies of an event in the schedule, so that it recurs as many times as you want and at any interval that you specify:

a. Click the event description on the timeline, and then choose **Add an Event > Duplicate All**.

b. Click the first **Select** button to choose the group whose event will be copied, and then click **OK**.

c. Click the second **Select** button to choose the group that should receive the copy, and then click **OK**.

d. Click **Save**.

Step 8 Click **Publish All** to transmit the deployment according to your defined schedule and synchronize it if you use ACNS or WAAS.

Step 9 Stop. You have completed this procedure.

Reference

- Software UI and Field Reference Tables, page 20-10
- FAQs and Troubleshooting, page 20-12

Software UI and Field Reference Tables

- Elements of a Tooltip in the Schedule Timeline, page 20-10
- Elements to Describe the Status of Deployed Events, page 20-11

Elements of a Tooltip in the Schedule Timeline

Navigation Path

Schedules > Play in Future

Table 20-1 Schedule Timeline Tooltips

Category	Description
Status	One of the following: • **New**—You made selections to define a new deployment. However, because you have not yet clicked Save, the schedule will discard your selections if you refresh your browser or load any other page in it. • **Saved**—You made selections to define a new deployment and you clicked Save. You created a permanent record for the deployment, but have not scheduled it yet to run. • **Published**—You made selections to define a deployment, you saved your selections, and the deployment is scheduled to run at the times that you specified. • **Scheduled**—The deployment is occurring now. • **Finished**—The deployment occurred at the scheduled time and is now stopped.
App	The selection that you made from the Applications list.
Group	The selection that you made from the DMP Groups list.

Table 20-1 Schedule Timeline Tooltips (continued)

Category	Description
From	The date and time when the deployment is (or was) scheduled to start.
To	The date and time when the deployment is (or was) scheduled to stop.
Repeat	The number of times that the deployment is scheduled to recur.
Start Cmd Result (Total/OK/Failed)	*N*/*N*/*N*, where: • The first *N* is a color-coded (black) numeral that counts the total number of times that DMM tried to deploy the command to start the designated task. • The second *N* is a color-coded (green) numeral that counts the number of times that DMM succeeded in deploying the command to start the designated task. • The third *N* is a color-coded (red) numeral that counts the number of times that DMM failed to deploy the command to start the designated task.
Stop Cmd Result (Total/OK/Failed)	*N*/*N*/*N*, where: • The first *N* is a color-coded (black) numeral that counts the total number of times that DMM tried to deploy the command to stop the designated task. • The second *N* is a color-coded (green) numeral that counts the number of times that DMM succeeded in deploying the command to stop the designated task. • The third *N* is a color-coded (red) numeral that counts the number of times that DMM failed to deploy the command to stop the designated task.

Elements to Describe the Status of Deployed Events

Navigation Path

Schedules > Play in Future

Table 20-2 Elements to Describe the Current Status of Scheduled Events

Category	Description
Application Name	The selection that you made from the Applications list.
Application Type	Either *Digital Media Designer* or one of the following. • (Go to) URL • Deployment Package • DMP Audio/Video Settings • DMP Discovery (autoregistration) • DMP Display Controls • DMP Failover Retry • DMP Firmware Upgrade • DMP Startup URL • File Transfer to DMP or Server • System Tasks
From	The date and time when the deployment is (or was) scheduled to start.

Table 20-2 Elements to Describe the Current Status of Scheduled Events (continued)

Category	Description
To	The date and time when the deployment is (or was) scheduled to stop.
How Often	The number of times that the deployment is scheduled to recur.
Status	One of the following: • **New**—You made selections to define a new deployment. However, because you have not yet clicked Save, DMM will discard your selections if you refresh your browser or load any other page in it. • **Saved**—You made selections to define a new deployment and you clicked Save. DMM created a permanent record for the deployment, but has not scheduled it yet to run. • **Published**—You made selections to define a deployment, you saved your selections, and DMM has scheduled the deployment to run at the times that you specified. • **Scheduled**—The deployment is occurring now. • **Finished**—The deployment occurred at the scheduled time and is now stopped.
Group	The selection that you made from the DMP Groups list.
Start Command Summary (Total/OK/Failed)	*N*/*N*/*N*, where: • The first *N* is a color-coded (white) numeral that counts the total number of times that DMM tried to deploy the command to start the designated task. • The second *N* is a color-coded (green) numeral that counts the number of times that DMM succeeded in deploying the command to start the designated task. • The third *N* is a color-coded (red) numeral that counts the number of times that DMM failed to deploy the command to start the designated task.
Stop Command Summary (Total/OK/Failed)	*N*/*N*/*N*, where: • The first *N* is a color-coded (white) numeral that counts the total number of times that DMM tried to deploy the command to stop the designated task. • The second *N* is a color-coded (green) numeral that counts the number of times that DMM succeeded in deploying the command to stop the designated task. • The third *N* is a color-coded (red) numeral that counts the number of times that DMM failed to deploy the command to stop the designated task.

In addition, a status bar at the bottom of the popup window counts the number of errors associated with the described deployment.

FAQs and Troubleshooting

• FAQs, page 20-12

FAQs

Q. Can I schedule an event that has no stop date?

A. Not exactly. However, when you use Play Now to initiate an event, it runs until another event starts.

Q. What prevents me from seeing the software user interface for Play in Future?

A. Refresh you browser. If the problem persists, make sure that your client OS, browser, and JRE are all set to English.

CHAPTER 21

Content Distribution and Delivery

Revised: April 4, 2012
OL-15762-04

- Concepts, page 21-1
- Procedures, page 21-15
- Reference, page 21-21

Audience

We prepared this material with specific expectations of you.

- You will configure and manage how DMP endpoints use content distribution network technologies.

Concepts

- Overview, page 21-1
- Understand DMP Support for the CIFS Protocol, page 21-2
- Choose a Content Delivery System to Use with DMPs, page 21-2
- DMS-CD Concepts, page 21-3
- Guidelines, page 21-7
- Restrictions, page 21-11
- Example Scenario, page 21-13

Overview

Commonly, the bandwidth capacity required to deliver an HD video stream ranges from 10 Mbps to 15 Mbps. In contrast, an average SD video stream uses approximately one-third as much capacity. However, these parameters are highly configurable and will vary from one WAN to another.

Content distribution technologies can make perfect copies of important files from your origin server and store the duplicates on multiple nodes in your network. Later, anyone who needs one or more of these cached files can obtain them quickly from a node that is closer to them than the origin server and less heavily loaded. Such methods improve network scalability and user experience.

Topics in this chapter explain how to use content distribution technologies with Cisco Digital Media Player (DMP) endpoints. Your understanding these important concepts will help you to use content distribution successfully.

Understand DMP Support for the CIFS Protocol

Common Internet File System (CIFS) is a network protocol for sharing files and for obtaining remote access to those files.

A *CIFS share* is a mount point on a network attached storage device that supports the CIFS protocol. When you choose WAAS as your content distribution method, Cisco Digital Signs instructs DMPs to use the CIFS protocol and mount a network share, such as a Windows shared folder, that uses CIFS.

Related Topics

- Configure ACNS or WAAS, page 21-15
- Procedures, page 21-15

Choose a Content Delivery System to Use with DMPs

In media networks, it is sometimes necessary to distribute large files where bandwidth capacity is moderately or severely constrained. The challenge of doing this successfully is that delivering HD or SD video streams and deploying large assets often requires an average data transfer rate of greater than 6 million bits per second (Mbps, or megabits). Media networks can compound your need for bandwidth.

There is a practical maximum limit in any WAN for how much bandwidth each of its remote sites can use, and a content delivery solution can help you to manage multicast file distribution efficiently to the DMPs that operate at your remote sites. In this way, content delivery solutions can enhance the scalability of your existing network infrastructure and adapt it for media deployments.

Table 21-1 Comparison of Supported Content-Distribution Methods

Method	Use Cases
DMS-CD	**Consider DMS-CD when:** • You do not use *Cisco Show and Share*. • Your DMPs *do not* show live video or high-definition video. • Each site in your WAN contains a maximum of three DMPs. • Your whole network contains a maximum of 300 DMPs. • Each site in your WAN has bandwidth capacity of less than T1/E1. • On average, each site in your organization downloads less than 200 MB daily. • It takes longer than 5 hours in your WAN to download 300 MB at 128 Kbps. **Note** **The file transfer capacity of DMS-CD at any one time is limited to 10 GB** (CSCsx45983)**.**

Table 21-1 Comparison of Supported Content-Distribution Methods (continued)

Method	Use Cases
ECDS	**Consider ECDS when:** • You use DMPs **and** *Cisco Show and Share*. • Your DMPs show high-definition video. • Each site in your WAN has a minimum of three DMPs or three *Show and Share* users. • Each site in your WAN has less bandwidth capacity than T2/E2. • On average, each site in your organization downloads 200-300 MB of video daily. • You need a comprehensive platform for media-delivery, including a Flash streaming server.
ACNS	**Consider ACNS when:** • You use DMPs **and** *Cisco Show and Share*. • Your DMPs show high-definition video. • Each site in your WAN has a minimum of three DMPs or three *Show and Share* users. • Each site in your WAN has less bandwidth capacity than T2/E2. • On average, each site in your organization downloads 200-300 MB of video daily. • You need a comprehensive platform for media-delivery, excepting a Flash streaming server.
WAAS	**Consider WAAS when:** • You use DMPs **and** *Cisco Show and Share*. • You use Windows Media for live Show and Share streams. • Each site in your WAN has a minimum of three DMPs or three *Show and Share* users. • Each site in your WAN has less bandwidth capacity than T2/E2. • On average, each site in your organization downloads more than 300 Mbps of video daily. • You want to use the CIFS protocol when provisioning assets to your DMPs.

Related Topics

- DMS-CD Overview, page 21-4
- Understand DMP Support for the CIFS Protocol, page 21-2
- Configure ACNS or WAAS, page 21-15

DMS-CD Concepts

- DMS-CD Overview, page 21-4
- Retry Timeout, page 21-4
- Concurrent Deployments, page 21-4
- DMS-CD Performance Factors, page 21-4
- Understand Shared Scheduling Features for Deployments, page 21-6

DMS-CD Overview

Activation **Anyone who has purchased a valid license to use this release of Cisco Digital Signs also has a perpetual license to use its built-in implementation of DMS-CD.** No additional software is required and there is no recurring cost.

Cisco DMS Content Distribution (DMS-CD) is a file delivery and management mechanism. It conserves network bandwidth and optimizes playback performance by provisioning creative assets directly to your DMPs. You can use FTP or SFTP to transfer multiple playlists and presentations to DMP local storage.

- Store assets locally on the flash memory card that is preinstalled inside a DMP.
- Store assets locally on an external USB hard drive or flash drive that you attach to a DMP.

Tip **DMPs cannot use the loopback IP address (127.0.0.1) or the loopback hostname (localhost) to find or load assets stored locally.** Instead, the path to local assets must always begin with **file://tmp/ftproot/** before it specifies one local volume, any subdirectories, and the relevant filename.

Retry Timeout

- The factory default Retry Count value is 5.
- The factory default Retry Timeout duration is 300 seconds.

Given these values, you can expect that DMS-CD—when it uses default values—takes as long as 1,500 seconds (25 minutes) to detect assets or determine that a DMP is unreachable and give up. In cases when this duration is too long, you might try changing the Retry Timeout value from 300 to 30.

Concurrent Deployments

Most DMS-CD deployment preference settings that you define take effect during the next scheduled DMS-CD deployment. However, any time that you change the “Number of concurrent deployments” value, you must restart your DMM appliance and run a scheduled DMS-CD deployment before the changed setting takes effect on your DMPs.

DMS-CD Performance Factors

- Differential Download Intelligence, page 21-4
- Bandwidth Consumption, page 21-5
- Resumption of Interrupted and Paused File Transfers, page 21-5

Differential Download Intelligence

Differential download intelligence in DMS-CD prevents the needless provisioning of any asset more than once to any DMP that uses it and already has downloaded it, even if you have used the asset repeatedly in multiple playlists or presentations. Your DMPs retain their valid assets and download only what is new or has changed.

Bandwidth Consumption

A systemwide threshold that you define limits in your WAN how much bandwidth is used per session when DMS-CD provisions assets to one of your DMPs.

For example, a limit of 1.2 mbits means that file transfer speeds for DMS-CD deployments cannot exceed the maximum threshold of 1.2 mbits per DMP.

Thus, if your deployment provisions assets to 20 DMPs, the maximum WAN bandwidth that DMS-CD uses is 24 mbits, because 20 x 1.2 = 24.

Resumption of Interrupted and Paused File Transfers

File transfer resumption in DMS-CD helps to compensate for bandwidth throttling and other constraints that might limit how many assets you can provision at a time. Such constraints commonly include a limited number of nighttime hours when deployments are certain not to disrupt the digital signage messages or *Cisco Cast* programs that your organization shows to its targeted audiences.

Values that you define at Deployment Manager > Deployment Preferences determine in part how DMS-CD responds to any incomplete file transfers, but its response also considers the size of individual files within a deployment package. Finally, a DMP might generate a queue for itself if it is the target of multiple deployments, because a DMP can receive data from only one deployment package at a time.

Outages and Other Disruptions

When the scheduled delivery of a deployment package is interrupted—by a power failure or a network outage, for example—while you are provisioning assets, the file transfer process might resume automatically at a later time.

- When sufficient time remains during the same deployment window that was interrupted, your file transfer resumes after your retry interval has elapsed.

Tip **You set this interval in the "Deployment retry time (in seconds)" field.**

- When the interruption extends past the end of the scheduled deployment window and the deployment is scheduled to recur, file transfer resumes automatically the next time that the deployment is scheduled to run.
- When the interruption extends past the end of the scheduled deployment window but you did not schedule the deployment to recur, file transfer stops without success and does not recur.

Likewise, the maximum number of times that DMS-CD tries to provision assets for an interrupted deployment package is constrained by the "Deployment retry count" value.

File Size

When your deployment is scheduled to recur, DMS-CD will either pause or stop the transfer of assets whose transfer did not finish during the deployment window. DMS-CD uses file size to determine whether an incomplete file is paused or stopped:

- **Transfer is stopped** for any partially transferred file whose size is *less than* 6 MB, no matter how much of it was transferred. Transfer of a 100 KB file, for example, must start over again from the first byte when the deployment recurs.
- **Transfer is paused** for any partially transferred file whose size is *greater than* 6 MB, no matter how little of it was transferred. A file whose size is 1.6 GB, for example, is paused when none of your DMPs can download more than 200 MB per day.

Tip

- **Calculations of this kind can help you to estimate how far in advance you should schedule the first instance of a recurring deployment.** When you know already, for example, that one-fifth of the data within a deployment package can transfer to DMP local storage during the deployment window that you reserved, then you know also that the deployment must recur on at least 5 separate days or your DMPs will not receive their assets in time.
- We recommend that your deployments recur once each day.
- When a deployment is scheduled to recur at any other interval than once per day—such as once per week—then this is the interval after which any paused transfer will resume.

DMP Group Memberships

Each DMP considers its group memberships when it starts to receive provisioned data from DMS-CD.

- DMPs that are assigned to only one DMP group apiece accept provisioned data to the best of their capacity.
- DMPs that belong to multiple groups, which are scheduled to receive differing deployments simultaneously, can receive only one of these deployments at a time. When they are the target of simultaneous deployments, DMPs generate a queue for themselves and receive the various deployment packages one at a time. Depending on the size and relative importance of one package over another, such DMPs might sometimes lack assets that you planned for them to have.

Tip

You might notice after a DMP joins multiple groups that it runs out of local storage space (on usb_1 or usb_2) faster than it did before.

- You can use the Play Now feature to deploy an empty playlist to any DMPs whose local storage has kept copies of obsoleted assets. This method clears local storage quickly.
- Alternatively, when local storage contains a combination of assets—some needed, others not—you can create and deploy a playlist that includes only the useful assets. The DMPs that receive this deployment will keep what they need and delete everything else.

Understand Shared Scheduling Features for Deployments

Because DMS-CD uses the same scheduling features that are built into Cisco Digital Signs, you can schedule assets to be provisioned late at night or at other convenient, planned times. Furthermore, reporting features in Cisco Digital Signs show you which DMS-CD deployments have succeeded or failed and show you which files were deployed to each DMP.

Understand DMS-CD Alert Reports

- Monitoring Modes, page 21-6
- Error Conditions, page 21-7
- Alert Types, page 21-7

Monitoring Modes

The Alert Reports feature supports modes that you can use when checking for DMS-CD deployment errors.

- *Live monitor mode* describes the most recent 100 instances of an event type that you choose. Its data is refreshed automatically every 90 seconds.
- *Snapshot mode* describes only the events that match the combination of all parameters that you choose.

Error Conditions

DMS-CD logging captures, detects, and reports these error conditions.

- DMS-CD cannot retrieve a file.
- DMS-CD cannot provision a file (DMP out of space or missing USB)
- DMP is not reachable (is down, or has wrong IP)
- Deployment was interrupted (network outage, DMM down, etc.)
- Deployment was not completed during its window

Alert Types

Successes or failures, exclusively

These options from the Type list cause a filtered report to describe only the DMS-CD deployments that failed or succeeded.

- Deployment Failures
- Deployment Successes

DMP-specific

These options from the Type list cause the filtered report to describe only the events that DMPs reported. Therefore, some of them might pertain to disrupted or failed deployments with DMS-CD.

- DMP Outages
- DMP Restarts
- DMP IP Conflicts

Internal to DMS-CD

When you choose the All Internal Events option from the Type list, these event types also pertain to DMS-CD deployments.

- Deployment error
- Deployment started
- Deployment ended

Guidelines

Note **You must restart your DMP after you switch it from ACNS mode to ECDS mode.** Although we recommend generally that you restart your DMP after you switch its mode from any content distribution method to another, it is mandatory only when you switch from ACNS to ECDS. (**CSCto35473**)

- DMS-CD Guidelines, page 21-8

DMS-CD Guidelines

- Gather the Essential Data to Develop a Deployment Strategy, page 21-8
- Limit DMS-CD Disruptions to DMP Performance, page 21-10

Gather the Essential Data to Develop a Deployment Strategy

DMS-CD deployments and deployment packages are all unique in their own ways. However, a repeatable process supports your development of the strategy for any such deployment. After you gather and record the numeric values that describe key factors, simple arithmetic leads you to a deployment strategy that we expect should be effective in your network.

The worksheet in this section explains and records these numeric values and guides you through the simple equations to plan a successful deployment.

Note **This worksheet assumes that all targeted DMPs in a deployment have identical network bandwidth capacity available to them.**

Table 21-2 Pre-Planning Worksheet for One DMS-CD Deployment

	Factor	Definition and Supporting Data
A.	DMP incoming transfer rate	Either the maximum transfer rate that you defined for DMS-CD or the result of factors that further constrain this rate. • (**A1**) What value is in effect for the Maximum Transfer Rate (Table 21-5 on page 21-22)? [ ] • (**A2**) If any factors[1] reduce bandwidth capacity per DMP to a lower rate than A1, what is the *actual* rate? [ ] **Q. The lower of these values is exactly what?** [ ] ←
B.	Total data to be deployed	The product of two values that you multiply. • (**B1**) In this deployment, the package size per DMP is exactly what? [ ] • (**B2**) This deployment targets exactly how many DMPs that should receive its package? [ ] **Q. What is the product (in gigabytes) when you multiply B1 by B2?** [ ] ←

Table 21-2 Pre-Planning Worksheet for One DMS-CD Deployment (continued)

	Factor	Definition and Supporting Data
C.	Maximum concurrent deployments	**Q. What value is in effect for the Number of concurrent deployments preference setting?**
D.	Duration of opportunity for deployment	The product of two values that you multiply. • (**D1**) How many hours per day are available for *nondisruptive* deployments? • (**D2**) How many days remain until all assets in the deployment package must be provisioned and available for playback on all targeted DMPs? **Q. What is the product (counted in hours) when you multiply D1 by D2?**
E.	Total DMS-CD throughput	Gather these values. • (**E1**) What is the throughput of your DMM appliance?[2] • (**E2**) What value is in effect for the Concurrency preference setting? • (**E3**) What DMP Incoming Transfer Rate value did you record in row A? • (**E4**) What is the sum when you add E2 to E3? **Q. Compare the values of E1 and E4. The lower value is exactly what?**
F.	Shortest possible duration for a parallel deployment	The quotient when you divide one value by another. • (**F1**) What Total Data to Be Deployed value did you record in row B? • (**F2**) What Total DMS-CD Throughput value did you record in row E? **Q. What is the quotient (counted in hours) when you divide F1 by F2?**

1. Potentially including any QoS policies that limit how much of your total bandwidth capacity DMS-CD is permitted to use.
2. Because your DMM appliance uses a 1 GB network adapter for Ethernet, its throughput is likely to be at least 40 mbits in any modern network that is not overloaded. If you do not know how to measure server throughput, contact your network administrator.

Limit DMS-CD Disruptions to DMP Performance

Improper scheduling practices and improper WAN bandwidth parameters in your media network might cause DMS-CD to disrupt playback performance temporarily on DMPs. The disruption affects multicast video streams, HD videos, Shockwave Flash animations, and image assets that these DMPs show on their attached presentation systems while simultaneously downloading newly provisioned, large assets. When this disruption occurs:

- Videos might become fragmented (contain artifacts), drop frames, or cut out during playback.
- SWF animations might play slowly.
- Images might redraw slowly.
- DMPs might restart unexpectedly, in rare instances.

You can configure bandwidth restrictions in your WAN that should help to alleviate these symptoms or eliminate them completely, depending on the system load of each DMP.

Best Practices

We recommend that you apply these DMS-CD best practices in your network whenever possible.

- Create and maintain only one deployment package for any DMP group whose constituent DMPs should play assets from local storage. Simply configure its deployment to recur nightly (or whatever other time has the least possible impact on your audience). Then, modify it as necessary, to:
  - Include all new or changed assets that member DMPs should obtain or keep for playback.
  - Remove obsolete assets that member DMPs should autoclean from local storage.

  DMS-CD syncs DMP storage with the current version of the deployment package and applies all changes automatically.

  Note **This method is simpler and more scalable than developing and maintaining a new package and scheduling a new deployment each time that your needs change.** Also, it increases the likelihood that large deployments will resume and be completed successfully on a slow connection. Furthermore, it prevents deployments from becoming too numerous to manage.

- Even if you have not imposed any bandwidth restrictions upon DMS-CD, avoid scheduling deployments and playback to run in parallel on DMPs. Otherwise, deployments can take longer to finish than you anticipate. (This delay occurs because the load is doubled on DMPs.) For best results, schedule DMS-CD deployments to run when no playback is scheduled. During such times, there is little or no load on DMPs.
- When playback and deployments must overlap, configure an upper threshold for DMS-CD bandwidth consumption. The value that you enter should be less than your network's maximum transfer rate. Adjust and test values as necessary, until you determine exactly how much bandwidth DMS-CD can use in your WAN without affecting DMP performance.

Tip **Use the "Enable maximum transfer rate" field (at Digital Media Players > Deployment Manager > Deployment Preferences) to limit DMS-CD bandwidth consumption.**

Note **In our tests, we found that using 5 Mbps as the upper threshold provided adequate bandwidth restriction in most cases.** However, this is not necessarily a value that you should use. Results will vary depending on network capacity and the load placed on a DMP.

Related Topics

- Configure Deployment Threshold Preferences, page 21-17

Restrictions

- DMS-CD Restrictions, page 21-11
- CIFS Restrictions, page 21-12
- ACNS Restrictions, page 21-12
- ECDS Restrictions, page 21-13

DMS-CD Restrictions

DMS-CD Capacity Category	Maximum Threshold
WAN size	100 sites
DMP count, per site	3 DMPs[1]
Data transfer per day, per DMP	300 MB[2]
Concurrent sessions per DMM appliance	75 DMS-CD sessions[2, 3]

1. This value is approximate and variable from one network to another.
2. This threshold might be lower in your WAN, depending on its total bandwidth capacity.
3. This threshold might be lower in your WAN, depending on your "Enable maximum transfer rate" value.

- We do not support use of the "Cast" plugin for Digital Media Designer with any content distribution system or network. (**CSCto35473**)
- Even though Microsoft Internet Information Server (IIS) is not case-sensitive, any use of IIS can trigger case-sensitive behaviors in DMS-CD. This occurs because DMS-CD uses all lowercase letters during its creation of a local folder whose name matches the FQDN of the external IIS host. When any asset URL includes even one uppercase letter in reference to the IIS host FQDN, DMS-CD cannot find any local folder by that name and, so, cannot find its local copy of assets to render. The error message in this case is "Size = Not Available is not available with the File Access Service. The status is FAILED." (**CSCtn07580**)
- This DMS-CD release does not support live video. It provisions assets that already exist.
- This DMS-CD release provisions assets to DMPs exclusively. You cannot target any other device type.
- This DMS-CD release does not delete files from any DMP that belongs to multiple DMP groups. For autocleaning to occur on a DMP, it can belong to one DMP group only. Alternatively, you can use Play Now to deploy a job to DMPs.
- You can attach only one external USB flash drive or external USB hard drive to a DMP.
- We do not support USB hubs or any other method that you might use to attach multiple drives (or other device types) to a DMP.

- DMS-CD does not prevent you from using the Actions list or the Play Now feature to start transferring a DMS-CD deployment package immediately. However, using either of these methods defeats many of the most important benefits of using DMS-CD. We recommend instead that you use the Play in Future feature to schedule all of your DMS-CD deployment packages.
- You cannot use the Deployment Status feature (at Digital Media Players > Deployment Manager > Deployment Status) to check the progress or status of immediate deployments.

CIFS Restrictions

CIFS Usernames

- Neither a DMP 4310G nor a DMP 4400G can mount any WAAS share volume whose CIFS username contains even one of these forbidden characters (**CSCtx15486**).

  `%  &  ` ' ( )`

CIFS Passwords

- Neither a DMP 4310G nor a DMP 4400G can mount any WAAS share volume whose CIFS password contains even one of these forbidden characters (**CSCtx15486**).

  `%  +`

Use of CIFS in General

- There can be only one CIFS mount point, which all DMPs use in common. You cannot set DMPs or DMP groups to mount any WAAS share except this one.
- Either your DMPs *all* use CIFS, or *none* of them do.

Digital Media Designer (DMD)

- We do not support use of the "Cast" plugin for Digital Media Designer with any content distribution system or network. (**CSCto35473**)

HD Video Playback

- Playback is choppy for HD video that a DMP 4310G renders from a mounted CIFS volume. However, a DMP 4400G can render the identical file without difficulty. (**CSCtj00686**)

ACNS Restrictions

- We do not support use of the "Cast" plugin for Digital Media Designer with any content distribution system or network. (**CSCto35473**)

Note **You must restart your DMP after you switch it from ACNS mode to ECDS mode.** Although we recommend generally that you restart your DMP after you switch its mode from any content distribution method to another, it is mandatory only when you switch from ACNS to ECDS. (**CSCto35473**)

Caution **Never delete an ACNS channel that Cisco DMS uses.** Otherwise, you cannot see, select, edit, or delete in your schedule any events that use the deleted channel. In this case, content substitution occurs on your DMPs because scheduled events call upon missing assets. So, before you delete any ACNS channel, be sure that you have deleted from your schedule all events that will be disrupted by its absence.

ECDS Restrictions

- We do not support use of the "Cast" plugin for Digital Media Designer with any content distribution system or network. (**CSCto35473**)
- Intra-playlist transitions take longer (by 1 or 2 seconds apiece) during playback in ECDS mode than they take in any other mode. Also, a gray screen is visible briefly between videos. (**CSCtl143456**)

Note **You must restart your DMP after you switch it from ACNS mode to ECDS mode.** Although we recommend generally that you restart your DMP after you switch its mode from any content distribution method to another, it is mandatory only when you switch from ACNS to ECDS. (**CSCto35473**)

Caution **Never delete an ECDS channel that Cisco DMS uses.** Otherwise, you cannot see, select, edit, or delete in your schedule any events that use the deleted channel. In this case, content substitution occurs on your DMPs because scheduled events call upon missing assets. So, before you delete any ECDS channel, be sure that you have deleted from your schedule all events that will be disrupted by its absence.

Example Scenario

Acme might be almost any kind of organization that uses digital signs. In this scenario, Acme uses digital signs at five of its sites. The scenario describes how Acme organizes its DMPs across these sites, and then optimizes its schedule and settings for efficient delivery of strategic assets to DMPs.

Because the standard floorplan at Acme allows for five signs per site, the Acme signage network combines 25 DMPs with 25 digital signs. As there are five weeknights per week and coincidentally, five DMP groups at Acme, its technical staff use a streamlined deployment strategy.

They create and save just five deployment packages in total—merely one per DMP group. They update the assets in each package according to a schedule for planned changes. They configure each package deployment to recur once per week, on a weeknight. Then, as needed, they can use the Play Now feature to deploy urgent or mission-critical changes in real time, if the standard timeslot is not appropriate.

- Organizational Logic at Acme, page 21-13
- Deployment Scheduling Logic at Acme, page 21-14

Organizational Logic at Acme

Table 21-3 Organizational Logic for DMPs and Digital Signs at Acme

Item	Description at Acme
Locations	Acme calls its locations with digital signs Site A, Site B, Site C, Site D, and Site E.
DMP Groups	Acme sorts its 25 DMPs into five DMP groups. • The five DMPs in Group 1 receive their scheduled deployment every Monday. • The five DMPs in Group 2 receive their scheduled deployment every Tuesday. • The five DMPs in Group 3 receive their scheduled deployment every Wednesday. • The five DMPs in Group 4 receive their scheduled deployment every Thursday. • The five DMPs in Group 5 receive their scheduled deployment every Friday.

Table 21-3 Organizational Logic for DMPs and Digital Signs at Acme

Item	Description at Acme
DMPs	There are five DMPs per site, and each DMP belongs to only one group. The names of DMPs are always derived from a combination of their site (a letter from A to E) and their group (a number from 1 to 5). • DMPs at Site A use the names A1, A2, A3, A4, and A5. • DMPs at Site B use the names B1, B2, B3, B4, and B5. • DMPs at Site C use the names C1, C2, C3, C4, and C5. • DMPs at Site D use the names D1, D2, D3, D4, and D5. • DMPs at Site E use the names E1, E2, E3, E4, and E5.
Group Assignments	Each DMP group includes one DMP apiece from each site. • Group 1 includes A1, B1, C1, D1, and E1. • Group 2 includes A2, B2, C2, D2, and E2. • Group 3 includes A3, B3, C3, D3, and E3. • Group 4 includes A4, B4, C4, D4, and E4. • Group 5 includes A5, B5, C5, D5, and E5.

Deployment Scheduling Logic at Acme

Table 21-4 explains how Acme organizes its scheduled deployments.

Table 21-4 DMS-CD Deployment Details for Acme

DMP Group	Locations of Targeted DMPs	Package Name and Total Size	Maximum Bandwidth per DMP	Aggregate Bandwidth per DMP Group	Estimated Length of a Full Deployment[1]	
					In Seconds	In DD:HH:MM
Regularly scheduled deployment for **Group 1** recurs overnight each **Monday**, from 10:00 p.m. to 6:00 a.m.[2]						
Group 1	Site A, DMP = A1	Package 1 = 300 MB	128 Kbit/sec	640 Kbit/sec	18750	00:05:12
	Site B, DMP = B1					
	Site C, DMP = C1					
	Site D, DMP = D1					
	Site E, DMP = E1					
Regularly scheduled deployment for **Group 2** recurs overnight each **Tuesday**, from 10:00 p.m. to 6:00 a.m.[2]						
Group 2	Site A, DMP = A2	Package 2 = 300 MB	128 Kbit/sec	640 Kbit/sec	18750	00:05:12
	Site B, DMP = B2					
	Site C, DMP = C2					
	Site D, DMP = D2					
	Site E, DMP = E2					

Table 21-4 DMS-CD Deployment Details for Acme (continued)

Regularly scheduled deployment for **Group 3** recurs overnight each **Wednesday**, from 10:00 p.m. to 6:00 a.m.[2]						
Group 3	Site A, DMP = A3	Package 3 = 300 MB	128 Kbit/sec	640 Kbit/sec	18750	00:05:12
	Site B, DMP = B3					
	Site C, DMP = C3					
	Site D, DMP = D3					
	Site E, DMP = E3					
Regularly scheduled deployment for **Group 4** recurs overnight each **Thursday**, from 10:00 p.m. to 6:00 a.m.[2]						
Group 4	Site A, DMP = A4	Package 4 = 300 MB	128 Kbit/sec	640 Kbit/sec	18750	00:05:12
	Site B, DMP = B4					
	Site C, DMP = C4					
	Site D, DMP = D4					
	Site E, DMP = E4					
Regularly scheduled deployment for **Group 5** recurs overnight each **Friday**, from 10:00 p.m. to 6:00 a.m.[2]						
Group 5	Site A, DMP = A5	Package 5 = 300 MB	128 Kbit/sec	640 Kbit/sec	18750	00:05:12
	Site B, DMP = B5					
	Site C, DMP = C5					
	Site D, DMP = D5					
	Site E, DMP = E5					

1. In a full deployment, where the target DMPs have not stored any assets whatsoever that are part of the latest deployment package. In many cases, packages will combine new assets with ones that have already been deployed. When this occurs, less time is required because only the new assets, or the changed ones, are actually deployed.
2. Although a full deployment should take roughly 5 hours, Acme pads its schedule to compensate for any problems that might slow down its deployments.

Procedures

- Configure ACNS or WAAS, page 21-15
- Configure DMS-CD, page 21-16

Configure ACNS or WAAS

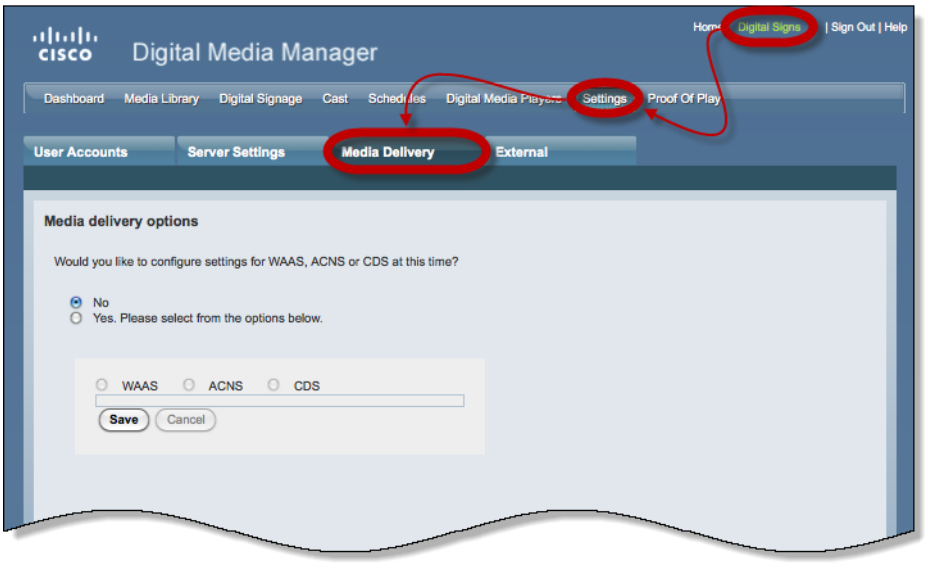
Tip **See our integration white paper on Cisco.com:** *Cisco Digital Media Suite Deployments for Digital Signage with Cisco ACNS Software.*

Before You Begin

- To see and use the Settings tab, you must be logged in an administrator.

Procedure

Step 1 Choose **Settings > Media Delivery**, and then choose the options that meet your requirements.



Step 2 Click **Save**.

Step 3 Stop. You have completed this procedure.

Related Topics

- Elements to Define WAAS, ACNS, or ECDS Settings, page 21-25

Configure DMS-CD

- Configure Deployment Threshold Preferences, page 21-17
- Check Disk Space Capacity for Deployments, page 21-17
- Create a Deployment Package, page 21-18
- Edit a Deployment Package, page 21-19
- Delete a Deployment Package, page 21-20

Configure Deployment Threshold Preferences

Procedure

Step 1 Choose **Digital Media Players > Deployment Manager > Preferences**.

Step 2 Define the DMS-CD thresholds that should be applied by default in the future, when you transfer deployment packages.

- Enter or edit the requested values.
- Choose the file transfer protocol, **FTP** or **SFTP**.
- Enable or disable a maximum transfer rate.

Changes to the maximum transfer rate will have no effect on deployments that are running already. They are applied to deployments that start after you save your changes.

Step 3 Click **Update** to save your work and put it into effect.

OR

Click **Cancel** to discard your work and restore the previous entries.

Step 4 Stop. You have completed this procedure.

Related Topics

- Elements to Define Deployment Thresholds, page 21-21
- Create a Deployment Package, page 21-18
- Troubleshoot DMS-CD, page 21-27

Check Disk Space Capacity for Deployments

Before You Begin

- Create DMP groups and populate them with DMPs.

Procedure

Step 1 Choose **Digital Media Players > DMP Manager**.

Step 2 Click in the **DMP Groups** object selector the name of the DMP group that contains the target DMP.

The DMP List table is repopulated with the corresponding group membership list.

Step 3 (**Optional**) *Would you like to limit how many DMPs the DMP List table describes?*

Use filtering options above the table.

Step 4 Add together the values that you see in the Internal Storage MB. (Total/Free) column and the Internal Storage MB. (Total/Free) column.

The combination of these values is the total free capacity.

Step 5 Compare the total free capacity to the expected size of your deployment package.

- When the total free capacity is sufficient, provision the assets in a deployment package, as planned.
- When the total free capacity is not sufficient, do one of the following.
  - Reduce the size of the deployment package.
  - Delete unused or unimportant assets from the DMP.
  - Attach one external USB drive to the DMP if you have not attached one already.
  - Replace the external USB drive with one that has greater capacity.

Step 6 Stop. You have completed this procedure.

Create a Deployment Package

Before You Begin

- Configure download threshold preferences for DMS-CD.
- Check the free disk space on your DMPs for storing provisioned assets.

Procedure

Step 1 Choose **Digital Media Players > Advanced Tasks**.

Step 2 Choose **Deployment Package** from the Application Types list.

Step 3 Click **Add New Application**.

Step 4 Enter a name and description for this deployment package.

Step 5 Choose the mount point for this deployment. You can choose only one:

- **Flash Storage** (also known as *usb_1*) is the SD memory card installed inside a DMP.
- **USB** (also known as *usb_2*) is an external USB hard drive or flash memory drive that is attached to a DMP.

Tip **To learn which external USB drives we support and have tested, see Cisco DMS compatibility information on Cisco.com.** *http://www.cisco.com/en/US/products/ps6681/products_device_support_tables_list.html.*

Step 6 *Does this job consist of assets for an emergency notification?*

- If so, check the **Emergency/Alarm** check box.
- If not, uncheck it.

Step 7 Populate and save the deployment package.

Step 8 Click the name of a category in the Applications list.

Step 9 Choose at least one option from the Available Applications list, and then click **Select Applications**.

Step 10 Click **Submit**.

Step 11 Use the **Play in Future** feature to schedule deployment of this package to your DMPs that should receive it, and then wait for the file transfer to finish.

Bandwidth capacity in your WAN determines how long you must wait. After the deployment is finished, Cisco Digital Signs autogenerates the (Go To) URL action for this deployment package.

Step 12 Choose **Digital Signage > Digital Medial Players > Advanced Task > (Go to) URL**.

Step 13 Check that a (Go to) URL action was autogenerated, which adds the prefix LOCAL to the name that you entered in Step 4.

Step 14 Deploy this autogenerated (Go to) URL action.

- Use the Actions list to deploy immediately.
- Use the Play Now feature to deploy immediately.
- Use the Play in Future feature to schedule a future deployment.

When you use Play in Future, the scheduled start and stop times are derived from the clock in your DMM appliance.

Step 15 Stop. You have completed this procedure.

Related Topics

- Check Disk Space Capacity for Deployments, page 21-17
- Configure Deployment Threshold Preferences, page 21-17
- Edit a Deployment Package, page 21-19
- Delete a Deployment Package, page 21-20

Edit a Deployment Package

Before You Begin

- Configure download threshold preferences for DMS-CD.
- Check the free disk space on your DMPs for storing provisioned assets.
- Create at least one DMS-CD deployment package.

Procedure

Step 1 Choose **Digital Media Players > Advanced Tasks**.

Step 2 Choose **Deployment Package** from the Application Types list.

Step 3 Click the name of the deployment package to be edited.

Step 4 Click **Edit Application**.

Step 5 As needed, edit the name or description for this deployment package.

Step 6 Choose the mount point for this deployment. You can choose only one.

- **Flash Storage** (also known as *usb_1*) is the SD memory card installed inside a DMP.
- **USB** (also known as *usb_2*) is an external USB hard drive or flash memory drive that is attached to a DMP.

Tip **To learn which external USB drives we support and have tested, see Cisco DMS compatibility information on Cisco.com.** *http://www.cisco.com/en/US/products/ps6681/products_device_support_tables_list.html.*

Step 7 *Does this job consist of assets for an emergency notification?*

- If so, check the **Emergency/Alarm** check box.
- If not, uncheck it.

Step 8 (**Optional**) *Would you like to repopulate this deployment package?*

Repopulate and save it now.

Step 9 Click the name of a category in the Applications list.

Step 10 Choose at least one option from the Available Applications list, and then click **Select Applications**.

Step 11 Click **Submit**.

Step 12 Use the **Play in Future** feature to schedule deployment of this package to your DMPs that should receive it, and then wait for the file transfer to finish.

DMS-CD does not prevent you from using the Actions list or the Play Now feature to start transferring a DMS-CD deployment package immediately. However, using either of these methods defeats many of the most important benefits of using DMS-CD. We recommend instead that you use the Play in Future feature to schedule all of your DMS-CD deployment packages.

Bandwidth capacity in your WAN determines how long you must wait. After the deployment is finished, Cisco Digital Signs autogenerates the (Go To) URL action for this deployment package.

Step 13 Choose **Digital Signage > Digital Medial Players > Advanced Task > (Go to) URL**.

Step 14 Check that a (Go to) URL action was autogenerated, which adds the prefix LOCAL to the name that you entered or edited in Step 5.

Step 15 Deploy this autogenerated (Go to) URL action.

- Use the **Actions** list to deploy immediately.
- Use the **Play Now** feature to deploy immediately.
- Use the **Play in Future** feature to schedule a future deployment.

When you use Play in Future, the scheduled start and stop times are derived from the clock in your DMM appliance.

Step 16 Stop. You have completed this procedure.

Related Topics

- Check Disk Space Capacity for Deployments, page 21-17
- Configure Deployment Threshold Preferences, page 21-17
- Create a Deployment Package, page 21-18
- Delete a Deployment Package, page 21-20

Delete a Deployment Package

Before You Begin

- You must have saved at least one DMS-CD deployment package.
- Use the Reports feature (at Schedules > Reports) to search your schedule for any instances of the deployment package that you will delete. Remove each scheduled instances of it from your schedule.

Procedure

Step 1 Choose **Digital Media Players > Advanced Tasks**.

Step 2 Choose **Deployment Package** from the Application Types list.

a. Click the name of the action to be deleted.

b. Click **Delete Application**.

c. Click **Submit**.

Step 3 Choose **(Go to) URL** from the Application Types list.

a. Click the name of the action to be deleted.

b. Click **Delete Application**.

c. Click **Submit**.

Step 4 Stop. You have completed this procedure.

Related Topics

- Create a Deployment Package, page 21-18
- Edit a Deployment Package, page 21-19

Reference

- Software UI and Field Label Reference Tables, page 21-21
- FAQs and Troubleshooting, page 21-27

Software UI and Field Label Reference Tables

- Elements to Define Deployment Thresholds, page 21-21
- Elements to Define a DMS-CD Deployment Package, page 21-24
- Elements to Define WAAS, ACNS, or ECDS Settings, page 21-25

Elements to Define Deployment Thresholds

Navigation Path

Digital Media Players > Deployment Manager > Preferences

Table 21-5 Elements to Configure DMS-CD Deployment Thresholds

Element	Description
Number of concurrent deployments	The maximum allowed number of FTP or SFTP threads, or *sessions*, that can run concurrently when DMS-CD provisions assets to DMPs.[1] Therefore, the maximum number of DMS-CD deployments that might possibly run concurrently in your WAN, if each such deployment targets only one DMP. Otherwise, when any deployments target multiple DMPs, this constraint limits how many DMPs can possibly receive deployments concurrently in your WAN.[2] **Tip** **When you use DMS-CD, it is a best practice that none of your DMP groups should contain more than this number of DMPs.** If you ever reduce this value, check that doing so has not caused any of your DMP groups to contain more DMPs than the new number. The permitted value is any whole number in the range from 1 to 1000. The factory-default value is 100 threads. We recommend that you avoid using any value greater than 100. Each incrementally higher value authorizes more concurrent DMS-CD deployments to DMPs and an increased load on your DMM appliance. You might try reducing this value if you notice that the CPU load is high on your DMM appliance during DMS-CD deployments. **Note** **Any time that you change this value, you must restart your DMM appliance before the changed setting takes effect on your DMPs.**
Deployment time limit per file (in minutes)	The count of how many minutes will be allowed to elapse after a DMS-CD deployment package begins to provision any file. Upon reaching this threshold, the file moves to the back of the queue and its transfer is deferred. The next file advances to the front of the queue and the deployment continues. DMS-CD applies this threshold to a deployment package as many times as necessary until it has cycled through all of its files, and then the transfer is resumed for a deferred file after it returns to the front of the queue. This threshold might cause the transfer of any especially large file to be distributed across days. Bottlenecks are prevented and as many assets are provisioned as can be provisioned. When you derive this value from the maximum transfer rate, large files in DMS-CD deployment packages are more likely to transfer quickly. The permitted value is any whole number in the range from 1 to 10080, where 10,080 minutes is the same as 168 hours or 7 days.The factory-default value is 1440 minutes, which is exactly 24 hours.
Deployment retry count	The count of how many times DMS-CD should try again to restart a failed deployment, until DMS-CD stops trying. In combination with the deployment retry time, this setting has significant impact on how long it takes DMS-CD to detect failed deployments. For example, 5 retries x 300 seconds = 1,500 seconds (25 minutes), while 5 retries x 30 seconds = 150 seconds (2.5 minutes). The permitted value is any whole number in the range from 1 to 100. The default value is 5 retries. We recommend that you do not change this value.

Table 21-5 Elements to Configure DMS-CD Deployment Thresholds (continued)

Enable maximum transfer rate	Enforces or ignores a maximum transfer rate that you specify. This rate is the upper threshold allowed for bandwidth consumption by DMS-CD during its deployments to any one DMP in your WAN. We measure this rate in kilobits per second (Kbps). The value that you enter should be less than the maximum transfer rate of your network. In combination with the Number of concurrent deployments value and the number of DMPs in a group that you target, this threshold limits how much bandwidth DMS-CD can consume during a deployment. For example, assume for a moment that QoS policies in your network limit DMS-CD bandwidth utilization to a maximum of 64 Kbps, and you have enabled the maximum transfer rate setting with a value of: • **64 Kbps**—Individual DMPs will each consume 64 Kbps per deployment. So, if you then set the number of concurrent deployments value to 10, you will use 64 Kbps x 10 = 640 Kbps. Furthermore, you cannot set the Number of concurrent deployments value any higher than 1, because 64 x 1 = 64. • **32 Kbps**—Individual DMPs will each consume 32 Kbps per deployment. So, if you then set the number of concurrent deployments value to 10, you will use 32 Kbps x 10 = 320 Kbps. Furthermore, you cannot set the Number of concurrent deployments value any higher than 2, because 32 x 2 = 64. • **21 Kbps**—Individual DMPs will each consume 21 Kbps per deployment. So, if you then set the number of concurrent deployments value to 10, you will use 21 Kbps x 10 = 210 Kbps. Furthermore, you cannot set the Number of concurrent deployments value any higher than 3, because 21 x 3 = 64. The permitted value is any whole number in the range from 28 to 102400, where 102400 Kbps is the same as 100 Mbps. The factory-default setting ignores this threshold. If you prefer to enforce it, check the check box.
Deployment Protocol	FTP or SFTP, according to your security requirements. When you choose SFTP, connections are encrypted between your DMM server and your DMPs. Otherwise, these sessions use clear text. Even though the factory-default setting is FTP, we recommend that you use SFTP.
Maximum file size (in MB)	The maximum number of megabytes—per file—that DMS-CD will transport inside a multifile deployment package to your DMPs, before the file that reached this threshold is moved to the back of the queue and its transfer is deferred. The next file advances to the front of the queue and the deployment continues. DMS-CD applies this threshold to a deployment package as many times as necessary until it has cycled through all of its files, and then the transfer is resumed for the deferred file after it returns to the front of the queue. This threshold might cause the transfer of any especially large file to be distributed across days. Bottlenecks are prevented and as many assets are provisioned as can be provisioned. The permitted value is any whole number in the range from 10 to 1024000, where 1,024,000 MB is the same as 1 TB. The factory-default maximum size is 600 MB. **Note** Although it is technically feasible to enter a file size as great as 1024000 MB, playback fails for any file that is larger than 1.9 GB, regardless of the DMP model type. This size is constrained by the limits of streaming.

Table 21-5 Elements to Configure DMS-CD Deployment Thresholds (continued)

Deployment retry time (in seconds)	The count of how many seconds must elapse before DMS-CD tries again to transfer a deployment package to a DMP on which the transfer failed or was interrupted. DMS-CD will never try to resume an interrupted or failed transfer until at least this many seconds have elapsed. When you edit this value, you change how quickly DMS-CD works around a failed or disrupted deployment. The permitted value is any whole number in the range from 5 to 10800, where 10800 is equal to 3 hours. The factory-default value is 300 seconds.
Enable Resume	Enables or disables the option to resume a DMS-CD file transfer that was interrupted. The factory-default behavior is to resume interrupted transfers. This behavior supports incremental transfer of large files through slow or unreliable networks over days. However, DMPs in this release do not have any ability to compare file modification time stamp values remotely. Our default behavior assumes that any static filename that persists at a static URI identifies a file that has never changed. So long as we retain a copy of the complete file as it existed while we transferred it, we will not check its URI again. This design does not consider that some assets might be dynamic, not static. You should deselect this check box and disable this feature when your assets are dynamic. After you disable this feature, DMS-CD will overwrite its copy of every asset whose file size has changed.

1. Each such thread maintains a transfer rate that is equal to or less than the maximum transfer rate in your WAN.
2. Although you can schedule deployments to run concurrently among your various DMP groups, a DMP will serialize in a queue any overlapping deployments that it is targeted to receive. See DMP Group Memberships, page 21-6.

Related Topics

- Configure Deployment Threshold Preferences, page 21-17

Elements to Define a DMS-CD Deployment Package

Navigation Path

Digital Media Players > Advanced Tasks

Table 21-6 Understanding the Advanced Task to Define a DMS-CD Deployment Package

Application Name	Description, Icons, and Options
Deployment Package	
Configure a DMS-CD deployment to DMP local storage.	
Name	A unique and human-readable name for the deployment task that you are configuring for DMS-CD. You must enter a name. The name is unique in the sense that you have not used it previously as the name for anything that can be scheduled.
Description	A brief description. The description is optional.
Mount Point	Choose whether the assets should be provisioned to the flash memory card inside the DMP (usb_1) or to the one external USB drive that you attached to the DMP (usb_2). **Tip To learn which external USB drives we support and have tested, see Cisco DMS compatibility information on Cisco.com.** *http://www.cisco.com/en/US/products/ps6681/products_device_support_tables_list.html.*
Emergency/Alarm	Check (tick) this box if the transferred files will be used during emergencies. Otherwise, do not check this box. Assets for emergencies are saved to a special partition

Table 21-6 Understanding the Advanced Task to Define a DMS-CD Deployment Package (continued)

Application Name	Description, Icons, and Options
Deployment Package (continued)	
Configure a DMS-CD deployment to DMP local storage. (continued)	
Application Types	The list of categories for advanced tasks. Click a category to see its tasks.
Available Applications	Advanced tasks in the category that you clicked. Click anywhere in a row to select the corresponding task. • **Select Applications**—Moves from the Available Applications table to the Selected Applications table the tasks that you selected. • **Name**—The unique and human-readable name that identifies a particular task. • **Description**—A brief description. The description is optional.
Selected Applications	Advanced tasks that you selected from the Available Applications table, so that you could include them in the file transfer operation that you are configuring. Click a file transfer task to select its assets for deployment. • **Move Selected Item Up/Down**—Reorders the list so that the highlighted item moves up (or down) one row, exchanging places with the item that was above it (or below it). • **Delete Selected Item**—Moves from the Selected Applications table to the Available Applications table the applications that you selected. • **Zoom In/Out**—Shows only the Selected Applications table, hiding the Available Applications table. Alternatively, shows the Selected Applications table and the Available Applications table simultaneously.

Elements to Define WAAS, ACNS, or ECDS Settings

Table 21-7 Elements for Using WAAS, ACNS, or ECDS

Element	Description
Would you like to configure settings for WAAS, ACNS or CDS at this time?	Either Yes or No. • Yes—You will use one of these content distribution methods. • No—You will not use any of these methods.
WAAS	
User	The username for mounting the CIFS share.
Password	The password for mounting the CIFS share.
Share	The name of the CIFS share.
Hostname/IP	The hostname or IP address of the CIFS share server.

Table 21-7 Elements for Using WAAS, ACNS, or ECDS (continued)

Element	Description
ACNS	
CDM Address	The routable IP address or resolvable DNS hostname of the appliance or services module (“blade”) that runs ACNS and Content Distribution Manager software.
Port	The TCP port for login access to CDM. The port number by default is 8443.
User	The username for login access to CDM.
Password	The password that corresponds to the CDM username that you entered.
Default ACNS Channel	Choose from the list of channels.
ECDS	
CDM Address	The routable IP address or resolvable DNS hostname of the appliance or services module (“blade”) that runs ECDS and Content Distribution Manager software.
Port	The TCP port for login access to CDM. The port number by default is 8443.
User	The username for login access to CDM.
Password	The password that corresponds to the CDM username that you entered.
Default CDS Service	Choose from the list of services.

Related Topics

- Configure ACNS or WAAS, page 21-15

FAQs and Troubleshooting

- Troubleshoot DMS-CD, page 21-27
- FAQs for ACNS, page 21-30

Troubleshoot DMS-CD

- Check Deployment Status Details, page 21-27
- Check Appliance System Logs for Deployment Errors, page 21-28
- Use Snapshot Mode or Live Monitor Mode to Check for Deployment Errors, page 21-29

Check Deployment Status Details

Tip **Values in the Timestamp column always signify *one* of these:**

- The moment when you clicked Publish All to provision the described deployment package.
- When the described deployment succeeded.
- When the described deployment failed.

Procedure

Step 1 Choose **Digital Signage > Digital Media Players > Deployment Manager > Deployment Status**.

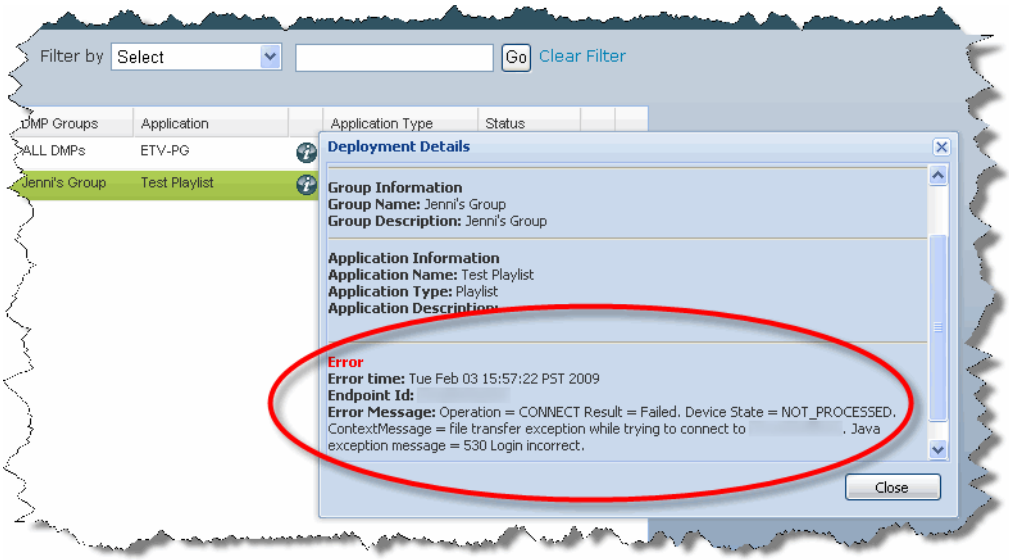
Step 2 (**Optional**) *Would you like to limit how many deployment packages the table describes?* If so, use filtering options above the table.

Step 3 Examine the Status column for any use of the word "Failed."

a. Whenever you see that a deployment package has failed, click its icon in the far right column.

b. Examine the Deployment Details popup window for any error message that might help you to troubleshoot the failure.

Figure 21-1 Deployment Details



For example, an error message in Figure 21-1 states that DMP login credentials were incorrect.

Step 4 Stop. You have completed this procedure.

Related Topics

- Troubleshoot DMS-CD, page 21-27

Check Appliance System Logs for Deployment Errors

Procedure

Step 1 Log in to AAI on your DMM appliance.

Step 2 Choose **DMM_CONTROL > DMM_LOG_LEVEL > DEBUG**, and ensure that the logs are verbose.

Step 3 Choose **APPLIANCE_CONTROL > GET_SYSLOG**,.

Step 4 Choose a method to receive the logfiles.

Step 5 Search through the **DMS-CD.log** and **catalina.out** logfiles for messages about:

- DMS-CD deployment events
- DMP deployment events
- Application deployment events
  (in this case, "application" means "deployment package")
- File management events
- Error events
- Debug logs

Step 6 Stop. You have completed this procedure.

Related Topics

- Troubleshoot DMS-CD, page 21-27

Use Snapshot Mode or Live Monitor Mode to Check for Deployment Errors

Procedure

Step 1 Choose **Administration > Alerts > Alert Reports**.

Step 2 Do one of the following.

- *Would you like to review **100 recent** errors?*

  When you will use live mode

  a. Click **Live Monitor Mode**.
  b. Choose an option from the Type list.

- *Would you like to review errors **between two time stamps**?*

  When you will use snapshot mode

  a. Click **Snapshot Mode**.
  b. Set a range of dates and a range of times.
  c. Choose an option from the Type list.

Step 3 Click **Apply**.

Step 4 Stop. You have completed this procedure.

Related Topics

- Troubleshoot DMS-CD, page 21-27

FAQs for ACNS

Q. Soon after I send copies of assets to my Content Engines, what prevents their playback on DMPs?

A. Your network topology and available bandwidth affect how long it takes for content replication to finish. Before your DMPs can play assets from a Content Engine, these assets must *reach* the Content Engine. Delay the playback of replicated assets from your content distribution network, until you know that ACNS replication is finished.

Tip **Remember to click Publish on the Schedules page.** Otherwise, playback cannot occur.

Q. How can I verify when content replication is finished in CDNFS?

A. You can telnet to a Content Engine to verify this. To learn how, see your Content Engine product documentation.

FAQs for WAAS

Q. Why would a DMP 4310G in WAAS mode stop playing a video after 1 or 2 seconds?

A. A combination of factors might trigger this behavior. To recover from it one time, restart your DMP. Or, to prevent this from happening, turn failover Off, set the recovery failover timeout to 1 millisecond, and the number of retries to 1. (**CSCtj85446**)

```
https://[DMP_IP_address]:7777/set_param?ciscocraft.mv_failover_timeout=1&ciscocraft.mv_
failover_retries=1&mib.save=1&mng.reboot=1
```

Troubleshoot ACNS

- Troubleshoot Choppy Playback of Videos from Your ACNS Network, page 21-30
- Troubleshoot Unlisted or Missing ACNS Channels in Digital Signs, page 21-33
- Troubleshoot ACNS Assets That Your DMPs Do Not Play, page 21-34

Troubleshoot Choppy Playback of Videos from Your ACNS Network

- *Is the HTTP bit rate (bandwidth) setting too low on your Content Engine?*
- *Are too many DMPs using your Content Engine?*
- *Are HTTP requests from DMPs redirected correctly to your Content Engine?*
- *Is the HTTP proxy setting wrong in DMPDM to use a Content Engine as the proxy?*

Is the HTTP bit rate (bandwidth) setting too low on your Content Engine?

The factory-default bandwidth setting for HTTP sessions (up to 1.5Mbps) on a Content Engine is not sufficient for MPEG-2 video.

- SD MPEG-2 video requires approximately 5Mbps.
- HD MPEG-2 video requires approximately 15Mbps.

Use the **bitrate** command, as follows, to increase the maximum bandwidth on a Content Engine to 6Mbps per HTTP session.

```
bitrate http default 6000
```

Are too many DMPs using your Content Engine?

Two factors affect the upper limit for how many DMPs should use one Content Engine.

- The resolution of the MPEG-2 files that you use (SD or HD).
- The designed capacity of the Content Engine model that you use.

For example, the HTTP caching throughput is approximately 40Mbps on a Content Engine565, which means that this model cannot support any more than:

- Eight DMPs that play SD MPEG-2 video at 5Mbps.
- Two or three DMPs that play HD MPEG-2 video at 15Mbps.

Are HTTP requests from DMPs redirected correctly to your Content Engine?

1. Telnet to your Content Engine and issue this command:

   ```
   show statistics http savings
   ```

2. Verify that the HTTP savings level is **high**.

   OR

   When you see that the HTTP savings level is **low**, verify that you have correctly configured your router and—if you use it on your Content Engine—transparent WCCP mode.

Is the HTTP proxy setting wrong in DMPDM to use a Content Engine as the proxy?

Verify that proxy settings are correct for DMPDM, and then correct them as needed.

1. Click **Basic** in the Settings list.
2. Verify in the HTTP Proxy table that *each of the following is true*.
   - You enabled the Use HTTP Proxy option.
   - Your proxy server IP address points to the closest Content Engine that you will use.
   - You entered the correct port number.
3. *Did you change anything in Step 2?*
   a. Click **Apply**.
   b. Click **Save Configuration** in the Administration list.
   c. Click **Save**.
   d. Click **Restart DMP** in the Administration list.
   e. Click **Restart**.

Note **Ensure that your proxy server is powerful enough to handle its full load of HTTP sessions.**

Troubleshoot Unlisted or Missing ACNS Channels in Digital Signs

- *Do time setting differ between Digital Signs and your ACNS server?*
- *Did you enter the wrong CDM port number, username, or password in Digital Signs?*
- *Did you use a recycled or duplicate ACNS channel name?*

Do time setting differ between Digital Signs and your ACNS server?

When time settings are not synchronized between your DMM appliance and your ACNS server, the differences might cause Digital Signs to reject the digital certificate from your ACNS server. We recommend that you configure your ACNS server, your DMM appliance, and each of your Content Engines to synchronize their time settings to an NTP server. [1]

CDM Procedure

1. Log in to Content Distribution Manager.
2. Choose **Devices > Device Groups**.
3. Expand the table of contents so that you see **General Settings > Services > Date/Time > NTP**, and then click **NTP**.
4. Check the Enable check box in the NTP Settings area.
5. Enter one ordinary IPv4 IP address In the NTP Server text box, to specify which NTP server you use.

   OR

   Enter as many as four such addresses, where each IP address is separated from its neighbor by one space.
6. Click **Submit**.

AAI Procedure

1. Log in to AAI on your DMM appliance.
2. Choose **DATE_TIME_SETTINGS**, and then press **Enter**.
3. Choose **NTP**, and then press **Enter**.
4. Enter or choose the NTP settings, and then confirm each individual change.
5. Press **Enter**.

Did you enter the wrong CDM port number, username, or password in Digital Signs?

Caution **Well-known, factory-default values for Content Distribution Manager (CDM) become wrong in your network as soon as a CDM administrator overwrites them with secure values.** You must use values that are actually correct in your network.

Be sure in Digital Signs to enter correct CDM values at Settings > ACNS Settings. These are the factory-default values for CDM.

- port number—**8443**
- username—**admin**
- password—**default**

Did you use a recycled or duplicate ACNS channel name?

You cannot duplicate or recycle channel names. See "Why do I see an HTTP 500 error when I use ACNS?"

1. Changing the time settings after you add content to the schedule might affect the availability of that content.

Troubleshoot ACNS Assets That Your DMPs Do Not Play

- *Is the ACNS channel origin server misconfigured?*
- *Is the ACNS channel quota misconfigured?*
- *Is the ACNS channel fully configured to use an external manifest file?*
- *Have you checked if any other content acquisition problems affect the external manifest file?*
- *Did anyone change the Time setting for your DMM appliance, but not restart it?*

Is the ACNS channel origin server misconfigured?

You must associate each origin server for any ACNS channel with the public IP address that one of these devices uses:

- Your DMM appliance.
- The external publishing server that you use with Digital Signs.
- The root Content Engine in your content delivery network.

Is the ACNS channel quota misconfigured?

Consider the following points when you configure the channel quota for DMS in CDM.

- On each Content Engine, the total disk space for the channel must not exceed the CDNFS disk space allocation.
- The combined size of all content files in a channel must not exceed the amount of disk space that you allocated for the channel in the Channel Quota field at Contents > Channels > Definition.

Worksheet

Due to overhead, a file uses more disk space than its own size. You can anticipate how much space to reserve for a file.

1. What is the actual file size in kilobytes (KB)?

   File size in KB =

2. Divide the file size in KB by the file system's fixed block size in bytes—a 4096-byte unit.

   File size in KB / 4096 =

3. Round up the quotient to the nearest integer. The result counts exactly how many 4 KB blocks the file has filled—or *partially* filled.

   Used file system blocks =

4. Multiply the total number of used file system blocks by 4096 bytes. The result measures actual disk space consumption in bytes.

   Total disk usage in bytes =

Note **4096 bytes x 4 = 16384.**
The integer 4 represents disk space that is reserved for internal system usage.

5. Add 16384 to the total disk space consumption in bytes.

   Minimum disk space to reserve =

Tip **We recommend that you reserve 10 percent more space than you estimate the file will consume.** *This cushion ensures that space remains available to other internal system functions.*

Is the ACNS channel fully configured to use an external manifest file?

1. Log in to CDM.
2. Choose **Services > Channels**.
3. Click **Channel Content** in the table of contents.
4. Click **Change Method**.
5. Check **Specify external manifest file**, and then click **Save**.
6. Enter any arbitrary text in the Manifest URL text box.
7. Enter **0** (zero) in the Check Manifest Every N mins text box.
8. Click **Submit**.

   Later, each time that you publish content from Digital Signs to ACNS, your ACNS server automatically fills in the correct manifest location.

Have you checked if any other content acquisition problems affect the external manifest file?

1. Log in to CDM.
2. Choose **Services > Channels**.
3. Click **Channel Content** in the table of contents.
4. Click **Validate**, and then consider the following while you read the validation report:

   - Does any message at the end of the report say that your manifest file is correct?
   - Are your Content Engines in sync with the device that hosts your manifest file?
   - Does the manifest file refer to files that you use in the affected ACNS channel?

Did anyone change the Time setting for your DMM appliance, but not restart it?

You must restart your DMM appliance after the time setting is changed in AAI or in Digital Signs. Otherwise, some scheduled deliveries might not occur.

- Concepts, page 1
- Procedures, page 2
- Reference, page 8

Concepts

- Overview, page 1

Overview

A DMP transmits signals to a public presentation system, such as a monitor or projector, that is connected to the DMP. This presentation system might be analog or digital. Its output fidelity depends in part upon which signal cables (and adapters) connect it to your DMP.

With most modern, digital presentation systems, you can use an HDMI cable for both video and audio.

Other such systems might not connect until you combine the HDMI cable with an HDMI-to-DVI adapter for video. However, DVI does not support the transmission of audio signals. In this case, you can use the provided audio cable for audio.

Tip Do you use a Cisco-branded LCD display? If so, a feature of *Cisco Digital Signs* software can detect automatically when your display is turned On or Off. To connect one of these models to your DMP, you must use an RS-232 serial cable in addition to the video signal cable.

Related Topics

- Use an HDMI Connection, page 2
- Use a Connection that Combines HDMI with DVI, page 2
- Connect to a Touchscreen, page 4

Procedures

Use an HDMI Connection

Procedure

Step 1 Connect the HDMI cable to the **HDMI** interface on the back panel of your DMP.

Step 2 Connect the other end of the cable to your presentation system.

Step 3 Turn **On** the presentation system.

Step 4 Stop. You have completed this procedure.

Related Topics

- Use a Connection that Combines HDMI with DVI, page 2

Use a Connection that Combines HDMI with DVI

HDMI and DVI differ in their support for audio signals and use connectors that are shaped differently, but otherwise are identical. Thus, an adapter can help you to connect to your DMP any presentation system that supports DVI but not HDMI. When you do this, however, you must also use a separate signal cable to transmit audio signals, or there will not be any audio.

Before You Begin

- Obtain an HDMI-to-DVI adapter.

Procedure

Step 1 Make connections for video:

a. Connect the HDMI cable to the **HDMI** interface on the back panel of your DMP.

b. Fasten an HDMI-to-DVI adapter to the free end of the cable.

c. Connect the free end of the DVI adapter to the corresponding interface on your presentation system.

Step 2 Make connections for audio:

a. Plug the 3.5mm audio jack into the **Audio** interface on the back panel of your DMP.

b. Connect the other end of the audio cable to the corresponding interface on your presentation system.

Step 3 If the presentation system is not already turned on, turn it **On** now.

Step 4 Stop. You have completed this procedure.

Related Topics

- Use an HDMI Connection, page 2

Connect to an Analog Display or Projector

Tip Although DMPs support connections to analog presentation systems, we recommend strongly that you use digital systems whenever possible.

Procedure

Step 1 Make connections for video.

a. Plug one yellow jack from the RCA video cable into the **CVBS** interface on the back panel of your DMP.

b. Connect the free end of this cable to the corresponding interface on your presentation system.

Step 2 Make connections for audio:

a. Plug the 3mm jack on the RCA audio cable into the **AUDIO** interface on the back panel of your DMP.

b. Connect the free end of this cable to the corresponding interface on your presentation system.

Step 3 If the presentation system is not already turned on, turn it **On** now.

Step 4 Stop. You have completed this procedure.

Related Topics

- Work Around the Low Signal Quality of Composite Video Cables, page 3

Work Around the Low Signal Quality of Composite Video Cables

Note Image quality suffers in visual media when the signals that describe them are transmitted through a composite cable. When you use a composite cable and your DMP shows any web-based media, small text might be difficult to read in TVzilla. To work around this limitation, you can lower the browser resolution setting in DMPDM.

Related Topics

- TVzilla, page 3
- Connect to an Analog Display or Projector, page 3

Connect to a Touchscreen

DMP connections to a touchscreen are mostly the same as for other digital displays. However, touchscreens employ a special cable that supports interactivity through touch. This might be either an RS-232 serial cable or a USB cable, depending on the touchscreen model. Although some models support both of these cable types for interactivity, you can use only one of them at a time.

Tip Some touchscreens work as designed only after they are calibrated manually. If your touchscreen is one of these, its calibration occurs during a later stage of DMP setup. The list of related topics for this procedure states where you can learn about calibration.

Before You Begin

- Verify that your DMP model supports touchscreen technologies and that we support the touchscreen brand, model, and device driver that you will use. See http://www.cisco.com/go/dms/compatibility.
- Check the documentation for your touchscreen to learn if it requires a serial connection or a USB connection to your DMP, or if it supports both of these connection types.

Procedure

Step 1 Connect an HDMI cable to the **HDMI** interface on the back panel of your DMP.

Step 2 Connect the other end to your touchscreen.

OR

If your touchscreen supports DVI connections and not HDMI connections:

- Fasten an HDMI-to-DVI adapter to the free end of the cable.
- Connect the free end of the DVI adapter to the corresponding interface on your touchscreen.

Tip You can use an HDMI splitter or other supported method to attach multiple presentation systems to your DMP, but only one of these systems can be a touchscreen.

Step 3 Do only one of the following:

- Connect a USB cable to the **USB** interface on the back panel of your DMP. Then, connect the other end to your touchscreen.

  If your DMP model has only one USB connector, you might prefer to connect an external hard drive there for added local storage. In this case, an RS-232 serial cable would be the better choice for connecting a touchscreen to your DMP.
- Connect an RS-232 serial cable to the **RS232** interface on the back panel of your DMP. Then, connect the other end to your touchscreen.

Step 4 Turn **On** the touchscreen.

A message might appear on the touchscreen, to inform you that it must download a characterization file. This happens only if your touchscreen uses technologies from Elo TouchSystems and if you have never turned it On previously (or after its CF card is reformatted). When you see this message, please disregard it. The touchscreen will obtain its characterization file automatically during a later stage of DMP setup.

Tip When you turn On a touchscreen that was calibrated previously, it might sometimes appear not to have been calibrated. If this happens to you, unplug the serial cable or the USB cable that connects this touchscreen to your DMP, and then plug that cable back in again.

Step 5 Stop. You have completed this procedure.

Choose and Calibrate a Touchscreen Driver

This procedure applies to you only if your DMP supports interactivity through touch and your presentation system is a touchscreen. Furthermore, it assumes that you completed the "Connect to a Touchscreen" section on page 4.

Before You Begin

- Verify that your DMP model supports touchscreen technologies and that we support the touchscreen brand, model, and device driver that you will use. See http://www.cisco.com/go/dms/compatibility.
- Log in to DMPDM.

Procedure

Step 1 If your touchscreen shows a message that says it must download a touchscreen characterization file:

- Do not disturb or interrupt this process. It occurs only once, automatically.
- The process takes approximately 10 minutes to finish. When it is finished, your touchscreen will clear the message automatically.
- Stop. You have completed this procedure and there is no need to perform any of its other steps.

Step 2 Because some touchscreen drivers cannot be calibrated on a DMP while it is playing video, use DMPDM to stop all videos.

a. Click **Video Multicast** in the Display Actions list, and then click **Stop**.

b. Click **Media URL** in the Display Actions list, and then click **Stop**.

Step 3 Choose the browser rotation angle for your touchscreen.

Supported rotation angles are 0°, 90°, 180°, and 270°.

a. Click **Browser** in the Settings list.

b. Choose an option from the Screen Rotation Angle (clockwise) list, and then click **Apply**.

c. Click **Save Configuration** in the Administration list, and then click **Save**.

d. Click **Restart DMP** in the Administration list, and then click **Restart**.

Step 4 After your DMP restarts, log in again to DMPDM.

Step 5 Click **Touch Screens** in the Settings list.

Tip If you do not see this option in DMPDM, your DMP might not support this feature. If you believe that its hardware design allows for the possibility of such support, check whether any firmware upgrade is available for your DMP that adds support for this feature:

- Cisco DMS release notes—http://cisco.com/go/dms/releasenotes.
- Cisco DMS compatibility information—http://cisco.com/go/dms/compatibility.

If such firmware is available, obtain it and then complete the DMP firmware upgrade procedure in the DMPDM user guide at http://cisco.com/go/dms/dmpdm. The nature of your Cisco DMS service contract might limit:

- Which upgrades are available to you.
- Where and how you obtain upgrades.
- Whether you must pay anything to obtain upgrades.

To learn about Cisco service contracts, see http://cisco.com/go/cscc.

a. Check the Currently Loaded Driver row to see which touchscreen driver, if any, is active on your DMP.

   The driver might be **3M**, **Zytronic**, **Elo**, **GeneralTouch**, or possibly something else. As we test various drivers, we might update this list between any two DMPDM releases.

   Your DMP must use a driver that is compatible with your touchscreen.

b. If the active driver is not compatible with your touchscreen, choose the compatible driver from the Choose Touch Screen to Activate list.

c. Click **Apply**.

d. Click **Save Configuration** in the Administration list, and then click **Save**.

e. Click **Restart DMP** in the Administration list, and then click **Restart**.

Tip The Elo and GeneralTouch drivers are self-calibrating.

Step 6 If you chose 3M, Zytronic, or another driver that must be calibrated manually:

a. After your DMP has restarted, log in again to DMPDM.

b. Click **Touch Screens** in the Settings list.

c. Click **Calibrate <***driver_name***> Screen**, where *driver_name* is the name of the driver that you chose.

   - When messages appear on the touchscreen surface that prompt you to touch the surface in various places, follow the prompts exactly. For example, the calibration utility might prompt you to touch exactly five areas or exactly nine areas.
   - If you do not complete this exercise within the brief period that is allotted for it, the calibration utility times out automatically.
   - Repeat these steps for manual calibration if the driver utility times out before you can calibrate your driver.

Note You must repeat the calibration whenever you:

- Rotate a touchscreen or change its resolution.
- Replace a touchscreen.

Step 7 Stop. You have completed this procedure.

Related Topics

- Connect to a Touchscreen, page 4

Configure Video Output

Before You Begin

- Connect your DMP to its presentation system.
- Log in to DMPDM.

Procedure

Step 1 Click **DMP Display Attributes** in the Settings list.

The display autodetection feature is enabled by default. However, it fails unless you use either:

- An HDMI signal cable.
- An HDMI signal cable in combination with an HDMI-to-DVI adapter.

Note If you are satisfied with the choices and entries that DMPDM made for you as a result of its DMP display autodetection, *you are done* with this section and you can go now to the "Configure Your DMP to Trust Only Your DMM Appliance" section on page 26.

Otherwise, if you are *not* satisfied—or if your display does not support HDMI connections—do the following.

a. Choose **Disable** from the DMP Display Autodetection (requires HDMI) list.

b. Choose a standard from the Display Standard list that applies in your country. For example, even though our factory default selection is NTSC_M, your country might use **PAL** instead.

c. Choose your connector and signal type from the Interface (DMP display output) list. For example, you might use **SVIDEO**.

If you do not know which options to choose, see the manufacturer documentation for your presentation system.

Step 2 Choose from the Color Space list the absolute color space that your presentation system uses.

Step 3 (**If you chose RGB as the color space**) Choose an option from the Color Component Order list to define the order in which to store red, green, and blue data.

The color component order is sometimes called the left-to-right additive color model.

Step 4 (**Optional**) Move any or all of the sliders to compensate for presentation system deficiencies in video (brightness, contrast, or saturation) or audio (channel volume).

Step 5 Click **Apply** to confirm your choices and to implement them until you change them or until you restart your DMP.

Step 6 Click **Show IP**—in the DMP Mode area—to test if your choices are suitable ones for your presentation system.

Your presentation system should show a Cisco logo and should show the IP address for your DMP.

Step 7 Click **Save Configuration** in the Administration list, and then click **Save**.

Step 8 Stop. You have completed this procedure.

Change the Splash Screen Duration

You can use DMPDM to change how long your DMP shows its splash screen during startup. This is useful when, for example, your organization prefers not to reveal an IP address casually to all observers.

- A duration of 30,000 milliseconds (30 seconds) is the factory default.
- A duration of 1 millisecond turns off the splash screen.
- Any duration in the range from 2 to 5,000 milliseconds (5 seconds) does not have any effect.

Before You Begin

- Log in to DMPDM.

Procedure

Step 1 Click **Browser** in the Settings list.

Step 2 Enter a new duration in milliseconds in the **Splash Screen Display Time (in milliseconds)** field.

Step 3 Click **Apply**.

Step 4 Click **Save Configuration** in the Administration list, and then click **Save**.

Step 5 Stop. You have completed this procedure.

Reference

- Media Interfaces on a DMP Chassis, page 9
- How to Choose Displays (Monitors) That Work Well with DMPs, page 9
- How to Choose Media Signal Cables, page 10

Media Interfaces on a DMP Chassis

Table 1 DMP Interfaces

Category and Subcategory	Subcategory		Chassis Labels	Instances per DMP Model	
				DMP 4305G	DMP 4400G
Media Signal					
Wired[1]	Video		• HDMI 1.1	1	1
			• Composite[2] • CVBS[3]	1	1
			• YPbPr[4] • S-Video	1	1
	Audio	RCA	• SPDIF	0	1
		3.5mm[5]	• Audio	0	1
		RCA	• Right	1	0
			• Left	1	0
	Infrared Remote Control Signal	3.5mm IR receiver extension	• IR Extension	0	1
Wireless	Infrared Remote Control Signal		• —	1	1
Serial (Comm Ports)					
Wired	Data	RS-232 (9-pin to 9-pin)	• RS 232	1	1

1. Each video and audio signal cable that we ship with DMPs is 6 ft (approximately 1.83 m) long.
2. See Work Around the Low Signal Quality of Composite Video Cables, page 3.
3. The S-Video/YPbPr connector supports Composite CVBS when you add an S-Video-to-Composite adapter.
4. Use an S-Video signal cable with a YPbPr-to-S-Video adapter to transmit and receive YPbPr data signals.
5. Stereo audio output, irrespective of the cable type for video output.

How to Choose Displays (Monitors) That Work Well with DMPs

We certify that DMPs work as designed with Cisco LCD flat-screen displays, which are engineered for intensive use in public settings. See http://cisco.com/go/dms/lcd.

In most cases, DMPs can use displays that comply with modern, international standards. If you will use a third-party display, we recommend:

- **Digital, not analog.**
- **High-definition, not standard-definition.**
- **Professional-grade, not consumer-grade.** Digital signs and public IPTV installations run many more hours each day than a consumer-grade display is engineered to run. A consumer-grade system is likely to fail years sooner than a professional-grade system would under these circumstances.

- **LCD, not plasma.** Digital signage uses static images more often than it uses full-motion video. Most often, content is web-based or animated in Flash. The nature of these media types means that some pixels are not updated frequently in digital signage. LCDs are less susceptible to burn-in than plasma displays are. Even though image persistence is sometimes a problem on LCD displays, it is almost always self-correcting and is unlikely to occur if you follow manufacturer guidelines for managing your displays correctly.
- **Built-in support for RS-232 signalling.** This recommendation is important in direct proportion to the number of displays that you will manage.

How to Choose Media Signal Cables

Caution Poorly shielded cable can sometimes promote undesired signal leakage (egress), interference from over-the-air signals (ingress), or crosstalk between cables that are in close physical proximity.

Special considerations apply when you obtain a signal cable that is longer or of a different type than cables that we included in your product kit.

Media Signal Cable Length

For DMPs models that support the following signal cable types, the maximum supported lengths are:

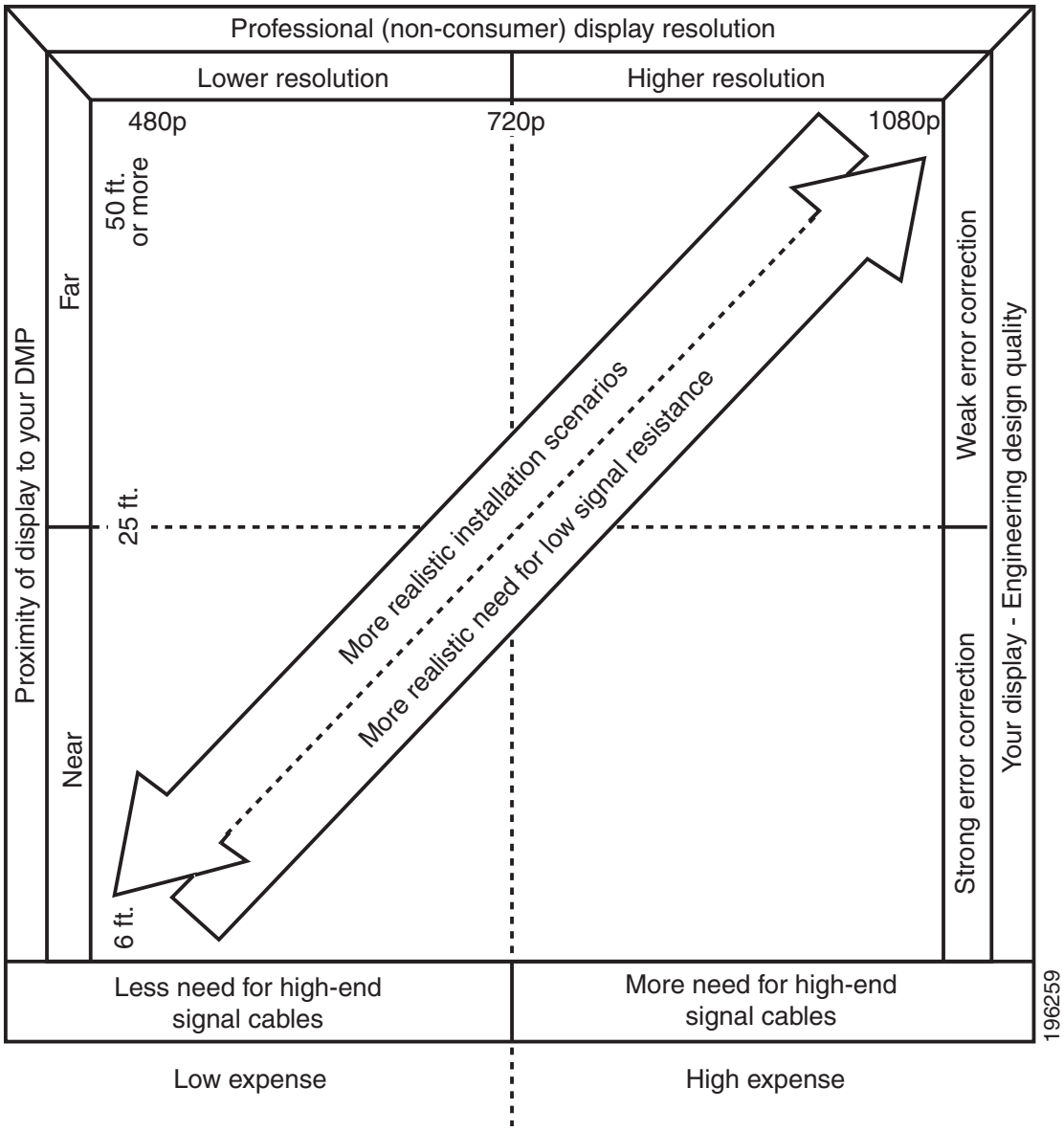
- Composite—10 ft (approximately 3 m)
- HDMI 1.1—16 ft (approximately 5 m)
- RCA—10 ft (approximately 3 m)
- S-Video—10 ft (approximately 3 m)
- SPDIF—10 ft (approximately 3 m)

The best signal cables objectively are those with the lowest signal resistance. Factors that affect signal resistance include wire gauge, cable shielding quality, and cable connector quality. However, the same materials and engineering designs that reduce signal resistance add to the cost of manufacturing. This added cost is passed along to a consumer. So, it is useful to understand when signal resistance is not relevant. Knowing this can help you to manage and reduce expenses without necessarily lowering your standards. The key points to understand are:

- High cost is not inevitable.
- High cost is not proof of high quality.
- Sometimes, high quality (low signal resistance) is irrelevant.

Even mediocre signal cables are sometimes sufficient, and such cables are often very affordable. Figure 1 illustrates the most important factors to consider when you choose signal cables.

Figure 1 Signal Cable Purchasing Factors to Consider



Beyond the general guidelines that Figure 1 illustrates, two additional factors constrain which types of signal cable you can use:

- **The technology, brand, and model of your display**—Check its product documentation to understand its compatibility with various signal cable types.
- **The DMP model**—Table 1 on page 9 states which physical interfaces are available on various DMP model chassis. (Alternatively, if the table does not describe your DMP model, see its datasheet at http://www.cisco.com/go/dms/dmp/datasheets.) Your packing list states which signal cables Cisco planned to ship with your DMP.

Related Topics

- Overview, page 1
- Connect to an Analog Display or Projector, page 3

CHAPTER 22

Playlists

Revised: April 4, 2012
OL-15762-04

- Concepts, page 22-1
- Procedures, page 22-2
- Reference, page 22-3

Audience

We prepared this material with specific expectations of you.

- You will organize media assets for sequential playback on presentation systems that your DMPs control.

Concepts

- Guidelines, page 22-1
- Restrictions, page 22-2

Guidelines

- Best Practices to Optimize DMP Settings for Playlists, page 22-1

Best Practices to Optimize DMP Settings for Playlists

- Improve Transition Speeds, page 22-2
- Reduce or Resolve Black-Screen Delays After Video Playback, page 22-2

Improve Transition Speeds

If playback transitions are unacceptably slow between videos, you can disable the video failover feature on DMPs.

Reduce or Resolve Black-Screen Delays After Video Playback

We recommend that you enable syslog on DMPs long enough to configure its settings, even if you have no plans to use it. **When you will not use syslog:**

1. Set the syslog server address to 127.0.0.1.
2. Save your changes.
3. Disable syslog.
4. Save your changes.
5. Restart the DMP.

Restrictions

You cannot add an advanced task (or a system task) to a playlist. However, you can schedule them to occur between playlists.

Procedures

- Create and Organize Playlists, page 22-2
- Change the Sequence of Playback, page 22-3

Create and Organize Playlists

Procedure

Step 1 Choose **Digital Signage > Playlists**.

Step 2 Select the options and enter the values that meet your requirements.

When you choose options anywhere on the Playlists page, it is updated automatically to show the options and features that are relevant to your selection.

Step 3 Stop. You have completed this procedure.

Related Topics

- Table 22-1Elements to Define a Playlist, page 22-3

Change the Sequence of Playback

Procedure

Step 1 Click an asset that should be moved.

Step 2 Click either **Move Playlist Item Up** or **Move Playlist Item Down**.

Step 3 Stop. You have completed this procedure.

Reference

- Software UI and Field Reference Tables, page 22-3

Software UI and Field Reference Tables

- Elements to Define a Playlist, page 22-3

Elements to Define a Playlist

Navigation

- Digital Signage > Playlists

Table 22-1 Elements to Define a Playlist

Element	Description
Title	The title for this playlist.
Assets	
A table in which each row describes one asset. Attributes are sorted into these columns.[1]	
Title	A unique and human-readable name for the asset.
File Type	The type that best describes the asset. • Video • Shockwave Flash • Images • HTML • Firmware

Table 22-1 Elements to Define a Playlist (continued)

Element	Description
{Estimated | Planned}	Respectively: • An estimate of the actual running time from start to finish of the described asset, without regard for the amount of time the playlist has reserved to show it. • The amount of time that is reserved in the playlist to show this asset. A planned duration of 0 (zero) seconds in the playlist causes a video to play from beginning to end. To skip a video instead of playing it, you must remove it from the playlist. Nonvideo assets must have a duration of 1 second or more for each that you include in a playlist.
Size	The file size.
Delete	
Resolution	Choose the resolution of your DMP display from the **Select** list or enter its width and height, in pixels.
Options	
Randomize	Enables or disables a randomized sequence of playback for assets in this playlist. To turn randomization on, check the check box. To turn randomization off, uncheck the check box.
Description	A description of this playlist. The description is optional.
Playlist Owner	Your name or the name of the person who manages this playlist.

1. To choose more assets from your media library that this playlist should include, click **Add Assets**.

CHAPTER 23

Proof of Play

Revised: April 4, 2012
OL-15762-04

- Concepts
- Procedures
- Reference

Audience

We prepared this material with specific expectations of you.

- You will audit and run reports that demonstrate your playback of media assets on your Cisco Digital Signs.

Concepts

- Overview, page 23-1
- Glossary, page 23-3
- Insertions, page 23-3
- Workflow, page 23-4

Overview

You can audit which assets your DMPs play... and where... and when... and for how long—across any supported range of dates that you specify. This feature supports a maximum of 200 DMPs.

Proof of play reports are available per DMP, per DMP group, and per *insertion*. We use a dedicated proof of play service to collect these records and generate these reports.

Restrictions

Caution

Proof-of-play features fail unless:

- The Syslog Collector IP Address entry in DMPDM points to your DMM appliance.
- The fully qualified domain name of your DMM appliance contains fewer than 30 characters.

- Implications of Changing the DMM Appliance Hostname, page 23-2
- Implications of Changing the User Authentication Method, page 23-2

Implications of Changing the DMM Appliance Hostname

Will you use AAI to change the hostname of a DMM appliance on which proof-of-play features are enabled (**CSCtr00731**)*?* There is no common reason to do this. We recommend that you do not. Nonetheless, we will not stop you.

BEFORE YOU CHANGE THE HOSTNAME

- Export your proof-of-play logs.

AFTER YOU CHANGE THE HOSTNAME

- Log in to the web interface for DMM at its new hostname, and then immediately reconfigure the proof-of-play feature.

WHY IS THIS NECESSARY?

We assume that your information is confidential and we strive to protect it from unauthorized access. Therefore, DMM self-registration of a feature license considers the combination of the appliance hostname and its hardware serial number.

After its appliance hostname is changed, DMM will reject its prior self-registration of your license to use proof-of-play features. Although the license is still valid and is still correctly associated with your hardware serial number, your DMM appliance cannot load proof-of-play logs from any server whose hostname differs from its own. It cannot read from them or write to them. Likewise, you cannot use proof-of-play features on any host but the one that self-registered the license.

Although you can return a hostname to its original value, doing so still might not be sufficient to satisfy an ongoing requirement for full and uninterrupted access to proof-of-play features and logfiles. Consider this scenario.

1. The hostname is changed from **A** to **B**. Therefore, B cannot use the feature license that A self-registered and cannot use the logfiles that DMM generated on behalf of A.
2. The hostname is then returned to **A**. Therfore, A can access its own data from any time when the hostname was A, including the original instance. However, it cannot use the feature license that B self-registered and cannot use the logfiles that DMM generated on behalf of B.

We recommend that you prevent these complications and disruptions by leaving the hostname in its original state.

Implications of Changing the User Authentication Method

Will you change the user authentication method from LDAP mode to Federation mode (SSO) for a Cisco DMS deployment that includes proof of play (**CSCtq55094**)*?* Fundamental changes to user authentication are not routine but can be useful occasionally.

However, account records in the new SSO user base might not correspond exactly to account records in the old LDAP user base. It is possible, in fact, that some long-established login credentials might cease to be valid for Cisco DMS users. And so, if the proof-of-play user role assignment in your network is associated with one of these nullified user accounts, the affected user cannot view proof-of-play insertions or run reports for insertions.

In this case, you must assign the proof-of-play role to a user account that exists in the SSO user base.

Implications of Changing Which Assets a Playlist Includes

In this release, proof-of-play reports for a given playlist during a given time range might not be correct (**CSCtr97593**). In some cases, these reports can:

- Omit playback records retroactively for assets that you trimmed from the playlist at a later time. (These assets were once correctly part of the playlist and their playback count from that time is relevant to this report.)
- Insert playback records retroactively for assets that you added to the playlist at a later time. (These assets were once correctly excluded from the playlist and their playback count from that time is not relevant to this report.)

Glossary

Timesaver **Go to terms that start with...** [**I** | **R**].

I

insertion The campaign or other common goal among any one set of presentations, playlists, and assets that you consider an affinity group.

R

Return to Top

requestor The agency or other entity that requests an insertion or prepares resources for an insertion.

Insertions

Cisco Digital Signs includes methods to identify and assemble an affinity group from any combination of presentations, playlists, and assets. We call this affinity group package an *insertion*.

Mingled elements within an insertion all share one clear and unifying purpose. For example, the elements of your first insertion might all advertise a community celebration, even though they use various languages or differ in other, key ways. However, you recognize for your own purposes that at least one significant factor (the community celebration, in this example) unites them as an affinity group.

The benefit of insertions is that you can audit and verify the scope of playback—individually and collectively—for all elements that support one goal, initiative, policy, campaign, or event. On a DMP-by-DMP basis, you can discover and demonstrate exactly which assets:

- Played successfully, and when.
- Were interrupted or prevented from playing, and when.

Note

- **Proof of play features in Cisco Digital Signs ignore the playback of assets that Cisco developed—including all samples and templates that you receive with DMM.**
- **Syslog data provides the start and stop time stamps for playback.** From time to time, some of these time stamps might seem wrong even though they are technically correct. In this case, puzzling results will report a playback duration of 0 min and 0 sec for any insertion element whose start time and stop time were identical—for any reason. The likeliest explanation is that a stop command interrupted playback coincidentally during the same second in which an insertion element was scheduled to start playback (CSCtr57386).

A populated insertion audits the playback of:

- Each asset that you reference *directly*, as a single element regardless of its context.
- Each asset that you reference *indirectly*, as one element within the context of a playlist or presentation.

Workflow

1. Add assets to your media library.
2. Develop, schedule, and publish presentations and playlists.
3. Define report collection parameters for proof-of-play.
4. Run reports.

Procedures

- Prepare DMPs to Support Proof of Play, page 23-4
- Create Requestors, page 23-7
- Create Insertions, page 23-7
- Run a Report, page 23-8
- Export a Report, page 23-9
- View Previous Reports, page 23-10
- Use the Proof of Play Dashboard, page 23-10
- Use Deployment Reports, page 23-11

Prepare DMPs to Support Proof of Play

- Enable Syslog and NTP, page 23-5
- Enable Proof of Play Features in DMM, page 23-6

Enable Syslog and NTP

Procedure

Step 1 Do one of the following.

- *Would you like to enable these services from Digital Signs?*

  Use elements in Digital Signs to enable these services.

  a. Choose **Advanced Tasks > System Tasks**.
  b. Create a new system task.
  c. Enter a meaningful name in the Name field, such as **Enable PoP access on DMPs**.
  d. Choose **Set** from the Request Type list, and then enter this string:

     `init.syslog=on&init.syslog_collector=``<DMM_routable_IP>`**`&mib.save=1&mng.reboot=1`**

  e. Click **Submit**.
  f. Click **OK**.
  g. Deploy to all DMPs that should support proof of play.

- *Would you like to enable these services from DMPDM?*

  Use elements in DMPDM to enable these services

  a. Click **Browser** in the Settings list.
  b. Enter the routable IP address of your DMM appliance in the Syslog Collector IP Address field.
  c. Click **Apply**.
  d. Click **NTP** in the Settings list, and then choose **On** from the Enable NTP Service list.
  e. Enter pool.ntp.org in the Hostname 1 field, if you have not already done so.
  f. Choose your locale from the Time Zone list, and then click **Apply**.
  g. Save Configuration
  h. Restart.

Step 2 Stop. You have completed this procedure.

Enable Proof of Play Features in DMM

Procedure

Step 1 Log in as superuser.

Step 2 Choose **Proof of Play > Configuration**.

Step 3 Enter the fully qualified, DNS-resolvable DMM appliance domain name in the DMM FQDN field.

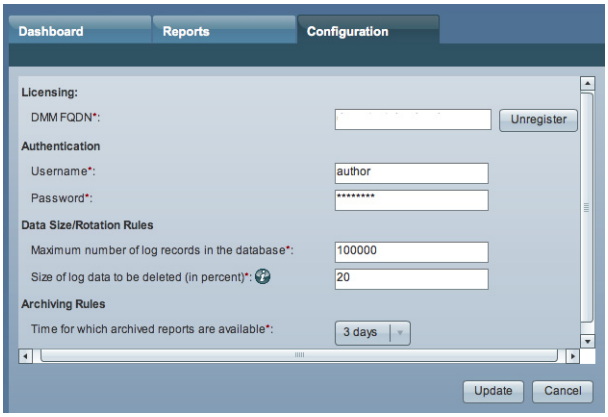
For example: *dmm.example.com*

Step 4 Click **Register**.

Step 5 Use fields in the Authentication area to enter the superuser name and password for your DMM appliance.

Step 6 Define settings in the Data Size/Rotation Rules area.

Step 7 Choose an option in the Archiving Rules area to set how many days of playback data to accumulate before archiving it.



Step 8 Click **Update**.

Step 9 Stop. You have completed this procedure.

Create Requestors

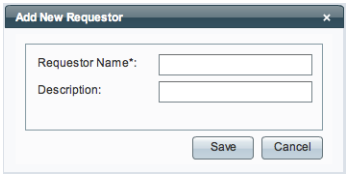
Procedure

Step 1 Choose **Digital Signage > Insertions**, and then click **Manage Requestors**.

The Manage Requestors dialog box opens.

Step 2 Click **Add New Requestors**.

The Add New Requestor dialog box opens.



Step 3 Enter at least a name but also, optionally, a description.

Step 4 Click **Save**.

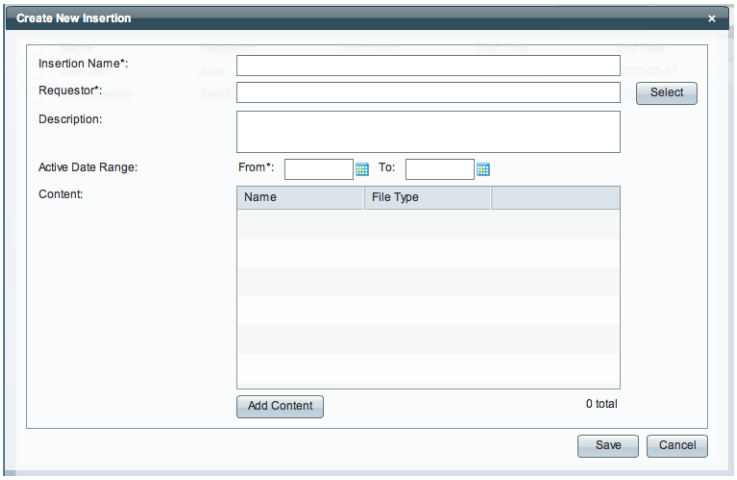
Step 5 Stop. You have completed this procedure.

Create Insertions

Procedure

Step 1 Choose **Digital Signage > Insertions**, and then click **Create Insertion**.

The Create New Insertion dialog box opens.



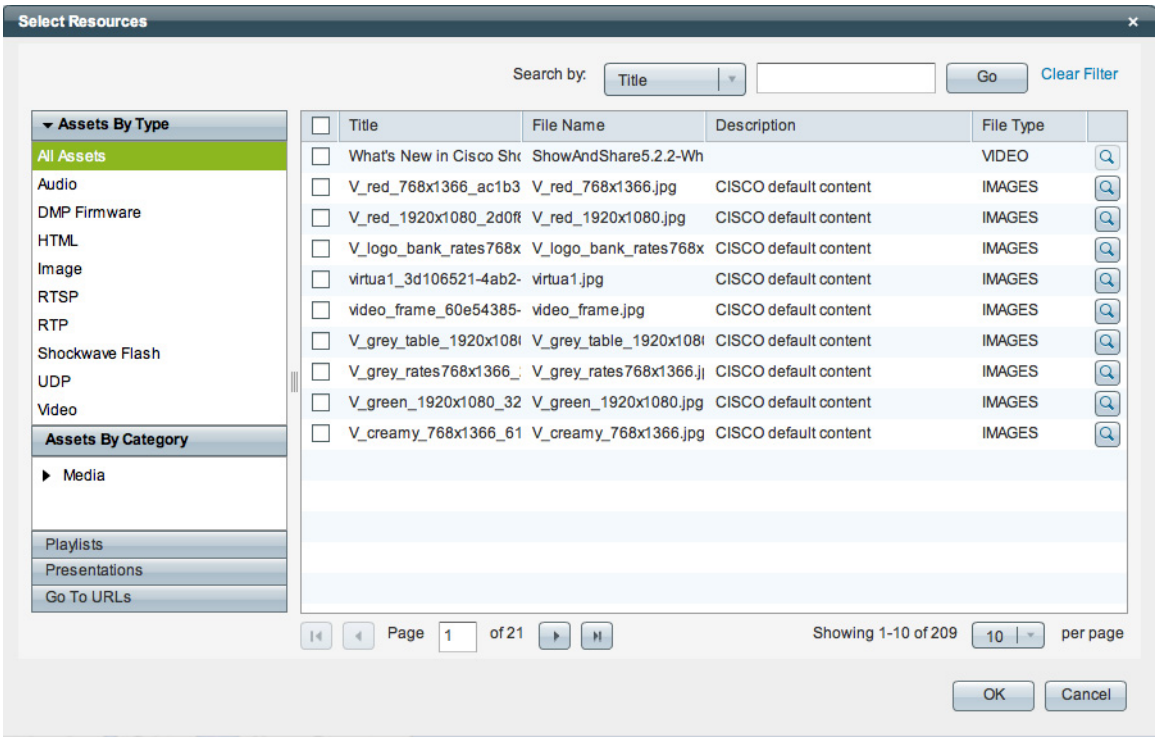
Step 2 Enter a name for this insertion.

Step 3 Associate a requestor with this insertion.

Step 4 Choose when this insertion should become active, and then choose when it should stop.

Step 5 Click **Add Content**.

The Select Resources dialog box opens.



Step 6 Use check boxes in the table to mark assets that you might use.

- Use options on the left to filter what the table shows.
- Use pagination controls under the table to control how many assets you see.
- Use the Search function above the table to locate particular assets quickly.

Step 7 Click **OK** to populate your insertion with the assets that you marked.

Step 8 Stop. You have completed this procedure.

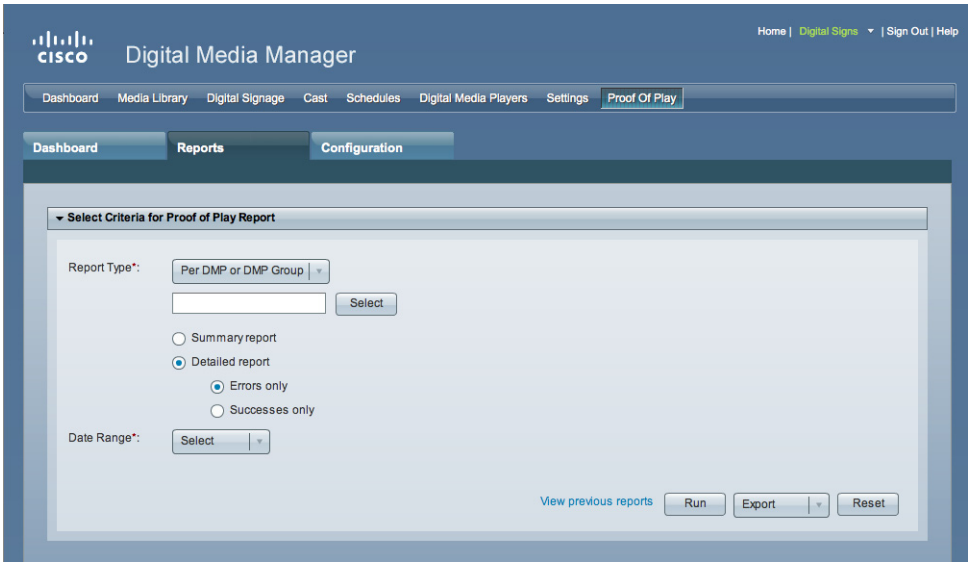
Run a Report

Procedure

Step 1 Choose **Proof of Play > Reports**.

Step 2 Choose reporting criteria.

- Report Type options are **Insertion**, **DMP**, or **DMP Group**.
- Reporting scope options are **Summary** and **Detailed**.
  - A summary report counts successes and failures.
  - A detailed report counts either successes *or* failures.
- You must specify the date range.



Step 3 Click **Run**.

Step 4 Stop. You have completed this procedure.

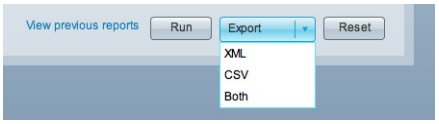
Export a Report

Before You Begin

- Complete the "Run a Report" section on page 23-8.

Procedure

Step 1 Choose a format from the Export list.



Step 2 Stop. You have completed this procedure.

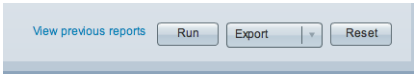
View Previous Reports

Before You Begin

- Complete the "Run a Report" section on page 23-8.

Procedure

Step 1 Click **View previous reports**.

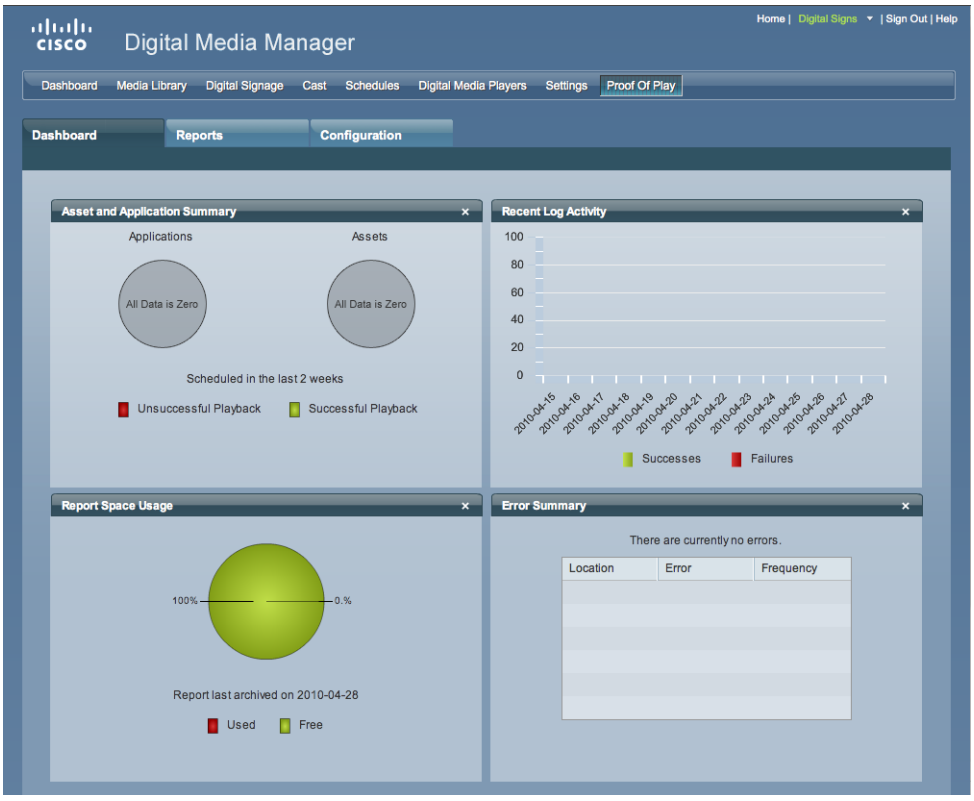


Step 2 Stop. You have completed this procedure.

Use the Proof of Play Dashboard

Procedure

Step 1 Choose **Proof of Play > Dashboard**.



Step 2 Stop. You have completed this procedure.

Use Deployment Reports

You can view, configure, and export additional reports for the presentations and tasks that you have deployed in your digital signage network.

Procedure

Step 1 Choose **Schedules > Reports**.

Step 2 Check the check boxes for the relevant DMP groups.

Step 3 Enter date range values in the From field and the To field.

Step 4 From the Report Type list, select the report type.

Step 5 Click **Go**.

Step 6 Stop. You have completed this procedure.

Reference

- FAQs and Troubleshooting, page 23-11

FAQs and Troubleshooting

- FAQs, page 23-11
- Troubleshooting, page 23-12

FAQs

Q. What might prevent proof-of-play features from working at all?

A. The fully qualified domain name (FQDN) for your DMM appliance must not exceed 30 characters.

```
dmm.example.com                          <-- VALID for Proof of Play
123456789012345678901234567890
digitalmediamanager.example.com          <-- NOT VALID for Proof of Play
```

Q. How do insertions differ from presentations and playlists?

A. They are fundamentally different.

- Before playback can start for a presentation or playlist, you must target DMP groups and reserve timeslots for playback.
- After a reserved timeslot has elapsed, you can verify whether playback occurred as scheduled for its programming.

Q. Are insertions required in proof of play?

A. No. Insertions are just one of three supported report types. You can also obtain proof of play reports per DMP or per DMP group.

Q. Can I associate one asset with multiple insertions?

A. Yes.

Q. What triggers universal proof of play auditing for an asset?

A. There are two scenarios in which we validate each instance of playback for an asset.

Scenario	Details	Exceptions
Your insertions already include all presentations and playlists that use the asset.	In this case, because you have not used the asset anywhere outside of an insertion, we verify its every instance of playback.	This universal verification becomes conditional when you use the asset anywhere outside an insertion.
You added the asset explicitly to an insertion.	In this case, we audit playback for this asset no matter how or when you play it, or in what context.	When you play it as *just one part* of a presentation or playlist that **is not**—*in its own right*—part of any insertion: • We **do not** verify playback for the playlist as a whole. • We **do not** verify playback for any other assets than the one that you audit explicitly.

Q. What triggers conditional proof of play auditing for an asset?

A. We might validate some instances of playback but not others. We cannot audit playback consistently for an asset whose instances of playback occur sometimes outside any insertion.

Q. What prevents proof of play auditing for an asset?

A. We cannot validate instances of playback for an asset whose every instance of playback occurs outside any insertion.

Q. What are the implications for emergency events?

A. See CSCtd23249

Troubleshooting

The log file location for proof of play features is: **`/var/apache-tomcat/proofofplay-core.log`**

CHAPTER 24

Plan for and Manage Emergencies

Revised: April 4, 2012
OL-15762-04

Caution **Severe conditions during and after an emergency might prevent messages from playing through your DMPs.**

- Concepts, page 24-1
- Procedures, page 24-2

Audience

We prepared this material with specific expectations of you.

- You will use Cisco Digital Signs for public safety messaging.

Concepts

- Overview, page 24-1

Overview

When emergencies of any kind affect sites where you deploy digital signage, you can use DMP displays to alert your viewers, warn them about dangers that might affect them, and direct them to safety. Or you can provide other kinds of information to them as you see fit. Until you stop playing emergency messages, they override all events that were scheduled to run automatically.

It is important to remember that emergency message insertions in your schedule will override *only* the events that are scheduled to run automatically. Furthermore, such insertions will override these events on *only* the DMPs that the emergency message insertion affected. All other DMPs in your network will abide by their schedule, without disruption.

Emergency conditions might prevent messages from playing on your DMP displays.

Note **Consider very carefully which DMM users should have permission to work with your schedule and manage your DMP groups.** Although all of the "Play in Future" features are suspended (for affected DMPs only) while an emergency is in progress, none of the "Play Now" features or "DMP Manager" features are suspended. Therefore, it is possible for a careless user or malicious user with sufficient permissions to start another event manually on the DMPs where an emergency message should play.

If policies in your organization require of you that one or more screen zones must show assets that are editable, you can stage the editable assets remotely on one of your external deployment servers instead of staging them locally on your DMPs. Then, the people in your organization who are entrusted to edit these assets can change them—to update the emergency message, for example—in real time.

After an emergency has stopped and normal scheduling has resumed on a DMP group and its children, any playlist or presentation that was scheduled for playback at that time will start from the beginning.

Procedures

- Create Deployment Packages for Emergencies, page 24-2
- Provision Emergency Assets Immediately to DMP Local Storage, page 24-3
- Schedule the Future Staging of Emergency Assets, page 24-6
- Start Playback of an Emergency Message, page 24-7
- Stop Playback of an Emergency Message, page 24-8

Create Deployment Packages for Emergencies

Before You Begin

- Populate the playlist or design the presentation whose assets you will transfer to your DMPs.

Procedure

Step 1 Define a deployment task for DMS-CD to provisioning emergency assets to DMP local storage.

Alternatively, do the following to define a file transfer task that you can deploy:

a. Choose **Digital Media Players > Advanced Tasks**, and then click **File Transfer to DMP or Server**.

b. To create a new file transfer task, click **Add New Application**.

c. After the page is refreshed, do the following to define behaviors for, and save, the file transfer task.

1. Enter a specific name, such as “Fire” or “Flash Flood,” for the type of emergency. You might want to use a less specific name, such as “Emergencies,” if this task will transfer the assets for multiple presentations or playlists, or if your organization uses one playlist or presentation for emergencies of all kinds.
2. From the DMP Publishing Protocol list, choose **FTP** or **HTTP**, and then check the **Emergency/Alarm** check box.
3. Click **Presentations** in the Applications list if the assets are part of a saved presentation.

   OR

   Click **Playlists** if the assets are part of a saved playlist.
4. After the page is refreshed, click in the Available Applications list the name of the presentation or playlist whose assets should be transferred, and then click **Select Applications**.

5. (**Optional**) To transfer the assets for multiple playlists and presentations, repeat the preceding step.
6. Click **Submit** to save this task, so that it becomes available for deployments.

Note **Even though you created and saved a file transfer task, you have not used it yet.** Your DMPs will not have local copies of the emergency assets until after you run this task successfully.

Step 2 Provision the emergency assets to your DMPs.

Step 3 Stop. You have completed this procedure.

Related Topics

- Use the 'Run Task' Feature to Provision Emergency Assets Immediately, page 24-3
- Use the 'Play Now' Feature to Provision Emergency Assets Immediately, page 24-5
- Schedule the Future Staging of Emergency Assets, page 24-6

Provision Emergency Assets Immediately to DMP Local Storage

- Use the 'Run Task' Feature to Provision Emergency Assets Immediately, page 24-3
- Use the 'Play Now' Feature to Provision Emergency Assets Immediately, page 24-5

Use the 'Run Task' Feature to Provision Emergency Assets Immediately

Before You Begin

- Create and save deployable messages for playback during emergencies.

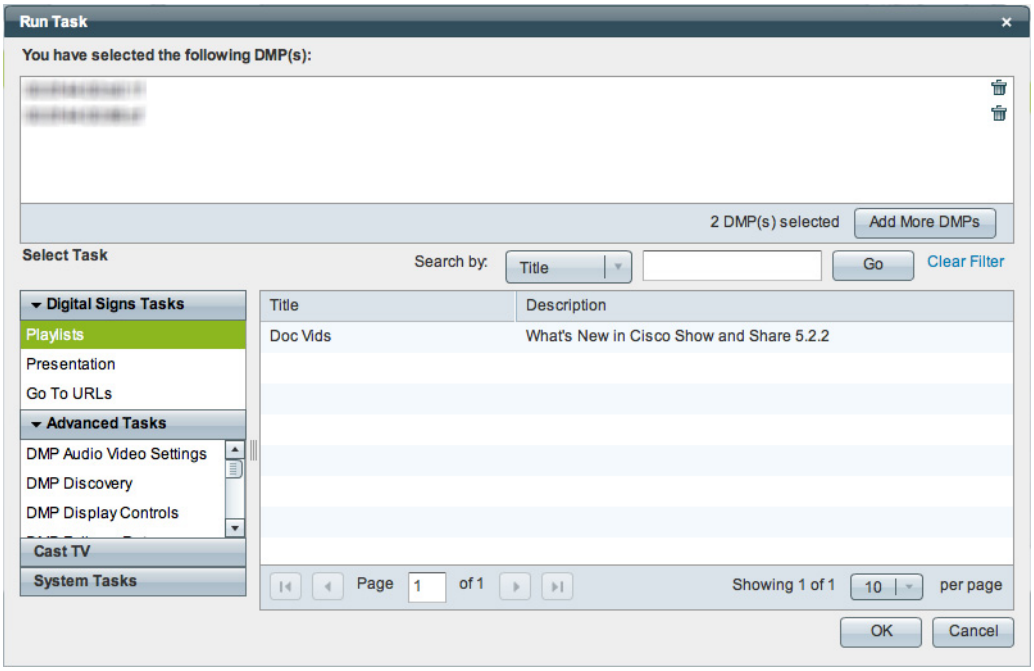
Procedure

Step 1 Click the **DMP Manager** tab.

Step 2 Use check boxes in the table to mark DMPs that should immediately show the emergency message.

Step 3 Click **Run Task**.

The Run Task dialog box opens.

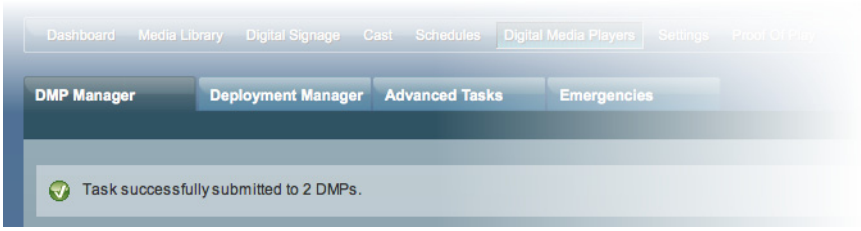


- Use options in the top pane to add DMPs to, or remove them from, your emergency deployment.
- Use options in the Select Tasks pane to filter which advanced tasks the table shows.
- Use pagination controls under the table to control how many advanced tasks you see.
- Use the Search function above the table to locate particular tasks quickly.

Step 4 Click to highlight the best system tasks for the type of emergency.

Step 5 Click **OK**.

The Run Task dialog box closes and a message tells you that your selected task was deployed.



- DMM transfers assets to your DMPs.
- DMM creates as many Go-to URL entries as the number of presentations and playlists that are part of the deployment.
- DMM applies the prefix “Alarm” to each of these Go-to URL entries.

Step 6 Stop. You have completed this procedure.

Related Topics

- Provision Emergency Assets Immediately to DMP Local Storage, page 24-3
- Schedule the Future Staging of Emergency Assets, page 24-6
- Start Playback of an Emergency Message, page 24-7
- Stop Playback of an Emergency Message, page 24-8

Use the 'Play Now' Feature to Provision Emergency Assets Immediately

Before You Begin

- Create and save deployable messages for playback during emergencies.

Procedure

Step 1 Choose **Schedules > Play Now**.

Step 2 From the Select an Event Type list, choose **System Tasks**.

Step 3 Click **Select System Tasks** and wait until the Select Event dialog box opens.

Step 4 Click **Deployment Package** in the Type column if you created a DMS-CD deployment task for this emergency.

OR

Click **File Transfer to DMP or Server** in the Type column if you created a file transfer task for this emergency.

Step 5 Click the task name in the Application Name column.

Step 6 Click **OK** to confirm your selection and close the Select Event dialog box.

Step 7 Click the name in the DMP Groups tree of the group whose member DMPs should have local copies of the emergency assets.

Step 8 Click **Submit** to issue the command immediately.

- It transfers assets to your DMPs.
- It creates as many Go-to URL entries as the number of presentations and playlists that you chose.
- It applies the prefix "Alarm" to each of these Go-to URL entries.

Step 9 Stop. You have completed this procedure.

Related Topics

- Use the 'Run Task' Feature to Provision Emergency Assets Immediately, page 24-3
- Schedule the Future Staging of Emergency Assets, page 24-6
- Start Playback of an Emergency Message, page 24-7
- Stop Playback of an Emergency Message, page 24-8

Schedule the Future Staging of Emergency Assets

Before You Begin

- Create and save deployable messages for playback during emergencies.

Procedure

Step 1 Choose **Schedules > Play in Future**.

Step 2 From the calendar, choose the year, month, and day when the assets should be transferred.

The timeline is updated automatically, so that it shows the schedule for that day.

Step 3 Choose **Advanced Tasks** from the Add an Event list, which is located under the timeline.

Step 4 Use features of the Schedule Task dialog box to choose the DMPs or the external servers.

a. Click **Select Group**, and then click the name of the group whose members should have local copies of the emergency assets.

b. Click **OK** to confirm your selection and close the Select DMP Group dialog box.

Step 5 Click **Select System Tasks** and wait until the Select Event dialog box opens.

Step 6 Click **Deployment Package** in the Type column if you created a DMS-CD deployment task for this emergency.

OR

Click **File Transfer to DMP or Server** in the Type column if you created a file transfer task for this emergency.

Step 7 Click the task name in the Application Name column.

Note **You cannot use DMS-CD to deploy to an external server.** DMS-CD supports deployments to DMPs only.

Step 8 Click **OK** to confirm your selection and close the Select Advanced Tasks dialog box.

Tip **You can use the provided controls to adjust the start and stop time for this task.** Remember to allow sufficient time for the transfer to complete. The amount of time required can vary according to the cumulative file size of the selected assets, the capacity of your network, any congestion in your network, and possibly other factors. Do not use any of the provided controls for repeating a task.

Step 9 Click **Save** to confirm your selections and close the Schedule Task dialog box.

Step 10 Click **Save All** to save your work in the schedule before you try to publish it.

Step 11 Click **Publish All** to transmit the deployment according to the schedule that you defined.

Step 12 Stop. You have completed this procedure.

Related Topics

- Provision Emergency Assets Immediately to DMP Local Storage, page 24-3
- Start Playback of an Emergency Message, page 24-7
- Stop Playback of an Emergency Message, page 24-8

Start Playback of an Emergency Message

Before You Begin

- Create and save deployable messages for playback during emergencies.
- Provision assets for the emergency message to DMP local storage or a network server.

Procedure

Step 1 Choose **Digital Media Players > Emergencies**.

OR

Choose **Schedules > Emergencies**.

Step 2 Click **Start Emergency**.

Step 3 From the Select Emergency list, choose the playlist or presentation that your DMPs should play during the type of emergency that is now in progress.

Entries that you see in the Select Emergency list are derived from file transfer tasks that you saved after checking the Emergency/Alarm check box. You cannot add the “ALARM” prefix manually to the name of a (Go to) URL task to make the task appear in the Select Emergency list. Nor can you delete the “ALARM” prefix manually from the name of a (Go to) URL task to exclude the task from the Select Emergency list.

Step 4 Expand the Select DMP Group tree, click the entry for the DMP group whose member DMPs should all announce the emergency, and then click **Start**.

When you choose a DMP group that has child groups, the child groups and their member DMPs are also selected automatically.

While this emergency is in-progress, the event-scheduling features at Schedule > Play in Future will be suspended temporarily for whichever group and children you chose. However, your other DMP groups will not be affected. You still can schedule events for those other groups. Later, after you stop this emergency, the event-scheduling features at Schedule > Play in Future will be restored for the group and children that you chose.

Step 5 To confirm your selections and start playback immediately of your emergency presentation or emergency playlist, click **OK**. (Emergency conditions might prevent messages from playing on your DMP displays.) Alternatively, to discard your selections without playing any assets for any emergency, click **Cancel**.

A message tells you whether you submitted the emergency successfully. After you dismiss the message, the page is refreshed. If you submitted the emergency, the DMP group that you chose in Step 4 is colored red in the Select DMP Group tree.

Step 6 Stop. You have completed this procedure.

Tip **You can submit an emergency to a DMP group while it is showing a playlist or presentation that describes some other emergency.** There is no need to explicitly stop playback of the current emergency message before you start another one.

Related Topics

- Schedule the Future Staging of Emergency Assets, page 24-6
- Stop Playback of an Emergency Message, page 24-8

Stop Playback of an Emergency Message

Before You Begin

- Start playback of an emergency message.

Procedure

Step 1 Choose **Digital Media Players > Emergencies**.

OR

Choose **Schedules > Emergencies**.

Step 2 Click **Stop Emergency**.

Step 3 Expand the Select DMP Group tree, click the DMP group that is colored red, and then click **Stop**.

If you choose a DMP group that has child groups, the child groups and their member DMPs are also selected automatically.

Step 4 To confirm your selections, which will stop playback of your emergency message and restore normal scheduling for the DMP group (and children) that you chose, click **OK**. Alternatively, to discard your selections without stopping the emergency, click **Cancel**.

A message tells you whether you stopped the emergency successfully. After you dismiss the message, the page is refreshed.

If you stopped the emergency, the DMP group that you chose in Step 3 is no longer colored red in the Select DMP Group tree.

Step 5 Stop. You have completed this procedure.

If you selected a DMP group whose member DMPs were not showing emergency messages, these DMPs will stop and then restart their playback of whatever asset they are scheduled to show.

If separate emergencies were in effect simultaneously across multiple DMP groups and you stopped the emergency for only one group, remember that the event-scheduling features at Schedule > Play in Future still are suspended for all groups where emergencies remain in effect.

Related Topics

- Start Playback of an Emergency Message, page 24-7

CHAPTER 25

Welcome [to Cisco Cast]

Revised: April 4, 2012
OL-15762-04

- Concepts, page 25-1
- Procedures, page 25-4

Audience

We prepared this material with specific expectations of you.

- You will manage the delivery of IPTV services to presentation systems connected to your DMP endpoints.

Concepts

- Overview, page 25-1
- Restrictions, page 25-2
- Centralized Administration, page 25-2
- On-Premises Operation, page 25-3
- Workflow, page 25-4

Overview

Features of *Cisco Cast* help your organization to deliver video-on-demand and live broadcast TV channels over IP networks to presentation systems that you connect to DMPs.

These DMPs might be in your conference rooms, public venues, executive offices, or other settings.

Restrictions

- Feature License Restrictions, page 25-2
- User Permissions Restrictions, page 25-2

User Permissions Restrictions

Note **Features of Cisco Cast are hidden from you until your user role assignment is APPLICATION MANAGER and you have explicit WRITE permissions** (CSCtr05337).

Feature License Restrictions

Activation **See the "Understand Licenses" section in Part 1, Chapter 3, "Licenses."**

Centralized Administration

Cisco Cast includes powerful features for administrators.

- Customize on-screen menus with a logo and a skin.
- Configure video channel assignments.
- Specify what channels and programs should be available to the DMP displays where your organization will deploy *Cisco Cast*, and when they should be available.

You can make programming available that suits your purpose at a particular location, for a particular audience, at a particular time of day.

Live news and financial information	Sales and marketing messages	Educational or training content for classrooms
Corporate communications	Entertainment	*Any other* programming that suits your purpose.

Hospitality and healthcare providers might even use *Cisco Cast* in support of in-room IPTV.

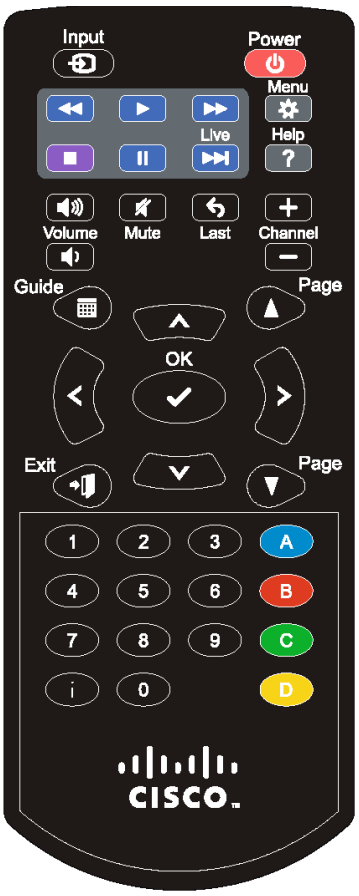
Related Topics

- Start Cisco Cast, page 25-4

On-Premises Operation

Easy navigation logic helps your on-premises operator to choose among your program offerings for *Cisco Cast*. Its on-screen menus, categories, and program guides support interaction through handheld remote control units, telephones, and touchscreens—all sold separately.

Your on-premises operator can change channels, adjust audio volume levels, play live streams, or play VoD streams. Using our handheld remote control, all buttons named here support on-premises interaction with *Cisco Cast* 5.3.x.



System Controls	
power	
Audio Controls	
volume up	
volume down	
mute	
Channel Controls	
channel down	
channel up	
return to previous	
1	
2	
3	
4	
5	
6	
7	
8	
9	
0	
Menu Controls	
menu	
up	
left	
OK	
right	
down	
Guide Controls	
guide	
page up	
page down	
exit	

Workflow

1. **Install the license** for *Cisco Cast* on your DMM appliance.
2. **Deploy DMPs and presentation systems** to sites where you will show IPTV programming.
3. *When your IPTV programming will include live TV.*
   - **Negotiate with a cable or satellite TV service** in your region for the right to redistribute their package of TV channel signals, in whole or in part.
   - **Configure one encoder apiece for each TV channel signal that you will stream in real time.**
     - Use a Scientific Atlanta 9032SD encoder for standard definition signals.
     - Use a Scientific Atlanta 9050HD encoder for high definition signals.
4. Use Skin Customization options to **enable or disable the electronic program guide** (EPG) for *Cisco Cast*.
   a. When you will use an EPG, **choose a population method** for each channel.
   b. When you will use an EPG and populate its channel descriptions from an EPG data subscription, **define the subscription settings**.
   c. When your DMM appliance does not have direct Internet access and should use a proxy server to obtain EPG data from your data service provider, **configure a SOCKS proxy** for *Cisco Cast*.

Procedures

- Start Cisco Cast, page 25-4

Start Cisco Cast

Procedure

Step 1 Point your browser at your DMM appliance.

- When you use **HTTP**, be sure to specify port **8080**.
- When you use **HTTPS**, be sure to specify port **8443**.
- Be sure to use the fully qualified appliance DNS name and not merely its IP address.

For example, `https://dmm.example.com:8443`

Step 2 Choose **Cast** from the global navigation or click **Cast** on the DMM landing page.

The TV Channels tab is preselected by default.

Step 3 Stop. You have completed this procedure.

CHAPTER 26

Redistribute Live TV

Revised: April 4, 2012
OL-15762-04

- Concepts, page 26-1
- Procedures, page 26-2
- Reference, page 26-6

Audience

We prepared this material with specific expectations of you.

- You will use Cisco Cast to deliver live television feeds to presentation systems at high-bandwidth sites.

Concepts

- Guidelines, page 26-1
- Restrictions, page 26-2

Guidelines

- Site Assessment for Live Video Programming, page 26-1

Site Assessment for Live Video Programming

Organizations that use *Cisco Cast* tend to show live video programming at their sites with the greatest bandwidth capacity, such as their main site. Live video programming is not suitable for remote branch offices with low bandwidth capacity.

When you plan how many TV channels to configure, consider the actual bandwidth capacity in your WAN and at each remote site where you will use *Cisco Cast*. The typical rate of bandwidth consumption will be in the range from 2 Mbps to 16 Mbps per channel, per site.

Restrictions

- User Permissions Restrictions, page 26-2
- Channel Count Restrictions, page 26-2
- Codec Restrictions, page 26-2

User Permissions Restrictions

Note **Features of Cisco Cast are hidden from you until your user role assignment is APPLICATION MANAGER and you have explicit WRITE permissions** (CSCtr05337)**.**

Channel Count Restrictions

Features of this *Cisco Cast* release support 99 or fewer channels of live broadcast programming and VoD programming, combined.

Codec Restrictions

Any digital encoders that you use for live broadcast channels must adhere to the MPEG2-TS standard for streaming and must support at least one of these codecs:

- MPEG1
- MPEG2
- MPEG4/h.264 (supported on DMP 4400G endpoints only)

For this reason, we recommend that you use a Scientific Atlanta 9032SD encoder or 9050HD encoder to encode the video streams that your DMPs use for *Cisco Cast* channels.

Procedures

- Add Channels, page 26-3
- Edit Channels, page 26-3
- Reassign Channel Numbers, page 26-4
- Delete Channels, page 26-5
- List Only the Defined (Active) or Undefined (Inactive) TV Channels, page 26-5

Add Channels

You can define many attributes for a new TV channel in your lineup. Permitted channel assignments range from 1 to 99.

Procedure

Step 1 Click the **TV Channels** tab.

Step 2 In the Channel Number column, identify the channel to be defined and then, in the corresponding row, click **Set Up Channel** in the Actions column.

The Add a New Channel dialog box opens.

Step 3 Choose the options or enter the values that meet your requirements.

Step 4 Click **Add a Channel** to save your entries.

OR

Click **Cancel** to discard your entries.

Step 5 Stop. You have completed this procedure.

Related Topics

- Elements to Manage TV Channels, page 26-6

Edit Channels

Procedure

Step 1 Click the **TV Channels** tab.

Step 2 Notice where the Channel Number column intersects a row that describes the targeted channel

Step 3 Click the arrow ( ) in that row's Actions column

The Actions menu expands so that you can see and choose among its options.

Step 4 Click **Edit Channel Setting**.

The Edit an Existing Channel dialog box opens.

Step 5 Choose the options or enter the values that meet your requirements.

Step 6 Click **Update Channel** to save your entries.

OR

Click **Cancel** to discard your entries.

Step 7 Stop. You have completed this procedure.

Related Topics

- Elements to Manage TV Channels, page 26-6

Reassign Channel Numbers

Procedure

Step 1 Click the **TV Channels** tab.

Step 2 In the Channel Number column, identify the channel to be edited.

Step 3 Do one of the following.

- *Would you like to reassign this channel to the nearest unused number?*

  When you will use the nearest number

  a. Click the up ( ) arrow to associate this channel definition with whichever *lower-numbered* channel is nearest among the undefined channels.

  (The arrow points up because lower rows are reserved for lower-numbered channels.)

  OR

  Click the down ( ) arrow to associate this channel definition with whichever *higher-numbered* channel is nearest among the undefined channels.

  (The arrow points down because higher rows are reserved for higher-numbered channels).

  b. Proceed to Step 4.

- *Would you like to specify the number for this channel?*

  When you will choose a specific number

  a. Notice where the Channel Number column intersects a row that describes the targeted channel.

  b. Click the arrow ( ) in that row's Actions column.

  The Actions menu expands so that you can see and choose among its options.

  c. Click **Reassign to Any Unused Channel**.

  d. Choose from the list in the Actions column which channel number to assign to the targeted channel.

  e. Proceed to Step 4.

Step 4 Stop. You have completed this procedure.

Related Topics

- Elements to Manage TV Channels, page 26-6
- "Reassign to Nearest Unused Channel" (in Table 26-1 on page 26-7)

Delete Channels

Procedure

Step 1 Click the **TV Channels** tab.

Step 2 In the Channel Number column, identify the channel to be deleted; then, click the arrow ( ) in the Actions column for that row.

The Actions menu expands so that you can see and choose among its options.

Step 3 Click **Delete This Channel**.

The Delete Confirmation dialog box opens.

Step 4 Click **Yes** to delete the channel.

OR

Click **No** to retain the channel.

Step 5 Stop. You have completed this procedure.

Related Topics

- Elements to Manage TV Channels, page 26-6

List Only the Defined (Active) or Undefined (Inactive) TV Channels

You can filter the TV Channels table so that it describes defined channels only or undefined channels only. By default, the table describes all channels.

Procedure

Step 1 Click the **TV Channels** tab.

Step 2 From the Channel View list above the column headings, choose one option.

- All Channels (default)—Shows the combination of all defined and undefined channels.
- Active Channels—Shows only the defined channels.
- Inactive Channels—Shows only the channels that are not yet defined.

Step 3 Stop. You have completed this procedure.

Related Topics

- Elements to Manage TV Channels, page 26-6

Reference

- Software UI and Field Reference Tables, page 26-6

Software UI and Field Reference Tables

- Elements to Manage TV Channels, page 26-6

Elements to Manage TV Channels

Navigation Path

Cast > TV Channels

The TV Channels table describes the defined and undefined TV channels for your network and includes features that help you to manage these channels.

Table 26-1 Elements of the TV Channels Table

Element	Description
Channel View list	Enables or disables a filtered view of which channels this table describes, based on which option you choose: • **All Channels**—Shows the combination of all defined and undefined channels. • **Active Channels**—Shows only the defined channels. • **Inactive Channels**—Shows only the channels that are not yet defined.
Channel Number	One numeral per row, in the range from 1 to 99, where any numeral can be the TV channel number that you associate with a particular multicast stream. The default behavior for this table is that it shows all 99 possible channel numbers, one per row. Your choice from the Channel View list might limit how many rows the table contains, and this can affect indirectly how many channel numbers you see. When you sort the table by clicking a column heading, channel numbers might be rearranged temporarily into an unrecognizable sequence. To sort channels back into the expected sequence if their sequence has become unrecognizable, click the Channel Number column heading.
Channel Name	Blank when the corresponding row describes an undefined TV channel. Otherwise, shows a value that you entered or an option that you chose from a list when you defined the channel. To understand these values, see Table 26-2 on page 26-8.
Description	
Multicast Address: Port	
Call Letters for Channel	

Table 26-1 Elements of the TV Channels Table (continued)

Element	Description
Reassign to Nearest Unused Channel	Two buttons, either of which can change the association between a channel definition and a channel number. The channel definition in the corresponding row becomes associated instead with the closest channel (of a higher number or a lower number, respectively) that is undefined. These buttons have no effect when every channel is already defined. The first row and last row of this table will only ever show one of these buttons apiece. These rows differ from all other rows in the table because you cannot use any channel number that is lower than the lowest supported channel number or higher than the highest supported channel number. The first row shows only , while the last row shows only . • —Associates the channel definition that the corresponding row describes with whichever *lower-numbered* channel is nearest among the undefined channels. The arrow points up because table rows above this row are reserved for lower-numbered channels. • —Associates the channel definition that the corresponding row describes with whichever *higher-numbered* channel is nearest among the undefined channels. The arrow points down because table rows above this row are reserved for higher-numbered channels.
Actions	One of these: • **Set Up Channel**—Opens the dialog box where you can enter values and define attributes for a TV channel. This button is visible only in rows that describe undefined TV channels. • —A list from which you can choose one of the following options. This list is visible only in rows that describe defined TV channels. – **Edit Channel Settings**—Opens the dialog box where you can edit the values and attributes of a channel that is already defined. – **Reassign to Any Unused Channel**—Associates the channel definition that the corresponding row describes with whichever channel is nearest among the undefined channels. The new channel number might be higher or lower than whichever channel number was in effect until you changed it. – **Delete This Channel**—Deletes all entries and attribute values from the definition of the channel that the corresponding row describes. The relevant channel number will not be associated with any defined channel unless or until you define a new channel for it or associate an existing channel with it.

Related Topics

- Add Channels, page 26-3
- Edit Channels, page 26-3
- Reassign Channel Numbers, page 26-4

Elements to Define Channel Settings

Navigation Path

- Cast > TV Channels > Set Up Channel
- Cast > TV Channels > > Edit Channel Settings

Table 26-2 Elements for Channel Definition

Element	Description
Your Name for This Channel	A meaningful, brief, and unique description of the channel that the corresponding row describes, such as China Central Television, Univision, Al-Jazeera, BBC-1, Star Cricket, HBO, or CNN.
Address Type	The method (multicast or HTTP) that your DMPs will use to receive the video stream for this channel. Choose an option from the list to enter the correct kind of address. Your choice determines which other fields appear on this page. The options are: • Multicast Address—The routable IP address and UDP port for a streaming server, as described in the "Multicast Address: Port" row elsewhere in this table. • HTTP URL—The full HTTP URL for one video file of a supported type, as described in the "HTTP URL" row elsewhere in this table.
Multicast Address: Port	The IP address and port number of the streaming server from which your DMPs will receive the multicast stream for this channel. You must specify the port number. This field is visible only after you choose Multicast Address from the Address Type list. Later, if you choose any other option from the Address Type list, *Cisco Cast* will ignore the values in this field.
HTTP URL	The exact URL and path that points to one MPEG video file on an HTTP server. You must use HTTP as the protocol and the filename extension must be MPG. This field is visible only after you choose HTTP URL from the Address Type list.
Text to Show if Program Guide is Not Available	Text that describes this channel. The electronic program guide (EPG) shows this text when no other information is available. When the EPG uses this text, it does not describe individual programs for this channel.
EPG Provider	Associates or disassociates this channel with one EPG data source and specifies the nature of that source if you associate one with this channel. You can choose whether to use any data source. The options are similar to these: • **TMS**—Your EPG will use data from Tribune Media Services to describe this channel and its programs. • **<*XMLTV*>**—Your EPG will use data in the XMLTV format to describe this channel and its programs. • **Upload CSV**—Your EPG will use data from a CSV file to describe this channel and its programs. • **None**—Your EPG will use a brief, generic statement to describe this channel and its programs. **Note** **EPG data is not required for Cisco Cast to work.** You can use options at Cast > Skins Customization to enable or disable the EPG. You are not required to subscribe to any EPG data service.
CSV File (Browse)	The method to find and select a CSV file that you have stored locally and will upload to your DMM appliance.
Download the CSV Template	A downloadable template file in Microsoft Excel format that you can use to define the EPG attributes for programs on one channel. This link is visible only when you have chosen Upload CSV from the EPG Provider list.

Table 26-2 Elements for Channel Definition (continued)

Element	Description
Call Letters for Channel	A list of call letters for TV channels that your EPG subscription includes. The list is variable according to your location in the United States, the package of channels that you receive from your cable or satellite TV provider, the nature of your contract with TMS, and possibly other factors. Your list might include some or all of these call letters, possibly among others: • ABC—American Broadcasting Company • AZA—Azteca América • CBC—Canadian Broadcasting Corporation • CBS—CBS Broadcasting • CW—The CW Television Network • FOX—Fox Broadcasting Company • MNT—MyNetworkTV • NBC—National Broadcasting Company • PAX—ION Television • PBS—Public Broadcasting Service • SRC—SRC • TEL—Telemundo • TLF—TeleFutura • TQS—Télévision Quatre Saisons • TVA—Tele Vida Abundante • UNI—Univision This list is visible only after you choose Tribune Media Services from the EPG Provider list.

Related Topics

- Generic Channel Descriptions, page 28-4
- Channel Descriptions from a CSV File, page 28-4
- Channel Descriptions from a Data Subscription, page 28-4
- Add or Edit Subscriptions to Data from an EPG Provider, page 28-5

CHAPTER 27

Video on Demand

Revised: April 4, 2012
OL-15762-04

- Concepts, page 27-1
- Procedures, page 27-2
- Reference, page 27-7

Audience

We prepared this material with specific expectations of you.

- You will make prerecorded video assets available for playback on demand through IPTV services to your presentation systems.

Concepts

- Overview, page 27-1
- Guidelines, page 27-1
- Restrictions, page 27-2

Overview

Categories help you to manage how VoDs are organized within the interactive menu system at sites where you deploy *Cisco Cast*.

Guidelines

- Site Assessment for VoD Programming, page 27-1

Site Assessment for VoD Programming

Remote branch offices are better suited to VoD programming than they are to live video programming. Common use cases for VoD programming include training and executive communications.

We recommend that you use a content delivery system to provision the assets for your VoD programming, particularly if your remote sites have low bandwidth capacity.

Restrictions

- User Permissions Restrictions, page 27-2
- Channel Count Restrictions, page 27-2

User Permissions Restrictions

Note **Features of Cisco Cast are hidden from you until your user role assignment is APPLICATION MANAGER and you have explicit WRITE permissions** (CSCtr05337).

Channel Count Restrictions

Features of this *Cisco Cast* release support 99 or fewer channels of live broadcast programming and VoD programming, combined.

Workflow to Stage VoD Assets to DMP Local Storage

You can stage *Cisco Cast* assets directly to a DMP, for local storage on:

- Its internal SD flash memory card (*usb_1*).
- An external USB drive (*usb_2*).

This technique conserves WAN bandwidth and avoids latency that might detract from the quality of your *Cisco Cast* VoD programming. It is useful also if you do not have any dedicated content delivery solution in place.

1. Create the DMP group whose member DMPs should store VoD assets.
2. Define the channel lineup.
3. Customize the menu system.
4. Define VoD categories.
5. Add video assets to the media library.
6. Populate VoD categories with video assets from the media library.
7. Verify that the FTP service is enabled on target DMPs.
8. Create a DMS-CD deployment package for the EPG.
9. Stage your EPG to DMPs that should serve VoDs from local storage.
10. Transfer your customized menu system, channels list, VoD playlist, and video assets to DMPs.
11. Monitor progress and the current status of your deployment.

Procedures

- Add a New VoD Category, page 27-3
- Add a New VoD Subcategory, page 27-3

- Edit a VoD Category, page 27-4
- Delete a VoD Category, page 27-4
- Map a Video to a VoD Category, page 27-5

Add a New VoD Category

Procedure

Step 1 Choose **Video on Demand > Categories**.

The Categories area is on the left, and after you click a category, a table on the right describes the videos that are mapped to that category.

Step 2 Click **Actions > Create a Category**.

Step 3 Enter a descriptive name for the category.

Step 4 Click **Save**.

OR

Click **Cancel** to discard your work.

Step 5 Stop. You have completed this procedure.

Related Topics

- Elements to Manage VoD Categories, page 27-7

Add a New VoD Subcategory

Procedure

Step 1 Choose **Video on Demand > Categories**.

The Categories area is on the left, and after you click a category, a table on the right describes the videos that are mapped to that category.

Step 2 Click the category that should contain the subcategory.

Step 3 Choose **Actions > Create a Category**.

Step 4 Enter a descriptive name for the subcategory.

Step 5 Click **Save**.

OR

Click **Cancel** to discard your work.

Step 6 Stop. You have completed this procedure.

Related Topics

- Elements to Manage VoD Categories, page 27-7

Edit a VoD Category

Procedure

Step 1 Choose **Video on Demand > Categories**.

The Categories area is on the left, and after you click a category, a table on the right describes the videos that are mapped to that category.

Step 2 Click the name of the category to be edited.

Step 3 Choose **Actions > Modify Category**.

Step 4 Edit the values.

Step 5 Click **Save**.

OR

Click **Cancel** to discard your work.

Step 6 Stop. You have completed this procedure.

Related Topics

- Elements to Manage VoD Categories, page 27-7

Delete a VoD Category

Procedure

Step 1 Choose **Video on Demand > Categories**.

The Categories area is on the left, and after you click a category, a table on the right describes the videos that are mapped to that category.

Step 2 Click the name of the category that you want to delete.

Step 3 Click **Actions > Delete Category**.

The Delete Confirmation dialog box opens.

Step 4 Click **Yes** to delete the category.

OR

Click **No** to retain it.

Step 5 Stop. You have completed this procedure.

Related Topics

- Elements to Manage VoD Categories, page 27-7

Map a Video to a VoD Category

Each video that you map to a category will be listed as a VoD in the interactive menu system at sites where you deploy *Cisco Cast*.

Before You Begin

- Add the video to your shared Media Library for digital signage and *Cisco Cast*.
- Create the category. See Add a New VoD Category, page 27-3.

Procedure

Step 1 Click the **Video on Demand** tab.

Step 2 In the Categories area, click the name of the category to which you will add a video.

Step 3 In the area that lists videos, click **Map Videos to Category**.

The VoD Mapping dialog box opens. A tree on the left shows the hierarchy of categories for assets in your shared Media Library and, after you click a category, an untitled table on the right describes each asset in that category.

Step 4 Click the Media Library category that contains the video that you want to use as a VoD.

The videos in this category are described in the untitled table on the right.

Step 5 Click the name of the video, and then drag and drop it to the area below.

Tip **To choose more than one video, hold down the Shift key while you click each name.**

Step 6 Click **Submit Mapping** to add the video.

The category that you chose is now part of the categories tree on the Video on Demand page. Later, whenever you choose this category in the tree, an untitled table on the left side of the page will describe each video that you added to it as a VoD.

OR

Click **Cancel** to discard your entries.

Step 7 Stop. You have completed this procedure.

Organize Videos in VoD Categories

When you organize the videos in a VoD category, you set the order in which *Cisco Cast* plays the videos at your deployment sites.

Procedure

Step 1 Click the **Video on Demand** tab.

Step 2 In the Categories area, click the name of the category that includes the videos to be organized.

The videos in this category are described in the untitled table on the right.

Step 3 Click the name of the video; then, drag and drop it to its new location in the list.

Videos that are higher in the list will be shown before videos that are lower in the list.

Step 4 Stop. You have completed this procedure.

Remove a Video from a Category

When you remove a video from a category on the Video on Demand page, you remove it also from the interactive menu system at sites where you deploy *Cisco Cast*.

Procedure

Step 1 Click the **Video on Demand** tab.

Step 2 In the area that lists videos, click **Map Videos to Category**.

The VoD Mapping dialog box opens.

Step 3 Click the **Remove** link that corresponds to a video that should be removed.

Step 4 Stop. You have completed this procedure.

Stage an EPG to DMP Local Storage

Procedure

Step 1 Choose **Digital Media Players > Advanced Tasks**.

Step 2 Choose **Deployment Package** from the Application Types list.

Step 3 Click **Add New Application**.

Step 4 Choose **Cast** from the Applications list.

Step 5 Enter **Deploy-Local-Cast** in the Name field.

Step 6 Choose an option from the Mount Point list.

• *Should "usb_1"[1] be the local mount point?*	**When you will use usb_1** Choose **Flash Storage (default)**.
• *Should "usb_2"[2] be the local mount point?*	**When you will use usb_2** Choose **USB**.

1. "usb_1" is the CF, SD, or SSD memory card inside your DMP.
2. "usb_2" is an external hard drive or flash drive that you have attached to your DMP.

Step 7 Click the name of your *Cisco Cast* program guide, and then click **Select Application**.

Step 8 Click **Submit**.

Step 9 Stop. You have completed this procedure.

Reference

- Software UI and Field Reference Tables, page 27-7

Software UI and Field Reference Tables

- Elements to Manage VoD Categories, page 27-7

Elements to Manage VoD Categories

Navigation Path

Cast > Video on Demand > Categories

Table 27-1 Elements for Managing VoD Categories

Element	Description
Categories selector	A hierarchical tree (an object selector) of VoD categories. Highlight the name of a category to designate it as the one that should contain a VoD that you will map to it.
Actions	Options that you can choose, whose effect is relative to the category that you chose. • Create a Category • Modify Category • Delete Category

Table 27-1 Elements for Managing VoD Categories (continued)

Element	Description
untitled table	Each row describes one VoD asset that is mapped to a category for *Cisco Cast*. Asset attributes that these columns describe are derived from records in your media library: • Title • Description • Duration • Source
Map Videos to Category	Opens a dialog box in which you can choose the videos to be mapped.

CHAPTER 28

Electronic Program Guide

Revised: April 4, 2012
OL-15762-04

- Concepts, page 28-1
- Procedures, page 28-5
- Reference, page 28-7

Audience

We prepared this material with specific expectations of you.

- You will configure and populate the channel and program listings for IPTV services to your presentation systems.

Concepts

- Overview, page 28-1
- Guidelines, page 28-2
- Restrictions, page 28-2
- Understand EPG Data Formats, page 28-2
- Understand Methods to Describe EPG Channels, page 28-4

Overview

Electronic program guide (EPG) data is not required for *Cisco Cast* to work. You can enable or disable the EPG for Cisco DMS. You are not required to subscribe to any EPG data service.

Tip

To have and use an EPG without entering into a subscription contract, you can create and upload a CSV file that contains program descriptions that you have entered.

Guidelines

Note **When you negotiate a subscription contract to receive EPG data in any format, tell your data provider that you will use its EPG data with Cisco Cast.** Knowing this, your provider can ensure that your license grants you sufficient permissions so that you are not in violation of its terms.

Restrictions

- User Permissions Restrictions, page 28-2

User Permissions Restrictions

Note **Features of Cisco Cast are hidden from you until your user role assignment is APPLICATION MANAGER and you have explicit WRITE permissions** (CSCtr05337).

Understand EPG Data Formats

We support the XMLTV and TMS data formats for subscriptions to electronic program guide (EPG) data.

- XMLTV, page 28-2
- Tribune Media Services, page 28-3

XMLTV

XMLTV is an emerging, open-source format for EPG data, based in part on RFC 2838 and maintained by the XMLTV Project. An EPG data file that complies with this format contains structured records that describe the attributes of episodes and channels individually.

Cisco DMS supports EPG data subscriptions that retrieve a single GZIP-compressed XMLTV file from an ftp server. Many subscription providers compile and deliver EPG data in this way, including these providers based in the United States:

- FYI Television, Inc. (http://www.fyitelevision.com/)
  1901 N State Hwy 360 3rd Floor
  Grand Prairie, TX 75050
- Schedules Direct (http://www.schedulesdirect.org/)
  8613 42nd Ave S
  Seattle, WA 98118

Tribune Media Services

Tribune Media Services (TMS; http://tms.tribune.com/products/k-epgs.html) sells subscriptions to EPG data in several proprietary data formats that it controls. Cisco DMS supports *only one* of these data formats. Specifically:

- The name of the supported product is *TV Schedules, United States*.
- The scope of the supported product is *Fourteen (14) rolling days*.
- Subscriptions that use this format are available only within the United States.

Other EPG subscription products from TMS use data formats that we do not support. If you are already a TMS customer, check whether your preexisting subscription contract already authorizes you to obtain and use EPG data in the supported format.

Note

- **To learn more about the supported TMS data format or to negotiate the commercial contract for a subscription, contact Amy Mann, the director of new media sales at Tribune Media Services.** Her toll-free telephone number is 800 833-9581, ext. 2333, and her email address is aamann@tribune.com. To ensure that your contract includes sufficient permissions, be sure to say that you intend to use TMS data for Cisco Cast.
- It might be necessary to adjust security settings in your network so that you can receive EPG data from TMS. The ftp server on your DMM appliance must be able to reach the TMS ftp server.
- Data from TMS is proprietary, copyrighted, and licensed. Although TMS compiles this licensed data in good faith, neither Cisco nor TMS makes any express or implied warranties regarding the data or its merchantability or fitness for any purpose.

Understand Methods to Describe EPG Channels

Generic Channel Descriptions

You can disassociate a channel from all EPG data sources.

In this case, the only information that an EPG will show about the channel is exactly the text that you enter in the Text to Show if Program Guide is Not Available field. This brief message, which you enter one time, describes the channel in a broad and general sense, and straddles all time slots.

Channel Descriptions from a CSV File

You can enter descriptions into a CSV file for each program that a channel will show.

With this method, you can have and use an EPG without entering into a subscription contract. To populate an EPG completely, you must create and upload a separate CSV file for every channel that your EPG should include. EPG provider-related prerequisites do not apply if your channel will use programming data from a CSV file.

There are strict requirements for what constitutes a valid CSV file. It must use syntax and formatting that are perfectly consistent with output from a downloadable Microsoft Excel format template that we provide for your use. We strongly recommend that you derive your CSV files from the free template. Click **Download the CSV Template** to obtain a copy of the template, and start using it to define the EPG attributes for programs on one channel. You can define the attributes for only a few programs or for as many as 14 days of programs.

Populate fields in the template as follows, where each table row contains the attributes for one program in the EPG for the corresponding TV channel.

- **Date**—The date and time of day when one described program will start. Start times for programs in your CSV file must use the format **MM/DD/YY HH:mm**.
- **Duration**—The total running time for the described program. Duration values for programs must use numerals, which indicate the total duration in minutes.
- **Title**—The title that the program guide should show for the described program. Program titles are limited to a maximum of 23 characters. When the text to be displayed in a program title should show any visible quotation marks, you must enter exactly **\"** for each quotation mark that should be visible.
- **Description**—The actual description that the program guide should show for the program. Descriptions are limited to a maximum of 50 characters. When the text to be displayed in your program guide should show any visible quotation marks, you must enter exactly **\"** for each quotation mark that should be visible.

Define the attributes for programs on one channel, and then save and upload your CSV file.

Channel Descriptions from a Data Subscription

You can negotiate with a vendor of programming data to establish a paid subscription, by which you will gain automatic access to current program schedules and descriptions for multiple channels. Before your channel can use any EPG data from a subscription provider, you must enter your subscription details and synchronize data on the EPG Providers tab. Then, you must configure the channel on the TV Channels tab. The supported data formats are:

- **TMS**—Your EPG will use Tribune Media Services data to describe the channel and its programs.
- **<*XMLTV*>**—Your EPG will use data in the XMLTV format to describe the channel and its programs. The provider name here is not necessarily “XMLTV.” Instead, it matches exactly what you entered for the provider name when you configured your subscription settings, assuming that you have an XMLTV data subscription.

Related Topics

- Add Channels, page 26-3

Procedures

- Add or Edit Subscriptions to Data from an EPG Provider, page 28-5
- Delete Settings That Define a Subscription, page 28-6
- Synchronize EPG Channel Schedules and Program Descriptions, page 28-6

Add or Edit Subscriptions to Data from an EPG Provider

You use elements on the EPG Providers page to define the settings for your EPG data subscriptions, view a summary of all subscriptions that you have defined and, optionally, choose whether to edit, delete, or synchronize a subscription.

Procedure

Step 1 Click the **EPG Providers** tab.

Step 2 Do one of the following:

- To define the settings for a new subscription, click **Add an EPG Provider**.
- To edit a subscription that you defined previously:
  a. In the EPG Provider Name column, identify the subscription to be edited; then, click the corresponding arrow ( ) in the Actions column.

     The Actions menu expands so that you can see and choose among its options.
  b. Click **Edit**.

A dialog box opens, in which you can define or edit the attributes for this subscription.

Step 3 Choose the options or enter the values that meet your requirements, as described in Table 28-1 on page 28-7.

Step 4 Do one of the following:

- To save your entries, do one of the following:
  - If you are defining a new subscription, click **Add Provider**.
  - If you are editing a subscription that you defined previously, click **Update Provider**.
- To discard your entries, click **Cancel**.

Step 5 Stop. You have completed this procedure.

What to Do Next

- *Would you like to associate a subscription with a channel?*
  Proceed to the "Add Channels" section on page 26-3.

Delete Settings That Define a Subscription

Procedure

Step 1 Click the **EPG Providers** tab.

Step 2 In the EPG Provider Name column, identify the subscription to be deleted; then, click the corresponding arrow ( ) in the Actions column.

The Actions menu expands so that you can see and choose among its options.

Step 3 Click **Delete**.

Step 4 Click **Yes** to delete the subscription.

OR

Click **No** to retain the subscription**.**

Step 5 Stop. You have completed this procedure.

Synchronize EPG Channel Schedules and Program Descriptions

Procedure

Step 1 Click the **EPG Providers** tab.

Step 2 Examine entries in the EPG Provider Name column.

a. Identify the subscription whose TV channel schedules and program descriptions should be synchronized to your EPG.

b. Click the corresponding arrow ( ) in the Actions column.

The Actions menu expands so that you can see and choose among its options.

Step 3 Click **Synchronize**.

The Performing EPG Synchronization dialog box opens. It shows a progress indicator ( ) that spins until synchronization has finished. This dialog box closes itself automatically upon completion, unless you dismiss it manually before that.

Step 4 (**Optional**) *Would you like to dismiss the dialog box?* If so, click **Run in Background.**

Synchronization finishes in the background so that you can continue your work.

Step 5 Stop. You have completed this procedure.

Reference

- Software UI and Field Reference Tables, page 28-7
- FAQs and Troubleshooting, page 28-8

Software UI and Field Reference Tables

- Elements to Define EPG Provider Settings, page 28-7

Elements to Define EPG Provider Settings

Table 28-1 Elements for Defining EPG Subscription Settings

Element	Description
Provider Name	The name that you use to distinguish this provider from all other providers.
Data Format	The file format for your subscription data, after you download and decompress it. One of these: • Tribune Media Services - TV Schedules • XMLTV
Host or IP Address	The routable IP address or DMS-resolvable hostname of the ftp server where you obtain EPG data from your subscription provider.
Username	Your username to log in to the specified ftp server.
Password	The password to authenticate your username to the specified ftp server.
Remote Path	The ftp server subdirectory path where EPG data files are stored for your subscription. Enter the full pathname, including the actual filename for the .gz (gzipped) archive, if the data format is XMLTV. For example, you might enter *pub/xmltv.xml.gz*.
Proxy Settings (Optional)	
Proxy Hostname Proxy Port	The routable IP address or DNS-resolvable hostname and port number of the proxy server that your DMM appliance should use if it does not have direct Internet access. **Note Do not enter a colon before the port number.** **Note Do not configure proxy settings for DMM appliances that have direct access to the Internet.**
Automatic Synchronization Time	
Hour Minute	The exact time of day when your DMM appliance should synchronize its program guides for *Cisco Cast* with the latest available EPG data from your service provider.

FAQs and Troubleshooting

- Troubleshoot EPG Highlighting, page 28-8

Troubleshoot EPG Highlighting

A DMP 4310G does not always render yellow highlighting correctly in the electronic program guide (EPG) listings for Cisco Cast.

As you navigate through EPG program listings, yellow highlights on screen should always indicate which listing is the current focus of your navigation. However, this highlighting can become offset from your true focus. Before the EPG reaches this state, all of the following must be true simultaneously.

- A DMP 4310G controls the digital sign that shows your EPG.
- Your EPG navigation focus reaches to the outermost edge of your navigable EPG—whether top, bottom, left, or right.
- You use an arrow button or other control that is not valid for your current focus.
- The reason this control is not valid in this context is that it would move focus beyond the outermost edge.

To recover from this state, press any valid button. Alternatively, double-press the same arrow button or other control that you previously invoked in error. The yellow highlight is then restored to your true focus.

CHAPTER 29

Look and Feel

Revised: April 4, 2012
OL-15762-04

- Concepts, page 29-1
- Procedures, page 29-2

Audience

We prepared this material with specific expectations of you.

- You will define and apply a "skin" to your IPTV menus.

Concepts

- Overview, page 29-1
- Restrictions, page 29-1

Overview

You can customize the interactive menu system that is presented to viewers at your deployment sites and choose which features this menu should include.

Restrictions

- User Permissions Restrictions, page 29-1

User Permissions Restrictions

Note **Features of Cisco Cast are hidden from you until your user role assignment is APPLICATION MANAGER and you have explicit WRITE permissions** (CSCtr05337).

Procedures

- Choose the Color Scheme for Your Menu System, page 29-2
- Specify Which Features Your Menu System Should Include, page 29-2
- Show a Custom Logo in Your Menu System, page 29-3
- Show the Cisco Logo in Your Menu System, page 29-4
- Choose the Date and Time Formats for Your Menu System, page 29-4
- Deploy Menu System Customizations to Your DMPs, page 29-5

Choose the Color Scheme for Your Menu System

Procedure

Step 1 Click the **Skin Customization** tab.

Step 2 In the Choose a Skin area, click the radio button for the color scheme that you want.

Step 3 Click **Save** to save your work.

OR

Click **Cancel** to discard your work.

Tip **Menu customizations do not take effect until you deploy them to DMPs.**

Step 4 Stop. You have completed this procedure.

Related Topics

- Deploy Menu System Customizations to Your DMPs, page 29-5

Specify Which Features Your Menu System Should Include

Procedure

Step 1 Click the **Skin Customization** tab.

Step 2 In the Features to Include in the Cisco Cast Main Menu area, check the check box for each feature that the menu system should include:

- Electronic Programming Guide
- Video on Demand
- Live TV Channels

Step 3 Click **Save** to save your work.

OR

Click **Cancel** to discard it

Tip **Menu customizations do not take effect until you deploy them to DMPs.**

Step 4 Stop. You have completed this procedure.

Related Topics

- Deploy Menu System Customizations to Your DMPs, page 29-5

Show a Custom Logo in Your Menu System

Procedure

Step 1 Click the **Skin Customization** tab.

Step 2 In the Upload a Custom Logo area, click **Browse**.

Step 3 Choose the file to be uploaded, and then click **Open**.

Step 4 Click **Preview** to view the logo file.

Step 5 Check the **Display Custom Logo** check box.

The logo appears in the upper right of the menu system.

Step 6 Click **Save** to save your work.

OR

Click **Cancel** to discard it

Tip **Menu customizations do not take effect until you deploy them to DMPs.**

Step 7 Stop. You have completed this procedure.

Related Topics

- Deploy Menu System Customizations to Your DMPs, page 29-5

Show the Cisco Logo in Your Menu System

Procedure

Step 1 Click the **Skin Customization** tab.

Step 2 Check the **Display Cisco Logo** check box.

The logo appears in the lower left of the menu system.

Step 3 Click **Save** to save your work.

OR

Click **Cancel** to discard your work.

Tip **Menu customizations do not take effect until you deploy them to DMPs.**

Step 4 Stop. You have completed this procedure.

Related Topics

- Deploy Menu System Customizations to Your DMPs, page 29-5

Choose the Date and Time Formats for Your Menu System

Procedure

Step 1 Click the **Skin Customization** tab.

Step 2 Choose either **mm/dd/yyyy** or **yyyy/mm/dd** from the Date Format list.

- mm is the month
- dd is the date in the month
- yyyy is the year

Step 3 Check the **Use Military Time** check box when your menu system should use a 24-hour clock that counts from 00:00 to 23:59 the hours that pass from one midnight to the next.

OR

Uncheck this check box when your menu system should use a 12-hour clock that counts from 12:00 to 11:59 the hours that pass from midnight to noon (designated as *a.m.*), and again from noon to midnight (designated as *p.m.*).

Step 4 Click **Save** to save your work.

OR

Click **Cancel** to discard it

Tip **Menu customizations do not take effect until you deploy them to DMPs.**

Step 5 Stop. You have completed this procedure.

Related Topics

- Deploy Menu System Customizations to Your DMPs, page 29-5

Deploy Menu System Customizations to Your DMPs

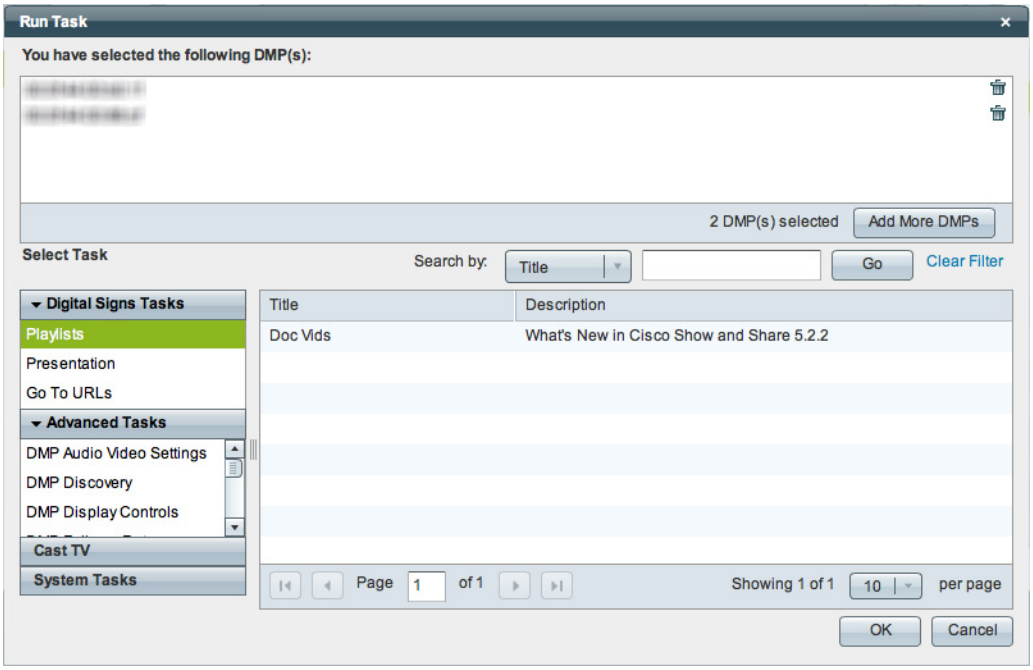
Procedure

Step 1 Choose **Digital Media Players > DMP Manager**.

Step 2 Use check boxes in the table to mark DMPs that should use this menu skin.

Step 3 Click **Run Task**.

The Run Task dialog box opens.

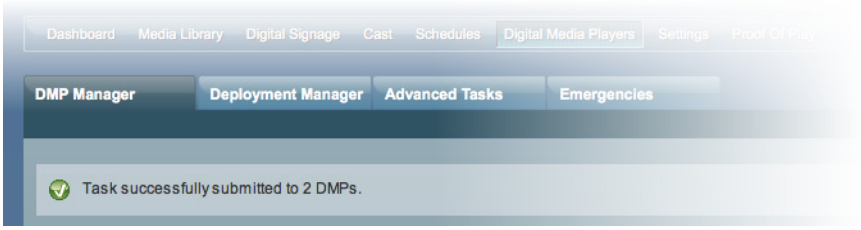


- Use options in the top pane to add DMPs to, or remove them from, your menu skin deployment.
- Use the Search function above the table to locate your **Cast-PG** task in particular.

Step 4 Click to highlight your **Cast-PG** task.

Step 5 Click **OK**.

The Run Task dialog box closes and a message tells you that your selected task was deployed.



- DMM transfers assets to your DMPs.
- DMM creates as many Go-to URL entries as the number of presentations and playlists that are part of the deployment.

Step 6 Stop. You have completed this procedure.