



## 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*.

- [auto-loopback](#), on page 2
- [cnbng-nal](#), on page 3
- [cp-association](#), on page 4
- [cp-server](#), on page 6
- [disable-secondary-address-notification](#), on page 7
- [hostidentifier](#), on page 8
- [ipoe fsol-flow-control](#), on page 9
- [pppoe fsol-flow-control](#), on page 10
- [route-summary](#), on page 11
- [secondary-address-update](#), on page 12
- [slaac](#), on page 13
- [up-cp-notification flow-control](#) , on page 14
- [up-cp-stats flow-control](#) , on page 15
- [up-server](#), on page 16

# 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		
<b>vrf</b>		Configures the VRF for the NAL auto-loopback.
<i>vrf-name</i>		Specifies the name of the NAL auto-loopback VRF.
<b>default</b>		Configures the default NAL auto-loopback VRF.
<b>interface Loopback</b>		Configures the NAL auto-loopback interface.
<i>loopback-num</i>		Specifies the NAL auto-loopback interface number.
<b>primary-address</b>		Configures the primary IP address of the NAL auto-loopback.
<i>ip-address</i>		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*

<b>Syntax Description</b>	<b>location</b> <i>location</i> Specifies the location of the cnBNG NAL node (route processor or line card).				
<b>Command Default</b>	None				
<b>Command Modes</b>	Global Configuration				
<b>Command History</b>	<table> <tr> <th>Release</th><th>Modification</th></tr> <tr> <td>Release 7.3.1</td><td>This command was introduced.</td></tr> </table>	Release	Modification	Release 7.3.1	This command was introduced.
Release	Modification				
Release 7.3.1	This command was introduced.				
<b>Usage Guidelines</b>	No specific guidelines impact the use of this command.				
<b>Task ID</b>	<table> <tr> <th>Task ID</th><th>Operation</th></tr> <tr> <td>config-services</td><td>read, write</td></tr> </table>	Task ID	Operation	config-services	read, write
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
PFCEP Port        : 15003
VRF               : default
```

```
Control-Plane configurations:
```

```
-----
PRIMARY IP        : 11.11.11.2
GTP Port          : 2152
PFCEP 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	<b>primary</b>	Configures the details of the primary server of the control plane.
	<b>ipv4 ipv4-address</b>	Specifies the IPv4 address of the primary server of the control plane.

Command Default      None

Command Modes      cnbng-nal

Command History	<b>Release</b>	<b>Modification</b>
	Release 7.3.1	This command was introduced.

Usage Guidelines      No specific guidelines impact the use of this command.

Task ID	<b>Task ID</b>	<b>Operation</b>
	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

<b>Syntax Description</b>	This command has no keywords or arguments.	
<b>Command Default</b>	None	
<b>Command Modes</b>	cnbng-nal	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Release 7.4.2	This command was introduced.
<b>Usage Guidelines</b>	No specific guidelines impact the use of this command.	
<b>Task ID</b>	<b>Task ID</b>	<b>Operation</b>
	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	<i>hostname</i> 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	<div>limit Specifies the maximum number of IPoE protocol packets to be sent from cnBNG UP to CP for each second.</div> <div>The limit ranges from 50 to 400; default being 100.</div>					
Command Default	Disabled, by default.					
Command Modes	cnbng-nal					
Command History	<table><tr><th>Release</th><th>Modification</th></tr><tr><td>Release 7.4.2</td><td>This command was introduced</td></tr></table>		Release	Modification	Release 7.4.2	This command was introduced
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	<table><tr><th>Task ID</th><th>Operations</th></tr><tr><td>config-services</td><td>read, write</td></tr></table>		Task ID	Operations	config-services	read, write
Task ID	Operations					
config-services	read, write					
Examples	<div>This example shows how to specify the limit of IPoE protocol packets to be sent from cnBNG UP to CP for each second:</div> <div>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</div>					
Related Commands	Command	Description				
	<a href="#">pppoe fsol-flow-control, on page 10</a>	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**

<b>Syntax Description</b>	<i>limit</i> 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.	
<b>Command Default</b>	Disabled, by default.	
<b>Command Modes</b>	cnbng-nal	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Release 7.4.2	This command was introduced
<b>Usage Guidelines</b>	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.	
<b>Task ID</b>	<b>Task ID</b>	<b>Operations</b>
	config-services	read, write
<b>Examples</b>	<p>This example shows how to specify the limit of PPPoE protocol packets to be sent from cnBNG UP to CP for each second:</p> <pre> 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 </pre>	
<b>Related Commands</b>	<b>Command</b>	<b>Description</b>
	<a href="#">ipoe fsol-flow-control, on page 9</a>	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** }

<b>Syntax Description</b>	<b>tag</b>	Sets a tag value for the route.
	<i>tag-value</i>	Specifies the tag value. The range is 1 to 4294967295.
	<b>default</b>	Specifies the default tag (of value 1) for the NAL server subscriber route summary.
<b>Command Default</b>	None	
<b>Command Modes</b>	cnbng-nal	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Release 7.3.1	This command was introduced.
<b>Usage Guidelines</b>	No specific guidelines impact the use of this command.	
<b>Task ID</b>	<b>Task ID</b>	<b>Operation</b>
	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	<b>enable</b> Enables the secondary address update.				
Command Default	None				
Command Modes	cnbng-nal				
Command History	<table> <tr> <th>Release</th><th>Modification</th></tr> <tr> <td>Release 7.3.1</td><td>This command was introduced.</td></tr> </table>	Release	Modification	Release 7.3.1	This command was introduced.
Release	Modification				
Release 7.3.1	This command was introduced.				
Usage Guidelines	No specific guidelines impact the use of this command.				
Task ID	<table> <tr> <th>Task ID</th><th>Operation</th></tr> <tr> <td>config-services</td><td>read, write</td></tr> </table>	Task ID	Operation	config-services	read, write
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**

<b>Syntax Description</b>	This command has no keywords or arguments.
---------------------------	--

<b>Command Default</b>	None
------------------------	------

<b>Command Modes</b>	cnbng-nal configuration mode
----------------------	------------------------------

Command History	Release	Modification
	Release 24.4.1	This command was introduced.

<b>Usage Guidelines</b>	No specific guidelines impact the use of this command
-------------------------	---

<b>Examples</b>	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	<i>limit</i> 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	<table><tr><th>Release</th><th>Modification</th></tr><tr><td>Release 7.4.2</td><td>This command was introduced</td></tr></table>		Release	Modification	Release 7.4.2	This command was introduced
Release	Modification					
Release 7.4.2	This command was introduced					
Usage Guidelines	<p>This command is common for IPoE, PPPoE-PTA, and PPPoE-LAC sessions.</p> <p>The notification events covered under this flow control feature include locally generated messages on UP such as:</p> <ul style="list-style-type: none"><li>• subscriber delete notifications (say, during mark-and-sweep procedure, session deletion by UP administrator, and so on)</li><li>• PPP keep alive timer expiry notification</li></ul>					
Task ID	<table><tr><th>Task ID</th><th>Operations</th></tr><tr><td>config-services</td><td>read, write</td></tr></table>		Task ID	Operations	config-services	read, write
Task ID	Operations					
config-services	read, write					
Examples	<p>This example shows how to specify the limit of notification events sent from cnBNG UP to CP for each second:</p> <pre>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</pre>					
Related Commands	<table><tr><th>Command</th><th>Description</th></tr><tr><td><a href="#">up-cp-stats flow-control</a> , on page 15</td><td>Configures flow control feature for statistics events that are sent from cnBNG user plane to control plane.</td></tr></table>		Command	Description	<a href="#">up-cp-stats flow-control</a> , on page 15	Configures flow control feature for statistics events that are sent from cnBNG user plane to control plane.
Command	Description					
<a href="#">up-cp-stats flow-control</a> , 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	<i>limit</i> 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	<table><tr><th>Release</th><th>Modification</th></tr><tr><td>Release 7.4.2</td><td>This command was introduced</td></tr></table>		Release	Modification	Release 7.4.2	This command was introduced
Release	Modification					
Release 7.4.2	This command was introduced					
Usage Guidelines	<p>This command is common for IPoE, PPPoE-PTA, and PPPoE-LAC sessions.</p> <p>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.</p>					
Task ID	<table><tr><th>Task ID</th><th>Operations</th></tr><tr><td>config-services</td><td>read, write</td></tr></table>		Task ID	Operations	config-services	read, write
Task ID	Operations					
config-services	read, write					
Examples	<p>This example shows how to specify the limit of statistics events sent from cnBNG UP to CP for each second:</p> <pre>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</pre>					
Related Commands	<table><tr><th>Command</th><th>Description</th></tr><tr><td><a href="#">up-cp-notification flow-control , on page 14</a></td><td>Configures flow control feature for notification events sent from cnBNG user plane to control plane.</td></tr></table>		Command	Description	<a href="#">up-cp-notification flow-control , on page 14</a>	Configures flow control feature for notification events sent from cnBNG user plane to control plane.
Command	Description					
<a href="#">up-cp-notification flow-control , on page 14</a>	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*] [**pfcf-port** *pfcf-port-num*] [**vrf** **default**]

<b>Syntax Description</b>	<b>ipv4</b> <i>ipv4-address</i>	Specifies the IPv4 address of the user plane server.
	<b>gtp-port</b> <i>gtp-port-num</i>	Specifies the source GPRS Tunneling Protocol (GTP) port number of the user plane server.  The range is 15002 to 15051.
	<b>pfcf-port</b> <i>pfcf-port-num</i>	Specifies the source Packet Forwarding Control Protocol (PFCP) port number of the user plane server.  The range is 15002 to 15051.
	<b>vrf</b> <b>default</b>	Configures the default VRF of the user plane server.
<b>Command Default</b>	None	
<b>Command Modes</b>	cnbng-nal	
<b>Command History</b>	<b>Release</b>	<b>Modification</b>
	Release 7.3.1	This command was introduced.
<b>Usage Guidelines</b>	No specific guidelines impact the use of this command.	
<b>Task ID</b>	<b>Task ID</b>	<b>Operation</b>
	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 pfcf-port 15003 vrf default
Router(config-cnbng-nal)#commit
```