



# Core Peak Bandwidth Licensing

The Core Peak Bandwidth (CPB) license enables you to manage Cisco cBR-8 routers with one comprehensive license, unlike the multiple license types associated with the traditional licensing models. This document provides information on CPB and how to configure the license on Cisco cBR-8 routers.

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## Core Peak Bandwidth License

The CPB licensing plan functions on a quarterly basis. In this plan, you pay for additional Core Peak Bandwidth licenses that you require. The cost of the CPB licenses is proportional to the number of subscribers on the Cisco cBR-8 router, as the network traffic through a CCAP core is proportional to the number of subscribers on the router.

In each quarter, as the CPB grows, additional CPB licenses equal to the growth are automatically billed and added to your existing CPB license inventory.

## CPB Calculation

The total CPB is calculated by measuring the core traffic through all the CCAP cores, taking the 95th percentile of the monthly peak, and reporting the quarterly value on the first day of the next quarter to the Smart License server to automatically manage the licensing process. The Smart License server automatically invoices for additional licensing needs and then delivers the licenses when you pay.

The traffic rate is measured every 5 minutes. Cisco cBR-8 routers save this data for a minimum of three months. The monthly CPB value is calculated and the maximum monthly value is considered as the quarterly CPB.

When you enable CPB on Cisco cBR-8, the initial CPB value is measured as 1.

For measuring the CPB, 12 samples are collected in every hour, which is one sample every 5 minutes. Due to a maintenance window or a shutdown, which approximately is less than 5 hours, if samples are lost and the number of lost samples is more than 60 in a month, the cable operator is notified with an error message. If the chassis serial number does not match the local chassis serial number, these sample records are deleted when starting the router or rebooting it. The sample history is also cleared when a Supervisor card is replaced.

To calculate the monthly CPB value, the Cisco cBR router rates all samples collected in one month based on the speed. For example, if 8767 samples are collected in a month, and the 8767th sample is the fastest, then the 95th percentile is the 8329th sample rated by speed (consider the first sample as the slowest and the 8767th the fastest). Hence, the CPB value for that month is the value of the 8329th sample divided by 100 (100Mbps).

## Configure CPB on Cisco cBR Routers

### Enable CPB Licensing

To enable CPB and show only the CPB usage, use the following command. When you enable CPB, the other existing licensing features are canceled automatically.

```
cable license enable-CPB
```

Use the `no cable license enable-CPB` command to disable CPB. By default, CPB is disabled on Cisco cBR routers.

### View CPB Usage Details

To display CPB usage information, use the following command:

```
show cable licenses cpb
```

#### Example: Show CPB Usage Details

The following example shows CPB usage details:

```
show cable licenses cpb
Entitlement: CPB License
Consumed count: 987
Consumed count reported to SmartAgent: 987
Enforced state: No Enforcement
Quarterly CPB is 987 (100Mbps) in the First quarter of 2018.
First monthly CPB is: 103585495480 bps, 987 (100Mbps).
Second monthly CPB is: 103595095264 bps, 987 (100Mbps).
Third monthly CPB is: 103595124064 bps, 987 (100Mbps).
```

### View Details of All Licenses

To display the usage information of all licenses, use the following command.

If you enable CPB, this command displays only the CPB usage information. If CPB is disabled, the command displays the usage information of all existing licenses.

```
show cable licenses all
```

#### Example: View Details of All Licenses

The following example shows the usage information of all licenses, when CPB is enabled.

```
show cable licenses all
Entitlement: CPB License
Consumed count: 987
Consumed count reported to SmartAgent: 987
Enforced state: No Enforcement
```

Quarterly CPB is 987 (100Mbps) in the First quarter of 2018.  
 First monthly CPB is: 103585495480 bps, 987 (100Mbps).  
 Second monthly CPB is: 103595095264 bps, 987 (100Mbps).  
 Third monthly CPB is: 103595124064 bps, 987 (100Mbps).

## View CPB Sample History

To display the details of the CPB sample history, use the following command.

```
show cable licenses cpb-records year <year> month <month> day <day>
```

### Example: View CPB Sample History

The following example CPB sample history.

```
show cable licenses cpb-records year 2018 month 4 day 28
index: 34626, timestamp: 28-April-2018 05:30:02 UTC, 5min rate: 105291741536 bps, 1004
(100Mbps)
index: 34627, timestamp: 28-April-2018 05:35:02 UTC, 5min rate: 104006310312 bps, 991
(100Mbps)
index: 34628, timestamp: 28-April-2018 05:40:02 UTC, 5min rate: 104006237736 bps, 991
(100Mbps)
index: 34629, timestamp: 28-April-2018 05:45:02 UTC, 5min rate: 104006156168 bps, 991
(100Mbps)
index: 34650, timestamp: 28-April-2018 07:30:03 UTC, 5min rate: 47644177216 bps, 454
(100Mbps)
index: 34651, timestamp: 28-April-2018 07:35:03 UTC, 5min rate: 83840688424 bps, 799
(100Mbps)
```

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 There are 6 cpb records in Apr 28 2018 UTC.

## Feature Information for Core Peak Bandwidth Licensing

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 [www.cisco.com/go/cfn](http://www.cisco.com/go/cfn) link. An account on the Cisco.com page is not required.



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

**Table 1: Feature Information for Core Peak Bandwidth Licensing**

Feature Name	Releases	Feature Information
Core Peak Bandwidth Licensing	Cisco IOS XE Fuji 16.9.1a	This feature was introduced on Cisco cBR Series Converged Broadband Routers.

