



StadiumVision



Cisco StadiumVision Content Creation Design and Specification Guide for the Cisco DMP 4310G

Release 3.1

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Table of Contents

About this Guide	5
Related Documentation	5
Document History	5
Chapter 1 Screen Template Specifications	6
Default Screen Templates	6
Template Resolutions.....	7
Full Screen Template.....	7
3-Region L-Wrapper Template	8
Custom Screen Templates	10
Rules for Custom Screen Templates.....	10
Recommended Video Walls (2x3).....	11
Pre and Post-Game Example:	12
In-Game Example:	12
Overlay Screen Templates	12
General Rules for All Screen Templates	13
Chapter 2 Content Rules and Specifications	14
Content Dimensions	14
Video Formats	14
Video from the Headend.....	14
Static Graphic Formats	16
Rules for Static Graphics	16
Flash Content	16
Rules for Flash Content	17
Event States and Event Scripts	17
Rules for Event States and Event Scripts.....	17
Groups and Zones	18
Rules for Groups and Zones.....	19
Playlists.....	19
Rules for Creating Playlists.....	20
RSS Tickers and Other External Data Integration	21
Graphic Specifications for Local TV Control and Commerce Integration	22
TV Channel Guide Content Formats	22

Cisco Unified IP Phone Channel Icons.....	23
Cisco Unified IP Phone Services Image.....	23
Cisco Unified IP Phone Background Image	24
Luxury Suite Welcome Screen Graphics.....	26

About this Guide

This document serves as the master reference guide for creating content for the Cisco StadiumVision solution. It is intended for Cisco StadiumVision technical marketing engineers, product managers and the creative services delivery team to help customers prepare the graphics and content they want to deploy with Cisco StadiumVision.

Related Documentation

- *Cisco StadiumVision Director External Content Integration Guide*
- *Cisco StadiumVision Headend Design and Implementation Guide*
- *Cisco StadiumVision Local Control Areas Design and Implementation Guide*
- *Cisco StadiumVision Video Endpoint (DMP) Design and Implementation Guide*

Document History

Table 1. Revision History

Date	Description
October 23, 2013	Added note about DMP synchronization to the "Rules for Creating Playlists" topic.
June 18, 2013	The following changes were made: <ul style="list-style-type: none">• Added guidelines for video walls and the Cisco IP Phone 9971.• Other updates, such as support for mixed media playlists.
April 20, 2013	First publication for Cisco StadiumVision Director Release 3.1.

Chapter 1 Screen Template Specifications

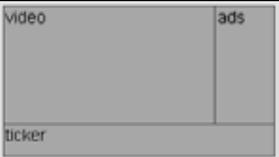
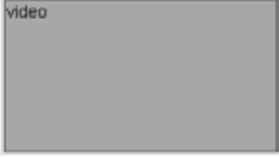
This chapter defines the screen templates supported for Cisco StadiumVision Director Release 3.1.

Default Screen Templates

Cisco StadiumVision Director includes default screen templates to make it easy to create event scripts. The dimensions for the default screen templates are fixed and cannot be changed. However, you can create custom screen templates where you specify different sizes for the screen template regions, and overlay screen templates where you have a non-video region overlapping a video region.

[Table 2](#) defines the default screen templates that come with Cisco StadiumVision Director.

Table 2. Default Screen Templates

Template Name	Content Type	Cisco DMP 4310G	Region Layout
3-REGION Lwrapper	Displays live video footage in Region 1, a playlist of advertisements in Region 2, and a ticker with scores or news in Region 3. Also referred to as an “L-wrapper.”	Video: 1500 x 844 Ads: 420 x 844 Ticker: 1920 x 236	
FULL SCREEN Video	Displays full-screen video.	Video: 1920 x 1080	
FULL SCREEN Graphic	Displays full-screen graphics.	Video: 1920 x 1080	

Template Resolutions

The default Cisco StadiumVision Director screen template size is 1920 x 1080.

Full Screen Template

The full screen template that comes with Cisco StadiumVision Director is used to display full-screen video or full-screen graphics. [Figure 1](#) shows an example of a graphic in the full screen template. This is a fixed screen template and cannot be customized.

Figure 1. Full Screen Template



Table 3. Full Screen Template dimensions

Content Type	Cisco DMP 4310G
Region 1: video	Region 1 : 1920x1080
Full screen Graphic	1920 x1080

3-Region L-Wrapper Template

[Figure 2](#) shows an example of the content for the 3-Region L-wrapper template that comes with Cisco StadiumVision Director. This is a fixed screen template and cannot be customized.

Figure 2. L-Wrapper with a single height ticker screen template

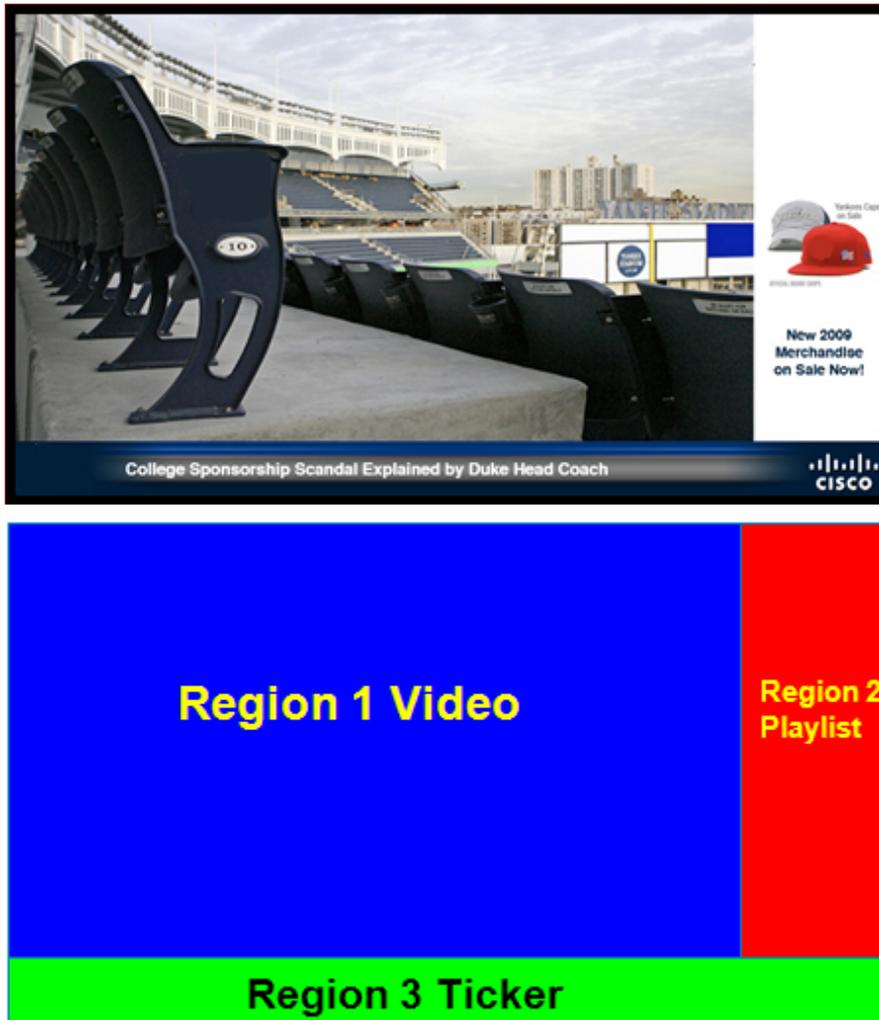


Table 4. **L-wrapper with single-height ticker region dimensions**

Content Type	Cisco DMP 4310G
Region 1: video	Region 1 : 1624 x 914
Region 2: non-video	Region 2: 296 x 914
Region 3: non-video	Region 3: 1920 x 166

[Table 5](#) lists the characteristics of the L-wrapper screen template.

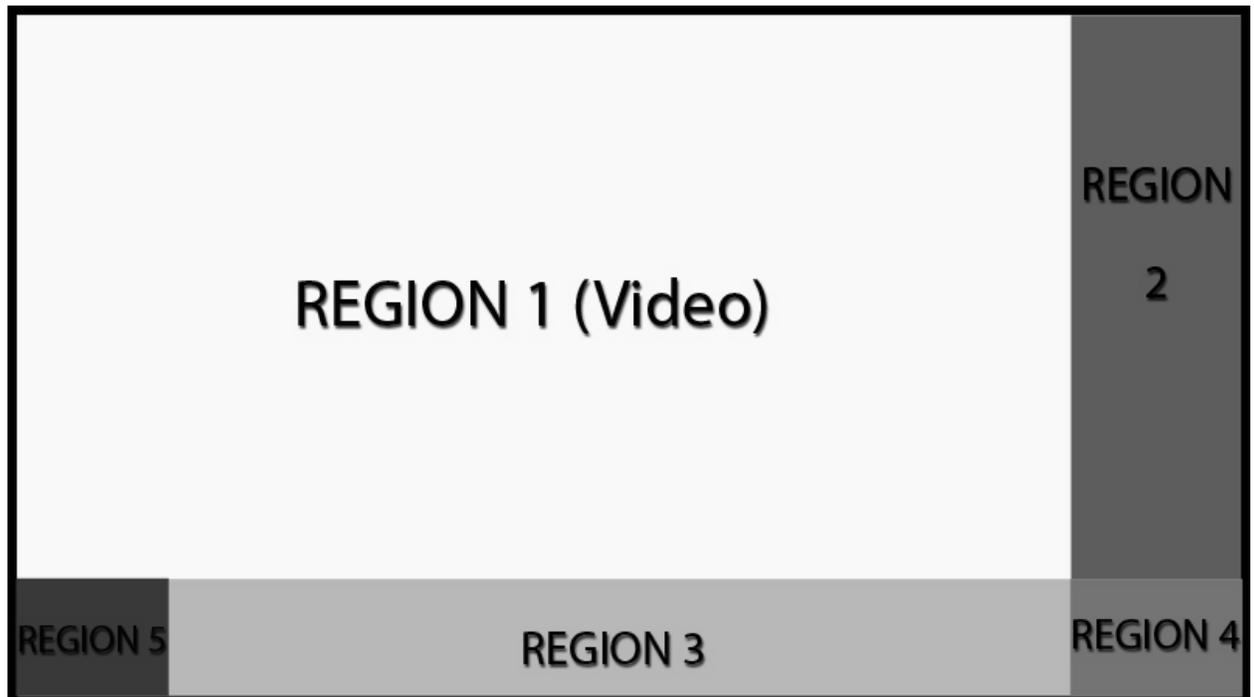
Table 5. **Video with L-wrapper screen template characteristics**

Region	Description
Region 1	<ul style="list-style-type: none"> • 16 X 9 aspect ratio. • Supports live video broadcasts in MPEG-4 and MPEG-2. For more details on video formats, refer to the Cisco StadiumVision Video Headend Design and Implementation Guide.
Region 2	<ul style="list-style-type: none"> • Supports playlists of advertisements. • Due to the small dimensions of region 2, use graphic-intensive ads rather than copy-intensive ads in this region.
Region 3	<ul style="list-style-type: none"> • Designed for displaying a graphic and/or information in the form of a ticker. • The ticker content can be from a compatible RSS feed approved by the stadium. • The ticker region can be customized with the stadium logo (with the ticker content playing in the remaining space).

Custom Screen Templates

Cisco StadiumVision Director starting with 2.4 supports custom screen templates, allowing you to change the size and arrangements of the regions on the screen to fit the sponsor/venue needs. Refer to [Figure 3](#).

Figure 3. Custom template



Rules for Custom Screen Templates

- You can have only one video region (always Region 1).
- For the Cisco DMP 4310G, the sum of the regions should not exceed 1920 x 1080, unless you are using overlay, in which case you could have two regions that are both 1920 x 1080.
- Up to five regions are supported for each screen layout (for example, a 5-region screen layout). A variable number is supported, but more than 5 will cause degradation.

- When creating custom templates, avoid the following:
 - Multiple video regions.
 - Overlapping regions (unless you are using overlay).
 - Too many regions (causes performance problems).

Recommended Video Walls (2x3)

The recommended video wall configuration is 2x3. Two screens high, and three screens wide. You will use two Full screen templates one for the 2x2 portion and one for the 1x2 portion. This will allow the most options to support the game feed, sponsor and team messaging and to supply a compelling fan experience. You will need video wall displays that have “Thin” or “Micro” bezels and that support the tile matrix feature. This will allow you to drive the entire wall with only 2 DMP’s.

The 2x2 Portion of the Wall

The first four screens will be driven by one DMP in the upper left and using the tile matrix feature you can assigned each screen to a quadrant of the image. Once these are assigned any 1920x1080 video that is played through the DMP will be displayed across all four screens as one seamless image. The game or event feed will drop right in and play in this area and any HD video that is 1920x1080 can also play here including sponsor commercials, team messaging, etc.

The 1x2 Portion of the wall

These screens are set-up the same way with the main DMP in the upper left and the displays in tile matrix set to display the appropriate content. Here the DMP will play the video as a full 1920x1080 display but since there is only 2 screens you will only be showing one half of a 1920x1080 video. Create content the normal way but only using the left half of the video since the right half will not be displayed.

- In Pre and Post Game time frames teams use the 2x2 portion of the video wall to display sponsor messaging and the 1x2 to display team and venue messaging.
- The In- Game timeframes teams use the 2x2 portion of the video wall to display game feed and the 1x2 to display sponsor messaging.
- Now all screens on the video wall can display full motion video or graphics.
- Teams sell these as a large digital billboard that has high impact.

Pre and Post-Game Example:



In-Game Example:



Overlay Screen Templates

The Cisco DMP 4310G supports graphics with transparency/opacity allowing a non-video region to overlap a video region. This overlay feature can be full-screen or assigned to any region. Using the overlay feature you can display:

- A full-screen video region with a full-screen non-video content region overlaid on top.
- A brand/graphic overlaid in a small region of the screen.
- A ghosted brand/graphic such as a transparent logo where some of the colors in the logo are transparent and others are not.

The Cisco DMP 4310G uses the alpha-channel of the graphics plane (PNG, SWF file types). Therefore, content creators can use the alpha-channel to allow the background video to show through.

The recommended file format for graphics used in Overlay Graphic Templates is 8-bit or 24-bit PNG (alpha-channel supported). If you plan to use the overlay feature, remember that JPG files have no transparency while PNG files have transparency. When you create the PNG file, you must make the pixels transparent for the full-size video region.

Note: The Global MIB Variable on the Cisco DMP needs to be changed to “Color Key Off” or you will not be able to create graphics with 00 Black (R:0 G:0 B:0) or anything black will appear transparent. Graphics always overlay video—you cannot put video over graphics.

General Rules for All Screen Templates

When creating screen templates and populating content, consider the following:

- There can be only one video region per template.
- For Proof of Play, you can have only one region with an ad playlist.

Chapter 2 Content Rules and Specifications

Before you import content, be sure your content is in the correct format, is the appropriate size, and has the correct dimensions for where it will be displayed. If the content is not the correct size for the region into which it will be placed, the image will either be cropped or there will be blank space in the region.

Content Dimensions

The content dimensions will depend on whether the image will play in full screen mode or in one region of a multi-region screen template. If it is shown in full screen mode, the image should match the resolution of the graphics screen of the DMP:

Cisco DMP 4310G: 1920 x 1080

Here are some things to consider regarding content:

- If the content will be shown in a region of a multi-region screen template, it must match the dimensions of that region.
- You should only use the 1920 x 1080 screen templates on the Cisco DMP 4310G.

Video Formats

Cisco StadiumVision supports two types of video:

- Video from the headend (in-house terrestrial TV and satellite and cable providers, typically multicast).
- Video locally stored on the DMP and played through a video playlist or in Release 3.1, a mixed media playlist.

Video from the Headend

The format of video provided from the headend is dependent upon the source. See the [Cisco StadiumVision Video Headend Design and Implementation Guide](#) for more details.

[Table 6](#) defines the supported video and audio formats for full screen video stored locally on the Cisco DMP 4310G and played through a video playlist.

Table 6. **Supported Video/Audio Formats for localized video files on the Cisco DMP 4310G**

Format	Specification
Format	MPEG2 TS (Transport Stream)
Video Resolution (Cisco DMP 4310G)	1920 x 1080
Aspect Ratio	Widescreen 16 x 9 (1.0 Square Pixels)
Field Order	Progressive
Video Bit rate	20 Mbps
Video Bit rate Encoding	CBR (Constant Bit Rate) GOP Settings: M Frames 3 N Frames 15
Audio Format	MPEG
Audio Layer	MPEG-1, Layer II
Audio Mode	Stereo
Audio Sample Size	16 bit
Audio Frequency	48 kHz
Audio Bit Rate	128

Static Graphic Formats

Static graphics are used for advertisements or informational messages that do not require motion. This could include Welcome messages for luxury suites or directional information after an event. Static graphics are stored locally in Flash memory on the DMP. [Table 7](#) lists the allowable formats for static graphics.

Table 7. **Static Graphic Formats**

Graphic Format	Cisco DMP 4310G
Maximum file size per graphic	2 MB
JPEG, non-progressive; (Resolution and Format: 72 dpi, 8-bit RGB)	Yes
JPEG, progressive	No
PNG 8 and 24 (Recommended format)	Yes
Animated GIF	No
Flash Player 7, Action Script 2.0 Support Only	Yes

Rules for Static Graphics

- The maximum number of files you can import at one time is 100. Therefore, if you have a large number of graphic files to upload, place them in a zip file and upload the zip file. Otherwise, upload them in batches of 100 files or less. The total file size must be less than 100 MB.
- For vertical content, graphics and video are not rotated by the DMP. Therefore, they need to be created in a vertical format.
- Content file names can have "-" and "_", but not white space(s) and other special characters.

Flash Content

Flash content includes low-motion graphics that are used to enhance advertisements, welcome messages, menu boards or directional signage for crowds. This type of content is stored locally on the DMP.

Rules for Flash Content

- Flash content must be stored on the local DMP. Flash content stored on a web server, is not supported by Cisco StadiumVision Director.
- A Flash object must fit into the screen template region where it will be displayed. Therefore, you may need to resize and/or crop as necessary.
- Low motion Flash objects (files with a .swf file extension) must be created with ActionScript 2.0 running on Adobe Flash Version 7 or lower at 12 frames per second or less on the Cisco DMP 4310G.
- When creating Flash animations do not use tweening, only create Flash Animations using ActionScript 2.0.
- You can have a maximum of 2 animated objects in a region 2 Flash advertisement.
- We advise testing on the Cisco StadiumVision Platform before final deployment.

Event States and Event Scripts

Event states and *event scripts* control when and what content displays over the course of an event. For example, a Welcome message for Pre-game, a food promotion at halftime and an Exit message at the end of the game. An *event state* is a period of time in which the group of screens will exhibit the same behavior e.g., the same screen template, playlists and channel. Event states can change over the course of time (Pre-Game, In-Game, Post-game etc).

Rules for Event States and Event Scripts

- Delay, Inside Emergency and Outside Emergency states are pre-built states with actions defined as part of the customization process for a venue. The names and actions assigned to these ad hoc event states cannot be changed. Also, they should not be deleted.
- Cisco StadiumVision uses the non-event state to put all non-event displays in full screen mode with a default channel (the channel customized for the venue) at the time of day configured in the Control Panel.
- When you start an event script, it takes a while for the system to settle. Therefore, wait at least 1 minute after the completion of the DMP loading sequence before you change to a different state.
- Do not change an event state more frequently than every 60 seconds. Since multicast messages are rebroadcasted every 30 seconds, you should wait for 2 rebroadcasts (60 seconds) to insure that all DMPs are switched to the current event state.

- When an event script only contains actions on a Group, but not on the enclosing Zone, the DMPs in the enclosing Zone will not be controlled by the event script.
- If there is no screen template or action assigned to a DMP and the DMP reboots, the TV will automatically be tuned to full screen video and display the default channel. Also, if a DMP misses the prior multicast state transition and the event state does not contain a screen template, it may display the wrong screen template. To avoid this situation, keep the DMP in an event state that has an assigned screen template action, or an event state whose predecessor has an assigned screen template action.

[Table 8](#) lists the tested limits for deploying event scripts and event states.

Table 8. **Tested Limits for Event Scripts and Event States**

Specification	Limit
Maximum items per playlist	1200
Maximum of items per event script	2200
Maximum event states per event	100

Groups and Zones

Groups and *zones* allow you to apply attributes to a number of screens with a single action. They simplify the control of advertisements in sponsored areas of the stadium, enabling all the screens in a sponsored zone to have the same branded messages, the same playlists, and the same video content.

Group and zone associations can be made any time prior to pushing an event script and can be used for multiple events.

[Table 9](#) defines the limits for deploying groups and zones.

Table 9. **Limits for Deploying Groups and Zones**

Specification	Limit
Max number of zones	100
Max number of groups	500
Max number of groups per zones to be supported	20
Max number of templates you can have in different groups and zones for a single event state	50

Rules for Groups and Zones

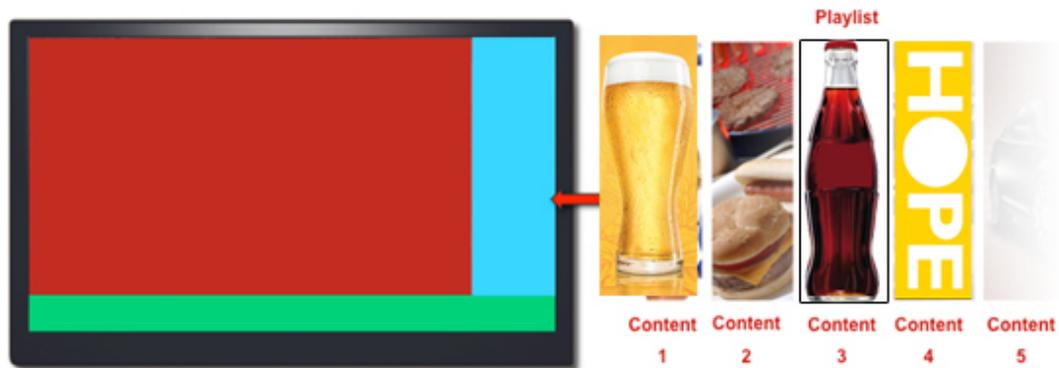
- The more groups and zones you have, the more complicated the deployment becomes.
- A DMP can be in different zones during each event state.
- A DMP that is in multiple zones and groups cannot have more than one action assigned to it for a given event state.
- A DMP can be in only one group at a given state. However, a DMP can switch groups when in a different event state.
- The maximum number of groups that is supported for a zone is 20; however, typically you'll have three or four groups for a given zone.
- The maximum number of zones supported in a venue is 100; however, 20 zones is typical for a given venue.
- All zone and group names must be unique.

Playlists

A *playlist* is a series of content items connected together (images, flash) to play for a set duration one-after-the-other in a given region and then repeat. Each playlist operates independently of other playlists, and multiple playlists can be run in a given event script. Playlists also can include tickers and full screen messages.

[Figure 4](#) illustrates a playlist with five images, each shown for 15 seconds and then repeating.

Figure 4. Playlist



Rules for Creating Playlists

When creating playlists, consider the following:

- Content with long filenames impact the number of total files you can have in the playlist. As a best practice, the filename for each content item should not have more than 20 characters.
- If the name of the content contains a space, content will not play and Proof of Play will not recognize it.
- You cannot have playlists with the same name.
- For Proof of Play, you can have only one region with an ad playlist.
- In releases prior to Release 3.1, Flash and static graphics are the only media supported in a playlist and locally stored video can only be played through a video playlist. Cisco StadiumVision Director Release 3.1 can support Flash, static graphics and video in our new mixed media playlists.
- Once a playlist displays the last content item in the list, it will loop back to the beginning of the playlist.
- The playlist ad rotation time must be the same for all ads for a given playlist.
- The recommended ad rotation time is 15 (recommended) or 30 seconds for all ads. As a best practice we recommend that you use a 15-second duration (and never less than 15 seconds) per playlist content item. **Note:** All playlists from all zones/groups for a given event must be loaded on every DMP prior to the event.
- On the Cisco DMP 4310G, the entire playlist in the event script cannot exceed 200 MB for a given DMP.
- Each playlist may have its own ad rotation time independent of other playlists.

- Content in the playlist is displayed in the order in which it is added unless you re-order your content.
- Multiple playlists can be configured to run sequentially on the same Cisco DMP.

Note: As a series of content items transition in a playlist (such as advertisements in Region 2 of a standard 3-region L-wrap template), there will be some variance in the appearance of each content item on the DMP displays where that content is presented. Each content item will generally appear on all corresponding DMP displays within about one second of each playlist item transition. However, the amount of time that it takes for all displays in your venue to show the same content item within a playlist might exceed a one-second duration based on the following venue conditions: Network infrastructure, number of regions on the display, number of content items in the playlist, and the playlist duration.

[Table 10](#) lists specifications for creating playlists.

Table 10. **Specifications for creating Playlists**

Specification	Cisco DMP 4310G
Maximum number of playlists (any type) in the entire Cisco StadiumVision Director content database	1000
Maximum number of items of content (any type) used in the entire Cisco StadiumVision Director event	2200
Maximum number of items per playlist	1200
Maximum aggregated playlist size:	200 MB *(hard limit of SDRAM size 28 GB)
Maximum length of playlist name (Characters)	22
Maximum playlist per group	100

RSS Tickers and Other External Data Integration

For more information, see the [Cisco StadiumVision Director External Content Integration Guide, Release 3.1](#).

Graphic Specifications for Local TV Control and Commerce Integration

[Table 11](#) defines specifications and locations for creating and storing graphics (or images) used for local TV control and commerce integration in luxury suites.

Table 11. Local TV control and commerce integration graphics specifications

Graphic	Location	Specifications
IP Phone Desktop background	CUCM	Supplied with Cisco StadiumVision Director IP Phone 7975: 320x216x16 IP Communicator: 320x212x12
Welcome Message example	Cisco StadiumVision Director	Supplied with Cisco StadiumVision Director DMP 4310: 1920x1080
Channel icons used in channel lineup on the IP Phone	Cisco StadiumVision Director	Must be supplied locally with network approval. IP Phone: 24x24, PNG 3 rd party: 40x40, PNG
Team logo used in channel lineup on the TV	Cisco StadiumVision Director	Must be supplied locally. DMP 4310: 300x180, PNG or JPEG
Food, beverage, and merchandise images used in the ordering process	Quest or Micros	Must be supplied locally. 265x265, JPEG non-progressive

TV Channel Guide Content Formats

The TV channel guide is a Flash file that is displayed on the TVs in luxury suites, bars, clubs and restaurants. If desired, this guide can include a venue or team logo in the upper left corner.

Note: Channel icons are not supported on the TV channel guide.

The logo must be stored in the Cisco StadiumVision Director content repository using a specific keyword tag. Then, when the channel guide is displayed, the Flash application pulls in the graphic with this file name and places it at the upper left of the screen.

[Table 12](#) describes the size, file type and required keyword tag of the logo on the Cisco DMP 4310G.

Table 12. **Logo formats for the TV Channel Guide**

DMP Model	Resolution	File Type	Keyword Tag
Cisco DMP 4310G	300x180	PNG or JPEG	Icon_Team_4310_SYS

Cisco Unified IP Phone Channel Icons

You can use Cisco StadiumVision Director to associate channel icons for display on the Cisco Unified IP Phone channel guide. Channel icons must be obtained locally (the venue must obtain permission from the network) and must be a 24 x 24 PNG file.

Cisco Unified IP Phone Services Image

Cisco StadiumVision provides a background image (homeBg.png) which is used as the background for the services on the Cisco Unified IP Phone. This is included with the default images. Default images are located at:

`/opt/sv/servers/config/webapps/StadiumVision/images/phone/phone/phoneImages`

The resolution for the phone services image for the cisco IP Phone 7975 is 298 x 168. For the Cisco IP Phone 9971 it is 618 x 432.

Figure 5. Default Services Image



To customize the phone services image, create a background graphic saved out in the .png format and name it BG.png. Your customized image now needs to be stored at:

`/var/sv/phone/phone/phoneImages`

To load the custom image you will need an FTP Client (FileZilla, etc) and you will also need a SNE TAC login account to access this area (which is currently only available to Cisco employees).

Cisco StadiumVision will first look for a customized image, if one is not found then it will use the default image.

Cisco Unified IP Phone Background Image

Cisco StadiumVision Director includes phone background images (download/cucmitems.zip) that need to be uploaded to CUCM. There are two images (one for the Cisco Unified IP Phone and one for the Cisco IP Communicator).

The resolution for the phone background image is:

- Cisco IP Phone 7975 – 320 x 216 pixels
- Cisco IP Phone 9971 – 640 x 480 pixels

Up to eight phone background images (in PNG format) can be loaded in to CUCM.

You can customize the phone background image by including a logo that can be changed for a particular venue or event. The logo should be centered in a space that measures 146 x 70 approximately 10 pixels from the bottom of the desktop image, as illustrated in [Figure 6](#).

Figure 6. Logo placement on the phone background image



PNG File Specifications for Custom IP Phone Background Images

Each phone background image requires two PNG files:

- Full size image—Version that appears on the phone.
- Thumbnail image—Version that appears on the Background Images screen from which users can select an image. Must be 25% of the size of the full size image.

Tip: Many graphics programs provide a feature that will resize a graphic. An easy way to create a thumbnail image is to first create and save the full size image, then use the sizing feature in the graphics program to create a version of that image that is 25% of the original size. Save the thumbnail version using a different name.

The PNG files for background images must meet the following specifications for proper display on the Cisco Unified IP Phone:

- Full size image (width x height) in pixels:
 - Cisco IP Phone 7975 — 320 x 216
 - Cisco IP Phone 9971 — 640 x 480
- Thumbnail image (width x height) in pixels:
 - Cisco IP Phone 7975 — 80 x 53
 - Cisco IP Phone 9971 — 123 x 111
- Color palette—Includes up to 16-bit color (65535 colors). You can use more than 16-bit color, but the phone will reduce the color palette to 16-bit before displaying the image. For best results, reduce the color palette of an image to 16-bit when you create a PNG file.

Tip: If you are using a graphics program that supports a posterize feature for specifying the number of tonal levels per color channel, set the number of tonal levels per channel to 40 (40 red X 40 green X 40 blue = 64000 colors). This is as close as you can posterize to 65535 colors without exceeding the maximum.

Creating a Custom Background Image for the Cisco Unified IP Phone

For more information, see the “Customizing the IP Phone” section of the Cisco Unified IP Phone Administration at the following URLs:

For the Cisco IP Phone 7975:

http://www.cisco.com/en/US/products/hw/phones/ps379/prod_maintenance_guides_list.html

For the Cisco IP Phone 9971:

http://www.cisco.com/en/US/docs/voice_ip_comm/cuipph/9971_9951_8961/7_1_3/english/admin/guide/9971cus.html#wp1038500

Also refer to the *Cisco StadiumVision Local Control Areas Design and Implementation Guide*.

Luxury Suite Welcome Screen Graphics

Some venues may want to customize the welcome screens in luxury suites. This is particularly useful for suites that are not owned by a single person or group but are rented out to different groups on an event-by-event basis.

Cisco StadiumVision Director provides the following example welcome message graphic in Adobe Photoshop format:

- Welcome_SV2-1920-template.psd is for use with the Cisco DMP 4310G.

These sample graphics can be used “as-is” in luxury suites to help guests understand that the phone is used to control the TVs. This graphic can also be modified to include a customized greeting.

When customizing this image, the logo or greeting should have a transparent background and should be centered in the blank space on the right side of the image, as illustrated in [Figure 7](#).

Figure 7. Custom Greetings on the Welcome Screen



The recommended best practice for implementing customized greetings on the welcome screen is to use the Cisco StadiumVision full screen template as a basis for creating a separate image with a logo or greeting added.

Load this image as content into Cisco StadiumVision Director and create a script to display the image on the designated “Welcome” TVs, as described in the *Cisco StadiumVision Local Control Areas Design and Implementation Guide*.