

Audio Video Bridging Feature Guide

Cisco Services



# Audio Video Bridging Feature Guide



## TABLE OF CONTENTS

Introduction	Plan	Configure	Monitor	Resources	Contents
--------------	------	-----------	---------	-----------	----------

### Contents

Introduction.....	4	<b>Enabling MVRP .....</b>	<b>13</b>
About Audio Video Bridging .....	4	<b>Configuring MVRP on the switch interface .....</b>	<b>14</b>
Key Benefits.....	4	Configuring HQoS .....	16
Planning for Deployment .....	5	<b>Hierarchical Policing .....</b>	<b>17</b>
Existing and Supported Topology .....	5	<b>Enabling HQoS.....</b>	<b>17</b>
Prerequisites.....	6	<b>Migrating from Flat Policy Formats to Hierarchical Policy Formats - Guidelines and Restrictions .....</b>	<b>17</b>
<b>Supported SKUs for AVB.....</b>	<b>6</b>	<b>Hierarchical QoS Policy Formats .....</b>	<b>18</b>
<b>Licenses Supporting AVB.....</b>	<b>7</b>	Monitoring.....	26
Configuring .....	7	Monitoring AVB.....	26
Enabling AVB on the switch .....	7	Monitoring gPTP.....	26
Configuring AVB on the devices .....	8	Monitoring MVRP .....	27
Configuring Generalized Precision Time Protocol (gPTP) .....	10	Monitoring MSRP .....	27
<b>Enabling gPTP .....</b>	<b>11</b>	<b>Functions of MSRP .....</b>	<b>27</b>
<b>Configuring the values of PTP clocks .....</b>	<b>11</b>	Monitoring HQoS .....	29
Configuring Multiple VLAN Registration Protocol (MVRP) .....	13	Examples of AVB Configurations and Monitoring .....	29
		<b>Examples for AVB.....</b>	<b>29</b>
		<b>Examples for gPTP .....</b>	<b>39</b>
		<b>Examples for MVRP .....</b>	<b>52</b>
		<b>Examples for MSRP .....</b>	<b>55</b>
		<b>Examples for HQoS .....</b>	<b>64</b>

# Audio Video Bridging Feature Guide



Introduction	Plan	Configure	Monitor	Resources	Contents
--------------	------	-----------	---------	-----------	----------

Resources/Support Information..... 111

---

# Audio Video Bridging Feature Guide



## INTRODUCTION

Introduction

Plan

Configure

Monitor

Resources

Contents

## Introduction

### About Audio Video Bridging

Audio and video equipment deployments have traditionally been analog single-purpose point-to-point one-way links. Migration to digital transmission also continued to retain the point-to-point one-way links architecture. The dedicated connection model resulted in a mass of cabling in professional and consumer applications, which was hard to manage and operate.

In order to accelerate the adoption to Ethernet based audio/video deployments in an interoperable way IEEE came up with the IEEE Audio Video Bridging standards - IEEE 802.1BA. This defines a mechanism where endpoints and the network will function as a whole to enable high quality A/V streaming across consumer applications to professional audio-video over an Ethernet infrastructure.

### Key Benefits

AVB is a standard based mechanism to enable Ethernet based audio-

video transmission which has the following benefits:

- Guaranteed max Latency
- Time Synchronized
- Bandwidth Guaranteed
- Professional Grade

# Audio Video Bridging Feature Guide



## CONFIGURE

Introduction

Plan

Configure

Monitor

Resources

Contents

## Planning for Deployment

### Existing and Supported Topology

AVB protocols operate only in domains where every device is AVB capable. The AVB network comprises of the AVB talkers, AVB listeners, AVB switches and the grandmaster clock source.

- AVB Talker - An AVB end station that is the source or producer of a stream, i.e. microphones, video camera, and so on.
- AVB Listener - An AVB end station that is the destination or consumer of a stream, i.e. speaker, video screen, and so on.
- AVB Switch - An Ethernet switch that complies with IEEE802.1 AVB standards.
- AVB stream - A data stream associated with a stream reservation compliant with the Stream Reservation Protocol (SRP).

### Note

In some instances, the word “bridge” is used. In this context, it references to a switch.

The IEEE 802.1BA specification requires that an AVB talker must be grandmaster capable. In a typical deployment a network node can also be the grandmaster, provided it can either source or derive timing from a grandmaster capable device and provide the timing to the AVB network using IEEE 802.1AS.

Figure 1 shows a simple illustration of AVB network with different components.

# Audio Video Bridging Feature Guide



## CONFIGURE

Introduction

Plan

Configure

Monitor

Resources

Contents

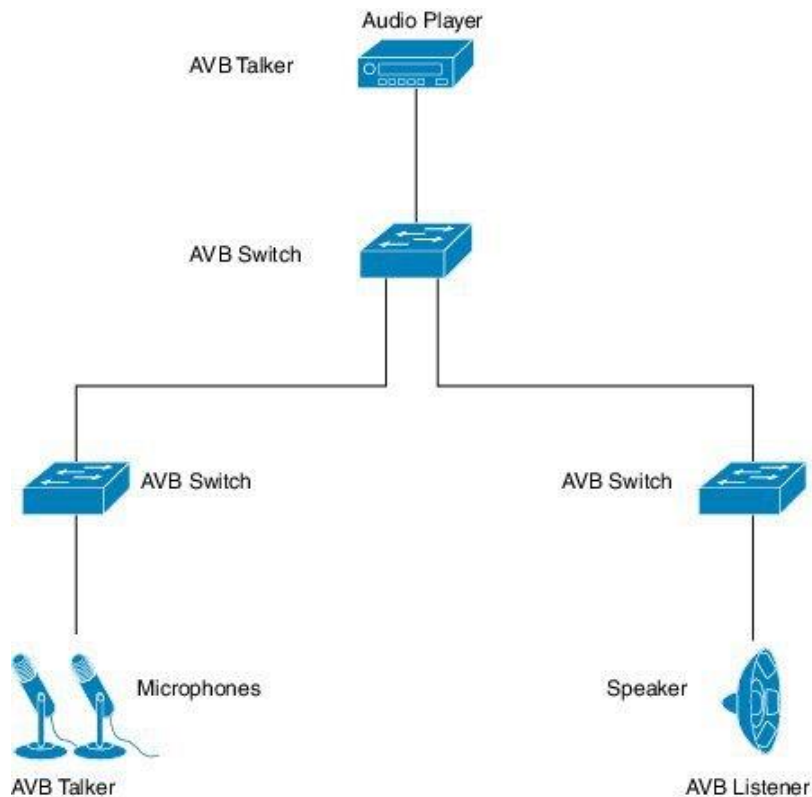
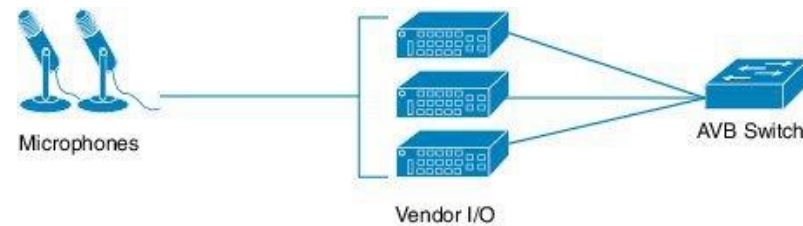


Figure 1 Network Topology for AVB Deployment

In many instances, the Audio/Video end points (Microphone, Speaker, etc.) are analog devices. AVB end-point vendors introduce Digital Signal Processors (DSP) and I/O devices that provide extensive audio/video processing and aggregate the end-points into an AVB Ethernet interface, as shown in Figure 2.



## Prerequisites

### Supported SKUs for AVB

AVB is supported on the following Catalyst 3850 and Catalyst 3650 SKUs.

- WS-C3650-8X24UQ
- WS-C3650-12X48UQ
- WS-C3650-24PDM

# Audio Video Bridging Feature Guide



## CONFIGURE

Introduction

Plan

Configure

Monitor

Resources

Contents

- WS-C3650-48FQM
- WS-C3850-12X48U
- WS-C3850-12XS
- WS-C3850-16XS
- WS-C3850-24XS
- WS-C3850-24XU
- WS-C3850-32XS
- WS-C3850-48XS

### Licenses Supporting AVB

AVB is supported on the following two license levels only:

- IP Base
- IP Services

### Configuring

This chapter describes how to configure the AVB network.

### Enabling AVB on the switch

You can enable AVB using the below command on the switch.

### Note

In Cisco IOS XE Denali 16.3.1, AVB is supported only on the non-mGig interfaces on WS-3850-12X48U. Starting from Cisco IOS XE Denali 16.3.2, AVB is supported on the mGig interfaces on WS-3850-12X48U and WS-C3850-24XU.

# Audio Video Bridging Feature Guide



## CONFIGURE

[Introduction](#)[Plan](#)[Configure](#)[Monitor](#)[Resources](#)[Contents](#)

	Command	Purpose
Step 1	Device> <b>enable</b>	Enables privileged EXEC mode. Enter your password if prompted.
Step 2	Device# <b>configure terminal</b>	Enters the global configuration mode.
Step 3	Device(config)# <b>avb</b>	Enables AVB on the switch.
Step 4	Device(config)# <b>end</b>	Returns to privileged EXEC mode.

To disable AVB on the switch, use the "**no**" form of the command.

### Configuring AVB on the devices

You can configure the interfaces along the connectivity path for AVB devices as dot1q trunk ports by using the below commands.



# Audio Video Bridging Feature Guide



## CONFIGURE

[Introduction](#)[Plan](#)[Configure](#)[Monitor](#)[Resources](#)[Contents](#)

	Command	Purpose
Step 1	Device> <b>enable</b>	Enables privileged EXEC mode. Enter your password if prompted.
Step 2	Device# <b>configure terminal</b>	Enters configuration mode.
Step 3	Device(config)# <b>interface</b> <i>interface-id</i>	Defines the interface to be configured as a trunk, and enters interface configuration mode.
Step 4	Device(config-if)# <b>switchport mode trunk</b>	Configures the port as a trunk port.
Step 5	Device(config-if)# <b>exit</b>	Returns to global configuration mode.
Step 6	Device(config)# <b>vlan 2</b>	Configures VLAN 2 on the switch.
Step 7	Device(config-vlan)# <b>avb</b>	Configures AVB on the specified interface.
Step 8	Device(config-vlan)# <b>end</b>	Returns to privileged EXEC mode.

# Audio Video Bridging Feature Guide



## CONFIGURE

[Introduction](#)[Plan](#)[Configure](#)[Monitor](#)[Resources](#)[Contents](#)

## Configuring Generalized Precision Time Protocol (gPTP)

Generalized Precision Time Protocol (gPTP) is an IEEE 802.1AS standard, which provides a mechanism to synchronize clocks of the bridges and end point devices in an AVB network. It defines the mechanism to elect the grandmaster clock (BMCA) among the time-aware bridges and talker and listener. The grandmaster is the root of the timing hierarchy that gets established in the time-aware network and distributes time to nodes below to enable synchronization.

Time synchronization also requires determining the link delay and switch delays in the network nodes. The gptp switch is a IEEE 1588 boundary clock, which also determines the link delay using the peer-to-peer delay mechanism. The delays computed are included in the correction field of the PTP messages and relayed to the end-points. The talker and listener use this gPTP time as a shared clock reference, which is used to relay and recover the media clock. gPTP currently defines only domain 0, which is what the switch supports.

The peer to peer delay mechanism runs on STP blocked ports as well. No other PTP messages are sent over blocked ports.

In a PTP domain, Best Master Clock (BMC) algorithm organizes Clocks and Ports into a hierarchical fashion, which includes clocks and port states:

### Clocks

- Grandmaster (GM/GMC)
- Boundary Clock (BC)

### Port States

- Master (M)
- Slave (S)
- Passive (P)

# Audio Video Bridging Feature Guide



## CONFIGURE

[Introduction](#)[Plan](#)[Configure](#)[Monitor](#)[Resources](#)[Contents](#)

### Enabling gPTP on a port

When AVB is enabled on the switch, gPTP for AVB also gets enabled.

You can also enable gPTP on a port using the command given below:

	Command	Purpose
Step 1	Device> <b>enable</b>	Enables privileged EXEC mode. Enter your password if prompted.
Step 2	Device# <b>configure terminal</b>	Enters configuration mode.
Step 3	Device(config)# <b>ptp profile dot1as</b>	Enables gPTP on the port.
Step 4	Device(config)# <b>end</b>	Returns to privileged EXEC mode..

### Enabling gPTP on an interface

You can also enable gPTP on an interface using the command given below:

	Command	Purpose
Step 1	Device> <b>enable</b>	Enables privileged EXEC mode. Enter your password if prompted.
Step 2	Device# <b>configure terminal</b>	Enters configuration mode.
Step 3	Device(config)# <b>interface interface-id</b>	Enters interface configuration mode.

# Audio Video Bridging Feature Guide



## CONFIGURE

[Introduction](#)[Plan](#)[Configure](#)[Monitor](#)[Resources](#)[Contents](#)

Step 4	Device(config-if) # <b>ptp enable</b>	Enables gPTP on the specified interface. To disable gPTP on the interface, use the no form of this command as shown below:  Device(config-if) # <b>no ptp enable</b>
Step 5	Device(config) # <b>end</b>	Returns to privileged EXEC mode..

### Configuring the values of PTP clocks

You can configure the values of ptp clock priority1 and priority2 using the commands below:

	Command	Purpose
Step 1	Device> <b>enable</b>	Enables privileged EXEC mode. Enter your password if prompted.
Step 2	Device# <b>configure terminal</b>	Enters configuration mode.
Step 3	Device(config) # <b>ptp priority1</b>	Configure the values of ptp clock priority1. 0-255 - This is the range for the value of the ptp clock priority. Select a value withing this range.  <b>Note:</b>  If the value of priority1 is configured to 255, the clock cannot become as
Step 4	Device(config) # <b>ptp priority2</b>	Configure the values of ptp clock priority2. 0-255 - This is the range for the value of the ptp clock priority. Select a value withing this range.

# Audio Video Bridging Feature Guide



## CONFIGURE

[Introduction](#)[Plan](#)[Configure](#)[Monitor](#)[Resources](#)[Contents](#)

	Command	Purpose
Step 5	<code>Device(config)# exit</code>	Returns to global configuration mode.

## Configuring Multiple VLAN Registration Protocol (MVRP)

### Enabling MVRP

You can enable MVRP on the switches in the topology to enable VLAN propagation using the below command.

### Note

You must change VTP mode to **transparent** or **off** , before enabling dynamic VLAN creation via MVRP.

	Command	Purpose
Step 1	<code>Device&gt; enable</code>	Enables privileged EXEC mode. Enter your password if prompted.
Step 2	<code>Device# configure terminal</code>	Enters configuration mode.
Step 3	<code>Device(config)# mvrp global</code>	Enters the MVRP Global configuration mode.
Step 4	<code>Device(config)# vtp mode {transparent   off}</code>	Sets the VTP to <b>transparent</b> or <b>off</b> mode.

# Audio Video Bridging Feature Guide



## CONFIGURE

[Introduction](#)[Plan](#)[Configure](#)[Monitor](#)[Resources](#)[Contents](#)

	Command	Purpose
Step 5	Device(config)# <b>mvrp vlan create</b>	Enables MVRP on the switches.
Step 6	Device(config)# <b>exit</b>	Returns to global configuration mode.

### Configuring MVRP on the switch interface

You can configure MVRP on the switch interfaces using the below commands:

	Command	Purpose
Step 1	Device> <b>enable</b>	Enables privileged EXEC mode. Enter your password if prompted.
Step 2	Device# <b>configure terminal</b>	Enters configuration mode.
Step 3	Device(config)# <b>interface interface-id</b>	Enters interface configuration mode.
Step 4	Device(config-if)# <b>mvrp registration {fixed   forbidden   normal}</b>	Registers MVRP with the MAD instance. <ul style="list-style-type: none"><li>• fixed - Fixed registration</li><li>• forbidden - Forbidden registration</li><li>• normal - Normal registration</li></ul>

# Audio Video Bridging Feature Guide



## CONFIGURE

[Introduction](#)[Plan](#)[Configure](#)[Monitor](#)[Resources](#)[Contents](#)

	Command	Purpose
Step 5	<code>Device(config-if)# mvrp timer {join   leave   leave-all   periodic}</code>	Configures the MVRP timer. <ul style="list-style-type: none"><li>• join - Timer controls the interval between transmit opportunities that are applied to the ASM</li><li>• leave - The timer controls the RSM waits in the LV state before transiting to the MT state</li><li>• leave-all - The timer control the frequency with which the LeaveAll SM generates LeaveAll PDUs</li><li>• periodic - Periodic timer</li></ul>
Step 6	<code>Device(config)# exit</code>	Returns to global configuration mode.

# Audio Video Bridging Feature Guide



## CONFIGURE

Introduction

Plan

Configure

Monitor

Resources

Contents

## Configuring HQoS

AVB networks guarantee bandwidth and minimum bounded latency for the time-sensitive audio and video streams. AVB defines Class A and Class B as the time-sensitive streams, based on the worst-case latency targets of the traffic from talker to listener.

The latency targets for the two streams are listed as below:

- SR-Class A: 2ms
- SR-Class B: 50ms

The sum of the worst-case latency contributions per hop should result in an overall end-to-end latency of 2 ms or less for SR-Class A and 50ms or less for SR-Class B. A typical AVB deployment of 7 hops from talker to listener meets these latency requirements.

The priority code points map the traffic to the specific stream. Frame forwarding behavior is based on this priority. A credit-based shaper is used to shape the transmission of these streams in accordance with the bandwidth that has been reserved on a given outbound queue so that the latency targets are met.

Starting with Cisco XE Denali 16.3.2, support for hierarchical QoS for AVB is enabled. AVB Hierarchical QoS policy is two level Parent-Child Policy. AVB Parent policy segregates audio, video traffic streams(SR-Class A , SR-Class B) and Network Control packets from standard best-effort ethernet traffic (Non-SR) and manage streams accordingly. Hierarchical QoS allows you to specify QoS behavior at multiple policy levels, which provides a high degree of granularity in traffic management. You can use hierarchical policies to:

- Allow a parent class to shape multiple queues in a child policy
- Apply specific policy map actions on the aggregate traffic
- Apply class-specific policy map actions

You can modify only ingress and egress HQoS child policy's class-map and its actions using **policy-map AVB-Output-Child-Policy** and **policy-map AVB-Input-Child-Policy** command.

### Note

**You should not modify the PCP in child policy to map with PCP configured in Parent Policy, e.g. SR Class A cos 3 and SR Class B Cos 2.**



# Audio Video Bridging Feature Guide



## CONFIGURE

Introduction

Plan

Configure

Monitor

Resources

Contents

### Hierarchical Policing

Hierarchical policing is supported on ingress and egress interfaces. Hierarchical QoS separates the SR and Non-SR class related rules into parent and child policies respectively. AVB SR classes are completely controlled by MSRP client and hence, parent policies containing SR class attributes are governed by MSRP. The end user has complete control over child policies which contain Non-SR class attributes and can modify only the child policies.

AVB HQoS child policies are user modifiable and NVGENed to preserve the configuration if user saves the configuration to the startup-config. So, AVB HQoS child policy configurations are retained even after reload.

### Enabling HQoS

When AVB is enabled on the switch, HQoS for AVB also gets enabled.

### Migrating from Flat Policy Formats to Hierarchical Policy Formats - Guidelines and Restrictions

Follow the below guidelines when migrating from flat policy formats to hierarchical policy formats for AVB:

- If you upgrade from Cisco IOS XE Denali 16.3.1 to Cisco IOS XE Denali 16.3.2, QoS policies that are in startup configuration of the

device will fail with errors. Follow the steps below to properly install HQoS policies on your device:

1. Use the **no avb** command to disable AVB globally.

### Note

When you disable AVB, all the policy-maps and class-maps are automatically removed from the configuration. But, the access-lists are not removed automatically. You must remove the access-lists manually. Ensure that all the QoS policy constructs are removed before upgrading to Cisco IOS XE Denali 16.3.2.

2. Enable AVB using the **avb** command. When AVB is enabled, HQoS for AVB also gets enabled.

- We do not recommend migrating from a hierarchical policy format supported release to a flat policy format supported release.
- You can only modify child policies. Parent policies are completely governed by MSRP.

# Audio Video Bridging Feature Guide



## CONFIGURE

Introduction

Plan

Configure

Monitor

Resources

Contents

- **show running config** command displays only the child policies.
- Starting from Cisco IOS XE Denali 16.3.2, **show running config interface** command will not display any details of the policy attached. You should use **show policy-map interface** command for displaying all the details of the policy attached.

### Hierarchical QoS Policy Formats

This following example shows hierarchical remarking policy at the ingress interface:

# Audio Video Bridging Feature Guide



## CONFIGURE

[Introduction](#)

[Plan](#)

[Configure](#)

[Monitor](#)

[Resources](#)

[Contents](#)

```
policy-map AVB-Input-Child-Policy
```

```
class VOIP-DATA-CLASS
```

```
    set dscp EF
```

```
class MULTIMEDIA-CONF-CLASS
```

```
    set dscp AF41
```

```
class BULK-DATA-CLASS
```

```
    set dscp AF11
```

```
class TRANSACTIONAL-DATA-CLASS
```

```
    set dscp AF21
```

```
class SCAVENGER-DATA-CLASS
```

```
    set dscp CS1
```

```
class SIGNALING-CLASS
```

# Audio Video Bridging Feature Guide



## CONFIGURE

[Introduction](#)

[Plan](#)

[Configure](#)

[Monitor](#)

[Resources](#)

[Contents](#)

```
set dscp CS3
```

```
class class-default
```

```
set dscp default
```

```
policy-map AVB-Input-Policy-Remark-AB
```

```
class AVB-SR-A-CLASS
```

```
set cos 0 (set 0 for boundary & SR class A PCP value for core port)
```

```
class AVB-SR-B-CLASS
```

```
set cos 0 (set 0 for boundary & SR class B PCP value for core port)
```

```
class class-default
```

```
service-policy AVB-Input-Child-Policy
```

# Audio Video Bridging Feature Guide



## CONFIGURE

[Introduction](#)

[Plan](#)

[Configure](#)

[Monitor](#)

[Resources](#)

[Contents](#)

```
policy-map AVB-Input-Policy-Remark-A
```

```
class AVB-SR-A-CLASS
```

```
    set cos 0 (set 0 for boundary & SR class A PCP value for core port)
```

```
class class-default
```

```
    service-policy AVB-Input-Child-Policy
```

```
policy-map AVB-Input-Policy-Remark-B
```

```
class AVB-SR-B-CLASS
```

```
    set cos 0 (set 0 for boundary & SR class B PCP value for core port)
```

```
class class-default
```

```
    service-policy AVB-Input-Child-Policy
```

# Audio Video Bridging Feature Guide



## CONFIGURE

[Introduction](#)

[Plan](#)

[Configure](#)

[Monitor](#)

[Resources](#)

[Contents](#)

```
policy-map AVB-Input-Policy-Remark-None
```

```
class class-default
```

```
    service-policy AVB-Input-Child-Policy
```

This following example shows hierarchical queuing policy at the egress interface:

```
policy-map AVB-Output-Child-Policy
```

```
class VOIP-PRIORITY-QUEUE
```

```
    bandwidth remaining percent 30
```

```
    queue-buffers ratio 10
```

```
class MULTIMEDIA-CONFERENCING-STREAMING-QUEUE
```

```
    bandwidth remaining percent 15
```

```
    queue-limit dscp AF41 percent 80
```

```
    queue-limit dscp AF31 percent 80
```

# Audio Video Bridging Feature Guide



## CONFIGURE

[Introduction](#)

[Plan](#)

[Configure](#)

[Monitor](#)

[Resources](#)

[Contents](#)

```
queue-limit dscp AF42 percent 90
```

```
queue-limit dscp AF32 percent 90
```

```
queue-buffers ratio 10
```

```
class TRANSACTIONAL-DATA-QUEUE
```

```
bandwidth remaining percent 15
```

```
queue-limit dscp AF21 percent 80
```

```
queue-limit dscp AF22 percent 90
```

```
queue-buffers ratio 10
```

```
class BULK-SCAVENGER-DATA-QUEUE
```

```
bandwidth remaining percent 15
```

```
queue-limit dscp AF11 percent 80
```

```
queue-limit dscp AF12 percent 90
```

# Audio Video Bridging Feature Guide



## CONFIGURE

[Introduction](#)

[Plan](#)

[Configure](#)

[Monitor](#)

[Resources](#)

[Contents](#)

```
queue-limit dscp CS1 percent 80
```

```
queue-buffers ratio 15
```

```
class class-default
```

```
bandwidth remaining percent 25
```

```
queue-buffers ratio 25
```

```
policy-map AVB-Output-Policy
```

```
class AVB-SR-A-CLASS
```

```
priority level 1 (Shaper value based on stream registration)
```

```
class AVB-SR-B-CLASS
```

```
priority level 2 (Shaper value based on stream registration)
```

```
class CONTROL-MGMT-QUEUE
```



# Audio Video Bridging Feature Guide



## CONFIGURE

[Introduction](#)

[Plan](#)

[Configure](#)

[Monitor](#)

[Resources](#)

[Contents](#)

```
priority level 3 percent 15
```

```
class class-default
```

```
bandwidth remaining percent 100
```

```
queue-buffers ratio 80
```

```
service-policy AVB-Output-Child-Policy
```

# Audio Video Bridging Feature Guide



## MONITOR

[Introduction](#)[Plan](#)[Configure](#)[Monitor](#)[Resources](#)[Contents](#)

### Monitoring

This chapter describes how to monitor the AVB network.

#### Monitoring AVB

To display the AVB details, use the commands in the following table:

Command	Purpose
<code>show avb domain</code>	Displays the AVB domain.
<code>show avb streams</code>	Displays the AVB stream information.

#### Monitoring gPTP

To display the gPTP protocol details, use the commands in the following table:

Command	Purpose
<code>show ptp brief</code>	Displays a brief status of ptp on the interfaces.
<code>show ptp clock</code>	Displays ptp clock information.
<code>show ptp parent</code>	Displays the parent clock information.
<code>show ptp port</code>	Displays the ptp port information.

# Audio Video Bridging Feature Guide



## MONITOR

Introduction	Plan	Configure	Monitor	Resources	Contents
--------------	------	-----------	---------	-----------	----------

<code>show platform software fed switch active ptp if-id {interface-id}</code>	Displays details info about ptp status on the port.
--	---

### Monitoring MVRP

To display the MVRP details, use the commands in the following table:

Command	Purpose
<code>show mvrp summary</code>	Displays MVRP summary information.
<code>show mvrp interface</code>	Displays interface MVRP information.

### Monitoring MSRP

Multiple Stream Reservation Protocol (MSRP) provides a mechanism for end stations to reserve network resources that will guarantee the transmission and reception of data streams across a network with the requested QoS. It is one of the core protocols required on an AVB device (talker, listener and switches). It allows talkers to advertise streams across a network of AVB switches and listeners to register for receiving the streams.

MSRP is the key software protocol module for supporting AVB. It enables stream establishment and teardown. It interfaces with gPTP to update the latency information for the streams. It interfaces with the

QoS module to setup the hardware resources that would guarantee requested bandwidth for the streams. It also provides the QoS shaping parameters required for the credit based shaper.

#### Functions of MSRP

MSRP performs the following functions:

# Audio Video Bridging Feature Guide



## MONITOR

Introduction	Plan	Configure	Monitor	Resources	Contents
--------------	------	-----------	---------	-----------	----------

- Allows Talkers to advertise Streams and Listeners to discover and register for Streams.
- Establishes a path through an Ethernet between a Talker and one or more Listeners.
- Provides guaranteed bandwidth for AVB Streams.
- Guarantees an upper bound on latency.
- Discovers and reports the worst case end-to-end latency between the Talker and each of its Listeners.
- Reports failure reason and location when a path between the Talker and a Listener cannot satisfy bandwidth requirements.
- Supports multiple classes of traffic with different latency targets.
- Protects best effort traffic from starvation by limiting AVB traffic.
- MSRP Talker declarations are not forwarded along the STP blocked ports.
- MSRP listens to the STP TCN notification to generate MSRP declarations tear /modify / establish streams.

To display the MSRP details, use the commands in the following table:

Command	Purpose
<code>show msrp streams</code>	Displays MSRP stream information.
<code>show msrp streams detailed</code>	Displays detailed MSRP stream information.
<code>show msrp streams brief</code>	Displays MSRP stream information in brief.

# Audio Video Bridging Feature Guide



## MONITOR

[Introduction](#)[Plan](#)[Configure](#)[Monitor](#)[Resources](#)[Contents](#)

```
show msrp port bandwidth
```

Displays MSRP port bandwidth information.

## Monitoring HQoS

To display the HQoS details, use the commands in the following table:

Command	Purpose
<pre>show run</pre>	Displays all the child policy map details.
<pre>show policy-map</pre>	Displays the details of the policy map configuration.
<pre>show platform hardware fed switch active qos queue stats interface interface-id</pre>	Displays the QoS statistics for different queue mappings in AVB.
<pre>show platform hardware fed switch active qos queue config interface interface-id</pre>	Displays the QoS queue configurations.
<pre>show policy-map interface interface-id [input   output]</pre>	Displays the AVB QoS statistics. Packet counters for ingress and bytes counters for egress are accounted for QoS Statistics.

## Examples of AVB Configurations and Monitoring

### Examples for AVB

This example shows how you can view the AVB domain.

```
Device#show avb domain
```

# Audio Video Bridging Feature Guide



## MONITOR

<a href="#">Introduction</a>	<a href="#">Plan</a>	<a href="#">Configure</a>	<a href="#">Monitor</a>	<a href="#">Resources</a>	<a href="#">Contents</a>
------------------------------	----------------------	---------------------------	-------------------------	---------------------------	--------------------------

### AVB Class-A

Priority Code Point	: 3
VLAN	: 2
Core ports	: 1
Boundary ports	: 67

### AVB Class-B

Priority Code Point	: 2
VLAN	: 2
Core ports	: 1
Boundary ports	: 67

# Audio Video Bridging Feature Guide



## MONITOR

<a href="#">Introduction</a>	<a href="#">Plan</a>	<a href="#">Configure</a>	<a href="#">Monitor</a>	<a href="#">Resources</a>	<a href="#">Contents</a>
------------------------------	----------------------	---------------------------	-------------------------	---------------------------	--------------------------

---

Interface	State	Delay	PCP	VID	Information
Te1/0/1	down	N/A			Oper state not up
Te1/0/2	down	N/A			Oper state not up
Te1/0/3	down	N/A			Oper state not up
Te1/0/4	down	N/A			Oper state not up
Te1/0/5	up	N/A			Port is not asCapable
Te1/0/6	down	N/A			Oper state not up
Te1/0/7	down	N/A			Oper state not up
Te1/0/8	down	N/A			Oper state not up
Te1/0/9	down	N/A			Oper state not up

# Audio Video Bridging Feature Guide



## MONITOR

<a href="#">Introduction</a>	<a href="#">Plan</a>	<a href="#">Configure</a>	<a href="#">Monitor</a>	<a href="#">Resources</a>	<a href="#">Contents</a>
------------------------------	----------------------	---------------------------	-------------------------	---------------------------	--------------------------

Te1/0/10	down	N/A	Oper state not up
Te1/0/11	down	N/A	Oper state not up
Te1/0/12	down	N/A	Oper state not up
Te1/0/13	down	N/A	Oper state not up
Te1/0/14	down	N/A	Oper state not up
Te1/0/15	down	N/A	Oper state not up
Te1/0/16	down	N/A	Oper state not up
Te1/0/17	down	N/A	Oper state not up
Te1/0/18	down	N/A	Oper state not up
Te1/0/19	up	N/A	Port is not asCapable
Te1/0/20	down	N/A	Oper state not up
Te1/0/21	down	N/A	Oper state not up



# Audio Video Bridging Feature Guide



## MONITOR

<a href="#">Introduction</a>	<a href="#">Plan</a>	<a href="#">Configure</a>	<a href="#">Monitor</a>	<a href="#">Resources</a>	<a href="#">Contents</a>
------------------------------	----------------------	---------------------------	-------------------------	---------------------------	--------------------------

Te1/0/22	down	N/A	Oper state not up
Te1/0/23	up	N/A	Port is not asCapable
Te1/0/24	down	N/A	Oper state not up
Te1/0/25	down	N/A	Oper state not up
Te1/0/26	down	N/A	Oper state not up
Te1/0/27	down	N/A	Oper state not up
Te1/0/28	down	N/A	Oper state not up
Te1/0/29	up	N/A	Port is not asCapable
Te1/0/30	down	N/A	Oper state not up
Te1/0/31	down	N/A	Oper state not up
Te1/0/32	down	N/A	Oper state not up
Te1/0/33	down	N/A	Oper state not up

# Audio Video Bridging Feature Guide



## MONITOR

<a href="#">Introduction</a>	<a href="#">Plan</a>	<a href="#">Configure</a>	<a href="#">Monitor</a>	<a href="#">Resources</a>	<a href="#">Contents</a>
------------------------------	----------------------	---------------------------	-------------------------	---------------------------	--------------------------

Te1/0/34	down	N/A			Oper state not up
Te1/0/35	up	N/A			Port is not asCapable
Te1/0/36	down	N/A			Oper state not up
Te1/0/37	down	N/A			Oper state not up
Te1/0/38	down	N/A			Oper state not up
Te1/0/39	up	507ns			
Class-	A	core	3	2	
Class-	B	core	2	2	
Te1/0/40	down	N/A			Oper state not up
Te1/0/41	down	N/A			Oper state not up
Te1/0/42	down	N/A			Oper state not up
Te1/0/43	down	N/A			Oper state not up

# Audio Video Bridging Feature Guide



## MONITOR

<a href="#">Introduction</a>	<a href="#">Plan</a>	<a href="#">Configure</a>	<a href="#">Monitor</a>	<a href="#">Resources</a>	<a href="#">Contents</a>
------------------------------	----------------------	---------------------------	-------------------------	---------------------------	--------------------------

Te1/0/44	down	N/A	Oper state not up
Te1/0/45	down	N/A	Oper state not up
Te1/0/46	down	N/A	Oper state not up
Te1/0/47	down	N/A	Oper state not up
Te1/0/48	down	N/A	Oper state not up
Te1/1/1	down	N/A	Oper state not up
Te1/1/2	down	N/A	Oper state not up
Te1/1/3	down	N/A	Oper state not up
Te1/1/4	down	N/A	Oper state not up
Te1/1/5	down	N/A	Oper state not up
Te1/1/6	down	N/A	Oper state not up
Te1/1/7	down	N/A	Oper state not up

# Audio Video Bridging Feature Guide



## MONITOR

<a href="#">Introduction</a>	<a href="#">Plan</a>	<a href="#">Configure</a>	<a href="#">Monitor</a>	<a href="#">Resources</a>	<a href="#">Contents</a>
------------------------------	----------------------	---------------------------	-------------------------	---------------------------	--------------------------

Te1/1/8	down	N/A	Oper state not up
Te1/1/9	down	N/A	Oper state not up
Te1/1/10	down	N/A	Oper state not up
Te1/1/11	down	N/A	Oper state not up
Te1/1/12	down	N/A	Oper state not up
Te1/1/13	down	N/A	Oper state not up
Te1/1/14	down	N/A	Oper state not up
Te1/1/15	down	N/A	Oper state not up
Te1/1/16	down	N/A	Oper state not up
Fo1/1/1	down	N/A	Oper state not up
Fo1/1/2	down	N/A	Oper state not up
Fo1/1/3	down	N/A	Oper state not up

# Audio Video Bridging Feature Guide



## MONITOR

Introduction	Plan	Configure	Monitor	Resources	Contents
--------------	------	-----------	---------	-----------	----------

```
Fo1/1/4      down      N/A          Oper state not up
```

- This example shows how you can view the AVB stream information.

```
Device#show avb streams
```

```
Stream ID:      0011.0100.0001:1      Incoming Interface:  Tel1/1/1
```

```
Destination    : 91E0.F000.FE00
```

```
Class          : A
```

```
Rank           : 1
```

```
Bandwidth      : 6400 Kbit/s
```

```
Outgoing Interfaces:
```

# Audio Video Bridging Feature Guide



## MONITOR

Introduction | Plan | Configure | Monitor | Resources | Contents

Interface	State	Time of Last Update	Information
-----------	-------	---------------------	-------------

-----			
Tel1/1/1	Ready	Tue Apr 26 01:25:40.634	

Stream ID: 0011.0100.0002:2 Incoming Interface: Tel1/1/1

Destination : 91E0.F000.FE01

Class : A

Rank : 1

Bandwidth : 6400 Kbit/s

Outgoing Interfaces:

-----

# Audio Video Bridging Feature Guide



## MONITOR

Introduction	Plan	Configure	Monitor	Resources	Contents
--------------	------	-----------	---------	-----------	----------

Interface	State	Time of Last Update	Information
-----------	-------	---------------------	-------------

-----			
Tel1/1/1	Ready	Tue Apr 26 01:25:40.634	

### Examples for gPTP

This command can be used to see a brief status of ptp on the interfaces.

```
Device# show ptp brief
```

Interface	Domain	PTP State
FortyGigabitEthernet1/1/1	0	FAULTY
FortyGigabitEthernet1/1/2	0	SLAVE
GigabitEthernet1/1/1	0	FAULTY
GigabitEthernet1/1/2	0	FAULTY
GigabitEthernet1/1/3	0	FAULTY

# Audio Video Bridging Feature Guide



## MONITOR

<a href="#">Introduction</a>	<a href="#">Plan</a>	<a href="#">Configure</a>	<a href="#">Monitor</a>	<a href="#">Resources</a>	<a href="#">Contents</a>
------------------------------	----------------------	---------------------------	-------------------------	---------------------------	--------------------------

GigabitEthernet1/1/4	0	FAULTY
TenGigabitEthernet1/0/1	0	FAULTY
TenGigabitEthernet1/0/2	0	FAULTY
TenGigabitEthernet1/0/3	0	MASTER
TenGigabitEthernet1/0/4	0	FAULTY
TenGigabitEthernet1/0/5	0	FAULTY
TenGigabitEthernet1/0/6	0	FAULTY
TenGigabitEthernet1/0/7	0	MASTER
TenGigabitEthernet1/0/8	0	FAULTY
TenGigabitEthernet1/0/9	0	FAULTY
TenGigabitEthernet1/0/10	0	FAULTY
TenGigabitEthernet1/0/11	0	MASTER



# Audio Video Bridging Feature Guide



## MONITOR

<a href="#">Introduction</a>	<a href="#">Plan</a>	<a href="#">Configure</a>	<a href="#">Monitor</a>	<a href="#">Resources</a>	<a href="#">Contents</a>
------------------------------	----------------------	---------------------------	-------------------------	---------------------------	--------------------------

TenGigabitEthernet1/0/12	0	FAULTY
TenGigabitEthernet1/0/13	0	FAULTY
TenGigabitEthernet1/0/14	0	FAULTY
TenGigabitEthernet1/0/15	0	FAULTY
TenGigabitEthernet1/0/16	0	FAULTY
TenGigabitEthernet1/0/17	0	FAULTY
TenGigabitEthernet1/0/18	0	FAULTY
TenGigabitEthernet1/0/19	0	MASTER
TenGigabitEthernet1/0/20	0	FAULTY
TenGigabitEthernet1/0/21	0	FAULTY
TenGigabitEthernet1/0/22	0	FAULTY
TenGigabitEthernet1/0/23	0	FAULTY

# Audio Video Bridging Feature Guide



## MONITOR

Introduction	Plan	Configure	Monitor	Resources	Contents
--------------	------	-----------	---------	-----------	----------

TenGigabitEthernet1/0/24	0	FAULTY
TenGigabitEthernet1/1/1	0	FAULTY
TenGigabitEthernet1/1/2	0	FAULTY
TenGigabitEthernet1/1/3	0	FAULTY
TenGigabitEthernet1/1/4	0	FAULTY
TenGigabitEthernet1/1/5	0	FAULTY
TenGigabitEthernet1/1/6	0	FAULTY
TenGigabitEthernet1/1/7	0	FAULTY
TenGigabitEthernet1/1/8	0	FAULTY

-----

This command can be used to view ptp clock information.

Device# show ptp clock

# Audio Video Bridging Feature Guide



## MONITOR

[Introduction](#)

[Plan](#)

[Configure](#)

[Monitor](#)

[Resources](#)

[Contents](#)

### PTP CLOCK INFO

PTP Device Type: Boundary clock

PTP Device Profile: IEEE 802/1AS Profile

Clock Identity: 0x4:6C:9D:FF:FE:4F:95:0

Clock Domain: 0

Number of PTP ports: 38

PTP Packet priority: 4

Priority1: 128

Priority2: 128

Clock Quality:

Class: 248

Accuracy: Unknown

# Audio Video Bridging Feature Guide



## MONITOR

<a href="#">Introduction</a>	<a href="#">Plan</a>	<a href="#">Configure</a>	<a href="#">Monitor</a>	<a href="#">Resources</a>	<a href="#">Contents</a>
------------------------------	----------------------	---------------------------	-------------------------	---------------------------	--------------------------

```
Offset (log variance): 16640
```

```
Offset From Master(ns): 0
```

```
Mean Path Delay(ns): 0
```

```
Steps Removed: 3
```

```
Local clock time: 00:12:13 UTC Jan 1 1970
```

---

This command can be used to view the parent clock information.

```
Device# show ptp parent
```

```
PTP PARENT PROPERTIES
```

```
Parent Clock:
```

```
Parent Clock Identity: 0xB0:7D:47:FF:FE:9E:B6:80
```

```
Parent Port Number: 3
```

# Audio Video Bridging Feature Guide



## MONITOR

[Introduction](#)

[Plan](#)

[Configure](#)

[Monitor](#)

[Resources](#)

[Contents](#)

Observed Parent Offset (log variance): 16640

Observed Parent Clock Phase Change Rate: N/A

Grandmaster Clock:

Grandmaster Clock Identity: 0x4:6C:9D:FF:FE:67:3A:80

Grandmaster Clock Quality:

Class: 248

Accuracy: Unknown

Offset (log variance): 16640

Priority1: 0

Priority2: 128

# Audio Video Bridging Feature Guide



## MONITOR

[Introduction](#)

[Plan](#)

[Configure](#)

[Monitor](#)

[Resources](#)

[Contents](#)

This command can be used to view the ptp port information.

```
Device#show ptp port
```

```
PTP PORT DATASET: FortyGigabitEthernet1/1/1
```

```
Port identity: clock identity: 0x4:6C:9D:FF:FE:4E:3A:80
```

```
Port identity: port number: 1
```

```
PTP version: 2
```

```
Port state: FAULTY
```

```
Delay request interval(log mean): 5
```

```
Announce receipt time out: 3
```

```
Peer mean path delay(ns): 0
```

```
Announce interval(log mean): 1
```

```
Sync interval(log mean): 0
```

# Audio Video Bridging Feature Guide



## MONITOR

[Introduction](#)

[Plan](#)

[Configure](#)

[Monitor](#)

[Resources](#)

[Contents](#)

```
Delay Mechanism: End to End
```

```
Peer delay request interval(log mean): 0
```

```
Sync fault limit: 500000000
```

```
PTP PORT DATASET: FortyGigabitEthernet1/1/2
```

```
Port identity: clock identity: 0x4:6C:9D:FF:FE:4E:3A:80
```

```
Port identity: port number: 2
```

```
PTP version: 2
```

```
Port state: FAULTY
```

```
Delay request interval(log mean): 5
```

```
Announce receipt time out: 3
```

```
Peer mean path delay(ns): 0
```

# Audio Video Bridging Feature Guide



## MONITOR

[Introduction](#)

[Plan](#)

[Configure](#)

[Monitor](#)

[Resources](#)

[Contents](#)

```
Announce interval(log mean): 1
```

--More--

-----

This command can be used to view the port information for a particular interface.

```
Device#show ptp port gil/0/26
```

```
PTP PORT DATASET: GigabitEthernet1/0/26
```

```
Port identity: clock identity: 0x4:6C:9D:FF:FE:4E:3A:80
```

```
Port identity: port number: 28
```

```
PTP version: 2
```

```
Port state: MASTER
```

```
Delay request interval(log mean): 5
```

```
Announce receipt time out: 3
```



# Audio Video Bridging Feature Guide



## MONITOR

[Introduction](#)

[Plan](#)

[Configure](#)

[Monitor](#)

[Resources](#)

[Contents](#)

```
Peer mean path delay(ns): 0
```

```
Announce interval(log mean): 1
```

```
Sync interval(log mean): 0
```

```
Delay Mechanism: Peer to Peer
```

```
Peer delay request interval(log mean): 0
```

```
Sync fault limit: 500000000
```

-----

This command can be used to view port data for the specified interface.

```
Device#show platform software fed switch active ptp if-id 0x20
```

```
Displaying port data for if_id 20
```

```
=====
```

# Audio Video Bridging Feature Guide



## MONITOR

[Introduction](#)

[Plan](#)

[Configure](#)

[Monitor](#)

[Resources](#)

[Contents](#)

Port Mac Address 04:6C:9D:4E:3A:9A

Port Clock Identity 04:6C:9D:FF:FE:4E:3A:80

Port number 28

PTP Version 2

domain\_value 0

dotlas capable: FALSE

sync\_recpt\_timeout\_time\_interval 375000000 nanoseconds

sync\_interval 125000000 nanoseconds

neighbor\_rate\_ratio 0.000000

neighbor\_prop\_delay 0 nanoseconds

compute\_neighbor\_rate\_ratio: TRUE

compute\_neighbor\_prop\_delay: TRUE

# Audio Video Bridging Feature Guide



## MONITOR

[Introduction](#)

[Plan](#)

[Configure](#)

[Monitor](#)

[Resources](#)

[Contents](#)

```
port_enabled: TRUE
```

```
ptt_port_enabled: TRUE
```

```
current_log_pdelay_req_interval 0
```

```
pdelay_req_interval 0 nanoseconds
```

```
allowed_lost_responses 3
```

```
neighbor_prop_delay_threshold 2000 nanoseconds
```

```
is_measuring_delay : FALSE
```

```
Port state: : MASTER
```

```
sync_seq_num 22023
```

```
delay_req_seq_num 23857
```

```
num sync messages transmitted 0
```

```
num sync messages received 0
```

# Audio Video Bridging Feature Guide



## MONITOR

Introduction	Plan	Configure	Monitor	Resources	Contents
--------------	------	-----------	---------	-----------	----------

```
num followup messages transmitted 0
num followup messages received 0
num pdelay requests transmitted 285695
num pdelay requests received 0
num pdelay responses transmitted 0
num pdelay responses received 0
num pdelay followup responses transmitted 0
num pdelay followup responses received 0
```

### Examples for MVRP

This example shows how you can view the MVRP summary information.

```
Device#show mvrp summary

MVRP global state          : enabled
```

# Audio Video Bridging Feature Guide



## MONITOR

<a href="#">Introduction</a>	<a href="#">Plan</a>	<a href="#">Configure</a>	<a href="#">Monitor</a>	<a href="#">Resources</a>	<a href="#">Contents</a>
------------------------------	----------------------	---------------------------	-------------------------	---------------------------	--------------------------

```
MVRP VLAN creation      : enabled
```

```
VLANs created via MVRP  : 2,567
```

```
MAC learning auto provision : disabled
```

```
Learning disabled on VLANs : none
```

-----

This example shows how you can view the interface MVRP information.

```
Device#show mvrp interface
```

```
Port      Status  Registrar State
```

```
Te1/0/47  on      normal
```

```
Te1/1/3   off     normal
```

```
Port      Join Timeout  Leave Timeout  Leaveall Timeout  Periodic
```

# Audio Video Bridging Feature Guide



## MONITOR

Introduction	Plan	Configure	Monitor	Resources	Contents
--------------	------	-----------	---------	-----------	----------

		Timeout		
Te1/0/47	20	60	1000	100
Te1/1/3	20	60	1000	100

### Port Vlans Declared

Te1/0/47 1-2,567,900

Te1/1/3 none

### Port Vlans Registered

Te1/0/47 2,567

Te1/1/3 none

# Audio Video Bridging Feature Guide



## MONITOR

Introduction	Plan	Configure	Monitor	Resources	Contents
--------------	------	-----------	---------	-----------	----------

Port	Vlans Registered and in Spanning Tree Forwarding State
Te1/0/47	2,567
Te1/1/3	none

### Examples for MSRP

This example shows how you can view the MSRP stream information.

```
Device#show msrp streams
```

```
-----  
Stream ID Talker Listener
```

```
Advertise Fail Ready ReadyFail AskFail
```

```
R | D R | D R | D R | D R | D
```

```
-----  
yy:yy:yy:yy:yy:yy:0001 1 | 2 0 | 0 1 | 0 0 | 1 1 | 0
```

# Audio Video Bridging Feature Guide



## MONITOR

Introduction	Plan	Configure	Monitor	Resources	Contents
--------------	------	-----------	---------	-----------	----------

```
zz:zz:zz:zz:zz:zz:0002 1 | 0 0 | 1 1 | 0 0 | 0 0 | 1
```

---

This example shows how you can view the detailed MSRP stream information.

```
Device#show msrp streams detail
```

```
Stream ID:          0011.0100.0001:1
```

```
Stream Age: 01:57:46 (since Mon Apr 25 23:41:11.413)
```

```
Create Time: Mon Apr 25 23:41:11.413
```

```
Destination Address: 91E0.F000.FE00
```

```
VLAN Identifier: 1
```

```
Data Frame Priority: 3 (Class A)
```

```
MaxFrameSize: 100
```

```
MaxIntervalFrames: 1 frames/125us
```



# Audio Video Bridging Feature Guide



## MONITOR

<a href="#">Introduction</a>	<a href="#">Plan</a>	<a href="#">Configure</a>	<a href="#">Monitor</a>	<a href="#">Resources</a>	<a href="#">Contents</a>
------------------------------	----------------------	---------------------------	-------------------------	---------------------------	--------------------------

Stream Bandwidth: 6400 Kbit/s

Rank: 1

Received Accumulated Latency: 20

Stream Attributes Table:

---

Interface	Attr State	Direction	Type
Gil/0/1	Register	Talker	Advertise

---

Attribute Age: 01:57:46 (since Mon Apr 25 23:41:11.413)

MRP Applicant: Very Anxious Observer, send None

MRP Registrar: In

Accumulated Latency: 20

# Audio Video Bridging Feature Guide



## MONITOR

Introduction

Plan

Configure

Monitor

Resources

Contents

----

```
Te1/1/1          Declare          Talker          Advertise
```

```
Attribute Age: 00:19:52 (since Tue Apr 26 01:19:05.525)
```

```
MRP Applicant: Quiet Active, send None
```

```
MRP Registrar: In
```

```
Accumulated Latency: 20
```

----

```
Te1/1/1          Register          Listener          Ready
```

```
Attribute Age: 00:13:17 (since Tue Apr 26 01:25:40.635)
```

```
MRP Applicant: Very Anxious Observer, send None
```

```
MRP Registrar: In
```

----

# Audio Video Bridging Feature Guide



## MONITOR

Introduction	Plan	Configure	Monitor	Resources	Contents
--------------	------	-----------	---------	-----------	----------

```
Gi1/0/1          Declare      Listener  Ready

Attribute Age: 00:13:17 (since Tue Apr 26 01:25:40.649)

MRP Applicant: Quiet Active, send None

MRP Registrar: In
```

---

This example shows how you can view the MSRP stream information in brief.

```
Device#show msrp streams brief
```

Legend: R = Registered, D = Declared.

---

Stream ID	Destination	Bandwidth	Talkers	Listeners	Fail
	Address	(Kbit/s)	R   D	R   D	

---

# Audio Video Bridging Feature Guide



## MONITOR

Introduction	Plan	Configure	Monitor	Resources	Contents
0011.0100.0001:1	91E0.F000.FE00	6400	1   1	1   1	No
0011.0100.0002:2	91E0.F000.FE01	6400	1   1	1   1	No
0011.0100.0003:3	91E0.F000.FE02	6400	1   1	1   1	No
0011.0100.0004:4	91E0.F000.FE03	6400	1   1	1   1	No
0011.0100.0005:5	91E0.F000.FE04	6400	1   1	1   1	No
0011.0100.0006:6	91E0.F000.FE05	6400	1   1	1   1	No
0011.0100.0007:7	91E0.F000.FE06	6400	1   1	1   1	No
0011.0100.0008:8	91E0.F000.FE07	6400	1   1	1   1	No
0011.0100.0009:9	91E0.F000.FE08	6400	1   1	1   1	No
0011.0100.000A:10	91E0.F000.FE09	6400	1   1	1   1	No

---

This example shows how you can view the MSRP port bandwidth information.

# Audio Video Bridging Feature Guide



## MONITOR

<a href="#">Introduction</a>	<a href="#">Plan</a>	<a href="#">Configure</a>	<a href="#">Monitor</a>	<a href="#">Resources</a>	<a href="#">Contents</a>
------------------------------	----------------------	---------------------------	-------------------------	---------------------------	--------------------------

```
Device#show msrp port bandwidth
```

```
-----
```

Ethernet	Capacity	Assigned	Available	Reserved
Interface	(Kbit/s)	A   B	A   B	A   B
Te1/0/1	10000000	75   0	75   75	0   0
Te1/0/2	10000000	75   0	75   75	0   0
Te1/0/3	1000000	75   0	75   75	0   0
Te1/0/4	10000000	75   0	75   75	0   0
Te1/0/5	10000000	75   0	75   75	0   0
Te1/0/6	10000000	75   0	75   75	0   0
Te1/0/8	10000000	75   0	75   75	0   0

# Audio Video Bridging Feature Guide



## MONITOR

Introduction	Plan	Configure	Monitor	Resources	Contents
--------------	------	-----------	---------	-----------	----------

Te1/0/9	10000000	75   0	75   75	0   0
Te1/0/10	10000000	75   0	75   75	0   0
Te1/0/11	10000000	75   0	75   75	0   0
Te1/0/12	10000000	75   0	75   75	0   0
Te1/0/13	1000000	75   0	75   75	0   0
Te1/0/14	10000000	75   0	75   75	0   0
Te1/0/15	10000000	75   0	75   75	0   0
Te1/0/16	10000000	75   0	75   75	0   0
Te1/0/17	10000000	75   0	75   75	0   0
Te1/0/18	10000000	75   0	75   75	0   0
Te1/0/19	1000000	75   0	75   75	0   0
Te1/0/20	10000000	75   0	75   75	0   0

# Audio Video Bridging Feature Guide



## MONITOR

Introduction	Plan	Configure	Monitor	Resources	Contents
--------------	------	-----------	---------	-----------	----------

Te1/0/21	10000000	75   0	75   75	0   0
Te1/0/22	10000000	75   0	75   75	0   0
Te1/0/23	10000000	75   0	75   75	0   0
Te1/0/24	10000000	75   0	75   75	0   0
Gi1/1/1	1000000	75   0	75   75	0   0
Gi1/1/2	1000000	75   0	75   75	0   0
Gi1/1/3	1000000	75   0	75   75	0   0
Gi1/1/4	1000000	75   0	75   75	0   0
Te1/1/1	10000000	75   0	75   75	0   0
Te1/1/2	10000000	75   0	75   75	0   0
Te1/1/3	10000000	75   0	75   75	0   0
Te1/1/4	10000000	75   0	75   75	0   0

# Audio Video Bridging Feature Guide



## MONITOR

Introduction	Plan	Configure	Monitor	Resources	Contents
--------------	------	-----------	---------	-----------	----------

Te1/1/5	10000000	75   0	75   75	0   0
Te1/1/6	10000000	75   0	75   75	0   0
Te1/1/7	10000000	75   0	75   75	0   0
Te1/1/8	10000000	75   0	75   75	0   0
Fo1/1/1	40000000	75   0	75   75	0   0
Fo1/1/2	40000000	75   0	75   75	0   0

### Examples for HQoS

This example shows how you can view all the policy-map configuration details when AVB is enabled.

```
Device#show policy-map
```

```
Policy Map AVB-Input-Policy-Remark-B
```

```
Class AVB-SR-CLASS-A
```



# Audio Video Bridging Feature Guide



## MONITOR

[Introduction](#)

[Plan](#)

[Configure](#)

[Monitor](#)

[Resources](#)

[Contents](#)

```
set cos 3
```

```
Class AVB-SR-CLASS-B
```

```
set cos 0
```

```
Class class-default
```

```
service-policy AVB-Input-Child-Policy
```

```
Policy Map AVB-Input-Policy-Remark-A
```

```
Class AVB-SR-CLASS-A
```

```
set cos 0
```

```
Class AVB-SR-CLASS-B
```

```
set cos 2
```

```
Class class-default
```

# Audio Video Bridging Feature Guide



## MONITOR

[Introduction](#)

[Plan](#)

[Configure](#)

[Monitor](#)

[Resources](#)

[Contents](#)

```
service-policy AVB-Input-Child-Policy
```

```
Policy Map AVB-Output-Policy-Default
```

```
Class AVB-SR-CLASS-A
```

```
priority level 1 1 (%)
```

```
Class AVB-SR-CLASS-B
```

```
priority level 2 1 (%)
```

```
Class AVB-CONTROL-MGMT-QUEUE
```

```
priority level 3 15 (%)
```

```
Class class-default
```

```
bandwidth remaining 100 (%)
```

```
queue-buffers ratio 70
```

# Audio Video Bridging Feature Guide



## MONITOR

[Introduction](#)

[Plan](#)

[Configure](#)

[Monitor](#)

[Resources](#)

[Contents](#)

```
service-policy AVB-Output-Child-Policy
```

```
Policy Map AVB-Input-Policy-Remark-AB
```

```
Class AVB-SR-CLASS-A
```

```
set cos 0
```

```
Class AVB-SR-CLASS-B
```

```
set cos 0
```

```
Class class-default
```

```
service-policy AVB-Input-Child-Policy
```

```
Policy Map AVB-Input-Policy-Remark-None
```

```
Class AVB-SR-CLASS-A
```

# Audio Video Bridging Feature Guide



## MONITOR

[Introduction](#)

[Plan](#)

[Configure](#)

[Monitor](#)

[Resources](#)

[Contents](#)

```
set cos 3
```

```
Class AVB-SR-CLASS-B
```

```
set cos 2
```

```
Class class-default
```

```
service-policy AVB-Input-Child-Policy
```

```
Policy Map AVB-Input-Child-Policy
```

```
Class AVB-VOIP-DATA-CLASS
```

```
set dscp ef
```

```
Class AVB-MULTIMEDIA-CONF-CLASS
```

```
set dscp af41
```

```
Class AVB-BULK-DATA-CLASS
```

# Audio Video Bridging Feature Guide



## MONITOR

[Introduction](#)

[Plan](#)

[Configure](#)

[Monitor](#)

[Resources](#)

[Contents](#)

```
set dscp af11
```

```
Class AVB-TRANSACTIONAL-DATA-CLASS
```

```
set dscp af21
```

```
Class AVB-SCAVENGER-DATA-CLASS
```

```
set dscp cs1
```

```
Class AVB-SIGNALING-CLASS
```

```
set dscp cs3
```

```
Class class-default
```

```
set dscp default
```

```
Policy Map AVB-Output-Child-Policy
```

```
Class AVB-VOIP-PRIORITY-QUEUE
```

# Audio Video Bridging Feature Guide



## MONITOR

<a href="#">Introduction</a>	<a href="#">Plan</a>	<a href="#">Configure</a>	<a href="#">Monitor</a>	<a href="#">Resources</a>	<a href="#">Contents</a>
------------------------------	----------------------	---------------------------	-------------------------	---------------------------	--------------------------

```
bandwidth remaining 30 (%)
```

```
queue-buffers ratio 30
```

```
Class AVB-MULTIMEDIA-CONF-STREAMING-QUEUE
```

```
bandwidth remaining 15 (%)
```

```
queue-limit dscp af41 percent 80
```

```
queue-limit dscp af31 percent 80
```

```
queue-limit dscp af42 percent 90
```

```
queue-limit dscp af32 percent 90
```

```
queue-buffers ratio 15
```

```
Class AVB-TRANSACTIONAL-DATA-QUEUE
```

```
bandwidth remaining 15 (%)
```

```
queue-limit dscp af21 percent 80
```

# Audio Video Bridging Feature Guide



## MONITOR

[Introduction](#)

[Plan](#)

[Configure](#)

[Monitor](#)

[Resources](#)

[Contents](#)

```
queue-limit dscp af22 percent 90
```

```
queue-buffers ratio 15
```

```
Class AVB-BULK-SCAVENGER-DATA-QUEUE
```

```
bandwidth remaining 15 (%)
```

```
queue-limit dscp af11 percent 80
```

```
queue-limit dscp af12 percent 90
```

```
queue-limit dscp cs1 percent 80
```

```
queue-buffers ratio 15
```

```
Class class-default
```

```
bandwidth remaining 25 (%)
```

```
queue-buffers ratio 25
```

# Audio Video Bridging Feature Guide



## MONITOR

[Introduction](#)

[Plan](#)

[Configure](#)

[Monitor](#)

[Resources](#)

[Contents](#)

This example shows how you can view all the policy-map configuration details when AVB is disabled.

```
Device#show policy-map
```

```
Building configuration...
```

```
Current configuration : 2079 bytes
```

```
!
```

```
policy-map AVB-Input-Child-Policy
```

```
class AVB-VOIP-DATA-CLASS
```

```
    set dscp ef
```

```
class AVB-MULTIMEDIA-CONF-CLASS
```

```
    set dscp af41
```

```
class AVB-BULK-DATA-CLASS
```



# Audio Video Bridging Feature Guide



## MONITOR

[Introduction](#)

[Plan](#)

[Configure](#)

[Monitor](#)

[Resources](#)

[Contents](#)

```
set dscp af11
```

```
class AVB-TRANSACTIONAL-DATA-CLASS
```

```
set dscp af21
```

```
class AVB-SCAVENGER-DATA-CLASS
```

```
set dscp cs1
```

```
class AVB-SIGNALING-CLASS
```

```
set dscp cs3
```

```
class class-default
```

```
set dscp default
```

```
policy-map AVB-Output-Child-Policy
```

```
class AVB-VOIP-PRIORITY-QUEUE
```

```
bandwidth remaining percent 30
```

# Audio Video Bridging Feature Guide



## MONITOR

[Introduction](#)

[Plan](#)

[Configure](#)

[Monitor](#)

[Resources](#)

[Contents](#)

```
queue-buffers ratio 30
```

```
class AVB-MULTIMEDIA-CONF-STREAMING-QUEUE
```

```
bandwidth remaining percent 15
```

```
queue-limit dscp af41 percent 80
```

```
queue-limit dscp af31 percent 80
```

```
queue-limit dscp af42 percent 90
```

```
queue-limit dscp af32 percent 90
```

```
queue-buffers ratio 15
```

```
class AVB-TRANSACTIONAL-DATA-QUEUE
```

```
bandwidth remaining percent 15
```

```
queue-limit dscp af21 percent 80
```

```
queue-limit dscp af22 percent 90
```

# Audio Video Bridging Feature Guide



## MONITOR

<a href="#">Introduction</a>	<a href="#">Plan</a>	<a href="#">Configure</a>	<a href="#">Monitor</a>	<a href="#">Resources</a>	<a href="#">Contents</a>
------------------------------	----------------------	---------------------------	-------------------------	---------------------------	--------------------------

```
queue-buffers ratio 15
```

```
class AVB-BULK-SCAVENGER-DATA-QUEUE
```

```
bandwidth remaining percent 15
```

```
queue-limit dscp af11 percent 80
```

```
queue-limit dscp af12 percent 90
```

```
queue-limit dscp cs1 percent 80
```

```
queue-buffers ratio 15
```

```
class class-default
```

```
bandwidth remaining percent 25
```

```
queue-buffers ratio 25
```

```
!
```

```
end
```

# Audio Video Bridging Feature Guide



## MONITOR

Introduction

Plan

Configure

Monitor

Resources

Contents

-----

This example shows how you can view all the class-map configuration details when AVB is enabled.

```
Device#show class-map
```

```
Class Map match-any AVB-VOIP-DATA-CLASS (id 31)
```

```
  Match dscp ef (46)
```

```
  Match cos 5
```

```
Class Map match-any AVB-BULK-DATA-CLASS (id 33)
```

```
  Match access-group name AVB-BULK-DATA-CLASS-ACL
```

# Audio Video Bridging Feature Guide



## MONITOR

[Introduction](#)

[Plan](#)

[Configure](#)

[Monitor](#)

[Resources](#)

[Contents](#)

```
Class Map match-any AVB-VOIP-PRIORITY-QUEUE (id 37)
```

```
  Match dscp cs4 (32) cs5 (40) ef (46)
```

```
  Match precedence 4 5
```

```
  Match cos 5
```

```
Class Map match-any AVB-MULTIMEDIA-CONF-CLASS (id 32)
```

```
  Match access-group name AVB-MULTIMEDIA-CONF-CLASS-ACL
```

```
Class Map match-any AVB-SIGNALING-CLASS (id 36)
```

```
  Match access-group name AVB-SIGNALING-CLASS-ACL
```

```
Class Map match-any AVB-MULTIMEDIA-CONF-STREAMING-QUEUE (id 38)
```

# Audio Video Bridging Feature Guide



## MONITOR

<a href="#">Introduction</a>	<a href="#">Plan</a>	<a href="#">Configure</a>	<a href="#">Monitor</a>	<a href="#">Resources</a>	<a href="#">Contents</a>
------------------------------	----------------------	---------------------------	-------------------------	---------------------------	--------------------------

```
Match dscp af41 (34) af42 (36) af43 (38)
```

```
Match dscp af31 (26) af32 (28) af33 (30)
```

```
Match cos 4
```

```
Class Map match-any AVB-BULK-SCAVENGER-DATA-QUEUE (id 40)
```

```
Match dscp cs1 (8) af11 (10) af12 (12) af13 (14)
```

```
Match precedence 1
```

```
Match cos 1
```

```
Class Map match-any AVB-TRANSACTIONAL-DATA-CLASS (id 34)
```

```
Match access-group name AVB-TRANSACTIONAL-DATA-CLASS-ACL
```

# Audio Video Bridging Feature Guide



## MONITOR

[Introduction](#)

[Plan](#)

[Configure](#)

[Monitor](#)

[Resources](#)

[Contents](#)

```
Class Map match-any AVB-TRANSACTIONAL-DATA-QUEUE (id 39)
```

```
Match dscp af21 (18) af22 (20) af23 (22)
```

```
Class Map match-any AVB-SR-CLASS-B (id 42)
```

```
Match cos 2
```

```
Class Map match-any AVB-SR-CLASS-A (id 41)
```

```
Match cos 3
```

```
Class Map match-any AVB-SCAVENGER-DATA-CLASS (id 35)
```

```
Match access-group name AVB-SCAVENGER-DATA-CLASS-ACL
```

# Audio Video Bridging Feature Guide



## MONITOR

[Introduction](#)

[Plan](#)

[Configure](#)

[Monitor](#)

[Resources](#)

[Contents](#)

```
Class Map match-any AVB-CONTROL-MGMT-QUEUE (id 43)
```

```
Match ip dscp cs2 (16)
```

```
Match ip dscp cs3 (24)
```

```
Match ip dscp cs6 (48)
```

```
Match ip dscp cs7 (56)
```

```
Match ip precedence 6
```

```
Match ip precedence 7
```

```
Match ip precedence 3
```

```
Match ip precedence 2
```

```
Match cos 6
```

```
Match cos 7
```



# Audio Video Bridging Feature Guide



## MONITOR

[Introduction](#)

[Plan](#)

[Configure](#)

[Monitor](#)

[Resources](#)

[Contents](#)

-----

This example shows how you can view all the class-map configuration details when AVB is disabled.

```
Device#show class-map
```

```
Building configuration...
```

```
Current configuration : 2650 bytes
```

```
!
```

```
class-map match-any AVB-VOIP-DATA-CLASS
```

```
match dscp ef
```

```
match cos 5
```

```
class-map match-any AVB-BULK-DATA-CLASS
```

```
match access-group name AVB-BULK-DATA-CLASS-ACL
```

# Audio Video Bridging Feature Guide



## MONITOR

[Introduction](#)

[Plan](#)

[Configure](#)

[Monitor](#)

[Resources](#)

[Contents](#)

```
class-map match-any AVB-VOIP-PRIORITY-QUEUE
```

```
match dscp cs4 cs5 ef
```

```
match precedence 4 5
```

```
match cos 5
```

```
class-map match-any AVB-MULTIMEDIA-CONF-CLASS
```

```
match access-group name AVB-MULTIMEDIA-CONF-CLASS-ACL
```

```
class-map match-any AVB-SIGNALING-CLASS
```

```
match access-group name AVB-SIGNALING-CLASS-ACL
```

```
class-map match-any AVB-MULTIMEDIA-CONF-STREAMING-QUEUE
```

```
match dscp af41 af42 af43
```

```
match dscp af31 af32 af33
```

```
match cos 4
```

# Audio Video Bridging Feature Guide



## MONITOR

[Introduction](#)

[Plan](#)

[Configure](#)

[Monitor](#)

[Resources](#)

[Contents](#)

```
class-map match-any AVB-BULK-SCAVENGER-DATA-QUEUE

match dscp cs1  af11  af12  af13

match precedence 1

match cos 1

class-map match-any AVB-TRANSACTIONAL-DATA-CLASS

match access-group name AVB-TRANSACTIONAL-DATA-CLASS-ACL

class-map match-any AVB-TRANSACTIONAL-DATA-QUEUE

match dscp af21  af22  af23

class-map match-any AVB-SCAVENGER-DATA-CLASS

match access-group name AVB-SCAVENGER-DATA-CLASS-ACL

end
```

# Audio Video Bridging Feature Guide



## MONITOR

[Introduction](#)

[Plan](#)

[Configure](#)

[Monitor](#)

[Resources](#)

[Contents](#)

-----

This example shows how you can view all the AVB QoS statistics.

```
Device#show policy-map interface gigabitEthernet 1/0/15
```

```
GigabitEthernet1/0/15
```

```
Service-policy input: AVB-Input-Policy-Remark-AB
```

```
Class-map: AVB-SR-CLASS-A (match-any)
```

```
0 packets
```

```
Match: cos 3
```

```
0 packets, 0 bytes
```

```
5 minute rate 0 bps
```

# Audio Video Bridging Feature Guide



## MONITOR

[Introduction](#)

[Plan](#)

[Configure](#)

[Monitor](#)

[Resources](#)

[Contents](#)

```
QoS Set
```

```
cos 0
```

```
Class-map: AVB-SR-CLASS-B (match-any)
```

```
0 packets
```

```
Match: cos 2
```

```
0 packets, 0 bytes
```

```
5 minute rate 0 bps
```

```
QoS Set
```

```
cos 0
```

```
Class-map: class-default (match-any)
```

# Audio Video Bridging Feature Guide



## MONITOR

Introduction

Plan

Configure

Monitor

Resources

Contents

```
0 packets
```

```
Match: any
```

```
Service-policy : AVB-Input-Child-Policy
```

```
Class-map: AVB-VOIP-DATA-CLASS (match-any)
```

```
0 packets
```

```
Match: dscp ef (46)
```

```
0 packets, 0 bytes
```

```
5 minute rate 0 bps
```

```
Match: cos 5
```

```
0 packets, 0 bytes
```

# Audio Video Bridging Feature Guide



## MONITOR

Introduction

Plan

Configure

Monitor

Resources

Contents

```
5 minute rate 0 bps
```

```
QoS Set
```

```
cos 3
```

```
Class-map: AVB-MULTIMEDIA-CONF-CLASS (match-any)
```

```
0 packets
```

```
Match: access-group name AVB-MULTIMEDIA-CONF-CLASS-ACL
```

```
0 packets, 0 bytes
```

```
5 minute rate 0 bps
```

```
QoS Set
```

```
dscp af41
```

# Audio Video Bridging Feature Guide



## MONITOR

[Introduction](#)

[Plan](#)

[Configure](#)

[Monitor](#)

[Resources](#)

[Contents](#)

```
Class-map: AVB-BULK-DATA-CLASS (match-any)
```

```
0 packets
```

```
Match: access-group name AVB-BULK-DATA-CLASS-ACL
```

```
0 packets, 0 bytes
```

```
5 minute rate 0 bps
```

```
QoS Set
```

```
dscp af11
```

```
Class-map: AVB-TRANSACTIONAL-DATA-CLASS (match-any)
```

```
0 packets
```

```
Match: access-group name AVB-TRANSACTIONAL-DATA-CLASS-ACL
```

```
0 packets, 0 bytes
```



# Audio Video Bridging Feature Guide



## MONITOR

Introduction	Plan	Configure	Monitor	Resources	Contents
--------------	------	-----------	---------	-----------	----------

```
5 minute rate 0 bps
```

```
QoS Set
```

```
dscp af21
```

```
Class-map: AVB-SCAVENGER-DATA-CLASS (match-any)
```

```
0 packets
```

```
Match: access-group name AVB-SCAVENGER-DATA-CLASS-ACL
```

```
0 packets, 0 bytes
```

```
5 minute rate 0 bps
```

```
QoS Set
```

```
dscp cs1
```

# Audio Video Bridging Feature Guide



## MONITOR

[Introduction](#)

[Plan](#)

[Configure](#)

[Monitor](#)

[Resources](#)

[Contents](#)

```
Class-map: AVB-SIGNALING-CLASS (match-any)
```

```
0 packets
```

```
Match: access-group name AVB-SIGNALING-CLASS-ACL
```

```
0 packets, 0 bytes
```

```
5 minute rate 0 bps
```

```
QoS Set
```

```
dscp cs3
```

```
Class-map: class-default (match-any)
```

```
0 packets
```

```
Match: any
```

```
QoS Set
```

# Audio Video Bridging Feature Guide



## MONITOR

Introduction

Plan

Configure

Monitor

Resources

Contents

```
dscp default
```

```
Service-policy output: AVB-Output-Policy-Default
```

```
queue stats for all priority classes:
```

```
Queueing
```

```
priority level 3
```

```
(total drops) 0
```

```
(bytes output) 7595
```

```
queue stats for all priority classes:
```

# Audio Video Bridging Feature Guide



## MONITOR

[Introduction](#)

[Plan](#)

[Configure](#)

[Monitor](#)

[Resources](#)

[Contents](#)

```
Queueing
```

```
priority level 2
```

```
(total drops) 0
```

```
(bytes output) 0
```

```
queue stats for all priority classes:
```

```
Queueing
```

```
priority level 1
```

```
(total drops) 0
```

```
(bytes output) 0
```

# Audio Video Bridging Feature Guide



## MONITOR

[Introduction](#)

[Plan](#)

[Configure](#)

[Monitor](#)

[Resources](#)

[Contents](#)

```
Class-map: AVB-SR-CLASS-A (match-any)
```

```
  0 packets
```

```
Match: cos 3
```

```
  0 packets, 0 bytes
```

```
  5 minute rate 0 bps
```

```
Priority: 1% (10000 kbps), burst bytes 250000,
```

```
Priority Level: 1
```

```
Class-map: AVB-SR-CLASS-B (match-any)
```

```
  0 packets
```

# Audio Video Bridging Feature Guide



## MONITOR

<a href="#">Introduction</a>	<a href="#">Plan</a>	<a href="#">Configure</a>	<a href="#">Monitor</a>	<a href="#">Resources</a>	<a href="#">Contents</a>
------------------------------	----------------------	---------------------------	-------------------------	---------------------------	--------------------------

```
Match: cos 2
```

```
0 packets, 0 bytes
```

```
5 minute rate 0 bps
```

```
Priority: 1% (10000 kbps), burst bytes 250000,
```

```
Priority Level: 2
```

```
Class-map: AVB-CONTROL-MGMT-QUEUE (match-any)
```

```
0 packets
```

```
Match: ip dscp cs2 (16)
```

```
0 packets, 0 bytes
```

```
5 minute rate 0 bps
```

# Audio Video Bridging Feature Guide



## MONITOR

<a href="#">Introduction</a>	<a href="#">Plan</a>	<a href="#">Configure</a>	<a href="#">Monitor</a>	<a href="#">Resources</a>	<a href="#">Contents</a>
------------------------------	----------------------	---------------------------	-------------------------	---------------------------	--------------------------

```
Match: ip dscp cs3 (24)
```

```
0 packets, 0 bytes
```

```
5 minute rate 0 bps
```

```
Match: ip dscp cs6 (48)
```

```
0 packets, 0 bytes
```

```
5 minute rate 0 bps
```

```
Match: ip dscp cs7 (56)
```

```
0 packets, 0 bytes
```

```
5 minute rate 0 bps
```

```
Match: ip precedence 6
```

```
0 packets, 0 bytes
```

```
5 minute rate 0 bps
```

# Audio Video Bridging Feature Guide



## MONITOR

[Introduction](#)

[Plan](#)

[Configure](#)

[Monitor](#)

[Resources](#)

[Contents](#)

```
Match: ip precedence 7
```

```
0 packets, 0 bytes
```

```
5 minute rate 0 bps
```

```
Match: ip precedence 3
```

```
0 packets, 0 bytes
```

```
5 minute rate 0 bps
```

```
Match: ip precedence 2
```

```
0 packets, 0 bytes
```

```
5 minute rate 0 bps
```

```
Match: cos 6
```

```
0 packets, 0 bytes
```

```
5 minute rate 0 bps
```



# Audio Video Bridging Feature Guide



## MONITOR

<a href="#">Introduction</a>	<a href="#">Plan</a>	<a href="#">Configure</a>	<a href="#">Monitor</a>	<a href="#">Resources</a>	<a href="#">Contents</a>
------------------------------	----------------------	---------------------------	-------------------------	---------------------------	--------------------------

```
Match: cos 7
```

```
0 packets, 0 bytes
```

```
5 minute rate 0 bps
```

```
Priority: 15% (150000 kbps), burst bytes 3750000,
```

```
Priority Level: 3
```

```
Class-map: class-default (match-any)
```

```
0 packets
```

```
Match: any
```

```
Queueing
```

# Audio Video Bridging Feature Guide



## MONITOR

Introduction

Plan

Configure

Monitor

Resources

Contents

```
(total drops) 0
```

```
(bytes output) 0
```

```
bandwidth remaining 80%
```

```
queue-buffers ratio 70
```

```
Service-policy : AVB-Output-Child-Policy
```

```
Class-map: AVB-VOIP-PRIORITY-QUEUE (match-any)
```

```
0 packets
```

```
Match: dscp cs4 (32) cs5 (40) ef (46)
```

```
0 packets, 0 bytes
```

```
5 minute rate 0 bps
```

# Audio Video Bridging Feature Guide



## MONITOR

<a href="#">Introduction</a>	<a href="#">Plan</a>	<a href="#">Configure</a>	<a href="#">Monitor</a>	<a href="#">Resources</a>	<a href="#">Contents</a>
------------------------------	----------------------	---------------------------	-------------------------	---------------------------	--------------------------

```
Match: precedence 4 5
```

```
0 packets, 0 bytes
```

```
5 minute rate 0 bps
```

```
Match: cos 5
```

```
0 packets, 0 bytes
```

```
5 minute rate 0 bps
```

```
Queueing
```

```
(total drops) 0
```

```
(bytes output) 0
```

```
bandwidth remaining 30%
```

```
queue-buffers ratio 30
```

# Audio Video Bridging Feature Guide



## MONITOR

[Introduction](#)

[Plan](#)

[Configure](#)

[Monitor](#)

[Resources](#)

[Contents](#)

```
Class-map: AVB-MULTIMEDIA-CONF-STREAMING-QUEUE (match-any)
```

```
0 packets
```

```
Match: dscp af41 (34) af42 (36) af43 (38)
```

```
0 packets, 0 bytes
```

```
5 minute rate 0 bps
```

```
Match: dscp af31 (26) af32 (28) af33 (30)
```

```
0 packets, 0 bytes
```

```
5 minute rate 0 bps
```

```
Match: cos 4
```

```
0 packets, 0 bytes
```

```
5 minute rate 0 bps
```

# Audio Video Bridging Feature Guide



## MONITOR

Introduction

Plan

Configure

Monitor

Resources

Contents

Queueing

```
queue-limit dscp 26 percent 80
```

```
queue-limit dscp 28 percent 90
```

```
queue-limit dscp 34 percent 80
```

```
queue-limit dscp 36 percent 90
```

```
(total drops) 0
```

```
(bytes output) 0
```

```
bandwidth remaining 15%
```

```
queue-buffers ratio 15
```

# Audio Video Bridging Feature Guide



## MONITOR

[Introduction](#)

[Plan](#)

[Configure](#)

[Monitor](#)

[Resources](#)

[Contents](#)

```
Class-map: AVB-TRANSACTIONAL-DATA-QUEUE (match-any)
```

```
0 packets
```

```
Match: dscp af21 (18) af22 (20) af23 (22)
```

```
0 packets, 0 bytes
```

```
5 minute rate 0 bps
```

```
Match: cos 0
```

```
0 packets, 0 bytes
```

```
5 minute rate 0 bps
```

```
Queueing
```

```
queue-limit dscp 18 percent 80
```

```
queue-limit dscp 20 percent 90
```

# Audio Video Bridging Feature Guide



## MONITOR

[Introduction](#)

[Plan](#)

[Configure](#)

[Monitor](#)

[Resources](#)

[Contents](#)

```
(total drops) 0
```

```
(bytes output) 0
```

```
bandwidth remaining 15%
```

```
queue-buffers ratio 15
```

```
Class-map: AVB-BULK-SCAVENGER-DATA-QUEUE (match-any)
```

```
0 packets
```

```
Match: dscp cs1 (8) af11 (10) af12 (12) af13 (14)
```

```
0 packets, 0 bytes
```

```
5 minute rate 0 bps
```

```
Match: precedence 1
```

# Audio Video Bridging Feature Guide



## MONITOR

[Introduction](#)

[Plan](#)

[Configure](#)

[Monitor](#)

[Resources](#)

[Contents](#)

```
0 packets, 0 bytes
```

```
5 minute rate 0 bps
```

```
Match: cos 1
```

```
0 packets, 0 bytes
```

```
5 minute rate 0 bps
```

```
Queueing
```

```
queue-limit dscp 8 percent 80
```

```
queue-limit dscp 10 percent 80
```

```
queue-limit dscp 12 percent 90
```

```
(total drops) 0
```

```
(bytes output) 0
```



# Audio Video Bridging Feature Guide



## MONITOR

Introduction

Plan

Configure

Monitor

Resources

Contents

```
bandwidth remaining 15%
```

```
queue-buffers ratio 15
```

```
Class-map: class-default (match-any)
```

```
0 packets
```

```
Match: any
```

```
Queueing
```

```
(total drops) 0
```

```
(bytes output) 0
```

```
bandwidth remaining 25%
```

# Audio Video Bridging Feature Guide



## MONITOR

Introduction	Plan	Configure	Monitor	Resources	Contents
--------------	------	-----------	---------	-----------	----------

```
queue-buffers ratio 25
```

The following is a sample output from the `show platform hardware fed switch active qos queue config interface interface-id` command.

```
DATA Port:2 GPN:11 AFD:Disabled QoSMap:2 HW Queues: 16 - 23
```

```
DrainFast:Disabled PortSoftStart:1 - 3600
```

```
-----
```

```
DTS   Hardmax   Softmax   PortSMin   GlblSMin   PortStEnd
```

```
-----
```

```
0    0    9    33    3    33    0    0    0    0    1    4800
```

```
1    0    9    33    4    2400  99   99   0    0    1    4800
```

```
2    1    6    30    4    2400  90   90   0    0    1    4800
```

```
3    1    5     0    4    2400 189  189  63   63   1    4800
```

```
4    1    5     0    4    2400  90   90  30   30   1    4800
```

# Audio Video Bridging Feature Guide



## MONITOR

Introduction	Plan	Configure	Monitor	Resources	Contents
--------------	------	-----------	---------	-----------	----------

5	1	5	0	4	2400	90	90	30	30	1	4800
6	1	5	0	4	2400	90	90	30	30	1	4800
7	1	5	0	4	2400	153	153	51	51	1	4800

Priority	Shaped/shared	weight	shaping_step
----------	---------------	--------	--------------

-----

0	1	Shaped	16383	163
1	2	Shaped	16383	163
2	3	Shaped	125	153
3	7	Shared	50	0
4	7	Shared	100	0
5	7	Shared	100	0
6	7	Shared	100	0

# Audio Video Bridging Feature Guide



## MONITOR

Introduction	Plan	Configure	Monitor	Resources	Contents
--------------	------	-----------	---------	-----------	----------

7 7 Shared 60 0

The following is a sample output from the `show platform hardware fed switch active qos queue stats interface interface-id` command.

DATA Port:8 Enqueue Counters

-----

Queue Buffers Enqueue-TH0 Enqueue-TH1 Enqueue-TH2

-----

0	1	0	0	23788459506
1	0	0	0	30973507838
2	0	0	12616270	13164040
3	0	0	0	0
4	0	0	0	0
5	0	0	0	0

# Audio Video Bridging Feature Guide



## MONITOR

Introduction	Plan	Configure	Monitor	Resources	Contents
--------------	------	-----------	---------	-----------	----------

6	0	0	0	0	
7	0	0	0	119616	

DATA Port:8 Drop Counters

-----

Queue	Drop-TH0	Drop-TH1	Drop-TH2	SBufDrop	QebDrop
0	0	0	0	0	0
1	0	0	0	0	0
2	0	0	0	0	0
3	0	0	0	0	0
4	0	0	0	0	0

# Audio Video Bridging Feature Guide



MONITOR

[Introduction](#)

[Plan](#)

[Configure](#)

[Monitor](#)

[Resources](#)

[Contents](#)

# Audio Video Bridging Feature Guide



RESOURCE AND SUPPORT INFORMATION

Introduction

Plan

Configure

Monitor

Resources

Contents

## Resources/Support Information

- Obtaining Documentation, Obtaining Support, and Security Guidelines

For information on obtaining documentation, submitting a service request, and gathering additional information, see the monthly What's New in Cisco Product Documentation, which also lists all new and revised Cisco technical documentation, at:

<http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.htm>

Subscribe to the What's New in Cisco Product Documentation as a Really Simple Syndication (RSS) feed and set content to be delivered directly to your desktop using a reader application. The RSS feeds are a free service.

---

*TOMORROW  
starts here.*



---

Cisco and the Cisco Logo are trademarks of Cisco Systems, Inc. and/or its affiliates in the U.S. and other countries. To view a list of Cisco trademarks, go to this URL: [www.cisco.com/go/trademarks](http://www.cisco.com/go/trademarks). Third-party trademarks mentioned are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (1110R)