



casa systems

CCAP Release Notes

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Casa CCAP

Release Notes, Version 7.2.5.10

About this document

This notice covers Release 7.2 software versions for the Casa C10G, C40G, and C100G platforms. It includes instructions on installing and upgrading the system software, information on resolved issues from prior releases, known issues, and operational considerations. Casa Systems updates and reissues this document anytime a new version of software becomes available.

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Contacting Casa

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Technical documentation

Casa Systems provides the following documentation set in PDF format, viewable using current versions of Adobe Reader®. The latest documentation and revisions are uploaded on a continued basis for Casa customers.

Contact Casa Technical Support or a Casa Sales Representative for assistance with downloading selected Casa documentation PDFs.

- *Casa Systems – C10G CMTS Quick Installation*
- *Casa Systems – C10G CMTS Hardware Installation Guide*
- *Casa Systems – C100G CCAP Quick Installation*
- *Casa Systems – C100G CCAP Hardware Installation Guide*
- *Casa Systems – C40G CCAP Hardware Installation Guide*
- *Casa Systems – CMTS Operations and Administration Guide*
- *Casa Systems – NSI Configuration Guide and Command Reference*
- *Casa Systems – RF Cable Configuration Guide and Command Reference*
- *Casa Systems – CCAP Video Edge User Guide*
- *Casa Systems – CMTS Network Solutions Guide*
- *Casa Systems – SNMP MIBs and Traps Reference*
- *Casa Systems – CCAP Troubleshooting and Diagnostics Guide*
- *Casa Systems – CMTS Release 7.2 Features Guide*

- *Casa Systems – CCAP Release Notes* (this document)

Release note revision history

- 7.2.5.10 — May 2019



Note: If you are upgrading to Release 7.2 from Release 6.1.3 or earlier, and if you would like to review of all product changes that have been implemented since you last upgraded your CMTS software, contact Casa Technical Support for specific versions of the *Casa Systems – CCAP Release Notes*.

Release 7.2 software is not supported on Casa C1G, C10200, C3200, and C2200 systems.

New features in Release 7.2.5.10

This section covers the new features which have been introduced with Release 7.2.5.10. For additional changes and enhancements, see the section [“Resolved issues and changes in Version 7.2.”](#)

New features in Release 7.2.5.9

This section covers the new features which have been introduced with Release 7.2.5.9. For additional changes and enhancements, see the section [“Resolved issues and changes in Version 7.2.”](#)

New features in Release 7.2.5.8

This section covers the new features which have been introduced with Release 7.2.5.8. For additional changes and enhancements, see the section [“Resolved issues and changes in Version 7.2.”](#)

New features in Release 7.2.5.7

This section covers the new features which have been introduced with Release 7.2.5.7. For additional changes and enhancements, see the section [“Resolved issues and changes in Version 7.2.”](#)

New features in Release 7.2.5.6

This section covers the new features which have been introduced with Release 7.2.5.6. For additional changes and enhancements, see the section [“Resolved issues and changes in Version 7.2.”](#)

New features in Release 7.2.5.5

This section covers the new features which have been introduced with Release 7.2.5.5. For additional changes and enhancements, see the section [“Resolved issues and changes in Version 7.2.”](#)

Dynamic partial-service for multicast

Dynamic partial-service for multicast modems is now supported in Release 7.2.5.5. This feature protects multicast traffic from being lost as CPEs would need to perform another multicast LEAVE or JOIN with recovery of the unusable channel.

When a multicast modem goes into partial-service, the unusable channel is removed from multicast channel set. During this period, DBC will instruct the modem to remove the old DSID and add a new DSID. When the channel recovers, the multicast channel set is updated.

Protection from high packet rate DOS attack

Release 7.2.5.5 supports improved detection and protection from high packet rate DOS attacks when a target CPE receives a large number packets per second. The **show ddos** command has also been enhanced to include additional information fields.

Example

```
CASA>show ddos
ddos auto rate limit: disabled
ip-address    Original-Drop-Rate  Currently-Under-Attack  Time-stamp
10.82.1.109    755042720           YES                     2018-08-13T17:51:11.304Z
```

Multiplexing of individual programs from an incoming MPTS

Support for multiplexing of selected individual programs from an input MPTS onto an egress broadcast QAM channel is supported in Release 7.2.5.5.

In the example below, individual programs (400, 401, and 402) destined to the same IP address (228.0.0.1), and each having unique input program numbers are multiplexed to one broadcast QAM channel (equivalent to MPTS passthrough session).

Example

```
video session 400 mux ip-address 228.0.0.1 qam-channels shared-channel
0/0 input-port 1 out-program-number 52703 in-program-number 52703
pid-drop 1 udp-port 1000 pid-remapping si-change src-ip
172.16.18.197

video session 401 mux ip-address 228.0.0.1 qam-channels shared-channel
0/0 input-port 1 out-program-number 52726 in-program-number 52726
pid-drop 1 udp-port 1000 pid-remapping si-change src-ip
172.16.18.197

video session 402 mux ip-address 228.0.0.1 qam-channels shared-channel
0/0 input-port 1 out-program-number 52729 in-program-number 52729
pid-drop 1 udp-port 1000 pid-remapping si-change src-ip
172.16.18.197
```

Implementation notes:

- Multiplexed sessions from an MPTS cannot be replicated.

New features in Release 7.2.5.4

This section covers the new features which have been introduced with Release 7.2.5.4. For additional changes and enhancements, see the section [“Resolved issues and changes in Version 7.2.”](#)

OSPFv3 over VRF support

Support for OSPFv3 has been implemented for IPv6 VRF route redistribution per VRF. The enhancement allows each OSPFv3 router to belong to a unique VRF for storing and redistributing routes to external routers.

The series of **show ipv6 ospf** commands has been enhanced to display IPv6 route statistics per VRF.

Graceful restart of the OSPFv3 process is supported with the enhancement. The maximum number of OSPFv3 processes is 10 per VRF, where each OSPFv3 process in a specific VRF can only run on interfaces belonging to the same VRF. Each OSPFv3 in a VRF obtains a router-id automatically.

ExampleExample:

```
CASA(config-vrf)# show ipv6 ospf <process_number> vrf <vrf_string>
```

```
CASA-(config-router-ospfv3)#show ipv6 ospf 205 vrf city
Routing Process "OSPFv3 (205)" with ID 1.1.206.205
Process uptime is 3 days 22 hours 21 minutes
SPF schedule delay min 0.500 secs, SPF schedule delay      max 50.0
secs
Minimum LSA interval 5 secs, Minimum LSA arrival 1 secs
Number of incoming current DD exchange neighbors 0/5
Number of outgoing current DD exchange neighbors 0/5
Number of external LSA 13. Checksum Sum 0x603E6
Number of AS-Scoped Unknown LSA 0
Number of LSA originated 163
Number of LSA received 2717
Number of areas in this router is 2
Graceful restart helper support enabled
  Area BACKBONE(0)
    Number of interfaces in this area is 1(1)
    SPF algorithm executed 5 times
    Number of LSA 6. Checksum Sum 0x46689
    Number of Unknown LSA 0
  Area 0.0.0.1
    Number of interfaces in this area is 2(2)
    SPF algorithm executed 53 times
    Area ranges are
      fec:75:2cd:7a9:602:206:3200:205/64 advertise
    Number of LSA 5. Checksum Sum 0x25579
    Number of Unknown LSA 0
```

New features in Release 7.2.5.3

This section covers the new features which have been introduced with Release 7.2.5.3.

Video broadcast multiplexing

Video broadcast multiplexing uses multi-port shared channels to send an input multiple program transport stream (MPTS) to all RF ports for a QAM channel.

The specific broadcast multiplexing capabilities with example CLI configuration sessions are as follows:

1. The MPTS is provisioned as a pass-through video session sourced by an input MPTS.

Example:

```
CASA(config)# video session 1 pass-through ip-address 227.0.0.1  
qam-channels shared-channel 0/0 src-ip 17.56.102.2
```

2. Specified programs in the input MPTS can be dropped while other programs by way of additional sessions can be multiplexed on the same shared QAM channel as the multiplex session.

Example

```
CASA(config)# video session 1 pass-through ip-address 227.0.0.1  
qam-channels shared-channel 0/0 prog-drop 53518,52000,51044 src-ip  
17.56.102.2
```

```
CASA(config)# video session 2 mux ip-address 227.0.0.2  
qam-channels shared-channel 0/0 out-program-number 52026  
in-program-number 0 pid-remapping src-ip 17.56.102.2
```

```
CASA(config)# video session 3 mux ip-address 227.0.0.3  
qam-channels shared-channel 0/0 out-program-number 52029  
in-program-number 0 pid-remapping src-ip 17.56.102.2...
```

3. Some specified packet identifiers (PIDs) can be dropped from the main MPTS input stream.

Example

```
CASA(config)# video session 1 pass-through ip-address 227.0.0.1  
qam-channels shared-channel 0/0 pid-drop 1,4,6,8 src-ip 17.56.102.2
```

4. Some PID streams such as the Network Information Table (NIT) for Service Information (SI) table generation can be multiplexed into the output MPTS. This is implemented by creating a data session with a single PID.

Example

```
CASA(config)# video session 4 data ip-address 227.0.0.4  
qam-channels shared-channel 0/0 src-ip 17.56.102.2
```

5. An SPTS stream can be multiplexed into the output MPTS session by using either automatic or manual PID remapping.
 - Automatic PID remapping is through the existing **video pid-remapping-mode** command that reserves a range of PIDs that do not conflict with the transparent passing of a video stream through a QAM channel.
 - Manual PID remapping is through the new **video pid-remap-session** command to set the specific range of target PIDs to remap.



Note: Manually altering PIDs requires advanced knowledge of the input transport stream and the outgoing MPTS.

Example

```
CASA(config)# video session 3 mux ip-address 227.0.0.3  
qam-channels shared-channel 0/0 out-program-number 52029  
in-program-number 0 pid-remapping src-ip 17.56.102.2  
CASA(config)# video pid-remap session 3 from 1988 to 2018
```

6. An optional operation can be used when multiple input streams containing Service Description Table (SDT) or Event Information Table (EIT) instances need to be multiplexed and where QAM is expected to merge the tables seamlessly before transmitting them. Use the **si-change** option for the multiplex or pass-through session.

Example

```
CASA(config)# video session 3 mux ip-address 227.0.0.3  
qam-channels shared-channel 0/0 out-program-number 52029  
in-program-number 0 si-change src-ip 17.56.102.2
```

The **si-change** property has been added to the **video session mux** and **video session pass-through** commands to enable parsing, combining, and multiplexing Service Information (SI) tables (SDTs and EITs). The **si-change** parameter needs to be applied to ALL video sessions on a given QAM channel.



Note: When **si-change** is used, ALL sessions on the QAM channel MUST indicate **si-change**. Without **si-change**, and if not dropped, those tables will be forwarded without any discretion.

Example

```
CASA(config)# video session 1 pass-through ip-address 230.1.1.1  
qam-channels shared-channel 0/0 si-change src-ip 192.168.3.67
```

```
CASA(config)# video session 2 mux ip-address 230.1.1.2 qam-channels  
shared-channel 0/0 si-change src-ip 192.168.3.67
```

```
CASA(config)# video session 3 mux ip-address 230.1.1.3 qam-channels  
shared-channel 0/0 si-change src-ip 192.168.3.67
```

The equivalent property was added to the Casa Video Web UI for the Add/Modify VoD CLI Session and Add/Modify Multicast CLI Session configuration dialogs off of the **Configure > Video > CLI Session** screen. The **SI Change** option appears when **Session Mode** is set to **mux** or **pass-through**.

New features in Release 7.2.5.2

This section covers the new features which have been introduced with Release 7.2.5.2.

C40G chassis enhancement to support four PSUs

A new version of the Casa C40G chassis has been introduced to support up to four AC power supply units (PSUs) using the expansion slot at PSU position 4, as illustrated in [Figure 1](#) and [Figure 2](#).

Each PSU for the C40G provide 1100Ws AC power (90-264 in a 2 + 2 configuration, operating in a current sharing mode. In the event of a single PSU failure, three remaining PSUs are available to provide the required power to maintain system operation. If the problem is not with the power source, availability and installation of a replacement PSU is recommended as soon as possible.

PSUs are labeled on the front of the chassis as PSU1, PSU2, PSU3, and PSU4 from right to left. PSUs are protected with a serviceable air filter within the removable front cover at the bottom front of the chassis.



Note: Prior C40G AC-powered systems are NOT upgradeable to the new four-PSU physical configuration.

Figure 1. Casa C40G front view with four AC power modules

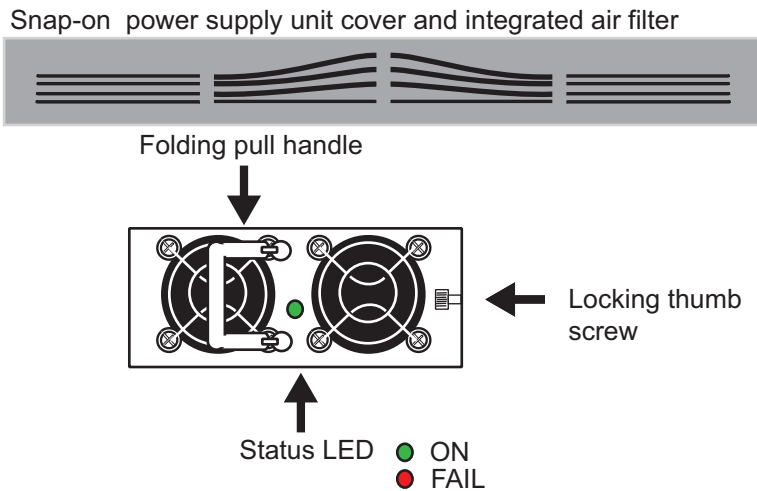
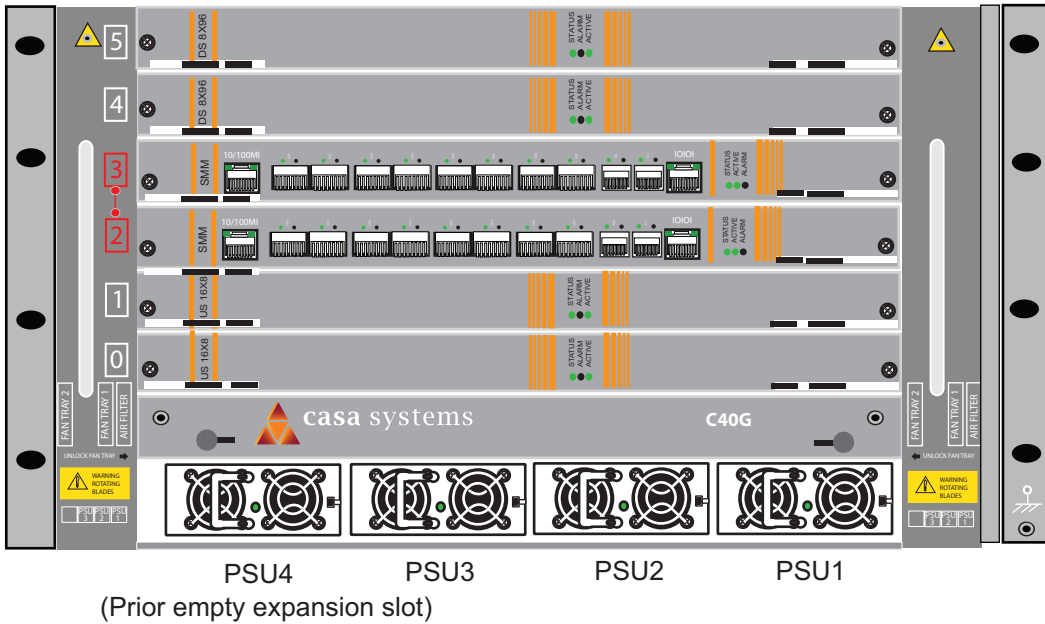
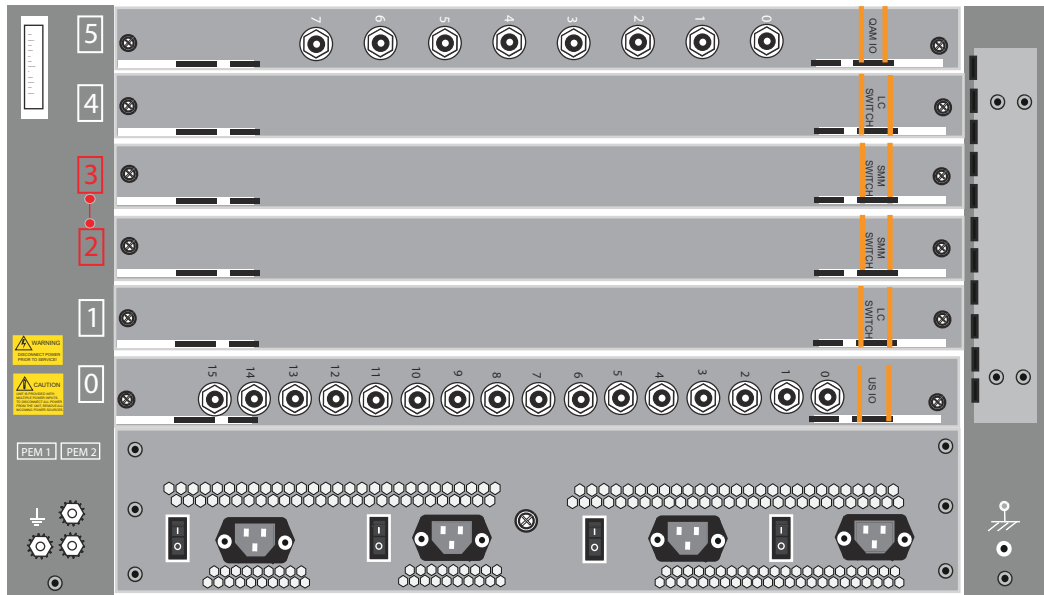


Figure 2. Casa C40G rear view with four AC power switches and plugs



Release 7.2.5.2 software includes support for auto-detection and monitoring of the PSU4 power configuration and fan status using the CLI **show emvn** command. Fan and power status monitoring is also supported in SNMP queries to the C40G.

Example

```
CASA-C40G# show envm power
PSU      Power      Input Status   Present
1         46V                Good    YES
2         39V*                Good    YES
3         36V*                Good    YES
4         49V                Good    YES
```

Major features in Release 7.2.5

The major feature changes in Release 7.2.5 include support for the following:

- OFDM on QAM 8x96 modules
- 48 channels on the QAM 8x96 module
- UPS 16x8 SEU health checks
- Up to four QAM modes on QAM 8x192 and QAM 8x96 modules (with one OFDM channel supported on the QAM 8x192).
- Session-based DVB Simulcrypt
- Pseudowire redundancy

OFDM support on the QAM 8x96 module

Orthogonal Frequency Division Multiplexing (OFDM) support has been extended to the QAM 8x96 module in Release 7.2.5.1, supporting 36 single-carrier QAMs and two OFDM channels. The QAM 8x96 channel frequency support with OFDM is up to 96 MHz and up to 1K QAM.



Note: The addition of two OFDM channels on the QAM 8x96 module reduces the number of SC-QAM DOCSIS primary channels by eight due to OFDM bandwidth requirements.



Note: To support QAM 8x96 redundancy, the backup module **MUST BE** configured and operating in the same mode as the primary QAM 8x96 module. The QAM 8x192 module cannot be used to back up a QAM 8x96 OFDM.

QAM 8x96 module configurations with OFDM

- With a maximum two 96-MHz OFDM channels per module,
 - RF ports 0–3 share OFDM channel 0
 - RF ports 4–7 share OFDM channel 1.
- Unicast channels support up to
 - 24 DOCSIS plus 12 DVB, or
 - 32 DOCSIS plus 4 DVB SC-QAM channels.

- Channels 0–23 are DOCSIS primary channels, or non-DVB video
- Channels 24–31 can be secondary DOCSIS plus non-DVB video, or all DVB video.
- Channels 32–35 can be DVB or non-DVB video.
- No shared SC-QAM channels are available.

The OFDM configuration for the QAM 8x96 requires configuring the shared OFDM channel parameters using the **interface shared-ofdm** command and then associating the shared OFDM settings with the downstream QAM module interface.

The following example shows a chassis with an active and standby QAM 8x96 in Release R7.2.and standby module

Example

```
CASA> show system
```

```
Product: C100G, System Uptime:0 d, 10 h, 8 m, 1 s
Chassis Serial_No: C100GS01693
System Time: Tue Oct 3 07:59:16 EDT 2017
128MHz, 3 PPM Crystal Clock
```

```
Module 5 QAM_8x96 Running (5 Backup 9) (8 ports, 40 channels/port, 64
shared channels, 8 dvb channels)
Major rev 5, Minor rev 9
Serial_No: QB10CCBS0004 CFE version 12.9.13
Uptime: 0 d, 0 h, 6 m, 1 s
```

```
Module 9 QAM_8x96 Standby (8 ports, 40 channels/port, 64 shared
channels, 8 dvb channels)
Major rev 5, Minor rev 9
Serial_No: QB10CE4S0011 CFE version 12.9.13
Uptime: 0 d, 0 h, 1 m, 50 s
```

...

With the **interface shared-ofdm** configuration, the shared OFDM channel is identified by the slot and OFDM channel number with only two OFDM channels (0 and 1) per slot configurable. Only the lower frequency needs to be set and all other frequencies are adjusted accordingly. The cyclic prefix is always 256 for shared OFDM channels, with the **profile** referencing a setting of 1024qam or less.

Example

```
CASA(config)# show interface shared-ofdm
interface shared-ofdm 1/0
lower-freq 108000000 upper-freq 203000000 plc-freq 116000000
cyclic-prefix 256
```

```
up-down-trap-enable
profile 1 7
profile 2 5
profile 3 56
no shutdown
!
interface shared-ofdm 1/1
lower-freq 108000000 upper-freq 198000000 plc-freq 116000000
cyclic-prefix 256
up-down-trap-enable
profile 1 7
profile 2 5
profile 3 56
no shutdown
!
CASA(config)# show ofdm profile

ofdm profile 1
profile-modulation 256qam

ofdm profile 3
profile-modulation 1024qam
subcarrier-group 1 600000000 633000000 modulation 1024qam
subcarrier-group 100 850000000 870000000 modulation 1024qam

ofdm profile 4
profile-modulation 16qam

ofdm profile 5
profile-modulation 512qam

ofdm profile 7
profile-modulation 256qam
...
ofdm profile 56
profile-modulation 1024qam
...
```

The QAM 8x96 module must be enabled and configured for shared OFDM channels by setting those channels to channel 0 or 1 (QAM ports 0–3 share OFDM channel 0 and ports 4–7 share OFDM channel 1).



Note: The shared OFDM frequencies cannot overlap with the other configured single-carrier frequencies.

The **module <slot> qam8x96 ofdm-channels {enable | disable}** command has been introduced in the Casa CLI to enable or disable OFDM channels on the QAM 8x96

module. The default setting is **disable**. The number of channels is set by the **module <slot> ofdm-channels** command; one OFDM channel per port is supported for the QAM 8x96.

Use the **show module <slot> config** command to display the OFDM channel configuration.

Sample configuration

In the following example CLI session, QAM interfaces 1/4–1/7 are configured with shared OFDM channel 1.

Example

```
CASA(config)# module 1 qam8x96 ofdm-channels enable
CASA(config)# show module 1 config
Module 1: QAM8x96 ofdm channels enabled
```

```
CASA(config)# interface qam 1/0
CASA(config-if-qam 1/0)# shared-ofdm 0
```

```
CASA(config-if-qam 1/0)# show this
```

```
interface qam 1/0
  interleave 128x1
  power 550
  shared-ofdm 0
  channel 0 frequency 265000000
  no channel 0 shutdown
  channel 1 frequency 271000000
  no channel 1 shutdown
  channel 2 frequency 277000000
  no channel 2 shutdown
  channel 3 frequency 283000000
  no channel 3 shutdown
  channel 4 frequency 289000000
  no channel 4 shutdown
  channel 5 frequency 295000000
  no channel 5 shutdown
  channel 6 frequency 301000000
  no channel 6 shutdown
  channel 7 frequency 307000000
  no channel 7 shutdown
```

```
...
CASA(config)# show ofdm-channels
module 0 qam8x192 ofdm-channels 1
module 1 qam8x96 ofdm-channels enable
module 4 qam8x192 ofdm-channels 2
```

```
module 5 qam8x96 ofdm-channels enable
```

48 channel support on the QAM 8x96 module

Release 7.2.5 software increases the number of supported SC-QAM 8x96 channels to 48 per port, and up to 16 DVB Simulcrypt channels per port. The number of DVB channels per port can be from 0 to 16.



Note: DVB Simulcrypt is now supported on a per-module basis. Previously, the number of supported DVB channels was based on the chassis-wide configuration.

With DVB Simulcrypt enabled, DVB video channels will NOT be allowed in a DOCSIS MAC domain.

QAM 8x96 port configurations

With support for up to 48 channels, the QAM 8x96 supports 32 primary DOCSIS channels, up to 16 secondary DOCSIS channels, and up to 16 DVB video channels.

The **module <slot> qam8x96 dvb-channels** command specifies how many channels can support DVB-encrypted video for QAM 8x96. The narrowcast channels are arranged so that all DVB-capable channels start at channel 40 if the **dvb-channels** setting is configured in the 0–8 range, or start at 32 if **dvb-channels** is configured in the 9-16 range.

To support QAM 8x96 redundancy in R7.2.5, the backup module **MUST BE** configured and operating in the same mode as the primary QAM 8x96 module.



Note: If DVB was previously enabled on QAM 8x96 channels, then those channels must be reconfigured in Release 7.2.5.

QAM mode configuration

Up to four QAM modes are supported per QAM 8x96 module, where the four modes comprise the following: annex, modulation, interleave, symbol rate, and spectral inversion.

On a single QAM port,

1. Channels 0 to 39 can be assigned two of the above modes over an 8-channel block boundary, and
2. Channels 40 to 47 can be assigned any two (of four) of the above modes on a per-channel basis with each corresponding channel over all QAM 8x96 ports using that same mode.

UPS 16x8 SEU health checks

The **ha hardware ups16x8 recovery <00000000:00000003> self-recover <00000000:00000003>** command has been introduced the Casa CLI to control the hardware health check functionality of the UPS 16x8 module for specifying how to handle single event upset (SEU) failures. An SEU failure can result in a bit error in the FPGA configuration, which may or may not have an effect on service.

By default, SEU checking is disabled on the UPS 16x8 module. With SEU health checking enabled, a detected SEU error will start recover process by applying a UPS 16x8 module switchover or module reset.

The **recovery** keyword specifies the type of failure which would trigger recovery action in the event of a PHY or MAC SEU error.

The **self-recover** keyword specifies the type of recovery to execute first, followed by two more recovery attempts before initiating the switchover. The recover and self-recover keywords use the following bit mask values:

- 00000001 — For PHY SEU errors.
- 00000002 — For MAC SEU errors.
- 00000003 — For both PHY and MAC errors.
- 00000000 — default; no SEU health checking.

Use the **show ha hardware ups16x8 recovery** command to view the bit settings.

Example

```
CASA(config)# ha hardware ups16x8 recovery 00000001 self-recover  
00000001
```

```
CASA(config)# show ha hardware ups16x8 recovery
```

Current configuration:

Bit	Recovery	Self-recover	HW Error Condition
-----	-----	-----	-----
00000001	On	On	PHY SEU ERROR
00000002	Off	Off	MAC SEU ERROR
00000004	Off	Off	
00000008	Off	Off	
00000010	Off	Off	
...			

Session-based DVB Simulcrypt

Release 7.2.5.0 now supports session-based DVB Simulcrypt where each encrypted video session is protected by a unique encryption key. Session-based Simulcrypt uses encryption resources provided by the Event Information Scheduler (EIS) in communication sessions with the CCAP Simulcrypt Synchronizer (SCS) over a unique TCP port.

The **video simulcrypt session-mode** command enables the session-based mode. The tier-mode setting, which enables the same encryption key of all inbound video streams on a video QAM port, continues to be the default operating mode if the **session-mode** is not enabled.

To enable SimulCrypt video encryption:

- 1. Enable the SimulCrypt mode, either tier-mode or session-mode.
- 2. Save the running configuration into the startup configuration.
- 3. Reboot the system.

Four QAM modes on QAM 8x192 and QAM 8x96 modules

QAM 8x192 and QAM 8x96 modules now support up to four QAM modes on a per-port/per module basis. The four modes can comprise the following: annex, modulation, interleave, symbol rate, and spectral inversion.

- **QAM 8x192** — With one OFDM channel per port, up to four QAM (two unicast, two broadcast).
- Note:** If two OFDM channels are configured per port, then only two QAM modes are supported (one unicast, one broadcast).

- **QAM 8x96** — With no OFDM channels, up to four QAM modes (two unicast, two broadcast)

Note: With OFDM configured, then only two QAM modes are supported (two unicast).

Example

The following example shows the following configuration:

- DOCSIS channels 0–15 in default qam256 modulation and 6952 symbol rate
- DOCSIS channels 16–31 in qam64 modulation and 6952 symbol rate
- VOD channels 64–67 in default qam256 modulation and 6900 symbol rate
- VOD channels 68–71 in qam64 modulation and 6900 symbol rate
- Shared channels 0–27 in default qam256 modulation and 6900 symbol rate
- Shared channels 32-35 in qam64 modulation and 6900 symbol rate
- OFDM channel 0

```
CASA# show interface qam 1/0
interface qam 1/0
  annex A
  interleave 12
  power 550
  channel 0 frequency 190000000
  no channel 0 shutdown
  channel 1 frequency 198000000
  no channel 1 shutdown
  channel 2 frequency 206000000
  no channel 2 shutdown
  channel 3 frequency 214000000
  no channel 3 shutdown
  channel 4 frequency 222000000
  no channel 4 shutdown
  channel 5 frequency 230000000
  no channel 5 shutdown
  channel 6 frequency 238000000
  no channel 6 shutdown
  channel 7 frequency 246000000
  no channel 7 shutdown
  channel 8 frequency 254000000
  no channel 8 shutdown
  channel 9 frequency 262000000
  no channel 9 shutdown
  channel 10 frequency 270000000
  no channel 10 shutdown
```


channel 11 frequency 278000000
no channel 11 shutdown
channel 12 frequency 286000000
no channel 12 shutdown
channel 13 frequency 294000000
no channel 13 shutdown
channel 14 frequency 302000000
no channel 14 shutdown
channel 15 frequency 310000000
no channel 15 shutdown
channel 16 frequency 318000000
channel 16 modulation 64qam
no channel 16 shutdown
channel 17 frequency 326000000
channel 17 modulation 64qam
no channel 17 shutdown
channel 18 frequency 334000000
channel 18 modulation 64qam
no channel 18 shutdown
channel 19 frequency 342000000
channel 19 modulation 64qam
no channel 19 shutdown
channel 20 frequency 350000000
channel 20 modulation 64qam
no channel 20 shutdown
channel 21 frequency 358000000
channel 21 modulation 64qam
no channel 21 shutdown
channel 22 frequency 366000000
channel 22 modulation 64qam
no channel 22 shutdown
channel 23 frequency 374000000
channel 23 modulation 64qam
no channel 23 shutdown
channel 24 frequency 382000000
channel 24 modulation 64qam
no channel 24 shutdown
channel 25 frequency 390000000
channel 25 modulation 64qam
no channel 25 shutdown
channel 26 frequency 398000000
channel 26 modulation 64qam
no channel 26 shutdown
channel 27 frequency 406000000
channel 27 modulation 64qam
no channel 27 shutdown
channel 28 frequency 414000000
channel 28 modulation 64qam
no channel 28 shutdown
channel 29 frequency 422000000
channel 29 modulation 64qam

```
no channel 29 shutdown
channel 30 frequency 430000000
channel 30 modulation 64qam
no channel 30 shutdown
channel 31 frequency 438000000
channel 31 modulation 64qam
no channel 31 shutdown
channel 32 shutdown
channel 33 shutdown
channel 34 shutdown
channel 35 shutdown
channel 36 shutdown
channel 37 shutdown
channel 38 shutdown
channel 39 shutdown
channel 40 shutdown
channel 41 shutdown
channel 42 shutdown
channel 43 shutdown
channel 44 shutdown
channel 45 shutdown
channel 46 shutdown
channel 47 shutdown
channel 48 shutdown
channel 49 shutdown
channel 50 shutdown
channel 51 shutdown
channel 52 shutdown
channel 53 shutdown
channel 54 shutdown
channel 55 shutdown
channel 56 shutdown
channel 57 shutdown
channel 58 shutdown
channel 59 shutdown
channel 60 shutdown
channel 61 shutdown
channel 62 shutdown
channel 63 shutdown
channel 64 annex A symbol rate 6900
channel 64 frequency 700000000
no channel 64 shutdown
channel 65 annex A symbol rate 6900
channel 65 frequency 708000000
no channel 65 shutdown
channel 66 annex A symbol rate 6900
channel 66 frequency 716000000
no channel 66 shutdown
channel 67 annex A symbol rate 6900
channel 67 frequency 724000000
no channel 67 shutdown
```

```
channel 68 annex A symbol rate 6900
channel 68 frequency 568000000
channel 68 modulation 64qam
no channel 68 shutdown
channel 69 annex A symbol rate 6900
channel 69 frequency 576000000
channel 69 modulation 64qam
no channel 69 shutdown
channel 70 annex A symbol rate 6900
channel 70 frequency 584000000
channel 70 modulation 64qam
no channel 70 shutdown
channel 71 annex A symbol rate 6900
channel 71 frequency 592000000
channel 71 modulation 64qam
no channel 71 shutdown
shared-channel 0 annex A symbol rate 6900
shared-channel 0 frequency 732000000
no shared-channel 0 shutdown
shared-channel 1 annex A symbol rate 6900
shared-channel 1 frequency 740000000
no shared-channel 1 shutdown
shared-channel 2 annex A symbol rate 6900
shared-channel 2 frequency 748000000
no shared-channel 2 shutdown
shared-channel 3 annex A symbol rate 6900
shared-channel 3 frequency 756000000
no shared-channel 3 shutdown
shared-channel 4 annex A symbol rate 6900
shared-channel 4 frequency 764000000
no shared-channel 4 shutdown
shared-channel 5 annex A symbol rate 6900
shared-channel 5 frequency 772000000
no shared-channel 5 shutdown
shared-channel 6 annex A symbol rate 6900
shared-channel 6 frequency 780000000
no shared-channel 6 shutdown
shared-channel 7 annex A symbol rate 6900
shared-channel 7 frequency 788000000
no shared-channel 7 shutdown
shared-channel 8 annex A symbol rate 6900
shared-channel 8 frequency 796000000
no shared-channel 8 shutdown
shared-channel 9 annex A symbol rate 6900
shared-channel 9 frequency 804000000
no shared-channel 9 shutdown
shared-channel 10 annex A symbol rate 6900
shared-channel 10 frequency 812000000
no shared-channel 10 shutdown
shared-channel 11 annex A symbol rate 6900
shared-channel 11 frequency 820000000
```

Release Notes

Major features in Release 7.2.5

```
no shared-channel 11 shutdown
shared-channel 12 annex A symbol rate 6900
shared-channel 12 frequency 828000000
no shared-channel 12 shutdown
shared-channel 13 annex A symbol rate 6900
shared-channel 13 frequency 836000000
no shared-channel 13 shutdown
shared-channel 14 annex A symbol rate 6900
shared-channel 14 frequency 844000000
no shared-channel 14 shutdown
shared-channel 15 annex A symbol rate 6900
shared-channel 15 frequency 852000000
no shared-channel 15 shutdown
shared-channel 16 annex A symbol rate 6900
shared-channel 16 frequency 860000000
no shared-channel 16 shutdown
shared-channel 17 annex A symbol rate 6900
shared-channel 17 frequency 868000000
no shared-channel 17 shutdown
shared-channel 18 annex A symbol rate 6900
shared-channel 18 frequency 876000000
no shared-channel 18 shutdown
shared-channel 19 annex A symbol rate 6900
shared-channel 19 frequency 884000000
no shared-channel 19 shutdown
shared-channel 20 annex A symbol rate 6900
shared-channel 20 frequency 892000000
no shared-channel 20 shutdown
shared-channel 21 annex A symbol rate 6900
shared-channel 21 frequency 900000000
no shared-channel 21 shutdown
shared-channel 22 annex A symbol rate 6900
shared-channel 22 frequency 908000000
no shared-channel 22 shutdown
shared-channel 23 annex A symbol rate 6900
shared-channel 23 frequency 916000000
no shared-channel 23 shutdown
shared-channel 24 annex A symbol rate 6900
shared-channel 24 frequency 924000000
no shared-channel 24 shutdown
shared-channel 25 annex A symbol rate 6900
shared-channel 25 frequency 932000000
no shared-channel 25 shutdown
shared-channel 26 annex A symbol rate 6900
shared-channel 26 frequency 940000000
no shared-channel 26 shutdown
shared-channel 27 annex A symbol rate 6900
shared-channel 27 frequency 948000000
no shared-channel 27 shutdown
shared-channel 32 annex A symbol rate 6900
shared-channel 32 frequency 536000000
```

```
shared-channel 32 modulation 64qam
no shared-channel 32 shutdown
shared-channel 33 annex A symbol rate 6900
shared-channel 33 frequency 544000000
shared-channel 33 modulation 64qam
no shared-channel 33 shutdown
shared-channel 34 annex A symbol rate 6900
shared-channel 34 frequency 552000000
shared-channel 34 modulation 64qam
no shared-channel 34 shutdown
shared-channel 35 annex A symbol rate 6900
shared-channel 35 frequency 560000000
shared-channel 35 modulation 64qam
no shared-channel 35 shutdown
ofdm-channel 0 lower-freq 133375000 upper-freq 323375000 plc-freq
225000000
ofdm-channel 0 cyclic-prefix 512
ofdm-channel 0 rolloff-period 256
ofdm-channel 0 sc-spacing 25
ofdm-channel 0 up-down-trap-enable
ofdm-channel 0 shutdown
no shutdown
```

The **show interface qam <slot>/<port> block** command now shows a fifth block:

- Block 0 covers the 16 DOCSIS channels with qam256 and 6952 symbol rate.
- Block 1 covers the 16 DOCSIS channels with qam64 and 6952 symbol rate.
- Block 2 covers the four DOCSIS channels 68–71 and four shared channels 32–35 with qam64 and 6900 symbol rate.
- Block 3 covers the four DOCSIS channels 64–67 and 20 shared channels 0–19 with qam256 and 6900 symbol rate.
- Block 4 covers the remaining eight shared channels 20–27 with qam256 and 6900 symbol rate as overflow from block 3.

```
CASA(config)# show interface qam 1/0 block
```

```
QCC_MODULE_INFO:
```

```
uc_mode 1: mid 1 annex A mod 256qam intlv 12 symb 6952 ref_cnt 16
uc_mode 2: mid 2 annex A mod 64qam intlv 12 symb 6952 ref_cnt 16
bc_mode 1: mid 3 annex A mod 64qam intlv 12 symb 6900 ref_cnt 8
bc_mode 2: mid 4 annex A mod 256qam intlv 12 symb 6900 ref_cnt 32
```

```
interface qam 1/0:
```

```
...
block 0 freq 1900000000 mask 0000ffff mode_id 0 in_used 1
```

```

channel 0 freq 190000000 blk 0 off 0 mid 1 annex A mod 256qam
intlv 12 sym 6952 dvb 0 status 1
...
block 1 freq 318000000 mask 0000ffff mode_id 0 in_used 1
channel 16 freq 318000000 blk 1 off 0 mid 2 annex A mod 64qam intlv
12 sym 6952 dvb 0 status 1
...
block 2 freq 536000000 mask 000000ff mode_id 0 in_used 1
channel 68 freq 568000000 blk 2 off 4 mid 3 annex A mod 64qam intlv
12 sym 6900 dvb 0 act 1 sta_m 0x01 sch 80 (11,16)
...
shared-channel 32 freq 536000000 blk 2 off 0 mid 3 annex A mod 64qam
intlv
...
block 3 freq 700000000 mask 00ffffff mode_id 0 in_used 1
channel 64 freq 700000000 blk 3 off 0 mid 4 annex A mod 256qam intlv
12 sym 6900 dvb 0 act 1 sta_m 0x01 sch 112 (11,48)
...
shared-channel 0 freq 732000000 blk 3 off 4 mid 4 annex A mod 256qam
intlv 12 sym 6900 dvb 0 act 1 sta_m 0x01 ch 72 sch 0 (10,0)12 sym
6900 dvb 0 act 1 sta_m 0x01 ch 104 sch 32 (10,32)
...
block 4 freq 892000000 mask 000000ff mode_id 0 in_used 1
shared-channel 20 freq 892000000 blk 4 off 0 mid 4 annex A mod
256qam intlv 12 sym 6952 dvb 0 act 1 sta_m 0x80 ch 92 sch 20 (10,20)
...

```

Pseudowire redundancy

VPWS pseudo wires (PWs) can be redundant across the network to include a backup (standby) PW peer. The peer's IP address must be different from the primary's and the virtual circuit ID (VCID) must be unique across the system. Currently, only one backup PW can be configured per primary PW. For multiple VPWS instances sharing the same VPNID, each instance can have its own backup PW.

PW redundancy configuration can be through the cable modem configuration file (known as *dynamic* provisioning) or through Casa CLI commands (known as *static* provisioning), as described in the following sections. PWs in the same protection group must be either statically or dynamically provisioned, but not both.

Dynamic PW redundancy provisioning

Dynamic PW redundancy provisioning is through type-length values (TLVs) defined in the CM configuration file. The supported TLVs consist of standard ones defined in the CableLabs Data-Over-Cable Service Interface Specifications Business Services

over DOCSIS® (BSOD) Layer 2 Virtual Private Networks CM-SP-L2VPN-I09 standard, along with additional vendor-specific TLVs.

Name	Type	Description
Standard		
	43.5.2.4.4	Backup PW ID
	43.5.2.4.5	Backup peer IP address
Vendor-specific		
MPLS-PW-VCID	43.5.43.38	PW ID: 4 bytes unsigned MPLS VCID
BACKUP-PEERIP	43.5.43.40.1	Backup peer IPv4 address
BACKUP-MPLS-PW-VCID	43.5.43.40.3	Backup PW ID: 4 bytes unsigned MPLS VCID
BACKUP-ENABLE-DELAY	43.5.43.41	Backup enable delay: 1 byte unsigned, number of seconds the backup PW should wait to take over after the primary PW goes down, default 0
BACKUP-DISABLE-DELAY	43.5.43.42	Backup disable delay: 1 byte unsigned, number of seconds the primary PW should wait to take over after the remote state of the primary PW comes up, default 0
BACKUP-DISABLE-NEVER	43.5.43.43	Backup disable never: 1 byte unsigned, backup PW should not be disabled even after the primary PW comes up, default revert back to the primary PW

Static PW redundancy provisioning

Static PW provisioning is through a series of CLI commands. The **mpls vpws** command specifies the VPWS name, peer IP address, and backup peer IP address.

Example

```
CASA(config)# mpls vpws VPLS-net1
CASA(config-vpws)# peer 192.168.8.8 10
                  encapsulation mpls 4 vccv-verification
CASA(config-vpws-peer)# backup-peer 192.168.8.9 11
```

The **peer <ip_addr> <vcid>** subcommand creates the PW VC to the primary peer router, which triggers LDP to establish a Type 5 PW with the VCID. (Note the appended 10 in the example).

The **backup-peer** <ip_addr> <vc id> subcommand at the peer configuration level configures the backup peer address and PW VCID (11 in the example). Encapsulation by PW type is optional, as is enabling virtual circuit verification (VCCV), which is enabled by default.

A **backup-delay** period setting determines how long (in seconds) the standby PW should wait to take over after the active PW goes down, as well as how long the primary PW should wait to take over after it comes back up again. The default in both cases is 0 seconds (immediately).

At the peer configuration level, apply the **backup-delay** <1:180> [<1:180> | **never**] command. (the **no** form of the command reverts to the defaults). With the **never** keyword applied instead of the switchback value, the primary PW never takes over (there is no automatic switch-back) while the backup PW is still active.

Example

```
CASA(config-vpws-peer) # backup-delay 30 30
```

To exit from the backup peer configuration, use the **exit-backup-peer** command:

Example

```
CASA(config-vpws-peer) # exit-backup-peer  
CASA(config-vpws) #
```

With VCCV enabled, the **pseudowire ping** command sets the label-switched path (LSP) **ping** parameters to determine the connection status. The default settings provide a TTL of 30 hops, an interval of one second, and a timeout of five seconds.

Example

```
CASA(config) # mpls pseudowire ping ttl 30 interval 1 timeout 5
```

LDP is used instead of LSP pinging for connectivity testing in some cases, especially when a connectivity failure with a cable modem is evident. In this case, the connection status is determined by sending a status type-length value (TLV), enabled using the LDP router **pw-status-tlv** command. (Note that this function is disabled by default.)

Example

```
CASA(config) # router ldp  
CASA(config-router-ldp) # pw-status-tlv
```


You then map a cable modem to the VPWS using the name and VCID of the primary PW through the **cable modem <mac_addr> mpls vpws <name> <id>** command.

Example

```
CASA(config)# cable modem 0111.affd.addf mpls vpws VPLS-net1 10
```

To force a PW switch-over for redundancy, use the **vpws force-switchover <id>** command in enable mode. If a backup PW is configured and ready to take over, the switchover occurs immediately. A forced switchover overrides the normal auto-switchback function. The ID is the VCID of the primary PW.

Example

```
CASA# mpls vpws force-switchover 10
```

View the status of VPWS redundancy using the **show mpls vpws xconnect redundancy** command. (Note that the **redundancy** keyword must be spelled out in full in this command instance.)

Example

```
CASA# show mpls vpws xconnect redundancy
VC-ID Peer Address In-Label Out Label Tunnel-Label Network-Intf State
Timer Value
115 114.1.1.1 87042 24014 87 gige 6/0 Active
0 (No Timer Running)
116 114.2.1.1 87043 14084 89 gige 7/0 Standby
0 (No Timer Running)
```

To debug any VPWS redundancy, use the **debug mpls vpws** and **show debugging** commands in enable mode:

Example

```
CASA# debug mpls vpws
CASA# show debugging
NSM debugging status:
mpls vpws debugging is on
```

Previously announced features in Release 7.2

This section covers the major features that have been implemented in Release 7.2. For complete information on all features introduced in Release 7.2, including information on how to configure new Release 7.2 functionality, see the *Casa Systems – CMTS Release 7.2 Features Guide*.

For a brief summary of the features and enhancements that have been implemented in this latest version, see [“Resolved issues and changes in Version 7.2”](#) in this release notice.

Detailed configuration information can be found in the following manuals to be published for Release 7.2:

- *Casa Systems – NSI Configuration Guide and Command Reference*
- *Casa Systems – RF Cable Configuration Guide and Command Reference*
- *Casa Systems – CCAP Troubleshooting and Diagnostics Guide*
- *Casa Systems – CCAP Video Edge User Guide*
- *Casa Systems – SNMP MIBs and Traps Reference*

QAM 8x192 downstream module enhancements

Release 7.2 introduces support for multi-port shared channels for broadcast video on the QAM 8x192 module for the Casa C100G and C40G platforms.

The QAM 8x192 also supports migration to the DOCSIS 3.1 Orthogonal Frequency Division Multiplexing (OFDM) channel modulation over 10 Gbps downstream.

The following capabilities have been implemented on the QAM 8x192 downstream module:

- Combined 64 multi-port shared channels (broadcast) and 64 narrowcast channels per port: 128
- Up to 80 narrowcast channels for DOCSIS, SDV, VOD. (All 128 multi-port shared channels must be narrowcast with no shared broadcast.
 - With up to 64 narrowcast channels (0 to 63) for DOCSIS
 - With up to 80 narrowcast channels (0 to 79) for SDV, VOD

- Maximum multi-port shared (broadcast) channels: 64
- Up to 24 Annex A, B, and C channels per port operating in DVB Simulcrypt encryption mode. These 24 channels must be configured at the upper channel range, such as 40 to 63. All shared channels support DVB Simulcrypt.
- Up to two downstream OFDM channels using channel 0 and channel 1, and one upstream OFDMA channel.

See the following sections for more information:

- [“Support for two OFDM downstream channels in R7.2.3.0”](#)
- [“Orthogonal Frequency Division Multiple Access \(OFDMA\)”](#)

Implementation notes

- To use the maximum number of narrowcast channels per port (>64), use the **video channel-id-offset** command introduced in Release 7.1 so that the number of narrowcast video channels per port is less than or equal to 64.

The command excludes DOCSIS channels from the video channel numbering space. The specified offset indicates the number of reserved DOCSIS channels; video channel numbering begins following the offset, with the first video channel number beginning at 0.

- Multi-port shared channels are for broadcast video purposes and can only be configured with the Casa CLI. Therefore, table mode VOD or EDIS/GQI-based session creation should not be used over the multi-port shared channels.

Unsupported functionality in Release 7.2

- On the QAM 8x192 module, when enabling DVB Simulcrypt on any QAM channel within an 8-channel block, all remaining channels within that block are unavailable as DOCSIS channels. All channels within the block must be DVB Simulcrypt video channels.
- The QAM 8x192 module is NOT supported on the Casa C10G platform.
- QAM 8x192 shared channels and DVB Simulcrypt are not presently supported with the two-channel OFDM frequency scheme.

QAM 8x192 broadcast video (MPTS pass-through)

Release 7.2 supports broadcast video (MPTS pass-through processing) where one input MPTS can be output to all QAM 8x192 RF ports. Note that PID replacement (drop and add) is supported with broadcast video.

QAM 8x192 redundancy requirements for OFDM

This section covers the redundant QAM 8x192 requirements when multiple modules are installed in the C100G.

Active module	Redundant module	I/O module	SMM usage
QAM 8x192 One OFDM channel 64 SC-QAM channels	QAM 8x192 One OFDM channel 64 SC-QAM channels	8-port I/O	SMM 8x10G or SMM 2x10G Release 7.2.2 or greater (note that this configuration is also supported in the previous R7.2.1 release).
QAM 8x192 Two OFDM channels 32 SC-QAM channels	QAM 8x192 Two OFDM channels 32 SC-QAM channels	8-port I/O	SMM 8x10G or SMM 2x10G Release 7.2.2 or greater

Support for two OFDM downstream channels in R7.2.3.0

QAM 8x192 module support for up to two downstream OFDM channels has been introduced in R7.2.3.0 on the QAM 8x192 module with the following supported channel capacities per module:

- One OFDM channel (0); 64 SC-QAM channels per port, and 128 broadcast/shared channels per module, or
- Two OFDM channels (0 and 1); 32 SC-QAM channels per port.



Note: When configuring two OFDM channels per QAM 8x192 port, the shared channel and DVB Simulcrypt features are NOT presently supported.

QAM 8x96 redundancy limitation (by design)



Note: To support QAM 8x96 redundancy, the backup module **MUST BE** configured and operating in the same mode as the primary QAM 8x96 module. The QAM 8x192 module cannot be used to back up a QAM 8x96 OFDM.

QAM 8x192 redundancy limitation (by design)

QAM 8x192 line cards operating in the OFDM two-channel mode will not be redundancy protected if the QAM 8x192 standby is configured for one OFDM channel and 64 SC-QAM channels. This also applies in the opposite scenario.

For QAM 8x192 redundancy protection, the standby QAM 8x192 module in redundant system slot 5 or 8 must be configured as a matching one-channel OFDM or two-channel OFDM channel scheme.

To redundancy-protect the active QAM card with a non-matching standby QAM card, interactively configure the standby QAM card to match the active QAM so that both modules are a matching single-channel OFDM or two-channel OFDM before performing a switchover.

See the next section for information on configuring two OFDM channels, as well as reverting back to one OFDM channel.

Configuration steps

Perform the following steps to enable two OFDM channels (and 32 SC-QAM channels) in Release 7.2.3:

1. Issue the **module <number> ofdm-channels** command in the CLI configuration mode.

Example

```
CASA(config)# module 4 ofdm-channels 2  
Need to reboot module 4 to apply the change.
```



Note: The command is NOT required for one OFDM channel and 64 SC-QAM channels (by default).

2. Reset the module using the **reboot module <number>** command.

Example

```
CASA(config)# reboot module 4
```

3. Repeat steps 1 and 2 for the redundant module to ensure a matching OFDM configuration between the active and standby QAM8x192 modules.

Reverting to one OFDM channel

To undo the 2-channel OFDM configuration and revert to one OFDM channel and 64 SC-QAM channels, perform the following steps:

1. Issue the **module <number> ofdm-channels** command in the CLI configuration mode:

Example

```
CASA(config)# module 4 ofdm-channels 1  
Need to reboot module 4 to apply the change.
```

2. Reset the module using the **reboot module <number>** command.

Example

```
CASA(config)# reboot module 4
```

3. Repeat steps 1 and 2 for the redundant module to ensure a matching OFDM configuration between the active and standby QAM8x192 modules.

Remaining configuration steps

Perform the follow steps to complete the OFDM configuration.

1. Enable DOCSIS 3.1 using the **cable docsis version 31** command in the CLI configuration mode.
2. Configure the OFDM channels. See the *Casa Systems – RF Cable Configuration Guide and Command Reference* for Release 7.2 for complete information on OFDM.
3. Save the configuration using the **copy running-config startup-config** command.

Dynamic modulation profile change on OFDM channels

Release 7.2 supports dynamic modulation profile changes on OFDM channels. In situations where the modem modulation error ratio (MER) on an OFDM channel can no longer support the highest-rate profile, the software will automatically change to a profile with a lower modulation rate.

During modem registration, the CMTS will select the appropriate OFDM channels and the highest-rate profile according to the modem's capability. Once the modem returns a registration acknowledgment, the CMTS will then request the Rx MER from the modem to determine if the error rate is too high to support the current modulation profile. The software will maintain the highest-rate profile and only move to a lower-rate modulation profile if necessary.

Once the modem comes online with the CMTS, the software will switch between modulation profiles (if requested by the modem) to ensure that the highest-rate profile is being applied to modems on the OFDM channel.

Orthogonal Frequency Division Multiple Access (OFDMA)

OFDMA is the multi-user version of OFDM where many users can transmit and receive over a single channel simultaneously. OFDMA uses distributed subcarriers among users to enable multiple user transmissions over one channel. DOCSIS Version 3.1-specific modems are necessary to support OFDMA in the cable network. DOCSIS 3.0 and earlier modems are not supported.

The OFDMA upstream channel capability is available for the UPS 16x8 line card on the C100G and C40G platforms and is based on the DOCSIS 3.1 specifications from CableLabs. One OFDMA upstream channel is supported on Release 7.2.

Backward compatibility and interoperability with legacy QAM and UPS channels coexists with both OFDM (downstream) and OFDMA (upstream) implementations.

UPS 16x8 redundancy limitation with OFDMA (by design)

UPS 16x8 line cards operating in the TDMA/OFDMA mixed-mode will not be redundancy protected if the UPS 16x8 standby is configured as a TDMA single-mode version. This also applies in the opposite scenario.

For TDMA/OFDMA mixed-mode redundancy protection, the standby UPS 16x8 module in redundant system slot 5 or 8 must be configured as a matching mixed-mode TDMA/OFDMA UPS 16x8.

To redundancy-protect the active UPS card with a non-matching standby UPS card, interactively configure the standby UPS card to match the active UPS so that both modules are a matching single-mode or mixed-mode before performing a switchover.

Low-density parity-check (LDPC) code support in OFDMA

The low-density parity-check (LDPC) error-correcting code is now supported with OFDMA transmissions. The LDPC implementation is compliant with the DOCSIS 3.1 specification. There is no configuration requirement with this functionality.

TaFDM between OFDMA and TDMA channels

Time and Frequency Division Multiplexing (TaFDM) allows the upstream frequency spectrum to be shared between the two types of channels, where one OFDMA channel overlaps one or more TDMA channels. This feature allows users to transition from the traditional TDMA scheme to the OFDMA scheme.

With multi-access to shared spectrum resources using the TaFDM scheme, spectrum resources are divided up into time and frequency dimensions which are then allocated to one channel or another. The upstream scheduler determines which area will be used for TDMA or OFDMA transmissions.

Guardband will be inserted on the boundary between TDMA and OFDMA channels both in frequency and time dimensions.

TaFDM configuration

Presently, there are no new CLI commands for the TaFDM feature.

In order for the upstream scheduler to run in TaFDM mode, the overlapping channels must be configured into the same OFDMA subcarrier Service Group.

TaFDM restrictions

There are no restrictions on how the frequency overlap can occur. For example, an OFDMA channel can

- Cover the entirety of all TDMA channels,
- Cover a portion of the TDMA channels on one side, and
- Reside inside the TDMA spectrum area.

Configuration example

```
CASA(config)# interface upstream 11/1.0
CASA(config-if-ups 11/1.0)# frequency 22000000
CASA(config-if-ups 11/1.0)# channel-width 6400000

CASA(config)# interface upstream 11/1.1
CASA(config-if-ups 11/1.1)# frequency 28400000
CASA(config-if-ups 11/1.1)# channel-width 6400000

CASA(config)# interface upstream 11/1.2
CASA(config-if-ups 11/1.2)# frequency 38000000
CASA(config-if-ups 11/1.2)# channel-width 6400000

CASA(config)# interface upstream 11/1.3
CASA(config-if-ups 11/1.3)# frequency 39600000
CASA(config-if-ups 11/1.3)# channel-width 3200000

CASA(config)# ofdma exclusion-band 1
CASA(conf-ofdma-exclusion-band 1)# exclusion-sc-group 1 5000000
7000000

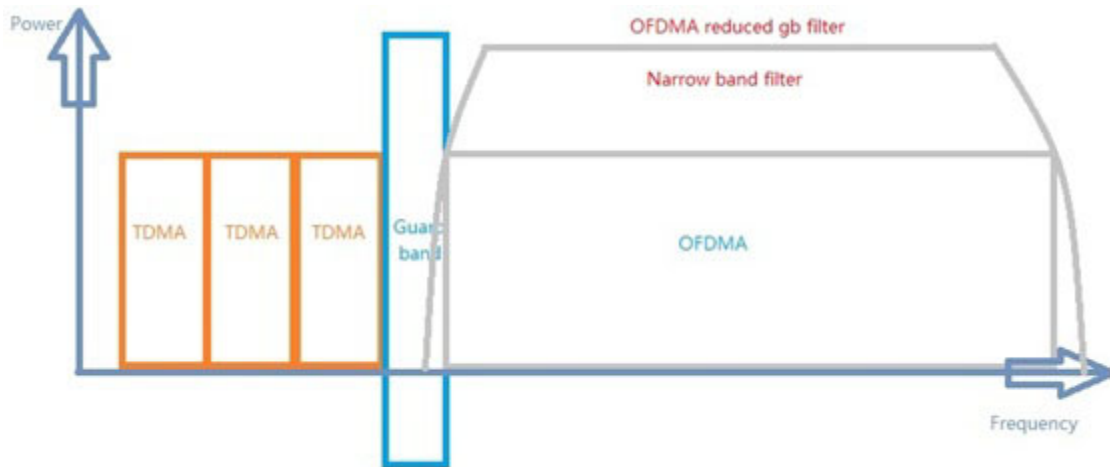
CASA(config)# interface ofdma 11/1.0
CASA(conf-ofdma-channel 11/1.0)# lower-freq 5000000 upper-freq
85000000
CASA(conf-ofdma-channel 11/1.0)# prov-attrib-mask 0x0
CASA(conf-ofdma-channel 11/1.0)# sc-spacing 50
CASA(conf-ofdma-channel 11/1.0)# symbols-per-frame 16
CASA(conf-ofdma-channel 11/1.0)# data-backoff automatic
CASA(conf-ofdma-channel 11/1.0)# ranging-backoff 0 4
CASA(conf-ofdma-channel 11/1.0)# voice-bw-reserve 75 emergency 0
CASA(conf-ofdma-channel 11/1.0)# power-level 0
CASA(conf-ofdma-channel 11/1.0)# power-adjust continue 4
CASA(conf-ofdma-channel 11/1.0)# power-adjust threshold 1

CASA# show docsis upstream channel utilization
Upstream          Total-BW      Utilization  Online  Secondary  Channel
Slot/Port.Channel  (Mb/Sec)     Percentage  Modems  Modems    Description
-----
11/1.0 (22000000 Hz)  30.7         80          1       2
11/1.1 (28400000 Hz)  30.7         79          0       3
11/1.2 (34800000 Hz)  30.7         80          0       3
11/1.3 (39600000 Hz)  15.4         65          1       2
11/1.0w ( 5M- 85M Hz) 580.6        55          1       1          ofdma
```

TaFDM guardband

With Time Division Multiple Access (TDMA) and Orthogonal Frequency Division Multiple Access (OFDMA) channels both enabled on upstream ports, RF interference may occur between the TDMA and OFDMA channels which can degrade the overall throughput of all the channels. To address this situation, a guardband of up to 2 MHz has been applied between the channels (a region not used for transmission) to safeguard against RF interference (Figure 3).

Figure 3. TaFMA guardband



Note: There are no added configuration commands to support TaFDM guardband. The guardband, which supports up to a 2 MHz frequency width, is handled internally in the software.

With OFDMA mode enabled on a UPS 16x8 line card, each port supports up to one OFDMA channel and four TDMA single-carrier channels. The OFDMA channels are between 5 and 101 MHz, while the ATDMA channels can have a center frequency between 5 and 100 MHz. If the non-overlapping area between the OFDMA and TDMA edge frequencies is less than 2 MHz, the chances of RF interference can increase.

An algorithm has been applied to insert a guardband of a specific size automatically between the OFDMA and single-carrier frequencies based on the signal-to-noise ratio (SNR) to guarantee error-free transmission. The guardband can be placed at either the

high or low frequency of the OFDMA spectrum based on where the TDMA spectrum is located.

The SNR value determines the size of the guardband. The guardband ranges are in increments of 0.25 MHz from 0.25 MHz through 2.0 MHz. For example, with an SNR measured at 4 dB, a guardband of 0.25 MHz is imposed, whereas an SNR of 20 dB imposes a larger guardband of 2.0 MHz. The system does this automatically and requires no user input. The frequency modulation rate also has an effect on the guardband size. Lower modulation rates (at a smaller bit rate) are less sensitive to SNR, in which case a smaller guardband can be applied. For example, a high modulation rate at QAM1024 requires a higher SNR (35.5 dB, translated to 9.5 dB by the guardband algorithm), requiring a higher guardband size.

The system imposes certain fixed filter sizes for the OFDMA band with the guardband in effect, in 5-MHz intervals starting at 10 MHz and extending to 95 MHz. The 95 MHz filter is used if no combined OFDMA and TDMA traffic is enabled. The other 10 filters are used when overlapping occurs inside the OFDMA band. With combined traffic, the narrowest filter that completely covers the overlapping area is selected. For example, with a 20–40 MHz OFDMA band and a 6.4 MHz TDMA band at 22 MHz, with both sets of channels operating, a 15 MHz filter is selected for the OFDMA band.

With the guardband in effect, the OFDMA band typically has a 70–80% utilization rate with OFMA and TDMA transmitting simultaneously.



Note: To disable the system from adding a guardband automatically, an exclusion zone between the OFDMA and TDMA channels can be configured. However, the size of the exclusion zone must be calculated to be sufficiently large to safeguard against overlaps.

Example

The following shows a guardband assignment based on changing a TDMA upstream interface frequency.

```
CASA(config-if-ups 12/0.0)# show this

interface upstream 12/0.0
  frequency 20000000
  channel-width 6400000
  power-adjustment continue 4
  logical-channel 0 profile 7
```

```

logical-channel 0 minislot 2
no logical-channel 0 shutdown
logical-channel 1 profile 6
logical-channel 1 minislot 2
logical-channel 1 shutdown
no shutdown

```

```
CASA(config-if-ups 12/0.0)# show interface ofdma 12/0.0
```

```

interface ofdma 12/0.0
lower-freq 20000000 upper-freq 55000000
no voice-bw-reserve
power-adjust continue 4
rolloff-period 64
iuc-profile 1
no shutdown

```

```
CASA(config-if-ups 12/0.0)# frequency 21000000
```

```
CASA(config-if-ups 12/0.0)# show cable modem fec
```

MAC Address	US IF	USSNR	Unerrored	Corrected	Uncorrectable
6814.01f0.3e67	12/0.0/0	42.1	75	0	0
6814.01f0.3e67	12/0.0w	42.1	11483944	12745	8
e448.c7c0.dc1a	12/0.0/0	42.1	7834606	0	0

After the frequency adjustment from 20 to 21 MHz, the OFDMA wide filter selected is 40 MHz (centered at 37.55 MHz) while the narrow filter selected is 35 MHz (centered at 41.95 MHz). The guardband is set at 0.25 MHz. The ensuing signal quality during mixed mode transmission then has a 0.1% correctable forward error correction (FEC) rate.

Multiple IUC TLV support

Multiple Internal Usage Code (IUC) TLV 46.11 is now sent by the CMTS with the REG-RSP-MP messages to D3.1 cable modems supporting multiple IUCs over OFDMA channels.

When the CMTS assigns multiple OFDMA Upstream Data Profile (OUDP) IUCs to the original OFDMA channel, the CMTS includes TCC Encoding TLV 46.11 with action "change" for the OFDMA channel in the REG-RSP message to the cable modem. After the modem registers with the TLV, the CMTS select the best IUC to use on the channel based on codeword error rate and channel SNR.

IUC 13 (lower modulation) is the default which is used if an OFDMA channel is ranged after the modem has registered. If the SNR is satisfactory for the other IUC's modulation, then the CMTS will switch the channel to the other IUC with the higher

modulation. If the uncorrected error rate is then higher than the acceptable packet drop threshold, the CMTS switches the channel back to the lower modulation with IUC 13.

If the SNR and FEC values are both high, possibly causing "flapping" between modulation rates, a 15-minute switching delay period is built in to allow the SNR to resolve itself before making (or not making) a switching change.

The **multiple-iuc** command has been introduced in the CLI OFDMA context to enable the multiple IUC configuration.

Example

```
CASA(conf-ofdma-channel 11/1.0)# multiple-iuc ?
<cr>
err-threshold      uncorrectable packet rate threshold to switching
                   iuc to lower modulation
interval           multiple iuc switching interval
max-retry          max attempt number of switching between iuc
```

The following command enables the CMTS to send multiple Internal Usage Code (IUC) TLV 46.11 REG-RSP-MP messages to D3.1 cable modems supporting multiple IUCs over OFDMA channels. Apply the **no** form of the command disable the multiple-iuc setting. The **multiple-iuc** setting is disabled by default.

Example

```
CASA(conf-ofdma-channel 11/1.0)# multiple-iuc
CASA(conf-ofdma-channel 11/1.0)# no multiple-iuc
```

The optional **multiple-iuc** parameters are as follows:

err-threshold <1:999> — Specifies the uncorrectable packet rate threshold to trigger switching the IUC to a lower modulation rate, specified in 0.1 percent intervals (to provide granularity at lower percentages). The default is 20, or 2%.

interval <1:200> — Specifies the number of recurring IUC ranging intervals to wait before making the next considered IUC change. Each ranging interval is a 10-second period. The default setting is 6 switching intervals, or 60 seconds before making the IUC change to another modulation profile. Setting the **interval** parameter to a higher setting will result in less frequent IUC changes. The regular 10-second ranging interval checking resumes after the completing the last IUC change. The next IUC change being considered restarts the waiting period (i.e., the configured number of intervals) before completing the IUC change.

max-retry {<2:200> | unlimited} — Maximum IUC switching retry attempts before making a dynamic bonding change (DBC) to substitute another data-iuc contained in the iuc-profile defined for the OFDMA interface. The default setting is **unlimited** retry attempts.

Example

```
CASA(config)# interface ofdma 11/1.0  
CASA(config-ofdma-channel 11/1.0) # multiple-iuc err-threshold 100  
CASA(config-ofdma-channel 11/1.0) #
```

Monitoring OFDMA in SNMP

Release 7.2 supports OFDMA in the DOCS-IF31-MIB. See the *Casa Systems – SNMP MIBs and Traps Reference* for information.

IPv6 Provider Edge routers (6PE) in BGP

Support has been added for IPv6 Provider Edge Routers (6PE) in BGP routes, as defined in RFC4698. 6PE routers are dual stack in order to connect to IPv6 islands and to the MPLS core, which is only required to run IPv4 MPLS. The 6PE routers exchange the IPv6 reachability information transparently over the core using the Multiprotocol Border Gateway Protocol (MP-BGP) over IPv4.

The implementation allows for a single 6PE Autonomous System (AS) and supports prefix delegation for IPv6 address assignment.

The following commands and functions support 6PE:

- **address-family ipv6 labeled-unicast**
- **[no] address-family ipv6 labeled-unicast**
- **show ipv6 bgp labeled-unicast**
- **show ipv6 bgp labeled-unicast summary**
- **show ipv6 bgp labeled-unicast XX::XX/len**
- **show ip bgp neighbors A.B.C.D**

NetFlow V9 traffic flow monitoring

Support has been added for NetFlow V9 network traffic flow monitoring. NetFlow provides the ability to collect IP network traffic as it enters or exits an interface. By analyzing the data, a network administrator can determine such things as the source and destination of traffic, class of service, and the causes of congestion. A network flow is a unidirectional stream of packets identified as the combination of factors. Any one of the following factors being different defines the flow as unique:

- Source and destination IP address
- IP protocol
- Source and destination port number
- Type of service (ToS)
- Ingress interface (SNMP IfIndex).

The Casa NetFlow implementation is based on NetFlow Version 9, described in RFCs 7011 and 7012. Version 9 is template-based and complies with IPv6 as well as IPv4 addressing. NetFlow information collection is turned on and off on individual IP bundle interfaces only.

One sampler MAP and one exporter map are supported per CMTS, with one data template each for IPv4 and IPv6. Each line card is both an observation domain and an export device. Only UDP transport is supported. NetFlow depends on a sampling rate. The Casa minimum sampling rate is defined as one packet out of one thousand packets.

The following commands have been added to support NetFlow monitoring:

- **[no] flow exporter-map <name>** — Source loopback and destination addresses and port definitions, template timeouts, and transport definitions, with accompanying show command.
- **[no] flow monitor-map <name>** — Protocol, exporter name, and cache timeout definitions, with accompanying show command.
- **[no] flow sampler-map <name>** — Sampler rate definition, minimum one per thousand packets, default 1024, maximum 10000 packets, with accompanying show command.
- Flow ingress and flow egress definitions applied to the IP bundle interface.

Session-based DVB Simulcrypt

Release 7.2 supports session-based DVB Simulcrypt where each encrypted video session is protected by a unique encryption key. Session-based Simulcrypt uses encryption resources provided by the Event Information Scheduler (EIS) in communication sessions with the CCAP Simulcrypt Synchronizer (SCS) over a unique TCP port.

The **video simulcrypt session-mode** command enables the session-based mode. The **tier-mode** setting, which enables the same encryption key of all inbound video streams on a video QAM port, continues to be the default operating mode if the **session-mode** is not enabled.

Example

```
CASA(config)# video simulcrypt session-mode
```

The **videos simulcrypt eis tcp-port** command specifies a unique port over which the CCAP communicates with the EIS. The port range is 1024 to 65535 and cannot be a known port for used for other applications.

Example

```
CASA(config)# video simulcrypt eis tcp-port 51712
```

The **show video simulcrypt eis** command displays the configured TCP port number and connection status between the CCAP SCS process and the EIS.

Example

```
CASA(config)# show vidwo simulcrypt eis
TCP Port           : 51712
Connection Status  : EIS Connected
```

CMTS Release 7.2.5.10 software installation

Version 7.2.5.10 distribution image

The following CMTS software images for Release 7.2.5.10 are available from the Casa Systems FTP site.

Release image: *ccsi.gz.rel7.2.5.10_build7559* — (For C10G, C40G, and C100G)

MD5 checksum: 58b21fdef8f866791e95fa332852bf4e

from your Web browser, log on to the site using your Casa Systems-assigned customer user name and password at <ftp://support.casa-systems.com>.

From Unix or Linux systems, run FTP and log in to casa-systems.com.

SNMP MIB archive: *mibs-rel7255b696b-20180917.tar.gz*

Software update procedures

This section covers the procedures for updating the CMTS application image with Release 7.2.

Verify and remove any previously-installed software patches

Use the **show patch** command to determine if any patches have been applied to the software version you are presently running. If a software patch was previously installed, you **MUST** remove the patch prior to installing the new image. Perform the following steps:

1. Execute the **show patch** command to verify that a patch has been applied and running at the CMTS.

Example

```
CASA# show patch
Size      Created on              Status   Patch name
-----
3544158   Mon Dec 7 11:48:06 201x  active   p####.tgz
```

```
PEER SMM VERSION:
Size      Created on              Status   Patch name
-----
3544158   Mon Dec 7 11:48:10 201x  active   p####.tgz
```

2. Revert and disable the previously-installed patch file using the **system patch revert** command. Reverting an in-service patch may take approximately 8 to 10 minutes to complete.

Example

```
CASA# system patch revert
Reverting slot 0..1..2..3..4..5..6..7..8..9..10..11..12..13..
The patch is removed.
```



Note: After installing new software, as covered in the section “[Updating the application image](#)” in this notice, and if a possible software rollback is not necessary, delete the patch file from the system using the **remove patch** command. This can be done at any time. Leaving the inactive patch file on the system does not impede the system in any way.

Example:

```
CASA# remove patch p###.tgz
```

3. Run **show version** at the CLI to verify the running software version as a standard, non-patched installation.

Example

```
CASA# show version
Running Image: SMM_8x10G Rel 7.2.5, Ver 4,build####, Fri Dec ##
17:19:36 EDT 2015,(relmgr)
Configured boot device: nvram
Image booted from: nvram, File name: ccsi.gz.rel7.2.5.4_build####
Casa RMI_BootLdr: Major ##, Minor # Build ##
```

Verifying the minimum boot loader firmware images

Use the **show system** command to verify the minimum boot loader firmware images for the C10G, C40G, and C100G hardware modules. The boot loader images are reported by the CFE version in the **show system** command output.

For Release 7.2

- SMM 8x10G — CFE Version 12.4.11
- SMM 2x10G — CFE Version 12.4.11
- QAM 8x192 — CFE Version 2.2.5
- QAM 8x96 — CFE Version 12.9.13
- QAM 8x8 — CFE Version 12.4.11
- UPS 16x4 — CFE Version 12.4.11
- UPS 16x8 — CFE Version 12.9.13

If the **show system** command reveals that you are running an earlier CFE version for any one of the listed modules, contact Casa Technical Support for assistance in updating one or more boot loader images to the current version.

Preserving the current software image

Prior to performing an upgrade to a new R7.2 software image, Casa recommends copying the existing startup configuration file (prior to R7.2) to a separate file for future use in situations where reverting to R7.1 (or prior release) may be necessary. This will allow the system to boot up to the earlier image without having to reconfigure the software.

Perform the following steps:

1. Before upgrading to a new release, copy the startup-config file to a separate file to preserve the software image.

Example

```
CASA# copy nvram startup-config nvram <filename>
```

2. Perform the software upgrade to R7.2, as covered in the next section, [“Updating the application image.”](#)

Note that this is also a general procedure which can be applied to all software releases.

See the section, [“Reverting to a prior software release”](#) for information on rolling back software versions.

Updating the application image

To update the application image, first download the image from the Casa FTP server to the TFTP server. The supported C10G/C100G storage device is *nvram* (non-volatile RAM).

1. To perform an update from the TFTP server:

```
CASA-CMTS# copy tftp <host-ip> <image> <device>
```

Where:

- **<host-ip>** is the IP address of the host where the update image is stored.
- **<image>** is the name of the software image stored on the remote system.

- **<device>** is the software storage device. On the C10G and C100G platforms, the storage device is *nvr*am.

Example

```
CASA-CMTS# copy tftp 192.168.3.10 ccsi.gz.rel7.2.5.10_build7559
nvr
```

2. Save the running configuration using the **copy running-config startup-config** command.

Example

```
CASA-CMTS# copy running-config startup-config
```

3. Execute the **md5 checksum** command to verify that the software image transferred to the system successfully and without error. The MD string must match the string associated with this software release.

```
CASA-CMTS# md5 checksum ccsi.gz.rel7.2.5.10_build7559
58b21fdef8f866791e95fa332852bf4e ccsi.gz.rel7.2.5.10_build7559
```

4. Set the boot device, as well as the **system bootfile update** parameter to improve system boot time (if used), then run **system reboot**. When the CMTS completes the series of boot-up processes, execute the **show version** command to verify the new software installation.

Example

On the C10G, C40G, or C100G, update the application image *ccsi.gz.rel7.2.5.10_build7559* file from host 192.168.3.10 to NVRAM:

```
CASA-CMTS# system bootdev nvr
```

```
CASA-CMTS# system bootfile update
```

```
CASA-CMTS# system reboot
```

```
CASA-CMTS# show version
```

```
Running Image: SMM_8x10G Rel 7.2.5, Ver 10, build7559 May 11
17:19:36 EDT 2019, (relmgr)
```

```
Configured boot device: nvr
```

```
Image booted from: nvr
```

```
Casa RMI_BootLdr: Major ##, Minor # Build ##
```



Note: If a software rollback is necessary, see the section “[Reverting to a prior software release](#).” If the rollback software version involves a patch installation, refer to the specific Casa-supplied instructions provided with original patch release for patch re-installation.

Open source library updates in R7.2.5

The following open source library versions have now been updated in R7.2.5 from prior Release 7.2.4.2.

- openssh-7.4p1
- openssl-1.0.2k
- Linux-PAM-1.1.8
- Apache httpd 2.2.31

Resolved issues and changes in Version 7.2

The following tables provide the Casa tracking IDs and descriptions of the product changes, enhancements, and fixed issues that have been applied in recent Version 7.2 software builds. For the complete listing and descriptions of all new features and enhancements, see the *Casa Systems – CMTS Release 7.2 Features Guide*.

Table 1. Release 7.2.5.10 Build 7559 changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
105113	Defect: Possible service impact (Medium)	Observations of OFDMA channels with pre-equalization enabled were showing drops in the RxMER measurements with spectrum analysis showing approximately 1 dB ripple. This issue has been fixed in this build under ID 111339 with the guardband insertion algorithm.

Table 1. Release 7.2.5.10 Build 7559 changes and applied fixes

Tracking ID	Service impact (Risk level)	Description																																																																																										
111339	Enhancement: CLI, Info, Operational (None)	<p>A software enhancement has been implemented to improve OFDMA signal quality and overall throughput with automatic insertion of a guardband between OFDMA and TDMA channels. The algorithm calculates the guardband to a specific size between the OFDMA and single-carrier frequencies based on the signal-to-noise ratio (SNR), modulation, and single carrier bandwidth to guarantee error-free transmission.</p> <p>As part of this change, the show ofdma channel <slot>/<port>.<pchan> tafdm-info command has been introduced in the CLI for report the current OFDMA TaFDM state (if triggered), minislot region, guardband filter size, and calculated guardband. The show interface docsis-mac topology command indicates the topology of the overlapping TDMA and OFDMA channels.</p> <p>Example:</p> <pre>CASA(config)# show ofdma channel 3/0.0 tafdm-info ofdma channel minislot number: 1 - 137 TaFDM state: true filter guardband: 0.250 MHz filter size: 35 MHz first overlapping minislot: 1 last overlapping minislot: 55 TaFDM minislot region: 56 - 137</pre> <p>Example:</p> <pre>CASA(config)# show interface docsis-mac topology beg 3/0.0</pre> <table><tr><th>US Int</th><th>Cable MAC</th><th>Chan ID</th><th>Oper State</th><th>Chan Type</th><th>Freq(Hz)</th><th>Channel Width</th><th>Mini Slot</th><th>Mod Prof</th></tr><tr><td colspan="9">Power Service Groups(s)</td></tr><tr><td>3/0.0/0</td><td>1</td><td>1</td><td>UP</td><td>atdma</td><td>9000000</td><td>6400000</td><td>2</td><td>3</td></tr><tr><td>0</td><td>1</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>3/0.1/0</td><td>1</td><td>2</td><td>UP</td><td>atdma</td><td>15400000</td><td>6400000</td><td>2</td><td>3</td></tr><tr><td>0</td><td>1</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>3/0.2/0</td><td>1</td><td>3</td><td>UP</td><td>atdma</td><td>21800000</td><td>6400000</td><td>2</td><td>3</td></tr><tr><td>0</td><td>1</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>3/0.3/0</td><td>1</td><td>4</td><td>UP</td><td>atdma</td><td>28200000</td><td>6400000</td><td>2</td><td>3</td></tr><tr><td>0</td><td>1</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>	US Int	Cable MAC	Chan ID	Oper State	Chan Type	Freq(Hz)	Channel Width	Mini Slot	Mod Prof	Power Service Groups(s)									3/0.0/0	1	1	UP	atdma	9000000	6400000	2	3	0	1								3/0.1/0	1	2	UP	atdma	15400000	6400000	2	3	0	1								3/0.2/0	1	3	UP	atdma	21800000	6400000	2	3	0	1								3/0.3/0	1	4	UP	atdma	28200000	6400000	2	3	0	1							
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Table 1. Release 7.2.5.10 Build 7559 changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
112143	Defect: No service impact (Low)	A software change has been applied to support access to BGP MIBs when BGP is running on a VRF. The change allows user to monitor BGP adjacency status and enable SNMP trap notifications on BGP adjacency changes. BGP now gets the peer information by peer address and peer VRF name.

Table 2. Release 7.2.5.9 Build 7309 changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
103437	Defect: Possible service impact (Medium)	PCR scheduling has been revised for proper handling of streams which have back-to-back PCRs.
104887	Defect: No service impact (None)	A case was reported where the OFDMA PNM RxMER report did not show the real received modulation error ratio (MER). This issue has been fixed.

Table 2. Release 7.2.5.9 Build 7309 changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
106598	Defect: Possible service impact (Medium)	<p>Log messages have been implemented to warn users that when setting channel power-attenuation to a new extended value up to 20dB on QAM 8x192 channels, the final per-channel power calculation may fall below the minimum low power limit.</p> <p>A warning message will be displayed if calculated per-channel power (based on attenuation and tilt adjustment of the base channel power) is lower than 25dB and above 11dB (the new per channel low power limit). In this situation, the configuration will be accepted.</p> <p>If the calculated channel power falls below the 11 dB low power limit, <u>the configuration is rejected</u>, and an error message will be logged.</p> <p>Note: If the channel's actual output power level is lower than 250, good MER on this channel cannot be guaranteed.</p> <p>Example:</p> <pre>CASA(config-if-qam 1/0)#channel 32 power-attenuation 200 Channel 32 power 172 is below 250 which may cause low MER.</pre> <pre>CASA(config-if-qam 1/0)#shared-channel 16 power-attenuation 200 bchan 16 power 172 is below 250 which may cause low MER.</pre> <pre>CASA(config-if-qam 1/0)#ofdm-channel 0 power-attenuation 180 frequency-band 0-26 ofdm channel 0 band 26 power 192 is below 250 which may cause low MER.</pre>

Table 2. Release 7.2.5.9 Build 7309 changes and applied fixes

Tracking ID	Service impact (Risk level)	Description																								
106870	Enhancement: Operational, CLI (Medium)	<p>The supported SC-QAM and OFDM channel power-attenuation has been increased from 10dB to 20dB on the QAM 8x192 module, configured in tenths of a dB units (0 to 200 range).</p> <p>Note: This enhancement <u>does not</u> apply to the QAM 8x96 module; the maximum power attenuation remains at 10dB on QAM 8x96 channels. See ID 106598 for additional information.</p> <p>Example: CASA(config-if-qam 1/3)#ch 0 power-attenuation 200 CASA(config-if-qam 1/3)#show int qam 1/3 power</p> <p>Configured Total Power: 580 Calculated Per-Channel Power: 485 Configured RF power mode: 0 Send to FPGA RF power mode: 0 Send to FPGA Power: 540 Power adjusted: 473 Spectrum-tilt: 0</p> <table><tr><th>CHAN_ID</th><th>FREQUENCY</th><th>ATTNU</th><th>B_POWER</th><th>TILT</th><th>T_POWER</th></tr><tr><td>CH_POWER</td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>0</td><td>483000000</td><td>200</td><td>285</td><td>0</td><td>285</td></tr><tr><td>285</td><td></td><td></td><td></td><td></td><td></td></tr></table>	CHAN_ID	FREQUENCY	ATTNU	B_POWER	TILT	T_POWER	CH_POWER						0	483000000	200	285	0	285	285					
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CH_POWER																										
0	483000000	200	285	0	285																					
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107331	Defect: Possible service impact (Medium)	An issue handling PAT/PMT large interval streams which could result in some STBs not being able to display video has been fixed. The issue has been resolved with code path optimization.																								
107332	Defect: Possible service impact (Medium)	A fix has been applied to correct a race condition which could cause a Simulcrypt component core. Protections have also been implemented in the logic to prevent the problem.																								
107761	Defect: Possible service impact (Medium)	Checks have been implemented in the software to ensure proper forwarding of packets during SMM high-availability switchover operations. An issue has been found where the standby SMM was not updated resulting in SNMP and ping packet loss at some modems at switchover time. This issue has been fixed.																								

Table 2. Release 7.2.5.9 Build 7309 changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
107800	Defect: Possible service impact (Medium)	A case was reported where some modems were unable to achieve the configured bitrate. The problem was caused by excessive video QAM overloading, which led to an error condition with data buffer resources running low and causing DOCSIS packet loss. Preventive code has been added which limits the amount of data buffers which can be consumed by video application.
107958	Defect: Possible service impact (Medium)	A software fix has been applied to correct processing and freeing of PIDs when video streams contain an abnormal PID type in the PMT table.
107986	Enhancement: Operational (Low)	A timer has been implemented to trigger possible reactivation of an OFDM profile when the profile is marked as unusable in cases when the RxMER in the OPT-RSP packet does not fit its modulation. The OFDM profile will be reactivated and made usable once the timer expires if no profile failure is reported by the modem and with RxMER returning to normal.

Table 3. Release 7.2.5.8 Build 7182 changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
104333	Defect: Possible service impact (Medium)	Support for CMTS interpretation of the IGMP record type "Change to Include Mode" has been implemented for establishment of multicast sessions. The change now handles IGMP JOIN requests from certain modems using this IGMP record type.
104538, 102059	Defect: Possible service impact (Medium)	<p>A problem was reported where PacketCable voice calls were being dropped. The problem was due to an issue with the placement of PacketCable timers, resulting in an infinite looping condition and high CPU consumption with voice calls being dropped. Performing an SMM switchover to the redundant SMM provided the work around to restore service. This problem has been fixed.</p> <p>Casa continues to investigate issues which could cause the PacketCable process to hang up. In addition to the fix, a soft-timer corruption check has been implemented in the code. If a soft-timer corruption is detected, the PacketCable process will execute a call trace stack dump to the /fdsk2/pktcb_soft_timer.<pid>. This will trigger a core dump followed by an SMM switchover.</p>

Table 4. Release 7.2.5.7 Build 7319 changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
108566	Defect: Possible service impact (Medium)	Intermittent downstream packet loss to CPEs with lost connectivity and with subsequent recovery has been observed. The fix corrects a counter error in the logic which was being hit in configurations with more than 255 L2VPN cable modems per VLAN (per module).

Table 5. Release 7.2.5.7 Build 7289 changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
107569	Defect: Possible service impact (Medium)	A fix has been applied to correct a video scheduling rate calculation due to a certain PCR wraparound condition. The fix addresses a queue overflow condition which caused video macro blocking.
107896	Defect: No service impact. (Low)	<p>Some informational syslog messages associated with video have been re-programmed to the debug level. The change will keep reduce the number of informational messages sent to the syslog host.</p> <p>Example: Informational message now set to debugging level</p> <pre>Mon Feb 4 13:08:11 2019 CAP17MECH01 -IN-QAM-: +++ Starting output packet,</pre> <p>Key:21-bc-94-71-89-16-ea-89</p>

Table 6. Release 7.2.5.7 Build 7149 changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
104879	Defect: Possible service impact. (Medium)	Support has been implemented for parsing and storing IPv6 Extended Reachability subTLVs (including TLV 236 subTLV 4) contained in received ISIS LSPs at the CMTS. LSPs with the subTLVs are placed in the link state database, but are ignored and are not currently processed. The change allows proper installation of IPv6 ISIS routes for compatibility with routers that include the ISIS Extended Reachability subTLVs.

Table 7. Release 7.2.5.7 Build 6ca9 changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
100868	Defect: Possible service impact. (Medium)	A case was reported where certain D3.1 modems would sometimes register with the CMTS in modem partial service over an OFDMA channel. Resetting the modem resolved the issue in some instances. This problem has been fixed.
101009	Defect: Possible service impact (Medium)	A case was reported where performing a QAM module switchover or revert resulted in video changing over to a black screen. Restarting Simulcrypt provided a workaround to the problem. This issue has been fixed.
102812	Defect: Possible service impact (Medium)	A software revision has been applied for improved buffer management and to force an SMM switchover when invalid buffer registers are detected. The fix addresses rare cases where buffer utilization incorrectly appears congested with the system is no longer able to accept inbound traffic.
103852	Defect: Possible service impact (Medium)	During a QAM 8x96 or QAM 8x192 switchover, video functionality would stop due to the program clock reference (PCR) interruption time being out of synchronization with the switchover time, thereby preventing the video signal from being properly decoded. This issue has been fixed.
104431	Defect: Possible service impact: (Medium)	An issue with QAM switchover when two ECMGs are used with different delay-start values has been fixed in this build.

Table 7. Release 7.2.5.7 Build 6ca9 changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
104600	Defect: Possible service impact (Medium)	A logging issue which resulted in Simulcrypt changing from the configured session-mode to tier-mode has been fixed. The problem was due to an error in the configuration query logic which was causing the change to tier-mode to be reported in log messages.
105238	Defect: Possible service impact (Medium)	A problem was found that a video program cannot be output to multiple QAM channels. The issue has been fixed.

Table 8. Release 7.2.5.6 Build 6b2b changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
99231	Defect: Possible service impact (Medium)	A software change has been applied to enable the CMTS to generate the ARP packet for updates to the ARP/L2 table on up-link switches. The change fixes a reported problem observed on some up-link switches where the ARP/L2 table timed out causing traffic to flood to other interfaces on the switch.
99473	Defect: Possible service impact (Medium)	A fix to prevent a possible memory corruption and possible line card switchovers has been applied in this build. The corruption caused incorrect CPU utilization percentages to be reported in CLI show commands.
99966	Defect: Possible service impact (Medium)	A single case was reported of a QAM 8x192 module switchover. The problem was traced to a possible channel-id corruption and domain resolution issue. The problem occurred only once. Protections and debugging counters have been implemented for further diagnosis should the problem happen again.
100439, 96440	Defect: Possible service impact (Medium)	A discrepancy was observed on the RX port measurement taken on OFDMA channels when comparing spectrum analyzer output with the configured power level setting at the chassis. Power levels at OFDMA channels were observed up to 3 dB higher in some measurements. This problem has been fixed.
100535	Defect: Possible service impact (Medium)	A channel licensing issue which was preventing the configuration of DVB Simulcrypt video channels 40 to 47 on the QAM 8x96 has been fixed. The change revises the video license to include the narrowcast shared channels in the video qam-domain .

Table 8. Release 7.2.5.6 Build 6b2b changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
101043	Defect: Possible service impact (Medium)	An issue was reported where D3.0 modems were unable to bond over certain MAC domains. An update has been applied in the software to correct a size limitation of the ID fields of the MDUSSG and MDDSSG logic. The limitation caused corruption of the IDs resulting in an invalid ID of zero with modems failing to bond.
101228	Defect: Possible service impact (Medium)	Improvements to the packet scheduling time has been applied for PCR packets of non-master programs when the input is MPTS. The video packet scheduling has been changed to account for the variable bit rates of the individual programs. An initial stream rate is calculated and used to extrapolate the schedule time stamp for individual packets between two successive PCRs.
101272	Defect: Possible service impact (Medium)	A case was reported where a new voice call could not be established when an existing call flow is long duration (with caller possibly never hanging up with session resources not being freed). A change has been applied to the resource manager logic for proper handling and insertion of the new call flow in this situation.
101275	Defect" No service impact (None)	The spectrum-tilt online help string has been updated to include the tilt level units in dB. This information was previously excluded. Example: CASA(config)# int qam 1/0 CASA(config-if-qam 1/0)# spectrum-tilt ? <0-50> tilt level (default: 0) in dB CASA-(config-if-qam 1/0)#
101281	Defect: Possible service impact (Medium)	A software change has been applied for improved handling of line card core files which could result in an out-of-memory condition at the SMM. The software change moves processing of core files from the RAM-based filesystem, /tftpboot to disk-based filesystem, /fdsk to prevent the out-of-memory condition on the SMM.
101414	Defect: Possible service impact (Medium)	A software correction has been applied to the remote query polling logic to correct a problem which was preventing triggering of remote query polls under certain conditions. The problem resulted in counters not being updated in the background. Performing an SMM switchover resolved the issue. This problem has been fixed.

Table 9. Release 7.2.5.5 Build 6999 changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
95514	Defect: Possible service impact (Medium)	A software fix has been applied to correct a QAM 8x96 latency issue with high dequeue utilization during peak periods. The latency was caused by the polling method scheme used to check downstream service flows for transmit opportunities. The fix improves the efficiency of the polling method by preventing a service flow lock each time the scheduler checks credits for transmission.
95576	Defect Possible service impact (Medium)	Protections have been applied to prevent a possible invalid address exception when handling flow control packets. The problem was reported on the QAM 8x96 module. Error logging of the issue has also been implemented.
95982	Defect: Possible service impact (Medium)	Improved checking of the global channel index (GCI) for possible out-of-range values has been implemented to prevent possible address exceptions. The problem was reported on the QAM 8x96 module.
96043	Defect: Possible service impact (Medium)	Continuous wave (CW) echoes were observed in upstream spectrum analysis data in a test environment. The problem was due to FFT packets having an inverted sequence during UDP transfer. Sequence numbers have been applied to detect and correct packet sequences.
96365	Defect: Possible service impact (Medium)	Systems running IPFIX software were experiencing disruptions due to referencing the NULL pointer unexpectedly under certain conditions. Checks have been implemented to avoid these disruptions. The NULL pointer reference resulted from a handling error when extracting the next header of the ESP protocol IPv6 packet. This problem has been fixed.
96562	Defect: Possible service impact (Medium)	In a QAM 8x96 configuration with an OFDM channel next to an SC-QAM channel, and with a guard band lower than or equal to 4 MHz, the SC-QAM channel in the upper edge closest to OFDM block was observed with a high bit error rate (BER). To correct the problem, the following changes have been applied: 1. Subcarrier 1088 will always be the first active subcarrier. 2. OFDM maximum channel width is now 96MHz, instead of 95MHz.
96585	Defect: Possible service impact (Medium)	In an OFDM channel configuration with one profile, and if this one profile became unusable with resulting OFDM partial service, the system would set profile ID 255 to QAM during recovery and continue to pass traffic with high MER. To correct the problem in a configuration when no other profile is usable, the system now correctly applies profile 0 to the OFDM channel at partial service recovery.

Table 9. Release 7.2.5.5 Build 6999 changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
96926	Defect: Possible service impact (Medium)	Handling of full synchronization requests from the Policy Server (PS) has been revised to ensure proper cycling of bulk COPs messages sent by the CMTS. The software fix addresses a problem where incomplete COPs messages due to congestion could result in the Policy Server going down.
97519	Enhancement: CLI, Info (None)	<p>Online help has been revised to clarify that spectral-inversion for Annex A channels is on by default for the interface qam configuration. Setting the option for an Annex A channel turns spectral inversion off.</p> <p>Example:</p> <pre>CASA(config-if-qam 1/0)# ch 0 annex A ? <cr> spectral-inversion spectralinversion (Onbydefaulton Annex A. Setting this will turn off inversion) symbol symbol rate CASA(config-if-qam 1/0)#ch 0 annex A spectral-inversion</pre>
97868	Defect: Possible service impact (Medium)	Protections have been implemented in the software to address a QAM8x192 memory buffer corruption under rare conditions when forwarding multicast traffic to a dynamic IGMP client/DSG.
97650	Enhancement: Operational. CLI (Low)	A software change has been applied to ensure that the copy running-config startup-config does not execute by default while static video sessions are being recovered during QAM module boot-up. The problem could result in an incomplete running-config and possible lost video sessions. With this change, the copy run start command cannot be executed during static video session recovery by default unless the unconditional parameter is specified.
98351	Defect: Possible service impact (Low)	<p>After enabling the aaa accounting commands xx default start-stop at the CMTS, a STOP message for "exit" was not being sent to the AAA server when exiting the session. A software fix has been applied to correct the problem.</p> <p>Software changes have been made to use a unique task ID for each CLI command when sending accounting messages to AAA server.</p>
98354	Defect: Possible service impact (Medium)	A software fix has been applied to correct handling of egress ACLs on VLAN interfaces where the software was classifying on the VLAN ID in matching any packet with the VLAN tag. The fix changes the classification to include the destination port as an NSI port.

Table 9. Release 7.2.5.5 Build 6999 changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
98531	Defect: Possible service impact (Low)	A case was reported where dynamic load balancing via DBC moved a modem's eight bonded channels to six bonded channels with eight modem channels available. A software fix has been applied to correct the channel selection logic to allocate the correct number of channels during load balancing.
98552	Defect: Possible service impact (Medium)	A software change to allow handling of additional descriptors in the PMT table has been applied. These descriptors were not handled properly.
98563	Defect: Possible service impact (Medium)	A source resource contention in QAM card error logging led to packet schedule jittering, resulting in video queue overflow. This resource contention issue is resolved in this build.
98827	Enhancement: No service impact (Low)	A more robust handling of QAM switchover for Simulcrypt has been added into this build. After a QAM switchover, the SMM queries the newly activated QAM card for Simulcrypt status and correct errors if found.
98882	Defect: Possible service impact (Medium)	After performing an SMM switchover, the default IPv6 route learned by ISIS could be lost due to an LSP handling issue between the active and standby module. This issue has been fixed.
98900	Defect: Possible service impact (Medium)	A QAM 8x192 memory leak which resulted in a module reboot has been fixed. The problem was associated with the processing of IPFIX packet flows which consumed additional memory on the module.
98963	Defect: Possible service impact (Medium)	An error in the time interval calculation logic for the CSM hop rate in the show spectrum hop-stats output has been fixed. The error was caused by a rare case in which the time interval returned to zero resulting in an arithmetic exception.
99204	Defect: Possible service impact (Low)	A problem with the CMTS forwarding jumbo packets (>1514 byte frames) to upstream routers has been fixed. Handling of jumbo packets from CPEs to the CMTS network side has been revised to ensure proper filtering for upstream forwarding.
99276	Defect: Possible service impact (Low)	A reported IPDR race condition which resulted in a file description (FD) leak has been fixed. Previously, the problem caused the IPDR process to go down.

Table 9. Release 7.2.5.5 Build 6999 changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
99413	Defect" Possible service impact (Medium)	Optimization to improve the video packet scheduling algorithm to minimize packet scheduling jitter has been applied in this build. This optimization improves the accuracy of output PCR values.
99636	Defect: Possible service impact (Low)	A case was reported where the fan speed in the C40G chassis increased to the maximum speed after removing the standby UPS module. This issue has been fixed.
99650	Defect: Possible service impact, CLI (Medium)	<p>A software fix has been applied to correct handling of OFDMA zero-valued minislots to be in compliance with the CableLabs MULPI specification, as follows:</p> <p><i>When the bit-loading is equal to 0, the CMTS is required to set the pilot pattern index to 0. A pilot pattern index equal to 0 is applicable only for Zero Valued Minislots and means there are no pilots in this minislot. Zero Valued Minislots contain no data or pilots.</i></p> <p>The pilot-pattern parameter range has been revised to 0 to 8, with 0 for zero modulation.</p> <p>Example:</p> <pre>CASA(conf-minislot-cfg 2)#subcarrier-group-minislot 1 19000000 21350000 modulation zero ? <cr> pilot-pattern set pilot pattern CASA(conf-minislot-cfg 2)#subcarrier-group-minislot 1 19000000 21350000 modulation zero pilot-pattern ? <0-8> pattern number: 0 for zero-modulation></pre>
99831	Defect: Possible service impact (Medium)	A case was reported where D3.0 modems were unable to bond in a certain service group/MAC domain configuration with one shared-ofdm channel configured into eight service-groups and shared by eight mac-domains. The fix scales the memory pool used to keep track of the service group and downstream/upstream channel combinations.
99900	Defect: No service impact (Low)	A revision has been applied to the fast message handler to address a large number of invalid and duplicated messages filling the log file (dmesg.sav) over a very short period resulting in possible keepalive failures at the QAM 8x192. The fix now limits the number of messages to prevent possible keepalive issues at the module.

Table 10. Release 7.2.5.4 Build 681a changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
96952	Defect: Possible service impact (Medium)	A software fix has been applied for an issue where the MTA part of a CM sometimes appeared as a CPE in "CPE Type VRF" output of a show cable modem cpe command. The problem caused the configured cable filters for CPEs to block voice traffic.
97860	Defect: No service impact (Low)	A software fix has been applied to ensure that all ATDMA upstream interfaces are returned in SNMP queries to the DocsIfUpstreamChannelEntry MIB. Previously, SNMP queries reported a partial list of upstream interfaces.

Table 11. Release 7.2.5.4 Build 6761 changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
87568	Defect: Possible service impact (Medium)	A case was reported where upstream packets from some CPEs (eRouters on a VRF instance) were being dropped. A change has been applied to increase the size of the CPE hash table for improved processing of VRF traffic.
90116	Defect: Possible service impact (Medium)	A case was reported where certain modems were unable to range and come online over the OFDM backup primary channel after the active primary channel was impaired and rendered unusable. A software fix to ensure that when the modem ranges over the backup primary downstream channel, the CMTS checks the DSID in the RNG-REQ message and returns the RNG-RSP message to the modem.
91611	Defect: Possible service impact (Medium)	A fix has been applied to correct observed PCR errors on broadcast streams. The scheduling of the control queue was changed from being scheduled every iteration of the egress to periodic scheduling (5 ms by default).
93198	Defect: Possible service impact (Medium)	A software logic error was forcing the video input stream processing into an incorrect state, resulting in packets being dropped. The error resulted in observed CC errors in the video output. The logic error has been fixed.

Table 11. Release 7.2.5.4 Build 6761 changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
94652	Defect: Possible service impact: (Medium)	A software fix to ensure TOS overwrite for IPv6 DSCP encodings in IPv6 upstream traffic has been applied. One case was reported where the Upstream Packet Classification Encoding output was incorrect on the upstream.
95068	Defect: Possible service impact (Low)	Bandwidth statistics associated with NGOD streams to the ERM are now reported in kilobits per second (kbps) per the D6 protocol specification instead of bits per second.
95173	Defect: Possible service impact (Medium)	When configuring an IP access-list rule to permit or deny IPv6 packets with DSCP values, the rule will not presently work when applied to the access-class in or the <service> access-group configuration. This issue has been fixed.
95278	Defect: Possible service impact (Medium)	A software change has been applied to the downstream scheduler logic to correct a possible QAM module hang after reconfiguring a QAM port from Annex B to Annex A.
95327	Defect: Possible service impact (Medium)	A case was reported where a modem was moved from 8 DS bonded channels (ch 1,2,3,4,5,6,7,8) to 6 DS bonded channels with dynamic load balancing. A software fix has been applied to correct the channel selection logic to allocate the correct number of channels during load balancing.
95459	Defect: Possible service impact (Medium)	High uncorrectables on OFDMA channels were observed when TDMA frequencies are above the OFDMA spectrum. A fix has been applied to improve signal quality when non-overlapping SC-QAM and OFDMA are transmitting at the same time.
95498	Defect: No service impact (None)	A software fix to correct the LastUptime calculation reported in the show chassis status command has been applied. The fix corrects a problem where the LastUpTime continued to report the time duration since a module first came online instead of the duration since the module was last booted.
95504	Defect: Possible service impact (Medium)	An issue which was resulting in an SSH restart when attempting a secure login from a client IPv6 address has been fixed. The issue was observed in one reported case. The software fix corrects an address length compatibility issue when handling IPv6 addresses.

Table 11. Release 7.2.5.4 Build 6761 changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
95512	Defect: Possible service impact (Medium)	A software fix has been applied to correct a problem where the first QAM spectrum-tilt calculation on a port channel was being applied to other port channels when performing a QAM module switchover to the redundant module. The fix corrects the port calculation logic to ensure that the spectrum-tilt calculation is not counted on the other port channels with high-availability operations. The problem was causing modems and STBs to drop offline with inability to re-register even when reverting the QAM modules.
95606	Defect: Possible service impact (Medium)	The software change has been applied to the SSH process to allow all modulus sizes (≥ 2048 and ≤ 8192 bits) supported by OpenSSH-7.4p1. The change corrects issues where some SSH clients were unable to log in.
95628	Defect: No service impact (None)	An intermittent issue was observed where the docsIf31CmtsCmUsOfdmaChannelThresholdRxMerValue was sometimes higher than docsIf31CmtsCmUsOfdmaChannelMeanRxMer in SNMP queries. This problem has been fixed.
95629	Enhancement: SNMP (None)	In cases where a modem has multiple IUC profiles assigned to an OFDMA channel, the active IUC will now be at the top of the list in SNMP queries to the docsIf31CmtsCmRegStatusUsProfileIucList MIB. The enhancement has been applied to the DOCS-IF31-MIB.

Table 11. Release 7.2.5.4 Build 6761 changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
95690, 95792	Enhancement: SNMP, Info (Low)	<p>The casaCmtsCmUsOfdmaPrimaryIucChangeCount MIB has been implemented in the CASA-DOCS-EXT-MIB file to support monitoring of the primary IUC change counter per modem.</p> <pre>-- 1.3.6.1.4.1.20858.10.22.2.25.1.1 casaCmtsCmUsOfdmaPrimaryIucChangeCount OBJECT-TYPE SYNTAX Unsigned32 MAX-ACCESS read-only STATUS current DESCRIPTION "This attribute is the change count of US OFDMA primary IUC that used by CM. The counter will show how many times the primary IUC is switched, such as due to noise conditions in the plant." ::= { casaCmtsCmUsOfdmaChannelStatusEntry 1 }</pre> <p>Example:</p> <pre>[root@e36m3 mibs]# snmpbulkwalk -v2c -c public 132.245.1.1 1.3.6.1.4.1.20858.10.22.2.25.1 SNMPv2-SMI::enterprises.20858.10.22.2.25.1.1.2.16000392 = Gauge32: 493 SNMPv2-SMI::enterprises.20858.10.22.2.25.1.1.3.16000392 = Gauge32: 5 SNMPv2-SMI::enterprises.20858.10.22.2.25.1.1.6.16000392 = Gauge32: 569 SNMPv2-SMI::enterprises.20858.10.22.2.25.1.1.7.16000392 = Gauge32: 365 SNMPv2-SMI::enterprises.20858.10.22.2.25.1.1.8.16000392 = Gauge32: 411 SNMPv2-SMI::enterprises.20858.10.22.2.25.1.1.9.16000392 = Gauge32: 199 SNMPv2-SMI::enterprises.20858.10.22.2.25.1.1.10.16000392 = Gauge32: 251</pre>

Table 11. Release 7.2.5.4 Build 6761 changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
95755	Defect: Possible service impact, CLI (Medium)	<p>The multiple-iuc backhop-protect-interval command has been introduced in the OFDMA channel configuration to avoid switching the IUC or sending DBC too frequently. The interval (in seconds) is applied when a low FEC error rate is detected on the channel with a good SNR, or after a DBC is sent to downgrade the IUC set. The default interval is 900 seconds.</p> <p>Example:</p> <pre>CASA(conf-ofdma-channel 13/0.0)#multiple-iuc backhop-protect-interval 900</pre>

Table 11. Release 7.2.5.4 Build 6761 changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
95765	Enhancement: CLI, Operational (Low)	<p>The multiple-iuc additional-snr-threshold-up and multiple-iuc additional-snr-threshold-down commands have been introduced in the OFDMA channel configuration to specify the SNR gap when switching multiple IUCs during DBC.</p> <p>Note: See CM-SP-PHYv3.1-I12-171026 (Table 18) specifications for the defined minimum SRN for modulations for determining an IUC switch.</p> <p>Example:</p> <pre>CMTS(conf-ofdma-channel 0/0.0)# multiple-iuc additional-snr-threshold-down ? <0-100> in 0.1 dB</pre> <p>The default setting for the multiple-iuc additional-snr-threshold-down setting is 0 dB.</p> <p>Example:</p> <pre>CMTS(conf-ofdma-channel 0/0.0)# multiple-iuc additional-snr-threshold-up ? <0-100> in 0.1 dB</pre> <p>The default setting for the multiple-iuc additional-snr-threshold-up setting is 20 dB.</p> <p>Note: Users should configure a higher multiple-iuc additional-snr-threshold-up value setting than the multiple-iuc additional-snr-threshold-down setting.</p> <p>Operational notes:</p> <p>The CMTS now checks the SNR when downgrading IUC. If SNR is smaller than specification-defined value + user defined gap, OR, if the FEC error rate is larger than user defined threshold, <u>an IUC downgrade will occur.</u></p> <p>When the SNR is larger than the specification-defined value + user defined upside gap, <u>an IUC upgrade will occur.</u></p>

Table 11. Release 7.2.5.4 Build 6761 changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
95766	Enhancement: CLI, Operational (Low)	<p>The cable modem <mac_addr> dbc ofdma <num=1:255> iuc <num=5:13> has been implemented in the Casa CLI to enable changing of the specified OFDMA IUC dynamically during DBC.</p> <p>Example: CASA# cable modem 6814.01f0.3f23 dbc ofdma 255 iuc 13</p>
95821	Defect: Possible service impact (Medium)	TCP ports used for internal services were being bound to any-address 0.0.0.0 with exposure to all external interfaces. A software fix has been applied to ensure that internal TCP ports are mapped to local internal network address to close possible security vulnerabilities.
95830	Defect: Possible service impact (Medium)	When video and DOCSIS traffic are active at the same time, some DOCSIS traffic data buffers could be corrupted by video traffic. This buffer corruption can lead to QAM card crash. This buffer corruption is fixed.
95856	Defect: No service impact (None)	A correction to the MIB OID for the casaVideoSimuStreamNotification trap has been applied. The corrected OID is 1.3.6.1.4.1.20858.10.57.7.20.2 in the casa-video-ts-mon-mib file.
95974	Defect: No service impact (None)	A false PCR drift message "FPGA PCR mismatch" was observed in the video log. The message was due to a calculation error which resulted in a negative value and resulting false PCR error. The calculation error has been fixed.
96386	Defect: Possible service impact (Medium)	An intermittent problem was detected where learned OSPFv3 routes were being dropped from the CMTS route tables after performing an SMM switchover. The issue was observed with show ipv6 route command results before and after a switchover. The problem DID NOT occur with every SMM switchover event. This problem has been fixed.
96441, 96574	Defect: Possible service impact: (Medium)	It has been observed that systems running IPFIX software are experiencing disruptions due to referencing the NULL pointer unexpectedly under certain conditions. Checks have been implemented to avoid these disruptions. However, the cause of the NULL pointer being generated is currently being investigated. Possibly corrupted sampled IPv6 packets are being investigated by debugging the first 10 packets after the null pointers are detected. Casa Customer Support is collecting these packet dumps.
96702	Defect: Possible service impact (Medium)	A problem was reported where after enabling the video simulcrypt tier-mode setting and adding channels 32 to 39 to the video QAM group, DVB Simulcrypt became disabled. The fix corrects a logic error which was preventing DVB from being set on the affected ports.

Table 12. Release 7.2.5.4 Build 6631 changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
82284	Defect: Possible service impact (Low)	A problem was reported where the Downstream RF Port interface description (ifDescr) was missing for ports 2 and 3 on both QAM 8x96 and 8x192 module types in SNMP queries. This problem has been fixed.
86700	Defect: Possible service impact (Low)	An issue was reported where a CPE device (a PC on the Internet) was unable to contact certain host URLs over the PC's Web browser. Performing a UPS or an SMM switchover to the redundant module resolved the issue with recovered access to the Internet. This problem has been fixed.
88489	Defect: No service impact (None)	After terminating an active session, the show user current command continued to display the session information in the presented output. Applying the deluser command failed to delete the session with the message "Failed to terminate session with terminal pts/0" returned in the command output. This problem has been fixed.
88826	Defect: Possible service impact (Medium)	During throughput testing of the QAM 8x192 module with two OFDM channels configured on a single port, a drop in channel utilization was observed across the SC-QAM channels over that port. This issue has been fixed.
89164	Defect: Possible service impact (Medium)	Illegal header checksum (HCS) bandwidth request packets from modems are now properly processed so that the detected error packets are dropped. The problem resulted in a race condition at the bandwidth request queue which caused the UPS module to go down.
89475	Defect: No service impact (None)	With STB provisioning for BPI-enabled cable modems, the show multicast client command output was reporting DOCSIS 2.0 CPE client MAC addresses as all zeros. The CPE client MAC addresses are now shown correctly.
89739	Defect: Possible service impact (Medium)	Checks have been implemented in the software to trigger an error message when port ranges in a specified IP egress access list are applied to the IP bundle interface. Port ranges are not supported in egress ACLs. Example: CASA(config)# interface ip-bundle 1 CASA(ip-bundle 1)# ip access-group egress out This product does not support egress rules with ranges Cannot apply access-group CASA-C10G(ip-bundle 1)# end

Table 12. Release 7.2.5.4 Build 6631 changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
90012	Defect: Possible service impact (Medium)	<p>An error-checking issue had been observed where after applying spectrum-tilt to a QAM port, the resulting per port power calculation was being reported in error (too low or too high) at the CLI compared to the actual measured port power, such as:</p> <p>Error: Total port power is too low on port 0.</p> <p>This problem has been fixed.</p>
90020	Enhancement: CLI, Operational (Low)	<p>The import map function has been implemented in the Casa CLI VRF configuration to supporting installation of BGP routes from the global route map to a specified VRF. Both IPv4 and IPv6 address families are supported with this enhancement.</p> <p>Example:</p> <pre>CASA(config)# route-map casal CASA(conf-route-map casal)#end CASA(config)# ip vrf net1 CASA(config-vrf)# import map casal CASA(config-vrf)#</pre>
90021	Enhancement: Operational (Medium)	An enhancement has been implemented to ensure that the VRF routing table at the next hop router is used when selecting a static recursive route to a VRF.
90191	Enhancement: Operational (Medium)	OSPFv3 over VRF. See the section, " New features in Release 7.2.5.4 " for a full description of this feature implementation.
90351	Defect: Possible service impact (Medium)	A fix to ensure recovery of partial-service OFDMA channels has been applied in R7.2.5.4. The impaired OFDMA channels resulted in a slight timing offset shift with modems failing to range over the affected channels. With the impairments removed, modems remained in partial service. The fix revises the timing adjustment to allow modems to range with the CMTS and come online.
90253	Defect: Possible service impact (Medium)	A problem was reported with moving a VRF-provisioned cable modem to a new VRF resulted in observed packet loss from a particular host from a subnet that is advertised via RIP. The problem impacted upstream forwarding. This issue has been fixed.

Table 12. Release 7.2.5.4 Build 6631 changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
90397	Enhancement: CLI, Operational (Low)	<p>The video session pass-through input-port property has been made optional in the command syntax to support creation of pass-through sessions without needing to specify the input-port. The change was also introduced on the Configure > Video > Session configuration dialogs in the Casa Video Web UI.</p> <p>Example:</p> <pre>CASA(config)# video session 1 pass-through ip-address 227.0.0.1 qam-channels shared-channel 0/0 prog-drop 53518,52000,51044 src-ip 17.56.102.2</pre>
90570	Defect: Possible service impact (Medium)	In rare and intermittent cases, switching between the active and standby SMMs can result in Distributed Denial of Service (DDoS) traffic records to be lost at the redundant standby once the module comes up. The problem was observed in situations where there are multiple CPE IP addresses behind the cable modem. This problem has been fixed.
90638	Enhancement: CLI, Operational (Low)	<p>A software change has been implemented to allow configuration of the static route next hop address when the next hop is the sub IP bundle interface in configurations where the IP bundle does not have a primary IP address.</p> <p>Example:</p> <pre>CASA(config)# ip route 10.123.16.0/24 ip-bundle 1.2</pre>
90796	Enhancement: CLI (Low)	<p>The no system timezone command has been added to reset the timezone to the default Coordinated Universal Time (UTC).</p> <p>Example:</p> <pre>CASA(config)# no system timezone Timezone is set to UTC</pre>
90840	Defect: Possible service impact (Low)	To improve OSPF network performance and possible route flaps, discarded LSAs are no longer removed in the first stage SPF calculation. Previously, removing the discarded LSAs resulted in a high number of add and delete messages with an observed reduction in network performance and possible traffic loss.
90963	Defect: Possible service impact (Low)	When changing the SNMP docsPnmCmtsUsOfdmaAQProbeTimeout value on an existing pending report, the change results in the docsPnmCmtsUsOfdmaAQProbeMeasStatus object becoming (6), resourceUnavailable. This problem has been fixed.

Table 12. Release 7.2.5.4 Build 6631 changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
90994	Defect: No service impact (Low)	<p>When configuring power attenuation on a port channel while the channel is in the shutdown state, the new power attenuation setting was not being updated in the show interface qam <slot/port> power CLI output.</p> <p>Performing a shutdown/no shutdown on any of the port channels resolved the issue. This problem has been fixed.</p>
91049	Defect: Possible service impact (Low)	Improvements have been applied to Program Association Table (PAT) processing to prevent possible continuity errors for dynamically changing broadcast streams.
91244	Enhancement, Operational, CLI (Low)	<p>IP access list configurations now have added support for permitting or denying Differentiated Services Code Point (DSCP) values in IPv6 packets.</p> <p>Example:</p> <pre>CASA(config)# ip access-list ACL1 CASA(conf-acl ACL1)# 10 deny6 all 2000:204:1::/64 any dscp 63 any any</pre>
91259	Defect: Possible service impact (Low)	<p>The D.1 PNM file format for the AQProbe report now conforms to the current CM-SP-CCAP-OSSv3.1-I11-171220 version. This changes replaces the prior version, CM-SP-CCAP-CCAP-OSSv3.1-I10-170906.</p> <p>The current report now includes the following data:</p> <ul style="list-style-type: none"> Length in bytes of probe capture data preEq On or Off Cyclic prefix length Rolloff First sample index Frequency domain samples
91268	Defect: Possible service impact (Medium)	In a configuration with four ATDMA channels and one OFDMA channel in non-TaFDM mode, changing the TDMA channel width from 6.4M to 3.2M caused the TDMA channel power to drop by 10db. Resetting the power level on the affected channels resolved the issue. This problem has been fixed.

Table 12. Release 7.2.5.4 Build 6631 changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
91291	Defect: Possible service impact (Medium)	In OFDM configurations when there is an odd number of OFDM 6 MHz bands around the center frequency and with power attenuation configured, the power attenuation of the last active OFDM band was incorrect. Power attenuation is correct for the last active band when there is an even number of OFDM bands. This problem has been fixed.
91299	Defect: Possible service impact (Medium)	A problem had been observed where VRF multicast traffic received over a BGP MVPN tunnel was being dropped. This problem has been fixed.
91436	Enhancement: CLI, Operational (Low)	<p>The pass-through option has been added to the video drop ghost-pid command to enable dropping ghost PIDs specifically for pass-through video sessions. A ghost PID is not identified as a well-known PID and is not included in PMT tables. By default, ghost PID dropping is enabled for multicast sessions, but is disabled for pass-through sessions.</p> <p>Example:</p> <pre>CASA(config)# show running-config verbose include ghost-pid video drop ghost-pid no video drop ghost-pid pass-through CASA(config)# no video drop ghost-pid CASA(config)# video drop ghost-pid pass-through CASA(config)# show running-config include ghost-pid no video drop ghost-pid video drop ghost-pid pass-through</pre>
91516	Defect: Possible service impact (Medium)	Protections have been applied in the software to prevent a possible timing issue when attempting to access an uninitialized local variable in the Casa database. The issue was observed in one reported case.
91525	Defect: Possible service impact (Medium)	A software fix has been applied to correct a missing semaphore which could result in a DVB Simulcrypt failure during certain operations. A single case was reported.
91604	Defect: Possible service impact (Low)	A fix has been applied to the show tech processing logic which could result in reported broadcast video errors while show tech is running for the first time. Running show tech a second time resulted in no reported errors.

Table 12. Release 7.2.5.4 Build 6631 changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
91803	Enhancement: Possible service impact (Medium)	QAM 8x192 module health check time periods and error thresholds have been increased to prevent unnecessary module failovers when detected DDR parity error incident rates are low. A module failover will continue to occur if detected error incident rates exceed the programmed thresholds applied in this enhancement.
92014	Defect: Possible service impact (Medium)	A BGP failure was previously observed when running a stress test script. Only one instance of the failure was observed over multiple tests. The problem has been traced to a mapping error which was causing BGP to attempt access to freed memory. This problem has been fixed.
92084	Defect: Possible service impact (Medium)	Handling of ARP REPLY packets has been revised for proper forwarding to video interfaces. The change addresses reported flapping of MAC addresses due to expired ARP entries between the local ARP table and the non-expired entries at neighbor ARP tables.
92287	Defect: No service impact (Low)	Reporting of spectrum management statistics in SNMP queries to the DOCS-IF3-MIB has been optimized to reduce longer than normal response times.
92302	Defect, Operational, CLI (Low)	<p>When performing an SMM switchover, the SNMP user MD5 option 1 for the hashed authentication password was being disregarded, preventing the chassis from being queried over SNMP. This problem has been fixed.</p> <p>Example:</p> <pre>CASA(config)# snmp user - test1 md5 1 edc5d939c05e0c2e4800dfa6602fbc4f des CASA# ha module 7 protect CASA# show run include test1 snmp user - test1 md5 1 edc5d939c05e0c2e4800dfa6602fbc4f des 1</pre>
92345	Defect: Possible service impact (Low)	The CMTS was returning incorrect value of 1 in bit 1 of TLV 5.44 Energy Management Capabilities (44), DOCSIS Light Sleep Mode. A value of 0 is now returned since this capability is not supported at the CMTS.
92964	Defect: Possible service impact (Medium)	A case was reported where D3.1 modems installed the wrong CA certificate, causing the modem to fail BPI. The software has been revised to search pre-installed CA certificates for correct matching of the issuer name of the CA certificate in AUTH-INFO packets.

Table 12. Release 7.2.5.4 Build 6631 changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
93134	Defect: Possible service impact (Low)	Fields in the topology IPDR for the CMTS IPv4 and IPv6 addresses were observed as incorrect even though the IPDR source was set to loopback 0. The loopback interface is now displayed in the IPv4 and IPv6 fields when configured.
93176	Enhancement: CLI, Info (Low)	<p>The show ipv6 route ospf [vrf <id>] command has been implemented to display configured OSPFv3 routes.</p> <p>Example:</p> <pre>CASA(config)# show ipv6 route ospf</pre> <p>Codes: K - kernel route, C - connected, S - static, R - RIP, O - OSPF, I - ISIS L1 - LEVEL-1 L2 - LEVEL-2 IA - inter area, B - BGP, > - selected route, * - FIB route.</p> <pre>O 6000:1050::/64 [110/10] is directly connected, vlan6, 1d19h29m...</pre>
93282	Defect: Possible service impact (Medium)	PCR errors were observed on broadcast multiplexed sessions due to an error in the scheduling logic when PCR appears in packets close to each other. The fix corrects the calculation of the PCR adjustment for the scheduled multiplexed sessions.
92936, 93941	Defect: Possible service impact (Medium)	An intermittent issue was reported where VPWS traffic was not able to pass due to a label mismatch between the active and standby SMMs. Performing a reboot of the standby SMM resolved the issue. This problem has been fixed.
93454	Defect: Possible service impact (Medium)	Under some error conditions, the software was accessing an invalid memory address. Checking has been applied to avoid such access.

Table 12. Release 7.2.5.4 Build 6631 changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
94017, 94210, 89799	Enhancement, Operational, CLI (Low)	<p>The rf power mode <0 1> command has been introduced to provide the option of allowing or disallowing RF power algorithm changes that affect all QAM 8x192 modules in the chassis. The 0 value is the default and allows all new RF power algorithm changes, while the 1 value disallows power algorithm changes and defers to the existing legacy algorithms.</p> <p>The setting can be confirmed with the show interface qam power command.</p> <p>Example:</p> <pre>CASA(config)# rf power mode 1 CASA(config)# show interface qam 1/3 power Configured Total Power: 510 Calculated Per-Channel Power: 329 Send to FPGA Power: 510 Power adjusted: 510 Spectrum-tilt: 0 RF power mode: 1</pre> <p>Note: This fix corrects RF power issues in ID 89799. A CMTS reboot is required for the rf power mode setting to take effect.</p>
94635	Defect: Possible service impact (Medium)	<p>The timing_adj_continue threshold returned to the modem in the RNG-RSP message from the CMTS has been updated to address conditions where continued timing adjustments due to high noise levels over OFDMA channels were causing modem flaps with possible data loss. The problem was observed where the default timing adjustment continue threshold of 4 tics was too low for the modem to register and come online over the OFDMA channel in the presence of noise.</p> <p>The revised timing adjust continue threshold has been increased to 20 tics to address this condition. The modem timing will still be adjusted but a RNG-RSP continue will not be sent until the adjustment exceeds 20 tics.</p>

Table 13. Release 7.2.5.3 Build 63f2 changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
40509, 87573	Enhancement, Operational, SNMP (Low)	<p>Implementation of the following tables in the DOCS-PNM-MIB (OID 1.3.6.1.4.1.4491.2.1.27) has been added to allow monitoring of DOCSIS 3.1 Proactive Network Maintenance (PNM) activity.</p> <p>docsPnmCmtsUsOfdmaAQProbeTable — See ID 84758 for details.</p> <p>docsPnmCmtsUsImpNoiseEnable — Probe to collect configured impulse noise events. The following objects are part of this table (writeable objects bolded, ranges and [defaults] indicated):</p> <ul style="list-style-type: none"> • docsPnmCmtsUsImpNoiseEnable (1.3.4.1.1) • docsPnmCmtsUsImpNoiseFreeRunDuration (1.3.4.1.2) – 0..65535 [60] • docsPnmCmtsUsImpNoiseStTrigLvl (1.3.4.1.3) – [300] micV • docsPnmCmtsUsImpNoiseEndTrigLvl (1.3.4.1.4) – [150] micV • docsPnmCmtsUsImpNoiseCenterFrq (1.3.4.1.5) – [7000000] Hz • docsPnmCmtsUsImpNoiseMeasBw (1.3.4.1.6) – [2560] KHz • docsPnmCmtsUsImpNoiseNumEvtsCnted (1.3.4.1.7) • docsPnmCmtsUsImpNoiseLastEvtTimeStamp (1.3.4.1.8) • docsPnmCmtsUsImpNoiseLastEvtDuration (1.3.4.1.9) • docsPnmCmtsUsImpNoiseLastEvtAvgPwr (1.3.4.1.10) • docsPnmCmtsUsImpNoiseMeasStatus (1.3.4.1.11) • docsPnmCmtsUsImpNoiseFileName (1.3.4.1.12) <p>docsPnmCmtsUsHistTable — Probe for the upstream histogram to measure nonlinear effects in the channel. The following objects are part of this table (writeable objects bolded, ranges and [defaults] indicated):</p> <ul style="list-style-type: none"> • docsPnmCmtsUsHistEnable (1.3.5.1.1) • docsPnmCmtsUsHistTimeOut (1.3.5.1.2) – 0..65535 [1800] sec • docsPnmCmDsHistMeasStatus (1.3.5.1.3) • docsPnmCmtsUsHistFileName (1.3.5.1.4) <p>docsPnmCmtsUsOfdmaRxPwrTable — See ID 84758 for details.</p> <p>docsPnmCmtsUsOfdmaRxMerTable — See ID 84758 for details.</p> <p>(continued next page)</p>

Table 13. Release 7.2.5.3 Build 63f2 changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
40509, 87573 (cont'd)	Enhancement, Operational, CLI (Low)	<p>docsPnmCmtsUsSpecAnTable — Probe for upstream triggered spectrum analysis measurement. NOTE that these table objects are marked as “deprecated” in the MIB. The following objects are part of this table (writeable objects bolded, ranges and [defaults] indicated):</p> <ul style="list-style-type: none"> • docsPnmCmtsUsSpecAnEnable (1.3.8.1.1)] • docsPnmCmtsUsSpecAnTrigMode (1.3.8.1.2) – other(1), freeRunning(2), miniSlotCount(3), sid(4), idleSid(5),minislotNumber(6), cmMac(7), quietProbeSymbol(8) • docsPnmCmtsUsSpecAnMiniSlotCnt (1.3.8.1.3) – 0..65535 [0] • docsPnmCmtsUsSpecAnSid (1.3.8.1.4) – 0..65535 [0] • docsPnmCmtsUsSpecAnMiniSlotNum (1.3.8.1.5) – 0..65535 [0] • docsPnmCmtsUsSpecAnCmMac (1.3.8.1.6) • docsPnmCmtsUsSpecAnCenterFreq (1.3.8.1.7) [0 Hz] • docsPnmCmtsUsSpecAnSpan (1.3.8.1.8) – 0..65535 [0] • docsPnmCmtsUsSpecAnNumberOfBins (1.3.8.1.9) – [0]..65535 • docsPnmCmtsUsSpecAnMeasStatus (1.3.8.1.10) • docsPnmCmtsUsSpecAnFileName (1.3.8.1.11)

Table 13. Release 7.2.5.3 Build 63f2 changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
75044	Enhancement: Operational, CLI (Low)	<p>The retry [<0-100> unlimited] option has been added to the existing CLI cable partial-service dbc-recovery command to ensure continued attempts at recovering upstream channels which have been placed in partial service.</p> <p>Up to 100 retry attempts may be specified to recovery impaired upstream channels. If a channel does not recover after the specified number of retry attempts, the CMTS will leave the impaired channel in a muted state. Specify 0 for a single recovery attempt with no retries.</p> <p>Specify unlimited for continued DBC recovery operations with no limit to the number of recovery attempts while one or more upstream channels are in the partial service state.</p> <p>Example:</p> <pre>CASA(config)# cable partial-service dbc-recovery <60-3600> waiting time after upstream channel partial service in seconds</pre> <pre>CASA(config)# cable partial-service dbc-recovery 60 retry ? <0-100> set to zero for a single recovery with no retry attempt unlimited attempt to recover channel until success</pre> <pre>CASA (config)# cable partial-service dbc-recovery 60 retry unlimited</pre>

Table 13. Release 7.2.5.3 Build 63f2 changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
77910 86631	Enhancement: Operational, CLI (Medium)	<p>Support for configuring a redundant source with a different destination IP for a video transport stream has been added through the video back-source session command. The feature provides the flexibility of adding another redundant address pair different from that of the original video session.</p> <p>The equivalent feature was added to the Casa Video Web UI with the Session Backup Source table of the Configure > Video > CLI Session screen.</p> <p>Example:</p> <pre>CASA(config)# video session 1 pass-through ip-address 230.1.1.1 qam-channels shared-channel 0/0 input-port 1 src-ip 192.168.3.67 CASA(config)# video backup-source session 1 dst-ip 230.1.1.1 src-ip 192.168.3.131 CASA(config)# video backup-source session 1 dst-ip 230.1.1.2 src-ip 192.168.3.67 CASA(config)# no video backup-source session 1 dst-ip 230.1.1.2 src-ip 192.168.3.67</pre>
80940	Defect: No service impact (None)	Performing a traceroute from a CPE within a VRF was incorrectly exposing the trunk and up-link router IP addresses. These IP addresses should not be appearing in the traceroute results. This problem has been fixed.
82692	Defect: Possible service impact (Low)	When editing an existing STM traffic-policy, the configured enforce max-traffic-rate cannot be removed without first deleting the rule and re-entering it. The problem has been fixed.
82872, 82935	Defect: Possible service impact (Low)	Under certain conditions, the ISIS daemon may go down (with coredump) when opening a route-map and setting a tag, and then applying the new route-map to the ISIS configuration. This problem has been fixed.
83065	Enhancement: Operational (Medium)	Broadcast Multiplexing. See the section, “New features in Release 7.2.5.2” for a full description of this feature implementation.

Table 13. Release 7.2.5.3 Build 63f2 changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
83151	Defect: No service impact (None)	<p>The CLI help text for the rolloff-period and cyclic-prefix settings under the interface ofdma channel configuration command was displaying a truncated list of values. The help text now shows the complete list of values.</p> <p>Example:</p> <pre>CASA(conf-ofdma-channel 12/9.0)# rolloff-period ? 160 1.5625us 224 2.1875us 32 0.3125us 96 0.9375us CASA(conf-ofdma-channel 12/9.0)# cyclic-prefix ? 128 1.25us 160 1.5625us 192 1.875us 224 2.1875us 256 2.5us 288 2.8125us 320 3.125us 384 3.75us 512 5.0us 640 6.25us 96 0.9375us</pre>

Table 13. Release 7.2.5.3 Build 63f2 changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
83192	Enhancement. Operational, CLI (Low)	<p>IPsec tunnel connections to a peer routers are now supported over virtual routing and forwarding (VRF) instances.</p> <p>The show ipsec spd command now displays the local interface if the configuration is part of a VRF instance.</p> <p>Example:</p> <pre>CASA(config)# show ipsec spd Mon Mar 19 17:00:55 UTC 2018 IPsec SPD configuration: remote ip address: 10.11.12.55 remote ip port : 0 remote net : 10.11.12.55/32 local ip address : 10.11.12.117 local ip port : 0 local net : 10.11.12.117/32 local interface : gige 6/0, VRF: voice(Id 9) protocol : any direction : in ipsec proto/mode : ESP/tunnel ...</pre>
84470	Defect: Possible service impact (Low)	<p>The QAM 8x96 module high temperature alert threshold has been corrected to 94° C, as documented. Previously, the threshold was incorrectly programmed to 90° C, which was causing the module to reboot at a lower detected temperature. The QAM 8x96 high temperature alert setting has been reinstated to 94° C.</p>

Table 13. Release 7.2.5.3 Build 63f2 changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
84554	Enhancement: Operational, CLI (Low)	<p>To better address downstream frequency changes, the optional start-frequency and stop-frequency parameter settings have been implemented with the spectrum-tilt command in the interface qam configuration to specify the start and stop frequency range where a configured QAM spectrum power level tilt setting is applied.</p> <p>The enhancement allows up to four separate spectrum-tilt frequency ranges to be configured on the QAM interface, with each frequency range applying a unique spectrum-tilt setting in the range 1 to 50 dB. An error message will be returned with any new configuration setting which detects an existing frequency overlap.</p> <p>A spectrum-tilt value of zero removes the tilt from the previously-configured start and stop range.</p> <p>Example:</p> <pre>CASA(config-if-qam 1/0) # spectrum-tilt 10 start-frequency 306000000 stop-frequency 314000000 CASA(config-if-qam 1/0) # spectrum-tilt 20 start-frequency 322000000 stop-frequency 330000000 CASA(config-if-qam 1/0) # spectrum-tilt 30 start-frequency 333000000 stop-frequency 346000000 CASA(config-if-qam 1/0) # spectrum-tilt 40 start-frequency 354000000 stop-frequency 362000000</pre>
84557	Defect: No service impact (None)	<p>A software change has been applied which increases the flap list insertion timer to 180 seconds to ensure full reporting of data associated with cable modem intermittent or slow service. Previously, the insertion timer was set to 120 seconds, which resulted in missing entries in the flap list.</p>

Table 13. Release 7.2.5.3 Build 63f2 changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
84758	Enhancement, Operational, SNMP (Low)	<p>The following tables in the DOCS-PNM-MIB (OID 1.3.6.1.4.1.4491.2.1.27.) have been added to support OFDMA monitoring:</p> <p>docsPnmCmtsUsOfdmaAQProbeTable — Active probe to measure plant response and measure the underlying noise floor. The following objects are part of this table (writeable objects bolded, ranges and [defaults] indicated):</p> <ul style="list-style-type: none"> • docsPnmCmtsUsOfdmaAQProbeCmMacAddr (1.3.3.1.1) • docsPnmCmtsUsOfdmaAQProbeUseIdleSid (1.3.3.1.2)] • docsPnmCmtsUsOfdmaAQProbePreEqOn (1.3.3.1.3)] • docsPnmCmtsUsOfdmaAQProbeEnable (1.3.3.1.4) • docsPnmCmtsUsOfdmaAQProbeTimeout (1.3.3.1.5) – 0..65535 [1800] • docsPnmCmtsUsOfdmaAQProbeNumSymToCapt (1.3.3.1.6) – 0..65535 [1] symbol [NOTE: Casa limits to one symbol] • docsPnmCmtsUsOfdmaAQProbeMaxCaptSymbols (1.3.3.1.7) • docsPnmCmtsUsOfdmaAQProbeNumSamples (1.3.3.1.8) • docsPnmCmtsUsOfdmaAQProbeTimeStamp (1.3.3.1.9) • docsPnmCmtsUsOfdmaAQProbeMeasStatus (1.3.3.1.10) • docsPnmCmtsUsOfdmaAQProbeFileName (1.3.3.1.11) <p>docsPnmCmtsUsOfdmaRxPwrTable — Probe to determine received power. The following objects are part of this table (writeable objects bolded, ranges and [defaults] indicated):</p> <ul style="list-style-type: none"> • docsPnmCmtsUsOfdmaRxPwrEnable (1.3.6.1.1) • docsPnmCmtsUsOfdmaRxPwrCmMac (1.3.6.1.2) – not-accessible • docsPnmCmtsUsOfdmaRxPwrPreEq (1.3.6.1.3) • docsPnmCmtsUsOfdmaRxPwrNumAvgs (1.3.6.1.4) – 0..255 [1] • docsPnmCmtsUsOfdmaRxPwrOnePtSixPsd (1.3.6.1.5) • docsPnmCmtsUsOfdmaRxPwrMeasStatus (1.3.6.1.6) <p>docsPnmCmtsUsOfdmaRxMerTable — Probe to measure upstream receive modulation error rate (RxMER). The following objects are part of this table (writeable objects bolded, ranges indicated):</p> <ul style="list-style-type: none"> • docsPnmCmtsUsOfdmaRxMerEnable (1.3.7.1.1) • docsPnmCmtsUsOfdmaRxMerCmMac (1.3.7.1.2) • docsPnmCmtsUsOfdmaRxMerPreEq (1.3.7.1.3) • docsPnmCmtsUsOfdmaRxMerNumAvgs (1.3.7.1.4) – 0..255 • docsPnmCmtsUsOfdmaRxMerMeasStatus (1.3.7.1.5) • docsPnmCmtsUsOfdmaRxMerFileName (1.3.7.1.6)

Table 13. Release 7.2.5.3 Build 63f2 changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
84789	Defect: Possible service impact (Medium)	Protections has been added to address a looping condition in the upstream logic which was causing the channel bandwidth queue to be accessed by multiple packet streams simultaneously. The problem caused the UPS module to failover to the redundant module. This problem has been fixed.
85228	Defect, No service impact (Low)	<p>The show spectrum hop-history command was returning an incorrect signal-to-noise (SNR) value after a modulation back-hop. The Reason column was showing a value of "SNR 0." This issue has been fixed in the software to display the correct SNR value.</p> <p>Example:</p> <pre>CASA# show spectrum hop-history upstream 1/2.0 Port Action Time Code From To Reason 1/2.0/ 0 Fri Jan 26 20:44:56 2018 M 30 33 SNR 420 (280) 1/2.0/0 Fri Jan 26 20:42:44 2018 M 33 30 SNR 53 (260) 1/2.0/ 0 Fri Jan 26 19:06:14 2018 M 30 33 SNR 420 (280) 1/2.0/0 Fri Jan 26 16:23:17 2018 M 33 30 SNR 48 (260)</pre>
85825	Defect: Possible service impact (Medium)	A reboot of the standby SMM was observed in one reported instance. The problem resulted during timing of the VPWS primary and secondary virtual circuit configuration at the standby. This issue has been fixed.
85863	Defect: Possible service impact (Low)	<p>IPDR DS-UTIL record counts were more than expected at the IPDR collector in some situations when SESSION STOP has been enabled with the [no] ipdr enable session-stop command, or when the QAM module has been reset with a resulting QAM module switchover. The problem has been fixed.</p> <p>See ID 85179 for information on the new ipdr enable session-stop command.</p>
85866	Defect: No service impact, CLI (None)	<p>Help text for the module 0 qam8x192 ofdm-channels command has been revised to display the correct default setting and range values.</p> <p>Example:</p> <pre>CASA(config)# module 0 qam8x192 ofdm-channels ? <1-2> number of ofdm channels per port (default: 1)</pre>
85928	Defect: No service impact (None)	The docsIf31CmtsDsOfdmChanPowerTxPower MIB was reporting the average power across all frequency bands instead of the actual power on each frequency band in SNMP queries. This problem has been fixed.

Table 13. Release 7.2.5.3 Build 63f2 changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
85948	Defect, No service impact (Medium)	A case was reported where the QAM module switched over to the standby module due to a SW FAIL NO KEEPALIVE error. There was no impact to service with the switchover. After investigation, protections have been applied to prevent a possible downstream queue contention and loss of heartbeat with the SMM.
86170	Defect: No service impact (None)	The first execution of the show envm command was incorrectly reporting power supply status as "BAD". Running the show envm command a second time and over all the future instances correctly reports power supply status as "GOOD" This problem has been fixed.
86411	Defect: No service impact (None)	In cases where a spectrum rule included the cm-mode parameter settings, the SNR threshold being reported with the show spectrum hop-history upstream command presented the SNR threshold associated with next low-ordered modulation profile instead of the current modulation profile. This same SNR value was also reported in casaCsmModulationChangeNotification traps. However, the correct SNR threshold was being applied. This issue has been fixed.
86425	Defect, No service impact (Medium)	<p>A case was reported where a modem was able to register and come online with the CMTS using a DHCP-acquired address instead of using the configured IP address in the modem's configuration file. The modem should have registered and come online using its configured IP address only.</p> <p>A software fix has been applied for correct handling of the modem's configured IP address during the registration process. The modem IP address is now compared to the TFTP Server Provisioned Modem Address for a match. If no match occurs, the REG-RSP message returns an authentication error and the modem will not be allowed to register with the CMTS.</p>
86566	Enhancement. Operational, CLI (Low)	<p>The cable dynamic-service-flow command has been enhanced with the non-ofdma option to force all unsolicited grant service (UGS) flows to exclude OFDMA channels and go to ATDMA channels only.</p> <p>Example:</p> <pre>CASA(config)# cable dynamic-service-flow non-ofdma CASA(config)# no cable dynamic-service-flow non-ofdma</pre>

Table 13. Release 7.2.5.3 Build 63f2 changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
86592 87115	Enhancement. Operational, CLI (Low)	<p>The show ipsec spd command now displays the local interface if the configuration is part of a virtual routing and forwarding (VRF) instance.</p> <p>Example:</p> <pre>CASA(config)# show ipsec spd IPsec SPD configuration: remote ip address: 16.61.102.1 remote ip port : 0 remote net : 16.61.102.1/32 local ip address : 16.61.102.2 local ip port : 0 local net : 16.61.102.2/32 local interface : gige 6/2, VRF: Min_VRF(2) protocol : any direction : in ipsec proto/mode : ESP/tunnel</pre>
87346	Defect: Possible service impact (Low)	In cases where an OFDMA channel is impaired and operating in modem partial service, the CMTS will no longer probe the muted OFDMA channel where ranging has failed. The fix corrects a problem where the modem reported an incorrect ranging status of SUCCESS with the CMTS initiating recovery.
87564	Defect: Possible service impact (Low)	When running traceroute from the CMTS to a VRF destination, the error "traceroute: findsaddr: Can't find interface 'trunk# '" has been observed indicating that an available source interface address belonging to the VRF was not found. A fix has been applied to use the VRF local interface as the source address in situations where a learned source interface is not found in the routing table.
87635	Defect: Possible service impact (Medium)	<p>A behavior change caused the shared-secret configured within the most recently created MAC domain interface (and included in the start-up configuration) to be copied to the non-configured global shared-secret configuration after a system boot-up. A fix has been applied to prevent the MAC domain shared-secret from being copied up to the global shared-secret configuration.</p> <p>Note: The MAC domain shared-secret configuration maintains the higher priority over the global configuration. If configured; the global setting is only effective on MAC domains which DO NOT have a shared-secret configuration.</p>

Table 13. Release 7.2.5.3 Build 63f2 changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
87791	Enhancement. Operational, CLI (Medium)	<p>The cable diplexer command has been added to the DOCSIS MAC interface configuration to allow the CMTS to notify cable modems in the MAC domain of the supported diplexer downstream lower and upper, and upstream upper band edge capabilities per TLV 5.60-62 according to the following bit maps:</p> <ul style="list-style-type: none"> Downstream lower edge — Frequency range starting with 0 (108 MHz) or 1 (258 MHz) Downstream upper edge — Frequency range ending with 0 (1218 MHz), 1 (1794 MHz), or 2 (1002 MHz) Upstream upper edge — Frequency range ending with 0 (42 MHz), 1 (65 MHz), 2 (85 MHz), 3 (117 MHz), or 4 (204 MHz) <p>Command syntax:</p> <p>[no] cable diplexer {downstream-lower-band-edge <0:1> downstream-upper-band-edge <0:2> upstream-upper-band-edge <0:4>}</p> <p>Example:</p> <pre>CASA(config)# interface docsis-mac 1 CASA(conf-if-mac 1)# cable diplexer downstream-lower-band-edge 1 CASA(conf-if-mac 1)# cable diplexer downstream-upper-band-edge 2 CASA(conf-if-mac 1)# cable diplexer upstream-upper-band-edge 4 CASA(conf-if-mac 1)# no cable diplexer downstream-lower-band-edge</pre>

Table 13. Release 7.2.5.3 Build 63f2 changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
87823	Enhancement. Operational, CLI (Medium)	<p>The video sdt-interval command has been added to the Casa CLI to allow setting the video service description table (SDT) transmission interval. SDTs are contained in packets identified by the packet ID (PID) 0x0011; the type of information carried in the packet is identified using a table ID.</p> <p>The SDT provides the information about each service, including transport stream ID, service ID, whether program schedules provided in the transport stream, information about the current and next programs, running status of the service, and whether a service is scrambled.</p> <p>The sdt-interval setting is in the range 25–2000 milliseconds. The default value is 1000 ms, as set by the default option. The setting is displayed in the show video global config command output.</p> <p>Command syntax:</p> <p>video sdt-interval {<25:2000> default}</p> <p>Example:</p> <pre>CASA(config) video sdt-interval 2000</pre> <pre>CASA-C100G# show video global config video drop ghost-pid no video proc-non-pmt-pcr no video edis bandwidth-control video dejitter-interval 200 video pat-interval 51 video min-pat-update-interval 0 video pmt-interval 100 video cat-interval 250 video sdt-interval 2000 video unicast-session-loss-timeout 3 video multicast-session-loss-timeout 3</pre>
87898	Defect: Possible service impact (Medium)	<p>On rare occasions, the QAM8x192 experienced unexpected lock-up due to multiple CPU contention of use of some common resources, resulting in loss of heartbeat. This issue has been fixed in the current build.</p>

Table 13. Release 7.2.5.3 Build 63f2 changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
88071	Defect: Possible service impact (Medium)	A case has been reported where some D3.0 modems were unable to complete full channel bonding across multiple service groups where the CMTS only assigned one single US/DS channel instead of multiple US/DS channels in the modem registration REG-RSP-MP message. Performing an SMM switchover to the redundant module resolved the issue with D3.0 modems registering with multiple US/DS bonded channels. This issue has been fixed.
88234	Enhancement. Operational, CLI, SNMP (Medium)	<p>The IP Detail Record (IPDR) collection time interval configuration has been extended to DOCSIS-CMTS-US-UTIL-STAT-EVENT-TYPE (14) and DOCSIS-CMTS-DS-UTIL-STATS-EVENT-TYPE (15) sessions.</p> <p>Use the show ipdr session command to display the configured Collection Interval setting.</p> <p>Example:</p> <pre>CASA(config)# ipdr session 14 interval 900 CASA(config)# show ipdr session 14 Session: 14 Session Name : DOCSIS-CMTS-US-UTIL-STATS-EVENT-TYPE ... Collection Interval: 900 (seconds) Collection AckSeq : 100 Streaming status : Other ...</pre>

Table 13. Release 7.2.5.3 Build 63f2 changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
88305 88794 89439	Enhancement. Operational, CLI (Medium)	<p>Unique VRF instances are now supported for each video interface on a QAM module, with each video interface supporting one VRF instance.</p> <p>Up to four unique VRF instances are now supported per module.</p> <p>Video QAM domains on the same QAM module can also have a different VRF instance for each of their video interfaces.</p> <p>Note: If a QAM domain has EDIS configured, a corresponding video interface must be configured with an EDIS control-source loopback interface, and all of the loopback interfaces must be in the same VRF for the chassis. The VRF for the control-source loopback interface can be different from the VRF used for the video interfaces.</p> <p>Example:</p> <pre> CASA(config)# vrf definition test1 CASA(config)# vrf definition test2 ... CASA(config)# interface video 1 CASA(conf-if-video 1)# vrf forwarding test1 CASA(conf-if-video 1)# edis control-source loopback 1 ... CASA(config)# interface video 2 CASA(conf-if-video 2)# vrf forwarding test2 CASA(conf-if-video 2)# edis control-source loopback 1 ... CASA(config)# video qam-domain 1 CASA(conf-qam-domain 1)# interface video 1 CASA(conf-qam-domain 1)# edis 1 CASA(conf-qam-domain 1)# qam-group 1 9/0/40 9/0/43 ... CASA(config)# video qam-domain 2 CASA(conf-qam-domain 1)# interface video 2 CASA(conf-qam-domain 1)# edis 1 CASA(conf-qam-domain 1)# qam-group 1 9/1/40 9/1/43 </pre>

Table 13. Release 7.2.5.3 Build 63f2 changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
88792	Enhancement. Operational (Medium)	<p>Transport stream IDs (TSIDs) can now be shared across QAM modules for shared-channels in different slots. The following conditions apply:</p> <ul style="list-style-type: none"> • TSIDs configured for channels in the same slot must be unique. • TSIDs for narrowcast channels must be unique across the chassis. • Shared channels cannot have overlapping TSIDs with narrowcast channels, as in the example below. <p>Example:</p> <pre>CASA(config)# interface qam 3/0 CASA(config-if-qam 3/0)# shared-channel 0 frequency 200000000 CASA(config-if-qam 3/0)# shared-channel 0 transport stream id 1000 Error : tsid 1000 has already been configured in qam channel 1/0/0 CASA(config-if-qam 3/0)# shared-channel 0 transport stream id 100</pre>
88822	Defect: No service impact (None)	A software change has been applied to ensure that multiplexed broadcast sessions are NOT encrypted with DVG Simulcrypt ECMG. Encryption is not supported with the broadcast multiplexing feature.

Table 13. Release 7.2.5.3 Build 63f2 changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
88823 89587	Enhancement. Operational, CLI (Medium)	<p>The video pid-remap session command has been introduced in the Casa CLI to identify the specific target program identifiers (PIDs) for PID remapping for a specific multiplex session ID. These configured PIDs override those selected by default from a range of free PIDs, when the video pid-remapping-mode command is used.</p> <p>The video session ID must preexist as a multicast session. Up to eight PID remaps can be configured per multiplex session. Adding or deleting the pid-remap configuration is allowed whether the session is active or inactive.</p> <p>Syntax:</p> <p>video pid-remap session <1:4294967295> from <1:8190> to <1:8190></p> <p>Specifying PID remapping for a multiplex session is through the video session <n> mux ... pid-remapping command.</p> <p>The show running-config video session command displays the video session configuration in the running configuration.</p> <p>Example:</p> <pre>CASA(config)# video session 343 mux ip-address 232.121.49.22 qam-channels shared-channel 1/33 input-port 8 out-program-number 52041 in-program-number 1 udp-port 5000 pid-remapping src-ip 10.255.5.15</pre> <pre>CASA(config)# video pid-remap session 126 from 1988 to 2018</pre> <pre>CASA(config)# show run video session ! ! Last configuration change at 09:46:27 EDT 2018-03-21 ! NVRAM config last updated at 14:29:44 EDT 2018-03-20</pre>
89036	Defect: No service impact (None)	<p>After performing an SMM switchover, the <u>default</u> SNMP engine ID was not present in the show running-config output. This problem has been fixed.</p>

Table 13. Release 7.2.5.3 Build 63f2 changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
89072	Defect: No service impact (None)	<p>After configuring the no up-down-trap-enabled setting in the OFDMA interface configuration, performing a subsequent system reboot caused the no up-down-trap-enabled setting to be dropped from the running configuration. Executing the show interface ofdma <slot/port.chan.> displayed the incorrect up-down-trap-enabled setting.</p> <p>Reconfiguring no up-down-trap-enabled and saving the running configuration resolved the issue. This issue has been fixed.</p>
89121	Defect: No service impact (None)	When running the show system detail command in the diag mode on a C40G system, IO module information was being reported in the wrong C40G slot location. The issue was with the reported show system detail output and not the actual physical location of the modules as correctly installed in the C40G chassis.
89368 89468	Enhancement, Operational, CLI (Low)	<p>A behavior change has been applied to the cable partial-service dbc-recovery command functionality in R7.2.5.3. The change now supports recovery of channels based on multiple partial service triggers, including recovery of muted channels due to uncorrectable frames, ranging timeouts, poor SNR, and other conditions resulting in channel impairment.</p> <p>The retry behavior has also been revised to support one retry attempt by default, where the retry value is n+1 retries, unless the unlimited option is specified. Setting the retry value to 0 initiates one retry only.</p>
89493	Defect, Possible service impact (Medium)	In configurations having a large number of routers within one area, OSPF LSA update traffic to the Provider Edge (PE) router was causing a temporary loss of Business Services over DOCSIS (BSoD) traffic due to flapping routes. A software change has been applied to optimize the shortest path first (SPF) route calculations when processing a larger number of LSA updates.
89623	Enhancement. Operational, Web UI (Medium)	The Session PID Remap section of the Configure > Video > CLI Session page been added to the Casa Video Web UI to correspond with the video pid-remap session command added to the Casa CLI. The PID remap can be modified only for a preexisting multiplex session. (See ID 88823 for details on selectable video PID remapping.)
89648	Feature: Operational (Medium)	To reduce the number of LDP messages between BGP and the NSM, bundling support has been implemented for inclusion of MPLS FEC-to-Next Hop Label Forwarding Entry (FTN) ADD, DELETE, and SLOW DELETE messages for improved label distribution of IPv4 and IPv6 routes.

Table 13. Release 7.2.5.3 Build 63f2 changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
89666	Defect: Possible service impact (Medium)	A software change has been applied to protect D3.0 modems from being assigned to OFDMA channels. Only D3.1 modems are supported for ranging and registration over OFDMA channels.
89817	Defect: Possible service impact (Medium)	<p>A problem had been observed where the channel power calculation based on the specified spectrum-tilt start and stop frequency range may result in a higher spectrum tilt value with the following messages returned with the new power calculation:</p> <p>Error: Maximum channel power difference is larger than 10 dB. Reduce spectrum-tilt or channel power-attenuation.</p> <p>Editing the spectrum-tilt stop-frequency to reduce the frequency width and the resulting power offset to 10 dB or less resolved the problem. This problem has been fixed.</p>

Table 13. Release 7.2.5.3 Build 63f2 changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
89882	Enhancement. Operational, CLI (Medium)	<p>The requirement for setting the pid-remapping property for video multiplex and pass-through sessions has been removed if a specific range of PID remaps are requested through the new pid-remap session command (see ID 88823).</p> <p>The pid-remapping property is relevant only if general PID remapping is desired where, by default, the CMTS selects a range of free PIDs to remap instead of being user-selectable.</p> <p>In addition, the in-program-number and input-port properties of video session configurations have been made optional.</p> <p>Example:</p> <pre>CASA(config)# video session 2 mux ip-address 230.1.1.2 qam-channels shared-channel 1/0 out-program-number 2 in-program-number 0 src-ip 192.168.3.67 video session 00000000000000000002 was created successfully CASA(config)# video pid-remap session 2 from 481 to 4811 CASA(config)# show running-config video session ! ! Last configuration change at 06:28:53 UTC 2018-03-09 ! NVRAM config last updated at 06:02:58 UTC 2018-03-09 video session 2 mux ip-address 230.1.1.2 qam-channels shared-channel 1/0 input-port 0 out-program-number 2 in-program-number 0 src-ip 192.168.3.67 video pid-remap session 2 from 481 to 4811 CASA(config)# video session 1 pass-through ip-address 230.1.1.1 qam-channels shared-channel 1/0 src-ip 192.168.3.67 video session 00000000000000000001 was created successfully</pre>

Table 13. Release 7.2.5.3 Build 63f2 changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
90153, 89007	Enhancement: Operational, CLI (Low)	<p>The time zone database has been updated to the latest IANA time zone table (2016g) at https://www.iana.org/time-zones. Some entries have been renamed or even removed from the previous list.</p> <p>Attempts to set time zones to PRC or UTC that previously failed can now be configured correctly. Note that other time zone changes may have occurred. Use the show timezone list command to display the current list of world time zone.</p> <p>Example:</p> <pre>CASA(config)# show timezone list Africa/Abidjan Africa/Accra Africa/Addis_Ababa Africa/Algiers Africa/Asmara Africa/Asmera Africa/Bamako Africa/Bangui Africa/Banjul ... CASA(config)# system timezone UTC CASA(config)# show timezone Timezone set to "UTC", offset from UTC is +0000</pre>
90248	Defect: Possible service impact	<p>With multi-Annex mode enabled on the QAM 8x192 module, the RF output power level has been observed at approximately 4dB higher than the configuration value after a QAM 8x192 redundancy switch over. The problem was due to incorrect gain values in Annex C.</p> <p>A change has been applied to the gain calibration table to ensure the redundancy gain level as a function of frequency and to be within DOCSIS DFR1 specifications.</p>
90258	Defect: Possible service impact: (Medium)	<p>A consistency issue had been observed where the show ofdm channel <slot/port> detail and show interface qam <slot/port> power commands were reporting missing or conflicting OFDM power band calculations. Walks to the associated SNMP docsIf31CmtsDsOfdmChanPowerTxPower MIB also reflected different power results. A software fix has been applied which corrects the OFDM power band calculation issue.</p>
90285	Defect: Possible service impact (Medium)	<p>In configurations where spectrum-tilt had been applied across the full QAM channel frequency range (without the optional start-frequency and stop-frequency range settings specified), incorrect and possible negative power levels were observed on both SC-QAM and OFDM channels on the QAM port. Incorrect power levels resulted in affected modems failing to range and come online with the CMTS. This problem has been fixed.</p>

Table 13. Release 7.2.5.3 Build 63f2 changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
90372 90637	Enhancement. Operational, CLI, Web UI (Medium)	<p>The si-change property has been added to the video session mux and video session pass-through commands to enable parsing, combining, and multiplexing Service Information (SI) tables such as Service Description Table (SDT) and Event Information Table (EIT) instances.</p> <p>Use the si-change option instead of PID remapping for instances where multiplexing involves multiple input streams containing SDTs or EITs and QAM is expected to merge the tables seamlessly before transmitting them.</p> <p>A subsequent change enabled the si-change property to be used together with the pid-remapping property for video session mux, but if si-change is used alone, SI tables are processed without PID remapping.</p> <p>The equivalent property was added to the Casa Video Web UI for the Add/Modify VoD CLI Session and Add/Modify Multicast CLI Session configuration dialogs off of the Configure > Video > CLI Session screen. The SI Change option appears when Session Mode is set to mux or pass-through.</p> <p>Example:</p> <pre>CASA(config)# video session 1 pass-through ip-address 230.1.1.1 qam-channels shared-channel 0/0 si-change src-ip 192.168.3.67</pre>
90616	Defect: No service impact (None)	The severity level for the SNMP trap associated with a QAM module removal from the chassis and with a QAM module switchover has been corrected from 0 (Normal) to 2 (Major). Removal and switchover of the UPS module is unaffected by the change, maintaining the correct severity level of 2 (Major).
90631	Defect: Possible service impact (Low)	In TaFDM mode with the map lead time among the overlapped channels synchronized to the largest value, adjusting the map lead time down from the CLI causes the synchronized value to remain set to the old value until the OFDMA channel is toggled with shutdown/no shutdown . The problem has been fixed.
90711	Defect: Possible service impact (Low)	The video input-null-drop command setting used for dropping null video packets at input was not persistent in the startup-config file after performing a system reboot . This problem has been fixed.

Table 14. Release 7.2.5.2 Build 63a1 changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
88870	Defect: Possible service impact (Medium)	In a specific configuration on the QAM 8x192 module where the last eight SC-QAM channels are shut down and replaced with an equivalent 48 MHz OFDM block, an intermittent QAM power drop of up to 3 dB was observed. Rebooting the QAM 8x192 module and performing a module switchover had no effect. This problem has been fixed.
88956, 80074	Defect: Possible service impact (Medium)	<p>A case was reported where excessive packet loss due to momentarily exceeded packet thresholds on a service flow could result in service interruptions or degraded performance at other modems on the same QAM module. The problem cleared itself over time without having to manually reset the affected modem(s). A QAM module switchover to the redundant module cleared the issue with ALL modems on the module re-registering and coming online.</p> <p>The problem was caused by a temporary CPU “busy” delay on the QAM module when a modem goes into an over-subscribed status due to the excessive packet traffic. This temporary CPU delay resulted in the service interruptions or the degraded performance at modems over the entire QAM module.</p> <p>The problem has been fixed in this software build.</p>
89011	Defect: Possible service impact (Medium)	The hard-coded default setting for the shared-ofdm channel rolloff-period on the QAM 8x96 module has been revised to the default OFDM channel setting of 64. The setting was previously incorrectly hard coded to 0 (not operational). The change addresses an issue where Intel-based modems would register in partial service when the modems boot up, followed by a possible recovery from the partial service state over a period of time.
89527	Defect: Possible service impact: (Low)	A problem has been reported where an ACL rule with TCP flags could not be applied to the RF and NSI interfaces. A software fix has been applied to add a missing qualifier to correct the problem.

Table 14. Release 7.2.5.2 Build 63a1 changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
89848	Enhancement: Informational (None)	<p>Buffer low and high packet drop warning messages have been implemented in the software for reporting and logging under detected conditions.</p> <p>Example:</p> <pre>CASA diag)# show log [Thu Mar 8 11:39:06 2018]-WA-QAM-0: lc0: Unexpected high packet drop rate on module 0, (Enq 574911/ Drop 170214) [Thu Mar 8 11:25:02 2018]-AL-SYS-1: smm6: Module 0 changed to active status CASA(diag)# show log [Thu Mar 8 17:40:52 2018]-WA-QAM-0: lc0: buffer low on module 0 [Thu Mar 8 17:32:32 2018]-AL-SYS-1: smm6: Module 0 changed to active status</pre>

Table 15. Release 7.2.5.2 Build 62aa changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
88799	Defect: Possible service impact (Medium)	<p>When performing a system reboot, OFDMA interface configurations in the startup-config file could possibly get applied to the incorrect OFDMA upstream interfaces. The problem was observed in configurations with multiple UPS modules using OFDMA, and with each UPS module slot using different OFDMA parameter settings. For example, the OFDMA interface 11/0.0 configuration could be pushed to OFDMA interface 10/15.0 during the boot-up. The problem has been fixed.</p>

Table 16. Release 7.2.5.2 Build 6279 changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
85478 87155, 87377	Defect: Possible service impact (Medium)	A case was reported where online modems were non-responsive to ping requests. To correct the problem, a software change to the upstream scheduler has been applied so that the maximum burst size is used when processing and segmenting upstream grants. The change prevents service flows from possibly getting stuck when the scheduler defers grants indefinitely due to the pending size being larger than the burst size.
85705	Enhancement: Operational, CLI (Low)	<p>The [no] cable sec sf-vrf-enforce parameter has been added to the interface ip-bundle configuration to address VRF mapping issues (based on the CPE IP address) where the same IP prefix is configured under a different IP bundle, resulting in the CMTS reporting the ARP entry as belonging to a different VRF.</p> <p>The cable sec sf-vrf-enforce setting CAN ONLY be enabled when the cable sec cm-vrf-enforce setting is disabled. Cable modems will require a reset when enabling and disabling the VRF enforce settings.</p> <p>Apply the no form of the command to disable the cable sec sf-vrf-enforce setting. The default is disabled.</p> <p>Example:</p> <pre>CASA(ip-bundle 1.1) # cable sec sf-vrf-enforce CASA(ip-bundle 1.1) # no cable sec sf-vrf-enforce</pre>
85951	Defect: Possible service impact (Low)	A software change has been applied to improve priority handling of downstream voice service flows during high traffic periods and to prevent the possibility of dropped packets. TOS and DSCP bit checks on packets have been added to ensure that voice traffic is prioritized in the downstream queues.
86708	Defect: Possible service impact (Medium)	A case was reported where a QAM 8x192 module reboot failed to initiate a switchover to the redundant module. The problem was due to a logic error when detecting the module state at the time of the reboot. Affected modems were able to register and come online once the rebooted module returned to the Active state. This problem has been fixed.
86730	Defect: Possible service impact (Low)	A CPE device behind an L2VPN-compliant modem having two VLAN tags was not able to get an IP address via DHCP OFFER message sent to broadcast. CPEs behind L2VPN compliant modems having only one VLAN tag, or if the DHCP OFFER message was not sent to broadcast, were not affected. The problem has been fixed.

Table 16. Release 7.2.5.2 Build 6279 changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
86793	Defect: Possible service impact (Medium)	Handling of session-based Simulcrypt encryption has been revised to correct a problem where the same CA descriptor was being sent to QAM resulting in some PID resources being leaked with lost video output. This problem has been fixed.
86919	Defect: Possible service impact (Medium)	A network communication interruption between the active and standby SMMs resulting in an SMM switchover and a failure of some modems to come back online has been fixed. The fix optimizes the processing of critical configuration tables (such as channel entries) when the active and standby SMMs synchronize.
87364	Defect: Possible service impact (Medium)	In an OFDMA configuration having three Interval Usage Codes (IUC) in the profile, DBC to switch to a lower IUC due to low SNR resulted in an invalid DBC response message and an SMM module switchover if the modem rejected the DBC. Reconfiguring the IUC profile with two IUCs instead of three provided a workaround to problem. This issue has been fixed.
87542	Defect: No service impact (Low)	When enabling Privacy Mode Encryption (PME) using the CLI video pme on command, the system is returning an obsolete internal warning message, “PME Encryption Algorithm is being applied. FPG image loaded is unknown. Save the configuration and reboot the system.” A software change has been applied to remove the obsolete message being triggered when enabling PME.
87981	Defect: Possible service impact (Low)	A fix has been applied to correct a packet corruption issue where some SDV streams have two PCRs in a video stream. The problem results in an output PMT corruption.
87995	Defect: Possible service impact (Medium)	In configurations with upstream channels operating in the TaFDM mode, or in RFoG over OFDMA channel configurations, packet loss and high FEC counts have been observed along with a rapid increase in the NoPreamble count with resulting traffic loss and possible D3.1 modem upstream partial service. This problem has been fixed by correcting the IE size (being too small) and the IUC1 contention due to sharing the same frame as the data burst.

Table 17. Release 7.2.5.2 Build 6151 changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
54987	Defect: Possible service impact (Medium)	Checks have been implemented in the software to ensure that SC-QAM and OFDM channels do not overlap when configured in the CLI and then enabled with no shutdown . Example: CASA(config-if-qam 2/0)# no shutdown Error: OFDM channel 2/0/0 has frequency overlap with channel 2/0/0.
83059	Defect: Possible service impact (Medium)	Intermittent audio and/or video issues were previously observed on some SDV channels at certain STBs. The problem was caused by incorrect deletion of the ECM PID when a video stream goes from pre-PME to clear. This problem has been fixed.
83136, 82986	Defect: Possible service impact (Medium_	Under certain conditions, upstream ARP/host entries from CPEs were being timed out at the CMTS, causing the ARP entries to be dropped. A fix has been applied to SMM ARP process to ensure that ARP entries are not dropped if upstream traffic is present on the UPS line card. If an ARP response is not received at the CMTS while upstream CPE traffic is present, the CMTS will reset the ARP timer for the affected CPE.
83462	Defect: Possible service impact (Low)	A software change has been applied to increase the QAM 8x192 module startup timeout from 10 to 15 minutes. The change allows the QAM 8x192 module to come up without the possibility of timing out during loading of the configuration.
83941	Defect: No service impact (Low)	A software change has been applied for improved caching and reporting of free CPU/memory statistics at the SMM in SNMP queries. Prior to the change, reported CPU and memory statistics for SMM7 were observed lower than the actual percentage of available memory resources.
83957, 83581	Defect: Possible service impact (Medium(In a configuration with OFDMA channels adjacent to TDMA channels, and with separate STM rules for the D3.0 and D3.1 modems, reported upstream and downstream channel utilization was not accurate for modems not passing traffic, as well as for modems with sufficient traffic for triggering an STM rule. The problem has been fixed.
84035	Defect: Possible service impact (Medium)	With 64 QAM modulation in Annex A or B configurations, shared OFDM channel power had been observed at 3 dB lower than SC-QAM channels after a QAM 8x96 module switchover. The problem has been fixed.

Table 17. Release 7.2.5.2 Build 6151 changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
84169	Enhancement: Performance (Low)	Optimization of the UPS forwarding processes has been applied for improved upstream performance. Average improvements around 20% compared to R7.2.5.1 will be observed with 86-byte, 128-byte, and 256-byte packet transmissions.
84232	Defect: Possible service impact (Medium)	An issue had been observed where certain modems were not able to lock on to OFDM channels and then intermittently go into partial service before recovering in QAM 8x96 OFDM configurations. The problem has been fixed.
84314	Defect: Possible service impact (Medium)	STM condition checks have been applied to ensure that when a penalty period expires, the present STM condition for the modem is evaluated to determine if the modem/service flow either remains in penalty or is withdrawn from penalty.
84465	Defect: Possible service impact (Low)	A software error which was causing the software to apply the default auto negotiate setting instead of the configured setting on SMM6 GigE ports has been fixed. SMM7 was not affected by the error and maintained the correct setting.
84575	Defect: Possible service impact (Low)	Handling of modem ping requests has been revised to support larger packet sizes and to prevent possible packet loss in networks supporting service flows with small burst sizes. The fix prevents possible packet processing issues which could prevent the modem from downloading the configuration file.
84599	Defect: Possible service impact (Medium)	A PacketCable confirmation error during the system reboot process has been fixed. A problem was observed where having a no packetcable configuration setting in the startup-config file could cause the reboot process to get stuck.
84618	Defect: Possible service impact (Medium)	A software fix has been applied to correct a problem which could affect systems with a previously reverted patch to get stuck in an SMM looping condition when the system boots up and then switches over to the standby SMM. The problem was due to the incorrect creation of internal patch installation files during the boot-up of a standard non-patched release.
84623	Defect: Possible service impact (Medium)	An error in the routing software which was causing BGP to announce IPv6 prefixes using 2 next hops (global and link local addresses) instead of 1 next hop (global address) has been fixed. Only EBGp sends 2 next hop addresses.
84780	Defect: Possible service impact (Medium)	A potential race condition that can cause the ECM message to be sent to the QAM module before the CA descriptor has been fixed. The problem was causing interruption of VOD streams under certain conditions. Performing a QAM module switchover resolved the issue with VOD streams returning normally.

Table 17. Release 7.2.5.2 Build 6151 changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
84838	Defect: Possible service impact (Medium)	<p>A problem was reported where a new CM/MTA subnet could not be added to an IP bundle having an overlapping static route configured. Removing the static route, adding the new subnet, and then re-adding the static route provided a workaround to the problem.</p> <p>A software change has been applied to improve static route address checking and proper calculation of the subnet address using the address prefix length of the interface IP address and the configured static route.</p>
84909	Defect: No service impact (Low)	Handling of time zone changes has been revised to ensure correct video session time stamps in the video logs. Previously, a time zone change notifications were not being corrected forwarded to the edge manager process, creating a discrepancy between the logged video time stamp and the actual system time.
85049, 83374	Enhancement: CLI (None)	<p>Monitoring of OFDM profile lockups is no longer necessary. The CLI originally introduced to monitor profile lockups has been removed in Release 7.2.5.2. This functionality was supported for the QAM 8x96 only.</p> <p>The affected CLI functionality was introduced in R7.2.5.1 with Tracking ID 83374.</p>
85091	Defect: Possible service impact (Low)	For pre-encrypted PME video, an issue was found where the output PMT does not follow the change of the input PMT, which was causing the STB to generate a "one moment please" (OMP) error message. The problem has been fixed.
85148	Defect: Possible service impact (Medium)	Checks has been implemented to address an OSPFv3 route table mismatch between the active and standby SMMs after performing an SMM switchover. The mismatch resulted from an SPF calculation which took place prior to locating the link-local address of the next hop neighbor router, resulting in an incorrect route table entry. The fix ensures the neighbor router is found prior to the SPF calculation.
85179	Enhancement: CLI, Operational (Low)	<p>The [no] ipdr enable session-stop command has been introduced in the CLI to periodically send a SESSION STOP message to the collector at 15 minute intervals in order to close the file before the start of the next collection interval.</p> <p>The command addresses a problem where the IPDR DS-UTIL record counts may be more than expected at the IPDR collector due to clock drift errors.</p> <p>Example:</p> <pre>CASA(config)# ipdr enable session-stop CASA(config)# no ipdr enable session-stop</pre>

Table 17. Release 7.2.5.2 Build 6151 changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
85206	Defect: Possible service impact (Low)	A software fix has been applied to correct a logic error which caused the SNMP process to fail when the UPS module is in a "Not Ready" state after a UPS module switchover.
85389	Defect: Possible service impact (Medium)	Support for values greater than 1 has been implemented for the TLV 5.20 Upstream Frequency Range Support capabilities specification for D3.0/D3.1 modem registration. Previously, values greater than 1 were not supported at the CMTS.
85395	Defect: Possible service impact (Medium)	A change has been implemented so that the CMTS will now send the REG-RSP message to the modem with TLV 5.48 disabled so that modem will not send the extended packet sizes. D3.1 modems which send large packet sizes can result in a UPS module crash when packets are decrypted. The Extended Packet Length Support Capability TLV 5.48 encoding for upstream and downstream sessions will be supported in a future release.
85535	Defect: Possible service impact (Medium)	A case has been reported where an IPv6 OSPF route was not distributed and received over xGigE interface 6/0. The route was dropped in a situation where during an SMM switchover to the standby SMM, OSPFV3 at the standby SMM was not in the "ready" state. A software revision has been applied to prevent dropped routes during a switchover.
85669	Defect: Possible service impact (Low)	UDP protocol support has been implemented in the video VRF port map messaging functionality in edge manager for interoperability with EDIS SRM implementations which use UDP to set up video sessions with the CCAP.
85793	Defect: Possible service impact (Low)	A software fix has been applied to correct diverging timestamps between the input and output PCR. The fix prevents possible audio loss over SDV channels.
85999	Defect: Possible service impact (Medium)	In cases where a spectrum rule included the cm-mode parameter settings, the software was using the configured thresholds from the incorrect modulation profiles, where the threshold for the current modulation profile was not being applied, but rather the next lower-ordered modulation profile in the list. The problem has been fixed.
86054	Defect: Possible service impact (Medium)	When a special VOD stream without a PCR was transmitted to the C100G, the Program Association Table (PAT) was not being updated to reflect the special stream's inclusion in a QAM channel. This issue has been fixed.

Table 17. Release 7.2.5.2 Build 6151 changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
86093	Defect: Possible service impact (Medium)	A problem was reported where an incorrect DOCSIS version value for a registered cable modem was being stored at the CMTS resulting in an SMM switchover. Resetting the cable modem resolved the issue and the modem was able to come online with the correct DOCSIS version. Using the cable modem remote-query on the cable modems was found to be the cause of the problem. The problem has been fixed.

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes

Tracking ID	Service impact (Risk level)	Description
40835	Defect: Possible service impact (Low)	On the SMM 8x10G module, performing a CLI shutdown on a GigE interface had no effect on the measured optical output power level. A fix has been applied to correct an issue where the software could fail to set the disable bit at the GigE interface SFP after performing a CLI interface shutdown . xGigE interfaces on the SMM 8x10G module were not affected by the problem.
45058	Enhancement, Operational, CLI (Low)	Enhanced syslog messages have been implemented for SimulCrypt Entitlement Control Message Generator (ECMG) failover and disconnect conditions and their resolutions. Example: [Wed Jun 21 06:23:04 2017]-ER-SIM-1: smm6: Connection to ECMG server 201.109.8.254, for system ID 18981 is lost. Could not establish any other connection to a ECMG server. Continuing to scramble using the last known CW [Wed Jun 21 06:25:07 2017]-IN-SIM-1: smm6: Connection to ECMG server 201.109.8.254 for system-id 18981 is resumed. Continuing to scramble using a valid CW

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
50604	Enhancement. Operational, CLI (Low)	<p>The per-module option has been added to the video simulcrypt tier-mode command to enable a single ECMG connection per QAM card. Tier mode based encryption in SimulCrypt allows all incoming video streams to be encrypted using the same set of key material.</p> <p>Example:</p> <pre>CASA(config)# video simulcrypt tier-mode per-module WARNING: Simulcrypt Encryption Algorithm is being applied. New FPGA image needs to be loaded. Save the configuration and reboot the system will take effect.</pre>
56345	Enhancement. Operational, CLI (Low)	<p>A log marking feature has been added to facilitate log searches. The default mark is a string of 16 asterisks. Any string of up to 64 characters can be specified through the log mark or video-log mark commands.</p> <p>Example:</p> <pre>CASA(diag)# log mark debug CASA(diag)# video-log mark video-debug CASA(diag)# show log mark log mark: debug video log mark: video-debug</pre>
58011	Defect: No service impact (Medium)	<p>Expired BPI certificates were causing cable modems to be denied with the docsBpi2CmtsCheckCertValidityPeriods object in the DOCS-IETF-BPI2-MIB incorrectly returning false(2) in SNMP queries. The object has been corrected to true(1) when creating the DOCSIS MAC.</p>
59117	Enhancement. CLI, SNMP, Operational (Low)	<p>The module active-smm cpu-utilization-measuring-interval command has been introduced to set the active Switch and Management Module (SMM) CPU measuring interval. Specify 1, 5, or 15 minute intervals. The default setting is 1 minute.</p> <p>The equivalent objects in the CASA-ENTITY-MIB are casaModuleSystemInfo and casaActiveSmmCpuUtilization.</p> <p>Example:</p> <pre>CASA(config)# module active-smm cpu-utilization-measuring-interval 5</pre>

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
60979	Enhancement. Operational, Web UI (Low)	The Configure > Video > Session screen in the Casa Web UI has been modified with two separate tables, one for Multicast Session and one for VoD Session with corresponding creation and editing dialog boxes.
61159	Enhancement, Operational, CLI (Low)	<p>Spectrum rules now include a reference count so that a rule can no longer be deleted without a warning if the rule is applied elsewhere on another upstream interface. If the rule is removed from all channels to which the rule is referenced, the rule can be deleted and then reconfigured as an FFT rule.</p> <p>Example:</p> <pre>CASA(config)# no spectrum rule 11 error: cannot delete rule while in use. CASA(config)# interface upstream 12/9.0 CASA(config-if-ups 12/9.0)# no logical-channel 0 spectrum-rule ... CASA(config-if-ups 12/9.3)# end CASA(config)# no spectrum rule 11 CASA(config)#</pre>

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
61410	Enhancement. Operational, SNMP (Low)	<p>The casaAppClassUtilTable objects have been added to the CASA-DOCS-EXT-MIB to enable polling of PacketCable Multimedia (PCMM) utilization.</p> <p>casaAppClassUtilEntry OBJECT-TYPE SYNTAX CasaAppClassUtilEntry MAX-ACCESS not-accessible STATUS current DESCRIPTION "The application class utilization Entry." INDEX { ifIndex, casaAppClassUtilAppClassId, casaAppClassUtilChildId } ::= { casaAppClassUtilTable 1 }</p> <p>CasaAppClassUtilEntry ::= SEQUENCE { casaAppClassUtilAppClassId Unsigned32, casaAppClassUtilChildId Unsigned32, casaAppClassUtilTotalBw Unsigned32, casaAppClassUtilUsedBw Unsigned32, casaAppClassUtilUsagePercentage Unsigned32, casaAppClassUtilIfDirection IfDirection</p>
61574,, 67214	Enhancement. Operational, CLI (Low)	<p>The show spectrum upstream <slot>/<port>/[.<chan>] chan-width <freq> command now includes the 200000 Hz frequency specification for the channel width in addition to the 400000, 800000, 1600000, 3200000, and 6400000 Mhz settings.</p> <p>Example: CASA(config)# interface upstream 13/1.0 CASA(config-if-ups 13/1.0)# channel-width 200000</p>
61704	Enhancement. Operational, CLI (Medium)	<p>Syslog event messages have been implemented for logging when stopping and restarting Simulcrypt using the video simulcrypt {restart stop} command.</p>

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
63471	Enhancement. Operational, CLI (Low)	<p>The [no] load-balance permit dbc-chg-prim-ds {dynamic static} [dcc-retry <0:10>] command now permits Dynamic Bonding Change (DBC) messages for dynamic or static load balancing on the downstream. The optional dcc-retry setting can also be applied, and can also be set independently of DBC with the load-balance dcc-retry command. The no form of the command disables this feature.</p> <p>Example:</p> <pre>CASA(config)# load-balance permit dbc-chg-prim-ds static CASA(load-bal-policy 1)# exit CASA(config)# no load-balance permit dbc-chg-prim-ds static CASA(config)# load-balance permit dbc-chg-prim-ds dcc-retry 0 CASA(load-bal-policy 1)# exit CASA(config)# no load-balance permit dbc-chg-prim-ds dcc-retry</pre>
63652	Enhancement: Operational (Low)	<p>A software change has been applied to adjust the ordering of SC-QAM (ATDMA) and OFDMA channels under conditions when a D3.1 cable modem transmit power drops. With this change, SC-QAM will be dropped first, with OFDMA channels maintaining priority. D3.0 modems, as well as D3.1 modems without OFDMA bonded modems <u>are not</u> affected by this change.</p>
64097	Enhancement, Operational, CLI (Low)	<p>The [no] cm-mode tolerance-count <4:100> option and its parameters have been added to the spectrum rule configuration.</p> <p>The tolerance count is the maximum number of tolerated cable modems on the upstream channel that are detected with lower-than-threshold signal-to-noise ratio (SNR) during polling. The default is 15 CMs. A higher number can trigger the specified spectrum rule action.</p> <p>The tolerance count can be extended by the low and minimum modem counts. The low-modem-count scales the tolerance-count by 1/3 below the value and defaults to 45; the min-modem-count defaults to 10.</p> <p>Example:</p> <pre>CASA(conf-rule 1)# cm-mode tolerance-count low-modem-count 45 min-modem-count 10</pre>

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
64902	Enhancement. Operational, CLI (Low)	<p>The Packetcable configuration has been enhanced with the VRF specification to support multiple VRF instances.</p> <p>Example:</p> <pre>CASA(config)# packetcable vrf VRF1 CASA(config)# packetcable myaddress 1.1.1.1 vfr VRF1</pre>
65190	Defect: Possible service impact (Medium)	<p>A software fix has been applied to address a problem where high priority LACP packets were contending with lower priority control traffic. To correct the problem, all control packets sent from the standby SMM to the active SMM will now retain their initial priority derived on the standby SMM.</p> <p>Before this change, all non-queue 0 (Best effort) control packets would be mapped to queue 7 when sent to the active SMM. This caused all priority levels to have contention when sent to the CPU on the active SMM. For example, LACP packets (queue 6) will now be mapped to queue 6 on the active SMM regardless of whether the packets are initially received on the standby SMM or active SMM.</p>
65502 71023	Enhancement. Operational, CLI (Low)	<p>The show cable modem bonding and show cable modem partial-service commands now include the following additional reason codes:</p> <ul style="list-style-type: none">• 13 Ds ofdm profile fail• 14 DPD mismatch <p>Example:</p> <pre>CASA(config)# show cable modem partial-service Reason code: x/y/z(reason_code) 1 MDD timeout 2 FEC lock failure 3 Bad tcc 4 Bad rcc 5 Reg ack 6 DBC rsp 7 TR power bad 8 NCP profile failure 9 Impaired channel 10 Channel unreachable 11 Range timeout 12 Ranging failure 13 Ds ofdm profile fail 14 DPD mismatch 0 Unknown</pre>

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
65695	Enhancement. Operational, CLI (Low)	<p>The cable modem arp-nd static command has been introduced to set cable modems to static Address Resolution Protocol (ARP) or IPv6 Neighbor Discovery (ND) status.</p> <p>When the CM completes DHCPv4 or DHCP, the DHCP relay agent adds an entry to the ARP table or the IPv6 ND cache. For Layer 2 static entries, ARP and ND refreshes are skipped.</p> <p>The clear cable modem command deletes the static L2 entry if the CM is purged from the CMTS table due to a DOCSIS event, such as a SID aging timeout. The show arp command shows the ARP entries which have been set to static.</p> <p>Example: CASA(config)# cable modem arp-nd static CASA(config)# no cable modem arp-nd static</p>
65751	Defect: Possible service impact (Medium)	An issue which resulted in a SimulCrypt synchronization error following an SMM switchover has been fixed.
66478	Defect: Possible service impact (Low)	If the 8 KHz clock on the active SMM fails, an SMM switchover or SMM reboot now takes place to clear the condition. The SMM will switch over to the standby if there are two SMMs present; the SMM will reboot if there is only one SMM present.
66583	Defect: Possible service impact (Medium)	A fix in the software logic has been applied to correct a problem where configuring channels 32 to 39 as video channels resulted in a QAM module switchover. The software fix now supports this configuration.
66809	Defect: Possible service impact (Medium)	A logic error which could cause a process thread to wait for the memory load request queue to become empty has been fixed. Under certain conditions, the wait time would exceed the time to respond to the keepalive polling, which triggered a QAM8x192 module restart with the message "failed heartbeat."
66984	Defect: Possible service impact (Low)	A software change has been applied to ensure correct calculation of the CmLastRegTime in IPDR SAMIS-1 records for dynamic service flows (Field 13). Previously, the service flow start time was incorrectly being used as the recorded time. The last registration time is now extracted from cable modem static data with the same Field 13 registration time recorded for both static and dynamic flows.

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
67017	Defect: Possible service impact (Medium)	Software fixes and protections have been implemented to prevent the upstream scheduler from getting stuck in a dead looping condition on the UPS 16x4 and UPS 16x8 modules when SID cluster updates are applied to the scheduler queue.
67028	Defect: No service impact (None)	A case was reported where the IPDR ServiceTimeActive (Field 28) record was returning a zero value for active downstream voice service flows in SNMP queries. The active time is now properly saved and reported consistently in IPDR and SNMP.
67069	Defect: No service impact (None)	<p>The error log string “Unsupported Crypto Suite” was being falsely reported in SNMP queries to the following MIBs:</p> <p>docsBpi2CmtsKeyRejectErrorString docsBpi2CmtsTEKInvalidErrorString docsBpi2CmtsAuthRejectErrorString docsBpi2CmtsAuthInvalidErrorString</p> <p>Modems were properly registering and coming online as expected. The presentation of the “Unsupported Crypto Suite” log message has been removed.</p>
67070	Defect: Possible service impact (Medium)	A software fix has been applied to correct a reported case where the CMTS did not send "TEK invalid" messages to the modem when the docsBpi2CmtsTEKReset MIB was set to "true".
67142	Defect: No service impact (None)	A timer issue was occasionally resulting in the CLI show l2vpn qam 0 mpls command displaying only the static VPWS table entries. A software fix has been applied to ensure that the MAC address timeout interval is correctly initialized for VPWS and VPLS.
67196	Enhancement. Operational, CLI (Low)	<p>The [no] debug ip pim system-log command has been added to the Casa CLI diag mode to send debugging information to the local system log. The no form of the command removes system log debugging output.</p> <p>Example: CASA(diag) # debug ip pim system-log CASA(diag) # no debug ip pim system-log</p>
67399	Defect: Possible service impact (Medium)	An internal FIFO issue was found which can cause certain QAM frequencies to have no output signal on some RF ports. This FIFO issue was fixed.

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
67467, 48666	Feature: CLI (Low)	<p>The [no] terminal exec prompt timestamp enable command was introduced in the Casa CLI to add a date and time stamp at the top of each CLI command. The setting does not persist across reboots by default unless you copy to startup.</p> <pre> CASA(config)# terminal exec prompt timestamp enable CASA(config)# show run Wed Oct 21 12:47:56 UTC 2015 ! ! Last configuration change at 12:47:52 UTC 2015-10-21 ... </pre>
67586	Defect: Possible service impact (Medium)	An error which was causing an extra PAT version packet to be inserted during the startup process of a video stream has been fixed. The extra PAT version packet is removed with this fix.
67594	Enhancement. Operational, CLI (Low)	<p>The sid-usage alarm threshold <10:100> command allows users to specify the SID utilization percentage threshold to hit before the system generates an alarm message in the log file. When the number of SIDs exceeds the configured threshold percentage, an alarm message will declare the current number of SIDs and the exceeded SID utilization percentage. The configurable threshold is 10 to 100 percent.</p> <p>Setting the no sid-usage alarm parameter clears any MAC domains which are in the alarm state. This is the default setting. The show sid-usage command displays the number of SIDs per DOCSIS MAC domain and the current SID utilization percentage.</p> <p>Example:</p> <pre> CASA(config)# sid-usage alarm threshold 10 CASA(config)# show sid-usage Docsis-Mac Sid Occupied Number/Percentage ----- 1 0/0.00% 2 4/0.05% CASA(config)# show log [Wed Dec 28 16:28:16 2016]-AL-MAC-1: smm6: MAC mac-domain 1,sid occupy alarm, threshold 10%,current occupied number 4096,percentage 50.00% </pre>

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
67596	Enhancement. Operational, CLI (Low)	<p>The video simulcrypt trap enable command has been introduced to enable a SimulCrypt SNMP traps associated with the notification objects in the CASA-VIDEO-TS-MON-MIB. The enhancement enables SNMP event messaging associated with ECMG connection status with the Casa CCAP.</p> <p>Example: CASA(config)# video simulcrypt trap enable</p>
67597	Enhancement: CLI (Low)	<p>The length of the RADIUS and TACACS usernames and passwords has been extended to 63 characters.</p> <p>Example: CASA# show user current</p> <pre> USER TTY TYPE FROM LEVEL SINCE ----- 63bytes4usernameandpassword63bytes4usernameandpassword63pr ivi15 console console local 15 </pre>
67611, 67363	Enhancement. CLI, Operational (Low)	<p>The [no] l2vpn local-traffic-forwarding and [no] l2vpn mac-address-movable commands have been reinstated in the Casa CLI to enhance local forwarding of L2VPN MPLS packets.</p> <ul style="list-style-type: none"> The local-traffic-forwarding property allows local traffic forwarding to local addresses. The mac-address-movable property allows location changes for MAC addresses attached to the L2VPN. <p>The two properties had been applied to the interface vlan configuration and to the global L2VPN setting, which takes precedence over the interface vlan configuration.</p> <p>Example: CASA(config)# l2vpn local-traffic-forwarding CASA(config)# l2vpn mac-address-movable</p> <pre> CASA(conf-if-vlan 1)# l2vpn local-traffic-forwarding CASA(conf-if-vlan 1)# l2vpn mac-address-movable </pre>
67661	Defect: Possible service impact (Low)	<p>A case was reported where SNMP queries to the docsQoSServiceFlowTimeActive MIB would return incorrect statistics for upstream flows during active voice calls. The service flow active time is now properly saved and reported consistently in IPDR and SNMP.</p>

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
67666	Defect: No service impact (Low)	The cable modem registration status value (CmRegStatusValue) was being changed from 8 to 1 if the voice call ended. A software fix has been applied so that the value is always 8 unless the cable modem goes offline with the resulting value changing to 1.
67719	Enhancement: CLI (None)	<p>The [no] video simulcrypt encryption-off command has been introduced in the Casa diag mode to allow operators to temporarily turn off Simulcrypt. The command is intended for diagnostic and testing purposes and does not impact the existing configuration.</p> <p>Use the no form of the command to resume encryption. With encryption turned off, the show video session all brief command displays "Clear" in the Encryption column.</p> <p>Example:</p> <pre>CASA(diag) # video simulcrypt encryption-off CASA(diag) # show video session all brief SRM Video Dest UDP QAM QAM PID ID Intf IPAddress Port Chan Domain Remap In Out Detected Input Output PSI Uptime ProgNo ProgNo Bitrate State State Detected (s) Encryption Session ID ID Intf IPAddress Port Chan Domain ----- 0000000000001063445c1 t 1 99.31.0.1 1537 1/0/24 1 Yes 0 1 3731000 On On Yes 40430 Clear</pre>
67829	Defect: No service impact (Low)	<p>A software change has been applied to the bandwidth reservation mechanism in the upstream scheduler to address an issue where a TDMA channel attempts to reserve a portion of the bandwidth when the scheduler is oversubscribed. In this situation, the bandwidth reservation could be cut short if an OFDMA reservation precedes the current TDMA reservation. The problem resulted in under-reserved bandwidth with reduced TDMA channel utilization.</p> <p>In cases where the needed TDMA reservation size is too small, the revised bandwidth reservation mechanism will continue searching forward for the next sufficient bandwidth.</p>

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
67833	Enhancement. SNMP, Informational (Low)	<p>An SNMP MIB object has been introduced to detect homeless video streams. The object in the CASA-VIDEO-TS-MON-MIB is defined as follows:</p> <pre>-- 1.3.6.1.4.1.20858.10.57.7.8.5.5 casaVideoAlarmHomelessStream NOTIFICATION-TYPE OBJECTS { casaVideoAlarmStreamId, casaVideoAlarmReason } STATUS current DESCRIPTION "Send trap casaVideoAlarmHomelessStream when video stream is homeless." ::= { casaVidelAlarmNotification 5 }</pre>
67838, 67907	Enhancement. SNMP, Informational (Low)	<p>The CASA-CABLE-MODEM-STATS-MIB has been introduced to return SNMP query statistics on the number of cable modems per DOCSIS version and the associated upstream/downstream interface type, such as MTA, STB, etc.</p> <p>CASA-CABLE-MODEM-STATS-MIB objects:</p> <pre> casaCmtsCableModemCountTable (1.3.6.1.4.1.20858.10.101.6.1) casaCmtsCableModemCountEntry (.1.1) casaCmtsCableModemCountDocs31Total (.1.1.1) casaCmtsCableModemCountDocs31EMTA (.1.1.2) casaCmtsCableModemCountDocs31ESTB (.1.1.3) casaCmtsCableModemCountDocs30Total (.1.1.4) casaCmtsCableModemCountDocs30EMTA (.1.1.5) casaCmtsCableModemCountDocs30ESTB (.1.1.6) casaCmtsCableModemCountDocs20Total (.1.1.7) casaCmtsCableModemCountDocs20EMTA (.1.1.8) casaCmtsCableModemCountDocs20ESTB (.1.1.9) casaCmtsCableModemCountDocs11Total (.1.1.10) casaCmtsCableModemCountDocs11EMTA (.1.1.11) casaCmtsCableModemCountDocs11ESTB (.1.1.12) casaCmtsCableModemCountDocs10Total (.1.1.13) casaCmtsCableModemCountDocs10EMTA (.1.1.14) casaCmtsCableModemCountDocs10ESTB (.1.1.15) casaCmtsCableModemCountGroups (.2) casaCmtsCableModemCountGroup (.2.1) casaCmtsCableModemCountCompliances (.3) casaCmtsCableModemCountCompliance (.3.1)</pre>

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
67921	Feature. Operational, CLI (Medium)	<p>L2VPN pseudowire (PW) redundancy support has been introduced in this release. The feature enables a provider edge router to detect a pseudowire (PW) failure and switch the Layer 2 service to a pre-established backup peer that can continue to provide the service. The feature is provided for Virtual Private Wire Service (VPWS) only. Failure detection is through virtual circuit verification (VCCV).</p> <p>The following commands and parameters have been introduced to support PW redundancy:</p> <ul style="list-style-type: none"> • Peer VCCV in the MPLS VPWS context • Backup peer IP address and ID in the MPLS VPWS context • Backup delay time in seconds in the MPLS VPWS context • Show MPLS VPWS redundancy command • Pinging for VCCB • Force switchover command on the enable CLI level <p>[no] peer <ip_addr> <1:2147483647> [encapsulation mpls <4:5>] [vccv-verification]</p> <p>[no] backup-peer <ip_addr> <1:2147483647></p> <p>[no] backup-delay <1:180> [<1:180>] [never]</p> <p>[no] pseudowire ping [ttl <1:255>] [interval <1:500>] [timeout <2:20000>]</p> <p>vpws force-switchover <1:2147483647></p> <p>Example:</p> <pre> CASA(config)# mpls vpws VPLS1 CASA(config-vpws)# peer 192.168.8.8 10 vccv-verification CASA(config-vpws-peer)# backup-peer 192.168.8.9 11 CASA(config-vpws-peer)# backup-delay 30 30 CASA(config-vpws-peer)# exit-backup-peer CASA(config-vpws)# end CASA(config)# mpls pseudowire ping ttl 30 interval 1 time- out 5 CASA(config)# show mpls vpws xconnect redundancy CASA(config)# end CASA# mpls vpws force-switchover 10 </pre>

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
67970	Enhancement. Operational, CLI (Low)	<p>The requirement for a unique ID for the VPWS primary and for the VPWS backup-peer has been removed, allowing identical IDs for multiple virtual circuits (VCs). Forcing a switchover to the backup-peer can now be accomplished using the mpls vpws force-switchover command. The show mpls vpws xconnect command output was also enhanced with the vc peer option.</p> <p>Example:</p> <pre>CASA(config)# mpls vpws VPLS-net1 CASA(config-vpws) # peer 192.168.8.8 11 CASA(config-vpws-peer) # backup-peer 192.168.8.9 11 CASA(config)# mpls vpws force-switchover 11 CASA(config)# show mpls vpws xconnect vc 11 peer 192.168.8.8 MAC Address Peer Address VC_ID VC_TYPE Us_Intf DS_Intf PSID State VPWSID</pre>
68151	Defect: Possible service impact (Low)	<p>A problem which was preventing the patch file from being copied to the standby SMM with the copy tftp <ip-address> <patchfile.tgz> patch command has been fixed. The problem was observed on SMMs which did not previously have a patch successfully applied.</p>
68177	Enhancement. CLI, Informational (Low)	<p>The show video session <id> command output now includes Source-Specific Multicast (SSM) session switch statistics in the Input Stream listing to include the source switch count and the last switched date and time.</p> <p>Example:</p> <pre>CASA# show video session 0000000000010014091f Created On : 02/24/2015,17:05:54 UTC StreamId : 3576 ... Input Stream: ... Source Switch Count : 38 Last Switched at : 02/14/2017,07:42:39 UTC ...</pre>

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
68272	Enhancement: CLI, Operational (Low)	<p>The video min-pat-updated-interval command has been introduced in the CLI to set the minimum time gap between changing Program Association Table (PAT) versions for proper handling of video sessions for some set-top boxes (STBs). The configured interval is set in microseconds at 100 ms increments in the range 100 to 2000.</p> <p>The default keyword changes the setting to 0 ms.</p> <p>Setting the maximum 2000 ms interval changes the next PAT version only after 2000 ms for each successive video session. Use the show video global config command to display the configuration setting.</p> <p>Example:</p> <pre>CASA(config)# video min-pat-update-interval ? <100-2000> interval value in terms of ms and in increment of 100ms default default interval value is 0 ms</pre> <pre>CASA(config)# video min-pat-update-interval 1000</pre>
68311	Defect: No service impact (None)	Overlapping x-axis values have been corrected in the Monitoring > Log graph in the Casa Video Web UI.
68385, 74497	Defect: Possible service impact (Low)	A fix has been applied to address a reported QAM 8x8 out-of-memory condition with the resulting log message "SMM internal link to slot # congested/failed!" followed by "SMM internal link to slot # recovered." The memory loss was caused by a downstream traffic processing error which resulted in an infinite looping state before recovering the affected traffic links.

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
68581, 72727	Enhancement: CLI, SNMP Informational	<p>The show cpuinfo module <number> command has been revised to retrieve QAM or UPS utilization statistics for all CPU processes running on the specified line card. CPU utilization statistics are reported as minimum, average, and maximum percentages.</p> <p>The equivalent objects in the CASA-ENTITY-EXT-MIB are:</p> <ul style="list-style-type: none"> • casaModuleDataCpuUtilizationTable • casaModuleDataCpuUtilizationEntry • casaModuleDataCpuUtilizationMin • casaModuleDataCpuUtilizationAvg • casaModuleDataCpuUtilizationMax <p>Example: CASA> show cpuinfo module 12 Module 12: ... Data CPU utilization(Min/Avg/Max) (13%/68%/95%) ...</p>
68626	Defect: Possible service impact (Low)	A correction to the CMTS load balancing logic has been applied to ensure that modems are moved to the lowest utilized channels during downstream load balancing with DBC. The fix addresses a reported issue where modems were being incorrectly moved to channels having higher bandwidth utilization during DBC.
68654	Enhancement. Operational, Web UI (Low)	The Configure > Video > Mirror screen has been enhanced in the Casa Video Web UI to display the Stream Dst IP and Stream Dst Port columns in the output.

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
68656	Enhancement, Operational, CLI (Low)	<p>Dead Packet Detection (DPD) support has been added for IPSec configuration. The ipsec phase 1 command now includes the following three DPD parameters:</p> <ul style="list-style-type: none"> • dpd-delay <sec> — Dead Packet Detection (DPD) delay, in seconds, default 0. Optional. • dpd-retry <sec> — DPD retry intervals, in seconds, default 5. Optional. • dpd-maxfail <num> — Maximum number of DPD retries without responses, default 5. Optional <p>Example:</p> <pre>CASA(config)# ipsec phase1 POL1 192.168.8.8 8 1 des md5 psk both dpd-delay 0 dpd-retry 5 dpd-maxfail 5</pre>
68715	Defect: Possible service impact (Medium)	<p>The message "[Mon Feb 20 22:21:51 2017]-ER-SYS-1: smm6: SMM restarting internal link to slot 13" has been observed under certain conditions when the system is recovering line card links after an SMM switchover with some modems on the upstream dropping offline. The problem was traced to error which was causing the line card ping MTU to incorrectly reset to 1514 instead of 1916 during recovery. This problem has been fixed.</p>

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
68806	Enhancement, Operational, CLI (Low)	<p>The [no] ddos command has been introduced in the CLI to enable or disable mitigation of Distributed Denial of Service (DDoS) breaches such as a DNS amplification attack or traffic over-subscription that can potentially limit service flows. The threshold is five simultaneous attacks with a reaction time of less than a second. The default is disabled. When enabled, the feature functions as follows:</p> <ul style="list-style-type: none"> • Handles over-subscription messages from QAM and drops packets if necessary. • Programs the switch with meter entries that qualify on destination IPv4 and IPv6 addresses. The meter is the aggregate of all service flows associated with the destination address. • Maintains the current state of programmed entries in the switch along with current drop counters. (Drop counters are retrieved every five seconds.) • Ages out existing entries when the drop counter on a corresponding entry no longer increases. (Aging out is after 10 minutes by default.) <p>The clear ddos and show ddos commands clear the current entry and subsequently check if the attack is still based on the time the DDoS entries were added and the current drop rate of the flows.</p> <p>Example:</p> <pre>CASA(config)# ddos CASA(config)# no ddos CASA> clear ddos CASA> show ddos</pre>
68910	Defect: Possible service impact (Medium)	A software fix has been applied to correct a possible duplication of program identifiers (PIDs) in multi-source SDV input streams.
68993	Defect: No service impact (Medium)	The PSID and State columns for show mpls vpws xconnect command output were separated by only one space which could result in script errors. The columns are now separated by an extra space to negate possible script errors.

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
69194	Defect: Possible service impact (Medium)	A coding error which could cause D3.0 modems to go into the partial-service state and D2.0 modems to drop offline and not re-register with the CMTS has been fixed. The problem was observed after re-assigning channel frequencies on the UPS 16x4 module where the affected channels became unusable. Resetting the UPS 16x4 module allowed D3.0 modems to recover from the partial-service condition, with D2.0 modems registering and coming online.
69385	Enhancement: Operational, CLI (Low)	<p>The range of the failure-threshold parameter of the software-health-check snmpd command has been revised from <1:600> to <6:600> to address issues with the low minimum threshold.</p> <p>Example:</p> <pre>CASA(config)# software-health-check snmpd failure-threshold ? <6-600> threshold number (seconds)</pre>
69464	Defect: No service impact (Medium)	A software fix has been applied to ensure correct reporting of OFDMA traffic and channel utilization statistics in SNMP queries. Previously, SNMP queries to the ifHCInOctets object were reporting statistics which were lower than the actual number of octets received on the OFDMA interface.
69620	Enhancement. Operational (Low)	Software improvements have been applied to the QAM switchover processes to prevent situations where modems could possibly lose lock on OFDM channels during a QAM 8x192 module switchover. A problem was observed where certain modems on OFDM channels would go into partial-service and remain locked on SC-QAM channels after the switchover.

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description																																				
69633	Enhancement. Operational, CLI (Low)	<p>The symbols-per-frame command has been added to Casa CLI in the interface ofdma configuration context to warn users if the configured symbol per frame or number of init/fine ranging subcarriers is too small.</p> <p>The following recommended OFDMA ranging slot settings are based on symbol rate. Ranging slots settings in number of subcarriers can be changed in ofdma iuc profile.</p> <p>Note that the number of fine ranging carriers larger than 64 not be used as it may cause fine ranging failures. This also means symbol per frame number less than 10 should NOT be used.</p> <p>Recommended settings:</p> <table> <tr> <th>Symbol per frame</th><th>Initial Ranging</th><th>Fine Ranging</th></tr> <tr><td>6</td><td>64</td><td>192</td></tr> <tr><td>7</td><td>64</td><td>192</td></tr> <tr><td>8</td><td>64</td><td>96</td></tr> <tr><td>9</td><td>64</td><td>96</td></tr> <tr><td>10</td><td>64</td><td>64</td></tr> <tr><td>11</td><td>64</td><td>64</td></tr> <tr><td>12</td><td>32</td><td>64</td></tr> <tr><td>13</td><td>32</td><td>64</td></tr> <tr><td>14</td><td>32</td><td>64</td></tr> <tr><td>15</td><td>32</td><td>64</td></tr> <tr><td>16</td><td>32</td><td>32</td></tr> </table> <p>Example: CASA(conf-ofdma-channel 10/6.0)# symbols-per-frame 6 symbol per frame 6 requires at least 16 initial ranging minislots in IUC profile warning: symbol per frame is too small</p>	Symbol per frame	Initial Ranging	Fine Ranging	6	64	192	7	64	192	8	64	96	9	64	96	10	64	64	11	64	64	12	32	64	13	32	64	14	32	64	15	32	64	16	32	32
Symbol per frame	Initial Ranging	Fine Ranging																																				
6	64	192																																				
7	64	192																																				
8	64	96																																				
9	64	96																																				
10	64	64																																				
11	64	64																																				
12	32	64																																				
13	32	64																																				
14	32	64																																				
15	32	64																																				
16	32	32																																				
69699	Defect: No service impact (Medium)	<p>The Server Last Time Up was showing an invalid date in show video simulcrypt ecmg output if the connection to the ECMG server was never established. This was fixed so that the Server Last Time Up shows as Never, N/A, or with a valid date.</p>																																				

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
69871	Enhancement, Operational, SNMP (Low)	<p>The casaMulticastGroupWVrfTable objects have been added to the CASA-DOC-EXT-MIB to support SNMP queries of multicast groups in virtual routing and forwarding (VRF) instances.</p> <pre>-- 1.3.6.1.4.1.20858.10.22.2.24 casaMulticastGroupWVrfTable OBJECT-TYPE SYNTAX SEQUENCE OF CasaMulticastGroupWVrfEntry MAX-ACCESS not-accessible STATUS current DESCRIPTION "This is a MIB enhancement be able to map from cable modem to different multicast groups with vrf and corresponding DSIDs joined by the modem" REFERENCE "Proprietary MIB." ::= { casaDocsExtMibObjects 24 }</pre> <pre>casaMulticastGroupWVrfEntry OBJECT-TYPE SYNTAX CasaMulticastGroupWVrfEntry MAX-ACCESS not-accessible STATUS current DESCRIPTION "An entry provides a list of attributes for a cable modem to different multicast groups with vrf and and corresponding DSIDs joined by the modem" INDEX {casaMulticastGroupWVrfCmMacAddress, casaMulticastGroupWVrfVrfId, casaMulticastGroupWVrfIpType, casaMulticastGroupWVrfDestIp, casaMulticastGroupWVrfSrcIp} ::= { casaMulticastGroupWVrfTable 1 }</pre> <pre>CasaMulticastGroupWVrfEntry ::= SEQUENCE { casaMulticastGroupWVrfCmMacAddress MacAddress, casaMulticastGroupWVrfVrfId Integer32, casaMulticastGroupWVrfIpType InetAddressType, casaMulticastGroupWVrfDestIp InetAddress, casaMulticastGroupWVrfSrcIp InetAddress, casaMulticastGroupWVrfReplID Integer32, casaMulticastGroupWVrfDsid Integer32 }</pre>

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
69920	Enhancement. Operational, CLI (Low)	<p>The unit of measure for the RxPw in show cable modem commands has been changed from decibels (dB) to decibels per millivolt (dBmV).</p> <p>Example:</p> <pre>CASA(conf)# show cable modem MAC Address IP Address US DS MAC Prim RxPwr Intf Intf Status Sid (dBmV) 7cb2.1b42.x 10.2.0.1 2/0.0/0 0/0/3* online(pt) 1 -0.5 e448.c7ba.x 10.2.0.1 2/2.3/0* 0/1/6* online(pt) 1 -0.2</pre>
69947	Enhancement. Operational, CLI	Up to sixteen (16) member GigE or xGigE interfaces per trunk are now supported on the SMM 8x10G module. Up to eight (8) member interfaces per trunk are supported on the SMM 2x10G module.
69965	Enhancement. Operational, CLI (Low)	<p>The show bonding-group utilization command now provides the application class child identifier in the App-Class-Id column. Child IDs are in the format #.#, as shown in the partial sample output below:</p> <p>Example:</p> <pre>CMTS(config)# show bonding-group utilization Mac GroupID App-Class-Id Total BW(kbps) Used BW(kbps) . 2 - 1.1 102865 0 0 2 - 1.2 102865 0 0 2 - 1.3 102865 0 0 2 - 1 102865 0 0</pre>
70152	Defect: Possible service impact (Medium)	A software error which was preventing video streams on the QAM module in system slot 13 from being protected during EIS redundancy processing has been fixed. Only slot 13 was affected by this error.
70174	Enhancement. Operational, CLI (Low)	A software change has been applied to ensure that the CMTS always includes the Remote-Address field in authorization packets sent to the TACACS+ server. The change, which has been applied to both Telnet and SSH logins, corrects a problem which was causing the Remote-Address field to reset to 0 and preventing users from executing commands after logging in.

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
70277	Enhancement, Operational, CLI (Low)	<p>The [no] cable primary-said non-l2vpn command has been added to the CLI to exclude the primary Security Association Identifier (SAID) in TLV 43.5.10 as the L2VPN SAID. By default, the primary SAID is included in the TLV to encrypt messages if the modem has L2VPN capability.</p> <p>This command is to address modems that do not accept the primary SAID encoded in the TLV. The no form of the command disables this function (the default). The verbose version of the show running-configuration command shows the current setting (or the default setting if not configured).</p> <p>Example:</p> <pre>CASA(config)# cable primary-said non-l2vpn CASA(config)# no cable primary-said non-l2vpn CASA(config)# show run verbose in primary-said no cable primary-said non-l2vpn</pre>
70465	Enhancement, Operational, CLI (Low)	<p>The [no] debug video simulcrypt {ecmg [<string>] scs [ecmg] [eis] [msg-dump] [tier] [trace]} command has been introduced in the Casa CLI diag mode to support enhanced ECMG debugging capabilities. Additionally, the show video simulcrypt debug-config command has been introduced, as well as changes to the show video simulcrypt ecmg command output.</p> <p>Example:</p> <pre>CASA(diag)# debug video simulcrypt ecmg CASA(diag)# show video simulcrypt debug-config SYMULCRYPT DEBUG CONFIG: TRACE: Off EIS: Off ECMG: Off MSG-DUMP: Off TIER: Off SCG: Off</pre>
70545	Defect: Possible service impact (Medium)	A problem was reported where RADIUS authenticated users were not being granted sufficient command privileges at the CMTS with a valid AAA configuration. The problem has been fixed.
70583	Defect: Possible service impact (Medium)	A problem was reported where QAM 8x192 modems were getting stuck in the init(d) or init(r) state after performing a system reboot . A software fix has been applied to correct a logic error where a process notification thread running between the QAM module slot and the SMM could fail to start after a module or system reboot .

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
70605	Defect: Possible service impact (Medium)	Executing a video simulcrypt restart command in diagnostic mode followed by logging out of the system was causing an SMM switchover over time with the SimulCrypt process exiting. This issue has been corrected.
70610	Enhancement, Operational, CLI (Low)	<p>Silent probe support to measure MER has been added to OFDMA channels using the ofdma probe interval command. When silent probe is enabled, the CMTS pauses and measures the present noise level on a given channel. The command sets the silent probe interval in minutes.</p> <p>The default setting is disabled. When disabled, a silent probe occurs every 30 seconds. When enabled and with pre-equalization configured for the OFDMA channel, all modems on the channel perform two probes during initial ranging, with repeated probes based on the interval setting.</p> <p>Example: CASA(config)# ofdma probe interval 60 CASA(config)# no ofdma probe</p>
70680	Defect: Possible service impact (Medium)	An OFDMA channel overlapping issue with TDMA channels in TaFDM mode with a frequency not aligned on a 50 KHz boundary was causing modems to go into partial service mode after registration. A software fix has been applied to adjust the frequency filter for the ODMA channel to prevent this issue from occurring.

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
71055	Enhancement, Operational, CLI (Low)	<p>The help text for the OFDMA channel rolloff-period and cyclic-prefix commands was enhanced to list the available values in units of microseconds to provide clarify.</p> <p>Example:</p> <pre>CASA(conf-ofdma-channel 12/0.0)# rolloff-period ? 0 0.0us 128 1.25us 160 1.5625us 192 1.875us 224 2.1875us 32 0.3125us 64 0.625us 96 0.9375us</pre> <pre>CASA(conf-ofdma-channel 12/0.0)# cyclic-prefix ? 128 1.25us 160 1.5625us 192 1.875us 224 2.1875us 256 2.5us 288 2.8125us 320 3.125us 384 3.75us 512 5.0us 640 6.25us 96 0.9375us</pre>
71107	Enhancement, Operational, CLI (Low)	<p>The [no] video full-scramble enable command has been implemented in the Casa CLI to enable full scrambling of all video components, including audio, video, and subtitles. The default setting is no video full-scramble enable where only audio and video will remain scrambled.</p> <p>Example:</p> <pre>CASA(config)# video full-scramble enable [Tue Apr 25 17:42:25 2017]-IN-CLI-1: smm6: update config last changed or saved time 2017-04-25 17:42:25</pre> <pre>CASA(config)# no video full-scramble enable [Tue Apr 25 17:42:36 2017]-IN-CLI-1: smm6: update config last changed or saved time 2017-04-25 17:42:36</pre>

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
71204	Defect: Possible service impact (Medium)	Missing or inaccessible next hop VRF routes have been observed after a performing a system reboot or SMM switchover where BGP next hop lookups are deemed invalid, with BGP unable to select the next hop in the BGP path selection with eventual lost routes. This problem has been fixed.
71309	Enhancement, Operational, CLI (Low)	Multiple IP addresses for a CPE device behind a cable modem can now be applied across multiple VRFs in the configuration. Previously, the multiple IP addresses for a CPE had to be configured under one VRF instance.
71509	Enhancement, Operational, CLI (Low)	<p>The video simulcrypt ecmg <id> stream <id> [module <0:13>] delete command has been added to the CLI diag mode to enable deleting a specific SimulCrypt stream ID from a given module.</p> <p>Example: CASA(diag)# video simulcrypt ecmg stream 1 module 3 delete</p>
71530	Enhancement: Operational, CLI (Low)	<p>The show video simulcrypt scg [module <slot>] [count] command has been implemented to display the Scrambling Control Group (SCG) configuration along with the Entitlement Control Message (ECM) information. Using one logical set, an SCG gathers the list of streams scrambled at the same time with the same control word, list of ECMs, Conditional Access (CA) system identifier, and respective access-criteria. Up to 1000 SCGs are supported.</p> <p>Example: CASA(config)# show video simulcrypt scg module 0 Encryption Period : 30 s (Default 30 s) Module 0: SCG 1: Transport Stream ID : 32 NetworkID, RefID : N/A, N/A Activation Time : 2017-09-08 03:04:00 Module/Port/Channel : 0/0/32 CP Number : 0 CP remaining time : 21 s Program ID(SessionId) : 1(N/A) ECM 0: ECM ID : 1 Super CAS ID : 0x4a250000 (18981, 0) Access-criteria : 0x11 0x22 0x33 0x44 0x55 0x66 0x77 0x88</p>

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description												
71534	Enhancement. Operational, CLI (Low)	<p>The show video simulcrypt ecmg [<i><id></i>] [<i>stats</i>] command has been introduced to display the Entitlement Control Message Generator (ECMG) configuration.</p> <p>Example:</p> <pre>CASA(config)# show video simulcrypt ecmg EEEE Encryption Period : 30 s ECMG Timeout : 3 s ECMG Retries : 3 ECMG Load-balancing : Disabled CP remaining time : 0 s ECM channel ID range : N/A ECMG VRF : N/A EIS VRF : vrf1</pre> <p>ECMG EEEE:</p> <pre>System Id : 18981 Subsystem Id : 0 IP Address : 172.16.8.199 TCP Port : 22288 Priority : 1 Protocol Version : 3 Access-criteria : N/A ECMG Uptime : 0 d : 0 h : 11 m : 37 s Connection Status : Connected Channel Status : Open ECM channel ID : 254 Stream Information:</pre> <table><thead><tr><th>Stream ID</th><th>Stream ECM ID</th><th>CP number</th><th>Status</th></tr><tr><th>-----</th><th>-----</th><th>-----</th><th>-----</th></tr></thead><tbody><tr><td>1</td><td>1</td><td>12</td><td>Open</td></tr></tbody></table>	Stream ID	Stream ECM ID	CP number	Status	-----	-----	-----	-----	1	1	12	Open
Stream ID	Stream ECM ID	CP number	Status											
-----	-----	-----	-----											
1	1	12	Open											

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
71536	Enhancement. Operational, CLI (Low)	<p>The show video simulcrypt scg command format has been revised in the Casa CLI.</p> <p>Example: CASA(config)# show video simulcrypt scg 10 Encryption Period : 30 s (Default 30 s)</p> <p>Module 0:</p> <p>SCG 10:</p> <pre> Transport Stream ID : 1016 Network ID : 0 SCG Reference ID : 0 Activation Time : 2016-08-30 15:40:32 Recommended CP duration : 60 s Module : 4 Port : 0 Channel : 16 Nominal CP duration : 60 s CP Number : 8 CP remaining time : 35 s Program IDs : 1 </pre> <p>ECM 0: ...</p>
71819, 67331	Enhancement. Operational, CLI (Low)	Support for detection of Real-time Transport Protocol (RTP) streams for video input has been implemented. The RtpSequenceErrorCount output has been added to the show video session command to display RTP streams as video input for broadcast and VoD.
71976	Defect: No service impact (None)	The casaDevSoftwareMib has been removed from the SNMP MIB archive in Release 7.2.5.0 to prevent possible security vulnerabilities at the CMTS.
72043	Defect: Possible service impact (Medium)	A software fix has been applied to the upstream scheduler logic. When polling the ranging time stamps in the scheduler queue, a possible corruption to the ranging timer could occur under certain conditions when the polling process reaches the end of the queue. A de-referenced pointer in the software logic was the cause of the problem.

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
72205	Enhancement. Operational, CLI (Low)	<p>The dva parameter has been added to the interface ip-bundle cable-helper-ipv6-address command to enable forwarding Digital Voice Adapter (DVA) broadcasts only.</p> <p>DHCPv6 packets which contain device type suboption(2) EDVA or EMTA device will be forwarded to specified server, if present.</p> <p>Example:</p> <pre>CASA(ip-bundle 1.1)# cable helper-ipv6-address 2001:20:158::6 dva</pre>
72367	Defect: No service impact (Low)	SNMP queries to the docsIf3CmtsSpectrumAnalysisMeasAmplitudeData MIB was object would sometimes fail to respond. Statistics continued to be reported correctly as expected with the CLI show spectrum-meas upstream command. The SNMP issue has been fixed.
72416	Enhancement. Operational, CLI (Low)	Misaligned column data in the show bonding-group utilization command output has been fixed.
72549	Enhancement, Operational, CLI (Low)	The help text for the cable partial-service dbc-recovery <60-3600> command was enhanced to indicate the units in seconds.
72651	Defect: Possible service impact (Medium)	Enabling DVB Simulcrypt over QAM 8x96 shared channels or narrowcast channels above and including 32 was not reliable in Release 7.2.4.2. A fix for this issue has been applied.
72820	Defect: No service impact (Low)	Traceroute elapsed time calculations have been reinstated in the software to ensure that an issued traceroute is able to time out successfully. The fix corrects a problem which was causing traceroute to run continuously and not terminate without user intervention.
72875	Defect: Possible service impact (Medium)	A software fix has been applied to close a possible security vulnerability over Telnet login sessions to the CMTS.
72934	Enhancement: No service impact (Low)	For D3.1 modems, support for the change-prim-ds cm-status TLV has been implemented for inclusion in the registration acknowledgment (REG_ACK) message to trigger DBC to change the modem's primary DS channel.

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
72995	Enhancement, Operational, CLI (Low)	<p>The dynamic dbc-unmodifiable option has been added to the show cable modem load-balance command to show only those modems that are no longer load balancing due to three or more failures.</p> <p>Example: CASA# show cable modem load-balance dynamic dbc-unmodifiable</p> <pre> MAC Address IP Address US DS Mac RLBG Intf Intf Id Id Policy DS US Success Sg-name/Cable-Tag Id Fail Fail 6814.01f0.3f23 10.66.1.252 4/2.3/0* 0/2/1* 1 0 1 3 0 0 1/1 7cb2.1bbe.a4f2 10.66.1.249 4/2.1/0* 0/2/0* 1 0 1 0 3 0 1/- fc52.8d5e.8583 10.66.1.248 4/2.0/0* 0/2/1* 1 0 1 3 3 0 1/1 total: 3 </pre>
73127	Defect: Possible service impact (Medium)	<p>An OFDMA channel lower edge frequency setting caused the subcarrier zero (SC0) center frequency to fall outside the 50 KHz alignment, causing modems to go into partial service. The SC0 frequency has been adjusted to fall within the 50 KHz alignment to correct the issue.</p>
73214	Enhancement, Operational, CLI (Low)	<p>The OFDMA initial ranging zone configuration has been enhanced with the start index of the minislot through the offset <0:237> option of the OFDMA IUC profile initial-ranging-iuc command. Initial ranging is used by the CMTS to identify a new admitting CM and for coarse power and timing ranging. It provides an interval in which new stations can join the network.</p> <p>The parameter sets the maximum number of subcarriers for initial ranging, along with the sum of the upper and lower guard bands for initial ranging in Hz. The offset is the ranging zone minislot start index, default 0, where the software does the offset calculation. With the offset set, the TaFDM ranging zone restriction is removed (ranging in a TDMA/OFDMA overlapped area is possible).</p> <p>Example: CASA(config)# ofdma iuc-profile 1 CASA(conf-IUC-profile 1)# initial-ranging-iuc 32 1000000 offset 40</p>

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
73237	Defect: Possible service impact (Low)	A problem which was causing SAMIS-1 IPDR sessions between the CMTS and a certain IPDR collector to get stuck due to uninitialized service flows has been fixed. The problem was traced to a discrepancy between the SAMIS-1 session creation time and the IPDR collection period.
73326	Defect: No service impact (Low)	The Simulcrypt log message "sim_scg_rec_get: SCG record not found from database" is no longer reported under normal add and delete operations and will only be displayed if EIS debugging is enabled.
73614	Defect: No service impact (Low)	OFDM channel status entry details are now being reported correctly with the CLI show ofdm channel command and in SNMP queries to the SNMP entPhysicalDescr object in the ENTITY-MIB.
73689	Defect: Possible service impact (Low)	<p>A packet drop issue in RFoG with TaFDM with resulting partial service has been observed. A fix has been applied to enhance converging of IUC4 timing adjustments for IUC4s on an OFDMA channel to correct the problem.</p> <p>The following settings for OFDMA channels are recommended to yield the best performance:</p> <pre> upstream map size 3 symbols-per-frame 10 fine-ranging-iuc 64 800000 initial-ranging-iuc 64 800000 </pre>
73758	Defect: Possible service impact (Medium)	FPGA overflow messages have been observed after re-configuring QAM 8x192 parameter settings, and in some cases, after adding QAM 8x192 channels. A fix has been implemented and the previous workaround is not longer necessary.

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
73780	Enhancement: Operational, CLI (Low)	<p>The show iftable interface_video [detail] command has been added to the Casa CLI to display the video interfaces in the ifTable. The detail option displays the full set of object values.</p> <p>Example:</p> <pre>CASA# show iftable ? Output modifiers <cr> detail interface detail downstream downstream interface downstream_rf_port downstream RF port interface eth ethernet interface gige gige interface interface_video video interface ip-bundle ip-bundle interface loopback loopback interface mac mac interface mdtvrf mdtvrf interface ofdm shared ofdm interface ofdma shared ofdma interface shared_video_downstream shared video downstream interface upstream_logic upstream logic interface upstream_physical upstream physical interface video_downstream video downstream interface</pre> <pre>CASA# show iftable interface_video detail ----- ifIndex: 18000001 ifDescr: interface video 1 ifType: ifType_softwareLoopback ifMtu: 1500 ifSpeed: 10000000 ifPhysAddress: 00:00:00:00:00:00 ifAdminStatus: Up(1) ifOperStatus: Up(1) ifLastChange: 0 day 00h:04m:46s.19th ifInOctets: 0 ifHCInOctets: 0 ifInUcastPkts: 0 ifInDiscards: 0 ...</pre>

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
73783	Enhancement: Operational, SNMP (Low)	<p>The casaVideoVirtualEdgeObjects objects have been added to the CASA-VIDEO-MIB to support video virtual edge functions.</p> <p>OID: 1.3.6.1.4.1.20858.10.103.1</p> <p> casaVideoVirtualEdgeObjects (.14) casaQamDomainVideoIfMappingEntry (.14.1) casaQamDomainId (.14.1.1) casaVideoIfId (.14.1.2) casaVideoIfIndex (.14.1.3) casaQamDomainGroupMappingTable (.14.2) casaQamDomainGroupMappingEntry (.14.2.1) casaQamGroupId (.14.2.1.1) casaQamGroupChannelMappingTable (.14.3) casaQamGroupChannelMappingEntry (.14.3.1) casaQamChannelIfIndex (.14.3.1.1) casaQamChannelDesc (.14.3.1.2) casaQamChannelVirtualEdgeMappingTable (.14.4) casaQamChannelVirtualEdgeMappingEntry (.14.4.1) casaQamVirtualEdgeDomainId (.14.4.1.1) casaQamVirtualEdgeQamGroupId (.14.4.1.2) casaQamVirtualEdgeQamChannelDesc (.14.4.1.3) </p> <p>Example:</p> <pre> ... casaQamChannelDesc.1.1.10000000 (octet string) Video Downstream 0/0/0 [56.69.64.65.6F.20.44.6F.77.6E.73.74.72.65.61.6D.20.30.2F. 30.2F.30 (hex)] ... casaQamVirtualEdgeQamChannelDesc.10003112 (octet string) Video Downstream 3/0/40 [56.69.64.65.6F.20.44.6F.77.6E.73.74.72.65.61.6D.20.33.2F. 30.2F.34.30 (hex)] ... casaQamVirtualEdgeDomainId.10003112 (integer) 6 ... casaQamVirtualEdgeQamGroupId.10003112 (integer) 1 ... </pre>

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
73784	Enhancement, Operational, SNMP (Low)	<p>The casaQamChannelBitrate entry has been added to the CASA-QAM-MIB file to allow QAM channel bit rate monitoring in SNMP queries.</p> <pre>-- 1.3.6.1.4.1.20858.10.27.1.2.1.10 casaQamChannelBitrate OBJECT-TYPE SYNTAX Unsigned32 UNITS "kbps" MAX-ACCESS read-only STATUS current DESCRIPTION "Qam channel bitrate" ::= { casaQamChannelEntry 10 }</pre> <p>Example:</p> <pre>SNMPv2-SMI::enterprises.20858.10.27.1.2.1.10.1.0.32 = Gauge32: 9863 SNMPv2-SMI::enterprises.20858.10.27.1.2.1.10.1.0.33 = Gauge32: 9863 SNMPv2-SMI::enterprises.20858.10.27.1.2.1.10.1.0.34 = Gauge32: 9863 SNMPv2-SMI::enterprises.20858.10.27.1.2.1.10.1.0.35 = Gauge32: 9863 SNMPv2-SMI::enterprises.20858.10.27.1.2.1.10.1.0.36 = Gauge32: 9863 SNMPv2-SMI::enterprises.20858.10.27.1.2.1.10.1.0.37 = Gauge32: 9863 SNMPv2-SMI::enterprises.20858.10.27.1.2.1.10.1.0.38 = Gauge32: 9863 SNMPv2-SMI::enterprises.20858.10.27.1.2.1.10.1.0.39 = Gauge32: 9863 SNMPv2-SMI::enterprises.20858.10.27.1.2.1.10.1.0.40 = Gauge32: 9454</pre>
73786	Defect, No service impact (Low)	<p>The show spectrum hop-history command was reporting an incorrect SNR hop trigger value for a back-hop to a less impaired modulation, reporting the lower SNR instead of higher SNR value of the original modulation. Modern hopping continued to operate at the correct SNR with no impact to service. This problem has been fixed.</p>
73935	Defect: No service impact (Low)	<p>The show cpu-memory process-list command was showing 0% CPU usage for process IDs that were rolling over in the number space. This error has been fixed.</p>

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
73978	Enhancement. Operational, SNMP (None)	The following MIB entries have been added to the CASA-QAM-MIB to support additional QAM channel statistics in SNMP queries: <ul style="list-style-type: none"> • casaQamChannelWidth • casaQamChannelSymbolRate • casaQamChannelSpectralInversionent:
74059	Defect: Possible service impact (Medium)	An error in the software logic which could affect the recovery of multiple processes at the time of an SMM switchover has been fixed. A correction has been made to prevent a possible looping condition as multiple processes recover. The console log message “soft_timer_control_tick: (mac timer) detected corrupted timer (xxxxxxx)” indicates the error.
74065	Defect: Possible service impact (Medium)	With a tier-based video pass-through session having both clear and encrypted SimulCrypt content, some PIDs were being dropped. To correct this issue, the pass-through is now enabled regardless of the content type (clear or encrypted).
74082	Defect: Possible service impact (Medium)	Slow response times and SNMP process timeouts have been reported when running SNMP queries to the docslf31CmtsCmUsOfdmaChannelStatusTable and docslf31CmtsCmUsOfdmaProfileStatusTable MIBs. Optimization improvements to the SNMP process have been applied to increase SNMP query response times and eliminate possible SNMP process timeouts when querying ODFMA channel status and profile status tables.
74208	Enhancement. Operational, SNMP (None)	The casaVideoInterfaceTable MIB has been added to the CASA-VIDEO-MIB file to support presentation of video interface statistics in SNMP queries.
74347, 71187	Defect: Possible service impact (Low)	Some modems were reporting decreasing OFDM MER away from the channel center. The problem has been fixed.
74443	Defect: Possible service impact (Low)	Upstream ingress cancellation enabled was not effectively canceling ingress. This condition has been fixed.

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
74499 79981	Defect, No service impact (Low)	A problem was observed where the show spectrum commands were displaying “No spectrum DATA received” errors on upstream ports configured with Time and Frequency Division Multiplexing (TaFDM). Due to multiple CLI session requests, a large number of temporary scm_sm* files were being accumulated in the /tmp directory, resulting in a failure to retrieve spectrum management data.
74568	Defect: Possible service impact (Medium)	An issue which was resulting in duplicate ES PIDs in the CLI show video channel <slot/port/channel> psi command display following a QAM module switchover has been fixed. The fix corrects a timing issue between processes which were recovering video streams to the same line card.
74667	Defect: Possible service impact (Medium)	A fix has been applied to avoid a possible race condition and resulting IPDR failure when IPDR exits at system reboot.
74688	Defect: Possible service impact (Medium)	A software error which was causing power and fan status polling to be temporarily disabled at the C40G CMTS has been fixed. The problem was observed in situations when the CLI show envm command was executed immediately after the show smm-alarm-led command on the C40G chassis only. Other platforms were not affected by the problem.
74720	Defect: No service impact (Low)	The output lines for shared channels for the show docsis channel utilization command were not aligned with the channel. This was fixed.

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
74812	Defect: No service impact (Low)	<p>Partial service (cable event 85010200) traps were not being sent to trap receivers unless the cable event priority warning flags were set to local non-volatile log, SYSLOG, or trap receivers, whereas the priority is actually informational. The priority was changed to informational, however the flags can still be set to 0xE0, 0xC0, or 0x40.</p> <p>Example:</p> <pre> CASA(config)# cable event priority informational 0xE0 CASA(config)# show cable event notification-policy Mon Jun 12 13:28:52 CST 2017 priority flash-log mem-log traps syslog ----- emergency yes no no no alert yes no no no critical yes no yes yes error yes no yes yes warning no yes yes yes notice no yes yes yes informational yes no yes yes debug no no no no </pre>
74815	Defect: No service impact (Low)	The show cable modem <mac_addr> qos command was showing a dynamically created downstream service flow as inactive while it was active. This condition was fixed.
74817	Enhancement. Operational, Web UI (Low)	The Configure > Encryption > Simulcrypt page in the Casa Video Web interface has been enhanced to include the Current CP, ECM channel ID range, and EIS VRF configuration entries in the Global table. Additionally, the Domain Name and Access Criteria configuration entries have been added to the ECMG table.

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
74957	Enhancement: Operational, SNMP (Low)	<p>The casaQamChannelAnnex, casaQamChannelModulation and casaQamChannelInterleave read-write objects have been added to the CASA-QAM-MIB to allow setting of the QAM annex, modulation, and interleave values. These MIB objects were also added to the CASA-QAM-IF-MIB for setting video transport stream properties.</p> <p>CASA-QAM-MIB: OID: 1.3.6.1.4.1.20858.10.27</p> <p>casaQamPortAnnex (.1.1.1.5) – annex-A(1), annex-B(2), annex-C(3) casaQamPortSymbolRate (.1.1.1.6) – 1..6952 [6952 ks/s] casaQamPortChannelSpacing (.1.1.1.7) casaQamPortInterleave (.1.1.1.8) – unknown(1), other(2), taps8Increment1(3), taps12Increment1(4), taps16Increment1(5), taps32Increment1(6), taps64Increment1(7), taps128Increment1(8), taps128Increment2(9), taps128Increment3(10), taps128Increment4(11), taps128Increment5(12), taps128Increment6(13), taps128Increment7(14), taps128Increment8(15)).</p> <p>CASA-QAM-IF-MIB: OID: 1.3.6.1.4.1.20858.10.101.2</p> <p>casaQamIfPortAnnex (.1.1.1.6) – annex-A(1), annex-B(2), annex-C(3) casaQamIfPortSymbolRate (.1.1.1.7) [6952 ks/s] casaQamIfPortChannelSpacing (.1.1.1.8) casaQamIfPortInterleave (.1.1.1.9) – unknown(1), other(2), taps8Increment1(3), taps12Increment1(4), taps16Increment1(5), taps32Increment1(6), taps64Increment1(7), taps128Increment1(8), taps128Increment2(9), taps128Increment3(10), taps128Increment4(11), taps128Increment5(12), taps128Increment6(13), taps128Increment7(14), taps128Increment8(15))</p>
74999	Defect: No service impact (Low)	<p>The DOCS-IF31-MIB has been updated to the 2016-12-15 version. The following MIB tables have been revised or added:</p> <ul style="list-style-type: none"> • docslf31RxChStatusOfdmProfiles • docslf31CmEmDlsStatusAssignedEmIds • docslf31CmtsDsOfdmSubcarrierStatusMainModulation • docslf31CmtsDsOfdmSubcarrierStatusSkip • docslf31CmtsDsOfdmSubcarrierStatusSkipModulation • docslf31CmtsUsOfdmaDataLutStatsAssignedCmCt

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
74996	Defect: No service impact (Low)	A error which was preventing cable modem channel statistics updates from being accurately reported in the CLI show cable modem summary total and the show cable modem bonding has been fixed.
75027	Enhancement: Operational, CLI (Medium)	<p>The ha hardware ups16x8 recovery <00000000:00000003> self-recover <00000000:00000003> command has been introduced the Casa CLI to control the hardware health check functionality of the UPS 16x8 module for specifying how to handle single event upset (SEU) failures. An SEU failure can result in a bit error in the FPGA configuration, which may or may not have an effect on service.</p> <p>See the section, "UPS 16x8 SEU health checks" in this notice for detailed information.</p>
75215	Defect: Possible service impact (Low)	Protections have been implemented in the software to ensure proper freeing and reestablishment of Simulcrypt EIS sessions whenever an SMM switchover takes place. The fix addresses a situation where the Simulcrypt process was unable to recover due to the system attempting to free an already closed EIS session following the SMM switchover.
75428	Defect: No service impact (Low)	The VPNID in show l2vpn vlan command output was fixed to include the entire string value. The value was previously truncated.
75437	Enhancement. Operational, CLI (Low)	<p>The video input-null-drop command has been added to the Casa CLI to enable dropping null video packets at input. Use the no form of the command to disable dropping null video packets at input, which is the default setting. Use the show video global config include input command to confirm the configuration setting.</p> <p>Example:</p> <pre>CASA(config)# video input-null-drop CASA(config)# show video global include input video input-null-drop.</pre>
75685	Enhancement. Operational (Low)	The video processing for multicast video was enhanced to use both the destination IP address and UDP port to identify a multicast session (with UDP port 0, only the IP address is used). Previously only the destination IP address was used to identify a multicast session.

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description																								
75691	Enhancement. Operational, CLI (Low)	<p>The show tech command in the Casa CLI has been enhanced to include SimulCrypt related output. A partial display is provided in the example below.</p> <p>Example:</p> <pre>CASA# show tech be Simulcrypt</pre> <pre>show video simulcrypt ecmg ! ECMG yli2: System Id : 18982 Subsystem Id : 0 Domain Name : N/A IP Address : 172.16.8.195 TCP Port : 22288 Priority : 1 Protocol Version : 3 Access-criteria : N/A ECMG Uptime : 0 d : 0 h : 0 m : 24 s Connection Status : Connected Channel Status : Open ECM channel ID : 254 Stream Information:</pre> <table><tr><th>Stream ID</th><th>Stream ECM ID</th><th>Slot</th><th>Scg-ID</th><th>CP number</th><th>Status</th></tr><tr><td>-----</td><td>-----</td><td>----</td><td>-----</td><td>-----</td><td>-----</td></tr><tr><td>1</td><td>4100</td><td>0</td><td>1001</td><td>0</td><td>Open</td></tr><tr><td>2</td><td>4100</td><td>0</td><td>1002</td><td>0</td><td>Open</td></tr></table>	Stream ID	Stream ECM ID	Slot	Scg-ID	CP number	Status	-----	-----	----	-----	-----	-----	1	4100	0	1001	0	Open	2	4100	0	1002	0	Open
Stream ID	Stream ECM ID	Slot	Scg-ID	CP number	Status																					
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1	4100	0	1001	0	Open																					
2	4100	0	1002	0	Open																					

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
75693	Enhancement, Operational, SNMP (None)	<p>Video elementary stream monitoring is now available in the CASA-VIDEO-MIB with the added casaVideoElemStreamTable objects.</p> <p>OID: 1.3.6.1.4.1.20858.10.103.1.15.2</p> <pre> casaVideoElemStreamTable OBJECT-TYPE SYNTAX SEQUENCE OF CasaVideoElemStreamEntry MAX-ACCESS not-accessible STATUS current DESCRIPTION "Casa video elementary stream table" ::= { casaVideoTransportStreamObjects 2 } CasaVideoElemStreamEntry ::= SEQUENCE { casaVideoElemStreamOutPid Integer32, casaVideoElemStreamOutProgNum Integer32, casaVideoElemStreamType INTEGER, casaVideoElemStreamDataRate Integer32 } </pre>
75694	Enhancement, Operational, SNMP (None)	<p>Video active program mapping monitoring is now available in the CASA-VIDEO-MIB with the added casaVideoActiveProgMappingTable objects.</p> <p>OID: 1.3.6.1.4.1.20858.10.103.1.15.3</p> <pre> casaVideoActiveProgMappingTable OBJECT-TYPE SYNTAX SEQUENCE OF CasaVideoActiveProgMappingEntry MAX-ACCESS not-accessible STATUS current DESCRIPTION "Casa video active input and output program mapping table" ::= { casaVideoTransportStreamObjects 3 } CasaVideoActiveProgMappingEntry ::= SEQUENCE { casaVideoInProgNumber Integer32, casaVideoOutProgNumber Integer32, casaVideoQamChannelDesc DisplayString, casaVideoProgTimeActive TimeTicks } </pre>

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
75695	Enhancement, Operational, SNMP (Low)	<p>Video active PID mapping monitoring is now available in the CASA-VIDEO-MIB with the added casaVideoActivePidMappingTable objects.</p> <p>OID: 1.3.6.1.4.1.20858.10.103.1.15.4</p> <p> casaVideoActivePidMappingTable OBJECT-TYPE SYNTAX SEQUENCE OF CasaVideoActivePidMappingEntry MAX-ACCESS not-accessible STATUS current DESCRIPTION "Casa video active elementary stream PID mapping table" ::= { casaVideoTransportStreamObjects 4 } </p> <p> casaVideoActivePidMappingEntry (.15.4.1) casaVideoInputPid (.15.4.1.1) casaVideoOutputPid (.15.4.1.2) casaVideoPidMapQamChannelDesc (.15.4.1.3) casaVideoPidMapTimeActive (.15.4.1.4) - .01 sec </p>
75697	Enhancement, Operational, SNMP (Low)	<p>Video global control monitoring is now available in the CASA-VIDEO-MIB with the added casaVideoGlobalControlObjects.</p> <p>OID: 1.3.6.1.4.1.20858.10.103.1.16</p> <p> casaVideoGlobalControlObjects casaVideoPATInterval (.16.1)* - ms casaVideoPMTInterval (.16.2)* - ms casaVideoUnicastTimeout (.16.3)* - sec casaVideoMulticastTimeout (.16.4)* - sec casaVideoGlobalJitterBufferSize (.16.5)* - ms casaVideoUdpPortOffset (.16.6) casaVideoERMPProtocol (.16.7) casaVideoVODPidRemapScheme (.16.8)* - auto(1), pg-num-based(2) casaVideoOverFlowRecovery (.16.9) - enabled(1), disabled(2) casaVideoPreEncryptDetection (.16.10) - enabled(1), disabled(2) </p>

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
75698	Enhancement, Operational, SNMP (Low)	<p>Video jitter buffer monitoring is now available in the CASA-VIDEO-MIB with the added casaVideoJitterBufferTable objects.</p> <p>OID: 1.3.6.1.4.1.20858.10.103.1.15.5</p> <pre> casaVideoJitterBufferTable OBJECT-TYPE SYNTAX SEQUENCE OF CasaVideoJitterBufferEntry MAX-ACCESS not-accessible STATUS current DESCRIPTION "Casa video jitter buffer table" ::= { casaVideoTransportStreamObjects 5 } casaVideoJitterBufferEntry (.15.5.1) casaVideoOutProgNum (.15.5.1.1) casaVideoChannelDesc (.15.5.1.2) casaVideoJitterBufferStatus (.15.5.1.3) - active(1), error(2) casaVideoPcrJitter (.15.5.1.4) - nanoseconds casaVideoPcrCounter (.15.5.1.5) casaVideoPcrContErrs (.15.5.1.6) casaVideoJitterBufferSize (.15.5.1.7) - milliseconds </pre>

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
75708	Enhancement. Operational, CLI (Low)	<p>A software change has been applied so that encrypted passwords no longer display in clear text with the show mpls ldp session command, as follows:</p> <ul style="list-style-type: none"> When the service password-encryption setting is enabled, the show mpls ldp session command will now display the text string "Password Encrypted!" on the Peer LDP Password line in the output. When the service password-encryption setting is disabled, the already-encrypted password will continue to display the text string "Password Encrypted!," with the adjacency being created only after the password encryption is disabled. If the LDP neighbor password is removed, then the text string "Not Set!" is displayed in the command output. <p>Example:</p> <pre>CASA (config-router-ldp)# show mpls ldp session 66.66.66.66 Session state : OPERATIONAL Session role : Active TCP Connection : Established IP Address for TCP : 66.66.66.66 Interface being used : xgige6/0 Peer LDP ID : 66.66.66.66:0 Peer LDP Password : Password Encrypted!</pre>
76029	Defect: Possible service impact (Medium)	The log message "bcm error:casa_qos_stats_get: bcm_field_stat_multi_get failed Internal error(-1)" resulted from an error when reallocating and changing a field processor counter. A fix has been implemented to ensure that all counters are always allocated in the same configuration.
76092	Defect: Possible service impact (Medium)	An error which was causing an extra PAT version packet to be inserted during the startup process of a video stream has been fixed. The extra PAT version packet is removed with this fix.

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
76380	Enhancement, Operational, SNMP (None)	<p>The CASA-VIDEO-MIB has been updated to support monitoring video transport stream statistics in SNMP queries.</p> <p> casaVideoTransportStreamTable OBJECT-TYPE SYNTAX SEQUENCE OF CasaVideoTransportStreamEntry MAX-ACCESS not-accessible STATUS current DESCRIPTION "Casa video transport stream table" ::= { casaVideoTransportStreamObjects 1 } </p> <p>SNMP OID: 1.3.6.1.4.1.20858.10.103.1.15.1</p> <p> casaVideoTransportStreamObjects (.15) casaVideoTransportStreamTable (.15.1) casaVideoTransportStreamEntry (.15.1.1) casaChannelTSID (.15.1.1.1) casaVideoTransportStreamIndex (.15.1.1.2) casaVideoTransportStreamId (.15.1.1.3) casaVideoTransportStreamSessionId (.15.1.1.4) casaVideoTransportStreamSRMId (.15.1.1.5) casaVideoTransportStreamVideoInterfaceId (.15.1.1.6) casaVideoTransportStreamDstIpAddr (.15.1.1.6) casaVideoTransportStreamDstIpAddr (.15.1.1.7) casaVideoTransportStreamDstUdpPort (.15.1.1.8) casaVideoTransportStreamSrcIpAddr (.15.1.1.9) casaVideoTransportStreamQamChannel (.15.1.1.10) casaVideoTransportStreamQamDomainId (.15.1.1.11) casaVideoTransportStreamPIDRemap (.15.1.1.12) casaVideoTransportStreamInProgramNum (.15.1.1.13) casaVideoTransportStreamOutProgramNum (.15.1.1.14) casaVideoTransportStreamAvgBitrate (.15.1.1.15) casaVideoTransportStreamInputState (.15.1.1.16) casaVideoTransportStreamOutputState (.15.1.1.17) casaVideoTransportStreamPSIDetected (.15.1.1.18) casaVideoTransportStreamTimeActive (.15.1.1.19) casaVideoTransportStreamEncryption (.15.1.1.20) </p>
76407	Enhancement. Operational, Web UI (Low)	<p>The Configure > QAM screen was revised in the Casa Web UI to include "Keep Configuration" and "Revoke Configuration" buttons after a QAM annex change is made. The previous "Revoke" dialog was unclear in that a Cancel was necessary to accept the change.</p>

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
76498	Enhancement. Operational, CLI (Low)	<p>The video simulcrypt log feature-log command has been introduced in the Casa CLI to redirect SimulCrypt log messages to the video log which would normally go to the system log. The function is disabled by default. Once enabled, apply the no form of the command to disable this functionality.</p> <p>Example:</p> <pre>CASA(config)# video simulcrypt log feature-log CASA(config)# show video log volatile ... CASA(config)# no video simulcrypt log feature-log</pre>
76527	Defect: Possible service impact (Low)	<p>A problem was observed where an OFDMA channel was experiencing a 5–10 dB drop in reported transmit power. The drop resulted from a symbol rate configuration change to the TDMA single-carrier channels which then affected the OFDMA channel transmit power configuration. Resetting the UPS module resolved the issue. This problem has been fixed.</p>
76681	Enhancement, Operational, SNMP (None)	<p>Certain object values were modified in the following SNMP MIBs:</p> <p>CASA-QAM-MIB OID: 1.3.6.1.4.1.20858.10.27</p> <ul style="list-style-type: none"> • casaQamPortChannelSpacing (.1.1.1.7) — changed to read-only • casaQamChannelWidth (.1.2.1.7) — changed to read-only <p>CASA-QAM-IF-MIB OID: 1.3.6.1.4.1.20858.10.101.2</p> <ul style="list-style-type: none"> • ccasaQamIfPortChannelSpacing (.1.1.1.8) — changed to read-only • casaQamIfChannelWidth (.1.2.1.8) — changed to read-only

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
76760	Enhancement: Operational, SNMP (Low)	<p>The available values for the casaQamIfChannelAnnex object of the CASA-QAM-IF-MIB have been enhanced to include the unknown(0) value to report OFDM channels which do not support channel annexes.</p> <pre>-- 1.3.6.1.4.1.20858.10.101.2.1.2.1.12 casaQamIfChannelAnnex OBJECT-TYPE SYNTAX INTEGER { unknown(0), annex-A(1), annex-B(2), annex-C(3) } MAX-ACCESS read-write STATUS current DESCRIPTION "Qam Channel Annex Type" ::= { casaQamIfChannelEntry 12 }</pre> <p>Example:</p> <pre>... 1440: casaQamIfChannelAnnex.13000095 (integer) annex-B(2) 1441: casaQamIfChannelAnnex.14000000 (integer) unknown(0) 1442: casaQamIfChannelAnnex.14000008 (integer) unknown(0) 1443: casaQamIfChannelAnnex.14000016 (integer) unknown(0) 1444: casaQamIfChannelAnnex.14000024 (integer) unknown(0) 1445: casaQamIfChannelAnnex.14000032 (integer) unknown(0) 1446: casaQamIfChannelAnnex.14000040 (integer) unknown(0) 1447: casaQamIfChannelAnnex.14000048 (integer) unknown(0) 1448: casaQamIfChannelAnnex.14000056 (integer) unknown(0)</pre>

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
76869	Enhancement. Operational, CLI (Low)	<p>The spectrum-rule configuration cm-mode tolerance-count <4:100> [low-modem-count <n> min-modem-count <n>] command has been modified in the Casa CLI by boundary checking for low and minimum modem counts. Errors are returned if the values do not conform to the boundary checking.</p> <p>The low-modem-count <n> must be higher than one-third the tolerance-count and up to 255, and defaults to 45. The min-modem-count <n> goes from 1 up to one-third the tolerance-count and less than the low-modem-count, and defaults to 10.</p> <p>Example:</p> <pre>CASA(config)# spectrum rule 13 CASA(conf-rule 13)# cm-mode tolerance-count 100 low-modem-count ? <1-255> default to 45 CASA(conf-rule 13)# cm-mode tolerance-count 100 low-modem-count 2000 min-modem-count ? <1-33> default to 10 CASA(conf-rule 13)# cm-mode tolerance-count 100 low-modem-count 2000 min-modem-count 2001 error: the low-modem-count must be higher than tolerance-count / 3 (33 in this case) and lower than 255 CASA(conf-rule 13)# cm-mode tolerance-count 100 low-modem-count 33 min-modem-count 33 error: the minimum-modem-count must be lower than the low-modem-count and lower than tolerance-count / 3 in this case must be 1...33 and lower than 33 CASA(conf-rule 13)# cm-mode tolerance-count 100 low-modem-count 33 min-modem-count 32 CASA(conf-rule 13)#</pre>

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
76874	Enhancement: Operational, CLI (Low)	<p>The video simulcrypt scg module <0:13> delete command has been modified in the Casa CLI diag mode to delete all Scrambling Control Group (SCG) IDs from a module if there are no active streams in progress. Previously, only a specific SCG ID could be deleted. However, this function is still an option with the video simulcrypt scg <id> module <0:13> delete command.</p> <p>Example: CASA(diag) # video simulcrypt scg module 13 delete</p>
76984	Enhancement: Operational, SNMP (Low)	The casaQamPortIpAddress, casaQamPortSubnetMask, and casaQamPortMacAddress objects in the casaQamPortTable of the CASA-QAM-MIB have been changed to READ-ONLY. Previously, these objects were defined as READ-WRITE in the MIB.
77041	Enhancement: Operational, SNMP (None)	The casaVideoSimuCryptoPeriod object in the CASA-VIDEO-TS-MON-MIB has been revised to use the range 10–6000 seconds. The previous range was 10 to 86400 seconds (out of range).
77042	Enhancement, Operational, SNMP (None)	<p>The following modifications were made to MIB objects:</p> <p>CASA-QAM-MIB OID: 1.3.6.1.4.1.20858.10.27</p> <ul style="list-style-type: none"> • casaQamChannelNetworkId (.1.2.1.4) — changed to read-only • casaQamChanneltransportId (.1.2.1.5) — added as read-write with range 0–65535 • casaQamChannelSymbolRate (.1.2.1.8) — changed range from 1–6999 to 5000–6999 <p>CASA-QAM-IF-MIB OID: 1.3.6.1.4.1.20858.10.101.2</p> <ul style="list-style-type: none"> • casaQamIfChannelNetworkId (.1.2.1.5) — changed to read-only • casaQamIfChannelSymbolRate (.1.2.1.9) — changed range from 1–6999 to 5000–6999

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
77123	Enhancement, Operational, SNMP (None)	The following modifications were made to objects in the CASA-VIDEO-TS-MIB: OID: 1.3.6.1.4.1.20858.10.57 <ul style="list-style-type: none"> • casaVideoSimuTrapLog (.7.15) — changed to read-only • casaVideoSimuTrapEnable (.7.16) — added as read-write with values enabled(1) and disabled(2)
77172	Enhancement, Operational, SNMP (Low)	The casaVideoElemStreamType object in the CASA-VIDEO-MIB has been enhanced with two additional values for the stream type: scte18(5) and scte35(6). The values are as follows: casaVideoElemStreamType (.15.2.3) – other(0), video(1), audio(2), data(3), ecm(4), scte18(5), scte35(6)
77192	Defect: Possible service impact (Medium)	Under certain conditions in configurations with multiple VRFs, a software issue has been found which could cause the SMM ARP process to get stuck with a resulting looping condition and subsequent SMM switchover. This problem has been fixed.
77518	Enhancement: Operational, SNMP (None)	The following objects in the CASA-QAM-MIB were changed from read-write to read-only: OID: 1.3.6.1.4.1.20858.10.101.2 <ul style="list-style-type: none"> • casaQamIfPortIpAddress (.1.1.1.3) • casaQamIfPortSubnetMask (.1.1.1.4) • casaQamIfPortMacAddress (.1.1.1.5)
77680	Enhancement: Performance (Low)	A software change has been implemented to support an increased the number of unsolicited grant service (UGS) voice flows in the UPS queue with up to 90% voice bandwidth allocation on the UPS port. With this enhancement, the UPS scheduler can now manage up to 40 UGS voice flows per port depending on the modulation profile in use.

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
77708	Defect: No service impact (Low)	<p>The show cable modem remote-query command now correctly populates and aligns data with the column headers in the displayed output. The US Intf and DS Intf column headers, which were incorrectly implemented due to the multiple variations of the show cable modem command, have been removed from the display.</p> <p>Example:</p> <pre>CASA# show cable modem remote-query MAC Address IP Address S/N US DS TXTime Micro(dB) Modem Ratio Power Power Offset Reflection State 0025.2ed4.x 10.121.xx 0.0 0.0 0.0 -- 0 online</pre>
77758	Enhancement: Operational, CLI (Low)	<p>The [no] ofdma probe interval command value range has been modified in the Casa CLI to 1–10080 minutes. Previously, the minimum interval was 10 minutes, which was resulting in delayed updates to the channel RxMER statistics reported in SNMP queries.</p> <p>Example:</p> <pre>CASA(config)# ofdma probe interval 1 CASA(config)# no ofdma probe interval</pre>
77759	Defect: Possible service impact (Medium)	<p>The OFDMA signal-to-noise ratio (SNR), carrier-to-noise ratio (CNR), and modulation error ratio (MER) were showing a 6 dB higher value in the CLI using the show cable modem fec and show upstream commands compared to the results reported in a spectrum analyzer. An FPGA calibration change has been applied to correct the problem.</p>
77793	Defect: Possible service impact (Medium)	<p>A problem which could result in a failure to correctly set up and establish a session with an adjacent LDP peer has been fixed. The problem was observed in situations where there are multiple LDP adjacencies.</p>
77895	Defect: Possible service impact (Medium)	<p>Checks have been implemented in the software to detect a possible service flow logic error in the QAM scheduler which could cause multicast service flows for a channel to get stuck with possible packet loss. The following error has been observed:</p> <pre>[Fri Jul 28 14:59:50 2017]-ER-QAM-2: lc2: Module 2: channel: 6, priority: 0, round: 2, slot: 4, scheduler bit is set but sf ptr is NULL(repeat count 10, last time Sat Jul 29 13:54:32 2017)</pre> <p>A fix has been applied to recover the service flow if an incorrect service flow pointer is detected.</p>

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
77902	Defect, No service impact (Low)	<p>The unit values for the interface QAM channel <number> power-attenuation and shared-channel <number> power-attenuation commands have been modified from tenths of a dBmV to tenths of a dB. These changes have also been applied to the Casa Video Web UI.</p> <p>Example: CASA(config-if-qam 0/0)# channel 0 power-attenuation <0-100> attenuation value in tenth of dB (default: 0)</p>
77903	Defect: No service impact (Low)	<p>A case was reported where some of the default settings which would normally appear in the Casa Video Web UI were being dropped from the Configure > QAM screen. Default settings are now copied to the Video Web screens as expected.</p>
77913	Enhancement: Operational, CLI, Web UI (Low)	<p>The [no] http inactive-session-timeout command has been introduced in the Casa CLI to set an HTTP session timeout value for the Casa Video Web UI. The range is 0–1440 minutes, or the default value of 10 minutes.</p> <p>The no http inactive-session timeout command sets the value to 0, which deactivates the timeout. The show http inactive-session-timeout command displays the current setting.</p> <p>Example: CASA(config)# http inactive-session-timeout <0-1440> inactive session timeout in minutes, 0 means never timeout default default timeout value, 10 minutes CASA(config)# http inactive-session-timeout default CASA(config)# no http inactive-session-timeout CASA(config)# show http inactive-session-timeout http inactive-session-timeout 0</p>
78081	Defect: No service impact (Low)	<p>snmpbulkget and snmpbulkwalk queries to the CASA-VIDEO-TS-MON-MIB were returning different values for certain casaVideoSimuConnectionTable MIB entries depending on the SNMP management tool being used. The same values are now returned regardless of the SNMP management tool.</p> <pre>-- 1.3.6.1.4.1.20858.10.57 casaVideoSimuConnectionStatus (.7.5.1.8) casaVideoSimuConnectionChannelStatus (.7.5.1.9) casaVideoSimuConnectionEcmChannelId (.7.5.1.14) casaVideoSimuConnectionStreamEcmId (.7.5.1.15) casaVideoSimuConnectionStreamStatus (.7.5.1.16)</pre>

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
78109, 77757	Enhancement: Operational, SNMP (None)	The ENTITY-MIB entPhysicalTable objects were missing OFDMA channel features. These objects are now presented in SNMP MIB queries.
78111, 77222	Defect: Possible service impact (Medium)	The docsIf31CmtsUsOfdmaDataLucStatsTable and docsIf31CmtsCmUsOfdmaProfileStatusTable objects of the DOCS-IF31-MIB-VIDEO-MIB were not displaying the actual IUC mapping per OFDMA channel. This issue has been fixed.
78342	Enhancement: Operational, CLI (Low)	<p>The show cable modem registered-traditional-docsis command has been added to the Casa CLI to display cable modems as DOCSIS version 3.0 that were incorrectly re-registered as traditional DOCSIS version 2.0. The re-registration could occur after shutting down and restarting a MAC domain. With this command, the re-registered CMs are shown in their correct original registration as D3.0 CMs.</p> <p>Example:</p> <pre>CASA# clear cable modem docsis-mac 2 registered-traditional-docsis reset Please type YES to confirm reset all modems in the specified range: yes CASA# show cable modem registered-traditional-docsis MAC IP Address US DS MAC Prim RxPwr Timing Num BPI Intf Intf Status Sid (dBmv) Offset CPEs Enb 386b.bbdf.bf54 10.66.1.34 4/2.0/0 0/2/3 online(pt) 12 7.5 2394 0 yes</pre>
78390	Defect: Possible service impact (Medium)	A software fix has been applied to correct a map messaging issue which resulted in available voice bandwidth not being fully utilized on the UPS port. The problem was observed when femtocell UGS voice flows with increased grant size were added to the UPS scheduler.
78409	Defect: Possible service impact (Medium)	Algorithm changes have been applied to correct a downstream service flow scheduling issue with mixed modem OFDM/SC-QAM channels. SC-QAM and OFDM channels were not being fully loaded in the mixed mode configuration with reduced channel loading when either one or two OFDM channels were enabled. In addition to the algorithm changes, checks have been implemented to monitor service flow and packet counts to ensure full utilization of downstream channels in the mixed mode.

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
78497, 77833	Defect: No service impact (Low)	The message "himem_free_buf: error : negative ref cnt" has been observed when applying or reverting an in-service patch to systems running the UPS 16x4 module. Modems remained online and there was no impact to service. The problem has been fixed.
78498	Defect: Possible service impact (Medium)	Using the mirror port nsi-port <num> command in the Casa diag mode and then switching over to the standby SMM resulted in the no mirror port command failing to clear the port mirror. The problem prevented new port mirrors from being applied to the active SMM. This problem has been fixed.
78525	Defect: No service impact (Low)	The ifSpeed and IfHighSpeed objects in the IF-MIB were returning incorrect values for VLAN interfaces. This problem has been fixed.
78669	Defect: Possible service impact (Medium)	After making changes to QAM channel parameters, such as changing an SC-QAM channel frequency, a situation was observed where some modems would de-register momentarily and then immediately come back online with the CMTS. Upon investigation of the problem, certain modems with low tolerance could not tolerate a brief disturbance across QAM ports affected by a parameter change, which could cause modems to flap briefly followed by quick recovery. The problem has been fixed.
78741	Defect: No service impact (Low)	A problem was reported where SNMP queries to the docsQosServiceFlowTable and docsQosGrpServiceFlowTable objects of the DOCS-QOS3-MIB would cause the SNMP process to go down with a resulting SMM switchover. This problem has been fixed.
78778	Defect: Possible service impact (Medium)	A CLI-initiated D3.1 dynamic channel change (DCC) from a SC-QAM channel to an OFDM channel resulted in a "wrong rsp dcc_resp_message" error and an unsuccessful DCC. To correct the problem, TLV 2.7 (OFDM Block Frequency) is now included in the DCC request message.

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
78801	Enhancement: Operational, CLI (Medium)	<p>The module <slot> qam8x96 ofdm-channels {enable disable} command has been introduced in the Casa CLI to enable or disable OFDM channels on the QAM 8x96 module. The default setting is disable. The number of channels is set by the module <slot> ofdm-channels command; one OFDM channel per port is supported for the QAM 8x96.</p> <p>Use the show module <slot> config command to display the OFDM channel configuration.</p> <p>Example:</p> <pre>CASA(config)# module 1 qam8x96 ofdm-channels enable CASA(config)# show module 1 config Module 1: QAM8x96 ofdm channels enabled</pre> <p>Use the show module <slot> config command to show the module OFDM channels configuration.</p> <p>Example:</p> <pre>CASA(config)# module 0 qam8x96 ofdm-channels enable CASA(config)# module 1 qam8x192 ofdm-channels 2 CASA(config)# show module 0 config Module 0: QAM8x96 ofdm channels enabled</pre>
78852, 74895, 70036	Defect: No service impact (Low)	A problem which was causing the xgige interface description to change to an incorrect setting after performing a system reboot has been fixed.
78917	Defect: Possible service impact (Medium)	A software change has been implemented to support handling of PME private data in separate PMT packets from normal PMT packets.
78998	Defect: Possible service impact (Medium)	Support for fragmented program association table (PAT) packets has been implemented in this release. The software change addresses an issue where fragmented packets in video broadcast pass-through input streams could result in a QAM module switchover.

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
79125	Enhancement: Operational, Web UI (Medium)	<p>The Configure > Video > Global screen of the Casa Web UI has been enhanced to include the Program Number Pass Through setting as an equivalent to the CLI [no] video program-number pass-through command. The setting enables or disables using the same table-mode VOD input program number as the output program number when sending the initial set-top box (STB) configuration file.</p> <p>This option is disabled by default where the output program number is based on the table mode VOD mapping.</p>
79142	Defect: Possible service impact (Medium)	Changing a RIP distribute-list ACL rule was causing the RIP connected (Rc) and RIP static (Rs) routes to become inactive. To fix the problem, Rc and Rs routes in the RIP database are no longer updated with a distribute-list rule change.
79291	Enhancement: Operational, CLI (Low)	<p>The shared-ofdm <slot>/<shared_chan> property has been implemented with the load-balance restricted-group command to support shared OFDM downstream channels in the load-balancing restricted-group configuration.</p> <p>Example:</p> <pre>CASA(config)# load-balance restricted-group 1 CASA(load-bal-restrict 1)# shared-ofdm 3/0 CASA(load-bal-restrict 1)# show this load-balance restricted-group 1 docsis-mac 2 enable qam 3/0/9 qam 3/0/10 qam 3/0/11 qam 3/0/12 shared-ofdm 3/0</pre>
79325	Enhancement: Operational, SNMP (Low)	<p>The casaDocsModemSummaryDocs31 object has been added to the CASA-DOCS-EXT-MIB to enable counters for DOCSIS 3.1 cable modems.</p> <pre>-- 1.3.6.1.4.1.20858.10.22.2.22.1.6 casaDocsModemSummaryDocs31 OBJECT-TYPE SYNTAX Counter32 MAX-ACCESS read-only STATUS current DESCRIPTION "Counter of DOCS3.1 cable modem." ::= { casaDocsModemSummaryEntry 6}</pre>

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
79393, 79686	Defect: Possible service impact (Medium)	<p>A problem was observed where the most recent auto-negotiation setting (either enabled or disabled) on an interface was not reported correctly in the show interface gige stat command. SNMP queries and other CLI show interface gige commands continued to report auto-negotiation setting correctly.</p> <p>A software change has been applied to improve status checking of interfaces whenever a hardware configuration change is being applied to the Casa database.</p>
79394	Defect: Possible service impact (Low)	<p>Some OFDMA interface rolloff-period and cyclic-prefix values were not configurable due to a CLI software error. This problem has been fixed.</p> <p>Example:</p> <pre>CASA(config)# interface ofdma 10/6.0 CASA(config-ofdma-channel 10/6.0)# rolloff-period 0 CASA(config-ofdma-channel 10/6.0)# cyclic-prefix 96 CASA(config-ofdma-channel 10/6.0)# show this</pre> <pre>interface ofdma 10/6.0 lower-freq 5000000 upper-freq 25000000 cyclic-prefix 96 rolloff-period 0 up-down-trap-enabled iuc-profile 1 no shutdown</pre>
79625	Defect: Possible service impact (Medium)	During cable modem init(0) ranging attempts, IUC4 (fine ranging) over OFDMA channels resulted in non-energy packets. To correct this problem, the no-energy detection threshold in the FPGA has been lowered to an additional -6 dB tolerance to ensure successful modem initial ranging with the CMTS.
79679	Enhancement: Operational, CLI (Low)	To address cases where some cable modems may not be able to come online with the CMTS, the cable tcc non-replace command has been added to the Casa CLI to disable the REPLACE action in transmit channel configuration (TCC) for modems ranging on upstream channels. The default is no cable tcc non-replace , where the "REPLACE function is enabled.

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
79849, 79850 80596	Enhancement: Operational, CLI (Medium)	<p>The module <slot> qam8x96 dvb-channels <0:16> command was introduced in the Casa CLI to set the number of DVB SimulCrypt-capable channels for all ports of the QAM 8x96 module. The default value is 8.</p> <p>Channels 40-47 can be used either as DOCSISsecondary or DVB video channels.</p> <p>When the dvb-channels parameter is set between 0-8, then all channels are capable of DOCSIS. Channels 0-31 are primary-capable, with all others being secondary-only. DVB video channels will be allocated starting from channel 40.</p> <p>When dvb-channels parameter is set between 9-16, channels 32-39 cannot be used as DOCSIS channels. Channels 0-31 are primary-capable and channels 40-47 are secondary-only. DVB video channels will be allocated starting from 32.</p> <p>If OFDM is disabled, the number of DVB channels can be 0–16. If OFDM is enabled, only 4 or 12 DVB channels are available with a default of 4 channels.</p> <p>The command may require a module reboot.</p> <p>Example:</p> <pre>CASA(config)# module 0 qam8x96 dvb-channels 8</pre> <p>Need to reboot module 0 to apply the change, no switchover will be performed.</p>
79998	Enhancement: Operational (Low)	<p>The CMTS now sends TLV 2 (Power Level Adjust in the RNG-RSP message when replying to the O-INIT-RNG-REQ from the modem per DOCSIS 3.1 specification (v. I10-170111). TLV 14 (Dynamic Range Window Upper Edge) and TLV 17 (Commanded Power) will no longer be returned in the RNG-RSP message to the modem O-INIT-RNG-REQ message.</p>
80042	Enhancement: Operational (Medium)	<p>All QAM channels now allow the same channel width but different modes (annex, modulation, spectral inversion, or symbol rates) to be shared in a DUC block. This enhancement enables more efficient use of the channel blocks to more space available for VOD and DOCSIS channels.</p>
80044	Enhancement: Operational, CLI (Low)	<p>The show ssh hostkey command has been modified in the Casa CLI to accept the values dsa (Digital Signature Algorithm), ecdsa (Elliptical Curve Digital Signature Algorithm), ed25519 (Edwards-curve Digital Signature Algorithm), and rsa (Rivest, Shamir and Adleman) to be compatible with SSH Version 2.</p>

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
80165	Defect: Possible service impact (Medium)	A problem was reported where cable modems were not able to join multicast sessions (IGMP join) with logged messages indicating low Group Service Flow (GSF) counts. This problem has been fixed.
80188	Defect: Possible service impact (Medium)	Incorrect routing status of GigE interfaces was observed with the CLI show ip route command. A problem was found where the next hop was not being selected for the configured static route and BGP route at the time of the show ip route command. This problem has been fixed.
80321	Defect: Possible service impact (Medium)	A VLAN-based policy-based routing (PBR) logic error which could result in upstream packet loss from CPEs has been fixed. The reported problem was cleared by performing an SMM switchover.
80330	Defect: No service impact (Low)	<p>The ha hardware ups16x8 recovery command help text was displaying an incorrect value of 00000003 for the default setting. The actual default value is 00000000 (no action). The help description has been corrected.</p> <p>Example:</p> <pre>CASA(config)# ha hardware ups16x8 recovery ? <bitmap> bitmap 0 - ffffffff default use default values: recovery 00000000 self-recover 00000000</pre>
80425	Defect: Possible service impact (Medium)	After executing a clear arp cache all command, loopback interfaces on the C100G were no longer reachable. The problem was traced to an issue which was causing the next hop router to incorrectly install an ARP address of the C100G loopback address. A software change has been applied to ensure consistent behavior between the active and standby SMM interfaces where the sender IP field in ARP packets is the outgoing interface IP address, and NOT the loopback ip address.
80459	Enhancement: Operational, Web UI (Medium)	The Configure > QAM screen of the Casa Web UI has been enhanced to include the Shared Ofdm slot and port setting and resulting table entries.

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
80463	Enhancement: Operational, CLI (Low)	<p>The [no] video table custom prog-per-chan <num> command has been added to the Casa CLI to set the number of programs per QAM channels. The supported values are 32, 64, or 256. The default is 64.</p> <p>Example: CASA(config)# video table custom prog-per-chan 64 chan-per-port 24 start-udp-offset 65 skip-chan 12 CASA(config)# no video table</p>
80527	Enhancement: Operational, CLI (Low)	<p>The output to the show cable modem verbose command has been modified in the Casa CLI to show the CFG Max-CPE value as CFG-Max-IPv4-CPE to be specific to the IPv4 protocol.</p>
80659	Enhancement: Operational, CLI (Low)	<p>The [no] debug video simulcrypt scs chan-status command has been introduced in the Casa CLI to enable or disable channel status debugging for the DVB SimulCrypt Synchronizer (SCS). Verify the setting using the show video simulcrypt debug-config command.</p> <p>Example: CASA(diag)# debug video simulcrypt scs chan-status CASA(diag)# show video simulcrypt debug-config SIMULCRYPT DEBUG CONFIG: TRACE: Off EIS: On ECMG: Off MSG-DUMP: Off TIER: Off SCG: Off CH-STATUS: On</p>
80751, 77776	Defect: Possible service impact: (Medium)	<p>A software fix has been applied to correct a problem where duplicate CSM message threads could be created under certain conditions when processing CSM data causing channels to remain in impaired CSM modulation. Some channels were not returning to the correct modulation after the SNR recovers with the channels stuck at the impaired modulation.</p>

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description																				
80834	Enhancement: Operational, CLI (Low)	<p>The show video simulcrypt service-list [module <number>] command has been introduced in the Casa CLI to display the list of SimulCrypt-encrypted video streams.</p> <p>Example:</p> <pre>CASA# show video simulcrypt service-list module 1</pre> <table><thead><tr><th>Module/Port/Channel Uptime</th><th>Service ID</th><th>TS ID</th><th>Session ID</th></tr><tr><th>-----</th><th>-----</th><th>-----</th><th>-----</th></tr></thead><tbody><tr><td>1 /0 /47 2017-10-11 07:44:09</td><td>1</td><td>1</td><td>7701</td></tr><tr><td>1 /0 /44 2017-10-11 07:44:09</td><td>13</td><td>1</td><td>7700</td></tr><tr><td>1 /0 /43 2017-10-11 07:44:09</td><td>1</td><td>1</td><td>7699</td></tr></tbody></table>	Module/Port/Channel Uptime	Service ID	TS ID	Session ID	-----	-----	-----	-----	1 /0 /47 2017-10-11 07:44:09	1	1	7701	1 /0 /44 2017-10-11 07:44:09	13	1	7700	1 /0 /43 2017-10-11 07:44:09	1	1	7699
Module/Port/Channel Uptime	Service ID	TS ID	Session ID																			
-----	-----	-----	-----																			
1 /0 /47 2017-10-11 07:44:09	1	1	7701																			
1 /0 /44 2017-10-11 07:44:09	13	1	7700																			
1 /0 /43 2017-10-11 07:44:09	1	1	7699																			
80844	Defect: Possible service impact (Medium)	A software fix has been applied to the decryption engine to correct a software logic error which could result in an incorrect offset and packet corruption. The logic error has been corrected in the decryption engine.																				
80963	Defect: Possible service impact (Medium)	<p>OFDMA channel power based on a TDMA reference channel could result in a lower dynamic range window (DRW) reported to the cable modem, causing the modem to attempt a ranging request starting from a relatively low power level, thereby preventing a dynamic bonding change (DBC).</p> <p>A software fix has been applied to recalculate the estimated power based on the configured bandwidth and receive power of the reference TDMA channel, as well as the receive power of the new OFDMA channel to achieve a more accurate transmit power value and DRW adjustment.</p>																				
80966	Defect: Possible service impact (Medium)	Per-service ACLs are now correctly applied and configured on the standby SMM. The affect services were: FTP, TFTP, SNMP, SSH, TELNET, TELNETS, FINGER, HTTP, RTELNET, POP2, POP3, SMTP, TIME, BOOTPS, BOOTPC, SUNRPC, NTP, IMAP, RSTP, NGOD, EDIS, and IPDR.																				

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
80969, 80548	Enhancement: Operational, CLI (Low)	<p>The cable service-flow default ds-target-buffer command has been introduced in the Casa CLI to adjust the cable service flow default downstream target buffer size to prevent latency when using a large percentage of provisioned services. Reducing the buffer interval can eliminate the service latency. Target buffer control is a quality of service (QoS) parameter of DOCSIS service flows with TLV 25.35.2.</p> <p>The command operates in the range 10–1000 ms. The default setting is 1000 ms.</p> <p>The optional bitrate value sets the rate to apply to the service flow if the maximum bitrate is below this threshold. The configuration range is 1–4294967295 kbit/sec.</p> <p>Example: CASA(config)# cable service-flow default ds-target-buffer 300 bitrate 4000000 CASA(config)# no cable service-flow default ds-target-buffer</p> <p>The show cable modem qos verbose command shows the target buffer size for a cable modem's quality of service. The tar-buff-size is shown as bytes using the following conversion:</p> <p>target buffer size = (sf. max. bitrate/8) * target-buffer-ms/1000</p> <p>Example: CASA(config)# show cable modem qos verbose Sfid :40962 ... Maximum Sustained rate : 100000 kbps ... max-buff-size : 0 bytes min-buff-size : 0 bytes tar-buff-size : 6250000 bytes</p>
81060	Defect: Possible service impact (Medium)	<p>A software change has been implemented to support operation of the cable service-class attribute mask setting for channel set selection with PCMM and DOCSIS multicast traffic. Previously, the capability was not supported.</p>

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
81102	Enhancement: CLI, Operational, (Medium)	<p>A software change has been applied to enable multiple video interfaces to share the same VLAN. Previously, only one video interface was allowed per VLAN. The CLI will not longer report the message “Can't configure vlan. It is used by other video interface” when configuring VLAN interfaces.</p> <p>Example: VLAN 100 with multiple video interfaces</p> <pre>interface video 1 vlan 100 ip address 129.121.11.1 255.255.255.0 input-port-id 1 bandwidth 10000000 xgige 6/1 interface video 2 vlan 100 ip address 129.121.11.2 255.255.255.0 input-port-id 2 bandwidth 10000000 xgige 6/1 interface video 3 vlan 100 ip address 129.121.11.3 255.255.255.0 input-port-id 3 bandwidth 10000000 xgige 6/1</pre>

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
81221, 81052	Defect: Possible service impact (Low)	<p>A software revision has been applied which affects the triggering of Subscriber Traffic Management (STM) action on channel-bonded cable modems which have exceeded the configured STM channel utilization threshold. Under this change, the average channel utilization for the bonded channels will be calculated using the channel-utilization-interval <seconds> stm-factor <number> parameter settings.</p> <p>The channel-utilization-interval is the general system configuration that specified in seconds to indicate how often channel utilization for the show docsis channel utilization command is updated. The optional stm-factor specifies the number multiplier to apply to the channel-utilization-interval to determine the overall time interval over which utilization is measured. STM action (penalty) is applied to a cable modem if the average channel-utilization-threshold is:</p> <ol style="list-style-type: none"> 1. Exceeded over the duration of a monitoring interval, and 2. Exceeded at each and every monitoring interval over the calculated time period. (See calculation below.) <p>Both the channel-utilization-interval and the stm-factor parameters are used to calculate an overall time duration where the average channel utilization (across all channels used by a cable modem) is calculated for a specific modem. The stm-factor range is 1–120, with a default setting of 30.</p> <p>Example: <code>CASA(traffic-policy 1)#channel-utilization-threshold 50</code> <code>CASA(config)#channel-utilization-interval 60 stm-factor 10</code></p> <p>STM utilization interval = channel-utilization-interval * STM factor</p> <p>where in the above example,</p> <p>STM utilization interval = 60*10=600= 10 minutes.</p> <p>If the modem is under the channel utilization threshold for even one interval, and STM penalty will NOT be applied even if the modem's average rate is above the avg-rate threshold in the preceding monitoring interval duration. Modems which have an STM penalty applied which have now dropped below the STM channel-utilization-threshold configured in the cable traffic-policy will be removed from STM penalty as monitoring intervals detect lower utilization.</p>

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
81443	Defect: Possible service impact (Medium)	<p>Under certain conditions, Program Association Table (PAT) updates for broadcast video sessions were not being correctly allocated in the pass-through broadcast QAM output. In situations where the CCAP processed a new PMT prior to the PAT update, the PMT PID was handled as a ghost PID and dropped.</p> <p>This problem has been corrected for proper handling.</p>

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description																																			
81452, 70007	Enhancement: Operational, CLI (Medium)	<p>For the QAM 8x192 module, the ofdm-channel <id> power-attenuation <value> [frequency-band <list>] command has been introduced in the Casa CLI to set the QAM interface's OFDM channel power attenuation, in tenths of a dBmV, in the range 0–200, default 0. The command allows operators to configure OFDM channel power levels independent of the SC-QAM power.</p> <p>The frequency-band option distributes the power attenuation value for a specific OFDM channel or across a frequency band range. Comma-separated values may be specified for separate ranges of channels.</p> <p>OFDM per-subcarrier attenuation is supported in segments of 6 Mhz blocks. A 192 Mhz channel can be broken up into 32 segments, with each segment having individual control of the power level. The band with index 0 is always at the lower edge frequency.</p> <p>Note: Handling of sudden changes in amplitude within an OFDM block will vary based on the modem's receiver chip implementation.</p> <p>The show interface qam <n> power command displays the value for the OFDM wideband (w) channels at the bottom of the output.</p> <p>Example:</p> <pre>CASA(config-if-qam 4/0)# ofdm-channel 0 shutdown CASA(config-if-qam 4/0)# ofdm-channel 0 power-attenuation 0 frequency-band 0-3,10,11,13-31 CASA(config-if-qam 4/0)# no channel 0 shutdown</pre> <pre>CASA(config-if-qam 4/0)# show interface qam 4/0 power Configured Total Power: 500 Calculated Per-Channel Power: 319 Send to FPGA Power: 500 Spectrum-tilt: 0 Power adjusted: 500</pre> <table><thead><tr><th>CHAN_ID</th><th>FREQUENCY</th><th>ATTNU</th><th>B_POWER</th><th>TILT</th><th>T_POWER</th><th>CH_POWER...</th></tr></thead><tbody><tr><td>0w (0)</td><td>500000000</td><td>0</td><td>319</td><td>0</td><td>319</td><td>319</td></tr><tr><td>0w (1)</td><td>506000000</td><td>0</td><td>319</td><td>0</td><td>319</td><td>319</td></tr><tr><td>0w (2)</td><td>512000000</td><td>0</td><td>319</td><td>0</td><td>319</td><td>319</td></tr><tr><td>0w (3)</td><td>518000000</td><td>0</td><td>319</td><td>0</td><td>319</td><td>319</td></tr></tbody></table>	CHAN_ID	FREQUENCY	ATTNU	B_POWER	TILT	T_POWER	CH_POWER...	0w (0)	500000000	0	319	0	319	319	0w (1)	506000000	0	319	0	319	319	0w (2)	512000000	0	319	0	319	319	0w (3)	518000000	0	319	0	319	319
CHAN_ID	FREQUENCY	ATTNU	B_POWER	TILT	T_POWER	CH_POWER...																															
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0w (1)	506000000	0	319	0	319	319																															
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0w (3)	518000000	0	319	0	319	319																															

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
81618	Defect: No service impact (Low)	An upstream channel descriptor (UCD) change message was being output every 10 seconds for an upstream module without any debug flag being set. A software error caused the debug to be on by default. This issue has been fixed.
81706, 81697 81602	Enhancement: Operational, CLI (Low)	<p>The show cable modem subscriber-usage command output has been enhanced with the "Util" column for upstream and downstream traffic to indicate average utilization per modem.</p> <p>Example:</p> <pre>CASA# show cable subscriber-usage MAC Address Sfid Dir Enforce-rule Max-Rate Last-detect Name kbps time Last-penalty Pen Chan Util time Flag Util d80f.9995.5572 1056770 DS ds001 30000 - - - 22% 76% d80f.9995.55f6 991234 DS ds001 30000 - - - 22% 70%</pre>
81726	Defect: Possible service impact (Medium)	After SMM switchover to the standby, a problem was observed where the STB was unable to decode encrypted video during the remaining crypto period (CP). Upon CP renewal, proper decoding of encrypted streams resumed. This problem has been fixed.
81752	Enhancement: Operational, CLI (Low)	<p>The show tech command output has been enhanced with process, CPU information, and PID status with the "ps -eLf" and "pstat -t" sections of the output.</p> <p>Example:</p> <pre>CASA# show tech ... !ps -eLf UID PID PPID LWP C NLWP STIME TTY TIME CMD croot 1 0 1 2 1 16:42 ? 00:00:13 init [3] ... !pidstat -t Linux 2.6.27.25 (CASA-C10G_old60) 10/10/17 _mips_ 16:51:27 PID TID %user %system %CPU CPU Command 16:51:27 1 - 0.00 2.64 2.64 8 init ...</pre>

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
81854	Defect: Possible service impact (Low) Enhancement: CLI (Low)	<p>A timing issue which was causing a delay with IPDR collection scheduling between the CMTS and certain IPDR collectors has been addressed with the implementation of the no ipdr timer-reset-on-flow-stop parameter setting.</p> <p>The no form of the command disables the reset of the session timer on IPDR connection establishment with collectors which control collection intervals using Flow-Stop/Disconnect packets sent by the collector to the CMTS.</p> <p>When enabled with the ipdr timer-reset-on-flow-stop command, collector Flow-Stop/Disconnect packets sent to the CMTS will allow the IPDR collector to reset the collection interval period. This is the default setting.</p> <p>Example: Example: CASA(config)# ipdr timer-reset-on-flow-stop CASA(config)# no ipdr timer-reset-on-flow-stop</p> <pre> CASA(config)# show ipdr global info DISPLAYING IPDR GLOBAL INFORMATION TCP port : 4737 Source interface : 30.175.100.1 Congestion timeout : 60 secs Acktime interval : 60 secs Keepalive interval : 60 secs IPDR mode : normal Data backup : enable FlowStop timer reset: disable </pre>
82081	Enhancement: CLI (Low)	<p>The source-address, tos-high, tos-low, and tos-mask parameters have been removed from the configuration and will no longer be displayed in the running-configuration. However, for backward compatibility, the commands will continue to be accepted without error from existing startup-configuration files. The parameters will continue to be visible, but will be ignored.</p> <p>The multicast classification for the IGMP joins (static, dynamic or via the modem configuration file) no longer creates the default classification. Only one group classifier replication (GCR) is created based on the highest priority matching multicast group config (GC). Since the GCR is created statically, it no longer uses these fields.</p>

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
82192	Enhancement: Operational, CLI (Low)	<p>The route-map set as-path prepend setting has been revised to a higher value (from 1-65535 to 1-4294967295) to support 4-octet BGP AS numbers. Up to nine AS numbers are supported on the command line.</p> <p>Example: CMTS(conf-route-map rm_rds_4B)# set as-path prepend 4294967295 4294967295 ? <1-4294967295> AS number</p>
82293	Defect: Possible service impact (Low)	<p>On the QAM 8x192 module with one OFDM channel enabled, a drop of 3 dB power per channel was observed after removing the module and with the redundant standby module becoming active. Reinstalling the removed module and switching back from the active standby resolved the problem. This issue has been fixed.</p> <p>QAM 8x192 switchovers without module removal continued to operate normally with no power per channel loss.</p>
82302	Defect: Possible service impact (Low)	With a PME certificate on the active SMM, a problem was preventing the PME certificate from automatically installing and activating on the standby SMM at the time of an SMM switchover. The PME process has been revised for proper installation and activation of the PME certificate at the SMM standby.
82785, 84483	Defect: Possible service impact (Medium)	A software change has been applied to correct a timing interval delay between the CMTS and IPDR collector. The delay resulted in missing IPDR DS-UTIL records on an intermittent basis at some CMTS systems. This problem has been fixed.

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description																					
82839	Enhancement: Operational, CLI (Medium)	<p>The shared-ofdm <id> power-attenuation <value> command has been introduced in the Casa CLI to set the QAM 8x96 interface OFDM shared channel power attenuation in tenths of a dB in the range 0–200, default 0. The command allows operators to configure OFDM channel power levels independent of the SC-QAM power.</p> <p>The show interface qam <n> power command displays the value for the OFDM wideband (w) channels at the bottom of the output.</p> <p>Example:</p> <pre>CASA(config-if-qam 0/0)# shared-ofdm 1 CASA(config-if-qam 0/0)# shared-ofdm 1 power-attenuation 30 CASA(config-if-qam 0/0)# show interface qam 0/0 power Configured Total Power: 510 Calculated Per-Channel Power: 339 Send to FPGA Power: 510 Spectrum-tilt: 0 Power adjusted: 514</pre> <table><thead><tr><th>CHAN_ID</th><th>FREQUENCY</th><th>ATTNU</th><th>B_POWER</th><th>TILT</th><th>T_POWER</th><th>CH_POWER...</th></tr></thead><tbody><tr><td>0w (L)</td><td>300000000</td><td>30</td><td>309</td><td>0</td><td>309</td><td>309</td></tr><tr><td>0w (U)</td><td>390000000</td><td>30</td><td>309</td><td>0</td><td>309</td><td>309</td></tr></tbody></table>	CHAN_ID	FREQUENCY	ATTNU	B_POWER	TILT	T_POWER	CH_POWER...	0w (L)	300000000	30	309	0	309	309	0w (U)	390000000	30	309	0	309	309
CHAN_ID	FREQUENCY	ATTNU	B_POWER	TILT	T_POWER	CH_POWER...																	
0w (L)	300000000	30	309	0	309	309																	
0w (U)	390000000	30	309	0	309	309																	

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
82899	Enhancement: No service impact (Low)	<p>The show system command output now returns the "OFDM spectrum" configuration for the QAM 8x96 module to maintain consistency with the QAM8x192 module, and with the UPS 16x8 module or OFDMA.</p> <p>Example:</p> <pre>CASA# show system Module 0 QAM_8x96 Running (8 ports, 40 channels/port, 64 shared channels, 8 dvb channels) OFDM spectrum: 100MHz Major rev 5, Minor rev 11 Serial_No: QB12CE2S0019 CFE version 12.9.13 Uptime: 0 d, 0 h, 2 m, 0 s Module 4 QAM_8x192 Running (8 ports, 32 channels/port, 256 shared channels, 2 ofdm channels/port) OFDM spectrum: 3040MHz Major rev 6, Minor rev 17 Serial_No: QB00DF6S1016 CFE version 2.2.5 Uptime: 0 d, 17 h, 28 m, 24 s Module 13 UPS_16x8 Running (16 ports, 4 sc phy chans/port, 2 log chans/sc phy chan, 1 ofdma chan/port, scdma map 00) Docsis channel: 150 OFDMA spectrum: 1600MHz Major rev 5, Minor rev 6 Serial_No: US14CF3S0074 CFE version 12.9.15 Uptime: 0 d, 17 h, 23 m, 57 s</pre>
83030	Enhancement: CLI, Video Web (Low)	<p>The "ECMG Uptime" column has been implemented in the Casa View Web UI Configure > Encryption > SimulCrypt screen to maintain consistency with the CLI show video simulcrypt ecmg command output.</p>
83277	Defect: Possible service impact (Medium)	<p>Logged Program Clock Reference (PCR) repetition errors were observed on broadcast video output streams. There was no impact to service. The problem was attributed to the accounting of null packets in bitrate calculations when the null packets were dropped at the input queue.</p> <p>A PCR bitrate calculation and scheduling time stamp change has been applied to fix this problem.</p>

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
83305	Defect: Possible service impact (Low)	Under certain conditions, a possible loss of QAM 8x96 OFDM profile data could occur. Casa recommends enabling QAM 8x96 health checking with the ha hardware qam8x96 recovery command. See ID "83374 (See ID 85049 for revised info.)" for information on the revised QAM 8x96 health check CLI commands.

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
83374 (See ID 85049 for revised info.)	Enhancement: CLI, Operational (Low)	Health checks have been enabled for detection of OFDM profile lockups on the QAM 8x96 module. This functionality is for the QAM 8x96 ONLY.
		To set Recovery and Self-recover to ON, set the bit mask to 00001000 for each parameter.
		Issue the show ha hardware qam8x96 recovery command and look for the OFDM INTERFACE ERROR line in the display. The Recovery and Self-Recover fields should be displayed as ON.
		Example:
		CASA(config)# ha hardware qam8x96 recovery 00001000 self-recover 00001000
		CASA config)# show ha hardware qam8x96 recovery
		Bit Recovery Self-recover HW Error Condition

		00000001 Off Off DUC FIFO UNDERRUN
		00000002 Off Off DUC FIFO OVERRUN
00000004 Off Off DUC/DAC PARITY ERROR		
00000008 Off Off DUC/DAC LOCK ERROR		
00000010 Off Off SEU UNCORRECTABLE_ERROR		
00000020 Off Off FPGA 128MHZ LOCK ERROR		
00000040 Off Off DUC SPI ERROR		
00000080 Off Off FPGA DDR PARITY ERROR		
00000100 Off Off SEU CORRECTABLE ERROR		
00000200 Off Off SEU CONTROLLER HEARTBEAT ERR		
00000400 Off Off		
00000800 Off Off		
00001000 On On OFDM INTERFACE ERROR		
00002000 Off Off		
00004000 Off Off		
...		
LOCK ERROR		
08000000 Off Off CARD 8KHZ PLL / DAC / VCXO		
CLOCKING ERROR		
10000000 Off Off		
20000000 Off Off CPU2FPGA XAUI TIMEOUT ERROR		
40000000 Off Off QAM I/O CARD POWER LEVEL		
WARNING		
80000000 Off Off QAM LINE CARD POWER LEVEL ERROR		

Table 18. Release 7.2.5.1 Build 5b81 changes and applied fixes (continued)

Tracking ID	Service impact (Risk level)	Description
83389	Defect" Possible service impact (Medium)	An issue previously existed where an STM channel utilization threshold penalty was being incorrectly applied to a cable modem where the average utilization for the previous rule interval was being applied instead of using the full range of intervals comprising the STM rule.
83544	Defect: Possible service impact (Medium)	When broadcast pass-through streams have dynamically switched a service on and off, the C100G was not handling such stream changes appropriately. This issue has been corrected.
83645	Defect: Possible service impact (Medium)	When performing a QAM module switchover and revert, normal Simulcrypt VOD sessions would sometimes change to a "black screen." Session audio was not affected. Performing a video simulcrypt restart restored the video portion of the session. To correct the problem, a software change has been applied to improve message timing between the SMM and the affected QAM module during a switchover and revert.
83715	Defect: Possible service impact (Medium)	For the QAM 8x192 module, or in some situations where the QAM 8x192 is reset, the timing information in the video streams can be incorrect, which can cause audio/video issues on STBs. This problem has been fixed.

Known issues and restrictions in Release 7.2

The following section describes the known issues and restrictions that remain under investigation for resolution in an upcoming release.

QAM 8x96 to QAM 8x192 switchover and revert issue (ID 108126, 105929)

Egress queue errors have been observed when performing QAM 8x96 to QAM 8x192 module switchover and revert operations. Casa is investigating the problem for a possible video QAM mapping mismatch between the two modules when a QAM switchover is initiated.

OFDMA channel configuration (ID 107935)

The OFDMA channel block must be configured at either the start or the end of the TDMA channel configurations. The OFDMA Block should not be configured between the TDMA channels, as this configuration could result in OFDMA modem partial service.

OFDM attenuation not working on OFDM upper end block (ID 107383)

When applying OFDM **power-attenuation** settings of 12 dB to 20 dB, higher channel power has been observed at the upper end of the OFDM block in configurations where the OFDM block includes guard bands. Casa is investigating the issue.

OFDMA RxMER report generation issue (ID 105243)

A problem is presently preventing RxMER reports from being generated. Polls of docsPnmCmtsUsOfdmaRxMerMeasStatus remain in a continuous busy(3) state following the setting of docsPnmCmtsUsOfdmaRxMerEnable.16000392 = INTEGER: true(1) when the condition occurs.

To work around the problem and to resume RxMER reporting in SNMP, set the docsPnmCmtsUsOfdmaRxMerEnable MIB to (2).

OFDMA Forbidden-Attribute-Mask (ID 103122)

Presently, the OFDMA Forbidden-Attribute-Mask to prohibit certain modems from using OFDMA is ignored when OFDMA is the primary channel. This issue is under investigation.

SNMP queries to the casaVideoQamPortTable MIB (ID 102868)

A continuity issue presently exists with the ifIndex entries reported in SNMP queries to the casaVideoQamPortTable MIB. The problem is under investigation.

OFDM roll-off appears with adjacent SC-QAM (ID 96646)

In a configuration with an OFDM and an SC-QAM channel adjacent to each other, roll-off of the QAM channel onto the boundary of the OFDM channel has been observed in one reported case resulting in lower MER at the boundary with subcarriers picking up a lower modulation order. Casa is investigating the issue.

Repetitive failover of UPS 16x8 active and standby (ID 95911)

UPS 16x8 module keepalive failovers on an active/standby linecard pair have been observed at regular intervals at one deployment. Casa is present reviewing logs and system information to determine the cause.

Modems flap when performing manual SMM switchover (ID 99683)

A case was reported where performing manual SMM switchovers on some systems were resulting in a random number of modems flapping across multiple modules. Casa is presently reviewing log information to determine the cause of the problem.

Multiplexing individual streams from an MPTS (ID 99816)

Currently, the out-program-number from the CLI will not be used when multiplexing individual streams from an MPTS. The video session creation ignores this out-program-number request and uses the same value as the in-program-number. The problem is under investigation.

uFEC errors on highest UPS frequency (ID 96840)

On the long cascade setup testing, uFEC errors on the highest UPS freq CH=59.6Mhz at the startup have been observed. Casa is investigating the root cause of the problem.

Spectrum inversion in Annex A configurations (ID 90122)

By default, spectrum inversion is enabled on Annex A channels. Configuring spectrum inversion will revert the enabled default setting to no spectrum inversion. The problem was observed in Annex A configurations only.

Workaround: Do not enable spectrum inversion on Annex A channels.

Operational impact: Possible QAM signal synchronization issues will result if the workaround is not applied.

OSPFv3 default route refresh after SMM switchover (ID 88578)

A problem has been observed where the learned OSPFv3 default route will refresh after performing an SMM switchover. Casa is working to reproduce the problem.

Workaround: None

Operational impact: No functional behavior impact was observed.

Reported BGP process issue with resulting SMM switchover (ID 88402)

A single case has been reported where the BGP process triggered an SMM switchover after BGP attempted to announce a BGP peer route which had already been freed.

Workaround: None

Operational impact: The issue has been observed only once and Casa is working to isolate and reproduce the problem.

SMM switchover event message to syslog (ID 88374)

Presently, SMM switchover event messages are not being forwarded to the target syslog server. Casa is working to resolve the issue.

Workaround: None

Operational impact: Line card switchovers are not affected by the problem.

VLAN traffic forwarding issue at standby SMM (ID 87997)

In a situation where a fiber link was taken down in a network backbone, a partial outage was observed where VLAN traffic was not being forwarded over the standby SMM xGigE 7/0 port interface. The port interface was in the UP state but with no OSPF adjacency due to a link down state. Performing an SMM switchover and a **reboot module 7** failed to recover the VLAN traffic flow. The problem remains under investigation.

Workaround: None

Operational impact: An initial review of the problem indicates a possible port mapping issue. Traffic forwarding may be interrupted on the SMM xGigE 7/0 port.

Remote-query data collection issue (ID 87887)

Casa is presently investigating one instance where **cable modem remote-query** polling failed to start and was not collecting modem statistics in the background due to a possible unidentified trigger. The **show cable modem remote-query** command displayed zero counters. However, Casa is testing **remote-query** to determine the cause of the problem.

Workaround: Using the **show cable modem remote-query immediate** command provided a workaround. Performing an SMM switchover resolved the issue.

Operational impact: Monitoring of cable modems.

Missing stats in show cable modem verbose (ID 87708)

In a particular configuration where a modem had only one OFDMA upstream channel, statistics for the Assigned OFDMA Upstream Data Profile (P1.6Hi) and the Phy Max Power (Pmax) fields were missing in the **show cable modem verbose** output. Casa is working to reproduce the problem.

Workaround: None

Operational impact: Monitoring of statistics for cable modems on OFDMA channels.

D3.1 modem initial ranging messaging issue after DBC (ID 87467)

A instance was reported where a D3.1 modem dropped offline due to a DBC timeout. An initial review of the problem revealed that the O_INIT_RNG_REQ message from the D3.1 modem was not received after doing downstream DBC. While the CMTS continued to send the DBC-REQ message to the modem, there was no observed O_INIT_RNG_REQ message from the modem. Casa is investigating the problem to determine the cause.

Workaround: None

Operational impact: One instance of the problem was reported; modem ranging and registration.

QAM 8x192 partial service issue on limited channels (ID 87016)

A case has been opened where one or two single carrier channels on a single QAM 8x192 module port go into downstream partial service with the channels reported as unusable. When performing a manual DBC to correct the issue, modems ignore the affected channels and move to the usable channels on the port. Casa is working to reproduce the problem.

Workaround: Performing a **reboot module** recovers the partial service channels.

Operational impact: Modems remain in partial service state if workaround is not applied.

Local authentication of passwords (ID 86740)

Presently, the system parses only the first eight characters in a configured password when authenticating local users. Any characters following the first eight characters are ignored and not considered in the authentication process. A fix will be available in a future release.

Workaround: None

Operational impact: None. Local users with passwords matching the first eight characters will be authenticated.

UPS channel lock issue in OFDMA-only configuration (ID 86788)

An intermittent issue presently exists where cable modems in a single DOCSIS MAC domain may not be able to lock on and come online over certain upstream OFDMA channels. The problem is in OFDMA-only configurations when the UPS module is booting up. Casa is presently working to determine the cause of the problem.

Workaround: If the problem occurs, issue the **reboot module** command on the affected UPS module.

Operational impact: Cable modems will not be able to come online if workaround is not applied.

SMM internal link message after module switchover (ID 85952)

The log message “SMM internal link to slot # congested/failed!” has been observed in rare instances after an SMM switchover. Casa is working to reproduce the problem to determine the cause of the message.

Workaround: None

Operational impact: Unknown; check for modems dropping offline.

Interface VLAN range performance issue in CLI (ID 85875)

When configuring the **interface vlan range** setting to point tagged traffic to a specific interface, the CLI fails to immediately return the CLI prompt. However, the prompt will return after several minutes. The problem is under investigation.

Workaround: None

Operational impact: None

Upstream performance with 256-byte and smaller packets (ID 85457)

Reduced upstream performance has been observed during testing with 256-byte and smaller packet sizes in configurations with 8 ATDMA channels. The statistics were compared with the earlier R6.5.2.4 releases. Casa is presently working to optimize UPS performance to exceed prior levels.

Workaround: None

Operational impact: Unknown

Interrupted video after SMM and QAM switchovers (ID 85160)

A problem has been reported where VOD streams are either blocked or interrupted if the SMM switches over, and then followed by a QAM switchover prior to the standby SMM becoming ACTIVE. Casa is working to reproduce the problem to determine a possible cause.

Workaround: None

Operational impact: Possible intermittent interruption of VOD service.

Possible QAM 8x96 module switchover (ID 84471)

A QAM 8x96 module switchover due to a timeout and failed heartbeat condition has been observed after a **system reboot**. The message “[Wed Dec 6 18:00:31 2017]-ER-SYS-1: smm2: System rebooting module 0,fail reason NO KEEPALIVE” was logged during module recovery. The problem is under investigation.

Workaround: None

Operational impact: Possible service impact during module recovery.

OFDM channel utilization issue with OFDM primary channel (ID 80203)

In configurations where the primary channel is an OFDM channel, a case has been reported where a D3.1 modem will drop offline if the primary channel utilization reaches 100%. The problem is under investigation.

Workaround: None

Operational impact: Possible service impact to affected modems.

OFDM MER at 1024 QAM modulation (ID 82674)

Modulation Error Ratio (MER) measurements for some modems operating over QAM 8x96 OFDM channels have been observed with low correction percentages when using 1024 QAM modulation. The problem is under investigation.

Workaround: None

Operational impact: Unknown

STBs not registering on some QAM modules (ID 82790)

A problem has been reported where STBs on some QAM modules may not be unable to register with the CMTS. The issue was observed with the **show cable modem docsis-device-class** command output and with monitored DCD counters not increasing. The problem is under investigation.

Workaround: QAM module switchover.

Operational impact: Service will impacted to affected modems and STBs.

Firmware upgrade on RIP erouter; packets to go to SMM CPU (ID 82688)

After performing a firmware upgrade on a RIP enabled erouter, a case has been reported where packets destined to the RIP erouter are being directed to the SMM CPU before being forwarded directly downstream. The problem is under investigation.

Workaround: None

Operational impact: Unknown

Rebooting the active SMM with a “Not Ready” standby SMM (ID 82838)

Rebooting the active SMM with the standby SMM in the “Not Ready” state will result in the QAM and UPS modules getting stuck in the CONFIG state with up to a 40-minute recovery time. Upon full recovery of the QAM and UPS modules, cable modems are able to register. The status of the standby SMM should be always be checked prior to rebooting the active SMM.

Workaround: None

Operational impact: Possible delays with modules coming up; service impact to affected modems.

D3.1 modem loses IP connectivity after downstream DBC (ID 78042)

A problem has been reported in a one instance where a D3.1 modem lost IP connectivity and could no longer be pinged after performing DBC on the primary downstream channel. The modem was registered and bonded with OFDM and SC-QAM channels. Casa is presently working to reproduce the problem.

Video channels showing spikes in spectrum (ID 77761)

Spikes in the center of an SC-QAM video channel have been observed starting from 826 MHz and higher frequencies. The problem is under investigation.

Workaround: Changing the channels to a lower channel ID resolved the issue.

Operational impact: Unknown

D3.1 modems with certain cyclic-prefix (ID 74458)

Presently, D3.1 modems with a certain cyclic-prefix will not work in OFDMA/TDMA mixed mode where modems will not be able to register over an OFDMA channel. The problem is under investigation.

Workaround: None

Operational impact: Certain cyclic-prefix settings will not work in OFDMA/TDMA mix mode. Currently supported values: CP = 128; CP = 256; CP = 512

QAM configuration modify issue (ID 66408)

On systems where the QAM 8x192 is the standby module for the QAM 8x96, and with the QAM 8x192 presently in the active state, making parameter changes on the QAM 8x192 while the QAM 8x96 is rebooting will result in DVB FIFO UNDERRUN messages, causing the QAM 8x192 to also reboot.

Workaround: Do not make parameter changes on the QAM8x192 while protecting the QAM8x96 module.

Operational impact: Possible service impact with module reboots.

MPLS traffic handling during SMM switchover (ID 59247)

During an SMM switchover to the standby SMM, processing of redirected MPLS-labeled traffic may result in the message, "smm6: Excessive MPLS packets are dropped." Ignore the message. There is no impact to service.

Workaround: None

Operational impact: None

Spectrum management amplitude data calculation (ID 61870)

Casa is presently investigating an issue where the position of the channel center frequency used in the calculation of amplitude data measurements may have a slight effect on the accuracy of the results reported in the docsIf3CmtsSpectrumAnalysisMeasAmplitudeData SNMP MIB.

Workaround: None

Operational impact: Unknown

Single carrier 25 kHz spacing in OFDMA (ID 61617)

Presently, the **sc-spacing 25** command in the **interface ofdma <slot/port.channel>** configuration is not supported. This capability will be added in a future release.

Workaround: None

Operational impact: None

show datapath-config dhcp-lease-tree command (ID 64537)

A problem was observed in a test environment where the **show datapath-config dhcp-lease-tree** command in the Casa **diag** mode could possibly return a blank output. The problem could not be immediately reproduced and is under investigation.

Workaround: None

Operational impact: None

Operational information

This section covers operational issues and limitations associated with the CMTS hardware and software.

CMTS reboot with rf power mode change (ID 94017)

With the introduction of the **rf power mode <0 |1>** command in R7.2.5 to enable or disable RF power algorithm changes, a CMTS reboot is required for the **rf power mode** setting to take effect over all QAM 8x192 modules in the system. See ID 94017 in this notice for additional information. The current setting can be confirmed with the **show interface qam power** command.

Bidirectional Forwarding Detection protocols

The following protocols support Bidirectional Forwarding Detection (BFD) in Release 7.2.5:

- ISIS (IPv4 and IPv6)
- OSPFv2, OSPFv3
- BGP (IPv4 peering)
- Static route (single hop, multi-hop)
- Static BFD (IPv4, IPv6)

Shared OFDM rolloff-period default setting

The hard-coded default setting for the **shared-ofdm** channel **rolloff-period** on the QAM 8x96 module has been revised to the default OFDM channel setting of 64. Refer to ID 89011 in this RN for implementation of this change. Specifically, the new default setting prevents issues with some modems registering in the partial service mode.

Although the CLI allows users to edit the **rolloff-period** setting, the new setting will not take effect and the default setting of 64 remains persistent and does not change. Performing a system or module reboot will revert any visible revised setting to 64.

OFDMA mini-slot zero-modulation config with rollback (ID 100053)

With the new OFDMA minislot zero-modulation bit loading introduced in ID 99650, saving the new running configuration and then performing a software rollback to a

R7.2.5.4 release will cause the minislot zero-modulation bit loading configuration to be rejected. To correct the problem after a software rollback, reconfigure the OFDMA mini-slot configuration.

In cases where the new zero-modulation configuration is NOT saved in R7.2.5.5, the software rollback will have no effect on the mini-slot configuration.

TaFDM channels from two different physical UPS ports

Presently, channel bonding of TaFDM channels from two different ports is not supported.

DBC recovery operations

New functionality has been introduced which allows users to control DBC recovery of channels which have been placed in upstream partial service. The **cable partial-service dbc-recovery** command (see ID 75044 in [Table 13](#)) now includes the **retry [<0-100> | unlimited]** option to ensure continued attempts at recovering the partial service upstream channels, either by using a configured number of retries, or by applying unlimited recovery attempts.

Casa recommends using DBC as the only DOCSIS defined method for recovering channels while modems are online.

Example

```
CASA(config)# cable partial-service dbc-recovery
               <60-3600>           waiting time after upstream channel
                                   partial service in seconds
CASA(config)# cable partial-service dbc-recovery 60 retry ?
               <0-100>             set to zero for a single recovery with
                                   no retry attempt
               unlimited            attempt to recover channel until
                                   success
CASA(config)# cable partial-service dbc-recovery 60 retry unlimited
```

The **cable partial-service continue-ranging** command should NOT be used to recover the upstream partial service channels.

The **continue-ranging** option attempts to recover the channel without using DBC by continuing to provide unicast ranging grants so that modem will respond to the grants and recover the channel. With some modems, using the **continue-ranging** option can

cause undesired behavior where the modem will respond to the grant using an invalid timing offset value. This will result in modem timing errors and possible collisions with other modems.

router-advertisement max-advert-interval setting (ID 86808)

When upgrading to R7.2.5.5, the **router-advertisement max-advert-interval** configuration setting may be lost at the boot up time when the **max-advert-interval** value is set before the **min-advert-interval** value in separate command lines in the startup-config file. The dropped setting was due to optimization changes in setting up each of the parameters which improved processing and loading time of the DOCSIS configuration to the line cards.

To support the optimization change, both the **max-advert-interval** and the **min-advert-interval settings** are now supported in one command where the **max-advert-interval** is specified first, followed by the **min-advert-interval** setting. The settings need to be re-applied using the single CLI command line in R7.2.5.2 and saved to the startup-config file. Once done, no further action is necessary.

Example

```
CASA(conf-if-mac 2) #router-advertisement max-advert-interval 10  
min-advert-interval 10
```

Extended Packet Length Support Capability TLV 5.48

As a result of an enhancement supporting the Extended Packet Length Support Capability TLV 5.48 encoding for upstream and downstream sessions, D3.1 modems may send a large packet that can cause a UPS module crash when the packet is decrypted.

A fix has been implemented to send the REG-RSP with TLV 5.48 disabled so that modem will not send the extended packet sizes. Refer to ID 85395 in this notice. The functionality supporting TLV 5.48 will be re-introduced in a future release.

OFDM 204.8MHz subcarrier low MER issue

An issue has been observed where the MER value of the OFDM 204.8MHz subcarrier has dropped. The issue was known to the DOCSIS 3.1 committee at the time the D3.1 specification was created.

It has been universally accepted that in CMTS implementations that it would be impossible to eliminate all spurs affecting subcarriers. The DOCSIS 3.1 committee created the specification to exclude up to 5 subcarriers (per OFDM channel) from the MER requirement specification.

Reference: *CM-SP-PHYv3.1-I06-150611 Specification*, table 7-36, note 5.

Module temperature thresholds

The system temperature thresholds are summarized in [Table 19](#). Any temperatures below these thresholds are marked as `Normal`. The system shuts down or reboots immediately with temperatures exceeding the shutdown/reboot board threshold.

Table 19. System temperature thresholds

Board type	Alert board threshold (°C / °F)	Shutdown/reboot board threshold (°C / °F)
QAM 8x8	80 / 176	90 / 194
QAM 8x96	75 / 167	94 / 201
QAM 8x192	75 / 167	90 / 194
Any SMM	55 / 131	75 / 167
UPS 16x4	65 / 149	90 / 194
UPS 16x8	65 / 149	90 / 194
Any CPU core	95 / 203	110 / 230
Low temperature	10 / 50	10 / 50
Ambient temp	40 / 104	65 / 149

OFDM subcarrier group limits

Presently, the number of supported subcarrier groups is limited to 66 per OFDM channel. Do not configure over this limit.

QAM channel modulation off command advisory

Presently, caution must be exercised when using the `QAM channel <number> modulation off` command as it could impact all channels on a QAM port. Casa recommends not using this command. If used, a warning will be presented, similar to the following message:

“Warning: Modulation will be changed to Undefined Modulation for # unicast channels on port: <slot/port>”

Extended taps on UPS 16x8 upstream channels

When enabling 24 equalizer taps on a single upstream channel on the UPS 16x8 module using the **pre-equalization extended-taps** parameter in the interface upstream configuration, all channels on that upstream port will have the 24 taps enabled.

Presently, **extended-taps** is a port-wide feature.

Example

```
CASA(config)# interface upstream 13/0.0
CASA(config-if-ups 13/0.0)# pre-equalization ?
extended-taps      support extended taps (tap equalizer),
                    default is off
CASA(config-if-ups 13/0.0)# pre-equalization extended-taps
```

Recommended modulation profile over ATDMA with 64QAM

To optimize the equalizer, Casa recommends the following profile over ATDMA channels using 64QAM modulation:

```
request atdma qpsk off 64 0 16 338 0 16 fixed on 1 2048 qpsk0
initial atdma qpsk off 640 5 34 338 0 48 fixed on 1 2048 qpsk0
station atdma qpsk off 640 5 34 338 0 48 fixed on 1 2048 qpsk0
a-short atdma 64qam off 152 12 75 338 6 16 shortened on 1 2048 qpsk1
a-long atdma 64qam off 152 16 220 338 0 16 shortened on 1 2048 qpsk1
ugs atdma 64qam off 152 16 220 338 0 16 shortened on 1 2048 qpsk1
```

Casa always recommends using QPSK for request, initial, and station maintenance operations. For ranging operations, QPSK provides the best opportunity to equalize an unequalized channel.

Two-channel OFDM current limitations

QAM 8x192 shared channels and DVB Simulcrypt are not presently supported with the two-channel OFDM frequency scheme.

Reverting to Release 7.1 (and prior) from Release 7.2

Due to SSH security enhancements implemented in Release 7.2, TACACS MD5 authentication keys used by OSPF and ISIS protocols are not backward compatible if reverting the CMTS software from Release 7.2 to Release 7.1 and prior releases.

Prior to performing an upgrade to a new R7.2 software image, Casa recommends copying the existing startup configuration file (prior to R7.2) to a separate file for future use in situations where reverting to R7.1 (or prior release) may be necessary. This will allow the system to boot up to the earlier image without having to reconfigure the software.

Perform the following steps:

1. Before upgrading to a new release, copy the startup-config file to a separate file to preserve the software image.

Example

```
CASA# copy nvram startup-config nvram <filename>
```

2. Perform the software upgrade to R7.2, as covered in the section, [“Software update procedures”](#) in this notice.
3. If a downgrade to R7.1 is necessary, copy the file saved in Step 1 to the startup-config file.

Example

```
CASA# copy nvram <filename> nvram startup-config
```

4. Ensure that the Casa release image for the prior release is present on the system.
5. From the CLI, set the boot device to the prior release image and reboot the system.

Example

```
CASA# system bootdev nvram <release-image-name>  
CASA# system reboot
```

Note that this is also a general procedure which can be applied to all software releases.

OFDM — QAM 8x96 redundancy limitation (by design)



Note: To support QAM 8x96 redundancy, the backup module **MUST BE** configured and operating in the same mode as the primary QAM 8x96 module. The QAM 8x192 module cannot be used to back up a QAM 8x96 OFDM.

OFDM — QAM 8x192 redundancy limitation (by design)

QAM 8x192 line cards operating in the OFDM two-channel mode will not be redundancy protected if the QAM 8x192 standby is configured for one OFDM channel and 64 SC-QAM channels. This also applies in the opposite scenario.

For QAM 8x192 redundancy protection, the standby QAM 8x192 module in redundant system slot 5 or 8 must be configured as a matching one-channel OFDM or two-channel OFDM channel scheme.

To redundancy-protect the active QAM card with a non-matching standby QAM card, interactively configure the standby QAM card to match the active QAM so that both modules are a matching single-channel OFDM or two-channel OFDM before performing a switchover.

OFDMA — UPS 16x8 redundancy limitation (by design)

UPS 16x8 line cards operating in the TDMA/OFDMA mixed-mode will not be redundancy protected if the UPS 16x8 standby is configured as a TDMA single-mode version. This also applies in the opposite scenario.

For TDMA/OFDMA mixed-mode redundancy protection, the standby UPS 16x8 module in redundant system slot 5 or 8 must be configured as a matching mixed-mode TDMA/OFDMA UPS 16x8.

To redundancy-protect the active UPS card with a non-matching standby UPS card, interactively configure the standby UPS card to match the active UPS so that both modules are a matching single-mode or mixed-mode before performing a switchover.

Enabling DVB Simulcrypt channels

On the QAM 8x96 and QAM 8x192 modules, when enabling DVB Simulcrypt on any QAM channel within an 8-channel block, all remaining channels within that block are

unavailable as DOCSIS channels. All channels within the block must be DVB Simulcrypt video channels.

Forwarding of clear multicast traffic

A new behavior change has been introduced to ensure that all dynamic IPTV sessions will only be allowed if there is a matching classifier defined in the multicast group configuration. In the multicast group configuration, specify the **group-address prefix** to match the supported multicast session. This is required to enable forwarding of both clear and encrypted multicast IPTV streams. If not matched, IGMP join/leave packets will be dropped.

An additional configuration parameter is necessary if encryption is to be applied to a matching multicast sessions. If an **encryption-id** is not specified, then traffic is forwarded as clear multicast.

The following **multicast group** configuration shows the specified **group-address** prefix to match the multicast session. IGMP join sessions matching the **group-address** prefix are sent to the SMM; non-matching IGMP join sessions are dropped. In this example, the **encryption-id** and **qos-id** parameters are also specified to indicate encryption and QOS treatment of the matched multicast session.

Example

```
multicast group config 1
  source-address 0.0.0.0/0
  group-address 239.195.0.45/32  <- minimum requirement
  qos-id 1                      <- only if QOS treatment is required
  encryption-id 1               <- only if this stream requires
                                encryption
```

Upstream 16x8 channel width limitation

The UPS 16x8 module does not support channel widths less than 1.6MHz.

QAM replication limit on QAM 8x96 and QAM 8x192

Release 7.1 and later releases have the following QAM replication limits. This limitation will be cleared in a subsequent software release.

Consider the following parameters to calculate and replicate QAM ports.

Where,

- c** — Is the number of active downstream QAM channels on a given RF port.
- r** — Is the number of channels to be replicated.
- n** — Is the number of RF ports for replication.

For any given port, c, r and n must be provisioned so that the following inequality holds: $(c + r * n / 2) \leq m$, where m is 48 for the QAM 8x96 module and 96 is for the QAM 8x192 module.

For the QAM 8x96 module

Example: 32 active channels, all of which replicated to another port

Where c = 32, r = 32, and n = 1 is a valid configuration.

Example: 32 active channels, 8 of which replicated to 4 other ports

Where c = 32, r = 8, and n = 4 is a valid configuration

Example: 32 active channels, 16 of which replicated to 3 other ports:

Where c = 32, r = 16, and n = 3 is NOT a valid configuration.

Casa recommends that replication be spread across all participating ports.

Example: Replicating 32 channels of a port to 3 other ports.

On each port, choose the following configuration: c = 8, r = 8, n = 3.

For QAM 8x192 module

Example: 64 active channels, all of which replicated to another port

Where c = 64, r = 64, and n = 1 is a valid configuration.

Example: 64 active channels, 16 of which replicated to 4 other ports

Where c = 64, r = 16, and n = 4 is a valid configuration

Example: 64 active channels, 32 of which replicated to 3 other ports:

Where c = 64, r = 32, and n = 3 is NOT a valid configuration.

Casa recommends that replication be spread across all participating ports.

Example: Replicating 64 channels of a port to 3 other ports.

On each port, choose the following configuration: c = 16, r = 16, n = 3.

Baseline Privacy Interface (BPI) and BPI-plus modems

When the **bpi-plus-enforce** setting is enabled at the CMTS, BPI cable modems running DOCSIS 1.1 or higher that are not running BPI-plus will not be able to register with the CMTS. However, non-BPI cable modems will be allowed to register.

Restricted load balancing groups

A restricted load balancing group **MUST** be a subset of a cable modem service group. Otherwise, cable modems will not be able to reliably register with the CMTS.

Rapid Spanning Tree Protocol

The CMTS only supports RSTP as the bridging protocol. RSTP is enabled by default. When using L2VPN with a redundant configuration, Casa recommends enabling RSTP on the uplink switch to avoid broadcast loops.

Open Shortest Path First Protocol

After setting the interface OSPF **hello-interval** timer to a value less than the default setting, you must also change the **dead-interval** timer and the **transmit-delay** timer to a value that is four-times (4X) the **hello-interval** setting with a maximum value of 65535. These settings are required to establish adjacency with neighbor OSPF routers.

Example

```
CASA(config-if-gige 5)# ip ospf hello-interval 100
CASA(config-if-gige 5)# ip ospf dead-interval 400
CASA(config-if-gige 5)# ip ospf transmit-delay 400
```

Reverting to a prior software release

To revert back to an earlier software image, locate the image file in your CMTS directory and then select the boot device from which the image file will be installed.



Note: When reverting to a prior software release, Casa recommends using the saved startup-config file from that release. This will allow the system to boot up to the earlier image without having to reconfigure the software. See the section in this notice, [“Preserving the current software image”](#) for information on creating this file.

Copy the saved file to the startup-config file.

Example:

```
CASA# copy nvram <filename> nvram startup-config
```

Example

To display the current CMTS boot device and software image:

```
CASA-CMTS# show bootdev
System boot device is: nvram
Boot Image: ccsi.gz.rel7.2.5.9_build7559
```

Example

To display the CMTS directory and any previously-installed images, enter the **dir**(ectory) command:

```
CASA-CMTS# dir
total 52192
-rw----- 1 root root 187584000 Aug 23 11:50
    ccsi.gz.rel7.2.4.2_build58b9
-rw----- 1 root root 194752000 May 11 20 16:56
    ccsi.gz.rel7.2.5.9_build7559
```

In the above example, there are two software images: *7.2.4.2_build58b9* and the current version, *7.2.5.9_build7559*.

Example

To boot the CMTS and load the earlier image (*build 58b9* in this example), specify the boot device and the image name as it appears in the CMTS directory. Then, issue the **system reboot** command.

```
CASA-CMTS# system bootdev nvram ccsi.gz.rel7.2.4.2_build58b9
```

```
CASA-CMTS# system reboot
```

SNMP MIB objects and OIDs in Release 7.2

The following Casa MIB objects are included in the Release 7.2 archive file.

<u>MIB archive name</u>	<u>Identifier</u>
casa	OID 1.3.6.1.20858
casa-3K-10K-module	OID 1.3.6.1.4.1.20858.10.36
casa-802-Tap-mib	OID 1.3.6.1.4.1.20858.10.19
casa-alert-mib	OID 1.3.6.1.4.1.20858.10.17
casa-bsod-l2vpn-mib	OID 1.3.6.1.4.1.20858.10.102
casa-cable-cmcpe-mib	OID 1.3.6.1.4.1.20858.10.12
casa-cable-cmquery-mib	OID 1.3.6.1.4.1.20858.10.18
casa-cable-flaplist-mib	OID 1.3.6.1.4.1.20858.10.11
casa-cable-modem-stats-mib	OID 1.3.6.1.4.1.20858.10.101.6
casa-copy-running-to-startup-mib	OID 1.3.6.1.4.1.20858.10.30
casa-denied-cm	OID 1.3.6.1.4.1.20858.10.101.4
casa-docs-ext-mib	OID 1.3.6.1.4.1.20858.10.22
casa-entity-ext-mib	OID 1.3.6.1.4.1.20858.10.13
casa-fan-mib	OID 1.3.6.1.4.1.20858.10.31
casa-gige-management-mib	OID 1.3.6.1.4.1.20858.10.25
casa-host-ext-mib	OID 1.3.6.1.4.1.20858.10.28
casa-id-mib	OID 1.3.6.1.4.1.20858.2
casa-ipdr-mib	OID 1.3.6.1.4.1.20858.10.55
casa-ip-forward-mib	OID 1.3.6.1.4.1.20858.10.102.2
casa-ip-trunk-mib	OID 1.3.6.1.4.1.20858.10.23
casa-lawful-intercept-mib	OID 1.3.6.1.4.1.20858.10.101.1
casa-log-mib	OID 1.3.6.1.4.1.20858.10.16
casa-mgmt-node	OID 1.3.6.1.4.1.20858.10.3
casa-module-mib	OID 1.3.6.1.4.1.20858.10.14
casa-ntp-mib	OID 1.3.6.1.4.1.20858.10.29
casa-pim-mib	OID 1.3.6.1.4.1.20858.10.60
casa-power-mib	OID 1.3.6.1.4.1.20858.10.32
casa-qam-mib	OID 1.3.6.1.4.1.20858.10.27
casa-qam-if-mib	OID 1.3.6.1.4.1.20858.10.102.2
casa-sfp-mib	OID 1.3.6.1.4.1.20858.10.37
casa-spectrum-mib	OID 1.3.6.1.4.1.20858.10.56

casa-sys-mon-mib	OID 1.3.6.1.4.1.20858.10.33
casa-system-mib	OID 1.3.6.1.4.1.20858.10.38
casa-video-mib	OID 1.3.6.1.4.1.20858.10.103
casa-video-ts-mon-mib	OID 1.3.6.1.4.1.20858.10.57
casa-vpws-mib	OID 1.3.6.1.4.1.20858.10.58

SNMP management using the Casa MIBs

Both standard and Casa Enterprise MIBs are available from the Casa FTP server at <ftp://support.casa-systems.com> in the compressed file named *mibs-rel7255b696b-20180917.tar.gz*.

For complete information on using SNMP to configure and monitor the CMTS, refer to the *Casa Systems – SNMP MIBs and Traps Reference*.

Appendix A. CLI changes in Release 7.2.5.10

The following table lists the CLI changes which have applied in Release 7.2.5.10. For CLI changes originally introduced in Releases 7.2, see the *Casa Systems – CMTS Release 7.2 Features Guide*.

Table 20. CLI additions and changes in Release 7.2.5.10

Command name and tracking ID	New or revised CLI description																																																																																										
show ofdma channel <slot>/<port>.<pchan> tafdm-info	<p>The show ofdma channel <slot>/<port>.<pchan> tafdm-info command has been introduced in the CLI for report the current OFDMA TaFDM state (if triggered), minislot region, guardband filter size, and calculated guardband. The show interface docsis-mac topology command indicates the topology of the overlapping TDMA and OFDMA channels.</p> <p>Example:</p> <pre>CASA(config)# show ofdma channel 3/0.0 tafdm-info ofdma channel minislot number: 1 - 137 TaFDM state: true filter guardband: 0.250 MHz filter size: 35 MHz first overlapping minislot: 1 last overlapping minislot: 55 TaFDM minislot region: 56 - 137</pre> <p>Example:</p> <pre>CASA(config)# show interface docsis-mac topology beg 3/0.0</pre> <table><tr><th>US Int</th><th>Cable MAC</th><th>Chan ID</th><th>Oper State</th><th>Chan Type</th><th>Channel Freq(Hz)</th><th>Mini Width</th><th>Mod Slot</th><th>Prof</th></tr><tr><td colspan="9">Power Service Groups(s)</td></tr><tr><td>3/0.0/0</td><td>1</td><td>1</td><td>UP</td><td>atdma</td><td>9000000</td><td>6400000</td><td>2</td><td>3</td></tr><tr><td>0</td><td>1</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>3/0.1/0</td><td>1</td><td>2</td><td>UP</td><td>atdma</td><td>15400000</td><td>6400000</td><td>2</td><td>3</td></tr><tr><td>0</td><td>1</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>3/0.2/0</td><td>1</td><td>3</td><td>UP</td><td>atdma</td><td>21800000</td><td>6400000</td><td>2</td><td>3</td></tr><tr><td>0</td><td>1</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>3/0.3/0</td><td>1</td><td>4</td><td>UP</td><td>atdma</td><td>28200000</td><td>6400000</td><td>2</td><td>3</td></tr><tr><td>0</td><td>1</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>	US Int	Cable MAC	Chan ID	Oper State	Chan Type	Channel Freq(Hz)	Mini Width	Mod Slot	Prof	Power Service Groups(s)									3/0.0/0	1	1	UP	atdma	9000000	6400000	2	3	0	1								3/0.1/0	1	2	UP	atdma	15400000	6400000	2	3	0	1								3/0.2/0	1	3	UP	atdma	21800000	6400000	2	3	0	1								3/0.3/0	1	4	UP	atdma	28200000	6400000	2	3	0	1							
US Int	Cable MAC	Chan ID	Oper State	Chan Type	Channel Freq(Hz)	Mini Width	Mod Slot	Prof																																																																																			
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Appendix B. CLI changes in Release 7.2.5.9

The following table lists the CLI changes which have applied in Release 7.2.5.9. For CLI changes originally introduced in Releases 7.2, see the *Casa Systems – CMTS Release 7.2 Features Guide*.

Table 21. CLI additions and changes in Release 7.2.5.9

Command name and tracking ID	New or revised CLI description																								
power-attenuation Tracking ID: 106870	<p>The supported SC-QAM and OFDM channel power-attenuation has been increased from 10dB to 20dB on the QAM 8x192 module, configured in tenths of a dB units (0 to 200 range).</p> <p>Note: This enhancement <u>does not</u> apply to the QAM 8x96 module; the maximum power attenuation remains at 10dB on QAM 8x96 channels. See ID 106598 for additional information.</p> <p>Example:</p> <pre>CASA(config-if-qam 1/3)#ch 0 power-attenuation 200 CASA(config-if-qam 1/3)#show int qam 1/3 power</pre> <p>Configured Total Power: 580 Calculated Per-Channel Power: 485 Configured RF power mode: 0 Send to FPGA RF power mode: 0 Send to FPGA Power: 540 Power adjusted: 473 Spectrum-tilt: 0</p> <table><tr><th>CHAN_ID</th><th>FREQUENCY</th><th>ATTNU</th><th>B_POWER</th><th>TILT</th><th>T_POWER</th></tr><tr><td>CH_POWER</td><td></td><td></td><td></td><td></td><td></td></tr><tr><td>0</td><td>483000000</td><td>200</td><td>285</td><td>0</td><td>285</td></tr><tr><td>285</td><td></td><td></td><td></td><td></td><td></td></tr></table>	CHAN_ID	FREQUENCY	ATTNU	B_POWER	TILT	T_POWER	CH_POWER						0	483000000	200	285	0	285	285					
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Appendix C. CLI changes in Release 7.2.5.6

The following table lists the CLI changes which have applied in Release 7.2.5.6. For CLI changes originally introduced in Releases 7.2, see the *Casa Systems – CMTS Release 7.2 Features Guide*.

Table 22. CLI additions and changes in Release 7.2.5.6

Command name and tracking ID	New or revised CLI description
spectrum-tilt Tracking ID: 101275	<p>The spectrum-tilt online help string has been updated to include the tilt level units in dB. This information was previously excluded.</p> <p>Example:</p> <pre>CASA(config)# int qam 1/0 CASA(config-if-qam 1/0)#spectrum-tilt ? <0-50> tilt level (default: 0) in dB</pre>

Appendix D. CLI changes in Release 7.2.5.5

The following table lists the CLI changes which have applied in Release 7.2.5.5. For CLI changes originally introduced in Releases 7.2, see the *Casa Systems – CMTS Release 7.2 Features Guide*.

Table 23. CLI additions and changes in Release 7.2.5.5

Command name and tracking ID	New or revised CLI description
spectral-inversion Tracking ID: 97519	<p>Online help has been revised to clarify that spectral-inversion for Annex A channels is on by default for the interface qam configuration. Setting the option for an Annex A channel turns spectral inversion off.</p> <p>Example:</p> <pre>CASA(config-if-qam 1/0)# ch 0 annex A ? <cr> spectral-inversion spectralinversion (Onbydefaulton Annex A. Setting this will turn off inversion) symbol symbol rate CASA(config-if-qam 1/0)#ch 0 annex A spectral-inversion</pre>

Table 23. CLI additions and changes in Release 7.2.5.5 (continued)

Command name and tracking ID	New or revised CLI description
pilot-pattern Tracking ID: 99650	<p>A software fix has been applied to correct handling of OFDMA zero-valued minislots to be in compliance with the CableLabs MULPI specification, as follows:</p> <p><i>When the bit-loading is equal to 0, the CMTS is required to set the pilot pattern index to 0. A pilot pattern index equal to 0 is applicable only for Zero Valued Minislots and means there are no pilots in this minislot. Zero Valued Minislots contain no data or pilots.</i></p> <p>The pilot-pattern parameter range has been revised to 0 to 8, with 0 for zero modulation.</p> <p>Example:</p> <pre>CASA(conf-minislot-cfg 2)#subcarrier-group-minislot 1 19000000 21350000 modulation zero ? <cr> pilot-pattern set pilot pattern CASA(conf-minislot-cfg 2)#subcarrier-group-minislot 1 19000000 21350000 modulation zero pilot-pattern ? <0-8> pattern number: 0 for zero-modulation></pre>

Appendix E. CLI changes in Release 7.2.5.4

The following table lists the CLI changes which have applied in Release 7.2.5.4. For CLI changes originally introduced in Releases 7.2, see the *Casa Systems – CMTS Release 7.2 Features Guide*.

Table 24. CLI additions and changes in Release 7.2.5.4

Command name and tracking ID	New or revised CLI description
import map Tracking ID: 90020	<p>The import map function has been implemented in the Casa CLI VRF configuration to supporting installation of BGP routes from the global route map to a specified VRF. Both IPv4 and IPv6 address families are supported with this enhancement.</p> <p>Example:</p> <pre>CASA(config)# route-map casal CASA(conf-route-map casal)#end CASA(config)# ip vrf net1 CASA(config-vrf)# import map casal CASA(config-vrf)#</pre>
video session pass-through input-port Tracking ID: 90397	<p>The video session pass-through input-port property has been made optional in the command syntax to support creation of pass-through sessions without needing to specify the input-port. The change was also introduced on the Configure > Video > Session configuration dialogs in the Casa Video Web UI.</p> <p>Example:</p> <pre>CASA(config)# video session 1 pass-through ip-address 227.0.0.1 qam-channels shared-channel 0/0 prog-drop 53518,52000,51044 src-ip 17.56.102.2</pre>
no system timezone Tracking ID: 90796	<p>The no system timezone command has been added to reset the timezone to the default Coordinated Universal Time (UTC).</p> <p>Example:</p> <pre>CASA(config)# no system timezone Timezone is set to UTC</pre>
ip access-list Tracking ID: 91244	<p>IP access list configurations now have added support for IPv6 Differentiated Services Code Point (DSCP) destination addresses and masks.</p> <p>Example:</p> <pre>CASA(config)# ip access-list ACL1 CASA(conf-acl ACL1)# 10 deny6 all 2000:204:1::/64 any dscp 63 any any</pre>

Table 24. CLI additions and changes in Release 7.2.5.4 (continued)

Command name and tracking ID	New or revised CLI description
pass-through Tracking ID: 91436	<p>The pass-through option has been added to the video drop ghost-pid command to enable dropping ghost PIDs specifically for pass-through video sessions. A ghost PID is not identified as a well-known PID and is not included in PMT tables. By default, ghost PID dropping is enabled for multicast sessions, but is disabled for pass-through sessions.</p> <p>Example:</p> <pre>CASA(config)# show running-config verbose include ghost-pid video drop ghost-pid no video drop ghost-pid pass-through CASA(config)# no video drop ghost-pid CASA(config)# video drop ghost-pid pass-through CASA(config)# show running-config include ghost-pid no video drop ghost-pid video drop ghost-pid pass-through</pre>
show ipv6 route ospf [vrf <id>] Tracking ID: 93176	<p>The show ipv6 route ospf [vrf <id>] command has been implemented to display configured OSPFv3 routes.</p> <p>Example:</p> <pre>CASA(config)# show ipv6 route ospf Codes: K - kernel route, C - connected, S - static, R - RIP, O - OSPF, I - ISIS L1 - LEVEL-1 L2 - LEVEL-2 IA - inter area, B - BGP, > - selected route, * - FIB route. O 6000:1050::/64 [110/10] is directly connected, vlan6, 1d19h29m...</pre>

Table 24. CLI additions and changes in Release 7.2.5.4 (continued)

Command name and tracking ID	New or revised CLI description
rf power mode <0 1> Tracking ID: 94017, 94210	<p>The rf power mode <0 1> command has been introduced to provide the option of allowing or disallowing RF power algorithm changes that affect all QAM 8x192 modules in the chassis. The 0 value is the default and allows all new RF power algorithm changes, while the 1 value disallows power algorithm changes and defers to the existing legacy algorithms.</p> <p>The setting can be confirmed with the show interface qam power command.</p> <p>Example:</p> <pre>CASA(config)# rf power mode 1 CASA(config)# show interface qam 1/3 power Configured Total Power: 510 Calculated Per-Channel Power: 329 Send to FPGA Power: 510 Power adjusted: 510 Spectrum-tilt: 0 RF power mode: 1</pre>
multiple-iuc backhop-protect-interval Tracking ID: 95755	<p>The multiple-iuc backhop-protect-interval command has been introduced in the OFDMA channel configuration to avoid switching the IUC or sending DBC too frequently. The interval (in seconds) is applied when a low FEC error rate is detected on the channel with a good SNR, or after a DBC is sent to downgrade the IUC set. The default interval is 900 seconds.</p> <p>Example:</p> <pre>CASA(conf-ofdma-channel 13/0.0)#multiple-iuc backhop-protect-interval 900</pre>

Appendix F. CLI changes in Release 7.2.5.3

The following table lists the CLI changes which have applied in Release 7.2.5.3. For CLI changes originally introduced in Releases 7.2, see the *Casa Systems – CMTS Release 7.2 Features Guide*.

Table 25. CLI additions and changes in Release 7.2.5.3

Command name and tracking ID	New or revised CLI description
cable partial-service dbc-recovery retry [<0-100> unlimited] Tracking ID: 75044	<p>The retry [<0-100> unlimited] option has been added to the existing CLI cable partial-service dbc-recovery command to ensure continued attempts at recovering upstream channels which have been placed in partial service.</p> <p>Up to 100 retry attempts may be specified to recovery impaired upstream channels. If a channel does not recover after the specified number of retry attempts, the CMTS will leave the impaired channel in a muted state. Specify 0 for a single recovery attempt with no retries.</p> <p>Specify unlimited for continued DBC recovery operations with no limit to the number of recovery attempts while one or more upstream channels are in the partial service state.</p> <p>Example:</p> <pre>CASA(config)# cable partial-service dbc-recovery <60-3600> waiting time after upstream channel partial service in seconds CASA(config)# cable partial-service dbc-recovery 60 retry ? <0-100> set to zero for a single recovery with no retry attempt unlimited attempt to recover channel until success CASA (config)# cable partial-service dbc-recovery 60 retry unlimited</pre>

Table 25. CLI additions and changes in Release 7.2.5.3 (continued)

Command name and tracking ID	New or revised CLI description
video back-source session Tracking ID: 77910, 86631	<p>Support for configuring a redundant source with a different destination IP for a video transport stream has been added through the video back-source session command. The feature provides the flexibility of adding another redundant address pair different from that of the original video session.</p> <p>The equivalent feature was added to the Casa Video Web UI with the Session Backup Source table of the Configure > Video > CLI Session screen.</p> <p>Example:</p> <pre>CASA(config)# video session 1 pass-through ip-address 230.1.1.1 qam-channels shared-channel 0/0 input-port 1 src-ip 192.168.3.67 CASA(config)# video backup-source session 1 dst-ip 230.1.1.1 src-ip 192.168.3.131 CASA(config)# video backup-source session 1 dst-ip 230.1.1.2 src-ip 192.168.3.67 CASA(config)# no video backup-source session 1 dst-ip 230.1.1.2 src-ip 192.168.3.67</pre>
rolloff-period cyclic-prefix Tracking ID: 83151	<p>The CLI help text for the rolloff-period and cyclic-prefix settings under the interface ofdma channel configuration command was displaying a truncated list of values. The help text now shows the complete list of values.</p> <p>Example:</p> <pre>CASA(conf-ofdma-channel 12/9.0)# rolloff-period ? 160 1.5625us 224 2.1875us 32 0.3125us 96 0.9375us CASA(conf-ofdma-channel 12/9.0)# cyclic-prefix ? 128 1.25us 160 1.5625us 192 1.875us 224 2.1875us 256 2.5us 288 2.8125us 320 3.125us 384 3.75us 512 5.0us 640 6.25us 96 0.9375us</pre>

Table 25. CLI additions and changes in Release 7.2.5.3 (continued)

Command name and tracking ID	New or revised CLI description
show ipsec spd Tracking ID: 83192	<p>IPsec tunnel connections to a peer routers are now supported over virtual routing and forwarding (VRF) instances.</p> <p>The show ipsec spd command now displays the local interface if the configuration is part of a VRF instance.</p> <p>Example:</p> <pre>CASA(config)# show ipsec spd Mon Mar 19 17:00:55 UTC 2018 IPsec SPD configuration: remote ip address: 10.11.12.55 remote ip port : 0 remote net : 10.11.12.55/32 local ip address : 10.11.12.117 local ip port : 0 local net : 10.11.12.117/32 local interface : gige 6/0, VRF: voice(Id 9) protocol : any direction : in ipsec proto/mode : ESP/tunnel ...</pre>

Table 25. CLI additions and changes in Release 7.2.5.3 (continued)

Command name and tracking ID	New or revised CLI description
spectrum-tilt Tracking ID: 84554	<p>To better address downstream frequency changes, the optional start-frequency and stop-frequency parameter settings have been implemented with the spectrum-tilt command in the interface qam configuration to specify the start and stop frequency range where a configured QAM spectrum power level tilt setting is applied.</p> <p>The enhancement allows up to four separate spectrum-tilt frequency ranges to be configured on the QAM interface, with each frequency range applying a unique spectrum-tilt setting in the range 1 to 50 dB. An error message will be returned with any new configuration setting which detects an existing frequency overlap.</p> <p>A spectrum-tilt value of zero removes the tilt from the previously-configured start and stop range.</p> <p>Example:</p> <pre>CASA(config-if-qam 1/0)# spectrum-tilt 10 start-frequency 306000000 stop-frequency 314000000 CASA(config-if-qam 1/0)# spectrum-tilt 20 start-frequency 322000000 stop-frequency 330000000 CASA(config-if-qam 1/0)# spectrum-tilt 30 start-frequency 333000000 stop-frequency 346000000 CASA(config-if-qam 1/0)# spectrum-tilt 40 start-frequency 354000000 stop-frequency 362000000</pre>
module 0 qam8x192 ofdm-channels Tracking ID: 85866	<p>Help text for the module 0 qam8x192 ofdm-channels command has been revised to display the correct default setting and range values.</p> <p>Example:</p> <pre>CASA(config)# module 0 qam8x192 ofdm-channels ? <1-2> number of ofdm channels per port (default: 1)</pre>
cable dynamic-service-flow non-ofdma Tracking ID: 86566	<p>The cable dynamic-service-flow command has been enhanced with the non-ofdma option to force all unsolicited grant service (UGS) flows to exclude OFDMA channels and go to ATDMA channels only.</p> <p>Example:</p> <pre>CASA(config)# cable dynamic-service-flow non-ofdma CASA(config)# no cable dynamic-service-flow non-ofdma</pre>

Table 25. CLI additions and changes in Release 7.2.5.3 (continued)

Command name and tracking ID	New or revised CLI description
show ipsec spd Tracking ID: 86592, 87115	<p>The show ipsec spd command now displays the local interface if the configuration is part of a virtual routing and forwarding (VRF) instance.</p> <p>Example:</p> <pre>CASA(config)# show ipsec spd IPsec SPD configuration: remote ip address: 16.61.102.1 remote ip port : 0 remote net : 16.61.102.1/32 local ip address : 16.61.102.2 local ip port : 0 local net : 16.61.102.2/32 local interface : gige 6/2, VRF: Min_VRF(2) protocol : any direction : in ipsec proto/mode : ESP/tunnel</pre>

Table 25. CLI additions and changes in Release 7.2.5.3 (continued)

Command name and tracking ID	New or revised CLI description
cable diplexer Tracking ID: 87791	<p>The cable diplexer command has been added to the DOCSIS MAC interface configuration to allow the CMTS to notify cable modems in the MAC domain of the supported diplexer downstream lower and upper, and upstream upper band edge capabilities per TLV 5.60-62 according to the following bit maps:</p> <ul style="list-style-type: none"> Downstream lower edge — Frequency range starting with 0 (108 MHz) or 1 (258 MHz) Downstream upper edge — Frequency range ending with 0 (1218 MHz), 1 (1794 MHz), or 2 (1002 MHz) Upstream upper edge — Frequency range ending with 0 (42 MHz), 1 (65 MHz), 2 (85 MHz), 3 (117 MHz), or 4 (204 MHz) <p>Command syntax:</p> <p>[no] cable diplexer {downstream-lower-band-edge <0:1> downstream-upper-band-edge <0:2> upstream-upper-band-edge <0:4>}</p> <p>Example:</p> <pre>CASA(config)# interface docsis-mac 1 CASA(config-if-mac 1)# cable diplexer downstream-lower-band-edge 1 CASA(config-if-mac 1)# cable diplexer downstream-upper-band-edge 2 CASA(config-if-mac 1)# cable diplexer upstream-upper-band-edge 4 CASA(config-if-mac 1)# no cable diplexer downstream-lower-band-edge</pre>

Table 25. CLI additions and changes in Release 7.2.5.3 (continued)

Command name and tracking ID	New or revised CLI description
video-sdt-interval Tracking ID: 87823	<p>The video sdt-interval command has been added to the Casa CLI to allow setting the video service description table (SDT) transmission interval. SDTs are contained in packets identified by the packet ID (PID) 0x0011; the type of information carried in the packet is identified using a table ID.</p> <p>The SDT provides the information about each service, including transport stream ID, service ID, whether program schedules provided in the transport stream, information about the current and next programs, running status of the service, and whether a service is scrambled.</p> <p>The sdt-interval setting is in the range 25–2000 milliseconds. The default value is 1000 ms, as set by the default option. The setting is displayed in the show video global config command output.</p> <p>Command syntax:</p> <p>video sdt-interval {<25:2000> default}</p> <p>Example:</p> <pre>CASA(config) video sdt-interval 2000</pre> <pre>CASA-C100G# show video global config video drop ghost-pid no video proc-non-pmt-pcr no video edis bandwidth-control video dejitter-interval 200 video pat-interval 51 video min-pat-update-interval 0 video pmt-interval 100 video cat-interval 250 video sdt-interval 2000 video unicast-session-loss-timeout 3 video multicast-session-loss-timeout 3</pre>

Table 25. CLI additions and changes in Release 7.2.5.3 (continued)

Command name and tracking ID	New or revised CLI description
ipdr session <number> interval Tracking ID: 88234	<p>The IP Detail Record (IPDR) collection time interval configuration has been extended to DOCSIS-CMTS-US-UTIL-STAT-EVENT-TYPE (14) and DOCSIS-CMTS-DS-UTIL-STATS-EVENT-TYPE (15) sessions.</p> <p>Use the show ipdr session command to display the configured Collection Interval setting.</p> <p>Example:</p> <pre>CASA(config)# ipdr session 14 interval 900 CASA(config)# show ipdr session 14 Session: 14 Session Name : DOCSIS-CMTS-US-UTIL-STATS-EVENT-TYPE ... Collection Interval: 900 (seconds) Collection AckSeq : 100 Streaming status : Other...</pre>

Table 25. CLI additions and changes in Release 7.2.5.3 (continued)

Command name and tracking ID	New or revised CLI description
interface video Tracking ID: 88305, 88794, 89439	<p>Unique VRF instances are now supported for each video interface on a QAM module, with each video interface supporting one VRF instance.</p> <p>Up to four unique VRF instances are now supported per module.</p> <p>Video QAM domains on the same QAM module can also have a different VRF instance for each of their video interfaces.</p> <p>Note: If a QAM domain has EDIS configured, a corresponding video interface must be configured with an EDIS control-source loopback interface, and all of the loopback interfaces must be in the same VRF for the chassis. The VRF for the control-source loopback interface can be different from the VRF used for the video interfaces.</p> <p>Example:</p> <pre> CASA(config)# vrf definition test1 CASA(config)# vrf definition test2 ... CASA(config)# interface video 1 CASA(conf-if-video 1)# vrf forwarding test1 CASA(conf-if-video 1)# edis control-source loopback 1 ... CASA(config)# interface video 2 CASA(conf-if-video 2)# vrf forwarding test2 CASA(conf-if-video 2)# edis control-source loopback 1 ... CASA(config)# video qam-domain 1 CASA(conf-qam-domain 1)# interface video 1 CASA(conf-qam-domain 1)# edis 1 CASA(conf-qam-domain 1)# qam-group 1 9/0/40 9/0/43 ... CASA(config)# video qam-domain 2 CASA(conf-qam-domain 1)# interface video 2 CASA(conf-qam-domain 1)# edis 1 CASA(conf-qam-domain 1)# qam-group 1 9/1/40 9/1/43 </pre>

Table 25. CLI additions and changes in Release 7.2.5.3 (continued)

Command name and tracking ID	New or revised CLI description
video pid-remap session Tracking ID: 88823, 89587	<p>The video pid-remap session command has been introduced in the Casa CLI to identify the specific target program identifiers (PIDs) for PID remapping for a specific multiplex session ID. These configured PIDs override those selected by default from a range of free PIDs, when the video pid-remapping-mode command is used.</p> <p>The video session ID must preexist as a multicast session. Up to eight PID remaps can be configured per multiplex session. Adding or deleting the pid-remap configuration is allowed whether the session is active or inactive.</p> <p>Syntax:</p> <p>video pid-remap session <1:4294967295> from <1:8190> to <1:8190></p> <p>Specifying PID remapping for a multiplex session is through the video session <n> mux ... pid-remapping command.</p> <p>The show running-config video session command displays the video session configuration in the running configuration.</p> <p>Example:</p> <pre>CASA(config)# video session 343 mux ip-address 232.121.49.22 qam-channels shared-channel 1/33 input-port 8 out-program-number 52041 in-program-number 1 udp-port 5000 pid-remapping src-ip 10.255.5.15</pre> <pre>CASA(config)# video pid-remap session 126 from 1988 to 2018</pre> <pre>CASA(config)# show run video session ! ! Last configuration change at 09:46:27 EDT 2018-03-21 ! NVRAM config last updated at 14:29:44 EDT 2018-03-20</pre>
cable partial-service dbc-recovery Tracking ID: 89368, 89468	<p>A behavior change has been applied to the cable partial-service dbc-recovery command functionality in R7.2.5.3. The change now supports recovery of channels based on multiple partial service triggers, including recovery of muted channels due to uncorrectable frames, ranging timeouts, poor SNR, and other conditions resulting in channel impairment.</p> <p>The retry behavior has also been revised to support one retry attempt by default, where the retry value is n+1 retries, unless the unlimited option is specified. Setting the retry value to 0 initiates one retry only.</p>

Table 25. CLI additions and changes in Release 7.2.5.3 (continued)

Command name and tracking ID	New or revised CLI description
<p>pid-remap session</p> <p>Tracking ID: 89882</p>	<p>The requirement for setting the pid-remapping property for video multiplex and pass-through sessions has been removed if a specific range of PID remaps are requested through the new pid-remap session command (see ID 88823).</p> <p>The pid-remapping property is relevant only if general PID remapping is desired where, by default, the CMTS selects a range of free PIDs to remap instead of being user-selectable.</p> <p>In addition, the in-program-number and input-port properties of video session configurations have been made optional.</p> <p>Example:</p> <pre>CASA(config)# video session 2 mux ip-address 230.1.1.2 qam-channels shared-channel 1/0 out-program-number 2 in-program-number 0 src-ip 192.168.3.67 video session 00000000000000000002 was created successfully CASA(config)# video pid-remap session 2 from 481 to 4811 CASA(config)# show running-config video session ! ! Last configuration change at 06:28:53 UTC 2018-03-09 ! NVRAM config last updated at 06:02:58 UTC 2018-03-09 video session 2 mux ip-address 230.1.1.2 qam-channels shared-channel 1/0 input-port 0 out-program-number 2 in-program-number 0 src-ip 192.168.3.67 video pid-remap session 2 from 481 to 4811 CASA(config)# video session 1 pass-through ip-address 230.1.1.1 qam-channels shared-channel 1/0 src-ip 192.168.3.67 video session 00000000000000000001 was created successfully</pre>

Table 25. CLI additions and changes in Release 7.2.5.3 (continued)

Command name and tracking ID	New or revised CLI description
si-change Tracking ID: 90372, 90637	<p>The si-change property has been added to the video session mux and video session pass-through commands to enable parsing, combining, and multiplexing Service Information (SI) tables such as Service Description Table (SDT) and Event Information Table (EIT) instances.</p> <p>Use the si-change option instead of PID remapping for instances where multiplexing involves multiple input streams containing SDTs or EITs and QAM is expected to merge the tables seamlessly before transmitting them.</p> <p>A subsequent change enabled the si-change property to be used together with the pid-remapping property for video session mux, but if si-change is used alone, SI tables are processed without PID remapping.</p> <p>The equivalent property was added to the Casa Video Web UI for the Add/Modify VoD CLI Session and Add/Modify Multicast CLI Session configuration dialogs off of the Configure > Video > CLI Session screen. The SI Change option appears when Session Mode is set to mux or pass-through.</p> <p>Example:</p> <pre>CASA(config)# video session 1 pass-through ip-address 230.1.1.1 qam-channels shared-channel 0/0 si-change src-ip 192.168.3.67</pre>

Appendix G. CLI changes in Release 7.2.5.2

The following table lists the CLI changes which have applied in Release 7.2.5.2. For CLI changes originally introduced in Releases 7.2, see the *Casa Systems – CMTS Release 7.2 Features Guide*.

Table 26. CLI additions and changes in Release 7.2.5.2

Command name and tracking ID	New or revised CLI description
[no] cable primary-said non-l2vpn Tracking ID: 70277	<p>The [no] cable primary-said non-l2vpn command has been added to the CLI to exclude the primary Security Association Identifier (SAID) in TLV 43.5.10 as the L2VPN SAID. By default, the primary SAID is included in the TLV to encrypt messages if the modem has L2VPN capability.</p> <p>This command is to address modems that do not accept the primary SAID encoded in the TLV. The no form of the command disables this function (the default). The verbose version of the show running-configuration command shows the current setting (or the default setting if not configured).</p> <p>Example:</p> <pre>CASA(config)# cable primary-said non-l2vpn CASA(config)# no cable primary-said non-l2vpn CASA(config)# show run verbose in primary-said no cable primary-said non-l2vpn</pre>
video simulcrypt tier-mode per-module Tracking ID: 50604	<p>The per-module option has been added to the video simulcrypt tier-mode command to enable a single ECMG connection per QAM card. Tier mode based encryption in SimulCrypt allows all incoming video streams to be encrypted using the same set of key material.</p> <p>Example:</p> <pre>CASA(config)# video simulcrypt tier-mode per-module WARNING: Simulcrypt Encryption Algorithm is being applied. New FPGA image needs to be loaded. Save the configuration and reboot the system will take effect.</pre>

Table 26. CLI additions and changes in Release 7.2.5.2 (continued)

Command name and tracking ID	New or revised CLI description
log mark video-log mark Tracking ID: 56345	<p>A log marking feature has been added to facilitate log searches. The default mark is a string of 16 asterisks. Any string of up to 64 characters can be specified through the log mark or video-log mark commands.</p> <p>Example:</p> <pre>CASA(diag)# log mark debug CASA(diag)# video-log mark video-debug CASA(diag)# show log mark log mark: debug video log mark: video-debug</pre>
module active-smm cpu-utilization- measuring-interval Tracking ID: 59117	<p>The module active-smm cpu-utilization-measuring-interval command has been introduced to set the active Switch and Management Module (SMM) CPU measuring interval. Specify 1, 5, or 15 minute intervals. The default setting is 1 minute.</p> <p>The equivalent objects in the CASA-ENTITY-MIB are casaModuleSystemInfo and casaActiveSmmCpuUtilization.</p> <p>Example:</p> <pre>CASA(config)# module active-smm cpu-utilization-measuring-interval 5</pre>
show spectrum upstream <slot>/ <port>.<chan> chan-width Tracking ID: 61574, 67214	<p>The show spectrum upstream <slot>/<port>.<chan> chan-width command now includes the previously missing 200000 Hz channel width value as defined in the CASA-SPECTRUM-MIB casaSpectrumMeasurementChannelWidth object.</p> <p>Example:</p> <pre>CASA# show spectrum upstream 13/0 chan-width ? <200000 400000 800000 1600000 3200000 6400000> channel width value</pre>

Table 26. CLI additions and changes in Release 7.2.5.2 (continued)

Command name and tracking ID	New or revised CLI description
[no] load-balance permit dbc-chg-prim-ds {dynamic static} [dcc-retry <0:10>] Tracking ID: 63471	<p>The [no] load-balance permit dbc-chg-prim-ds {dynamic static} [dcc-retry <0:10>] command now permits Dynamic Bonding Change (DBC) messages for dynamic or static load balancing on the downstream. The optional dcc-retry setting can also be applied, and can also be set independently of DBC with the load-balance dcc-retry command. The no form of the command disables this feature.</p> <p>Example:</p> <pre>CASA(config)# load-balance permit dbc-chg-prim-ds static CASA(load-bal-policy 1)# exit CASA(config)# no load-balance permit dbc-chg-prim-ds static CASA(config)# load-balance permit dbc-chg-prim-ds dcc-retry 0 CASA(load-bal-policy 1)# exit CASA(config)# no load-balance permit dbc-chg-prim-ds dcc-retry</pre>
spectrum rule: [no] cm-mode tolerance-count <4:100> Tracking ID: 64097	<p>The [no] cm-mode tolerance-count <4:100> option and its parameters have been added to the spectrum rule configuration.</p> <p>The tolerance count is the maximum number of tolerated cable modems on the upstream channel that are detected with lower-than-threshold signal-to-noise ration (SNR) during polling. The default is 15 CMs. A higher number can trigger the specified spectrum rule action.</p> <p>The tolerance count can be extended by the low and minimum modem counts. The low-modem-count scales the tolerance-count by 1/3 below the value and defaults to 45; the min-modem-count defaults to 10.</p> <p>Example:</p> <pre>CASA(conf-rule 1)# cm-mode tolerance-count low-modem-count 45 min-modem-count 10</pre>
packetcable vrf <name> packetcable myaddress <addr> vrf <name> Tracking ID: 64902	<p>The Packetcable configuration has been enhanced with the VRF specification to support multiple VRF instances.</p> <p>Example:</p> <pre>CASA(config)# packetcable vrf VRF1 CASA(config)# packetcable myaddress 1.1.1.1 vrf VRF1</pre>

Table 26. CLI additions and changes in Release 7.2.5.2 (continued)

Command name and tracking ID	New or revised CLI description
show cable modem bonding show cable modem partial-service Tracking ID: 65502, 71023	<p>The show cable modem bonding and show cable modem partial-service commands now include the following additional reason codes:</p> <ul style="list-style-type: none"> 13 Ds ofdm profile fail 14 DPD mismatch <p>Example:</p> <pre>CASA(config)# show cable modem partial-service Reason code: x/y/z(reason_code) 1 MDD timeout 2 FEC lock failure 3 Bad tcc 4 Bad rcc 5 Reg ack 6 DBC rsp 7 TR power bad 8 NCP profile failure 9 Impaired channel 10 Channel unreachable 11 Range timeout 12 Ranging failure 13 Ds ofdm profile fail 14 DPD mismatch 0 Unknown</pre>
cable modem arp-nd static Tracking ID: 65695	<p>The cable modem arp-nd static command has been introduced to set cable modems to static Address Resolution Protocol (ARP) or IPv6 Neighbor Discovery (ND) status.</p> <p>When the CM completes DHCPv4 or DHCP, the DHCP relay agent adds an entry to the ARP table or the IPv6 ND cache. For Layer 2 static entries, ARP and ND refreshes are skipped.</p> <p>The clear cable modem command deletes the static L2 entry if the CM is purged from the CMTS table due to a DOCSIS event, such as a SID aging timeout. The show arp command shows the ARP entries which have been set to static.</p> <p>Example:</p> <pre>CASA(config)# cable modem arp-nd static CASA(config)# no cable modem arp-nd static</pre>
[no] debug ip pim system-log Tracking ID: 67196	<p>The [no] debug ip pim system-log command has been added to the Casa CLI diag mode to send debugging information to the local system log. The no form of the command removes system log debugging output.</p> <p>Example:</p> <pre>CASA(diag)# debug ip pim system-log CASA(diag)# no debug ip pim system-log</pre>

Table 26. CLI additions and changes in Release 7.2.5.2 (continued)

Command name and tracking ID	New or revised CLI description
show video session Tracking ID: 67331	Support for detection of real-time polling service (RTP) streams for video input has been implemented. The RtpSequenceErrorCount output has been added to the show video session command to display RTP streams as video input for broadcast and VoD.
[no] terminal exec prompt timestamp enable Tracking ID: 67467	<p>The [no] terminal exec prompt timestamp enable command was introduced in the Casa CLI to add a date and time stamp at the top of each CLI command. The setting does not persist across reboots by default unless you copy to startup.</p> <pre>CASA(config)# terminal exec prompt timestamp enable CASA(config)# show run Wed Oct 21 12:47:56 UTC 2015 ! ! Last configuration change at 12:47:52 UTC 2015-10-21 ...</pre>
[no] sid-usage alarm threshold <10:100> Tracking ID: 67594	<p>The sid-usage alarm threshold <10:100> command allows users to specify the SID utilization percentage threshold to hit before the system generates an alarm message in the log file. When the number of SIDs exceeds the configured threshold percentage, an alarm message will declare the current number of SIDs and the exceeded SID utilization percentage. The configurable threshold is 10 to 100 percent.</p> <p>Setting the no sid-usage alarm parameter clears any MAC domains which are in the alarm state. This is the default setting. The show sid-usage command displays the number of SIDs per DOCSIS MAC domain and the current SID utilization percentage.</p> <p>Example:</p> <pre>CASA(config)# sid-usage alarm threshold 10 CASA(config)# show sid-usage Docsis-Mac Sid Occupied Number/Percentage ----- 1 0/0.00% 2 4/0.05% CASA(config)# show log [Wed Dec 28 16:28:16 2016]-AL-MAC-1: smm6: MAC mac-domain 1,sid occupy alarm, threshold 10%,current occupied number 4096,percentage 50.00%</pre>

Table 26. CLI additions and changes in Release 7.2.5.2 (continued)

Command name and tracking ID	New or revised CLI description
video simulcrypt trap enable Tracking ID: 67596	<p>The video simulcrypt trap enable command has been introduced to enable a SimulCrypt SNMP traps associated with the notification objects in the CASA-VIDEO-TS-MON-MIB. The enhancement enables SNMP event messaging associated with ECMG connection status with the Casa CCAP.</p> <p>Example: CASA(config)# video simulcrypt trap enable</p>
RADIUS/TACACS username/password Tracking ID: 67597	<p>The length of the RADIUS and TACACS usernames and passwords has been extended to 63 characters.</p> <p>Example: CASA# show user current</p> <pre> USER TTY TYPE FROM LEVEL SINCE ----- 63bytes4usernameandpassword63bytes4usernameandpassword63pr ivi15 console console local 15 </pre>
[no] l2vpn local-traffic-forwarding [no] l2vpn mac-address-movable Tracking ID: 67363, 67611	<p>The [no] l2vpn local-traffic-forwarding and [no] l2vpn mac-address-movable commands have been reinstated in the Casa CLI to enhance local forwarding of L2VPN MPLS packets.</p> <ul style="list-style-type: none"> The local-traffic-forwarding property allows local traffic forwarding to local addresses. The mac-address-movable property allows location changes for MAC addresses attached to the L2VPN. <p>The two properties had been applied to the interface vlan configuration and to the global L2VPN setting, which takes precedence over the interface vlan configuration.</p> <p>Example: CASA(config)# l2vpn local-traffic-forwarding CASA(config)# l2vpn mac-address-movable</p> <pre> CASA(conf-if-vlan 1)# l2vpn local-traffic-forwarding CASA(conf-if-vlan 1)# l2vpn mac-address-movable </pre>

Table 26. CLI additions and changes in Release 7.2.5.2 (continued)

Command name and tracking ID	New or revised CLI description
pseudowire redundancy Tracking ID: 67921	<p>The following commands and parameters have been introduced to support PW redundancy:</p> <p>[no] peer <ip_addr> <1:2147483647> [encapsulation mpls <4:5>] [vccv-verification]</p> <p>[no] backup-peer <ip_addr> <1:2147483647></p> <p>[no] backup-delay <1:180> [<1:180>] [never]</p> <p>[no] pseudowire ping [ttl <1:255>] [interval <1:500>] [timeout <2:20000>]</p> <p>vpws force-switchover <1:2147483647></p> <p>Example:</p> <pre> CASA(config)# mpls vpws VPLS1 CASA(config-vpws)# peer 192.168.8.8 10 vccv-verification CASA(config-vpws-peer)# backup-peer 192.168.8.9 11 CASA(config-vpws-peer)# backup-delay 30 30 CASA(config-vpws-peer)# exit-backup-peer CASA(config-vpws)# end CASA(config)# mpls pseudowire ping ttl 30 interval 1 timeout 5 CASA(config)# show mpls vpws xconnect redundancy CASA(config)# end CASA# mpls vpws force-switchover 10 </pre>

Table 26. CLI additions and changes in Release 7.2.5.2 (continued)

Command name and tracking ID	New or revised CLI description
mpls vpws force-switchover show mpls vpws xconnect Tracking ID: 67970	<p>The requirement for a unique ID for the VPWS primary and for the VPWS backup-peer has been removed, allowing identical IDs for multiple virtual circuits (VCs). Forcing a switchover to the backup-peer can now be accomplished using the mpls vpws force-switchover command. The show mpls vpws xconnect command output was also enhanced with the vc peer option.</p> <p>Example:</p> <pre>CASA(config)# mpls vpws VPLS-net1 CASA(config-vpws)# peer 192.168.8.8 11 CASA(config-vpws-peer)# backup-peer 192.168.8.9 11 CASA(config)# mpls vpws force-switchover 11 CASA(config)# show mpls vpws xconnect vc 11 peer 192.168.8.8 MAC Address Peer Address VC_ID VC_TYPE Us_Intf DS_Intf PSID State VPWSID</pre>
show video session <id> Source Switch Count Tracking ID: 68177	<p>The show video session <id> command output now includes Source-Specific Multicast (SSM) session switch statistics in the Input Stream listing to include the source switch count and the last switched date and time.</p> <p>Example:</p> <pre>CASA# show video session 0000000000010014091f Created On : 02/24/2015,17:05:54 UTC StreamId : 3576 ... Input Stream: ... Source Switch Count : 38 Last Switched at : 02/14/2017,07:42:39 UTC ...</pre>

Table 26. CLI additions and changes in Release 7.2.5.2 (continued)

Command name and tracking ID	New or revised CLI description
video min-pat-updated-interval Tracking ID: 68272	<p>The video min-pat-updated-interval command has been introduced in the CLI to set the minimum time gap between changing Program Association Table (PAT) versions for proper handling of video sessions for some set-top boxes (STBs). The configured interval is set in microseconds at 100 ms increments in the range 100 to 2000.</p> <p>The default keyword changes the setting to 0 ms.</p> <p>Setting the maximum 2000 ms interval changes the next PAT version only after 2000 ms for each successive video session. Use the show video global config command to display the configuration setting.</p> <p>Example:</p> <pre>CASA(config)# video min-pat-update-interval ? <100-2000> interval value in terms of ms and in increment of 100ms default default interval value is 0 ms</pre> <pre>CASA(config)# video min-pat-update-interval 1000</pre>
cable modem deny Tracking ID: 68309, 69673	<p>The cable modem deny list capacity has been increased to 2048 cable modem MAC address entries. Previously, the maximum number of supported entries in the list was 512. The cable modem deny command specifies the MAC address of a cable modem which is prohibited from registering with the CMTS.</p> <p>Example:</p> <pre>CASA(config)# cable modem deny 0001.0001.2043 CASA(config)# cable modem deny 0001.0001.2044 CASA(config)# cable modem deny 0001.0001.2045 CASA(config)# cable modem deny 0001.0001.2046 CASA(config)# cable modem deny 0001.0001.2047 CASA(config)# cable modem deny 0001.0001.2048 CASA(config)# cable modem deny 0001.0001.2049 set black cm to database failed!</pre> <pre>CASA(config)# CASA(config)# show running-config count-only "modem deny" Wed Mar 8 03:59:58 UTC 2017 Count Line: 2048 CASA(config)#</pre>

Table 26. CLI additions and changes in Release 7.2.5.2 (continued)

Command name and tracking ID	New or revised CLI description
show cpuinfo module <number> Tracking ID: 68581	<p>The show cpuinfo module <number> command has been revised to retrieve QAM or UPS utilization statistics for all CPU processes running on the specified line card. CPU utilization statistics are reported as minimum, average, and maximum percentages.</p> <p>The equivalent objects in the CASA-ENTITY-EXT-MIB are:</p> <ul style="list-style-type: none"> • casaModuleDataCpuUtilizationTable • casaModuleDataCpuUtilizationEntry • casaModuleDataCpuUtilizationMin • casaModuleDataCpuUtilizationAvg • casaModuleDataCpuUtilizationMax <p>Example:</p> <pre>CASA> show cpuinfo module 12 Module 12: ... Data CPU utilization (Min/Avg/Max) (13%/68%/95%) ...</pre>
ipsec phase 1 dpd-delay <sec> dpd-retry <sec> dpd-maxfail <num> Tracking ID: 68656	<p>Dead Packet Detection (DPD) support has been added for IPSec configuration. The ipsec phase 1 command now includes the following three DPD parameters:</p> <ul style="list-style-type: none"> • dpd-delay <sec> — Dead Packet Detection (DPD) delay, in seconds, default 0. Optional. • dpd-retry <sec> — DPD retry intervals, in seconds, default 5. Optional. • dpd-maxfail <num> — Maximum number of DPD retries without responses, default 5. Optional <p>Example:</p> <pre>CASA(config)# ipsec phase1 POL1 192.168.8.8 8 1 des md5 psk both dpd-delay 0 dpd-retry 5 dpd-maxfail 5</pre>

Table 26. CLI additions and changes in Release 7.2.5.2 (continued)

Command name and tracking ID	New or revised CLI description
[no] ddos Tracking ID: 68806	<p>The [no] ddos command has been introduced in the CLI to enable or disable mitigation of Distributed Denial of Service (DDoS) breaches such as a DNS amplification attack or traffic over-subscription that can potentially limit service flows. The threshold is five simultaneous attacks with a reaction time of less than a second. The default is disabled. When enabled, the feature functions as follows:</p> <ul style="list-style-type: none"> • Handles over-subscription messages from QAM and drops packets if necessary. • Programs the switch with meter entries that qualify on destination IPv4 and IPv6 addresses. The meter is the aggregate of all service flows associated with the destination address. • Maintains the current state of programmed entries in the switch along with current drop counters. (Drop counters are retrieved every five seconds.) • Ages out existing entries when the drop counter on a corresponding entry no longer increases. (Aging out is after 10 minutes by default.) <p>The clear ddos and show ddos commands clear the current entry and subsequently check if the attack is still based on the time the DDoS entries were added and the current drop rate of the flows.</p> <p>Example:</p> <pre>CASA(config)# ddos CASA(config)# no ddos CASA> clear ddos CASA> show ddos</pre>
all Tracking ID: 69289	<p>Support for the all protocol option has been reinstated in ACL permit and deny rules in the configuration. Customers who previously upgraded to R7.2.4.0 may have experienced issues with ACLs where the all option was not filtering packets as expected.</p>
software-health-check snmpd failure-threshold Tracking ID: 69385	<p>The range of the failure-threshold parameter of the software-health-check snmpd command has been revised from <1:600> to <6:600> to address issues with the low minimum threshold.</p> <p>Example:</p> <pre>CASA(config)# software-health-check snmpd failure-threshold ? <6-600> threshold number (seconds)</pre>

Table 26. CLI additions and changes in Release 7.2.5.2 (continued)

Command name and tracking ID	New or revised CLI description
show cable modem Tracking ID: 69920	<p>The unit of measure for the RxPwr in show cable modem commands has been changed from decibels (dB) to decibels per millivolt (dBmV).</p> <p>Example:</p> <pre>CASA(conf)# show cable modem MAC Address IP Address US DS MAC Prim RxPwr Intf Intf Status Sid (dBmV) 7cb2.1b42.x 10.2.0.1 2/0.0/0 0/0/3* online(pt) 1 -0.5 e448.c7ba.x 10.2.0.1 2/2.3/0* 0/1/6* online(pt) 1 -0.2</pre>
interface trunk Tracking ID: 69947	<p>Up to sixteen (16) member GigE or xGigE interfaces per trunk are now supported on the SMM 8x10G module. Up to eight (8) member interfaces per trunk are supported on the SMM 2x10G module.</p>
show bonding-group utilization Tracking ID: 69965	<p>The show bonding-group utilization command now provides the application class child identifier in the App-Class-Id column. Child IDs are in the format ##, as shown in the partial sample output below:</p> <p>Example:</p> <pre>CMTS(config)# show bonding-group utilization Mac GroupID App-Class-Id Total BW(kbps) Used BW(kbps) . 2 - 1.1 102865 0 0 2 - 1.2 102865 0 0 2 - 1.3 102865 0 0 2 - 1 102865 0 0</pre>
[no] debug video simulcrypt {ecmg [<string>] scs [ecmg] [eis] [msg-dump] [tier] [trace]} Tracking ID: 70465	<p>The [no] debug video simulcrypt {ecmg [<string>] scs [ecmg] [eis] [msg-dump] [tier] [trace]} command has been introduced in the Casa CLI diag mode to support enhanced ECMG debugging capabilities. Additionally, the show video simulcrypt debug-config command has been introduced, as well as changes to the show video simulcrypt ecmg command output.</p> <p>Example:</p> <pre>CASA(diag)# debug video simulcrypt ecmg CASA(diag)# show video simulcrypt debug-config SYMULCRYPT DEBUG CONFIG: TRACE: Off EIS: Off ECMG: Off MSG-DUMP: Off TIER: Off SCG: Off</pre>

Table 26. CLI additions and changes in Release 7.2.5.2 (continued)

Command name and tracking ID	New or revised CLI description
ofdma probe interval Tracking ID: 70610	<p>Silent probe support to measure MER has been added to OFDMA channels using the ofdma probe interval command. When silent probe is enabled, the CMTS pauses and measures the present noise level on a given channel. The command sets the silent probe interval in minutes.</p> <p>The default setting is disabled. When disabled, a silent probe occurs every 30 seconds. When enabled and with pre-equalization configured for the OFDMA channel, all modems on the channel perform two probes during initial ranging, with repeated probes based on the interval setting.</p> <p>Example: CASA(config)# ofdma probe interval 60 CASA(config)# no ofdma probe</p>
rolloff-period cyclic-prefix Tracking ID: 71055	<p>The help text for the OFDMA channel rolloff-period and cyclic-prefix commands was enhanced to list the available values in units of microseconds to provide clarify.</p> <p>Example: CASA(conf-ofdma-channel 12/0.0)# rolloff-period ? 0 0.0us 128 1.25us 160 1.5625us 192 1.875us 224 2.1875us 32 0.3125us 64 0.625us 96 0.9375us</p> <p>CASA(conf-ofdma-channel 12/0.0)# cyclic-prefix ? 128 1.25us 160 1.5625us 192 1.875us 224 2.1875us 256 2.5us 288 2.8125us 320 3.125us 384 3.75us 512 5.0us 640 6.25us 96 0.9375us</p>

Table 26. CLI additions and changes in Release 7.2.5.2 (continued)

Command name and tracking ID	New or revised CLI description
[no] video full-scramble enable Tracking ID: 71107	<p>The [no] video full-scramble enable command has been implemented in the Casa CLI to enable full scrambling of all video components, including audio, video, and subtitles. The default setting is no video full-scramble enable where only audio and video will remain scrambled.</p> <p>Example:</p> <pre>CASA(config)# video full-scramble enable [Tue Apr 25 17:42:25 2017]-IN-CLI-1: smm6: update config last changed or saved time 2017-04-25 17:42:25</pre> <p>CASA(config)# no video full-scramble enable [Tue Apr 25 17:42:36 2017]-IN-CLI-1: smm6: update config last changed or saved time 2017-04-25 17:42:36</p>
video simulcrypt ecmg <id> stream <id> [module <0:13>] delete Tracking ID: 71509	<p>The video simulcrypt ecmg <id> stream <id> [module <0:13>] delete command has been added to the CLI diag mode to enable deleting a specific SimulCrypt stream ID from a given module.</p> <p>Example:</p> <pre>CASA(diag)# video simulcrypt ecmg stream 1 module 3 delete</pre>

Table 26. CLI additions and changes in Release 7.2.5.2 (continued)

Command name and tracking ID	New or revised CLI description
show video simulcrypt ecmg [<id>] [stats] Tracking ID: 71534	<p>The show video simulcrypt ecmg [<id>] [stats] command has been introduced to display the Entitlement Control Message Generator (ECMG) configuration.</p> <p>Example:</p> <pre>CASA(config)# show video simulcrypt ecmg EEEE Encryption Period : 30 s ECMG Timeout : 3 s ECMG Retries : 3 ECMG Load-balancing : Disabled CP remaining time : 0 s ECM channel ID range : N/A ECMG VRF : N/A EIS VRF : vrf1 ECMG EEEE: System Id : 18981 Subsystem Id : 0 IP Address : 172.16.8.199 TCP Port : 22288 Priority : 1 Protocol Version : 3 Access-criteria : N/A ECMG Uptime : 0 d : 0 h : 11 m : 37 s Connection Status : Connected Channel Status : Open ECM channel ID : 254 Stream Information: Stream ID Stream ECM ID CP number Status ----- 1 1 12 Open</pre>

Table 26. CLI additions and changes in Release 7.2.5.2 (continued)

Command name and tracking ID	New or revised CLI description
show video simulcrypt scg Tracking ID: 71536	<p>The show video simulcrypt scg command format has been revised in the Casa CLI.</p> <p>Example:</p> <pre>CASA(config)# show video simulcrypt scg 10 Encryption Period : 30 s (Default 30 s)</pre> <p>Module 0:</p> <pre>SCG 10: Transport Stream ID : 1016 Network ID : 0 SCG Reference ID : 0 Activation Time : 2016-08-30 15:40:32 Recommended CP duration : 60 s Module : 4 Port : 0 Channel : 16 Nominal CP duration : 60 s CP Number : 8 CP remaining time : 35 s Program IDs : 1</pre> <p>ECM 0: ...</p>
cable-helper-ipv6-address Tracking ID: 72205	<p>The dva parameter has been added to the interface ip-bundle cable-helper-ipv6-address command to enable forwarding Digital Voice Adapter (DVA) broadcasts only.</p> <p>DHCPv6 packets which contain device type suboption(2) EDVA or EMTA device will be forwarded to specified server, if present.</p> <p>Example:</p> <pre>CASA(ip-bundle 1.1)# cable helper-ipv6-address 2001:20:158::6 dva</pre>
cable partial-service dbc-recovery Tracking ID: 72549	<p>The help text for the cable partial-service dbc-recovery <60-3600> command was enhanced to indicate the units in seconds.</p>

Table 26. CLI additions and changes in Release 7.2.5.2 (continued)

Command name and tracking ID	New or revised CLI description																																																																						
show cable modem load-balance dynamic dbc-unmodifiable Tracking ID: 72995	<p>The dynamic dbc-unmodifiable option has been added to the show cable modem load-balance command to show only those modems that are no longer load balancing due to three or more failures.</p> <p>Example:</p> <pre>CASA# show cable modem load-balance dynamic dbc-unmodifiable</pre> <table><tr><th>MAC</th><th>Address</th><th>IP Address</th><th>US</th><th>DS</th><th>Mac</th><th>RLBG</th></tr><tr><th></th><th></th><th></th><th>Intf</th><th>Intf</th><th>Id</th><th>Id</th></tr><tr><th></th><th></th><th>Policy</th><th>DS</th><th>US</th><th>Sucess</th><th>Sg-name/Cable-Tag</th></tr><tr><th></th><th></th><th>Id</th><th>Fail</th><th>Fail</th><th></th><th></th></tr><tr><td>6814.01f0.3f23</td><td>10.66.1.252</td><td>4/2.3/0*</td><td>0/2/1*</td><td>1</td><td>0</td><td></td></tr><tr><td></td><td>1</td><td>3</td><td>0</td><td>0</td><td>1/1</td><td></td></tr><tr><td>7cb2.1bbe.a4f2</td><td>10.66.1.249</td><td>4/2.1/0*</td><td>0/2/0*</td><td>1</td><td>0</td><td></td></tr><tr><td></td><td>1</td><td>0</td><td>3</td><td>0</td><td>1/-</td><td></td></tr><tr><td>fc52.8d5e.8583</td><td>10.66.1.248</td><td>4/2.0/0*</td><td>0/2/1*</td><td>1</td><td>0</td><td></td></tr><tr><td></td><td>1</td><td>3</td><td>3</td><td>0</td><td>1/1</td><td></td></tr></table> <p>total: 3</p>	MAC	Address	IP Address	US	DS	Mac	RLBG				Intf	Intf	Id	Id			Policy	DS	US	Sucess	Sg-name/Cable-Tag			Id	Fail	Fail			6814.01f0.3f23	10.66.1.252	4/2.3/0*	0/2/1*	1	0			1	3	0	0	1/1		7cb2.1bbe.a4f2	10.66.1.249	4/2.1/0*	0/2/0*	1	0			1	0	3	0	1/-		fc52.8d5e.8583	10.66.1.248	4/2.0/0*	0/2/1*	1	0			1	3	3	0	1/1	
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fc52.8d5e.8583	10.66.1.248	4/2.0/0*	0/2/1*	1	0																																																																		
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ofdma iuc-profile <n> initial-ranging-iuc offset <0:237> Tracking ID: 73214	<p>The OFDMA initial ranging zone configuration has been enhanced with the start index of the minislot through the offset <0:237> option of the OFDMA IUC profile initial-ranging-iuc command. Initial ranging is used by the CMTS to identify a new admitting CM and for coarse power and timing ranging. It provides an interval in which new stations can join the network.</p> <p>The parameter sets the maximum number of subcarriers for initial ranging, along with the sum of the upper and lower guard bands for initial ranging in Hz. The offset is the ranging zone minislot start index, default 0, where the software does the offset calculation. With the offset set, the TaFDM ranging zone restriction is removed (ranging in a TDMA/OFDMA overlapped area is possible).</p> <p>Example:</p> <pre>CASA(config)# ofdma iuc-profile 1 CASA(conf-IUC-profile 1)# initial-ranging-iuc 32 1000000 offset 40</pre>																																																																						

Table 26. CLI additions and changes in Release 7.2.5.2 (continued)

Command name and tracking ID	New or revised CLI description
video input-null-drop Tracking ID: 75437	<p>The input-null-drop command has been added to the Casa CLI to enable dropping null video packets at input. Use the no form of the command to disable dropping null video packets at input, which is the default setting. Use the show video global config include input command to confirm the configuration setting.</p> <p>Example:</p> <pre>CASA(config)# video input-null-drop CASA(config)# show video global include input video input-null-drop.</pre>
show tech Tracking ID: 75691	<p>The show tech command in the Casa CLI has been enhanced to include SimulCrypt related output. A partial display is provided in the example below.</p> <p>Example:</p> <pre>CASA# show tech be Simulcrypt show video simulcrypt ecmg ! ECMG yli2: System Id : 18982 Subsystem Id : 0 Domain Name : N/A IP Address : 172.16.8.195 TCP Port : 22288 Priority : 1 Protocol Version : 3 Access-criteria : N/A ECMG Uptime : 0 d : 0 h : 0 m : 24 s Connection Status : Connected Channel Status : Open ECM channel ID : 254 Stream Information: Stream ID Stream ECM ID Slot Scg-ID CP number Status ----- 1 4100 0 1001 0 Open 2 4100 0 1002 0 Open</pre>

Table 26. CLI additions and changes in Release 7.2.5.2 (continued)

Command name and tracking ID	New or revised CLI description
show mpls ldp session Tracking ID: 75708	<p>A software change has been applied so that encrypted passwords no longer display in clear text with the show mpls ldp session command, as follows:</p> <ul style="list-style-type: none"> When the service password-encryption setting is enabled, the show mpls ldp session command will now display the text string "Password Encrypted!" on the Peer LDP Password line in the output. When the service password-encryption setting is disabled, the already-encrypted password will continue to display the text string "Password Encrypted!," with the adjacency being created only after the password encryption is disabled. If the LDP neighbor password is removed, then the text string "Not Set!" is displayed in the command output. <p>Example:</p> <pre>CASA (config-router-ldp)# show mpls ldp session 66.66.66.66 Session state : OPERATIONAL Session role : Active TCP Connection : Established IP Address for TCP : 66.66.66.66 Interface being used : xgige6/0 Peer LDP ID : 66.66.66.66:0 Peer LDP Password : Password Encrypted!</pre>

Table 26. CLI additions and changes in Release 7.2.5.2 (continued)

Command name and tracking ID	New or revised CLI description
l2vpn mac-address interval <1:1800> Tracking ID: 38077, 48609	<p>Enhancement. To support L2 Business Services over DOCSIS (BSoD), L2 broadcast traffic can now be disabled between two cable modems on the same VLAN. All L2 traffic will be forwarded to the upstream router over the CMTS network side interface. The upstream router will then redirect the traffic back to the CMTS.</p> <p>The following no commands have been implemented in the CLI to disable L2 traffic.</p> <p>Example:</p> <pre>CASA(conf-if-vlan 10)# no l2vpn mac-address-movable</pre> <pre>CASA(conf-if-vlan 10)# no l2vpn local-traffic-forwarding</pre> <p>The l2vpn mac-address interval <1:1800> command has been implemented to set the L2VPN interval timer period in seconds to elapse before determining if a MAC address is no longer active. The default value is 900 seconds. The configurable range is 1 to 1800 seconds.</p> <p>Example:</p> <pre>CASA(conf-if-vlan 10)# l2vpn mac-address interval ? <1-1800> expiry interval in seconds if mac-address is no longer active. Default is 900 seconds</pre> <pre>CASA(conf-if-vlan 10)# l2vpn mac-address interval 400</pre>
video simulcrypt log feature-log Tracking ID: 76498	<p>The video simulcrypt log feature-log command has been introduced in the Casa CLI to redirect SimulCrypt log messages to the video log which would normally go to the system log. The function is disabled by default. Once enabled, apply the no form of the command to disable this functionality.</p> <p>Example:</p> <pre>CASA(config)# video simulcrypt log feature-log CASA(config)# show video log volatile ... CASA(config)# no video simulcrypt log feature-log</pre>

Table 26. CLI additions and changes in Release 7.2.5.2 (continued)

Command name and tracking ID	New or revised CLI description
cm-mode tolerance-count <4:100> [low-modem-count <n> min-modem-count <n>] Tracking ID: 76869	<p>The spectrum-rule configuration cm-mode tolerance-count <4:100> [low-modem-count <n> min-modem-count <n>] command has been modified in the Casa CLI by boundary checking for low and minimum modem counts. Errors are returned if the values do not conform to the boundary checking.</p> <p>The low-modem-count <n> must be higher than one-third the tolerance-count and up to 255, and defaults to 45. The min-modem-count <n> goes from 1 up to one-third the tolerance-count and less than the low-modem-count, and defaults to 10.</p> <p>Example:</p> <pre>CASA(config)# spectrum rule 13 CASA(config-rule 13)# cm-mode tolerance-count 100 low-modem-count ? <1-255> default to 45 CASA(config-rule 13)# cm-mode tolerance-count 100 low-modem-count 2000 min-modem-count ? <1-33> default to 10 CASA(config-rule 13)# cm-mode tolerance-count 100 low-modem-count 2000 min-modem-count 2001 error: the low-modem-count must be higher than tolerance-count / 3 (33 in this case) and lower than 255 CASA(config-rule 13)# cm-mode tolerance-count 100 low-modem-count 33 min-modem-count 33 error: the minimum-modem-count must be lower than the low-modem-count and lower than tolerance-count / 3 in this case must be 1...33 and lower than 33 CASA(config-rule 13)# cm-mode tolerance-count 100 low-modem-count 33 min-modem-count 32 CASA(config-rule 13)#</pre>

Table 26. CLI additions and changes in Release 7.2.5.2 (continued)

Command name and tracking ID	New or revised CLI description
<p>The video simulcrypt scg module <0:13> delete</p> <p>Tracking ID: 76874</p>	<p>The video simulcrypt scg module <0:13> delete command has been modified in the Casa CLI diag mode to delete all Scrambling Control Group (SCG) IDs from a module if there is no active stream in progress. Previously, only a specific SCG ID could be deleted. However, this function is still an option with the video simulcrypt scg <id> module <0:13> delete command.</p> <p>Example:</p> <pre>CASA(diag) # video simulcrypt scg module 13 delete</pre>
<p>[no] ofdma probe interval</p> <p>Tracking ID: 77758</p>	<p>The [no] ofdma probe interval command value range has been modified in the Casa CLI to 1–10080 minutes. Previously, the minimum interval was 10 minutes, which was resulting in delayed updates to the channel RxMER statistics reported in SNMP queries.</p> <p>Example:</p> <pre>CASA(config) # ofdma probe interval 1 CASA(config) # no ofdma probe interval</pre>
<p>[no] http inactive-session-timeout</p> <p>Tracking ID: 77913</p>	<p>The [no] http inactive-session-timeout command has been introduced in the Casa CLI to set an HTTP session timeout value for the Casa Video Web UI. The range is 0–1440 minutes, or the default value of 10 minutes.</p> <p>The no http inactive-session timeout command sets the value to 0, which deactivates the timeout. The show http inactive-session-timeout command displays the current setting.</p> <p>Example:</p> <pre>CASA(config) # http inactive-session-timeout <0-1440> inactive session timeout in minutes, 0 means never timeout default default timeout value, 10 minutes CASA(config) # http inactive-session-timeout default CASA(config) # no http inactive-session-timeout CASA(config) # show http inactive-session-timeout http inactive-session-timeout 0</pre>

Table 26. CLI additions and changes in Release 7.2.5.2 (continued)

Command name and tracking ID	New or revised CLI description
show cable modem registered-traditional-docsis Tracking ID: 78342	<p>The show cable modem registered-traditional-docsis command has been added to the Casa CLI to display cable modems as DOCSIS version 3.0 that were incorrectly re-registered as traditional DOCSIS version 2.0. The re-registration could occur after shutting down and restarting a MAC domain. With this command, the re-registered CMs are shown in their correct original registration as D3.0 CMs.</p> <p>Example:</p> <pre>CASA# clear cable modem docsis-mac 2 registered-traditional-docsis reset</pre> <p>Please type YES to confirm reset all modems in the specified range: yes</p> <pre>CASA# show cable modem registered-traditional-docsis MAC IP Address US DS MAC Prim RxPwr Timing Num BPI Intf Intf Status Sid (dBmV) Offset CPEs Enb 386b.bddf.bf54 10.66.1.34 4/2.0/0 0/2/3 online(pt) 12 7.5 2394 0 yes</pre>
module <slot> qam8x96 ofdm-channels {enable disable} Tracking ID: 78801	<p>The module <slot> qam8x96 ofdm-channels {enable disable} command has been introduced in the Casa CLI to enable or disable OFDM channels on the QAM 8x96 module. The default setting is disable. The number of channels is set by the module <slot> ofdm-channels command; one OFDM channel per port is supported for the QAM 8x96.</p> <p>Use the show module <slot> config command to display the OFDM channel configuration.</p> <p>Example:</p> <pre>CASA(config)# module 1 qam8x96 ofdm-channels enable CASA(config)# show module 1 config Module 1: QAM8x96 ofdm channels enabled</pre> <p>Use the show module <slot> config command to show the module OFDM channels configuration.</p> <p>Example:</p> <pre>CASA(config)# module 0 qam8x96 ofdm-channels enable CASA(config)# module 1 qam8x192 ofdm-channels 2 CASA(config)# show module 0 config Module 0: QAM8x96 ofdm channels enabled</pre>

Table 26. CLI additions and changes in Release 7.2.5.2 (continued)

Command name and tracking ID	New or revised CLI description
[no] cable tcc non-replace Tracking ID: 79679	<p>To address cases where some cable modems may not be able to come online with the CMTS, the cable tcc non-replace command has been added to the Casa CLI to disable the REPLACE action in transmit channel configuration (TCC) for modems ranging on upstream channels.</p> <p>The default is no cable tcc non-replace, where the “REPLACE function is enabled.</p>
module <slot> qam8x96 dvb-channels <0:16> Tracking ID: 79849, 79850, 80596	<p>The module <slot> qam8x96 dvb-channels <0:16> command was introduced in the Casa CLI to set the number of DVB SimulCrypt-capable channels for all ports of the QAM 8x96 module. The default value is 8.</p> <p>Channels 40-47 can be used either as DOCSISsecondary or DVB video channels.</p> <p>When the dvb-channels parameter is set between 0-8, then all channels are capable of DOCSIS. Channels 0-31 are primary-capable, with all others being secondary-only. DVB video channels will be allocated starting from channel 40.</p> <p>When dvb-channels parameter s set between 9-16, channels 32-39 cannot be used as DOCSIS channels. Channels 0-31 are primary-capable and channels 40-47 are secondary-only. DVB video channels will be allocated starting from 32.</p> <p>If OFDM is disabled, the number of DVB channels can be 0–16. If OFDM is enabled, only 4 or 12 DVB channels are available with a default of 4 channels.</p> <p>The command may require a module reboot.</p> <p>Example:</p> <pre>CASA(config)# module 0 qam8x96 dvb-channels 8</pre> <p>Need to reboot module 0 to apply the change, no switchover will be performed.</p>
show ssh hostkey Tracking ID: 80044	<p>The show ssh hostkey command has been modified in the Casa CLI to accept the values dsa (Digital Signature Algorithm), ecdsa (Elliptical Curve Digital Signature Algorithm), ed25519 (Edwards-curve Digital Signature Algorithm), and rsa (Rivest, Shamir and Adleman) to be compatible with SSH Version 2.</p>

Table 26. CLI additions and changes in Release 7.2.5.2 (continued)

Command name and tracking ID	New or revised CLI description
[no] video table custom prog-per-chan <num> Tracking ID: 80463	<p>The [no] video table custom prog-per-chan <num> command has been added to the Casa CLI to set the number of programs per QAM channels. The supported values are 32, 64, or 256. The default is 64.</p> <p>Example:</p> <pre>CASA(config)# video table custom prog-per-chan 64 chan-per-port 24 start-udp-offset 65 skip-chan 12 CASA(config)# no video table</pre>
show cable modem verbose Tracking ID: 80527	<p>The output to the show cable modem verbose command has been modified in the Casa CLI to show the CFG Max-CPE value as CFG-Max-IPv4-CPE to be specific to the IPv4 protocol.</p>

Table 26. CLI additions and changes in Release 7.2.5.2 (continued)

Command name and tracking ID	New or revised CLI description
cable service-flow default ds-target-buffer Tracking ID: 80548, 80969	<p>The cable service-flow default ds-target-buffer command has been introduced in the Casa CLI to adjust the cable service flow default downstream target buffer size to prevent latency when using a large percentage of provisioned services. Reducing the buffer interval can eliminate the service latency. Target buffer control is a quality of service (QoS) parameter of DOCSIS service flows with TLV 25.35.2.</p> <p>The command operates in the range 10–1000 ms. The default setting is 1000 ms.</p> <p>The optional bitrate value sets the rate to apply to the service flow if the maximum bitrate is below this threshold. The configuration range is 1–4294967295 kbit/sec.</p> <p>Example:</p> <pre>CASA(config)# cable service-flow default ds-target-buffer 300 bitrate 4000000</pre> <pre>CASA(config)# no cable service-flow default ds-target-buffer</pre> <p>The show cable modem qos verbose command shows the target buffer size for a cable modem's quality of service. The tar-buff-size is shown as bytes using the following conversion:</p> $\text{target buffer size} = (\text{sf. max. bitrate}/8) * \text{target-buffer-ms}/1000$ <p>Example:</p> <pre>CASA(config)# show cable modem qos verbose Sfid :40962 ... Maximum Sustained rate : 100000 kbps ... max-buff-size : 0 bytes min-buff-size : 0 bytes tar-buff-size : 6250000 bytes</pre>

Table 26. CLI additions and changes in Release 7.2.5.2 (continued)

Command name and tracking ID	New or revised CLI description																				
[no] debug video simulcrypt scs chan-status Tracking ID: 80659	<p>The [no] debug video simulcrypt scs chan-status command has been introduced in the Casa CLI to enable or disable channel status debugging for the DVB SimulCrypt Synchronizer (SCS). Verify the setting using the show video simulcrypt debug-config command.</p> <p>Example:</p> <pre>CASA(diag)# debug video simulcrypt scs chan-status CASA(diag)# show video simulcrypt debug-config SIMULCRYPT DEBUG CONFIG: TRACE: Off EIS: On ECMG: Off MSG-DUMP: Off TIER: Off SCG: Off CH-STATUS: On</pre>																				
[no] debug video simulcrypt scs chan-status Tracking ID: 80834	<p>The show video simulcrypt service-list [module <number>] command has been introduced in the Casa CLI to display the list of SimulCrypt-encrypted video streams.</p> <p>Example:</p> <pre>CASA# show video simulcrypt service-list module 1</pre> <table><thead><tr><th>Module/Port/Channel Uptime</th><th>Service ID</th><th>TS ID</th><th>Session ID</th></tr></thead><tbody><tr><td>-----</td><td>-----</td><td>-----</td><td>-----</td></tr><tr><td>1 /0 /47 2017-10-11 07:44:09</td><td>1</td><td>1</td><td>7701</td></tr><tr><td>1 /0 /44 2017-10-11 07:44:09</td><td>13</td><td>1</td><td>7700</td></tr><tr><td>1 /0 /43 2017-10-11 07:44:09</td><td>1</td><td>1</td><td>7699</td></tr></tbody></table>	Module/Port/Channel Uptime	Service ID	TS ID	Session ID	-----	-----	-----	-----	1 /0 /47 2017-10-11 07:44:09	1	1	7701	1 /0 /44 2017-10-11 07:44:09	13	1	7700	1 /0 /43 2017-10-11 07:44:09	1	1	7699
Module/Port/Channel Uptime	Service ID	TS ID	Session ID																		
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1 /0 /44 2017-10-11 07:44:09	13	1	7700																		
1 /0 /43 2017-10-11 07:44:09	1	1	7699																		

Table 26. CLI additions and changes in Release 7.2.5.2 (continued)

Command name and tracking ID	New or revised CLI description
stm-factor Tracking ID: 81221,81052	<p>A software revision has been applied which affects the triggering of Subscriber Traffic Management (STM) action on channel-bonded cable modems which have exceeded the configured STM channel utilization threshold. Under this change, the average channel utilization for the bonded channels will be calculated using the channel-utilization-interval <seconds> stm-factor <number> parameter settings.</p> <p>The channel-utilization-interval is the general system configuration that specified in seconds to indicate how often channel utilization for the show docsis channel utilization command is updated. The optional stm-factor specifies the number multiplier to apply to the channel-utilization-interval to determine the overall time interval over which utilization is measured. STM action (penalty) is applied to a cable modem if the average channel-utilization-threshold is:</p> <ol style="list-style-type: none"> 1. Exceeded over the duration of a monitoring interval, and 2. Exceeded at each and every monitoring interval over the calculated time period. (See calculation below.) <p>Both the channel-utilization-interval and the stm-factor parameters are used to calculate an overall time duration where the average channel utilization (across all channels used by a cable modem) is calculated for a specific modem. The stm-factor range is 1–120, with a default setting of 30.</p> <p>Example:</p> <pre>CASA(traffic-policy 1)#channel-utilization-threshold 50 CASA(config)#channel-utilization-interval 60 stm-factor 10</pre> <p>STM utilization interval = channel-utilization-interval * STM factor</p> <p>where in the above example,</p> <p>STM utilization interval = 60*10=600= 10 minutes.</p> <p>If the modem is under the channel utilization threshold for even one interval, and STM penalty will NOT be applied even if the modem's average rate is above the avg-rate threshold in the preceding monitoring interval duration. Modems which have an STM penalty applied which have now dropped below the STM channel-utilization-threshold configured in the cable traffic-policy will be removed from STM penalty as monitoring intervals detect lower utilization.</p>

Table 26. CLI additions and changes in Release 7.2.5.2 (continued)

Command name and tracking ID	New or revised CLI description
ofdm-channel <id> power-attenuation <value> [frequency-band <list>] Tracking ID: 81452,70007	<p>For the QAM 8x192 module, the ofdm-channel <id> power-attenuation <value> [frequency-band <list>] command has been introduced in the Casa CLI to set the QAM interface's OFDM channel power attenuation, in tenths of a dBmV, in the range 0–200, default 0. The command allows operators to configure OFDM channel power levels independent of the SC-QAM power.</p> <p>The frequency-band option distributes the power attenuation value for a specific OFDM channel or across a frequency band range. Comma-separated values may be specified for separate ranges of channels.</p> <p>OFDM per-subcarrier attenuation is supported in segments of 6 Mhz blocks. A 192 Mhz channel can be broken up into 32 segments, with each segment having individual control of the power level. The band with index 0 is always at the lower edge frequency.</p> <p>Note: Handling of sudden changes in amplitude within an OFDM block will vary based on the modem's receiver chip implementation.</p> <p>The show interface qam <n> power command displays the value for the OFDM wideband (w) channels at the bottom of the output.</p> <p>Example:</p> <pre>CASA(config-if-qam 4/0)# ofdm-channel 0 shutdown CASA(config-if-qam 4/0)# ofdm-channel 1 power-attenuation 0 frequency-band 0-3,10,11,13-31 CASA(config-if-qam 4/0)# no channel 0 shutdown CASA(config-if-qam 4/0)# show interface qam 0/0 power Configured Total Power: 500 Calculated Per-Channel Power: 319 Send to FPGA Power: 500 Spectrum-tilt: 0 Power adjusted: 500 CASA(config-if-qam 4/0)# show interface qam 4/0 power CHAN_ID FREQUENCY ATTNU B_POWER TILT T_POWER CH_POWER...</pre>

Table 26. CLI additions and changes in Release 7.2.5.2 (continued)

Command name and tracking ID	New or revised CLI description
show cable modem subscriber-usage Tracking ID: 81706, 81602	<p>The show cable modem subscriber-usage command output has been enhanced with the “Util” column for upstream and downstream traffic to indicate average utilization per modem.</p> <p>Example:</p> <pre>CASA# show cable subscriber-usage MAC Address Sfid Dir Enforce-rule Max-Rate Last-detect Name kbps time Last-penalty Pen Chan Util time Flag Util d80f.9995.5572 1056770 DS ds001 30000 - - - 22% 76% d80f.9995.55f6 991234 DS ds001 30000 - - - 22% 70%</pre>
show tech Tracking ID: 81752	<p>The show tech command output has been enhanced with process, CPU information, and PID status with the “ps -eLf” and “pstat -t” sections of the output.</p> <p>Example:</p> <pre>CASA# show tech ... !ps -eLf UID PID PPID LWP C NLWP STIME TTY TIME CMD croot 1 0 1 2 1 16:42 ? 00:00:13 init [3] ... !pidstat -t Linux 2.6.27.25 (CASA-C10G_old60) 10/10/17 _mips_ 16:51:27 PID TID %user %system %CPU CPU Command 16:51:27 1 - 0.00 2.64 2.64 8 init ...</pre>

Table 26. CLI additions and changes in Release 7.2.5.2 (continued)

Command name and tracking ID	New or revised CLI description
[no] ipdr timer-reset-on-flow-stop Tracking ID: 81854	<p>A timing issue which was causing a delay with IPDR collection scheduling between the CMTS and certain IPDR collectors has been addressed with the implementation of the no ipdr timer-reset-on-flow-stop parameter setting.</p> <p>The no form of the command disables the reset of the session timer on IPDR connection establishment with collectors which control collection intervals using Flow-Stop/Disconnect packets sent by the collector to the CMTS.</p> <p>When enabled with the ipdr timer-reset-on-flow-stop command, collector Flow-Stop/Disconnect packets sent to the CMTS will allow the IPDR collector to reset the collection interval period. This is the default setting.</p> <p>Example: Example:</p> <pre>CASA(config)# ipdr timer-reset-on-flow-stop CASA(config)# no ipdr timer-reset-on-flow-stop CASA(config)# show ipdr global info DISPLAYING IPDR GLOBAL INFORMATION TCP port : 4737 Source interface : 30.175.100.1 Congestion timeout : 60 secs Acktime interval : 60 secs Keepalive interval : 60 secs IPDR mode : normal Data backup : enable FlowStop timer reset: disable</pre>
source-address, tos-high, tos-low, tos-mask Tracking ID: 82192	<p>The source-address, tos-high, tos-low, and tos-mask parameters have been removed from the configuration and will no longer be displayed in the running-configuration. However, for backward compatibility, the commands will continue to be accepted without error from existing startup-configuration files. The parameters will continue to be visible, but will be ignored.</p> <p>The multicast classification for the IGMP joins (static, dynamic or via the modem configuration file) no longer creates the default classification. Only one group classifier replication (GCR) is created based on the highest priority matching multicast group config (GC). Since the GCR is created statically, it no longer uses these fields.</p>

Table 26. CLI additions and changes in Release 7.2.5.2 (continued)

Command name and tracking ID	New or revised CLI description																					
source-address, tos-high, tos-low, tos-mask Tracking ID: 82081	<p>The route-map set as-path prepend setting has been revised to a higher value (from 1-65535 to 1-4294967295) to support 4-octet BGP AS numbers. Up to nine AS numbers are supported on the command line.</p> <p>Example:</p> <pre>CMTS(config-route-map rm_rds_4B)# set as-path prepend 4294967295 4294967295 ? <1-4294967295> AS number</pre>																					
shared-ofdm <id> power-attenuation <value> Tracking ID: 82839	<p>The shared-ofdm <id> power-attenuation <value> command has been introduced in the Casa CLI to set the QAM 8x96 interface OFDM shared channel power attenuation in tenths of a dB in the range 0–200, default 0. The command allows operators to configure OFDM channel power levels independent of the SC-QAM power.</p> <p>The show interface qam <n> power command displays the value for the OFDM wideband (w) channels at the bottom of the output.</p> <p>Example:</p> <pre>CASA(config-if-qam 0/0)# shared-ofdm 1 CASA(config-if-qam 0/0)# shared-ofdm 1 power-attenuation 30 CASA(config-if-qam 0/0)# show interface qam 0/0 power Configured Total Power: 510 Calculated Per-Channel Power: 339 Send to FPGA Power: 510 Spectrum-tilt: 0 Power adjusted: 514</pre> <table><thead><tr><th>CHAN_ID</th><th>FREQUENCY</th><th>ATTNU</th><th>B_POWER</th><th>TILT</th><th>T_POWER</th><th>CH_POWER...</th></tr></thead><tbody><tr><td>0w (L)</td><td>3000000000</td><td>30</td><td>309</td><td>0</td><td>309</td><td>309</td></tr><tr><td>0w (U)</td><td>3900000000</td><td>30</td><td>309</td><td>0</td><td>309</td><td>309</td></tr></tbody></table>	CHAN_ID	FREQUENCY	ATTNU	B_POWER	TILT	T_POWER	CH_POWER...	0w (L)	3000000000	30	309	0	309	309	0w (U)	3900000000	30	309	0	309	309
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0w (L)	3000000000	30	309	0	309	309																
0w (U)	3900000000	30	309	0	309	309																

Table 26. CLI additions and changes in Release 7.2.5.2 (continued)

Command name and tracking ID	New or revised CLI description
show system Tracking ID: 82899	<p>The show system command output now returns the "OFDM spectrum" configuration for the QAM 8x96 module to maintain consistency with the QAM8x192 module, and with the UPS 16x8 module or OFDMA.</p> <p>Example:</p> <pre>CASA# show system Module 0 QAM_8x96 Running (8 ports, 40 channels/port, 64 shared channels, 8 dvb channels) OFDM spectrum: 100MHz Major rev 5, Minor rev 11 Serial_No: QB12CE2S0019 CFE version 12.9.13 Uptime: 0 d, 0 h, 2 m, 0 s Module 4 QAM_8x192 Running (8 ports, 32 channels/port, 256 shared channels, 2 ofdm channels/port) OFDM spectrum: 3040MHz Major rev 6, Minor rev 17 Serial_No: QB00DF6S1016 CFE version 2.2.5 Uptime: 0 d, 17 h, 28 m, 24 s Module 13 UPS_16x8 Running (16 ports, 4 sc phy chans/port, 2 log chans/sc phy chan, 1 ofdma chan/port, scdma map 00) Docsis channel: 150 OFDMA spectrum: 1600MHz Major rev 5, Minor rev 6 Serial_No: US14CF3S0074 CFE version 12.9.15 Uptime: 0 d, 17 h, 23 m, 57 s</pre>
[no] ipdr enable session-stop Tracking ID: 85179	<p>The [no] ipdr enable session-stop command has been introduced in the CLI to periodically send a SESSION STOP message to the collector at 15 minute intervals in order to close the file before the start of the next collection interval.</p> <p>The command addresses a problem where the IPDR DS-UTIL record counts may be more than expected at the IPDR collector due to clock drift errors.</p> <p>Example:</p> <pre>CASA(config)# ipdr enable session-stop CASA(config)# no ipdr enable session-stop</pre>

Table 26. CLI additions and changes in Release 7.2.5.2 (continued)

Command name and tracking ID	New or revised CLI description
[no] cable sec sf-vrf-enforce Tracking ID: 85705	<p>The [no] cable sec sf-vrf-enforce parameter has been added to the interface ip-bundle configuration to address VRF mapping issues (based on the CPE IP address) where the same IP prefix is configured under a different IP bundle, resulting in the CMTS reporting the ARP entry as belonging to a different VRF.</p> <p>The cable sec sf-vrf-enforce setting CAN ONLY be enabled when the cable sec cm-vrf-enforce setting is disabled. Cable modems will require a reset when enabling and disabling the VRF enforce settings.</p> <p>Apply the no form of the command to disable the cable sec sf-vrf-enforce setting. The default is disabled.</p> <p>Example:</p> <pre>CASA(ip-bundle 1.1) # cable sec sf-vrf-enforce CASA(ip-bundle 1.1) # no cable sec sf-vrf-enforce</pre>



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