



## **Cloud Native BNG Control Plane Statistics Reference Guide, Release 2021.01.0**

**First Published:** 2021-02-26

### **Americas Headquarters**

Cisco Systems, Inc.  
170 West Tasman Drive  
San Jose, CA 95134-1706  
USA  
<http://www.cisco.com>  
Tel: 408 526-4000  
800 553-NETS (6387)  
Fax: 408 527-0883

THE SPECIFICATIONS AND INFORMATION REGARDING THE PRODUCTS IN THIS MANUAL ARE SUBJECT TO CHANGE WITHOUT NOTICE. ALL STATEMENTS, INFORMATION, AND RECOMMENDATIONS IN THIS MANUAL ARE BELIEVED TO BE ACCURATE BUT ARE PRESENTED WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED. USERS MUST TAKE FULL RESPONSIBILITY FOR THEIR APPLICATION OF ANY PRODUCTS.

THE SOFTWARE LICENSE AND LIMITED WARRANTY FOR THE ACCOMPANYING PRODUCT ARE SET FORTH IN THE INFORMATION PACKET THAT SHIPPED WITH THE PRODUCT AND ARE INCORPORATED HEREIN BY THIS REFERENCE. IF YOU ARE UNABLE TO LOCATE THE SOFTWARE LICENSE OR LIMITED WARRANTY, CONTACT YOUR CISCO REPRESENTATIVE FOR A COPY.

The Cisco implementation of TCP header compression is an adaptation of a program developed by the University of California, Berkeley (UCB) as part of UCB's public domain version of the UNIX operating system. All rights reserved. Copyright © 1981, Regents of the University of California.

NOTWITHSTANDING ANY OTHER WARRANTY HEREIN, ALL DOCUMENT FILES AND SOFTWARE OF THESE SUPPLIERS ARE PROVIDED "AS IS" WITH ALL FAULTS. CISCO AND THE ABOVE-NAMED SUPPLIERS DISCLAIM ALL WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, WITHOUT LIMITATION, THOSE OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NON-INFRINGEMENT OR ARISING FROM A COURSE OF DEALING, USAGE, OR TRADE PRACTICE.

IN NO EVENT SHALL CISCO OR ITS SUPPLIERS BE LIABLE FOR ANY INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES, INCLUDING, WITHOUT LIMITATION, LOST PROFITS OR LOSS OR DAMAGE TO DATA ARISING OUT OF THE USE OR INABILITY TO USE THIS MANUAL, EVEN IF CISCO OR ITS SUPPLIERS HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

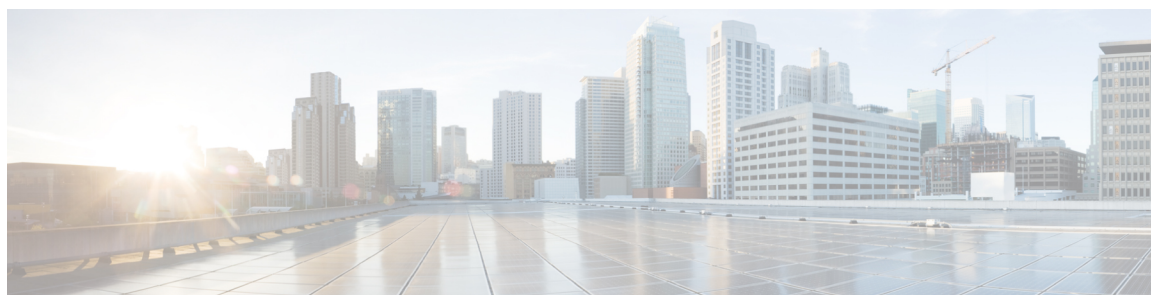
Any Internet Protocol (IP) addresses and phone numbers used in this document are not intended to be actual addresses and phone numbers. Any examples, command display output, network topology diagrams, and other figures included in the document are shown for illustrative purposes only. Any use of actual IP addresses or phone numbers in illustrative content is unintentional and coincidental.

All printed copies and duplicate soft copies of this document are considered uncontrolled. See the current online version for the latest version.

Cisco has more than 200 offices worldwide. Addresses and phone numbers are listed on the Cisco website at [www.cisco.com/go/offices](http://www.cisco.com/go/offices).

Cisco and the Cisco logo are trademarks or registered trademarks of Cisco and/or its affiliates in the U.S. and other countries. To view a list of Cisco trademarks, go to this URL: <https://www.cisco.com/c/en/us/about/legal/trademarks.html>. Third-party trademarks mentioned are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (1721R)

© 2021 Cisco Systems, Inc. All rights reserved.



## CONTENTS

---

### PREFACE

<a href="#">About this Guide</a>	v
<a href="#">Conventions Used</a>	v

---

### CHAPTER 1

<a href="#">Cloud Native BNG Control Plane Interface for Metrics</a>	1
<a href="#">Feature Summary and Revision History</a>	1
<a href="#">Summary Data</a>	1
<a href="#">Feature Description</a>	1

---

### CHAPTER 2

<a href="#">Cloud Native BNG Control Plane Metrics</a>	3
<a href="#">CNBNG Accounting Session details Category</a>	4
<a href="#">CNBNG Accounting message current statistics Category</a>	4
<a href="#">CNBNG Accounting message total statistics Category</a>	5
<a href="#">CNBNG Accounting session statistics Category</a>	5
<a href="#">CNBNG DHCP Session Statistics Category</a>	6
<a href="#">CNBNG DHCPv4 Packet Statistics Category</a>	6
<a href="#">CNBNG DHCPv6 Packet Statistics Category</a>	7
<a href="#">CNBNG IPAM Address Events Current Counter Category</a>	7
<a href="#">CNBNG IPAM Address Events Total Counter Category</a>	8
<a href="#">CNBNG IPAM Chunk Events Current Counter Category</a>	9
<a href="#">CNBNG IPAM Chunk Events Total Counter Category</a>	9
<a href="#">CNBNG PFCP and GTPU packet statistics Category</a>	10
<a href="#">CNBNG PPP IPCP Packet statistics Category</a>	12
<a href="#">CNBNG PPP IPCPV6 Packet statistics Category</a>	12
<a href="#">CNBNG PPP LCP Packet statistics Category</a>	13
<a href="#">CNBNG PPP PAP Packet statistics Category</a>	14
<a href="#">CNBNG PPPOE Packet statistics Category</a>	15

CNBNG PPPOE Session Limits Category	15
CNBNG PPPOE Session Statistics Category	16
CNBNG Radius COA and DM packet statistics Category	16
CNBNG Radius Server status Category	17
CNBNG Radius packet gauge statistics Category	18
CNBNG Radius packet statistics Category	18
CNBNG Service usage report total statistics Category	19
CNBNG Session Manager Policy Rule Engine Event Status Category	20
CNBNG Session Manager Policy Rule Engine Events Category	21
CNBNG Session Manager Statistics Category	21
CNBNG Session usage report total statistics Category	22



## About this Guide

This preface describes how the *Cisco Broadband Network Gateway (BNG) Control Plane Statistics Reference Guide* is organized and its document conventions.

- [Conventions Used, on page v](#)

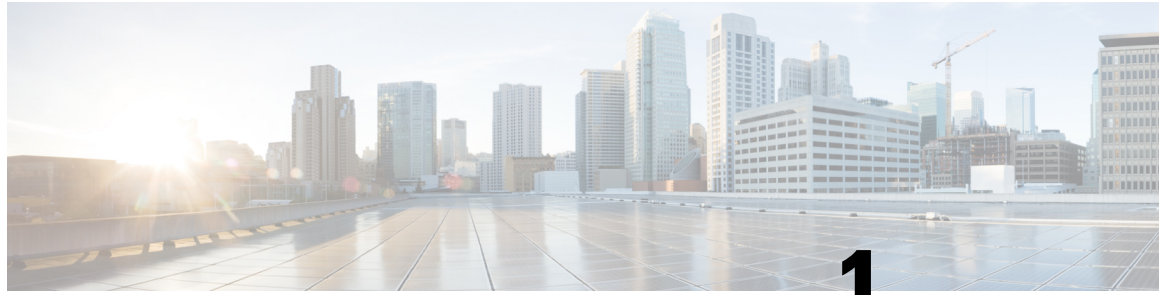
## Conventions Used

The following tables describe the conventions used throughout this documentation.

Notice Type	Description
Information Note	Provides information about important features or instructions.
Caution	Alerts you of potential damage to a program, device, or system.
Warning	Alerts you of potential personal injury or fatality. May also alert you of potential electrical hazards.

Typeface Conventions	Description
Text represented as a screen display	This typeface represents displays that appear on your terminal screen, for example:  Login:
Text represented as <b>commands</b>	This typeface represents commands that you enter, for example:  <b>show ip access-list</b>  This document always gives the full form of a command in lowercase letters. Commands are not case sensitive.

Typeface Conventions	Description
Text represented as a <b>command</b> <i>variable</i>	This typeface represents a variable that is part of a command, for example:  <b>show card</b> <i>slot_number</i>  <i>slot_number</i> is a variable representing the desired chassis slot number.
Text represented as menu or sub-menu names	This typeface represents menus and sub-menus that you access within a software application, for example:  Click the <b>File</b> menu, then click <b>New</b>



# CHAPTER 1

## Cloud Native BNG Control Plane Interface for Metrics

- [Feature Summary and Revision History, on page 1](#)
- [Feature Description, on page 1](#)

### Feature Summary and Revision History

#### Summary Data

**Table 1: Summary Data**

Applicable Product(s) or FunctionalArea	Cloud Native Broadband Network Gateway
Applicable Platform(s)	SMI
Feature Default Setting	Enabled – Always-on
Related Changes in this Release	Not Applicable
Related Documentation	Not Applicable

### Feature Description

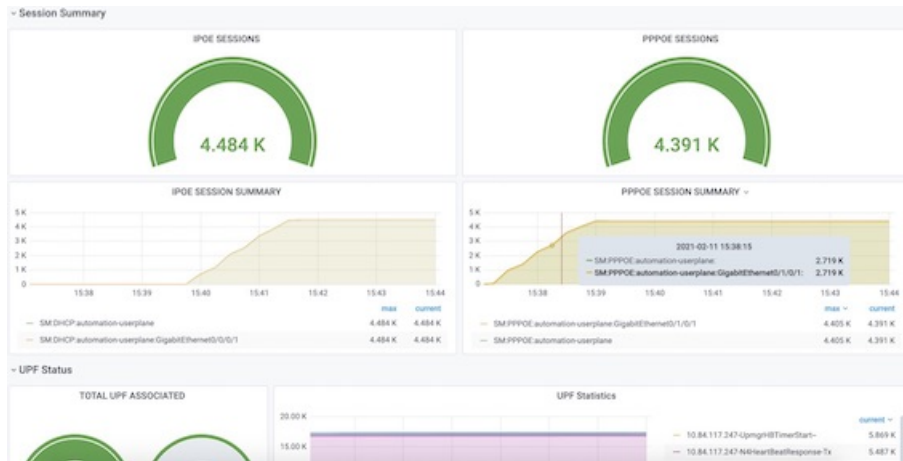
The Cisco Cloud Native Broadband Network Gateway uses Prometheus for gathering statistics/counters from its microservices.

Grafana is used as the user interface to view metrics. It pulls the data from the Prometheus data store. Default graphs for KPI are available using Grafana for rendering a graphical view of the statistics with timelines.

For each microservice, counters and a set of labels are defined. Counters are incremented/decremented with the set of labels depending on the functionality.

The following snapshot is a sample of the Grafana dashboard.

Figure 1: Grafana Dashboard







## CHAPTER 2

# Cloud Native BNG Control Plane Metrics

---

- [CNBNG Accounting Session details Category, on page 4](#)
- [CNBNG Accounting message current statistics Category, on page 4](#)
- [CNBNG Accounting message total statistics Category, on page 5](#)
- [CNBNG Accounting session statistics Category, on page 5](#)
- [CNBNG DHCP Session Statistics Category, on page 6](#)
- [CNBNG DHCPv4 Packet Statistics Category, on page 6](#)
- [CNBNG DHCPv6 Packet Statistics Category, on page 7](#)
- [CNBNG IPAM Address Events Current Counter Category, on page 7](#)
- [CNBNG IPAM Address Events Total Counter Category, on page 8](#)
- [CNBNG IPAM Chunk Events Current Counter Category, on page 9](#)
- [CNBNG IPAM Chunk Events Total Counter Category, on page 9](#)
- [CNBNG PFCP and GTPU packet statistics Category, on page 10](#)
- [CNBNG PPP IPCP Packet statistics Category, on page 12](#)
- [CNBNG PPP IPCPV6 Packet statistics Category, on page 12](#)
- [CNBNG PPP LCP Packet statistics Category, on page 13](#)
- [CNBNG PPP PAP Packet statistics Category, on page 14](#)
- [CNBNG PPPOE Packet statistics Category, on page 15](#)
- [CNBNG PPPOE Session Limits Category, on page 15](#)
- [CNBNG PPPOE Session Statistics Category, on page 16](#)
- [CNBNG Radius COA and DM packet statistics Category, on page 16](#)
- [CNBNG Radius Server status Category, on page 17](#)
- [CNBNG Radius packet gauge statistics Category, on page 18](#)
- [CNBNG Radius packet statistics Category, on page 18](#)
- [CNBNG Service usage report total statistics Category, on page 19](#)
- [CNBNG Session Manager Policy Rule Engine Event Status Category, on page 20](#)
- [CNBNG Session Manager Policy Rule Engine Events Category, on page 21](#)
- [CNBNG Session Manager Statistics Category, on page 21](#)
- [CNBNG Session usage report total statistics Category, on page 22](#)

## CNBNG Accounting Session details Category

### **db\_records\_total**

Description: Current number of Subscriber regardless of accounting enable or not

Sample Query: 'db\_records\_total{session\_type="Charging"}'

Labels:

- Label: `session_type`  
Label Description: Session type  
Example: Charging, Charging:<upf>

## CNBNG Accounting message current statistics Category

### **Accounting\_message\_current**

Description: Current number of Start/Stop/Interim Message triggered towards Server and Waiting for Response

Sample Query: 'Accounting\_message\_current{acct\_type="Start",upf="asr9k-1",service\_name="qos1"}'

Labels:

- Label: `acct_type`  
Label Description: Accounting Packet type  
Example: Start, Interim, Stop
- Label: `acct_level`  
Label Description: Accounting category  
Example: Session, Service
- Label: `upf`  
Label Description: UPF Name  
Example: Any string
- Label: `service_name`  
Label Description: Name of service  
Example: Any string

# CNBNG Accounting message total statistics Category

## Accounting\_message\_total

Description: Total number of Start/Stop/Interim Message trigger towards Radius Server

Sample Query: 'Accounting\_message\_total{acct\_type="Start",upf="asr9k-1",service\_name="qos1"}'

Labels:

- Label: `acct_type`  
Label Description: Accounting Packet type  
Example: Start, Interim, Stop
- Label: `acct_level`  
Label Description: Accounting category  
Example: Session, Service
- Label: `upf`  
Label Description: UPF Name  
Example: Any string
- Label: `aaa_profile`  
Label Description: AAA profile used  
Example: Any string
- Label: `service_name`  
Label Description: Name of service  
Example: Any string
- Label: `status`  
Label Description: Status of accounting request  
Example: Attempt, Success, Failure

# CNBNG Accounting session statistics Category

## Charging\_subscriber\_total

Description: Total number of Subscriber regardless of accounting enable or not

Sample Query: 'Charging\_subscriber\_total{upf="asr9k-1"}'

Labels:

- Label: `upf`  
Label Description: UPF Name

Example: Any string

## CNBNG DHCP Session Statistics Category

### **db\_records\_total**

Description: Current number of DHCP sessions

Sample Query: 'db\_records\_total{session\_type="dhcp:ipoe"}'

Labels:

- Label: `session_type`

Label Description: Session type

Example: dhcp:ipoe, dhcp:ipoe:<upf>, dhcp:ipoe:<upf>:<intf>, dhcp:pppoe, dhcp:pppoe:<upf>, dhcp:pppoe:<upf>:<intf>, dhcp:afi:dual, dhcp:afi:ipv4, dhcp:afi:ipv6, dhcp:ipv4-state:<state>, dhcp:ipv6-addr-state:<state>, dhcp:ipv6-pfx-state:<state>

## CNBNG DHCPv4 Packet Statistics Category

### **DHCPv4\_packet\_stats**

Description: Total DHCPv4 packet statistics

Sample Query:

'DHCPv4\_packet\_stats{pkt\_type="Discover", upf="asr9k-1", port\_id="Bundle-Ether1.1"}'

Labels:

- Label: `pkt_type`

Label Description: Packet type

Example: Discover, Request, Release, Decline, Inform, Offer, Ack, Nak

- Label: `direction`

Label Description: Transmitted or Received packet

Example: In, Out

- Label: `upf`

Label Description: UPF Name

Example: Any string

- Label: `port_id`

Label Description: Access interface Name

Example: Any string

- Label: `vrf`

Label Description: VRF Name

Example: Any string

## CNBNG DHCPv6 Packet Statistics Category

### DHCPv6\_packet\_stats

Description: Total DHCPv6 packet statistics

Sample Query: 'DHCPv6\_packet\_stats{pkt\_type="Solicit",upf="asr9k-1",port\_id="Bundle-Ether1.1"}'

Labels:

- Label: `pkt_type`

Label Description: Packet type

Example: Solicit, Request, Renew, Rebind, Release, Decline, Inform, Advertise, Reply

- Label: `direction`

Label Description: Transmitted or Received packet

Example: In, Out

- Label: `upf`

Label Description: UPF Name

Example: Any string

- Label: `port_id`

Label Description: Access interface Name

Example: Any string

- Label: `vrf`

Label Description: VRF Name

Example: Any string

## CNBNG IPAM Address Events Current Counter Category

### IPAM\_address\_allocations\_current

Description: Current state of IPAM Address allocations

Sample Query:

'IPAM\_address\_allocations\_current{pool="p1",allocationType="dynamic",addressType="IPv4",upf="dp1"}'

Labels:

- Label: `pool`

Label Description: name of the pool associated with the request

Example: Any string

- Label: `allocationType`

Label Description: type of allocation associated with the request

Example: static/dynamic

- Label: `addressType`

Label Description: address type associated with the request

Example: IPv4/IPv6NA/IPv6PD

- Label: `upf`

Label Description: upf identifier associated with the request

Example: Any string

## CNBNG IPAM Address Events Total Counter Category

### IPAM\_address\_events\_total

Description: Total number of IPAM Address events

Sample Query:

```
'IPAM_address_events_total{pool="p1",eventType="Allocation",allocationType="dynamic",addressType="IPv4",upf="dp1"}'
```

Labels:

- Label: `pool`

Label Description: name of the pool associated with the request

Example: Any string

- Label: `eventType`

Label Description: type of event associated with the request

Example: Allocation/Release

- Label: `allocationType`

Label Description: type of allocation associated with the request

Example: static/dynamic

- Label: `addressType`

Label Description: address type associated with the request

Example: IPv4/IPv6NA/IPv6PD

- Label: `upf`

Label Description: upf identifier associated with the request

Example: Any string

# CNBNG IPAM Chunk Events Current Counter Category

## IPAM\_chunk\_allocations\_current

Description: Current state of IPAM Address Chunk allocations

Sample Query: 'IPAM\_chunk\_allocations\_current{pool="p1",addressType="IPv4",upf="dp1"}'

Labels:

- Label: pool

Label Description: name of the pool associated with the request

Example: Any string

- Label: addressType

Label Description: address type associated with the request

Example: IPv4/IPv6NA/IPv6PD

- Label: upf

Label Description: upf identifier associated with the request

Example: Any string

# CNBNG IPAM Chunk Events Total Counter Category

## IPAM\_chunk\_events\_total

Description: Total number of IPAM Address Chunk events

Sample Query:

'IPAM\_chunk\_events\_total{pool="p1",eventType="Allocation",addressType="IPv4",upf="dp1"}'

Labels:

- Label: pool

Label Description: name of the pool associated with the request

Example: Any string

- Label: eventType

Label Description: type of event associated with the request

Example: Allocation/Release

- Label: addressType

Label Description: address type associated with the request

Example: IPv4/IPv6NA/IPv6PD

- Label: upf

Label Description: upf identifier associated with the request

Example: Any string

## CNBNG PFCP and GTPU packet statistics Category

### **bng\_proto\_dhcp\_total**

Description: Total number of GTPU DHCP packets received/transmitted

Sample Query: `'bng_proto_dhcp_total{pkt_type="Gtpu",message_name="IPoE", upf="asr9k-1"}'`

Labels:

- Label: `pkt_type`  
Label Description: Type of packet  
Example: Gtpu
- Label: `message_direction`  
Label Description: Transmitted or received packet  
Example: inbound, outbound
- Label: `status`  
Label Description: Status of packet processing  
Example: accepted, discarded, decode-error, encode-error
- Label: `message_name`  
Label Description: IPoE message type  
Example: IPoE
- Label: `upf`  
Label Description: upf identifier associated with the request  
Example: Any string

### **bng\_proto\_pppoe\_total**

Description: Total number of GTPU PPPOE packets received/transmitted

Sample Query: `'bng_proto_pppoe_total{pkt_type="Gtpu",message_name="PPPoE", upf="asr9k-1"}'`

Labels:

- Label: `pkt_type`  
Label Description: Type of packet  
Example: Gtpu
- Label: `message_direction`  
Label Description: Transmitted or received packet



Example: inbound, outbound

- Label: `status`

Label Description: Status of packet processing

Example: accepted, discarded, decode-error, encode-error

- Label: `message_name`

Label Description: PPPoE message type

Example: PPPoE

- Label: `upf`

Label Description: upf identifier associated with the request

Example: Any string

--

### **bng\_proto\_udp\_total**

Description: Total number of PFCP/GTPU packets received/transmitted

Sample Query:

```
'bng_proto_udp_total{pkt_type="PfcP",message_name="n4_session_establishment_req"}'
```

Labels:

- Label: `pkt_type`

Label Description: Type of packet

Example: PfcP, Gtpu

Labels:

- Label: `message_direction`

Label Description: Transmitted or received packet

Example: inbound, outbound

- Label: `status`

Label Description: Status of packet processing

Example: accepted, discarded, decode-error, encode-error

- Label: `transport_type`

Label Description: Initial or retransmitted request

Example: original, retransmitted

- Label: `message_name`

Label Description: pfcP/gtpu message type

Example: n4\_session\_establishment\_req, n4\_session\_establishment\_res, n4\_session\_modification\_req, gtpu\_bng\_control\_packet, gtpu\_bng\_control\_packet\_dhcp, gtpu\_bng\_control\_packet\_pppoe

- Label: `upf`

Label Description: upf identifier associated with the request

Example: Any string

## CNBNG PPP IPCP Packet statistics Category

### PPP\_IPCP\_packet\_events\_total

Description: Total number of PPP IPCP packets transmitted and received

Sample Query:

```
'PPP_IPCP_packet_events_total{PacketType="Conf-Req",Routename="asr9k-1",PortID="Bundle-Ether1.1"}'
```

Labels:

- Label: `PacketType`

Label Description: Packet type

Example: Conf-Req, Conf-Ack, Conf-Nak, Term-Req, Term-Ack, Proto-Rej, Code-Rej, Conf-Rej

- Label: `Direction`

Label Description: Transmitted or Received packet

Example: Tx, Rx

- Label: `Routename`

Label Description: UPF Name

Example: Any string

- Label: `PortID`

Label Description: Access interface Name

Example: Any string

## CNBNG PPP IPCPV6 Packet statistics Category

### PPP\_IPV6CP\_packet\_events\_total

Description: Total number of PPP IPv6CP packets transmitted and received

Sample Query:

```
'PPP_IPV6CP_packet_events_total{PacketType="Conf-Req",Routename="asr9k-1",PortID="Bundle-Ether1.1"}'
```

Labels:

- Label: `PacketType`

Label Description: Packet type

Example: Conf-Req, Conf-Ack, Conf-Nak, Term-Req, Term-Ack, Proto-Rej, Code-Rej, Conf-Rej

- Label: `Direction`  
Label Description: Transmitted or Received packet  
Example: Tx, Rx
- Label: `Routername`  
Label Description: UPF Name  
Example: Any string
- Label: `PortID`  
Label Description: Access interface Name  
Example: Any string

## CNBNG PPP LCP Packet statistics Category

### PPP\_LCP\_packet\_events\_total

Description: Total number of PPP LCP packets transmitted and received

Sample Query:

```
'PPP_LCP_packet_events_total{PacketType="Conf-Req",Routername="asr9k-1",PortID="Bundle-Ether1.1"}'
```

Labels:

- Label: `PacketType`  
Label Description: Packet type  
Example: Conf-Req, Conf-Ack, Conf-Nak, Conf-Rej, Term-Req, Term-Ack, Proto-Rej, Code-Rej, Echo-Req, Echo-Rep
- Label: `Direction`  
Label Description: Transmitted or Received packet  
Example: Tx, Rx
- Label: `Routername`  
Label Description: UPF Name  
Example: Any string
- Label: `PortID`  
Label Description: Access interface Name  
Example: Any string

# CNBNG PPP PAP Packet statistics Category

## PPP\_LCP\_PAP\_packet\_events\_total

Description: Total number of PPP LCP PAP packets transmitted and received

Sample Query:

```
'PPP_LCP_PAP_packet_events_total{PacketType="Request",Routername="asr9k-1",PortID="Bundle-Ether1.1"}'
```

Labels:

- Label: `PacketType`  
Label Description: Packet type  
Example: Request, Ack, Nack
- Label: `Direction`  
Label Description: Transmitted or Received packet  
Example: Tx, Rx
- Label: `Routername`  
Label Description: UPF Name  
Example: Any string
- Label: `PortID`  
Label Description: Access interface Name  
Example: Any string

category:CNBNG PPP CHAP Packet statistics

## PPP\_LCP\_CHAP\_packet\_events\_total

Description: Total number of PPP LCP CHAP packets transmitted and received

Sample Query:

```
'PPP_LCP_CHAP_packet_events_total{PacketType="Challenge",Routername="asr9k-1",PortID="Bundle-Ether1.1"}'
```

Labels:

- Label: `PacketType`  
Label Description: Packet type  
Example: Challenge, Response, Rep-Success, Rep-Fail
- Label: `Direction`  
Label Description: Transmitted or Received packet  
Example: Tx, Rx
- Label: `Routername`  
Label Description: UPF Name

Example: Any string

- Label: `PortID`

Label Description: Access interface Name

Example: Any string

## CNBNG PPPOE Packet statistics Category

### PPPOE\_packet\_events\_total

Description: Total number of PPPoE packets transmitted and received

Sample Query:

```
'PPPOE_packet_events_total{PacketType="PADI",Routename="asr9k-1",PortID="Bundle-Ether1.1"}'
```

Labels:

- Label: `PacketType`

Label Description: Packet type

Example: PADI, PADO, PADR, PADS, PADT

- Label: `Direction`

Label Description: Transmitted or Received packet

Example: Tx, Rx

- Label: `Routename`

Label Description: UPF Name

Example: Any string

- Label: `PortID`

Label Description: Access interface Name

Example: Any string

- Label: `Status`

Label Description: Status of packet processing

Example: Processed | Dropped

## CNBNG PPPOE Session Limits Category

### PPPoE\_session\_limits\_total

Description: Total number of PPPoE session limit hits

Sample Query: 'PPPoE\_session\_limits\_total{profile="pppoe-profl",limit="circuit-id"}'

Labels:

- Label: `profile`  
Label Description: pppoe profile name  
Example: Any string
- Label: `limit_type`  
Label Description: Type of pppoe limit  
Example: Any string
- Label: `status`  
Label Description: Status of pppoe limit  
Example: accepted, warned, rejected

## CNBNG PPPOE Session Statistics Category

### **db\_records\_total**

Description: Current PPPoE session count

Sample Query: `'db_records_total{session_type="PPPOE:dual"}'`

Labels:

- Label: `session_type`  
Label Description: Session type  
Example: PPPOE, PPPOE:<upf>, PPPOE:<upf>:<intf>, PPPOE:dual, PPPOE:ipv4, PPPOE:ipv6

## CNBNG Radius COA and DM packet statistics Category

### **Radius\_CoaDM\_Requests\_Current**

Description: Current outstanding radius COA/DM requests

Sample Query: `'Radius_CoaDM_Requests_Current{radSvrIp="1.1.1.1",radMsgCode="CoaReq"}'`

Labels:

- Label: `radSvrIp`  
Label Description: Radius Server IP address  
Example: Any string
- Label: `radMsgCode`  
Label Description: Message type  
Example: CoaReq, DMReq, CoaAck, CoaNak

### Radius\_CoaDM\_Requests\_Statistics

Description: Total number of radius COA and DM packets sent and received

Sample Query: `'Radius_CoaDM_Requests_Statistics{radSvrIp="1.1.1.1",radMsgCode="CoaReq"}'`

Labels:

- Label: `radSvrIp`  
Label Description: Radius Server IP address  
Example: Any string
- Label: `radMsgCode`  
Label Description: Message type  
Example: CoaReq, DMReq, CoaAck, CoaNak
- Label: `radPacketType`  
Label Description: Direction  
Example: Tx, Rx
- Label: `radResult`  
Label Description: Result  
Example: Success, Failure\_Invalid\_Request

## CNBNG Radius Server status Category

### Radius\_Server\_Status

Description: Display active/inactive status of radius-server

Sample Query:

`'Radius_Server_Status{radSvrIp="1.1.1.1",radSvrPort="1812",radSvrPortType="Auth"}'`

Labels:

- Label: `radSvrIP`  
Label Description: Radius Server IP address  
Example: Any string
- Label: `radSvrPort`  
Label Description: Radius Server Port  
Example: Any string
- Label: `radSvrPortType`  
Label Description: Type of server  
Example: Auth, Acct

# CNBNG Radius packet gauge statistics Category

## Radius\_requests\_current

Description: Current outstanding radius requests

Sample Query:

```
'Radius_requests_current{radSvrIp="1.1.1.1",radSvrPort="1812",radSvrPortType="Auth"}'
```

Labels:

- Label: `radSvrIp`  
Label Description: Radius Server IP address  
Example: Any string
- Label: `radSvrPort`  
Label Description: Radius Server Port  
Example: Any string
- Label: `radSvrPortType`  
Label Description: Type of server  
Example: Auth, Acct
- Label: `radMsgCode`  
Label Description: Message type  
Example: AaaAuthReq, AaaAcctReq
- Label: `radPacketType`  
Label Description: Direction  
Example: Tx, Rx

# CNBNG Radius packet statistics Category

## Radius\_requests\_statistics

Description: Total number of radius packets sent and received

Sample Query:

```
'Radius_requests_statistics{radSvrIp="1.1.1.1",radSvrPort="1812",radSvrPortType="Auth"}'
```

Labels:

- Label: `radSvrIp`  
Label Description: Radius Server IP address  
Example: Any string



- Label: `radSvrPort`  
Label Description: Radius Server Port  
Example: Any string
- Label: `radSvrPortType`  
Label Description: Type of server  
Example: Auth, Acct
- Label: `radMsgCode`  
Label Description: Message type  
Example: AaaAuthReq, AaaAcctReq
- Label: `radPacketType`  
Label Description: Direction  
Example: Tx, Retry\_Tx, Rx
- Label: `radResult`  
Label Description: Result  
Example: Success, Timeout, Failure\_Reject, Failure\_NoServer

## CNBNG Service usage report total statistics Category

### Service\_usage\_report\_total

Description: Total number of Usage Report Coming from PFCP per service

Sample Query:

```
'Service_usage_report_total{report_type="ChargingFinalUsageReport",upf="asr9k-1",service_name="qos1"}'
```

Labels:

- Label: `report_type`  
Label Description: Usage report type  
Example: ChargingFinalUsageReport, ChargingInterimUsageReport
- Label: `upf`  
Label Description: UPF Name  
Example: Any string
- Label: `aaa_profile`  
Label Description: AAA profile used  
Example: Any string
- Label: `service_name`  
Label Description: Name of service

Example: Any string

# CNBNG Session Manager Policy Rule Engine Event Status Category

## **smc\_pre\_events\_status\_total**

Description: Total number of execution status of PRE-events.

Sample Query: 'smc\_pre\_events\_status\_total{session\_type="DHCP", Upf="asr9k-1", preEvent="session-start", status="success"}'

Labels:

- Label: `SessType`

Label Description: Type of session

Example: DHCP, PPPOE

- Label: `Upf`

Label Description: UPF Name

Example: Any string

- Label: `PortID`

Label Description: Port Identifier

Example: Any string

- Label: `preEvent`

Label Description: PRE event name

Example: session-start, session-activate, session-update, session-disconnect, account-update

- Label: `status`

Label Description: PRE event status

Example: success, error

- Label: `status_code`

Label Description: PRE event status code

Example: policySuccess, policySvmApplyFailed, policySubsProfNotFound, policyActionAuthenFailure, policyActionAuthorFailure

# CNBNG Session Manager Policy Rule Engine Events Category

## **smc\_pre\_events\_total**

Description: Total number of PRE-events started.

Sample Query: 'smc\_pre\_events\_total{session\_type="DHCP", Upf="asr9k-1", preEvent="session-start"}'

Labels:

- Label: `SessType`

Label Description: Type of session

Example: DHCP, PPPOE

- Label: `Upf`

Label Description: UPF Name

Example: Any string

- Label: `PortID`

Label Description: Port Identifier

Example: Any string

- Label: `preEvent`

Label Description: PRE event name

Example: session-start, session-activate, session-update, session-disconnect, account-update

# CNBNG Session Manager Statistics Category

## **db\_records\_total**

Description: Current number of IPOE/PPPOE sessions

Sample Query: 'db\_records\_total{session\_type="SM:DHCP"}'

Labels:

- Label: `session_type`

Label Description: Type of session

Example: SM:DHCP, SM:DHCP:<upf>, SM:DHCP:<upf>:<intf>, SM:PPPOE, SM:PPPOE:<upf>, SM:PPPOE:<upf>:<intf>

# CNBNG Session usage report total statistics Category

## Session\_usage\_report\_total

Description: Total number of Usage Report Coming from PFCP per session

Sample Query:

```
'Session_usage_report_total{report_type="ChargingFinalUsageReport",upf="asr9k-1"}'
```

Labels:

- Label: `report_type`

Label Description: Usage report type

Example: ChargingFinalUsageReport, ChargingInterimUsageReport

- Label: `upf`

Label Description: UPF Name

Example: Any string

- Label: `aaa_profile`

Label Description: AAA profile used

Example: Any string