Main page: Cisco Unified MeetingPlace, Release 8.0

Up one level: Planning Your Deployment

This chapter describes how to calculate the capacity of your system, which is different depending on if you have an Express Media Server or a Hardware Media Server. It also provides recommendations about how to populate the fields on the Media Resource Configuration page in the Administration Center.

- Resource Management and System Capacity for Systems Using the Express Media Server
- Resource Management and System Capacity for Systems Using the Hardware Media Server
- About the Resource Management Spreadsheet
- Resource Management Spreadsheet Example
- About Video Profile Level Negotiation and the User Experience
- How to Calculate Values for the Media Resource Configuration Page in the Administration Center
- System Capacity Limits for New Deployments
- System Capacity Quick Reference Tables

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Resource Management and System Capacity for Systems Using the Express Media Server

If you installed and configured your Cisco Unified MeetingPlace system to use an Express Media Server (by setting the System Media Mode parameter to software), the system capacity, or the value of the Total system resource units (SRUs) parameter, is based on the type of Cisco MCS that the Application Server resides on and the speed and number of processors on that system.

The system first calculates the total number of SRUs. It then calculates the maximum number of SRUs that could be used, based on the number of licenses you purchased. The remaining resources are put in a SRU pool and are available for enhanced audio and video features.

For example, a Cisco Unified MeetingPlace system has 1000 total SRUs. If the customer buys 100 audio licenses, then the system reserves one pool of 100 SRUs (the customer can have a maximum of 100 G.711 calls at the same time). The remaining 900 SRUs in the SRU pool are used for enhanced audio and video features; for example for G.722 or G.729 calls, or for calls with video.

The system consumes SRUs from the pool as follows:

- After installing voice and video licenses, the system allocates one SRU for a voice port and one SRU for a video port from the remaining SRU pool.

  If you install more licenses that the system can support, the remaining SRU pool shows 0, and the system allocates resources to audio first and then to video (if there are remaining resources).

- The number of SRUs used depends on the voice and video attributes of the call. See Table: System Resource Units Used Per Port Type. For example, if the caller uses the G.729 audio codec, more resources are consumed on the system than if a caller is using a G.711 codec. An SRU is defined as a measurement of the system computing power used by one G.711 call.

Table: System Resource Units Used Per Port Type

Port Type	Number of System Resource Units (SRUs) Used
One G.711 audio port	1
One G.729 or one G.722 audio port	5
One video port[1] at 320 kbps	1
One video port at 384 kbps	1
One video port at 768 kbps	2
One video port at 1200 kbps	4
One video port at 1500 kbps	5
One video port at 2000 kbps	6

1. 320 kbps video is the lowest rate that is guaranteed for a video license.

- When you configure scheduled meeting features, the system allocates the resources at runtime, if they are available. If there are not enough SRUs remaining in the pool, the system will not offer the feature to the user.
- When you configure ad-hoc meeting features, the system immediately deducts resources from the remaining SRU pool to support ad-hoc voice and ad-hoc video. The system guarantees ad-hoc video conferencing up to 384 kbps. If you configure a higher rate, the system tries to deliver a higher rate, but it is not guaranteed.

We recommend that you configure your system so that there are some resources in the Remaining SRUs for high-end audio and video field.

- Do not install more licenses than the system can support.
- If the number of installed voice licenses is more than the resources in the SRU pool, the system supports only G.711 audio.
- If you install more licenses than your hardware can support, you can manually override the system capacity. Adjust your voice and video licenses (see the About Overriding Values) so that the system has some remaining SRUs.

Resource Management and System Capacity for Systems Using the Hardware Media Server

If you installed and configured your Cisco Unified MeetingPlace system to use a Hardware Media Server (by setting the System Media Mode parameter to hardware), the system manages resources based on the number of Audio and Video Blades installed in the Hardware Media Server and the type of codec (standard rate or high rate) selected:

- For audio ports, the number of Audio Blades and the Global audio mode parameter determine the physical capacity of the system. You set the Global audio mode parameter to either 250 ports per blade or to 166 ports per blade, depending on which audio codecs are required in your deployment. You get 250 ports with G.711. If you enable G.729 with Line Echo Cancellation, G.722, or iLBC, the full capacity of each blade is then 166 ports, even if only G.711 is used. You can transcode the G.729, G.722, and iLBC codecs and send only G.711 calls to Cisco Unified MeetingPlace if you want to maintain the 250 port maximum capacity.

  The reservation mechanism associated with meeting scheduling also affects the use for audio ports. Reservation can cause a meeting entry to be denied even if not all licenses or physical capacity are in use. Scheduling is based on licensed capacity and configuration, not physical capacity.

- For video ports, the number of Video Blades determines the physical capacity of the system (48 ports for a single-blade system or 40 ports per blade for a multiple-blade system). If a meeting is in high-rate mode, each video connection takes two video port resources, which means the system runs out of resources more quickly. There is no reservation mechanism for video; the system services video on a first come, first served basis until either the system runs out of physical resources or licenses.
- The resource cost difference between standard-rate and high-rate video is a factor of two. This means that twice as many resources are used with high-rate video.
  - ◆ Audio and video port resources are based on licenses, not physical capacity. If the system does not have enough physical capacity to satisfy the licenses, it generates an alarm. The

system stops attempting to provide resources only when the number of licenses assigned for callers meets the number configured for the system.
   ♦ If you have too many licenses for the physical capacity, you can avoid the alarm by using the override system capacity mechanism.
   • If you set the Override system audio and video capacity parameter to **Yes**:
      ♦ Audio available ports = Audio capacity override (ports)
      ♦ Video available ports = Video capacity override (ports)
   • If you set the Override system audio and video capacity parameter to **No**:
      ♦ Audio available ports = Audio licensed ports
      ♦ Video available ports = Video licensed ports

About the Resource Management Spreadsheet

The Cisco Unified MeetingPlace Release 8.0 documentation contains a Resource Management Spreadsheet that can be found at
http://www.cisco.com/en/US/products/sw/ps5664/ps5669/prod_technical_reference_list.html.

Table 1, "Capacity for Various Video Bit Rates," is on rows 5 to 22 and lists the capacity of various video bit rates.

Table 2, "Audio and Video Port Combinations," is on rows 32 to 40 and shows various combinations of audio and video ports.

Table 3, "Capacity Testing," is on rows 47 to 55 and can be used for you to test your numbers.

Notes about the Resource Management Spreadsheet:

   • The "Total SRUs per call" field is the total of the values in the "Audio SRUs per call" and "Video SRUs per call" columns.
   • To calculate the value in the 7835-I2 column, take the total number of SRUs (for 7835-I2 it is 500) and divide it by the value in the "Total SRUs per call" column. For example, for G.711 audio + 1200 Kbps video, the value for the Total SRUs per call is 5. Therefore, the value in the 7835-I2 column is 500 divided by 5 which is 100.
   • To calculate the value in the 7845-I2 column, take the total number of SRUs (for 7845-I2 it is 1000) and divide it by the value in the "Total SRUs per call" column. For example, for G.711 audio + 2000 Kbps video, the value for the Total SRUs per call is 8. Therefore, the value in the 7845-I2 column is 1000 divided by 8 which is 125.
   • To calculate the value in the QuadCore column, take the total number of SRUs (for QuadCore it is 1500) and divide it by the value in the "Total SRUs per call" column. For example, for G.722/G.729 audio + 1500 Kbps video, the Total SRUs per call is 10. Therefore, the value in the QuadCore column is 1500 divided by 10 which is 150.

Resource Management Spreadsheet Example

Use Table 2, titled "Audio and Video Port Combinations," in the Resource Management Spreadsheet to create different mixes (or ratios) of video and of high-complexity audio. The ratios define the maximum

number of supported calls for your Cisco Unified MeetingPlace hardware. For each hardware platform, the Audio and the Video columns contain the numbers that you enter in the Audio capacity override (ports) and the Video capacity override (ports) fields on the Media Resource Configuration page.

For example, if you know the mix of users on your network (how many use video and at what speed, and what types of audio codecs will be used), you can determine if you need to buy additional licenses or whether to override the system capacity on the Media Resource Configuration page to support these extra features.

Before You Begin

- Install the appropriate number of audio and video licenses to support your users. See Table 1, "Capacity for Various Video Bit Rates," in the Resource Management Spreadsheet, which defines the license requirements for basic audio and video and for high-complexity audio and video.

Procedure

1. Analyze the use of audio and video endpoints of the users in your network. Enter a ratio (percentage) in the "Audio/Video Ratio %" cell to define the ratio of audio to video calls.
2. Press **Enter**.
3. Enter a ratio (percentage) in the "G.711 to G.722 Ratio %" cell to define the ratio of basic G.711 audio to G.722/G.729 high-complexity audio.
    - To use G.711 for all audio calls and to not offer video, enter 0 in both the "Audio/Video Ratio %" and "G.711/G.722 Ratio %" cells.
    - To have half of the calls have video and the other half use G.722/G.729 audio codecs, enter 50 into both the "Audio/Video Ratio %" and "G.711/G.722 Ratio %" cells.
    - To have all calls be video-enabled, enter 100 in the "Audio/Video Ratio %" cell.
4. Press **Enter**.
5. Read the number in the "Max number of calls supported with this combo" cell to see the number of supported calls.
6. Read the number under the Audio and Video columns for your hardware:
    - If these numbers are less than the installed audio and video licenses, purchase additional licenses to make up the difference.
    - If these numbers are greater than the installed audio and video licenses, enter these numbers into the Audio capacity override (ports) and the Video capacity override (ports) fields on the Media Resource Configuration page.

Note: If you configure a mix for both high quality and high definition endpoints to join a meeting, compare the Audio numbers for high quality and high definition for the specified hardware. Compare the video numbers for high quality and high definition for the specified hardware. Enter the smaller of the two numbers into the Audio capacity override (ports) and the Video capacity override (ports) fields.

Example

Assume that your Cisco Unified MeetingPlace system is installed on a Cisco MCS 7835-I2. You initially determined that you wanted to support G.711 audio and 320 kbps video. You installed 250 audio and 250

video licenses on your system according to Table 1, "Capacity for Various Video Bit Rates," in the Resource Management Spreadsheet.

Later, you decide to alter the mix, and you use Table 2, "Audio and Video Port Combinations," in the Resource Management Spreadsheet. For the 320 Kbps video compatibility row, you change the value in the "Audio/Video Ratio %" to 50. You also change the value in the "G711 to G722 Ratio %" cell to 50. This causes 50 percent of the calls to have video at 320 kbps and 50 percent of the calls to use G.722/G.729 audio codecs.

With this configuration, the system supports only 142 calls. From the 7835-I2 Audio and Video columns, you need 142 audio licenses and 71 video licenses installed on your system. Enter the number from the Audio and from the Video columns into the Audio capacity override (ports) and the Video capacity override (ports) fields on the Media Resources Configuration page. In this example, half the audio calls use G.722/G.729 and the other half use G.711. The 71 video ports all use 320 kbps video bandwidth.

About Video Profile Level Negotiation and the User Experience

- Video User Experience with the Express Media Server
- Video User Experience with the Hardware Media Server

Video User Experience with the Express Media Server

When you configure the system for software media mode, the system supports a range of endpoints from mobile users to HD users. Each endpoint has its own set of video capabilities (specified by its profile and level during signaling) that might be very different from other endpoints that join the meeting. The profile and level indicate the ability of the endpoint to decode a video stream with certain resolution and frame rate attributes. The profile and level also specify the maximum bandwidth associated with it as shown in Table: Level and Bandwidth Mapping for Video Profiles in Software Media Mode.

Table: Level and Bandwidth Mapping for Video Profiles in Software Media Mode

AVC Modes	Typical Resolution	Level Advertised[1]	Minimum Bit Rate	Maximum Bit Rate
H.263	CIF	Level N/A	192 kbps	768 kbps
Mobile (H.264 AVC)	QCIF	1.1	64 kbps	384 kbps
Compatibility (H.264 AVC)	CIF	1.3	192 kbps	768 kbps
High Quality	VGA or 4CIF	3.0	768 kbps	2000 kbps

Example   6

(H.264 AVC)				
HD (H.264 AVC)	720p	3.1	1200 kbps	2000 kbps

1. Cisco Unified MeetingPlace supports <u>RFC 3984</u>, which governs the negotiation of H.264 through levels and not specific resolutions or frame rates. Each level supports multiple resolutions depending on the bit and frame rates.

As shown in <u>Table: Level and Bandwidth Mapping for Video Profiles in Software Media Mode</u>, only one video mode per video format is offered when the system is in software media mode, and the system does not provide interoperability between these different profile levels. This means that when a meeting is scheduled, only endpoints that can support the advertised video profile level or higher can join the meeting with video. If the endpoint offers a higher profile level than advertised, the system negotiates to a lower level. Consequently, the higher-level video endpoint can join the lower-level meeting, but a lower-level endpoint, which cannot support the higher advertised level, can join as audio only.

- If Mobile (Level 1.1) is advertised, all higher-level video endpoints can join, but the video quality is reduced to Level 1.1.
- If Compatibility (Level 1.3) is advertised, only Levels 1.3, 3.0, and 3.1 video endpoints can join with video, but the video quality is reduced to Level 1.3.
- If High Quality (Level 3.0) is advertised, only Levels 3.0 and 3.1 video endpoints can join with video. All other lower-level video endpoints can join but will be audio-only endpoints in the conference.
- If HD (Level 3.1) is advertised, only Level 3.1 video endpoints can join.
- If a Level 3.0 endpoint enters an HD Level 3.1 conference, or if a CIF endpoint enters a high-quality conference, the system negotiates the endpoints down to an audio-only experience because of the level incompatibility.

Video User Experience with the Hardware Media Server

When you install the Media Server and configure the system for hardware media mode, the system supports the modes, profiles, and levels shown in <u>Table: Level, Resolution, and Bandwidth Mapping for Video Profiles in Hardware Media Mode</u> for scheduled and reservationless meetings.

Table: Level, Resolution, and Bandwidth Mapping for Video Profiles in Hardware Media Mode

AVC Modes	Level Advertised	AVC Resolution	Minimum Bit Rate	Maximum Bit Rate
Standard Rate (H.263 and H.264 AVC)	1.2	176 × 144 (QCIF) 352 × 288 (CIF)	64 kbps	384 kbps
High Rate	2.0	176 × 144 (QCIF)	64 kbps	2000 kbps

(H.261, H.263, and H.264 AVC)		352 x 288 (CIF)		
		704 × 576 (4CIF)		

As shown in Table: Level, Resolution, and Bandwidth Mapping for Video Profiles in Hardware Media Mode, there are multiple video modes per video format. This means that for a meeting in hardware mode, if the user profile for the meeting owner uses high rate, users with video endpoints that use H.261, H.263, and H.264 AVC can join with video supported. This is possible because the Hardware Media Server supports transcoding between video codecs.

The Hardware Media Server also performs transrating, which means a user with an ISDN connection can join a meeting with user using a 2 Mb connection without affecting the interaction between participants using the High Rate AVC mode.

You configure the video type through the User Profile page. When the user schedules the meeting, the system uses this mode as the video type. The system applies the mode setting on a per-meeting basis.

How to Calculate Values for the Media Resource Configuration Page in the Administration Center

- The Media Resource Configuration Page
- About Overriding Values
- Recommendations for Determining the Number of Audio Floater Ports
- Recommendations for Determining the Number of Audio Overbook Ports
- Recommendations for Determining the Global Audio Mode
- Recommendations for Determining the Global Video Mode
- Considerations for Systems Using Ad-Hoc Video

The Media Resource Configuration Page

You can set values for the meetings held on your system by going to the Media Resource Configuration page in the Administration Center. For additional descriptions of the fields on that page, see the online help in the administrator interface or the *Configuration Guide for Cisco Unified MeetingPlace Release 8.0* at http://www.cisco.com/en/US/products/sw/ps5664/ps5669/products_installation_and_configuration_guides_list.html. For guidelines on settings values for some of those fields, see either Table: Setting Media Resource Configuration Values -- Express Media Server or Table: Setting Media Resource Configuration Values -- Hardware Media Server.

Notes:

- These guidelines are good defaults for a new system. If your system is already configured with settings that work well for your user base, then keep the existing settings.
- There are two tables: Table: Setting Media Resource Configuration Values -- Express Media Server is for systems that use an Express Media Server and Table: Setting Media Resource Configuration Values -- Hardware Media Server is for systems that use a Hardware Media Server. Use the table that applies to your system.

System Media Mode

On the top of the Media Resource Configuration page in the Administration Center, there is a parameter called **System media mode**. This parameter can be set to either Software, which means that you are using an Express Media Server, or Hardware, which means that you are using a Hardware Media Server. The parameters that you see on the rest of the Media Resource Configuration page depend on the value that you set for the System media mode parameter.

Express Media Server

Table: Setting Media Resource Configuration Values -- Express Media Server

Field	How to Determine the Value
Total system resource units (SRUs)	*Read-only.* Total number of SRUs available in the system. This shows the system capacity, based on hardware (such as the Cisco MCS type and the number and speed of the CPUs).
Remaining SRUs for high-end audio and video	*Read-only.* Number of SRUs that are available for enhanced audio and video features. After you load audio and video licenses, the system deducts one SRU per audio or per video license from the remaining SRU pool. For example, if you install one audio and one video license, the system deducts two SRUs from the pool. If you install more licenses than the system can support, the remaining SRU pool shows 0, and the system allocates resources first to audio and second to video (if there are remaining resources). Some SRUs are consumed immediately for normal system operation and are deducted from the Total system resource units (SRUs). When you configure ad-hoc meeting features, SRUs are immediately deducted from the remaining SRU pool. When you configure scheduled meeting features, the system allocates the resources at runtime if available. If there are not enough SRUs remaining in the pool, the system will not offer the feature to the user.
Audio licensed ports	*Read-only.* Based on the number of ports for which you have licenses. There are two licenses: voiceconf and maxvoice. The number of audio licensed ports is the lesser of these values.

	You cannot change this value on the Media Resource Configuration page. To change this value, purchase and install additional licenses.
Audio available ports	*Read-only.* Number of voice ports for scheduled, reservationless and ad-hoc meetings on the system, determined by either the Audio licensed ports parameter or the Audio capacity override (ports) parameter. Voice ports are also used by meeting recordings. The displayed value determines the maximum possible number of simultaneous voice meeting connections to Cisco Unified MeetingPlace. Default: Audio available ports = Scheduled audio ports + Ad-hoc audio ports
Video licensed ports	Based on the number of ports for which you have licenses. There are two licenses: videoconf and maxvideo. The number of video licensed ports is the lesser of these values. You cannot change this value on the Media Resource Configuration page. To change this value, purchase and install additional licenses.
Video available ports	*Read-only.* Number of video ports for scheduled, reservationless, and ad-hoc meetings on the system, determined by either the Video licensed ports field or the Video capacity override (ports) field. This number is also affected by the settings on the Add Video Type Page based on which video type you select. When the system runs out of resources from the remaining SRU pool, video is no longer offered to the user. Video ports can also be used by meeting recordings. The displayed value determines the maximum possible number of simultaneous video connections to Cisco Unified MeetingPlace. Default: Video available ports = Scheduled video ports + Ad-hoc video ports
Scheduled Audio and Video Settings	
Scheduled audio ports	*Read-only.* Number of scheduled voice ports. The system checks this number against the number of installed audio licenses. Scheduled audio ports = Audio licensed ports - Ad-hoc audio ports
Enable scheduled G.729 or G.722	Can be either yes or no. Enables G.729 or G.722 high-quality voice ports for scheduled meetings. The system

	does not reserve these ports in advance but takes them from the remaining SRU pool only if there are enough resources remaining on the system. Cost per port: 5 SRUs.
Scheduled video ports	Number of scheduled video ports. The system does not reserve these ports in advance but takes them from the remaining SRU pool only if there are enough resources remaining on the system. Scheduled video ports = Video licensed ports - Ad-hoc video ports
Audio floater ports	See the Recommendations for Determining the Number of Audio Floater Ports.
Audio overbook ports	See the Recommendations for Determining the Number of Audio Overbook Ports.
Ad-Hoc Audio and Video Settings	
Ad-hoc audio ports	Number of ad-hoc voice ports registered to Cisco Unified Communications Manager. The Cisco Unified MeetingPlace system checks this number against the number of installed audio licenses. Changing this value affects the number of resources in the remaining SRU pool. You must set the Ad-hoc audio ports parameter to a number greater than 0. This enables the Enable ad-hoc G.729 or G.722 and Enable ad-hoc video options. Otherwise, these options are disabled. Default: Ad-hoc audio ports = Audio licensed ports - Scheduled audio ports
Enable ad-hoc G.729 or G.722	Enable or disable G.729 or G.722 ad-hoc ports. You can enable this feature only if there are enough SRUs available on the system to support these features. For example, the remaining SRUs must be greater than or equal to the number of Ad-hoc audio ports multiplied by the G.729 cost. The number that you configure is the maximum number of ports that can be configured, but only if system resources are available. If there are enough resources, the system immediately deducts them from the remaining SRU pool. Cost per port: 5 SRUs.
Enable ad-hoc video	Enable or disable ad-hoc video. When enabled, the system reserves the same number of ad-hoc video ports as ad-hoc audio ports from the SRU pool. Based on the selected Ad-hoc video mode type, these video ports are configured at the Ad-hoc video minimum bit rate (kbps) and the Ad-hoc video maximum bit rate (kbps). The system guarantees video ports at the basic rate of 320 kbps. The system provides additional bit rates to the port only if there are remaining SRUs.
Ad-hoc video ports	

	Display only. Number of ad-hoc video ports available. This number cannot be larger than the number of Ad-hoc audio ports. If Enable ad-hoc video is disabled, the ports that were allocated for ad-hoc video are now available for Scheduled video ports. Default: Ad-hoc video ports = Ad-hoc audio ports

Ad-hoc video mode	Video mode used:
	
	  • H.263: To support H.263
	  • Mobile: To support mobile AVC clients (low resolution)
	  • Compatibility: To support desktop resolution for AVC endpoints
	  • High quality: To support VGA for AVC endpoints
	  • HD: To support HD resolution of AVC endpoints
	
	This setting is applied at the system level; it applies to all ad-hoc meetings.
	
	Restriction: You cannot select an ad-hoc video mode unless you set Enable ad-hoc video to yes.

Ad-hoc video minimum bit rate (kbps)	Minimum bit rate for the video experience. The minimum bit rate is the minimum rate that the endpoint must receive from the meeting. The meeting bridge offers the minimum and maximum bit rates to the endpoint during negotiation. The minimum bit rate specifies the minimum video experience and if the system does not have resources to support this rate, video is not offered to the user.
Ad-hoc video maximum bit rate (kbps)	Maximum bit rate for ad-hoc video. The maximum bit rate is the maximum rate that the endpoint can send video to the meeting.
Override System Capacity	
Override system audio and video capacity	Values can be yes or no. See the About Overriding Values.
Audio capacity override (ports)	See the About Overriding Values.
Video capacity override (ports)	See the About Overriding Values.
Ports Per Meeting	
Maximum ports per reservationless meeting	Limits the total number of all port types that can be used for each reservationless meeting. Ensures that resources are shared adequately among users.
Maximum ports per scheduled meetings	Limits the total number of all port types that can be used for each scheduled meeting. Ensures that resources are shared adequately among users.

Maximum reserved ports per scheduled meeting	Restricts the maximum number of ports that can be reserved when a meeting is scheduled. **Note:** The upper limit for this field is <u>Maximum ports per scheduled meetings</u>. The lower limit for this field is 2.
Default number of ports per audio meeting	Default number of voice ports to reserve for meetings. This value is used in the Number of Participants field when scheduling meetings. This field also applies to reservationless meetings. Restriction: The value of this parameter cannot be more than the value of the <u>Audio available ports</u> parameter.

Hardware Media Server

Table: Setting Media Resource Configuration Values -- Hardware Media Server

Field	How to Determine the Value
Audio licensed ports	Based on the number of ports for which you have licenses. There are two licenses: <u>voiceconf</u> and <u>maxvoice</u>. The number of audio licensed ports is the lesser of these values. You cannot change this value on the Media Resource Configuration page. To change this value, purchase and install additional licenses.
Audio available ports	The value of the <u>Audio licensed ports</u> field modified by the value of the <u>Global audio mode</u>: • If the value of <u>Global audio mode</u> is G.711, G.729; 250 ports/blade, equals the value of <u>Audio licensed ports</u> • If the value of <u>Global audio mode</u> is G.711, G.722, G.729, iLBC; 166 ports/blade, equals two-thirds the value of the <u>Audio licensed ports</u> To change this value, change the value of the <u>Global audio mode</u> field. **Note:** The <u>Global audio mode</u> parameter is only available when your system is using a Hardware Media Server.
Video licensed ports	Based on the number of ports for which you have licenses. There are two licenses: <u>videoconf</u> and <u>maxvideo</u>. The number of video licensed ports is the lesser of these values. You cannot change this value on the Media Resource Configuration page. To change this value, purchase and install additional licenses.
Video available ports	The number of Video available ports is equal to the number of <u>Video licensed ports</u> subject to the availability of hardware resources.
Audio floater ports	See the <u>Recommendations for Determining the Number of Audio Floater Ports</u>.
Audio overbook ports	See the <u>Recommendations for Determining the Number of Audio Overbook Ports</u>.
Override System Capacity	
	Values can be yes or no.

Override system audio and video capacity	See the About Overriding Values.
Audio capacity override (ports)	See the About Overriding Values.
Video capacity override (ports)	See the About Overriding Values.
Global Settings	
Global audio mode	See the Recommendations for Determining the Global Audio Mode.
Ports Per Meeting	
Maximum ports per reservationless meeting	Limits the total number of all port types that can be used for each reservationless meeting. Ensures that resources are shared adequately among users.
Maximum ports per scheduled meetings	Limits the total number of all port types that can be used for each scheduled meeting. Ensures that resources are shared adequately among users.

About Overriding Values

You can install more licenses than your hardware can support; that is, you can manually override the system capacity. This is for your convenience when upgrading your system, so that you can upgrade the number of licenses before you physically upgrade your hardware. However, every time you restart the system with this configuration, the system will generate an alarm.

To avoid generating an alarm, set the Override system audio and video capacity parameter to yes and then change the values for the Audio capacity override (ports) and Video capacity override (ports) parameters so that the licensed capacity matches the physical capacity. The system will use the values you enter when calculating the capacity for scheduling.

Recommendations for Determining the Number of Audio Floater Ports

Floater ports are used when the actual number of participants for a meeting exceeds the number of ports that were reserved for that meeting. If the meeting runs out of reserved ports, the system uses floater ports for additional participants who join the meeting.

The information in Table: Recommended Percentages for Overbooking and Floater Ports maximizes the port utilization and capacity of the system, depending on how much traffic is used for reservationless meetings. It contains information to help you determine the starting values for the Audio floater ports and Audio overbook ports parameters.

The values in the "Overbook Port %" and "Floater Port %" columns are expressed as a percentage of the number of ports. Note that the "% reserved" refers to port usage rather than the number of meetings. Because reserved (or scheduled) meetings tend to be larger than reservationless, their effect is greater.

Table: Recommended Percentages for Overbooking and Floater Ports

Usage	Default meeting size	Audio Overbook Port %	Audio Floater Port %
All reserved	5-6	33%	30%

R% reserved	3-4	R / 3	50% - (R / 5)
All reservationless	2-3	0	50%

Tips

- Increase the number of audio floater ports if users complain that their meetings are being forced to end at the scheduled end time.
- Decrease the number of audio floater ports to allow more meetings to be scheduled.
- Reservationless meetings are best served by a small starting meeting size and a larger floater pool, with little or no overbooking.
- Increase the number of audio floater ports if your system has frequent meeting recordings.

Recommendations for Determining the Number of Audio Overbook Ports

Audio overbook ports provide some leeway in port allocations, based on the assumption that not all reserved licensed ports will be used. When a user schedules a meeting, the system reserves ports based on the specified number of meeting participants. The system uses overbook ports to allow users to schedule more meetings, with more participants, than the system actually has licenses for.

For recommendations, see <u>Table: Recommended Percentages for Overbooking and Floater Ports</u>.

Tips

- Increase the overbooking percentage if you find that port utilization is low at times when scheduling failures are high.
- Decrease the overbooking percentage if you have evidence that callers are unable to get into their meetings even though adequate ports were reserved.
- Reservationless meetings are best served by a small starting meeting size and a larger floater pool, with little or no overbooking.
- With scheduled meetings it is best to set the default meeting size to the average (which is typically about 5), and use overbooking to compensate for no-shows and cases where reservations are higher than actual usage.

Recommendations for Determining the Global Audio Mode

Note: This parameter only applies to systems that use a Hardware Media Server.

Options for this parameter are:

- G.711, G.729; 250 ports/blade
- G.711, G.722, G.729, iLBC; 166 ports/blade

Table: Recommended Percentages for Overbooking and Floater Ports   15

The following applies to the Hardware Media Server when used alone or in multiple blade situations:

- For High Capacity mode (G.711 with LEC and G.729 without LEC), the Audio Blades have a maximum audio port capacity of 250 at 90% of hardware capacity. When the hardware resource limit is reached, the system sends an alarm and users hear a busy signal when they attempt to access their meeting.
- For High Quality mode (G.711, G.722, G.729 with LEC, and iLBC), the Audio Blades have a maximum audio port capacity of 166 at 60% of hardware capacity. When the hardware resource limit is reached, the system sends an alarm and users hear a busy signal when they attempt to access their meeting.

Note: If you use Line Echo Cancellation (LEC) with G.729, you must select the lower capacity audio mode.

Recommendations for Determining the Global Video Mode

The following applies to the Cisco Unified MeetingPlace 3515 Media Server and Cisco Unified MeetingPlace 3545 Media Server Video Blades:

- When used alone, Video Blades have the following maximum video port capacity:
  - ♦ in "Standard Rate" mode - 48 ports
  - ♦ in "High Rate" mode - 24 ports
- When used in multiple blade situations (also known as cascading), Video Blades have the following maximum video port capacity:
  - ♦ in "Standard Rate" mode - 40 ports
  - ♦ in "High Rate" mode - 20 ports

Video available ports are equal to Video licensed ports, subject to hardware resource availability. When the hardware resource limit is reached, users are unable to send or receive video.

Considerations for Systems Using Ad-Hoc Video

- When you set Enable ad-hoc video to **Yes**:
  - ♦ The Ad-hoc video mode, the Ad-hoc video minimum bit rate (kbps), and the Ad-hoc video maximum bit rate (kbps) options are enabled.
  - ♦ Ad-hoc video ports = Ad-hoc audio ports
  - ♦ Scheduled video ports = Video available ports - Ad-hoc video ports
- Ad-hoc conferencing works with these configuration settings:
  - ♦ On the Media Resource Configuration Page, Enable ad-hoc G.729 or G.722 is set to No. In Cisco Unified Communications Manager Administration, the Cisco Unified MeetingPlace conference bridge is in the default device pool and the Cisco Unified IP Phone device that initiates the ad-hoc conference is also in the default device pool.
  - ♦ On the Media Resource Configuration Page, Enable ad-hoc G.729 or G.722 is set to Yes. In Cisco Unified Communications Manager Administration, the Cisco Unified MeetingPlace conference bridge is in the default device pool and the Cisco Unified IP Phone device that initiates the ad-hoc conference is in the G.729 device pool.
  - ♦ On the Media Resource Configuration Page, Enable ad-hoc G.729 or G.722 is set to Yes. In Cisco Unified Communications Manager Administration, the Cisco Unified MeetingPlace conference bridge is in the G.729 device pool and the Cisco Unified IP Phone device that initiates the ad-hoc conference is in the G.729 device pool.

♦ On the Media Resource Configuration Page, <u>Enable ad-hoc G.729 or G.722</u> is set to Yes. In Cisco Unified Communications Manager Administration, the Cisco Unified MeetingPlace conference bridge is in the G.729 device pool and the Cisco Unified IP Phone device that initiates the ad-hoc conference is in the default device pool.

When you configure ad-hoc conferencing, consider this criteria:

- The system guarantees voice ports for G.711. You can enable ad-hoc G.729 or G.722 only if there are enough SRUs on the system to support these features. If there are enough resources, the system immediately deducts them from the remaining SRU pool.
- If you enable ad-hoc video, the system reserves the same number of ad-hoc video ports as ad-hoc audio ports from the SRU pool.

  The system guarantees video ports at the basic rate of 320 kbps. The system provides additional bit rates to the port only if there are remaining SRUs.
  You can configure a lower rate to improve video quality and responsiveness. If you want lower network utilization, you can lower the maximum bit rate allowed for video conferencing.