



PSIP and EAS Support for Broadcast QAM

This document provides information on the support for PSIP and EAS and how to configure Cisco cBR series routers to avail the support.

Your software release may not support all the features that are documented in this module. For the latest feature information and caveats, see the release notes for your platform and software release. The Feature Information Table at the end of this document provides information about the documented features and lists the releases in which each feature is supported.

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Hardware Compatibility Matrix for the Cisco cBR Series Routers



Note The hardware components that are introduced in a given Cisco IOS-XE Release are supported in all subsequent releases unless otherwise specified.

Table 1: Hardware Compatibility Matrix for the Cisco cBR Series Routers

Cisco CMTS Platform	Processor Engine	Interface Cards
Cisco cBR-8 Converged Broadband Router	<p>Cisco IOS-XE Release 16.5.1 and Later Releases</p> <p>Cisco cBR-8 Supervisor:</p> <ul style="list-style-type: none"> • PID—CBR-SUP-250G • PID—CBR-CCAP-SUP-160G 	<p>Cisco IOS-XE Release 16.5.1 and Later Releases</p> <p>Cisco cBR-8 CCAP Line Cards:</p> <ul style="list-style-type: none"> • PID—CBR-LC-8D30-16U30 • PID—CBR-LC-8D31-16U30 • PID—CBR-RF-PIC • PID—CBR-RF-PROT-PIC • PID—CBR-CCAP-LC-40G • PID—CBR-CCAP-LC-40G-R • PID—CBR-CCAP-LC-G2-R • PID—CBR-SUP-8X10G-PIC • PID—CBR-2X100G-PIC <p>Digital PICs:</p> <ul style="list-style-type: none"> • PID—CBR-DPIC-8X10G • PID—CBR-DPIC-2X100G <p>Cisco cBR-8 Downstream PHY Module:</p> <ul style="list-style-type: none"> • PID—CBR-D31-DS-MOD <p>Cisco cBR-8 Upstream PHY Modules:</p> <ul style="list-style-type: none"> • PID—CBR-D31-US-MOD



Note Do not use DPICs (8X10G and 2x100G) to forward IP traffic, as it may cause buffer exhaustion, leading to line card reload.

The only allowed traffic on a DPIC interface is DEPI, UEPI, and GCP traffic from the Cisco cBR-8 router to Remote PHY devices. Other traffic such as DHCP, SSH, and UTSC should flow via another router, since DPICs cannot be used for normal routing.

Information About PSIP and EAS Support

The Cisco cBR Series Router provides support for merging of Program and System Information Protocol (PSIP) and Emergency Alert Signaling (EAS) streams. This support allows to merge the PSIP and EAS information for digital terminal adapter (DTA) boxes. Merging these two streams helps in avoiding Continuity Counter (CC) errors and packet drops.

An operator can configure a session as PSIP and EAS when creating a session in a broadcast QAM. Operators can configure Passthru session as psip and data-piping session as eas.

Prerequisites for PSIP and EAS Support

PSIP and EAS are applicable to table based sessions on broadcast QAMs. The following prerequisites are applicable to configuring the PSIP and EAS sessions:

- Service Distribution Group (SDG)
- Virtual Carrier Group (VCG)
- Bind VCG to SDG
- Logical Edge Device (LED)
- Protocol of LED specified as table-based.
- Associate VCG to LED

How to Configure PSIP and EAS Sessions

You should create a Passthru session with PSIP and data session with EAS.

This section contains the following:

Configuring PSIP and EAS Sessions

The following sample commands show how to configure the sessions with PSIP and EAS.

```
cable video
  service-distribution-group service distribution group name id <ID>
  rf-port integrated-cable slot/bay/port
  virtual-carrier-group name [id number]
  service-type narrowcast
  rf-channel start_channel-end_channel tsid start_tsid-end_tsid output-port-number
start_number-end_number
bind-vcg
  vcg vcg-name sdg <sdg name>
logical-edge-device name [id] number
protocol table-based
  virtual-edge-input-ip ip-address [vrf vrf-name] input-port-number port-number
vcg <vcg name>
active
table-based
vcg <vcg name>
  rf-channel <channel number>
```

```

        session SESS_PSIP input-port <id> start-udp-port udp port number processing-type
passthru psip
        session SESS_EAS input-port <id> start-udp-port udp port number processing-type
data eas

```

Verifying the PSIP and EAS Configurations

The following example shows how to verify the configured PSIP and EAS sessions.

```

show cable video session logical-edge-device id 1
Total Sessions = 2

Session Output Frequency Streaming Sess Session Source UDP Input Output Input Output
Input Output Encrypt Encrypt Low PMV Session UDP Input Output Input Output
Id Port Hz Type Status Lat NUM Name Port Program Program State State
Bitrate Bitrate Type
Mcast IP (S,G)
-----
1048576 101 93000000 Passthru UDP 174.102.1.1 49652 - - - ACTIVE-PSI
ON 895556 904871 CLEAR - N - SESS_PSIP.1.0.1.0.49652
1048577 101 93000000 Data-Piping UDP 174.102.1.1 49653 - - - ACTIVE
ON 908578 904857 CLEAR - N - SESS_EAS.1.0.1.0.49653

```

Verifying the PSIP Session Configuration

```

show cable video session logical-edge-device id 1 session-id 1048576
1048576
Session Name       : SESS_PSIP.1.0.1.0.49652
Session Id        : 1048576
Creation Time     : Fri Feb  2 07:30:06 2018

Output Port       : 101
TSID              : 100
ONID              : 0
Number of Sources : 1
  Destination IP  : 174.102.1.1
  UDP Port        : 49652
Config Bitrate    : not specified
Jitter            : 100 ms
Processing Type   : Passthru
Stream Rate       : VBR
Program Number    : -
Idle Timeout      : 2000 msec
Init Timeout      : 2000 msec
Off Timeout       : 60 sec
Encryption Type   : CLEAR
Encryption Status : -

Input Session Stats:
=====
State: ACTIVE-PSI, Uptime: 0 days 00:00:25
IP Packets: In 5005, RTP 0, Drop 0
TP Packets: In 28092, PCR 1003, PSI 107, Null 1938
            Unreference 0, Discontinuity 0
Errors: Sync loss 0, CC error 0, PCR Jump 0,
        Underflow 0, Overflow 0, Block 0
Bitrate: Measured 1647418 bps, PCR 1836378 bps

Output Session Stats:
=====
State: ON, Uptime: 0 days 00:00:25

```

```

TP Packets: In 28074, PCR 1000, PSI 106,
            Drop 0, Forward 27968, Insert 0
Errors: Info Overrun 0, Info Error 0, Block 0, Overdue 0,
        Invalid Rate 0, Underflow 0, Overflow 0
Bitrate: Measured 1643931 bps

```

PSIP Stats:

=====

```

Total Packets: in 1905, out 31
MGT: in 1, out 1, version 8, length 1458, carousel 7160
RRT: in 1, out 1, version 0, length 901, carousel 5
STT: in 28, out 28, version 0, length 20, carousel 1
VCT: in 1, out 1, version 4, length 244, carousel 670

```

PAT Info:

=====

```

Version 1, TSID 1, len 16, section 0/0
Program 1: PMT 8020

```

Input PMT Info:

=====

```

Program 1, Version 1, PCR 8000, Info len 0
PID 8000: Type 2, Info len 5, (desc 2 len 3)
PID 8001: Type 129, Info len 17, (lang eng), (desc 5 len 4), (desc 129 len 3)

```

Output PMT Info:

=====

```

Program 1, Version 1, PCR 8000, Info len 0
PID 8000: Type 2, Info len 5, (desc 2 len 3)
PID 8001: Type 129, Info len 17, (lang eng), (desc 5 len 4), (desc 129 len 3)

```

Verifying EAS Session Configuration

```

show cable video session logical-edge-device id 1 session-id 1048577
Session Name      : SESS_EAS.1.0.1.0.49653
Session Id       : 1048577
Creation Time    : Fri Feb  2 07:30:06 2018

```

```

Output Port      : 101
TSID             : 100
ONID            : 0
Number of Sources : 1
  Destination IP : 174.102.1.1
  UDP Port       : 49653
Config Bitrate   : not specified
Jitter          : 100 ms
Processing Type   : Data-Piping
Stream Rate      : VBR
Program Number    : -
Idle Timeout     : 2000 msec
Init Timeout     : 2000 msec
Off Timeout      : 60 sec
Encryption Type  : CLEAR
Encryption Status : -

```

Input Session Stats:

=====

```

State: ACTIVE, Uptime: 0 days 00:00:30
IP Packets: In 6006, RTP 0, Drop 0
TP Packets: In 33804, PCR 1204, PSI 0, Null 2232
            Unreference 0, Discontinuity 0
Errors: Sync loss 0, CC error 0, PCR Jump 0,
        Underflow 0, Overflow 0, Block 0

```

```

Bitrate: Measured 1682436 bps, PCR 1816387 bps

Output Session Stats:
=====
State: ON, Uptime: 0 days 00:00:30
TP Packets: In 33669, PCR 1201, PSI 0,
            Drop 0, Forward 33669, Insert 0
Errors: Info Overrun 0, Info Error 0, Block 0, Overdue 0,
        Invalid Rate 0, Underflow 0, Overflow 0
Bitrate: Measured 1678854 bps

EAS Stats:
=====
Total Packets: in 4, out 1
EAS: in 1, out 1, version 19, length 238, carousel 32

```

Configuration Example

This section provides example of PSIP and EAS configuration.

Example: PSIP and EAS Configuration

```

cable video
service-distribution-group sdg1 id 1
  rf-port integrated-cable 7/0/0
virtual-carrier-group vcg1 id 1
  service-type narrowcast
  rf-channel 0 tsid 100 output-port-number 101
bind-vcg
  vcg vcg1 sdg sdg1
logical-edge-device led1 id 1
  protocol table-based
  virtual-edge-input-ip 192.168.1.1 input-port-number 1
  vcg vcg1
  active
table-based
  vcg vcg1
  rf-channel 0
  session SESS_PSIP input-port 1 start-udp-port 49652 processing-type passthru psip
  session SESS_EAS input-port 1 start-udp-port 49653 processing-type data eas

```

Troubleshooting Tips

The following tips help in troubleshooting issues:

- Make sure that PSIP session is configured as processing-type passthru and psip
- Make sure that EAS session is configured as processing-type data and eas
- When the PSIP session becomes ACTIVE-PSI, verify the PSIP Stats under the session details command.

Similarly, when the EAS session becomes ACTIVE, verify the EAS Stats under the session details command.

The out-count and carousel-count should increment.

Feature Information for PSIP and EAS Support



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 2: Feature Information for PSIP and EAS Support

Feature Name	Releases	Feature Information
PSIP and EAS Support	Cisco IOS XE Fuji 16.7.1	This feature was integrated on the Cisco cBR Series Converged Broadband Routers.

