Hardware Compatibility Matrix for the Cisco cBR Series Routers

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

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

Cisco CMTS Platform	Processor Engine	Interface Cards
Cisco cBR-8 Converged Broadband Router	**Cisco IOS-XE Release 16.5.1 and Later Releases** Cisco cBR-8 Supervisor: • PID—CBR-SUP-250G • PID—CBR-CCAP-SUP-160G • PID—CBR-CCAP-SUP-60G	**Cisco IOS-XE Release 16.5.1 and Later Releases** Cisco cBR-8 CCAP Line Cards: • PID—CBR-LC-8D30-16U30 • PID—CBR-LC-8D31-16U30 • PID—CBR-RF-PIC • PID—CBR-RF-PROT-PIC • PID—CBR-CCAP-LC-40G • PID—CBR-CCAP-LC-40G-R • PID—CBR-CCAP-LC-G2-R • PID—CBR-SUP-8X10G-PIC • PID—CBR-2X100G-PIC Digital PICs: • PID—CBR-DPIC-8X10G • PID—CBR-DPIC-2X100G Cisco cBR-8 Downstream PHY Module: • PID—CBR-D31-DS-MOD Cisco cBR-8 Upstream PHY Modules: • PID—CBR-D31-US-MOD

Hardware Compatibility Matrix for the Cisco cBR Series Routers

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

Table 2: Hardware Compatibility Matrix for the Cisco cBR Series Routers

Cisco CMTS Platform	Processor Engine	Interface Cards
Cisco cBR-8 Converged Broadband Router	**Cisco IOS-XE Release 16.5.1 and Later Releases** Cisco cBR-8 Supervisor: • PID—CBR-SUP-250G • PID—CBR-CCAP-SUP-160G • PID—CBR-CCAP-SUP-60G	**Cisco IOS-XE Release 16.5.1 and Later Releases** Cisco cBR-8 CCAP Line Cards: • PID—CBR-LC-8D30-16U30 • PID—CBR-LC-8D31-16U30 • PID—CBR-RF-PIC • PID—CBR-RF-PROT-PIC • PID—CBR-CCAP-LC-40G • PID—CBR-CCAP-LC-40G-R • PID—CBR-CCAP-LC-G2-R • PID—CBR-SUP-8X10G-PIC • PID—CBR-2X100G-PIC Digital PICs: • PID—CBR-DPIC-8X10G • PID—CBR-DPIC-2X100G Cisco cBR-8 Downstream PHY Module: • PID—CBR-D31-DS-MOD Cisco cBR-8 Upstream PHY Modules: • PID—CBR-D31-US-MOD

Prerequisites for Downgrading Channel Bonding in Battery Backup Mode

- The cable modem must be DOCSIS3.0-compliant with battery backup capability.
- At last one free Downstream Resilient Bonding Group (RBG) must be available.

Note For information about how to reserve RBG and verify reserved RBG, refer to Downstream Resiliency Bonding Group

Restrictions for Downgrading Channel Bonding in Battery Backup Mode

- If the cable modem does not support the CM-STATUS events 9 and 10, channel bonding is not downgraded for the cable modem in battery backup mode.

Note We recommend that you configure separate dynamic bonding groups for each primary channel in a MAC domain.

- If the cable modem has an active voice call, channel bonding is not downgraded for the cable modem in battery backup mode.
- If the cable modem is working on the protect line card, channel bonding is not downgraded if its primary channel is not included in the dynamic bonding group.
- If the line card switches over when the cable modem is entering or exiting the battery backup mode, the cable modem may go offline.

Information About Downgrading Channel Bonding in Battery Backup Mode

When this feature is enabled and the cable modem enters the battery backup mode, channel bonding is downgraded to one downstream and one upstream channels (battery backup 1x1 mode). This feature reduces the power usage when the cable modem is running on battery backup. When the cable modem returns to the AC power mode, the channel bonding is returned to its original configuration. You can configure this feature globally and for each MAC domain.

Note We recommend that you enable this feature globally and for each MAC domain.

The cable modem uses the following CM-STATUS events to indicate its power status to the Cisco CMTS:

- 9—Indicates that the cable modem is operating in battery backup mode.
- 10—Indicates that the cable modem has returned to AC power mode.

When this feature is disabled, cable modem cannot downgrade the channel bonding even if it is running on battery backup.

How to Configure Downgrading Channel Bonding in Battery Backup Mode

This section contains the following:

Configuring Channel Bonding Downgrade in Battery Backup Mode Globally

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Router> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Router# configure terminal`	Enters global configuration mode.
Step 3	**cable reduction-mode mta-battery enable** **Example:** `Router(config)# cable reduction-mode mta-battery enable`	Enables the channel bonding downgrade for cable modems in battery backup mode.
Step 4	**cable reduction-mode mta-battery dampen-time** *seconds* **Example:** `Router(config)# cable reduction-mode mta-battery dampen-time 40`	(Optional) Configures the dampen time, in seconds, to defer the cable modems from entering or exiting the channel bonding downgrade 1x1 mode.
Step 5	**cable reduction-mode mta-battery ranging-init-technique** *us-ranging-init-technique* **Example:** `Router(config)# cable reduction-mode mta-battery ranging-init-technique 3`	(Optional) Configures the init-ranging technique.

	Command or Action	Purpose
Step 6	**cable reduction-mode mta-battery dynamic-channel-percent** *percent* **Example:** `Router(config)# cable reduction-mode mta-battery dynamic-channel-percent 10`	(Optional) Configures the maximum and first try percentage of dynamic channel bandwidth in battery backup mode. **Note** Ensure to leave enough bandwidth for primary channel so that it can allocate dynamic channel bandwidth when it joins a newly created dynamic bonding group.
Step 7	**exit** **Example:** `Router(config)# exit`	Returns to the privileged EXEC mode.

Configuring Channel Bonding Downgrade in Battery Backup Mode for MAC Domain

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Router> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Router# configure terminal`	Enters global configuration mode.
Step 3	**interface wideband-cable** *slot/subslot/port:wideband-channel* **Example:** `Router(config)# interface wideband-cable 1/0/0:7`	Configures a wideband cable interface.
Step 4	**cable ds-resiliency** **Example:** `Router(config-if)# cable ds-resiliency`	Reserves a resiliency bonding group or WB interface for usage on a line card, on a per controller basis.
Step 5	**exit** **Example:** `Router(config-if)# exit`	Returns to the global configuration mode.
Step 6	**interface cable** *slot/subslot/port* **Example:** `Router(config)# interface cable 9/0/0`	Specifies the cable interface on the router and enters the interface configuration mode.

	Command or Action	Purpose
Step 7	**cable reduction-mode mta-battery enable** **Example:** `Router(config-if)# cable reduction-mode mta-battery enable`	Enables the channel bonding downgrade for cable modems in battery backup mode for each MAC domain.
Step 8	**cable cm-status enable 9** **Example:** `Router(config-if)# cable cm-status enable 9`	Enables the CM-STATUS event 9 for the MAC domain. The value 9 indicates that the cable modem is operating in battery backup mode.
Step 9	**cable cm-status enable 10** **Example:** `Router(config-if)# cable cm-status enable 10`	Enables the CM-STATUS event 10 for the MAC domain. The value 10 indicates that the cable modem has returned to AC power mode.
Step 10	**end** **Example:** `Router(config-if)# end`	Returns to the privileged EXEC mode.

Verifying the Configuration for Channel Bonding Downgrade in Battery Backup Mode

- **show cable modem**—Displays information if the cable modem is running in battery backup mode.

  Following is a sample output of the command:

```
Router# show cable modem

 D
MAC Address    IP Address      I/F           MAC               Prim  RxPwr  Timing Num
 I
                                              State             Sid   (dBmv) Offset CPE
 P
f45f.d4a1.b75a ---             C6/1/0/UB     p-online(pt)      846  !-3.50  1475   0
 N
c427.9551.3489 30.154.1.12     C6/1/0/UB     w-online(pt)      930   -0.50  1579   2
 Y
f45f.d4a1.b762 30.55.223.253   C6/1/0/UB     w-online          1770  0.00   1503   0
 Y
0016.925e.661a 30.55.230.136   C6/1/0/U0     online(pt)        825   -0.50  1467   1
 N
4458.2945.458a 30.0.7.72       C6/1/0/UB     w-online          3916  0.00   1511   2
 Y
4458.2945.401e ---             C6/1/0/UB     w-online(pt)      847   -0.50  1473   1
 N
4458.2945.20c6 ---             C6/1/0/UB     w-online(pt)(bm)  895   0.00   1481   0
 N
```

- **show cable modem reduction-mode mta-battery**—Displays the channel bonding downgrade information for cable modems in battery backup mode.

  Following is a sample output of the command:

```
Router# show cable modem reduction-mode mta-battery

                              Orig BG                         Curr BG
I/F     MAC Address    ID      I/F       RFs     ID          I/F        Upstream
------- -------------- ------------------------------------------------------
C7/0/0  0025.2eaf.843e 897  Wi7/0/0:0     4      252        Wi7/0/0:1      US0
C7/0/0  0025.2eaf.8356 897  Wi7/0/0:0     4      252        Wi7/0/0:1      US0
C7/0/0  0015.d176.5199 897  Wi7/0/0:0     4      252        Wi7/0/0:1      US0
```

Following is a sample output of the command for a cable modem when the MAC address is specified:

```
Router# show cable modem 0025.2eaf.843e reduction-mode mta-battery

                              Orig BG                         Curr BG
I/F     MAC Address    ID      I/F       RFs     ID          I/F        Upstream
------- -------------- ------------------------------------------------------
C7/0/0  0025.2eaf.843e 897  Wi7/0/0:0     4      252        Wi7/0/0:1      US0
```

Following is a sample output of the command for a cable modem when the IP address is specified:

```
Router# show cable modem 90.18.0.9 reduction-mode mta-battery

                              Orig BG                         Curr BG
I/F     MAC Address    ID      I/F       RFs     ID          I/F        Upstream
------- -------------- ------------------------------------------------------
C7/0/0  0025.2eaf.843e 897  Wi7/0/0:0     4      252        Wi7/0/0:1      US0
```

Following is a sample output of the command for a cable modem when the IPv6 address is specified:

```
Router# show cable modem 2001:18::9 reduction-mode mta-battery

                              Orig BG                         Curr BG
I/F     MAC Address    ID      I/F       RFs     ID          I/F        Upstream
------- -------------- ------------------------------------------------------
C7/0/0  0025.2eaf.843e 897  Wi7/0/0:0     4      252        Wi7/0/0:1      US0
```

- **show cable modem verbose**—Displays the detailed information for the cable modem.

  Following is a sample output of the command:

```
Router# show cable modem 54d4.6ffb.30fd verbose

MAC Address                       : 54d4.6ffb.30fd
IP Address                        : 40.4.58.14
IPv6 Address                      : 2001:40:4:58:741A:408D:7E4B:D7C8
Dual IP                           : Y
Prim Sid                          : 9
Host Interface                    : C7/0/0/UB
MD-DS-SG / MD-US-SG               : 1 / 1
MD-CM-SG                          : 0x3C0101
Primary Wideband Channel ID       : 897 (Wi7/0/0:0)
Primary Downstream                : In7/0/0:2 (RfId : 722)
Wideband Capable                  : Y
RCP Index                         : 3
RCP ID                            : 00 10 00 00 08
Downstream Channel DCID RF Channel : 99    7/0/0:2
Downstream Channel DCID RF Channel : 97    7/0/0:0
Downstream Channel DCID RF Channel : 98    7/0/0:1
Downstream Channel DCID RF Channel : 100   7/0/0:3
Multi-Transmit Channel Mode       : Y
Extended Upstream Transmit Power  : 0dB
Upstream Channel                  : US0        US1
```

```
Ranging Status                      : sta        sta
Upstream SNR (dB)                   : 36.12      32.55
Upstream Data SNR (dB)              : --         --
Received Power (dBmV)               : 0.00       0.00
Reported Transmit Power (dBmV)      : 25.25      26.00
Peak Transmit Power (dBmV)          : 54.00      54.00
Phy Max Power (dBmV)                : 54.00      54.00
Minimum Transmit Power (dBmV)       : 24.00      24.00
Timing Offset             (97.6 ns): 1226       1226
Initial Timing Offset               : 1229       973
Rng Timing Adj Moving Avg(0.381 ns): -1          0
Rng Timing Adj Lt Moving Avg        : -7         0
Rng Timing Adj Minimum              : -768       0
Rng Timing Adj Maximum              : 0          64768
Pre-EQ Good                         : 0          0
Pre-EQ Scaled                       : 0          0
Pre-EQ Impulse                      : 0          0
Pre-EQ Direct Loads                 : 0          0
Good Codewords rx                   : 515        472
Corrected Codewords rx              : 0          0
Uncorrectable Codewords rx          : 0          0
Phy Operating Mode                  : atdma*     atdma*
sysDescr                            :
Downstream Power                    : 0.00 dBmV (SNR = ----- dB)
MAC Version                         : DOC3.0
QoS Provisioned Mode                : DOC1.1
Enable DOCSIS2.0 Mode               : Y
Modem Status                        : {Modem= w-online, Security=disabled}
Capabilities                        : {Frag=N, Concat=N, PHS=Y}
Security Capabilities               : {Priv=, EAE=Y, Key_len=}
L2VPN Capabilities                  : {L2VPN=N, eSAFE=N}
Sid/Said Limit                      : {Max US Sids=16, Max DS Saids=15}
Optional Filtering Support          : {802.1P=N, 802.1Q=N, DUT=N}
Transmit Equalizer Support          : {Taps/Symbol= 1, Num of Taps= 24}
Number of CPE IPs                   : 0(Max CPE IPs = 16)
CFG Max-CPE                         : 200
Flaps                               : 0()
Errors                              : 0 CRCs, 0 HCSes
Stn Mtn Failures                    : 0 aborts, 0 exhausted
Total US Flows                      : 1(1 active)
Total DS Flows                      : 1(1 active)
Total US Data                       : 7 packets, 2006 bytes
Total US Throughput                 : 0 bits/sec, 0 packets/sec
Total DS Data                       : 5 packets, 1202 bytes
Total DS Throughput                 : 0 bits/sec, 0 packets/sec
LB group ID assigned (index)        : 2151416065 (48131)
LB group ID in config file (index)  : N/A (N/A)
LB policy ID                        : 0
LB policy ID in config file         : 0
LB priority                         : 0
Tag                                 :
Required DS Attribute Mask          : 0x0
Forbidden DS Attribute Mask         : 0x0
Required US Attribute Mask          : 0x0
Forbidden US Attribute Mask         : 0x0
Service Type ID                     :
Service Type ID in config file      :
Active Classifiers                  : 2 (Max = NO LIMIT)
CM Upstream Filter Group            : 0
CM Downstream Filter Group          : 0
CPE Upstream Filter Group           : 0
CPE Downstream Filter Group         : 0
DSA/DSX messages                    : permit all
Voice Enabled                       : NO
```

```
CM Energy Management Capable        : Y
CM Enable Energy Management         : Y
CM Enter Energy Management          : No
Battery Mode                        : Yes
Battery Mode Status                 : BATTERY_MODE / AC_POWER_MODE
DS Change Times                     : 0
Boolean Services                    : 2
Number of Multicast DSIDs Support   : 16
MDF Capability Mode                 : 2
IGMP/MLD Version                    : MLDv2
FCType10 Forwarding Support         : Y
Features Bitmask                    : 0x0
Total Time Online                   : 2h12m    (2h12m     since last counter reset)
CM Initialization Reason            : NO_PRIM_SF_USCHAN
CFG Max IPv6 CPE Prefix             : 16 (-1 used)
```

Note *Battery Mode* indicates if the cable modem is in battery backup mode or AC power mode.

Battery Mode Status indicates the status of the cable modem:

- When the cable modem is in AC_POWER_MODE/BATTERY_MODE status, it is in stable state.
- When the cable modem is in AC_POWER_PENDING/BATTERY_PENDING status, it is in transfer state.
- When the cable modem is in AC_POWER_HOLD/BATTERY_HOLD status, it is updating status of the last event received until the dampen time expires.

- **show cable modem cm-status**—Displays the cable modem CM-STATUS event information.

  Following is a sample output of the command:

```
Router# show cable modem e448.c70c.9d80 cm-status

I/F       MAC Address    Event              TID   Count Error Dups  Time
C6/0/3/UB e448.c70c.9d80 Battery backup     14     1     0     0     Apr 2 22:17:29
          e448.c70c.9d80 A/C power          1      1     0     0     Apr 2 22:43:52
```

Additional References

Related Documents

Related Topic	Document Title
CMTS commands	Cisco CMTS Cable Command Reference

Standards and RFCs

Standard/RFC	Title
CM-SP- MULPIv3.1-I01-131029	Data-Over-Cable Service Interface Specifications, DOCSIS 3.1, MAC and Upper Layer Protocols Interface Specification

Technical Assistance

Description	Link
The Cisco Support website provides extensive online resources, including documentation and tools for troubleshooting and resolving technical issues with Cisco products and technologies. To receive security and technical information about your products, you can subscribe to various services, such as the Product Alert Tool (accessed from Field Notices), the Cisco Technical Services Newsletter, and Really Simple Syndication (RSS) Feeds. Access to most tools on the Cisco Support website requires a Cisco.com user ID and password.	http://www.cisco.com/support

Feature Information for Downgrading Channel Bonding in Battery Backup Mode

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

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

Table 3: Feature Information for Downgrading Channel Bonding in Battery Backup Mode

Feature Name	Releases	Feature Information
Battery Backup 1x1 Mode	Cisco IOS XE Everest 16.6.1	This feature was introduced in the Cisco IOS XE Everest 16.6.1 on the Cisco cBR Series Converged Broadband Routers.

Prerequisites for Downgrading Channel Bonding in Battery Backup Mode

- The cable modem must be DOCSIS3.0-compliant with battery backup capability.
- At last one free Downstream Resilient Bonding Group (RBG) must be available.

Note For information about how to reserve RBG and verify reserved RBG, refer to Downstream Resiliency Bonding Group

Restrictions for Downgrading Channel Bonding in Battery Backup Mode

- If the cable modem does not support the CM-STATUS events 9 and 10, channel bonding is not downgraded for the cable modem in battery backup mode.

Note We recommend that you configure separate dynamic bonding groups for each primary channel in a MAC domain.

- If the cable modem has an active voice call, channel bonding is not downgraded for the cable modem in battery backup mode.
- If the cable modem is working on the protect line card, channel bonding is not downgraded if its primary channel is not included in the dynamic bonding group.
- If the line card switches over when the cable modem is entering or exiting the battery backup mode, the cable modem may go offline.

Information About Downgrading Channel Bonding in Battery Backup Mode

When this feature is enabled and the cable modem enters the battery backup mode, channel bonding is downgraded to one downstream and one upstream channels (battery backup 1x1 mode). This feature reduces the power usage when the cable modem is running on battery backup. When the cable modem returns to the AC power mode, the channel bonding is returned to its original configuration. You can configure this feature globally and for each MAC domain.

Note We recommend that you enable this feature globally and for each MAC domain.

The cable modem uses the following CM-STATUS events to indicate its power status to the Cisco CMTS:

- 9—Indicates that the cable modem is operating in battery backup mode.
- 10—Indicates that the cable modem has returned to AC power mode.

When this feature is disabled, cable modem cannot downgrade the channel bonding even if it is running on battery backup.

How to Configure Downgrading Channel Bonding in Battery Backup Mode

This section contains the following:

Configuring Channel Bonding Downgrade in Battery Backup Mode Globally

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Router> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Router# configure terminal`	Enters global configuration mode.
Step 3	**cable reduction-mode mta-battery enable** **Example:** `Router(config)# cable reduction-mode mta-battery enable`	Enables the channel bonding downgrade for cable modems in battery backup mode.
Step 4	**cable reduction-mode mta-battery dampen-time** *seconds* **Example:** `Router(config)# cable reduction-mode mta-battery dampen-time 40`	(Optional) Configures the dampen time, in seconds, to defer the cable modems from entering or exiting the channel bonding downgrade 1x1 mode.
Step 5	**cable reduction-mode mta-battery ranging-init-technique** *us-ranging-init-technique* **Example:** `Router(config)# cable reduction-mode mta-battery ranging-init-technique 3`	(Optional) Configures the init-ranging technique.

	Command or Action	Purpose
Step 6	**cable reduction-mode mta-battery dynamic-channel-percent** *percent* **Example:** `Router(config)# cable reduction-mode mta-battery dynamic-channel-percent 10`	(Optional) Configures the maximum and first try percentage of dynamic channel bandwidth in battery backup mode. **Note** Ensure to leave enough bandwidth for primary channel so that it can allocate dynamic channel bandwidth when it joins a newly created dynamic bonding group.
Step 7	**exit** **Example:** `Router(config)# exit`	Returns to the privileged EXEC mode.

Configuring Channel Bonding Downgrade in Battery Backup Mode for MAC Domain

Procedure

	Command or Action	Purpose
Step 1	**enable** **Example:** `Router> enable`	Enables privileged EXEC mode. • Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Router# configure terminal`	Enters global configuration mode.
Step 3	**interface wideband-cable** *slot/subslot/port:wideband-channel* **Example:** `Router(config)# interface wideband-cable 1/0/0:7`	Configures a wideband cable interface.
Step 4	**cable ds-resiliency** **Example:** `Router(config-if)# cable ds-resiliency`	Reserves a resiliency bonding group or WB interface for usage on a line card, on a per controller basis.
Step 5	**exit** **Example:** `Router(config-if)# exit`	Returns to the global configuration mode.
Step 6	**interface cable** *slot/subslot/port* **Example:** `Router(config)# interface cable 9/0/0`	Specifies the cable interface on the router and enters the interface configuration mode.

	Command or Action	Purpose
Step 7	**cable reduction-mode mta-battery enable** **Example:** `Router(config-if)# cable reduction-mode mta-battery enable`	Enables the channel bonding downgrade for cable modems in battery backup mode for each MAC domain.
Step 8	**cable cm-status enable 9** **Example:** `Router(config-if)# cable cm-status enable 9`	Enables the CM-STATUS event 9 for the MAC domain. The value 9 indicates that the cable modem is operating in battery backup mode.
Step 9	**cable cm-status enable 10** **Example:** `Router(config-if)# cable cm-status enable 10`	Enables the CM-STATUS event 10 for the MAC domain. The value 10 indicates that the cable modem has returned to AC power mode.
Step 10	**end** **Example:** `Router(config-if)# end`	Returns to the privileged EXEC mode.

Verifying the Configuration for Channel Bonding Downgrade in Battery Backup Mode

- **show cable modem**—Displays information if the cable modem is running in battery backup mode.

  Following is a sample output of the command:

```
Router# show cable modem

 D
MAC Address    IP Address      I/F           MAC               Prim  RxPwr  Timing Num
 I
                                             State             Sid   (dBmv) Offset CPE
 P
f45f.d4a1.b75a ---             C6/1/0/UB     p-online(pt)      846  !-3.50  1475   0
 N
c427.9551.3489 30.154.1.12     C6/1/0/UB     w-online(pt)      930   -0.50  1579   2
 Y
f45f.d4a1.b762 30.55.223.253   C6/1/0/UB     w-online          1770  0.00   1503   0
 Y
0016.925e.661a 30.55.230.136   C6/1/0/U0     online(pt)        825   -0.50  1467   1
 N
4458.2945.458a 30.0.7.72       C6/1/0/UB     w-online          3916  0.00   1511   2
 Y
4458.2945.401e ---             C6/1/0/UB     w-online(pt)      847   -0.50  1473   1
 N
4458.2945.20c6 ---             C6/1/0/UB     w-online(pt)(bm)  895   0.00   1481   0
 N
```

- **show cable modem reduction-mode mta-battery**—Displays the channel bonding downgrade information for cable modems in battery backup mode.

  Following is a sample output of the command:

```
Router# show cable modem reduction-mode mta-battery

                              Orig BG                         Curr BG
I/F     MAC Address    ID      I/F       RFs     ID          I/F        Upstream
------- -------------- ------------------------------------------------------
C7/0/0  0025.2eaf.843e 897  Wi7/0/0:0     4      252        Wi7/0/0:1      US0
C7/0/0  0025.2eaf.8356 897  Wi7/0/0:0     4      252        Wi7/0/0:1      US0
C7/0/0  0015.d176.5199 897  Wi7/0/0:0     4      252        Wi7/0/0:1      US0
```

Following is a sample output of the command for a cable modem when the MAC address is specified:

```
Router# show cable modem 0025.2eaf.843e reduction-mode mta-battery

                              Orig BG                         Curr BG
I/F     MAC Address    ID      I/F       RFs     ID          I/F        Upstream
------- -------------- ------------------------------------------------------
C7/0/0  0025.2eaf.843e 897  Wi7/0/0:0     4      252        Wi7/0/0:1      US0
```

Following is a sample output of the command for a cable modem when the IP address is specified:

```
Router# show cable modem 90.18.0.9 reduction-mode mta-battery

                              Orig BG                         Curr BG
I/F     MAC Address    ID      I/F       RFs     ID          I/F        Upstream
------- -------------- ------------------------------------------------------
C7/0/0  0025.2eaf.843e 897  Wi7/0/0:0     4      252        Wi7/0/0:1      US0
```

Following is a sample output of the command for a cable modem when the IPv6 address is specified:

```
Router# show cable modem 2001:18::9 reduction-mode mta-battery

                              Orig BG                         Curr BG
I/F     MAC Address    ID      I/F       RFs     ID          I/F        Upstream
------- -------------- ------------------------------------------------------
C7/0/0  0025.2eaf.843e 897  Wi7/0/0:0     4      252        Wi7/0/0:1      US0
```

- **show cable modem verbose**—Displays the detailed information for the cable modem.

  Following is a sample output of the command:

```
Router# show cable modem 54d4.6ffb.30fd verbose

MAC Address                       : 54d4.6ffb.30fd
IP Address                        : 40.4.58.14
IPv6 Address                      : 2001:40:4:58:741A:408D:7E4B:D7C8
Dual IP                           : Y
Prim Sid                          : 9
Host Interface                    : C7/0/0/UB
MD-DS-SG / MD-US-SG               : 1 / 1
MD-CM-SG                          : 0x3C0101
Primary Wideband Channel ID       : 897 (Wi7/0/0:0)
Primary Downstream                : In7/0/0:2 (RfId : 722)
Wideband Capable                  : Y
RCP Index                         : 3
RCP ID                            : 00 10 00 00 08
Downstream Channel DCID RF Channel : 99    7/0/0:2
Downstream Channel DCID RF Channel : 97    7/0/0:0
Downstream Channel DCID RF Channel : 98    7/0/0:1
Downstream Channel DCID RF Channel : 100   7/0/0:3
Multi-Transmit Channel Mode       : Y
Extended Upstream Transmit Power  : 0dB
Upstream Channel                  : US0        US1
```

```
Ranging Status                      : sta        sta
Upstream SNR (dB)                   : 36.12      32.55
Upstream Data SNR (dB)              : --         --
Received Power (dBmV)               : 0.00       0.00
Reported Transmit Power (dBmV)      : 25.25      26.00
Peak Transmit Power (dBmV)          : 54.00      54.00
Phy Max Power (dBmV)                : 54.00      54.00
Minimum Transmit Power (dBmV)       : 24.00      24.00
Timing Offset             (97.6 ns): 1226       1226
Initial Timing Offset               : 1229       973
Rng Timing Adj Moving Avg(0.381 ns): -1          0
Rng Timing Adj Lt Moving Avg        : -7         0
Rng Timing Adj Minimum              : -768       0
Rng Timing Adj Maximum              : 0          64768
Pre-EQ Good                         : 0          0
Pre-EQ Scaled                       : 0          0
Pre-EQ Impulse                      : 0          0
Pre-EQ Direct Loads                 : 0          0
Good Codewords rx                   : 515        472
Corrected Codewords rx              : 0          0
Uncorrectable Codewords rx          : 0          0
Phy Operating Mode                  : atdma*     atdma*
sysDescr                            :
Downstream Power                    : 0.00 dBmV (SNR = ----- dB)
MAC Version                         : DOC3.0
QoS Provisioned Mode                : DOC1.1
Enable DOCSIS2.0 Mode               : Y
Modem Status                        : {Modem= w-online, Security=disabled}
Capabilities                        : {Frag=N, Concat=N, PHS=Y}
Security Capabilities               : {Priv=, EAE=Y, Key_len=}
L2VPN Capabilities                  : {L2VPN=N, eSAFE=N}
Sid/Said Limit                      : {Max US Sids=16, Max DS Saids=15}
Optional Filtering Support          : {802.1P=N, 802.1Q=N, DUT=N}
Transmit Equalizer Support          : {Taps/Symbol= 1, Num of Taps= 24}
Number of CPE IPs                   : 0(Max CPE IPs = 16)
CFG Max-CPE                         : 200
Flaps                               : 0()
Errors                              : 0 CRCs, 0 HCSes
Stn Mtn Failures                    : 0 aborts, 0 exhausted
Total US Flows                      : 1(1 active)
Total DS Flows                      : 1(1 active)
Total US Data                       : 7 packets, 2006 bytes
Total US Throughput                 : 0 bits/sec, 0 packets/sec
Total DS Data                       : 5 packets, 1202 bytes
Total DS Throughput                 : 0 bits/sec, 0 packets/sec
LB group ID assigned (index)        : 2151416065 (48131)
LB group ID in config file (index)  : N/A (N/A)
LB policy ID                        : 0
LB policy ID in config file         : 0
LB priority                         : 0
Tag                                 :
Required DS Attribute Mask          : 0x0
Forbidden DS Attribute Mask         : 0x0
Required US Attribute Mask          : 0x0
Forbidden US Attribute Mask         : 0x0
Service Type ID                     :
Service Type ID in config file      :
Active Classifiers                  : 2 (Max = NO LIMIT)
CM Upstream Filter Group            : 0
CM Downstream Filter Group          : 0
CPE Upstream Filter Group           : 0
CPE Downstream Filter Group         : 0
DSA/DSX messages                    : permit all
Voice Enabled                       : NO
```

```
CM Energy Management Capable        : Y
CM Enable Energy Management         : Y
CM Enter Energy Management          : No
Battery Mode                        : Yes
Battery Mode Status                 : BATTERY_MODE / AC_POWER_MODE
DS Change Times                     : 0
Boolean Services                    : 2
Number of Multicast DSIDs Support   : 16
MDF Capability Mode                 : 2
IGMP/MLD Version                    : MLDv2
FCType10 Forwarding Support         : Y
Features Bitmask                    : 0x0
Total Time Online                   : 2h12m    (2h12m     since last counter reset)
CM Initialization Reason            : NO_PRIM_SF_USCHAN
CFG Max IPv6 CPE Prefix             : 16 (-1 used)
```

Note *Battery Mode* indicates if the cable modem is in battery backup mode or AC power mode.

Battery Mode Status indicates the status of the cable modem:

- When the cable modem is in AC_POWER_MODE/BATTERY_MODE status, it is in stable state.
- When the cable modem is in AC_POWER_PENDING/BATTERY_PENDING status, it is in transfer state.
- When the cable modem is in AC_POWER_HOLD/BATTERY_HOLD status, it is updating status of the last event received until the dampen time expires.

- **show cable modem cm-status**—Displays the cable modem CM-STATUS event information.

  Following is a sample output of the command:

```
Router# show cable modem e448.c70c.9d80 cm-status

I/F       MAC Address    Event              TID   Count Error Dups  Time
C6/0/3/UB e448.c70c.9d80 Battery backup     14     1     0     0     Apr 2 22:17:29
          e448.c70c.9d80 A/C power          1      1     0     0     Apr 2 22:43:52
```

Additional References

Related Documents

Related Topic	Document Title
CMTS commands	Cisco CMTS Cable Command Reference

Standards and RFCs

Standard/RFC	Title
CM-SP- MULPIv3.1-I01-131029	Data-Over-Cable Service Interface Specifications, DOCSIS 3.1, MAC and Upper Layer Protocols Interface Specification

Technical Assistance

Description	Link
The Cisco Support website provides extensive online resources, including documentation and tools for troubleshooting and resolving technical issues with Cisco products and technologies. To receive security and technical information about your products, you can subscribe to various services, such as the Product Alert Tool (accessed from Field Notices), the Cisco Technical Services Newsletter, and Really Simple Syndication (RSS) Feeds. Access to most tools on the Cisco Support website requires a Cisco.com user ID and password.	http://www.cisco.com/support

Feature Information for Downgrading Channel Bonding in Battery Backup Mode

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

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

Table 4: Feature Information for Downgrading Channel Bonding in Battery Backup Mode

Feature Name	Releases	Feature Information
Battery Backup 1x1 Mode	Cisco IOS XE Everest 16.6.1	This feature was introduced in the Cisco IOS XE Everest 16.6.1 on the Cisco cBR Series Converged Broadband Routers.