

cnBNG User Plane Configuration Commands

This chapter describes the Cisco IOS XR software commands that are used to configure the cloud native Broadband Network Gateway (cnBNG) user plane on Cisco ASR 9000 Series Routers. For details regarding the related configurations, see the *Cloud Native BNG User Plane Configuration Guide for Cisco ASR 9000 Series Routers*.

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auto-loopback

To configure NOS adaptation layer (NAL) auto-loopback on the user plane of cloud native BNG, use the **auto-loopback** command in cnbng-nal configuration mode. To remove this configuration, use the **no** form of this command.

auto-loopback vrf { *vrf-name* | **default** } [**interface Loopback** *loopback-num*] [**primary-address** *ip-address*]

Syntax Description

vrf	Configures the VRF for the NAL auto-loopback.
vrf-name	Specifies the name of the NAL auto-loopback VRF.
default	Configures the default NAL auto-loopback VRF.
interface Loopback	Configures the NAL auto-loopback interface.
loopback-num	Specifies the NAL auto-loopback interface number.
primary-address	Configures the primary IP address of the NAL auto-loopback.
ip-address	Specifies the primary IP address of the NAL auto-loopback.

Command Default

None

Command Modes

cnbng-nal

Command History

Release	Modification
Release 7.3.1	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operation
config-services	read, write

This example shows how to configure NAL auto-loopback for a default VRF on the user plane of cloud native BNG:

```
Router(config)#cnbng-nal location 0/1/CPU0
Router(config-cnbng-nal)#auto-loopback vrf default interface Loopback1 primary-address
10.0.0.1
Router(config-cnbng-nal)#commit
```

cnbng-nal

To enter into the cnbng-nal configuration mode and to specify the NOS adaptation layer (NAL) configurations for the user plane of cloud native BNG (cnBNG), use the **cnbng-nal** command in Global Configuration mode.

cnbng-nal location *location*

Syntax Description

location *location*	Specifies the location of the cnBNG NAL node (route processor or line card).

Command Default

None

Command Modes

Global Configuration

Command History

Release	Modification
Release 7.3.1	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operation
config-services	read, write

This example shows how to enter into the cnbng-nal configuration mode:

```
Router(config)#cnbng-nal location 0/1/CPU0
Router(config-cnbng-nal)#
```

cp-association

To specify the retry count to start the cnBNG control plane-user plane (CP-UP) association, use the **cp-association** command in cnbng-nal configuration mode. To remove this configuration, use the **no** form of this command.

cp-association retry-count *count*

Syntax Description

retry-count *count*	Specifies the retry count to start the cnBNG CP-UP association. The range is 5 to 20.

Command Default

None

Command Modes

cnbng-nal

Command History

Release	Modification
Release 7.3.1	This command was introduced.

Usage Guidelines

It is mandatory to configure this **cp-association** command along with the other relevant CP server/UP server configurations to start the cnBNG CP-UP association.

You can use the **show cnbng-nal cp connection status location** command to verify if the retry count is configured or not. A sample output is given here:

```
Router#show cnbng-nal cp connection status location 0/0/CPU0
Wed Nov 18 14:32:30.101 IST

Location: 0/0/CPU0


User-Plane configurations:
--------------------------
IP             : 11.11.11.1
GTP Port       : 15002
PFCP Port      : 15003
VRF            : default


Control-Plane configurations:
-----------------------------
PRIMARY IP     : 11.11.11.2
GTP Port       : 2152
PFCP Port      : 8805

Retry count is not configured

Connection Status: Down
Connection Status time stamp: Wed Nov 18 14:32:15 2020

Connection Prev Status : Up
Connection Prev Status time stamp: Wed Nov 18 14:12:20 2020
```

```
Association status: Inactive
Association status time stamp: Wed Nov 18 14:31:08 2020
```

Task ID

Task ID	Operation
config-services	read, write

This example shows how to specify the retry count to start the cnBNG (CP-UP) association:

```
Router(config)#cnbng-nal location 0/1/CPU0
Router(config-cnbng-nal)#cp-association retry-count 5
Router(config-cnbng-nal)#commit
```

cp-server

To configure the server details of the control plane for cloud native BNG (cnBNG), use the **cp-server** command in cnbng-nal configuration mode. To remove this configuration, use the **no** form of this command.

cp-server primary ipv4 *ipv4-address*

Syntax Description

primary	Configures the details of the primary server of the control plane.
ipv4 *ipv4-address*	Specifies the IPv4 address of the primary server of the control plane.

Command Default

None

Command Modes

cnbng-nal

Command History

Release	Modification
Release 7.3.1	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operation
config-services	read, write

This example shows how to configure the primary server details of the control plane of cnBNG:

```
Router(config)#cnbng-nal location 0/1/CPU0
Router(config-cnbng-nal)#cp-server primary ipv4 198.51.100.1
Router(config-cnbng-nal)#commit
```

disable-secondary-address-notification

To disable internal notification messages between the software components during the secondary address update under the loopback interface on cnBNG user plane (UP), use the **disable-secondary-address-notification** command in cnbng-nal configuration mode. To remove this configuration, use the **no** form of this command.

disable-secondary-address-notification

Syntax Description

This command has no keywords or arguments.

Command Default

None

Command Modes

cnbng-nal

Command History

Release	Modification
Release 7.4.2	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operation
config-services	read, write

This example shows how to disable internal notification messages between the software components during the secondary address update for route provisioning on the cnBNG UP:

```
Router#configure
Router(config)#cnbng-nal location 0/RSP0/CPU0
Router(config-cnbng-nal-local)#disable-secondary-address-notification
Router(config-cnbng-nal-local)#commit
```

hostidentifier

To specify a host identifier for the cloud native BNG (cnBNG) NOS adaptation layer (NAL) instance, use the **hostidentifier** command in cnbng-nal configuration mode. To remove this configuration, use the **no** form of this command.

hostidentifier *hostname*

Syntax Description

hostname	Specifies the hostname of cnBNG NAL.

Command Default

None

Command Modes

cnbng-nal

Command History

Release	Modification
Release 7.3.1	This command was introduced.

Usage Guidelines

The host identifier string must match the user plane (UP) name configured in the control plane (CP) for the CP-UP association to come up.

Task ID

Task ID	Operation
config-services	read, write

This example shows how to specify a host identifier for the NAL instance on cnBNG user plane:

```
Router(config)#cnbng-nal location 0/1/CPU0
Router(config-cnbng-nal)#hostidentifier test-host
Router(config-cnbng-nal)#commit
```

ipoe fsol-flow-control

To configure flow control feature for IPoE protocol packets sent from cnBNG user plane (UP) to control plane (CP), use the **ipoe fsol-flow-control** command in *cnbng-nal* configuration mode. To remove the configuration, use the **no** form of this command.

ipoe fsol-flow-control *limit*

Syntax Description

limit	Specifies the maximum number of IPoE protocol packets to be sent from cnBNG UP to CP for each second. The limit ranges from 50 to 400; default being 100.

Command Default

Disabled, by default.

Command Modes

cnbng-nal

Command History

Release	Modification
Release 7.4.2	This command was introduced

Usage Guidelines

The IPoE protocol packets covered under this flow control feature include IPoE DHCPv4 DISCOVER and DHCPv6 SOLICIT messages.

Task ID

Task ID	Operations
config-services	read, write

Examples

This example shows how to specify the limit of IPoE protocol packets to be sent from cnBNG UP to CP for each second:

```
Router#configure
Router(config)#cnbng-nal location 0/0/CPU0
Router(config-cnbng-nal-local)#ipoe fsol-flow-control 70
Router(config-cnbng-nal-local)#commit
```

Related Commands

Command	Description
pppoe fsol-flow-control, on page 10	Configures flow control feature for PPPoE protocol packets sent from cnBNG user plane to control plane.

pppoe fsol-flow-control

To configure flow control feature for IPoE protocol packets sent from cnBNG user plane to control plane, use the **pppoe fsol-flow-control** command in *cnbng-nal* configuration mode. To remove the configuration, use the **no** form of this command.

pppoe fsol-flow-control *limit*

Syntax Description

limit	Specifies the number of PPPoE protocol packets to be sent from cnBNG UP to CP for each second. The limit ranges from 50 to 400; default being 100.

Command Default

Disabled, by default.

Command Modes

cnbng-nal

Command History

Release	Modification
Release 7.4.2	This command was introduced

Usage Guidelines

The PPPoE protocol packets covered under this flow control feature include PPPoE-PTA PADI (PPPoE Active Discovery Initiation), PPPoE-LAC PADI, and PPPOE-PTA DHCPV6 SOLICIT messages.

Task ID

Task ID	Operations
config-services	read, write

Examples

This example shows how to specify the limit of PPPoE protocol packets to be sent from cnBNG UP to CP for each second:

```
Router#configure
Router(config)#cnbng-nal location 0/0/CPU0
Router(config-cnbng-nal-local)#pppoe fsol-flow-control 60
Router(config-cnbng-nal-local)#commit
```

Related Commands

Command	Description
ipoe fsol-flow-control, on page 9	Configures flow control feature for IPoE protocol packets sent from cnBNG user plane to control plane.

route-summary

To configure the cnBNG NAL route summary tag, use the **route-summary** command in cnbng-nal configuration mode. To remove this configuration, use the **no** form of this command.

route-summary tag { *tag-value* | **default** }

Syntax Description

tag	Sets a tag value for the route.
tag-value	Specifies the tag value. The range is 1 to 4294967295.
default	Specifies the default tag (of value 1) for the NAL server subscriber route summary.

Command Default

None

Command Modes

cnbng-nal

Command History

Release	Modification
Release 7.3.1	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operation
config-services	read, write

This example shows how to configure the cnBNG NAL route summary tag:

```
Router(config)#cnbng-nal location 0/1/CPU0
Router(config-cnbng-nal)#route-summary tag 4
Router(config-cnbng-nal)#commit
```

secondary-address-update

To enable secondary address update under loopback during route provisioning on cnBNG user plane (UP), use the **secondary-address-update** command in cnbng-nal configuration mode. To remove this configuration, use the **no** form of this command.

secondary-address-update enable

Syntax Description

enable	Enables the secondary address update.

Command Default

None

Command Modes

cnbng-nal

Command History

Release	Modification
Release 7.3.1	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operation
config-services	read, write

This example shows how to enable secondary address update during route provisioning on the cnBNG user plane:

```
Router(config)#cnbng-nal location 0/1/CPU0
Router(config-cnbng-nal)#secondary-address-update enable
Router(config-cnbng-nal)#commit
```

slaac

To enable Stateless Address Auto-Configuration (SLAAC) for IPv6 IANA address assignment, use the **slaac** command in cnbng-nal configuration mode. To disable the feature, use the **no** form of this command.

slaac

Syntax Description

This command has no keywords or arguments.

Command Default

None

Command Modes

cnbng-nal configuration mode

Command History

Release	Modification
Release 24.4.1	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command

Examples

This example shows how to enable SLAAC for PPPoE sessions:

```
Router#configure
Router(config)#interface Bundle-Ether1.1
Router(config-subif)#pppoe enable
Router(config-subif)# cnbng-nal ipv6 nd
Router(config-cnbng-nal)# ra-initial 0 16
Router(config-cnbng-nal-ra)# slaac
Router(config-cnbng-nal-ra)#exit
```

up-cp-notification flow-control

To configure flow control feature for notification events sent from cnBNG user plane (UP) to control plane (CP), use the **up-cp-notification flow-control** command in *cnbng-nal* configuration mode. To remove the configuration, use the **no** form of this command.

up-cp-notification flow-control *limit*

Syntax Description

limit	Specifies the maximum number of notification events to be sent from cnBNG UP to CP for each second. The limit ranges from 20 to 400; default being 100.

Command Default

Disabled, by default.

Command Modes

cnbng-nal

Command History

Release	Modification
Release 7.4.2	This command was introduced

Usage Guidelines

This command is common for IPoE, PPPoE-PTA, and PPPoE-LAC sessions.

The notification events covered under this flow control feature include locally generated messages on UP such as:

- subscriber delete notifications (say, during mark-and-sweep procedure, session deletion by UP administrator, and so on)
- PPP keep alive timer expiry notification

Task ID

Task ID	Operations
config-services	read, write

Examples

This example shows how to specify the limit of notification events sent from cnBNG UP to CP for each second:

```
Router#configure
Router(config)#cnbng-nal location 0/0/CPU0
Router(config-cnbng-nal-local)#up-cp-notification flow-control 70
Router(config-cnbng-nal-local)#commit
```

Related Commands

Command	Description
up-cp-stats flow-control , on page 15	Configures flow control feature for statistics events that are sent from cnBNG user plane to control plane.

up-cp-stats flow-control

To configure flow control feature for statistics events that are sent from cnBNG user plane (UP) to control plane (CP), use the **up-cp-stats flow-control** command in *cnbng-nal* configuration mode. To remove the configuration, use the **no** form of this command.

up-cp-stats flow-control *limit*

Syntax Description

limit	Specifies the maximum number of statistics events to be sent from cnBNG UP to CP for each second. The limit ranges from 20 to 500; default being 150.

Command Default

Disabled, by default.

Command Modes

cnbng-nal

Command History

Release	Modification
Release 7.4.2	This command was introduced

Usage Guidelines

This command is common for IPoE, PPPoE-PTA, and PPPoE-LAC sessions.

The statistics events covered under this flow control feature include locally generated messages like, subscriber session or service periodic statistics notification, that are sent from UP to CP.

Task ID

Task ID	Operations
config-services	read, write

Examples

This example shows how to specify the limit of statistics events sent from cnBNG UP to CP for each second:

```
Router#configure
Router(config)#cnbng-nal location 0/0/CPU0
Router(config-cnbng-nal-local)#up-cp-stats flow-control 70
Router(config-cnbng-nal-local)#commit
```

Related Commands

Command	Description
up-cp-notification flow-control , on page 14	Configures flow control feature for notification events sent from cnBNG user plane to control plane.

up-server

To configure the server details of the user plane for cloud native BNG (cnBNG), use the **up-server** command in cnbng-nal configuration mode. To remove this configuration, use the **no** form of this command.

up-server ipv4 *ipv4-address* [**gtp-port** *gtp-port-num*] [**pfcp-port** *pfcp-port-num*] [**vrf default**]

Syntax Description

ipv4 *ipv4-address*	Specifies the IPv4 address of the user plane server.
gtp-port *gtp-port-num*	Specifies the source GPRS Tunneling Protocol (GTP) port number of the user plane server. The range is 15002 to 15051.
pfcp-port *pfcp-port-num*	Specifies the source Packet Forwarding Control Protocol (PFCP) port number of the user plane server. The range is 15002 to 15051.
vrf default	Configures the default VRF of the user plane server.

Command Default

None

Command Modes

cnbng-nal

Command History

Release	Modification
Release 7.3.1	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operation
config-services	read, write

This example shows how to configure the UP server details of cnBNG:

```
Router(config)#cnbng-nal location 0/1/CPU0
Router(config-cnbng-nal)#up-server ipv4 192.0.2.1 gtp-port 15002 pfcp-port 15003 vrf default
Router(config-cnbng-nal)#commit
```