



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 46](#) 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 **Configuration > Devices** interface ([Figure 2 on page 47](#)).

Note: DMP portrait mode is not available for UHD (4K) videos. See the [Cisco Vision Content Planning and Specifications Guide, Release 6.2](#) for complete information about using portrait mode and auto-rotation.

Note: Portrait mode is not recommended for CV-HD and CV-HD2 DMPs.

Flexible DMP Content Rotation

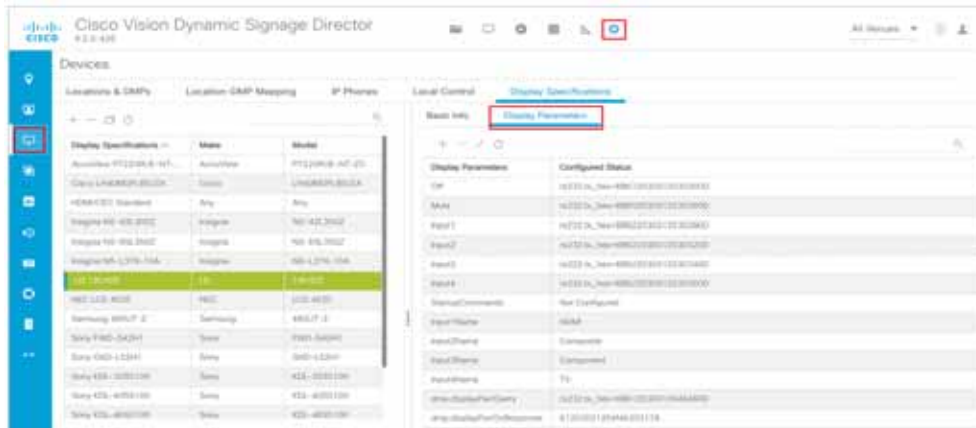
You can rotate content 90 degrees and -90 degrees (or +270 degrees). This works for all content like videos, static images, widgets, local and multicast video, and external URLs. Rotate content for situations where the display monitor has already been installed in a portrait position and to show your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

To rotate content to portrait mode:

1. Go to **Configuration > 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 ([Figure 2 on page 47](#)).

- Click **+** to add a new Display Parameter. The Create New Display Parameter dialog box appears (Figure 3 on page 47).

Figure 2 Adding Content Rotation Specifics to Display Parameters



- Type **dmp.portrait** or **dmp.portrait.clockwise** and set it to “**true**” to achieve the proper rotation value you need.

Figure 3 Create New Display Parameter



By default, if you use **dmp.portrait** and set “**true**” to your content, it rotates the content 90 degrees. 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: **More > Management Dashboard > DMP and TV Controls > DMP Commands > Reboot Device.**

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 UHD videos.

Distorted Portrait Mode Displays

IMPORTANT: When the DMP is in portrait mode and you are streaming a multicast video, you may notice that the display is distorted. If this happens, it may be because the DMP registry of **scaleToFit.video** is set to “**true**.” The default is this registry is not present or it is set to “**false**.” If there is an outstanding reason to have the registry set to true, then change the default from a multicast stream with portrait mode URL to something else, like a web page instead.



To set a separate default URL for portrait-oriented displays:

1. Go to **More > Management Dashboard > Dynamic Signage Director Configuration > System Configuration > Dynamic Signage Director Settings**.
2. Highlight **Dynamic Signage Director Settings** and the right panel populates.
3. Change the **Value** of the **Default portrait content URL** to use HTML so the content is not stretched.

The screenshot shows the Cisco Vision Dynamic Signage Director Management Dashboard. The left sidebar contains navigation options: Monitor and Status, DMP and TV Controls, Event Viewer, and Dynamic Signage Director Configuration. Under Dynamic Signage Director Configuration, System Configuration (12) is expanded to show Dynamic Signage Director Settings (1). The main panel displays the Dynamic Signage Director Configuration table with the following data:

Configuration Property	Value
Default landscape content URL	udp://239.194.0.204:4000
Default portrait content URL	udp://239.194.0.204:4000
Delay Channel	24
IP Address of Director Server	10.194.170.141:8080
Dynamic Signage Director Server locale	English (United States)
Allow Duplicate url for Channels	false

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 by HDMI/CEC TV control:

- **dmp.powerQueryByCEC**—Enables powerQuery to get TV Power status using HDMI/CEC instead of RS-232.
- **dmp.TVControlbyCEC**—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.
- **dmp.hDMIStreamingDelay**—Indicates the amount of time (units in ms) that the DMP will stop streaming from the time it receives the command. If not defined, the default is 500 (ms). Typically, you do not need to define this parameter.

For HDMI Streaming operations initiated via IR Remote, this parameter prevents too frequent commands from crashing the DMP. If no value is set for this parameter through the Display Specifications, the default is 5000 milliseconds.

This is similar to the parameter “Ratelimit.Frequency.High.” The only difference being that this parameter is for HDMI Streaming operations issued through local control API.

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 6.0](#).

Display Parameters 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 behavior is indicated by configuring volume and mute commands that start with sigma=.

Display Parameters for RS-232 TV Control

Table 1 on page 50 shows a summary of the display parameters and RS-232 commands for the DMPs with their **example** values. These values are provided as an example of the type of data you would enter.

Note: Different TV display models may support only certain RS-232 commands. The commands in this table are supported by the LG 19LH20 TV display. Each model and even software version of a display may require a different configuration.

IMPORTANT: Check with the TV display manufacturer for the appropriate values to enter.

Table 1 DMP Display Parameters

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

Volume Control

Input3Name	Component
Input4	rs232.tx_hex=6B622030312030300D
Input4Name	TV
Mute	rs232.tx_hex=6B652030312030300D
Off	rs232.tx_hex=6B612030312030300D
On	rs232.tx_hex=6B652030312030310D
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

Volume Control

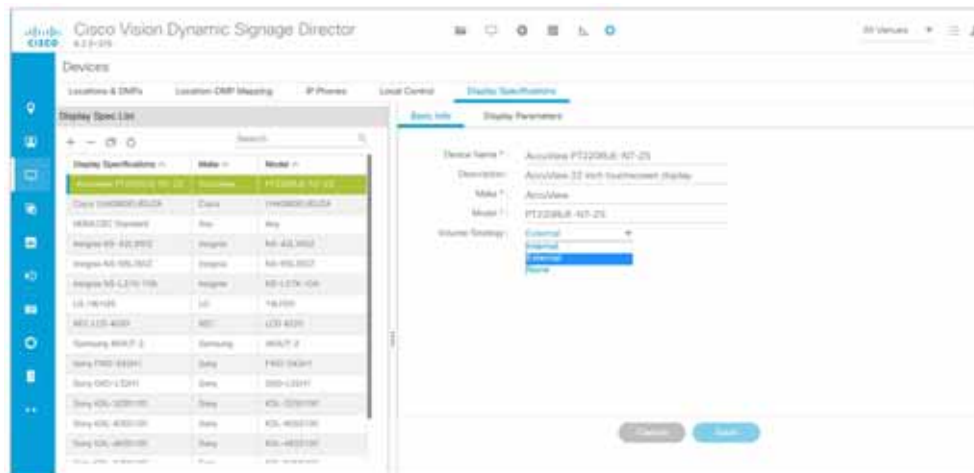
When properly configured in Cisco Vision Director, volume changes can be made from methods such as the IP phone, IR remote, Management Dashboard, or event script state change. Volume changes for the primary video audio can be controlled for the SPDIF (on the SV-4K, CV-UHD, and CV-UHD2 only), analog audio, 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 4 on page 52](#).

To choose the volume for the device:

1. Go to **Configuration > Devices > Display Specifications > Basic Info**.
2. Use the **Volume Strategy** pull-down arrow to choose a volume.
3. Click **Save**.

Figure 4 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 52](#)
- [Configuring Basic Information for TV Display Specifications, on page 53](#)
- [Configuring Touchscreen Support, page 55](#)
- [Configuring Touchscreen Support, page 55](#)

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 **Configuration > Devices > Display Specifications** (Figure 4 on page 52).
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 53](#) 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 51 .

4. Click **Save**.
5. Apply configuration to the DMPs.

Note: 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 **Configuration > Devices > Display Specifications**.
2. Select an existing display specification or add a new one.
3. Click **Display Parameters** tab.
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 120000 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>
dmp.SupportsTouchScreen	<p>True—Enables Dynamic Signage Director to support USB HID devices plugged in to the DMP.</p> <p>False—Disables the option.</p>
dmp.hdmiStreamingDelay	<p>Value (in ms) determines the delay.</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 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.

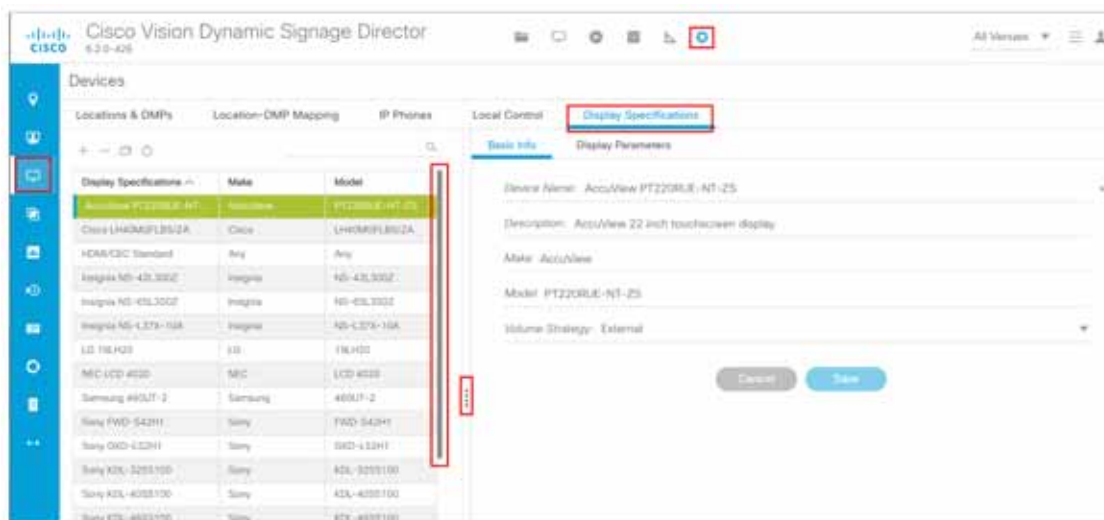
Note: Some manufacturers claim support for HID while using custom drivers. Verify that standard HID drivers are used.

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 **Configuration > Devices > Display Specifications** (Figure 5 on page 55).

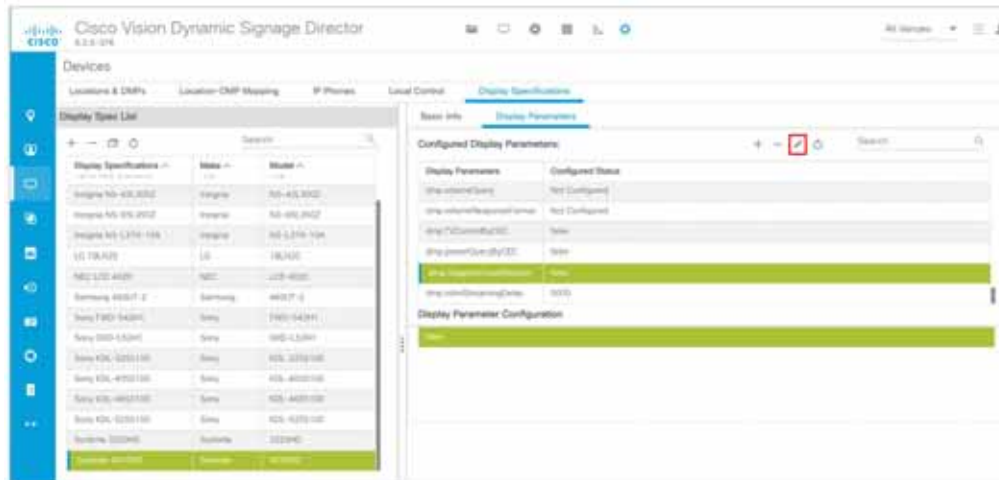
Figure 5 Setting Display Specifications



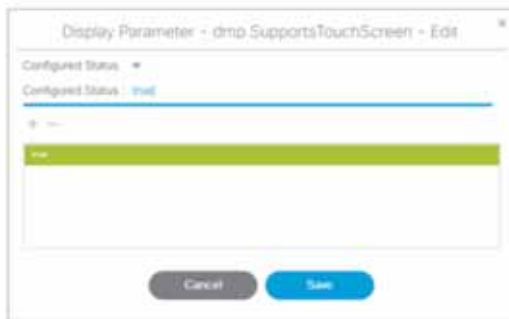
2. Create a display specification for your device screen. See the device specifications for this information. Use the + icon to create a new spec.

Or, scroll down the list of devices. Find your Make and Model and select it.

3. Click the **Display Parameters** tab.
4. Scroll down to **dmp.SupportsTouchScreen** and select it (Figure 6 on page 56).
5. Click the **Edit** icon. The Display Parameter Edit box appears (Figure 7 on page 56).

Figure 6 Setting dmp.SupportsTouchScreen Parameter

6. In the Display Parameter Edit box, change false to **“true”** for your device.

Figure 7 Display Parameter Edit Dialog Box

7. 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.

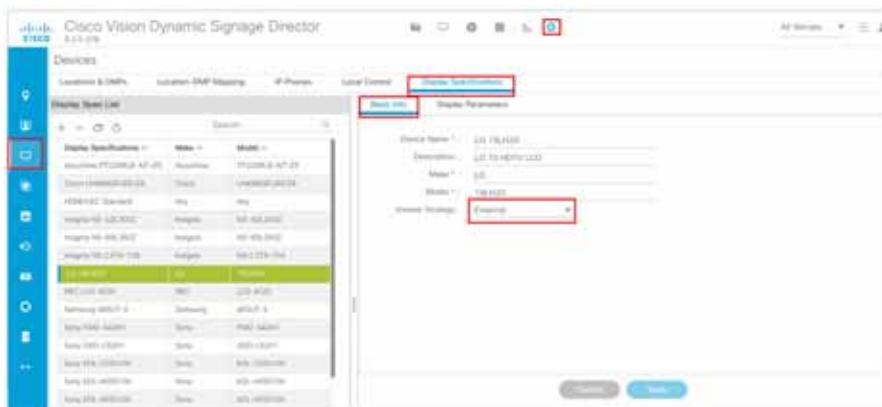
Configuring Display Parameters for External Volume Support

User Role: Administrator

When using the external volume strategy, configure RS-232 commands to send to the TV to change the volume ([Figure 8 on page 57](#)).

Go to **Configuration > Devices > Display Parameters > Basic Info > External**.

Figure 8 External Volume Strategy



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 57 provides information about the display parameters used to configure the Relative and Absolute types of external volume control.

Table 3 Display Parameters for External Volume Support

Display Parameters	Volume Type	Description
Volume <i>n</i>	Absolute	Specifies the volume increment level, where <i>n</i> is a number from 1 to the total number of volume levels supported. Configure multiple <code>Volume<i>n</i></code> commands for the number of increments being supported. Specify whole numbers for " <i>n</i> ." For example specify "1"—not 01. TIP: The best practice is to set <code>Volume1</code> 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.
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.
VolumeCount	Absolute	Total number of volume levels available.

Display Parameters	Volume Type	Description
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 display parameter.		
dmp.RelativeVolumeSteps	Relative	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. For example, if the value is set to 8, then a VolumeUp or VolumeDown command sends 8 copies of the RS-232 string.
dmp.SerialDelay	Relative	Specifies the delay between sending repeated serial commands from the media player. The default is 5000 ms. This command can be used for certain TV displays that discard repeated serial commands that are sent too close together.

Table 4 on page 58 shows an example of RS-232 command strings defined for Absolute volume control using 12 increments.

Table 4 Volume Count Command Example for One Model of 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:

- [Setting the Display Input Name, page 59](#)
- [Disabling the TV Display Banner, page 60](#)

Setting the Display Input Name

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 11 on page 60](#)).

To set the TV display name so it appears on screen:

1. Click **Configuration > Luxury Suite**
2. Click the + icon to add a luxury suite or select an existing one.
 - a. Click the **Location Assignment** tab ([Figure 9 on page 59](#)). The screen shows the Assigned Locations and the Available Locations panels.
 - b. Highlight a **Location Name** from the right panel and click the **Assign Location**. Now that Location appears in the **Assigned Locations** panel.
 - c. Click the **Edit** (pencil icon). The Edit Display Label box appears ([Figure 10 on page 60](#)).
3. Type a name in the **Display Label** field, in our example “Main” ([Figure 11 on page 60](#)).

Figure 9 Assign the Location of the Luxury Suite

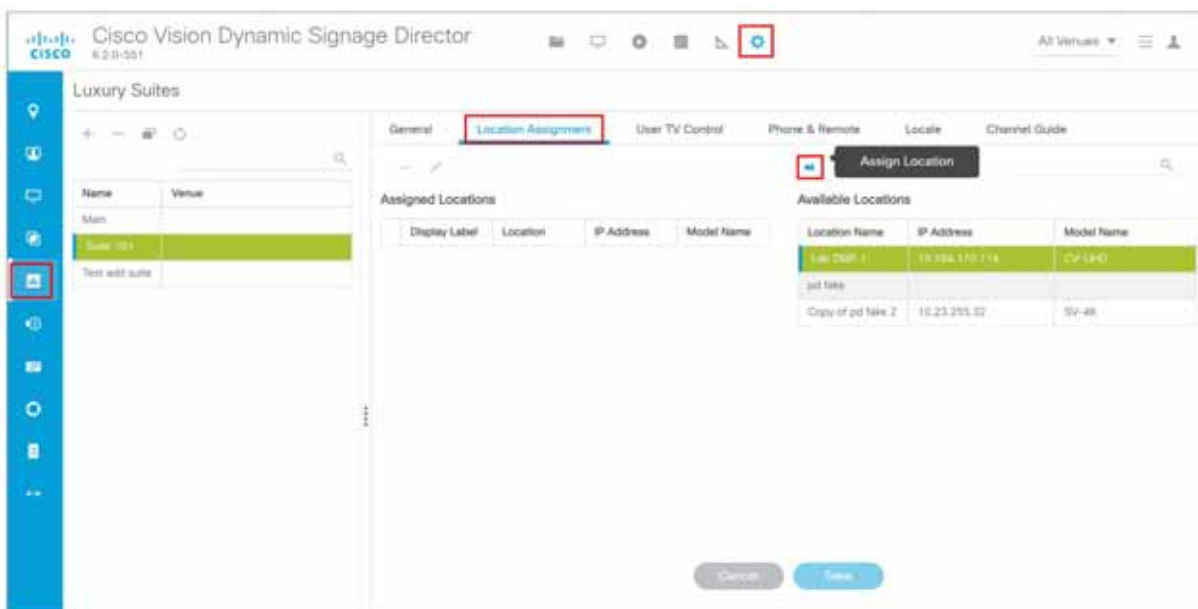


Figure 10 Setting the Display Name


4. Click **Save** to close the dialog box.
5. Click **Save** for the suite configuration.

Note: The change will not reflect on the DMP until the next content push or a DMP restart.

The display banner is enabled by default with a duration of 5 seconds when controlled via the IR Remote (Figure 11 on page 60).

Figure 11 TV Display Banner and Screen Identification

Disabling the TV Display Banner

User Roles: Administrator

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 **More > Management Dashboard > Tools** drawer > **Advanced** tab > **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**.