VideoStream

Information about Media Stream

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 Media Stream feature makes the delivery of the IP multicast stream reliable over air, by converting the multicast frame to a unicast frame over the air. Each Media Stream client acknowledges receiving a video IP multicast stream.

Note Support for IPv6 was added from Cisco IOS XE Gibraltar 16.12.1. You can use IPv6 multicast addresses in place of IPv4 multicast addresses to enable media stream on the IPv6 networks.

Prerequisites for Media Stream

- Make sure that the Multicast feature is enabled. We recommend that you configure IP multicast on the controller in multicast-multicast mode.

- Check for the IP address on the client machine. The machine should have an IP address from the respective VLAN.

- Verify that the access points have joined the controllers .

How to Configure Media Stream

Configuring Multicast-Direct Globally for Media Stream (CLI)

Procedure

	Command or Action	Purpose
Step 1	**configure terminal** **Example:** Device# **configure terminal**	Enters global configuration mode.
Step 2	**wireless multicast** **Example:** Device(config)# **wireless multicast**	Enables multicast for wireless forwarding.
Step 3	**ip igmp snooping** **Example:** Device(config)# **ip igmp snooping**	Enables IGMP snooping on a per-VLAN basis. If the global setting is disabled, then all the VLANs are treated as disabled, whether they are enabled or not.
Step 4	**ip igmp snooping querier** **Example:** Device(config)# **ip igmp snooping querier**	Enables a snooping querier on an interface when there is no multicast router in the VLAN to generate queries.
Step 5	**wireless media-stream multicast-direct** **Example:** (config)#**wireless media-stream multicast-direct**	Configures the global multicast-direct on the controller.
Step 6	**wireless media-stream message** **Example:** (config)#**wireless media-stream message ?** Email Configure Session Announcement Email	Configures various message-configuration parameters such as phone, URL, email, and notes. That is, when a media stream is refused (due to bandwidth constraints), a message can be sent to the corresponding user. These parameters configure the messages that are to

	Command or Action	Purpose
| | ```
   Notes   Configure Session Announcement
notes
   URL     Configure Session Announcement
URL
   phone   Configure Session Announcement
Phone number
   <cr>
``` | be sent to the IT support email address, notes (message be displayed explaining why the stream was refused), URL to which the user can be redirected, and the phone number that the user can call about the refused stream. |
| Step 7 | **wireless media-stream group** *name startIp endIp*<br><br>**Example:**<br><br>```
(config)#wireless media-stream  group
grp1 231.1.1.1 239.1.1.3

   avg-packet-size Configure average
packet size
   default Set a command to its defaults

   exit Exit sub-mode
   max-bandwidth Configure maximum
expected stream bandwidth in Kbps
   no Negate a command or set its
defaults
   policy Configure media stream
admission policy
   priority Configure media stream
priority, <1:Lowest - 8:Highest>
   qos Configure over the air QoS class,
<'video'> ONLY
   rrc-evaluation Configure RRC
re-evaluation admission
   violation Configure stream violation
policy on periodic re-evaluation
``` | Configures each media stream and its parameters such as expected multicast destination addresses, stream bandwidth consumption, and stream-priority parameters. |
| Step 8 | **end**<br><br>**Example:**<br><br>```
Device(config)# end
``` | Returns to privileged EXEC mode. Alternatively, you can also press **Ctrl-Z** to exit global configuration mode. |

Configuring Media Stream for 802.11 Bands (CLI)

Procedure

	Command or Action	Purpose
| Step 1 | **configure terminal**<br><br>**Example:**<br><br>```
Device# configure terminal
``` | Enters global configuration mode. |
| Step 2 | **ap dot11** {**24ghz** \| **5ghz** } **media-stream multicast-direct** | Configures whether MediaStream (multicast to unicast) is allowed for the 802.11 band. |

	Command or Action	Purpose
	Example: Device(config)#**ap dot11 24ghz media-stream multicast-direct**	You must disable to 802.11 network to enable the MediaStream.
Step 3	**ap dot11** {**24ghz** | **5ghz** } **media-stream video-redirect** **Example:** Device(config)#**ap dot11 24ghz media-stream video-redirect**	Optional. Configures the redirection of unicast video traffic to the best-effort queue.
Step 4	**ap dot11** {**24ghz** | **5ghz** } **media-stream multicast-direct admission-besteffort** **Example:** Device(config)#**ap dot11 24ghz media-stream multicast-direct admission-besteffort**	Configures the media stream to be sent through the best-effort queue if that media stream cannot be prioritized due to bandwidth-availability limitations. Run the **no** form of the command to drop the stream, if the media stream cannot be prioritized due to bandwidth-availability limitations.
Step 5	**ap dot11** {**24ghz** | **5ghz** } **media-stream multicast-direct client-maximum** *value* **Example:** Device(config)#**ap dot11 24ghz media-stream multicast-direct client-max 15**	Configures the maximum number of allowed media streams per individual client. The maximum is 15 and the default is 0. The value of 0 denotes unlimited streams.
Step 6	**ap dot11** {**24ghz** | **5ghz** } **media-stream multicast-direct radio-maximum** *value* **Example:** Device(config)#**ap dot11 24ghz media-stream multicast-direct radio-maximum 20**	Configures maximum number of radio streams. The valid range is from 1 to 20. Default is 0. The value of 0 denotes unlimited streams.
Step 7	**ap dot11** {**24ghz** | **5ghz** } **cac multimedia max-bandwidth** *bandwidth* **Example:** Device(config)#**ap dot11 24ghz cac multimedia max-bandwidth 60**	Configures maximum media (voice + video) bandwidth, in percent. The range is between 5-85%.
Step 8	**ap dot11** {**24ghz** | **5ghz** } **cac media-stream multicast-direct min-client-rate** *dot11_rate* **Example:** Device(config)#**ap dot11 24ghz cac media-stream multicast-direct min_client_rate**	Configures the minimum PHY rate needed for a client to send a media stream as unicast. Clients communicating below this rate will not receive the media stream as a unicast flow. Typically, this PHY rate is equal to or higher than the rate at which multicast frames are sent.
Step 9	**ap dot11** {**24ghz** | **5ghz** } **cac media-stream** **Example:** Device(config)#**ap dot11 5ghz cac media-stream**	Configures Call Admission Control (CAC) parameters for media stream access category.

	Command or Action	Purpose
Step 10	**ap dot11** {**24ghz** | **5ghz** } **cac multimedia** **Example:** Device(config)#**ap dot11 5ghz cac multimedia**	Configures CAC parameters for media access category: used for voice and video.
Step 11	**ap dot11** {**24ghz** | **5ghz** } **cac voice** **Example:** Device(config)#**ap dot11 5ghz cac voice**	Configures CAC parameters for voice access category.
Step 12	**end** **Example:** Device(config)# **end**	Returns to privileged EXEC mode. Alternatively, you can also press **Ctrl-Z** to exit global configuration mode.

Configuring a WLAN to Stream Video(GUI)

Procedure

Step 1   Choose **Configuration > Wireless > WLANs > Wireless Networks**.

Step 2   Select a **WLAN** to view the **Edit WLAN** window.

Step 3   Click **Advanced** tab.

Step 4   Check the **Media Stream Multicast-Direct** check box to enable the feature.

Step 5   Click **Update & Apply to Device**.

Configuring a WLAN to Stream Video (CLI)

Procedure

	Command or Action	Purpose
Step 1	**configure terminal** **Example:** Device# **configure terminal**	Enters global configuration mode.
Step 2	**wlan** *wlan_name* **Example:** (config)#**wlan wlan50**	Enters WLAN configuration mode.
Step 3	**shutdown** **Example:** (config-wlan)#**shutdown**	Disables the WLAN for configuring its parameters.

	Command or Action	Purpose
Step 4	**media-stream multicast-direct** **Example:** (config)#**media-stream multicast-direct**	Configures the multicast-direct on media stream for the WLAN.
Step 5	**no shutdown** **Example:** (config-wlan)#**no shutdown**	Enables the WLAN.
Step 6	**end** **Example:** Device(config)# **end**	Returns to privileged EXEC mode. Alternatively, you can also press **Ctrl-Z** to exit global configuration mode.

Deleting a Media Stream (GUI)

Procedure

Step 1   Choose **Configuration** > **Wireless** > **Media Stream**.

Step 2   Click the **Streams** tab.

Step 3   Check the checkbox adjacent to the Stream Name you want to delete.

To delete multiple streams, select multiple stream name checkboxes.

Step 4   Click **Delete**.

Step 5   Click **Yes** on the confirmation window to delete the VLAN.

Deleting a Media Stream (CLI)

Before you begin

The media stream should be enabled and configured for it to be deleted.

Procedure

	Command or Action	Purpose
Step 1	**configure terminal** **Example:** Device# **configure terminal**	Enters global configuration mode.
Step 2	**no wireless media-stream group** *media_stream_name* **Example:**	Deletes the media stream that bears the name mentioned in the command.

	Command or Action	Purpose
	`Device(config)#`**`no wireless media-stream grp1`**	
Step 3	**end** **Example:** `Device(config)#` **`end`**	Returns to privileged EXEC mode. Alternatively, you can also press **Ctrl-Z** to exit global configuration mode.

Monitoring Media Streams

Table 1: Commands for monitoring media streams

Commands	Description
show wireless media-stream client detail *group name*	Displays media stream client details of the particular group.
show wireless media-stream client summary	Displays the media stream information of all the clients.
show wireless media-stream group detail *group name*	Displays the media stream configuration details of the particular group.
show wireless media-stream group summary	Displays the media stream configuration details of all the groups.
show wireless media-stream message details	Displays the session announcement message details.
show wireless multicast	Displays the multicast-direct configuration state.
show ap dot11 {24ghz	5ghz} media-stream rrc	Displays 802.11 media Resource-Reservation-Control configurations.

Configuring the General Parameters for a Media Stream (GUI)

Procedure

Step 1   Choose **Configuration > Wireless > Media Stream**.

Step 2   In the **General** tab, check the **Multicast Direct Enable** check box.

Step 3   In the **Session Message Config** section, check the **Session Announcement State** check box to enable the session announcement mechanism. If the session announcement state is enabled, clients are informed each time a controller is not able to serve the multicast direct data to the client.

Step 4   In the **Session Announcement URL** field, enter the URL where the client can find more information when an error occurs during the multicast media stream transmission.

Step 5   In the **Session Announcement Email** field, enter the e-mail address of the person who can be contacted.

Step 6   In the **Session Announcement Phone** field, enter the phone number of the person who can be contacted.

Step 7   In the **Session Announcement Note** field, enter a reason as to why a particular client cannot be served with a multicast media.

Step 8   Click **Apply**.

Adding Media Stream (CLI)

Procedure

	Command or Action	Purpose
Step 1	**wireless media-stream group** *groupName startIpAddr endIpAddr* **Example:** `Device(config)# wireless media-stream group group1 224.0.0.0 224.0.0.223`	Configures each media stream and its parameters, such as expected multicast destination addresses, stream bandwidth consumption , and stream priority parameters.
Step 2	**avg-packet-size** *packetsize* **Example:** `Device(media-stream)# avg-packet-size 100`	Configures the average packet size.
Step 3	**max-bandwidth** *bandwidth* **Example:** `Device(media-stream)# max-bandwidth 80`	Configures the maximum expected stream bandwidth, in Kbps.
Step 4	**policy** {**admit**	**deny** } **Example:** `Device(media-stream)# policy admit`	Configure the media stream admission policy.
Step 5	**qos video** **Example:** `Device(media-stream)# qos video`	Configures over-the-air QoS class, as 'video'.
Step 6	**violation** {**drop**	**fallback** } **Example:** `Device(media-stream)# violation drop`	Configures the violation mode.
Step 7	**rrc-evaluation** {**initial**	**periodic** } **Example:** `Device(media-stream)# rrc-evaluation initial`	Configure Resource Reservation Control (RRC) re-evaluation admission, which provides initial or periodic admission evaluation. The re-evaluation admission occurs at 2, 4,8, and so on seconds.
Step 8	**priority** *priority-value* **Example:**	Sets the priority value. The valid range is from 1-8, with 1 being the lowest.

	Command or Action	Purpose
	`Device(media-stream)# priority 6`	

Enabling a Media Stream per WLAN (GUI)

Procedure

Step 1	Choose **Configuration** > **Tags & Profiles** > **WLANs**.
Step 2	On the **WLANs** page, click the name of the **WLAN** or click **Add** to create a new one.
Step 3	In the **Add/Edit WLAN** window that is displayed, click the **Advanced** tab.
Step 4	Check the **Enabling a Media Stream for each WLAN** check box to enable Media Stream on the WLAN.
Step 5	Save the configuration.

Enabling a Media Stream per WLAN (CLI)

Follow the procedure given below to enable a media stream for each WLAN:

Procedure

	Command or Action	Purpose
Step 1	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 2	**wlan** *wlan_name* **Example:** `Device(config)# wlan wlan5`	Enters WLAN configuration mode.
Step 3	**shutdown** **Example:** `Device(config-wlan)# shutdown`	Disables the WLAN for configuring its parameters.
Step 4	**media-stream multicast-direct** **Example:** `Device(config-wlan)# media-stream multicast-direct`	Configures multicast-direct for the WLAN.
Step 5	**no shutdown** **Example:** `Device(config-wlan)# no shutdown`	Enables the WLAN.

Configuring the General Parameters for a Media Stream (GUI)

Procedure

Step 1 Choose **Configuration** > **Wireless** > **Media Stream**.

Step 2 Check the **Multicast Direct Enable** check box to enable multicast direct globally on the local mode.

Step 3 In the **Session Message Config** section, enter the values for the following parameters

- Session Announcement URL

- Session Announcement Email

- Session Announcement Phone

- Session Announcement Note

Step 4 Save the configuration.

Configuring the General Parameters for a Media Stream (CLI)

Follow the procedure given below to configure the general parameters for a media stream:

Procedure

	Command or Action	Purpose
Step 1	**configure terminal** **Example:** ``` Device# configure terminal ```	Enters global configuration mode.
Step 2	**wireless media-stream message** { **URL** *url* | **email** *email-address* | **phone** *phone-no* | **notes** *notes* } **Example:** ``` Device(config)# wireless media-stream message url www.xyz.com ```	Configures various message configuration parameters, such as phone, URL, email, and notes.
Step 3	**wireless media-stream multicast-direct** **Example:** ``` Device(config)# wireless media-stream multicast-direct ```	Enables multicast direct globally for local mode. **Note** This configuration will not impact flex and fabric media-stream configurations.
Step 4	**exit** **Example:**	Returns to privileged EXEC mode.

	Command or Action	Purpose
	`Device(config)# exit`	

Configuring Multicast Direct Admission Control (GUI)

Procedure

Step 1   Choose **Configuration > Wireless > Media Stream**.

Step 2   Check the **Media Stream Admission Control (ACM)** check box to enable multicast direct admission control.

Step 3   In the **Maximum Media Stream RF bandwidth (%)** field, enter the percentage of the maximum bandwidth to be allocated for media applications on this radio band. Valid range is from 5 to 85. When the client reaches a specified value, the AP rejects new calls on this radio band.

Step 4   In the **Maximum Media Bandwidth (%)** field, enter the bandwidth. Valid range is from 5 to 85%.

Step 5   From the **Client Minimum Phy Rate** drop-down list, select the minimum transmission data rate or the rate in kilobits per second at which the client can operate. If the transmission data rate is below the physical 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.

Step 6   In the **Maximum Retry Percent (%)** 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.

Step 7   Click **Apply**.

Configuring Multicast Direct Admission Control (CLI)

Follow the procedure given below to configure multicast direct admission control:

Procedure

	Command or Action	Purpose
Step 1	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 2	**ap dot11** {**24ghz** | **5ghz** } **shutdown** **Example:** `Device(config)# ap dot11 24ghz shutdown`	Disables the 802.11 network.
Step 3	**ap dot11** {**24ghz** | **5ghz** } **media-stream video-redirect** **Example:**	Configures the redirection of the unicast video traffic to best-effort queue.

	Command or Action	Purpose
	```Device(config)# ap dot11 24ghz media-stream video-redirect```	
Step 4	**ap dot11 {24ghz	5ghz } cac media-stream acm** **Example:** ```Device(config)# ap dot11 24ghz cac media-stream acm```	Enables admission control on the media-stream access category.
Step 5	**ap dot11 {24ghz	5ghz } cac media-stream max-bandwidth** *bandwidth* **Example:** ```Device(config)# ap dot11 24ghz cac media-stream max-bandwidth 65```	Configures the maximum media bandwidth, in percent. The range is between 5-85%.
Step 6	**ap dot11 {24ghz	5ghz } cac multimedia max-bandwidth** *bandwidth* **Example:** ```Device(config)# ap dot11 24ghz cac multimedia max-bandwidth 65```	Configures the maximum bandwidth allocated to Wi-Fi Multimedia (WMM) clients for media. The range is between 5-85%.
Step 7	**ap dot11 {24ghz	5ghz } cac media-stream multicast-direct min-client-rate** *dot11Rate* **Example:** ```Device(config)# ap dot11 24ghz cac media-stream multicast-direct min-client-rate 800```	Configures the minimum PHY rate needed for a client to receive media stream as unicast. Clients communicating below this rate will not receive the media stream as a unicast flow. Typically, this PHY rate is equal to or higher than the rate at which multicast frames are sent.
Step 8	**ap dot11 {24ghz	5ghz } cac media-stream multicast-direct max-retry-percent** *retryPercent* **Example:** ```Device(config)# ap dot11 24ghz cac media-stream multicast-direct max-retry-percent 50```	Configures CAC parameter maximum retry percent for multicast-direct streams.
Step 9	**ap dot11 {24ghz	5ghz } media-stream multicast-direct radio-maximum** *value* **Example:** ```Device(config)# ap dot11 24ghz media-stream multicast-direct radio-maximum 10```	Configures the maximum number of radio streams. The range is from 1 to 20. Default is 0. Value 0 denotes unlimited streams.
Step 10	**ap dot11 {24ghz	5ghz } media-stream multicast-direct client-maximum** *value* **Example:** ```Device(config)# ap dot11 24ghz media-stream multicast-direct client-maximum 12```	Configures the maximum number of allowed media streams per individual client. The maximum is 15 and the default is 0. Value 0 denotes unlimited streams.

	Command or Action	**Purpose**

Step 11	**ap dot11 {24ghz	5ghz } media-stream multicast-direct admission-besteffort**
		
		Example:
		`Device(config)# ap dot11 24ghz`
		`media-stream multicast-direct`
		`admission-besteffort`
			Configures the media stream to still be sent through the best effort queue if a media stream cannot be prioritized due to bandwidth availability limitations. Add **no** in the command to drop the stream if the media stream cannot be prioritized due to bandwidth availability limitations.

Step 12	**no ap dot11 {24ghz	5ghz } shutdown**
		
		Example:
		`Device(config)# no ap dot11 24ghz`
		`shutdown`
			Enables the 802.11 network.

Create and Attach Policy-based QoS Profile

The high-level steps to create and attach policy-based QoS profile are as follows:

1. Create a QoS Profile

2. Create a Service Template

3. Map the Service Template to the Policy Map

4. Map the Policy Map to the Policy Profile

Create a QoS Profile (GUI)

Procedure

Step 1	Click **Configuration** > **Services** > **QoS**.
Step 2	Click **Add** to create a new QoS Policy.
Step 3	Enter a **Policy Name**.
Step 4	Enter a **Description** for the policy.
Step 5	In the **Class Default** section, choose a value in the **Mark** drop-down list.
Step 6	Enter the **Police(kbps)** value.
Step 7	Click **Apply to Device**.

Create a QoS Profile (CLI)

Procedure

	Command or Action	**Purpose**
Step 1	**configure terminal** **Example:** Device# configure terminal	Enters global configuration mode.
Step 2	**policy-map** *policy-map-name* **Example:** Device(config)# policy-map QoS_Drop_Youtube	Creates a policy map.
Step 3	**description** *description* **Example:** Device(config-pmap)# description QoS_Drop_Youtube	Adds a description to the policy map.
Step 4	**class** *class-map-name* **Example:** Device(config-pmap)# class QoS_Drop_Youtube1_AVC_UI_CLASS	Creates a policy criteria.
Step 5	**police cir** *committ-information-rate* **Example:** Device(config-pmap-c)# police cir 8000	Polices the provided committed information rate.
Step 6	**conform-action drop** **Example:** Device(config-pmap-c-police)# conform-action drop	Configures the action when the rate is less than the conform burst.
Step 7	**exceed-action drop** **Example:** Device(config-pmap-c-police)# exceed-action drop	Configures the action when the rate is within the conform and conform plus exceed burst.
Step 8	**end** **Example:** Device(config-pmap-c-police)# end	Returns to privileged EXEC mode.

Create a Service Template (GUI)

Procedure

Step 1   Choose **Configuration** > **Security** > **Local Policy**.

Step 2   On the **Local Policy** page, **Service Template** tab, click **Add**.

Step 3   In the **Create Service Template** window, enter the following parameters:

- **Service Template Name:** Enter a name for the template.

- **VLAN ID:** Enter the VLAN ID for the template. Valid range is between 1 and 4094.

- **Session Timeout (secs):** Sets the timeout duration for the template. Valid range is between 1 and 65535.

- **Access Control List:** Choose the Access Control List from the drop-down list.

- **Ingress QOS:** Choose the input QoS policy for the client from the drop-down list

- **Egress QOS:** Choose the output QoS policy for the client from the drop-down list.

Step 4   Click **Apply to Device**.

Create a Service Template (CLI)

Procedure

	Command or Action	**Purpose**
Step 1	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 2	**service-template** *template-name* **Example:** `Device(config)# service-template qos-template`	Configures the service-template or identity policy.
Step 3	**vlan** *vlan-id* **Example:** `Device(config-service-template)# vlan 87`	Specifies VLAN ID.
Step 4	**absolute-timer** *timer* **Example:** `Device(config-service-template)# absolute-timer 3600`	Specifies session timeout value for a service template.

	Command or Action	Purpose

Step 5	**service-policy qos input** *qos-policy*
	
	Example:
	`Device(config-service-template)#`
	`service-policy qos input QoS_Drop_Youtube`
		Configures an input QoS policy for the client.

Step 6	**service-policy qos output** *qos-policy*
	
	Example:
	`Device(config-service-template)#`
	`service-policy qos output`
	`QoS_Drop_Youtube`
		Configures an output QoS policy for the client.

Step 7	**end** **Example:** `Device(config-service-template)# end`	Returns to privileged EXEC mode.

Map the Service Template to the Policy Map (GUI)

Procedure

- **Step 1**   Choose **Configuration** > **Tags & Profiles** > **Policy**.
- **Step 2**   On the **Policy Profile** page, select the **Policy Profile** to be mapped.
- **Step 3**   In the **Edit Policy Profile** window, click **Access Policies** tab.
- **Step 4**   Use the **Local Subscriber Policy Name** drop-down list to select the policy name.
- **Step 5**   Click **Update & Apply to Device**.

Map the Service Template to the Policy Map (CLI)

Procedure

	Command or Action	Purpose
Step 1	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.

Step 2	**parameter-map type subscriber attribute-to-service** *parameter-map-name*
	
	Example:
	`Device(config)# parameter-map type`
	`subscriber attribute-to-service`
	`QoS-Policy_Map-param`
		Specifies the parameter map type and name.

	Command or Action	Purpose
Step 3	*map-index* **map device-type eq** *filter-name* **user-role eq** *user-name* **Example:** `Device(config-parameter-map-filter)# 1 map device-type eq "Android" user-role eq "student"`	Specifies the parameter map attribute filter criteria. Multiple filters are used in the example provided here.
Step 4	*map-index* **service-template** *service-template-name* **precedence** *precedence-num* **Example:** `Device(config-parameter-map-filter-submode)# 1 service-template Qos_template`	Specifies the service template.
Step 5	**end** **Example:** `Device(config-parameter-map-filter-submode)# end`	Returns to privileged EXEC mode.
Step 6	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 7	**policy-map type control subscriber** *policy-map-name* **Example:** `Device(config)# policy-map type control subscriber QoS-Policy_Map`	Specifies the policy map type.
Step 8	**event identity-update match-all** **Example:** `Device(config-event-control-policymap)# event identity-update match-all`	Specifies the match criteria to the policy map.
Step 9	*class-num* **class always do-until-failure** **Example:** `Device(config-event-control-policymap)# 1 class always do-until-failure`	Applies a class-map with a service-template.
Step 10	*action-index* **map attribute-to-service table** *parameter-map-name* **Example:** `Device(config-event-control-policymap)# 1 map attribute-to-service table QoS-Policy_Map-param`	Applies a parameter map.

Map the Policy Map (GUI)

Procedure

Step 1	Choose **Configuration** > **Security** > **Local Policy** > **Policy Map** tab.
Step 2	Click **Add**.
Step 3	Enter a name in the **Policy Map Name** text field.
Step 4	Click **Add** to add the matching criteria information.
Step 5	Choose the service template from the **Service Template** drop-down list.
Step 6	Choose the filters from **Device Type**, **User Role**, **User Name**, **OUI** and **MAC Address** drop-down lists.
Step 7	Click **Add Criteria**
Step 8	Click **Apply to Device**.

Map the Policy Map (CLI)

Procedure

	Command or Action	Purpose
Step 1	**configure terminal** **Example:** `Device# configure terminal`	Enters global configuration mode.
Step 2	**wireless profile policy** *wlan-policy-profile-name* **Example:** `Device(config)# wireless profile policy test-policy-profile`	Configures a wireless policy profile.
Step 3	**description** *profile-policy-description* **Example:** `Device(config-wireless-policy)# description "test policy profile"`	Adds a description for the policy profile.
Step 4	**subscriber-policy-name** *policy-name* **Example:** `Device(config-wireless-policy)# subscriber-policy-name QoS-Policy_Map`	Configures the subscriber policy name.

Viewing Media Stream Information

Use the following **show** commands to view the media stream information.

To view media stream general information and status, use the following commands:

```
Device# show wireless media-stream multicast-direct state

Multicast-direct State.......................... : enabled
Allowed WLANs:
WLAN-Name                                        WLAN-ID
----------------------------------------------------------
zsetup_mc                                        1
vwlc-mc_mo                                       3
mcuc_test1                                       4
mcuc_test2                                       5


Device# show wireless media-stream group summary


Number of Groups:: 4

Stream Name        Start IP             End IP            Status
-----------------------------------------------------------------------
new2               231.2.2.3            231.2.4.4         Enabled
my234              234.0.0.0            234.10.10.10      Enabled
uttest2            235.1.1.20           235.1.1.25        Enabled
uttest3            235.1.1.40           235.1.1.200       Enabled
```

To view the details of a particular media stream, use the **show wireless media-stream client detail** *media_stream_name* command:

```
Device# show wireless media-stream group detail uttest2


Media Stream Name        : uttest2
Start IP Address         : 235.1.1.20
End IP Address           : 235.1.1.25
RRC Parameters:
 Avg Packet Size(Bytes)  : 1200
 Expected Bandwidth(Kbps) : 1000
 Policy                  : Admitted
 RRC re-evaluation       : Initial
 QoS                     : video
 Status                  : Multicast-direct
 Usage Priority          : 4
 Violation               : Drop
```

To view RRC information for a dot11 band, use the **show ap dot11** {**24ghz** | **5ghz** } **mediastream rrc** command:

```
Device# show  ap dot11 5ghz media-stream rrc

Multicast-direct                : Enabled
Best Effort                     : Disabled
Video Re-Direct                 : Disabled
Max Allowed Streams Per Radio   : Auto
Max Allowed Streams Per Client  : 5
Max Media-Stream Bandwidth      : 5
Max Voice Bandwidth             : 50
Max Media Bandwidth             : 43
Min PHY Rate (Kbps)             : 6000
Max Retry Percentage            : 5
```

To view session announcement message details, use the **show wireless media-stream message details** command:

```
Device# show wireless media-stream message details
URL          :
Email        : abc@cisc
Phone        :
Note         :
State        : Disabled
```

To view the list of clients in the blocked list database, use the **show ip igmp snooping igmpv2-tracking** command:

```
Device# show ip igmp snooping igmpv2-tracking

Client to SGV mappings
----------------------
Client: 10.10.10.215 Port: Ca1
 Group: 239.255.255.250 Vlan: 10 Source: 0.0.0.0 blacklisted: no
 Group: 234.5.6.7 Vlan: 10 Source: 0.0.0.0 blacklisted: no
 Group: 234.5.6.8 Vlan: 10 Source: 0.0.0.0 blacklisted: no
 Group: 234.5.6.9 Vlan: 10 Source: 0.0.0.0 blacklisted: no

Client: 10.10.101.177 Port: Ca2
 Group: 235.1.1.14 Vlan: 10 Source: 0.0.0.0 blacklisted: no
 Group: 235.1.1.16 Vlan: 10 Source: 0.0.0.0 blacklisted: no
 Group: 235.1.1.18 Vlan: 10 Source: 0.0.0.0 blacklisted: no

SGV to Client mappings
----------------------
Group: 234.5.6.7 Source: 0.0.0.0 Vlan: 10
 Client: 10.10.10.215 Port: Ca1 Blacklisted: no
```

To view wireless client summary, use the **show wireless media-stream client summary** command:

```
Device# show wireless media-stream client summary
```

To view details of a specific wireless media stream, use the **show wireless media-stream client detail** command:

```
Device# show wireless media-stream client detail uttest2

Media Stream Name         : uttest2
Start IP Address          : 235.1.1.20
End IP Address            : 235.1.1.25
RRC Parameters:
 Avg Packet Size(Bytes)   : 1200
 Expected Bandwidth(Kbps) : 1000
 Policy                   : Admitted
 RRC re-evaluation        : Initial
 QoS                      : video
 Status                   : Multicast-direct
 Usage Priority           : 4
 Violation                : Drop
```