



# Low Latency VOD Support

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The Cisco cBR-8 router supports Low Latency Video on Demand (VOD) sessions for gaming.

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## Information About Low Latency VOD Support

### Overview of Low Latency VOD Support

Each Cisco cBR-8 RF linecard supports up to 1280 low latency VOD gaming sessions and up to 64 unique low latency QAMs. These numbers are applicable to both Annex A and B.

An output QAM is treated as low latency if it is associated with a virtual carrier group (VCG) that is configured as low-latency.

A table-based input session is treated as low latency if the session jitter  $\leq 50$  ms and output QAM is low latency.

A GQI input session is treated as low latency if the session type is gaming and output QAM is low latency.

Low latency VOD gaming, normal VOD, and Switched Digital Video (SDV) can share the same low latency QAM.

Each Cisco cBR-8 RF linecard supports up to 448 unique normal latency Annex B video QAMs (336 Annex A). Each QAM used for low latency reduces the number of remaining available QAMs by two. For example, the linecard can support up to 320 normal latency and 64 low latency Annex B QAMs.

The average latency of a low latency session is approximately 13 ms plus 50% of the jitter buffer size.

# How to Configure Low Latency VOD Support

## Configuring the Low Latency Virtual Carrier Group

To configure the low latency virtual carrier group, follow the steps below:

```
enable
configure terminal
cable video
virtual-carrier-group id
low-latency
```

If more than 64 low latency QAM channels are being configured, CLI will output the following error:

```
%ERROR: Number of low latency QAM channels configured has reached the linecard limit.
```

If a QAM is configured for low latency, it cannot be configured for broadcast and vice versa, CLI will output the following errors:

```
%ERROR: Failed to set low latency to virtual group.
Reason: Broadcast service type is set and cannot set low latency.
```

```
%ERROR: Failed to set_svctype to virtual group.
Reason: Low latency is set and cannot set service type to broadcast.
```

## Verifying the Low Latency Virtual Carrier Group Configuration

To verify the configuration of the low latency virtual carrier group, use the **show cable video virtual-carrier-group** command as shown in the example below:

```
Router# show cable video virtual-carrier-group id 1
Name: vcg1
  ID: 1
  Service Distribution Group Name: sdg1
  Service Distribution Group ID: 1
  Logical Edge Device Name: led1
  Logical Edge Device ID: 1
  ServiceType: narrowcast
  Encrypted: N
  Low Latency: Y
  Number of VEIs: 0
  Virtual Edge Input:
  Input Port  VEI          Bundle
  ID          IP           ID
  -----
  Number of RF-Channels: 8
  RF-Channel Range  TSID Range  Output Port Number Range
  -----
  0-7                100-107    100-107
```

## Verifying the Low Latency in Linecard

To verify the low latency configuration in the linecard, use the **show cable video low-latency linecard** command as shown in the example below:

```

Router# show cable video low-latency linecard all
Line Card: 1
  Virtual-Carrier-Group: vcg1
  Service-Distribution-Group: sdg1
  Logical-Edge-Device: led1
  Number of RF-Channels: 8
  RF-Channel Range   TSID Range   Output Port Number Range
  -----
  0-7                100-107     100-107

Line Card: 2
  Virtual-Carrier-Group: vcg2
  Service-Distribution-Group: sdg2
  Logical-Edge-Device: led1
  Number of RF-Channels: 8
  RF-Channel Range   TSID Range   Output Port Number Range
  -----
  0-7                200-207     200-207

```

## Configuring the Jitter Buffer Size for Table Based Session

To configure the jitter buffer size for table-based session, follow the steps below:

```

enable
configure terminal
cable video
table-based
vcg vcg_name
rf-channel start_rf_channel-end_rf_channel
session session_name input-port input_port_number start-udp-port
unicast_udp_port_number num-sessions-per-qam max_sessions_per_qam_channel
processing-type [data|passthru|remap] start-program program_number jitter
jitter_value

```

The default jitter buffer size for table-based video is 100 ms.

## Configuring the Jitter Buffer Size for GQI

To configure the jitter buffer size for GQI session, follow the steps below:

```

enable
configure terminal
cable video
jitter session_type jitter_value

```

## Verifying Jitter Buffer Size for GQI

To verify the jitter buffer size for GQI session, use the **show cable video jitter** command as shown in the example below:

```

Router# show cable video jitter
Session jitter:
  VOD: 200
  SDV: 200
  broadcast: 200
  gaming: 5

```

```
table-based: 100
```

## Verifying the Low Latency Sessions

To verify the configuration of the low latency session, use the **show cable video session logical-edge-device** command as shown in the example below:

```
Router# show cable video session logical-edge-device id 1
Total Sessions = 160
```

Session Id	Output State	Output Port	Streaming Output Type	Output Bitrate	Session Encrypt Type	Session Encrypt Ucast Status	Source Low IP/Mcast Latency	Session IP (S,G)	UDP Port	Output Program	Input State
1048576	100		Remap		UDP	-	174.101.1.1		49152	1	ACTIVE-PSI
ON	1723787		1722987		CLEAR	-	Y	t1.1.0.1.0.49152			
1048577	100		Remap		UDP	-	174.101.1.1		49153	2	ACTIVE-PSI
ON	1724147		1722987		CLEAR	-	Y	t1.1.0.1.0.49153			
1048578	100		Remap		UDP	-	174.101.1.1		49154	3	ACTIVE-PSI
ON	1722807		1722987		CLEAR	-	Y	t1.1.0.1.0.49154			
1048579	100		Remap		UDP	-	174.101.1.1		49155	4	ACTIVE-PSI
ON	1723279		1722987		CLEAR	-	Y	t1.1.0.1.0.49155			
1048580	100		Remap		UDP	-	174.101.1.1		49156	5	ACTIVE-PSI
ON	1723665		1722987		CLEAR	-	Y	t1.1.0.1.0.49156			
1048581	100		Remap		UDP	-	174.101.1.1		49157	6	ACTIVE-PSI
ON	1724096		1722987		CLEAR	-	Y	t1.1.0.1.0.49157			
1048582	100		Remap		UDP	-	174.101.1.1		49158	7	ACTIVE-PSI
ON	1724475		1722987		CLEAR	-	Y	t1.1.0.1.0.49158			
1048583	100		Remap		UDP	-	174.101.1.1		49159	8	ACTIVE-PSI
ON	1723166		1722988		CLEAR	-	Y	t1.1.0.1.0.49159			
1048584	100		Remap		UDP	-	174.101.1.1		49160	9	ACTIVE-PSI
ON	1723595		1722988		CLEAR	-	Y	t1.1.0.1.0.49160			
1048585	100		Remap		UDP	-	174.101.1.1		49161	10	ACTIVE-PSI
ON	1724024		1722988		CLEAR	-	Y	t1.1.0.1.0.49161			
1048586	100		Remap		UDP	-	174.101.1.1		49162	11	ACTIVE-PSI
ON	1724425		1722988		CLEAR	-	Y	t1.1.0.1.0.49162			
1048587	100		Remap		UDP	-	174.101.1.1		49163	12	ACTIVE-PSI
ON	1723547		1722989		CLEAR	-	Y	t1.1.0.1.0.49163			
1048588	100		Remap		UDP	-	174.101.1.1		49164	13	ACTIVE-PSI
ON	1722215		1722988		CLEAR	-	Y	t1.1.0.1.0.49164			
1048589	100		Remap		UDP	-	174.101.1.1		49165	14	ACTIVE-PSI
ON	1722683		1722988		CLEAR	-	Y	t1.1.0.1.0.49165			
1048590	100		Remap		UDP	-	174.101.1.1		49166	15	ACTIVE-PSI
ON	1723060		1723001		CLEAR	-	Y	t1.1.0.1.0.49166			

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## Feature Information for Low Latency VOD Support

Use Cisco Feature Navigator to find information about the platform support and software image support. Cisco Feature Navigator enables you to determine which software images support a specific software release, feature set, or platform. To access Cisco Feature Navigator, go to the [cfng.cisco.com](http://cfng.cisco.com) link. An account on the Cisco.com page is not required.



**Note** The following table lists the software release in which a given feature is introduced. Unless noted otherwise, subsequent releases of that software release train also support that feature.

**Table 1: Feature Information for Low Latency VOD Support**

Feature Name	Releases	Feature Information
Low Latency VOD Support	Cisco IOS XE Everest 16.6.1	This feature was integrated on the Cisco cBR Series Converged Broadband Routers.

