C H A P T E R 19

Media Assets and Embedded Software

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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

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

- 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

- 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.

■ **Concepts**

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

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

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

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.