



Working with TV Displays

User Role: Administrator, Venue Administrator

This module provides information about setting up TV displays in Cisco Vision Director.

User TV Control

Support for all methods of user TV control is enabled by default in Cisco Vision Director for all media player types. This includes control of TV displays using local control devices and applications, IP phones, touch screens and infrared remote (IR) control.

Some venues have a need to disable user TV control for certain events or suites, or to limit the TV to display a particular channel or control its volume.

TV Display Specification

Cisco Vision Director requires that you configure certain commands and attributes for the TVs used in the venue to ensure proper communication between the media player and the TV. This configuration is defined in what is called a *display specification*.

By default, Cisco Vision Director includes display specifications for several common TV display models. If your TV display model is not included in the default specifications, add and configure it.

A different display specification is required for each unique TV type, based on which commands are used to control the TVs. In some cases, all TVs from a certain manufacturer can use the same display specifications. In other cases, different TV models from the same company might require different display specifications.

Note: As a best practice, configure your TV display specifications before configuring Locations in Cisco Vision Director. You must select the “Display Spec” for the type of TV (brand/model) that is physically installed when you configure a Location.

Closed Captioning

The standard for closed captioning (CC) in North America, which all digital TV broadcasters typically follow, is the Consumer Electronics Association (CEA)-608 and CEA-708 closed captioning standard. [Figure 1 on page 40](#) shows US CC standards.

IMPORTANT: Closed Captioning will not work in Europe or anywhere outside of North America.

Figure 1 Closed Captioning Support in Cisco Vision Dynamic Signage Director



This standard is generally supported on all broadcast channels from service providers. Cisco Vision Director is automatically configured to enable closed captioning CC1-CC4 support on the Cisco SV-4K devices.

Content Orientation

The default orientation for all content in Cisco Vision Director is landscape mode.

In Release 4.1 and earlier releases, you can manually create content in vertical format (*static graphics* only) and rotate it. Release 5.0 and later supports auto-rotation of content in portrait mode set in the TV display specification.

Guidelines for Portrait Mode Auto-Rotation

- Supported in Release 5.0 and later releases.
- Allows DMPs to automatically rotate content for proper orientation on vertically-positioned displays.
- Supported for all content sources for a *single* TV display.
- Scaling of content across multiple display screens in portrait mode is only supported for multicast streaming video.
- Enabled using the "dmp.portrait=true" display parameter when configuring TV display specifications in the Control Panel.

Note: DMP portrait mode is not available for 4K videos.

Flexible DMP Content Rotation

You can rotate content 90 degrees and -90 degrees (or +270 degrees). This works for all content like videos, static images, widgets, local and multicast video, and external URLs. Rotate content for situations where the display monitor has already been installed in a portrait position and to show your content in the proper orientation.

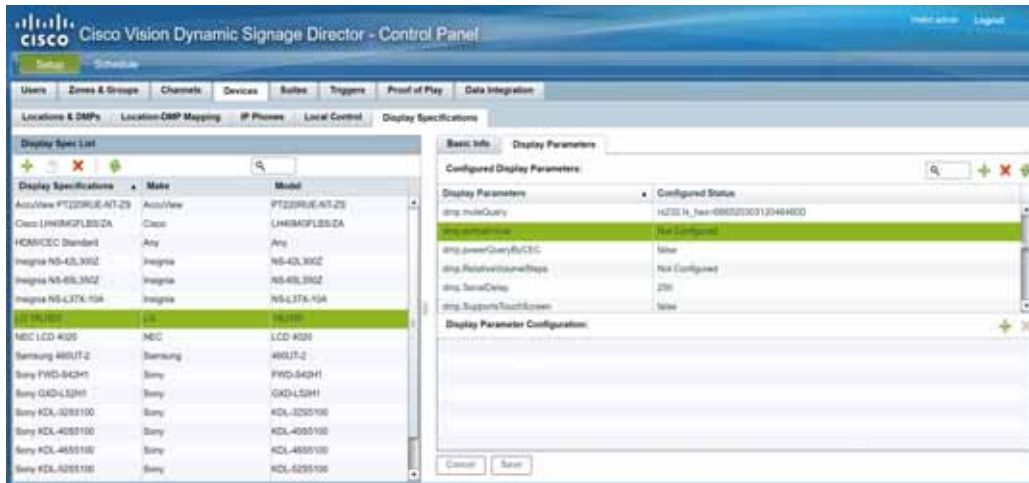
To rotate content to portrait mode:

1. Go to **Tools > Control Panel > Setup > Devices > Display Specifications**.
2. Choose the specific display from the list on the left panel and click the **Display Parameters** tab in the right panel.
3. Add a Display Parameter called `dmp.portrait` or `dmp.portrait.clockwise` and set it to **"true"** to achieve the proper rotation value you need.

By default, if you use dmp.portrait and set “true” to your content, it rotates the content 90 degree. If you set dmp.portrait.clockwise to “false,” it will rotate the content 270 degrees (or -90 degrees).

Note: Reboot the DMPs to set this parameter. Go to: **Tools > Management Dashboard > DMP and TV Controls > DMP Commands > Reboot Device.**

Figure 2 Adding Content Rotation Specifics to Display Parameters



Below is a figure displaying rotated content 90 and -90 degrees. Use clockwise and counterclockwise.

Clockwise



Counter clockwise



Note: DMP portrait mode is not available for 4K videos.

HDMI-CEC

Support for HDMI Consumer Electronics Control (CEC) allows you to control the following three TV functions:

- Power On
- Standby (Power Off)
- Power Status

When HDMI CEC TV control is enabled, HDMI CEC is used instead of RS-232 for TV control functions. To control TVs, you can run the TV On and TV Off from the **DMP and TV Controls > TV Commands** menu in the Management Dashboard.

You can configure a TV display for HDMI-CEC TV control using one of two methods:

- Apply the HDMI/CEC Standard display specification for new TVs, where the HDMI-CEC display parameters are automatically enabled and set to default values.
- Modify an existing display specification to set the HDMI-CEC display parameters manually.

The following commands are used HDMI/CEC TV control:

- **dmp.powerQueryByCEC**—(New in Release 5.0) Enables powerQuery to get TV Power status using HDMI/CEC instead of RS-232.
- **dmp.TVControlbyCEC**—(New in Release 5.0) Enables TV control using HDMI/CEC instead of RS-232.
- **dmp.monitorAPIDelay**—Frequency of power query command sent by Dynamic Signage Director over HDMI CEC to the TV. The default is 120000 ms (2 minutes). This command is also supported when using TV control with RS-232.
- **dmp.monitorPower**—Enables Dynamic Signage Director to run a power query to the TV using the Get Status command from the Management Dashboard. This command is also supported when using TV control with RS-232.

TV Qualification for HDMI-CEC Support

Note: Not all TVs support the standard HDMI-CEC commands. Test the TV models that you plan to install for support of HDMI CEC. Turn on HDMI-CEC. TV manufacturers refer to CEC by different trade names. For example, Anynet+ (Samsung), BRAVIA Link (Sony), EasyLink (Phillips), and SimpLink (LG).

Note: HDMI-CEC does not support the same command set as RS-232 due to proprietary links.

For more information about the successfully tested TV for HDMI CEC, see the [Cisco Vision Dynamic Signage Director Release Notes for Release 6.1](#).

Serial Commands for RS-232 Communication

RS-232 commands can be used to control TV functions such as On/Off, mute, volume and external input. In more specialized scenarios they might also be used to configure TV tile matrix capabilities.

RS-232 responses are used to retrieve the current status of a TV. Currently Cisco Vision Director uses responses only when querying a TV for its current power on/off status.

For situations where a TV cannot be controlled via RS-232 or otherwise, volume and mute can be controlled by the media player instead. This is behavior is indicated by configuring volume and mute commands that start with sigma=.

Serial Commands for RS-232 TV Control

[Table 1 on page 43](#) shows a summary of the display parameters and RS-232 commands for the DMPs with their default values. The table shows command names and values for an LG 19LH20 TV display only.

Note: Different TV display models may support only certain RS-232 commands.

Table 1 DMP Serial Commands

Command Name	Value
dmp.AVInputQuery	rs232.tx_hex=6B622030312046460D
dmp.displayPwrOnResponse	61203031204f4b303178
dmp.displayPwrQuery	rs232.tx_hex=6B612030312046460D
dmp.hdmiStreamingDelay	5000
dmp.Input1response	62203031204F4B303878
dmp.Input2response	62203031204F4B303278
dmp.Input3response	62203031204F4B303478
dmp.Input4response	62203031204F4B303078
dmp.monitorAPIDelay	120000
dmp.monitorAVInput	true
dmp.monitorMute	true
dmp.monitorPower	true
dmp.monitorVolume	true
dmp.muteOnResponse	65203031204F4B303078
dmp.muteQuery	rs232.tx_hex=6B652030312046460D
dmp.portrait=true	true
dmp.powerQueryByCEC	false
dmp.SerialDelay	250
dmp.SupportsTouchScreen	false
dmp.TVControlByCEC	false
dmp.volumeQuery	rs232.tx_hex=6B662030312046460D
dmp.volumeResponseFormat	66203031204F4B5F5F78
Input1	rs232.tx_hex=6B622030312030390D
Input1Name	HDMI
Input2	rs232.tx_hex=6B622030312030320D
Input2Name	Composite
Input3	rs232.tx_hex=6B622030312030340D
Input3Name	Component
Input4	rs232.tx_hex=6B622030312030300D
Input4Name	TV
Mute	rs232.tx_hex=6B652030312030300D
Off	rs232.tx_hex=6B612030312030300D
On	rs232.tx_hex=6B652030312030310D

Volume Control

Unmute	s232.tx_hex=6B652030312030300D
Volume1	rs232.tx_hex=6B662030312030350D
Volume10	rs232.tx_hex=6B662030312035300D
Volume11	rs232.tx_hex=6B662030312035350D
Volume12	rs232.tx_hex=6B662030312036300D
Volume2	rs232.tx_hex=6B662030312031300D
Volume3	rs232.tx_hex=6B662030312031350D
Volume4	rs232.tx_hex=6B662030312032300D
Volume5	rs232.tx_hex=6B662030312032350D
Volume6	rs232.tx_hex=6B662030312033300D
Volume7	rs232.tx_hex=6B662030312033350D
Volume8	rs232.tx_hex=6B662030312034300D
Volume9	rs232.tx_hex=6B662030312034350D
VolumeCount	12

¹The commands in this table are supported by the LG 19LH20 TV display.

Volume Control

When properly configured in Cisco Vision Director, volume changes can be made from methods such as the IP phone, IR remote, Management Dashboard, or event script state change.

Volume changes for the primary video audio can be controlled for the SPDIF (on the SV-4K and CV-UHD only), analog audio, and HDMI out ports only when the TV display specification volume strategy is set to *internal*.

Volume Strategy Option

Cisco Vision Director supports three Volume Strategy settings, see [Figure 3 on page 44](#).

Figure 3 Control Panel Display Specifications–Volume Strategy Option



Internal—The audio feed volume level is controlled by telling the DMP how loud to send the signal. Internal allows volume change control of the audio feed by Cisco Vision Director (such as by the IP phone, IR remote, Management Dashboard, or event script state).

External—Using External, the level sent by the DMP remains the same and the DMP sends commands to change the volume level on the attached TV, via RS-232.

Note: We recommend external volume strategy because most TVs have better audio range than the DMP and many TVs show a visual indicator of the volume as it changes. This strategy also avoids problems if someone changes the volume using the TV panel buttons or the TV remote.

None—The volume cannot be adjusted. This is useful for TVs that are used for video only where audio (if any) is provided separately (such as in a bar where an overhead system provides the audio).

How to Configure TV Display Specifications

This section includes the following topics:

- [Guidelines for RS-232 Command Configuration, page 45](#)
- [Configuring Basic Information for TV Display Specifications, on page 45](#)
- [Configuring Portrait Mode in TV Display Specifications, page 47](#)
- [Configuring Touchscreen Support, page 48](#)

Guidelines for RS-232 Command Configuration

Consider the following guidelines when configuring RS-232 commands in TV display specifications:

- Cisco Vision Director supports only one RS-232 command per event state.
- All RS-232 commands configured in Cisco Vision Director must use the prefix `rs232.tx_hex=`.
- RS-232 responses are used to retrieve the current status of a TV.
- RS-232 responses are always configured without a prefix.
- Cisco Vision Director uses responses only when querying a TV for its current power on/off status.
- For situations where a TV cannot be controlled via RS-232 or otherwise, volume and mute can be controlled by the media player instead.

Configuring Basic Information for TV Display Specifications

User Role: Administrator

To configure basic information for TV display specifications:

1. Go to **Tools > Control Panel > Setup > Devices > Display Specifications**.
2. Do one of the following:
 - Select an existing display specification.
 - Click the + icon to add a new display specification.
3. Refer to [Table 2 on page 46](#) to specify the options in the Basic Info panel.

Table 2 Basic TV Display Specification Options

Option	Description
Name	Name that appears in the Display Spec drop-down list when you are adding TV Types to Locations. TIP: Be sure that this name is unique and easily identifies the type of TV that it defines.
Description	Any text string to describe the TV display specification.
Make	TV manufacturer/brand name.
Model	Model(s) of the brand to which this display specification applies. This can be a single module type, a group of models, or "All" to specify that all TVs of this brand use the same display specification.
Volume Strategy	Specifies how the TV volume is controlled. The possible values are: Internal—Volume is controlled using IP phone, IR remote, and so on. External—Volume is controlled by sending serial commands from the media player to the TV using RS-232. None—Fixes the volume so that it cannot be adjusted. For more information, see Volume Control, page 44 .

4. Click Save.

5. Apply configuration to the DMPs:

- Series 2 and Series 3 DMPs—Reboot the DMP(s).

Configuring HDMI-CEC TV Control in TV Display Specifications

User Role: Administrator, Venue Administrator

You can apply the HDMI/CEC Standard display specification for new TVs, or you can modify an existing display specification to add the display parameters commands independently.

If you use the HDMI/CEC Standard display specification, the four related HDMI-CEC commands for TV control are enabled and set to any corresponding default value.

To configure HDMI-CEC display parameters:

1. Go to **Tools > Control Panel > Setup > Devices > Display Specifications**
2. Select an existing display specification or add a new one.
3. Click **Display Parameters**.
4. Find and set the following parameters:

Display Parameter	Value
dmp.powerQueryByCEC	<p>True– Enables powerQuery to get TV power status using HDMI-CEC instead of RS-232.</p> <p>False–Disables powerQuery using HDMI-CEC.</p> <p>Note: This command is not supported by all TV models.</p>
dmp.TVControlbyCEC	<p>True–Enables TV control using HDMI-CEC instead of RS-232.</p> <p>False–Disables HDMI-CEC TV control.</p>
dmp.monitorAPIDelay	<p>Number (in ms) for the frequency of power query command to be sent by Dynamic Signage Director. The default in HDMI/CEC Standard display specification is 12000 ms (or 2 minutes).</p>
dmp.monitorPower	<p>True–Enables Dynamic Signage Director to run a power query to the TV using the Get Status command from the Management Dashboard.</p> <p>False–Disables the option.</p>

Note: You can run the **Get Status** command from the Management Dashboard to get the latest TV health status known to the DMP. This information can be up to two minutes old, or a few seconds depending on when the power query last ran.

If the “dmp.monitorPower” parameter is set to false then you will not get the correct TV health status.

5. Click Save.
6. Reboot the DMPs.

Configuring Portrait Mode in TV Display Specifications

User Role: Administrator, Venue Administrator

Portrait rendering mode allows the DMPs to automatically rotate content for proper orientation on vertically-positioned displays.

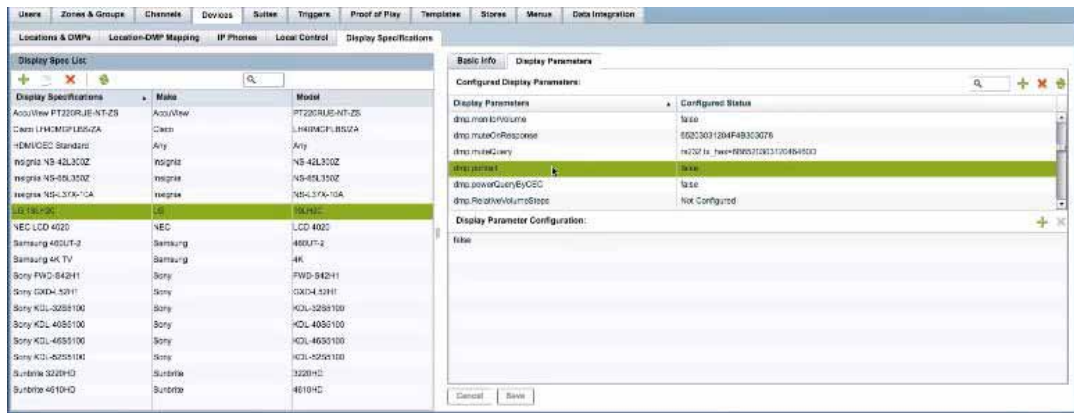
Note: DMP portrait mode is not available for 4K videos.

To configure the portrait mode display parameter:

1. Go to: **Tools > Control Panel > Setup > Devices > Display Specifications**
2. Select an existing display specification or add a new one.
3. Click **Display Parameters**.
4. Click the + icon to add a new display parameter.

5. Enter a new command, type **dmp.portrait** in the box.
6. In the Configured Status box, type **true**. See [Figure 4 on page 48](#).

Figure 4 Setting Portrait Display Parameter



7. Click **Save**.
8. Reboot the DMPs. Go to: **Tools > Management Dashboard > DMP and TV Controls > DMP Commands > Reboot Device**.

Configuring Touchscreen Support

For proper touchscreen operation with HTML5 pages, be sure that your touchscreen devices are human interface device (HID)-compliant and are using standard HID drivers.

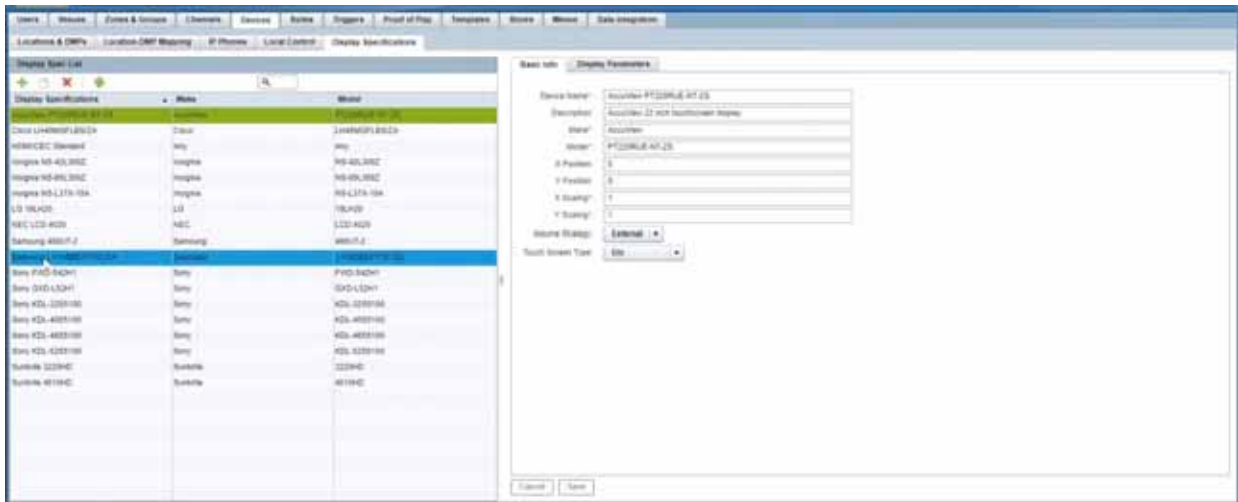
Note: Some manufacturers claim support for HID while using custom drivers. Verify that standard HID drivers are used.

By default the display parameter is set to **false** for Cisco Vision Director. To enable touchscreen capability between your device and the DMP, you must change that.

To enable touchscreen capabilities for your specific device:

1. In Cisco Vision Director, go to **Tools > Control Panel > Setup > Devices > Display Specifications** ([Figure 5 on page 49](#)).

Figure 5 Setting Display Specifications

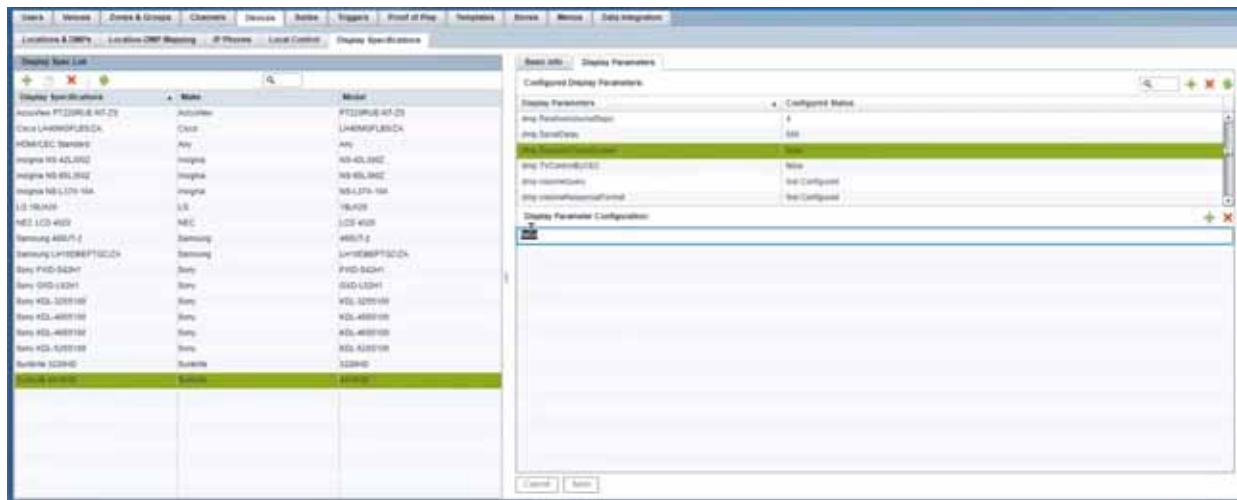


2. Create a display specification for your device screen. See the device specifications for this information. Use the green plus icon to create a new spec.
3. Choose Elo for **Touch Screen Type** from the **Basic Info** tab (Figure 6 on page 49).

Figure 6 Touch Screen Type



4. Or, scroll down the list of devices. Find your Make and Model and select it.
5. Click the **Display Parameters** tab.
6. Scroll down to **dmp.SupportsTouchScreen** and select it (Figure 7 on page 50).

Figure 7 Setting .DMPSupportsTouchScreen Parameter

7. In the Display Parameter Configuration box, change false to “**true**” for your device (Figure 7 on page 50).

8. Click **Save**.

By enabling this feature, you are giving touch screen support to a state or a channel to your content (generally an HTML page).

To connect the DMP to your device, use a USB A to B-type cable that connects from the DMP USB port to your device.

Configuring Serial Commands for External Volume Support

User Role: Administrator

When using the external volume strategy, configure RS-232 commands to send to the TV to change the volume.

Note: When using internal volume strategy, volume commands do not need to be configured.

Cisco Vision Director allows you to configure two types of volume controls:

- **Relative**—Depends on the volume increments set in the TV, which vary from model to model.
- **Absolute**—Preferred method. Defines a number of increments that are used to control the volume between the minimum and maximum volume levels.
 - For the SV-4K—Absolute volume is configured only by the series of *Volumen* commands only.

Table 3 on page 51 provides information about the serial commands used to configure the Relative and Absolute types of external volume control.

Table 3 Serial Commands for External Volume Support

Serial Command	Volume Type	Description
Volume <i>n</i>	Absolute	<p>Specifies the volume increment level, where <i>n</i> is a number from 1 to the total number of volume levels supported.</p> <p>Configure multiple Volume<i>n</i> commands for the number of increments being supported.</p> <p>Specify whole numbers for "<i>n</i>." For example specify "1" –not 01.</p> <p>TIP: The best practice is to set Volume1 to a value greater than zero. A zero volume level is treated as a mute command, and when the user adjusts the volume up, some displays show the status bar as if their volume is turned up, but the display remains muted.</p>
VolumeUp	Relative	Specifies an incremental volume setting determined by internal settings in the TV.
VolumeDown	Relative	Specifies an incremental volume setting determined by internal settings in the TV.
For some TVs, the increase/decrease in volume is very slight requiring multiple VolumeUp or VolumeDown commands to achieve the desired effect. For these TVs, use the dmp.RelativeVolumeSteps" serial command.		
dmp.RelativeVolumeSteps	Relative	<p>Specifies the number of times the RS-232 command for VolumeUp or VolumeDown is repeated each time that you press up or down on the IR remote (or on the phone). The default is 1.</p> <p>For example, if the value is set to 8, then a VolumeUp or VolumeDown command sends 8 copies of the RS-232 string.</p>
dmp.SerialDelay	Relative	<p>Specifies the delay between sending repeated serial commands from the media player. The default is 5000 ms.</p> <p>This command can be used for certain TV displays that discard repeated serial commands that are sent too close together.</p>

Table 4 on page 52 shows an example of RS-232 command strings defined for Absolute volume control using 12 increments.

Table 4 Volume Count Command Example for an LG TV Display

Serial Command	String
Volume1	rs232.tx_hex=6B662030312030350D
Volume2	rs232.tx_hex=6B662030312031300D
Volume3	rs232.tx_hex=6B662030312031350D
Volume4	rs232.tx_hex=6B662030312032300D
Volume5	rs232.tx_hex=6B662030312032350D
Volume6	rs232.tx_hex=6B662030312033300D
Volume7	rs232.tx_hex=6B662030312033350D
Volume8	rs232.tx_hex=6B662030312034300D
Volume9	rs232.tx_hex=6B662030312034350D
Volume10	rs232.tx_hex=6B662030312035300D
Volume11	rs232.tx_hex=6B662030312035350D
Volume12	rs232.tx_hex=6B662030312036300D

How to Configure the TV Display Banner

This section includes the following topics:

- [Modifying the TV Banner Duration, page 52](#)
- [Disabling the TV Display Banner, page 53](#)

Modifying the TV Banner Duration

The TV display banner is a graphical banner that temporarily appears at the top of the display to provide information about the TV that received a TV command ([Figure 8 on page 53](#)). The display banner is enabled by default with a duration of 5 seconds.

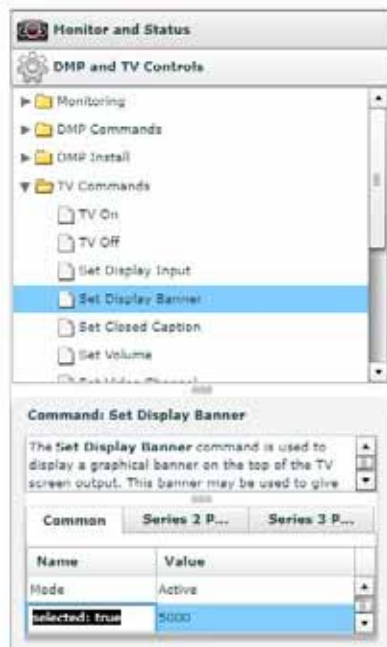
Figure 8 TV Display Banner and Screen Identification



To configure the TV display banner:

1. Go to **Tools > Management Dashboard > DMP and TV Controls > TV Commands> Set Display Banner.**
2. In the Duration box, set the duration in milliseconds.
3. Select the devices to which you want to apply the command.
4. Click the play button to run the command on those devices.

Figure 9 Set Display Banner–Common Panel



Disabling the TV Display Banner

User Roles: Administrator

How to Configure the TV Display Banner

For a better visual experience for video wall displays, disable the TV display banner. The TV display banner is enabled by default for all TV displays.

To disable the TV display banner globally:

1. Go to **Tools > Management Dashboard > Tools drawer > Advanced > Registry**
2. In the Registry Data box, click **Add Row**.
3. In the key field, type **localControl.banner.disable**.
4. In the value field, type **true**.
5. Click **Apply**.