



Configuring VideoStream

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Information About VideoStream

The IEEE 802.11 wireless multicast delivery mechanism does not provide a reliable way to acknowledge lost or corrupted packets. As a result, if any multicast packet is lost in the air, it is not sent again which may cause an IP multicast stream unviewable.

The VideoStream feature makes the IP multicast stream delivery reliable over the air, by converting the broadcast frame over the air to a unicast frame. Each VideoStream client acknowledges receiving a video IP multicast stream.

Guidelines and Limitations

Follow these guidelines when you configure VideoStream on the controller:

- The AP1100 and AP1200 do not support the reliable multicast feature.
- Make sure that the multicast feature is enabled. We recommend configuring IP multicast on the controller with multicast-multicast mode.
- Check for the IP address on the client machine. The machine should have an IP address from the respective VLAN.
- If there is a mismatch in the version of code on your controller, upgrade the controller code to 7.0.98.0 or later.
- Verify that the access points have joined the controllers.
- Make sure that the clients are able to associate to the configured WLAN at 802.11n speed.
- VideoStream is supported on the following access points: Cisco Aironet 3600, 3500, 1260, 1250, 1240, 1140, 1130, and 1040.

Configuring VideoStream

This section contains the following topics:

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Configuring the VideoStream on the Controller (GUI)

Step 1 Enable the multicast feature:

- Select the **Multicast Direct Feature** check box to enable the multicast direct feature. The default value is disabled.



Note Enabling the Multicast Direct feature does not automatically reset the existing client state. The wireless clients must rejoin the multicast stream after enabling the Multicast Direct feature on the controller.

- Under the Session Message Config, select **Session announcement State** to enable the session announcement mechanism. If this feature is enabled, clients are informed each time a controller is not able to serve the multicast direct data to the client.
- In the Session announcement URL text box, enter the URL where the client can find more information when an error occurs during the multicast media stream transmission.
- In the Session announcement e-mail text box, enter the e-mail address of the person who can be contacted.
- In the Session announcement Phone text box, enter the phone number of the person who can be contacted.
- In the Session announcement Note text box, enter a reason as to why a particular client cannot be served with a multicast media.
- Click **Apply** to commit your changes.

Step 2 Add a media stream:

- Choose **Wireless > Media Stream > Streams** to open the Media Stream page.
- Click **Add New** to configure a new media stream. The Media Stream > New page appears.



Note The Stream Name, Multicast Destination Start IP Address (IPv4 or IPv6), and Multicast Destination End IP Address (IPv4 or IPv6) text boxes are mandatory. You must enter information in these text boxes.

- In the Stream Name text box, enter the media stream name. The stream name can be up to 64 characters.
- In the Multicast Destination Start IP Address (IPv4 or IPv6) text box, enter the start IPv4 or IPv6 address of the multicast media stream.

- e. In the Multicast Destination End IP Address (IPv4 or IPv6) text box, enter the end IPv4 or IPv6 address of the multicast media stream.
- f. In the Maximum Expected Bandwidth text box, enter the maximum expected bandwidth that you want to assign to the media stream. The values can range between 1 to 35000 kbps.



Note We recommend that you use a template to add a media stream to the controller.

- g. From the Select from Predefined Templates drop-down list under Resource Reservation Control (RRC) Parameters, choose one of the following options to specify the details about the resource reservation control:
 - **Very Coarse** (below 300 kbps)
 - **Coarse** (below 500 kbps)
 - **Ordinary** (below 750 kbps)
 - **Low** (below 1 Mbps)
 - **Medium** (below 3 Mbps)
 - **High** (below 5 Mbps)



Note When you select a predefined template from the drop-down list, the following text boxes under the Resource Reservation Control (RRC) Parameters list their default values that are assigned with the template.

- **Average Packet Size** (100-1500 bytes)—Specifies the average packet size. The value can be in the range of 100 to 1500 bytes. The default value is 1200.
- **RRC Periodic update**—Enables the RRC (Resource Reservation Control Check) Periodic update. By default, this option is enabled. RRC periodically updates the admission decision on the admitted stream according to the correct channel load. As a result, it may deny certain low priority admitted stream requests.
- **RRC Priority** (1-8)—Specifies the priority bit set in the media stream. The priority can be any number between 1 and 8. The larger the value means the higher the priority is. For example, a priority of 1 is the lowest value and a value of 8 is the highest value. The default priority is 4. The low priority stream may be denied in the RRC periodic update.
- **Traffic Profile Violation**—Specifies the action to perform in case of a violation after a re-RRC. Choose an action from the drop-down list. The possible values are as follows:
 - Drop —Specifies that a stream is dropped on periodic reevaluation.
 - Fallback—Specifies that a stream is demoted to Best Effort class on periodic reevaluation.
 The default value is drop.

- h. Click **Apply** to save the configuration changes.

Step 3 Enable the media stream for multicast-direct:

- a. Choose **WLANS > WLAN ID** to open the WLANS > Edit page.
- b. Choose the **QoS** tab and select **Gold (Video)** from the Quality of Service (QoS) drop-down list.
- c. Enable **Multicast Direct**.
- d. Click **Apply** to save the configuration changes.

- Step 4** Set the EDCA parameters to voice and video optimized (optional):
- Choose **Wireless > 802.11a/n** or **802.11b/g/n > EDCA Parameters**.
 - From the EDCA Profile drop-down list, choose the **Voice and Video Optimized** option.
 - Click **Apply** to save the changes made.

- Step 5** Enable the admission control on a band for video (optional):



Note Keep the voice bandwidth allocation to a minimum for better performance.

- Choose **Wireless > 802.11a/n** or **802.11b/g/n > Media** to open the 802.11a/n (5 GHz) or 802.11b/g/n > Media page.
- Choose the **Video** tab.
- Select the **Admission Control (ACM)** check box to enable bandwidth-based CAC for this radio band. The default value is disabled.
- Click **Apply** to save the configuration changes.

- Step 6** Configure the video bandwidth:



Note The template bandwidth that is configured for a media stream should be more than the bandwidth for the source media stream.



Note The voice configuration is optional. Keep the voice bandwidth allocation to a minimum for better performance.

- Choose **Wireless > 802.11a/n** or **802.11b/g/n > Media** to open the 802.11a/n (5 GHz) or 802.11b/g/n > Media page.
- Choose the **Video** tab.
- Select the **Admission Control (ACM)** check box to enable the video CAC for this radio band. The default value is disabled.
- In the Max RF Bandwidth field, enter the percentage of the maximum bandwidth allocated to clients for video applications on this radio band. Once the client reaches the value specified, the access point rejects new requests on this radio band.
- The range is 5 to 85%.
- The default value is 9%.
- Click **Apply** to commit your changes.
- Reenable all WMM WLANs and click **Apply**.

- Step 7** Configure the media bandwidth:

- Choose **Wireless > 802.11a/n** or **802.11b/g/n > Media** to open the 802.11a (or 802.11b) > Media > Parameters page.
- Choose the **Media** tab to open the Media page.
- Select the **Unicast Video Redirect** check box to enable Unicast Video Redirect. The default value is disabled.

- d. In the **Maximum Media Bandwidth (0-85%)** text box, enter the percentage of the maximum bandwidth to be allocated for media applications on this radio band. Once the client reaches a specified value, the access point rejects new calls on this radio band.
- e. The default value is 85%; valid values are from 0 to 85%.
- f. In the **Client Phy Rate** field, enter the minimum transmission data rate to the client. If the transmission data rate is below the phy rate, either the video will not start or the client may be classified as a bad client. The bad client video can be demoted for better effort QoS or subject to denial.
- g. In the **Maximum Retry Percent (0-100%)** field, enter the percentage of maximum retries that are allowed. The default value is 80. If it exceeds 80, either the video will not start or the client might be classified as a bad client. The bad client video can be demoted for better effort QoS or subject to denial.
- h. Select the **Multicast Direct Enable** check box to enable the Multicast Direct Enable field. The default value is enabled.
- i. From the **Max Streams per Radio** drop-down list, choose the maximum number of streams allowed per radio from the range 0 to 20. The default value is set to auto. If you choose auto, there is no limit set for the number of client subscriptions.
- j. From the **Max Streams per Client** drop-down list, choose the maximum number of streams allowed per client from the range 0 to 20. The default value is set to auto. If you choose auto, there is no limit set for the number of client subscriptions.
- k. Select the **Best Effort QoS Admission** check box to enable best-effort QoS admission.
 - l. Click **Apply** to save the configuration changes

Step 8 Enable WLANs:

- a. Choose **WLANS > WLAN ID**. The **WLANs > Edit** page appears.
- b. Enable the VideoStream feature for the WLAN.
- c. Select the **Status** check box to enable the WLAN.
- d. Click **Apply** to commit your changes.

Step 9 Enable the 802.11 a/n or 802.11 b/g/n network:

- a. Choose **Wireless > Wireless > 802.11a/n or 802.11b/g/n > Network**.
- b. Select the **802.11a or 802.11b/g Network Status** check box to enable the network status.
- c. Click **Apply** to commit your changes.

Step 10 Verify that the clients are associated with the multicast groups and group-ids:

- a. Choose **Monitor > Clients**. The **Clients** page appears.
 - b. Check if the 802.11a or 802.11b/g network clients have the associated access points.
 - c. Choose **Monitor > Multicast**. The **Multicast Groups** page appears.
 - d. Select the **MGID** check box for the VideoStream to the clients.
 - e. Click **MGID**. The **Multicast Group Detail** page appears. Check the Multicast Status details.
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Configuring the VideoStream on the Controller (CLI)

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- Step 1** Configure the multicast-direct feature on WLANs media stream by entering this command:
config wlan media-stream multicast-direct {*wlan_id* | **all**} {**enable** | **disable**}
- Step 2** Enable or disable the multicast feature by entering this command:
config media-stream multicast-direct {**enable** | **disable**}
- Step 3** Configure various message configuration parameters by entering this command:
config media-stream message {**state** [**enable** | **disable**] | **url** *url* | **email** *email* | **phone** *phone_number* | **note** *note*}
- Step 4** Save your changes by entering this command:
save config
- Step 5** Configure various global media-stream configurations by entering this command:
config media-stream add multicast-direct stream-name *media_stream_name* *start_IP* *end_IP* [**template** {**very-coarse** | **coarse** | **ordinary** | **low-resolution** | **med-resolution** | **high-resolution**} | **detail** {**Max_bandwidth** *bandwidth* | **packet size** *packet_size* | **Re-evaluation** *re-evaluation* {*periodic* | *initial*}}] **video** *video* **priority** {**drop** | **fallback**}



Note

- The Resource Reservation Control (RRC) parameters are assigned with the predefined values based on the values assigned to the template.
- The following templates are used to assign RRC parameters to the media stream:
 - Very Coarse (below 3000 kbps)
 - Coarse (below 500 kbps)
 - Ordinary (below 750 kbps)
 - Low Resolution (below 1 mbps)
 - Medium Resolution (below 3 mbps)
 - High Resolution (below 5 mbps)

- Step 6** Delete a media stream by entering this command:
config media-stream delete *media_stream_name*
- Step 7** Enable a specific enhanced distributed channel access (EDC) profile by entering this command:
config advanced {**801.11a** | **802.11b**} **edca-parameters optimized-video-voice**
- Step 8** Enable the admission control on the desired bandwidth by entering the following commands:
- Enable bandwidth-based voice CAC for 802.11a or 802.11b/g network by entering this command:
config {**802.11a** | **802.11b**} **cac voice acm enable**
 - Set the percentage of the maximum bandwidth allocated to clients for voice applications on the 802.11a or 802.11b/g network by entering this command:
config {**802.11a** | **802.11b**} **cac voice max-bandwidth** *bandwidth*
 - Configure the percentage of the maximum allocated bandwidth reserved for roaming voice clients on the 802.11a or 802.11b/g network by entering this command:
config {**802.11a** | **802.11b**} **cac voice roam-bandwidth** *bandwidth*

- Step 9** Set the maximum number of streams per radio and/or per client by entering these commands:
- Set the maximum limit to the number multicast streams per radio by entering this command:
config {802.11a | 802.11b} media-stream multicast-direct radio-maximum [value | 'no-limit']
 - Set the maximum number of multicast streams per client by entering this command:
config {802.11a | 802.11b} media-stream multicast-direct client-maximum [value | 'no-limit']
- Step 10** Save your changes by entering this command:
- save config**
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Viewing and Debugging Media Streams

- See the configured media streams by entering this command:
show wlan *wlan_id*
- See the details of the media stream name by entering this command:
show 802.11{a | b | h} media-stream *media-stream_name*
- See the clients for a media stream by entering this command:
show 802.11a media-stream client *media-stream-name*
- See a summary of the media stream and client information by entering this command:
show media-stream group summary
- See details about a particular media stream group by entering this command:
show media-stream group detail *media_stream_name*
- See details of the 802.11a or 802.11b media resource reservation configuration by entering this command:
show {802.11a | 802.11b} media-stream rrc
- Enable debugging of the media stream history by entering this command:
debug media-stream history {enable | disable}

