

nV System Command Reference for Cisco ASR 9000 Series Routers

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Preface

From Release 6.1.2 onwards, Cisco introduces support for the 64-bit Linux-based IOS XR operating system. However, support for nV Satellite System on the Cisco IOS XR 64-bit operating system is available only from the Release 6.2.1. Extensive feature parity is maintained between the 32-bit and 64-bit environments. Unless explicitly marked otherwise, the contents of this document are applicable for both environments. For more details on Cisco IOS XR 64 bit, refer to the Release Notes for Cisco ASR 9000 Series Routers, Release 6.1.2 document.

The Preface contains the following sections:

- Changes to This Document, on page v
- Communications, Services, and Additional Information, on page v

Changes to This Document

This table lists the technical changes made to this document since it was first published.

Table 1: Changes to this Document

Date	Change Summary
April 2016	Initial release of the cumulative command reference document that covers all updates from Cisco IOS XR Release 4.3.0 onwards.
November 2016	Republished with documentation updates for Release 6.1.2 features.
September 2017	Republished with documentation updates for Release 6.3.1 features.

Communications, Services, and Additional Information

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Satellite nV System Commands

This module describes the commands used to configure Satellite nV System on Cisco ASR 9000 Series Router.

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hw-module satellite reload

To reload and perform a soft reset of individual slots of the satellite device, use the **hw-module satellite reload** command in the EXEC mode.

hw-module satellite { *satellite-id* | *satellite-id-range* | *all* } **reload**

Syntax Description

satellite-id	Performs the reload operation on the satellite specified by its unique identifier.
satellite-id-range	Performs the reload operation on the specified range of satellite devices.
all	Performs the reload operation on all the currently active satellites.

Command Default

No default behavior or values

Command Modes

EXEC mode

Command History

Release	Modification
Release 4.2.1	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Example

This example shows a sample output of the **hw-module satellite reload** command:

```
Router#hw-module satellite 100 reload
Thu Mar  5 16:35:51.949 UTC
WARNING: This may take the requested satellite out of service.
Do you wish to continue? [confirm(y/n)] y
Reload Op 1: hw-module satellite 100 reload
  1 configured satellite has been specified for the reload operation.
  1 satellite has successfully initiated the reload operation.
```

candidate-fabric-ports

To configure additional candidate fabric ports on a satellite, use the **candidate-fabric-ports** command in satellite configuration mode.

candidate-fabric-ports *interface-type slot/subslot/port-range*

Syntax Description

interface-type	Specifies the satellite fabric interface type. The supported values are **nVFabric-GigE**, **nVFabric-TenGigE**, and **nVFabric-HundredGigE**.
slot/subslot/port-range	Specifies the slot, subslot, and port range for the candidate fabric ports. The values of *slot* and *subslot* can be in the range of 0 to 5. The port ranges are specified as a comma-separated list of subranges. Each subrange consists of either a single port number, or a low and high hyphen-separated range, both inclusive. The subranges must be non-overlapping and strictly in ascending order.

Command Default

No default behavior or values.

Command Modes

Satellite configuration mode

Usage Guidelines

This command specifies the additional ports on the satellite that can be used as dynamic ICLs or fabric ports along with the default set of ports.

Example

This example shows how to configure additional candidate fabric ports on a satellite:

```
RP/0/RSP0/CPU0:router# configure
RP/0/RSP0/CPU0:router(config)# nv
RP/0/RSP0/CPU0:router(config-nV)# satellite 100
RP/0/RSP0/CPU0:router(config-satellite)# candidate-fabric-ports nVFabric-GigE 0/0/21-25
```

install nv satellite

To download and activate the software image on the satellite, use the **install nv satellite** command in EXEC mode.

install nv satellite { *id* | *id-range* | **all** } **activate** [**package** *package-name*] [**progress**]
install nv satellite { *id* | *id-range* | **all** } { **deactivate** | **remove** } **package** *package-name* [**progress**]
install nv satellite { *id* | *id-range* | **all** } **transfer** [**file** *file-name* | **image-reference** *image-reference* | **reference** *reference-name*] [**progress**]
install nv satellite { *id* | *id-range* | **all** } { **update** | **replace** } { **file** *file-name* | **image-reference** *image-reference-name* | **reference** *reference-name* } [**progress**]
install nv satellite [**operation** *operation-id*] **abort**

Syntax Description

satellite-id	Specifies the unique identifier for the satellite to which the image must be transferred.
satellite-id-range	Specifies the target satellites by selecting a range of IDs.
all	Performs the operation on all currently active satellites that are not already at the target version.
abort	Cancels a pending or currently running transfer or activate operation on the specified target.
activate	Activates an inactive package on the satellite.
deactivate	Deactivates an active package on the satellite.
remove	Removes an inactive package from the satellite.
replace	Replaces the existing software image or packages on the satellite device, ensuring it runs the new version.
transfer	Transfers a file to the satellite.
update	Transfers and activates SMUs/base package on the satellite in one operation. This keyword is supported on: • 8011-4G24Y4H-I • 8011-32Y8L2H2FH
progress	Displays the progress bar for the install operation.
package *package-name*	Specifies one or more package names to be activated, deactivated, or removed. Up to 24 packages can be specified.
file *file-name*	Performs the update operation on the specified file or list of files
image-reference	Specifies a base image for a reference.

create	Creates an image reference.
delete	Deletes an image reference.
reference *reference-name*	Performs the update operation on the specified reference.
operation *operation-id*	Targets a specific background operation identified by its unique operation ID.

Command Default

No default behavior or values

Command Modes

EXEC mode

Command History

Release	Modification
Release 4.2.1	This command was introduced.
Release 6.3.1	The **update** option was introduced in this command.

Usage Guidelines

Note This command only operates on satellites that are fully connected and authenticated.

Note If the **activate** keyword is run directly, the software image is transferred and activated on the satellite.

Example

This example shows the sample output of the **install nv satellite** commands:

```
RP/0/RSP0/CPU0:router # install nv satellite 100 transfer

Install operation initiated successfully.

RP/0/RSP0/CPU0:sat-host#RP/0/RSP0/CPU0:May 3 20:12:46.732 : icpe_gco[1146]:
%PKT_INFRA-ICPE_GCO-6-TRANSFER_DONE : Image transfer completed on Satellite 100

RP/0/RSP0/CPU0:router# install nv satellite 100 activate
Install operation initiated successfully.
LC/0/2/CPU0:May 3 20:13:50.363 : ifmgr[201]: %PKT_INFRA-LINK-3-UPDOWN : Interface
GigabitEthernet100/0/0/28, changed state to Down
RP/0/RSP0/CPU0:May 3 20:13:50.811 : invmgr[254]: %PLATFORM-INV-6-OIROUT : OIR: Node 100
removed

RP/0/RSP0/CPU0:router# install nv satellite 100 update file
disk0:ncs5k-mpls-2.2.0.0-r631.x86_64.rpm tftp://172.27.18.8/ncs5k-mgbl-2.2.0.0-r631.x86_64.rpm
```

This command initiates a software update for a specific satellite device. The location of the software image file stored on the router's hard disk is specified.

```
Router#install nv satellite 300 update file harddisk:/8000-aarch64.tgz
Thu Feb 26 07:01:51.801 UTC
WARNING: This may take the requested satellite out of service.
Do you wish to continue? [confirm(y/n)] y
Install Op 3: install nv satellite 300 update file harddisk:/8000-aarch64.tgz
  1 configured satellite has been specified for the update operation.
  1 satellite has successfully initiated the update operation.
```

install nv satellite reference

To create or delete a reference name given to a set of files, use the **install nv satellite reference** command in EXEC mode.

install nv satellite reference *reference-name* { **create** { **file** *file-name* | **empty** } | **delete** }

Syntax Description

reference-name	Specifies the name that can be given to refer to a list of files.
create	Create the reference for the specified list of files.
delete	Deletes a previously created reference.
file *file-name*	Performs the reference creation operation on the specified list of files.
empty	Performs the reference creation of empty references.

Command Default

No default behavior or values

Command Modes

EXEC mode

Command History

Release	Modification
Release 6.3.1	The reference option was introduced

Example

This example shows the sample output of the **install nv satellite reference** commands:

```
RP/0/RSP0/CPU0:router # install nv satellite reference MyRef create file
tftp://172.27.18.8/ncs5k-mpls-2.2.0.0-r631.x86_64.rpm
tftp://172.27.18.8/ncs5k-mgbl-2.2.0.0-r631.x86_64.rpm

RP/0/RSP0/CPU0:router# install nv satellite reference AnotherRef create empty
```

install nv satellite image-reference

To create a base image reference for satellite install operations, use the **install nv satellite image-reference** command in the EXEC mode.

install nv satellite image-reference *image-reference-name* **[create file** *file-name* **| delete]**

Syntax Description

image-reference-name	Creates or manages a reference name for a set of files (software images) related to the satellite nV system. The reference name allows grouping of one or more image files or packages under a single label.
create file *file-name*	Create the reference for the specified base image.
delete *file-name*	Deletes a previously created image reference.

Command Default

No default behavior or values

Command Modes

EXEC mode

Command History

Release	Modification
Release 26.2.1	This command is supported on: • 8011-4G24Y4H-I • 8011-32Y8L2H2FH
Release 6.3.1	The image-reference option was introduced

Creating a named reference

This example creates a named reference (MyReference) for a set of files located at harddisk:/8000-aarch64.iso. The reference name can be used in subsequent satellite install operations, such as transferring or activating software images.

```
Router#install nv sat image-reference MyReference create file harddisk:/8000-aarch64.iso
Install Op 3: install nv satellite image-reference
MyReference create file harddisk:/8000-aarch64.iso
```

Deleting a named reference

This example deletes a named reference (MyReference) for a set of files located at harddisk:/8000-aarch64.iso.

```
Router#install nv sat image-reference MyReference delete
Install Op 4: install nv satellite image-reference
MyReference delete
```

minimum preferred links

To configure the minimum number of preferred satellite fabric bundle-ether links in a dual home satellite network topology, use the **minimum preferred links** command in the satellite nV fabric link redundancy configuration mode.

minimum preferred links *number*

Syntax Description

number	Specifies the number of minimum number of active links to the host.

Command Default

If you do not enable this parameter on any host, then it is assumed as 0 by default on that host.

Command Modes

Satellite Fabric Link Redundancy

Command History

Release	Modification
Release 5.3.1	This command was introduced.

Usage Guidelines

In order to configure minimum preferred links, the interface must be a bundle-ether interface. If you do not enable this parameter on any host, then it is assumed as 0 by default on that host. Hence, the decision of failover is judged using that value.

Note You can either go to the redundancy mode to configure **minimum preferred links** or you can specify **redundancy** keyword before configuring the minimum preferred links.

Example

This example shows how to execute the **minimum preferred links** command:

```
RP/0/RSP0/CPU0:router # configure
RP/0/RSP0/CPU0:router(config)# interface Bundle-Ether 1
RP/0/RSP0/CPU0:router(config-int)# nV satellite-fabric-link satelite 200
RP/0/RSP0/CPU0:router(config-satellite-fabric-link)# redundancy minimum preferred links 2

(OR)

RP/0/RSP0/CPU0:router(config-satellite-fabric-link)# redundancy
RP/0/RSP0/CPU0:router(config-nV-red)# minimum preferred links 2
```

minimum required links

To configure the minimum number of required satellite fabric bundle-ether links in a single host hub and spoke satellite network topology, use the **minimum required links** command in the nV interface satellite-fabric-link configuration mode.

minimum required links *number*

Syntax Description

number	Specifies the number of minimum number of active links to the host. The range is 1 to 64.

Command Default

If you do not enable this parameter on any host, then it is assumed as 0 by default on that host.

Command Modes

nV Interface Satellite Fabric Link

Usage Guidelines

In order to configure minimum required links, the interface must be a bundle-ether interface. If you do not enable this parameter on any host, then it is assumed as 0 by default on that host. Hence, the decision of failover is judged using that value.

Example

This example shows how to execute the **minimum required links** command:

```
RP/0/RSP0/CPU0:router # configure
RP/0/RSP0/CPU0:router(config)# interface Bundle-Ether 1
RP/0/RSP0/CPU0:router(config-int)# nV satellite-fabric-link satelite 200
RP/0/RSP0/CPU0:router(config-satellite-fabric-link)# minimum required links 2
```

nv

To enter the satellite network virtualization configuration mode, use the **nv** command in Global Configuration mode.

nv

Syntax Description

This command has no keywords or arguments.

Command Default

No default behavior or values

Command Modes

Global Configuration mode

Command History

Release	Modification
Release 4.2.1	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Example

This example shows how to enter the **nv** configuration mode:

```
RP/0/RSP0/CPU0:router#configure
RP/0/RSP0/CPU0:router(config)#nv
RP/0/RSP0/CPU0:router(config-nV)#
```

nv satellite sla processing disable

To disable processing of CFM Performance Monitoring (PM) frames on the satellite, use the **nv satellite sla processing disable** command in CFM configuration mode. To re-enable CFM PM frames processing on the satellite, use the no form of the command.

nv satellite sla processing disable
no nv satellite sla processing disable

Syntax Description

This command has no keywords or arguments.

Command Default

By default, the processing of CFM PM frames on the satellite is enabled.

Command Modes

CFM configuration mode

Command History

Release	Modification
Release 5.3.1	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Examples

The following example shows how to enter the CFM configuration mode.

```
RP/0/RSP0/CPU0:router# configure
RP/0/RSP0/CPU0:router(config)#ethernet cfm
RP/0/RSP0/CPU0:router(config-cfm)#nv satellite sla processing disable
```

satellite

To declare a new satellite that is to be attached to the host and enter the satellite configuration mode, use the satellite command in the Satellite nV configuration mode.

satellite *satellite-id*

Syntax Description

satellite-id	The *satellite-id* is a number in the range of 100 to 65534.

Command Default

No default behavior or values

Command Modes

Satellite Network Virtualization Configuration

Command History

Release	Modification
Release 4.2.1	This command was introduced.

Usage Guidelines

Each satellite must be declared in a separate line with an unique identifier.

Example

This example shows how to declare a new satellite device using the **satellite** command:

```
RP/0/RSP0/CPU0:router # configure
RP/0/RSP0/CPU0:router(config)# nv
RP/0/RSP0/CPU0:router(config-nV)# satellite 220
```

satellite-fabric-link satellite

To specify an interface as a ICPE inter-chassis link, use the **satellite-fabric-link satellite** command in the satellite nV interface configuration mode.

satellite-fabric-link satellite *satellite-id* { **slot** *slot-id* | **ports** *ports* | **network** }

Syntax Description

satellite *satellite-id*	Specifies the satellite ID.
slot *slot-id*	(Optional) Specifies the slot number. The slot ID consists of two slash-separated numbers, representing the slot and sub-slot IDs on the satellite device of the node from which to cross-link ports. This is not supported on single-node satellites.
ports *ports*	Specifies the port number. The ports are specified as a range, not necessarily consecutive, of port IDs to crosslink to this IC Link. The range consists of one or more comma-separated sub-ranges. Each sub-range can either be a single number, or a hyphen separated consecutive range (where the left number must be smaller than the right number).
network	(Optional) Specifies a network of satellites.

Command Default

The slot defaults to 0/0. The ports default to all available ports.

Command Modes

Satellite Network Virtualization Interface Configuration

Command History

Release	Modification
Release 4.2.1	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Example

This example shows how to execute the **satellite-fabric-link satellite** command:

```
RP/0/RSP0/CPU0:router # configure
RP/0/RSP0/CPU0:router(config)# interface TenGigE0/2/1/0
RP/0/RSP0/CPU0:router(config-int)# ipv4 point-to-point
RP/0/RSP0/CPU0:router(config-int)# interface unnumbered loopback0
RP/0/RSP0/CPU0:router(config-int)# nV
RP/0/RSP0/CPU0:router(config-int-nV)# satellite-fabric-link satelite 200
```

ssh satellite

To initate an SSH connection from the host to a satellite device, use the **ssh satellite** command in the host's EXEC mode. The target satellite device must be authentication-enabled and have its secret set.

ssh satellite *satellite-id*

Syntax Description

ssh	Initiates an SSH connection to the specified satellite device.
satellite *satellite-id*	Specifies the ID of the target satellite device.

Command Default

No default behavior or values.

Command Modes

This command is available in host EXEC mode.

Command History

Release	Modification
Release 26.2.1	This command was introduced and is supported on: • 8011-4G24Y4H-I • 8011-32Y8L2H2FH

Usage Guidelines

- Authentication mode must be enabled and a secret must be set for the satellite device.
- This command is supported only for these satellite devices:
  - 8011-4G24Y4H-I
  - 8011-32Y8L2H2FH

Example

The host initiates SSH connection to a satellite device (satellite is authentication-enabled and a secret is set).

```
Router:host#ssh satellite 100
Password:

Router:Sat100#
```

Example

The host attempts SSH connection to a satellite (satellite is not authentication-enabled or no secret is set).

```
Router:host#ssh satellite 200
Failed to connect to 10.0.200.1 - Connection failed
```

satellite secret

To configure a secret for the satellite nV system user for login to the satellite device, use the **secret** command in the satellite nV configuration mode. You must configure a secret to enable SSH access from the host to the satellite.

secret { *plain text secret for satellite AAA* | encrypted *SHA512-encrypted secret for satellite AAA* | 5 *MD5-based secret for satellite AAA* }

Syntax Description

secret *plain text secret for satellite AAA*	Configures a plain text secret for the satellite nV system user for login to the satellite device.
encrypted *SHA512-encrypted secret for satellite AAA*	Configures an encrypted secret for the satellite nV system user for login to the satellite device.
5 *MD5-based secret for satellite AAA*	Configures a Type 5 (MD5) encrypted secret for the satellite nV system user for login to the satellite device. This option is not supported on: • 8011-4G24Y4H-I • 8011-32Y8L2H2FH

Command Default

There is no default secret.

Command Modes

Satellite Network Virtualization Configuration

Command History

Release	Modification
Release 26.2.1	This command is supported on: • 8011-4G24Y4H-I • 8011-32Y8L2H2FH

Example

This example shows how to configure a satellite and set the authentication secret:

```
Router# configure
Router(config)# nv
Router(config-nV)# satellite 200
Router(config-nV)# secret <secret for satellite AAA>
```

satellite type

To define the expected type of the attached satellite device, use the **satellite type** command in the satellite nV configuration mode.

satellite id type *type-name*

Syntax Description

type *type-name*	Specifies the type name of the attached satellite. The satellite types are ncs5001, ncs5002, asr9000v, asr9000v2, 8011-4G24Y4H-I , and 8011-32Y8L2H2FH.

Command Default

No default behavior or values

Command Modes

Satellite Network Virtualization Configuration

Command History

Release	Modification
Release 4.2.1	This command was introduced.
Release 4.3.0	The Cisco ASR901 and ASR903 Series Routers were included as satellites.
Release 5.2.2	The Cisco ASR9000v-V2 Series Routers were included as satellites.

Usage Guidelines

The type string is used to lookup satellite capabilities, allowing other configuration to be verified accurately. The string is user-visible, and must match the publicly known names of the Satellite devices.

Example

This example shows a sample output of how to use the **satellite type** command:

```
RP/0/RSP0/CPU0:ios#configure
RP/0/RSP0/CPU0:ios(config)#nv
RP/0/RSP0/CPU0:ios(config-nV)#satellite 200
RP/0/RSP0/CPU0:ios(config-satellite)#type 8011-4G24Y4H-I
```

serial-number

To authenticate the serial number for a defined satellite, use the **serial-number** command in the Satellite nV configuration mode.

serial-number *string*

Syntax Description

string	Specifies the alphanumeric string that is assigned to a satellite.

Command Default

No default behavior or values

Command Modes

Satellite Network Virtualization Configuration

Command History

Release	Modification
Release 4.2.1	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Example

This example shows how to specify the serial number for a satellite:

```
RP/0/RSP0/CPU0:router # configure
RP/0/RSP0/CPU0:router(config)# nv
RP/0/RSP0/CPU0:router(config-nV)# satellite 120
RP/0/RSP0/CPU0:router(config-nV)# serial-number CAT1521B1BB
```

show nv satellite protocol control

To display the control protocol statistics and details of the SDAC (Satellite Discovery And Control) protocol, use the **show nv satellite protocol control** in the EXEC mode mode.

show nv satellite protocol control [**brief** | **counters**] [**satellite** *satellite-id*]

Syntax Description

brief satellite *satellite-id*	Displays a brief information of the control protocol statistics.
satellite *satellite-id*	Displays the control protocol information based on the specified satellite device.
counters satellite *satellite-id*	Displays control packet counters.

Command Default

No default behavior or values.

Command Modes

EXEC mode

Command History

Release	Modification
Release 4.2.1	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Example

This example shows a sample output of the **show nv satellite protocol control** command:

```
RP/0/RSP0/CPU0:router show nv satellite protocol control Satellite 1000
Satellite 1000
--------------
  Status: Connected since 2016/10/25 15:38:05.097
  IP address: 100.1.1.1 (VRF: default)
  Channels:
    Control (0)
    -----------
      Channel status: Open
      Messages sent: 15014 (15014 control), received: 15008 (15008 control)
      Version: 0

    Interface Extension Layer 1 (1)
    -------------------------------
      Channel status: Open
      Messages sent: 23 (12 control), received: 742 (8 control)
            dropped: 15 (0 control)
      Version: 0

    Interface Extension Layer 2 (2)
    -------------------------------
      Channel status: Open
      Messages sent: 385 (12 control), received: 14259 (8 control)
            dropped: 1 (0 control)
      Version: 0
```

```
Interface Extension Cross-link (3)
----------------------------------
  Channel status: Open
  Messages sent: 16 (12 control), received: 15 (8 control)
        dropped: 3 (0 control)
  Version: 0

Virtual Satellite Fabric Links (4)
----------------------------------
  Channel status: Open
  Messages sent: 45 (23 control), received: 35 (13 control)
        dropped: 10 (0 control)
  Version: 0
  Capabilities Present:
    1    : Min-links Offload: Supported

Device Management (5)
---------------------
  Channel status: Open
  Messages sent: 23 (23 control), received: 13 (13 control)
  Version: 0
  Capabilities Present:
    1    : Uptime Command: Supported

Inventory (6)
-------------
  Channel status: Open
  Messages sent: 44 (20 control), received: 197 (13 control)
  Version: 0

Environment monitoring (7)
--------------------------
  Channel status: Open
  Messages sent: 858 (20 control), received: 24910 (13 control)
  Version: 0

Alarm (8)
---------
  Channel status: Open
  Messages sent: 28 (20 control), received: 397 (13 control)
  Version: 0

Password (10)
-------------
  Channel status: Open
  Messages sent: 30 (23 control), received: 20 (13 control)
        dropped: 6 (0 control)
  Version: 0

Topology (14)
-------------
  Channel status: Open
  Messages sent: 94 (25 control), received: 97 (14 control)
        dropped: 193 (0 control)
  Version: 0

SyncE Interface (16)
--------------------
  Channel status: Open
  Messages sent: 20 (20 control), received: 13 (13 control)
  Version: 0

Multicast Offload (17)
----------------------
```

```
  Channel status: Open
  Messages sent: 451 (32 control), received: 19 (19 control)
        dropped: 2 (0 control)
  Version: 0

Multicast Offload Statistics (18)
---------------------------------
  Channel status: Open
  Messages sent: 3738 (20 control), received: 6745 (13 control)
        dropped: 5 (0 control)
  Version: 0

Fabric Layer 1 (19)
-------------------
  Channel status: Open
  Messages sent: 31 (12 control), received: 42 (8 control)
  Version: 0

Fabric Layer 2 (20)
-------------------
  Channel status: Open
  Messages sent: 385 (12 control), received: 760 (8 control)
  Version: 0

Configurable Fabric Ports (23)
------------------------------
  Channel status: Open
  Messages sent: 21 (15 control), received: 14 (9 control)
        dropped: 3 (0 control)
  Version: 0

Notification (24)
-----------------
  Channel status: Open
  Messages sent: 23 (23 control), received: 34 (13 control)
  Version: 0
```

Related Commands

Command	Description
show nv satellite protocol discovery, on page 23	Displays the statistics of satellite discovery protocol.

show nv satellite crosslink

To display a summary view of which access ports on the satellite are crosslinked to which satellite fabric link, use the **show nv satellite crosslink** command in the EXEC mode.

show nv satellite crosslink [**brief**] [**satellite** *satellite-id*] [**interface** *interface-name*]

Syntax Description

brief	(Optional) Displays brief information about all the satellite systems.
satellite *satellite-id*	(Optional) Displays the crosslink information based on the specified satellite device.
interface *interface-name*	(Optional) Displays the crosslink information based on the specified interface.

Command Default

No default behavior or values.

Command Modes

EXEC mode

Command History

Release	Modification
Release 6.0.2	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Example

The examples below show the sample outputs of the **show nv satellite crosslink** command:

```
RP/0/RSP0/CPU0:router# show nv satellite crosslink
Access Port      SFL Name         Port Validity
-----------------------------------------------
Te100/0/0/11     Te0/0/1/1             Accepted
Gi100/0/0/5      Te0/0/1/2              Invalid
Te100/0/0/12     Te0/0/1/2             Accepted
Te100/0/0/13     Te0/0/1/2             Accepted

RP/0/RSP0/CPU0:routershow nv satellite crosslink brief
           |         |            # Ports
SFL Name   | # Sats  | Accept  Reject  Invalid | Total
-----------|---------|-------------------------|--------
Te0/0/1/1  |       1 |       2       0       0 |       2
Te0/0/1/2  |       1 |       2       0       1 |       3
```

show nv satellite protocol discovery

To display the current FSM states and discovery protocol statistics such as packets, messages, and bytes from the SDAC (Satellite Discovery And Control) protocol , use the **show nv satellite protocol discovery** in the EXEC mode.

show nv satellite protocol discovery { **interface** *interface-name* | **brief** | **counters** }

Syntax Description

interface *interface-name*	Displays the discovery protocol information based on the interface type.
brief	Displays a brief discovery protocol information.
counters	Displays packet counters.

Command Default

No default behavior or values.

Command Modes

EXEC mode

Command History

Release	Modification
Release 4.2.1	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Example

This example show how to execute the **show nv satellite protocol discovery** command:

```
RP/0/RSP0/CPU0:router show nv satellite protocol discovery interface Bundle-Ether901
-------------------------
  Interface TenGigE0/0/1/0: Probing for satellites
  Interface TenGigE0/1/0/4/1: Probing for satellites

  Satellite ID: 1000
  Status: Satellite ready
  Host IPv4 Address: 100.1.1.2
  Satellite IPv4 Address: 100.1.1.1
  Discovered links:

    TenGigE0/0/1/0
    --------------
      Status: Satellite ready
      Vendor: CISCO SYSTEMS, INC,
      Serial Id: FOC1930R2AL
      Remote ID: 33554472
      Remote MAC address: c472.95a6.beed
      Chassis MAC address: c472.95a6.bec5

    TenGigE0/1/0/4/1
    ----------------
      Status: Satellite ready
      Vendor: CISCO SYSTEMS, INC,
      Serial Id: FOC1930R2AL
      Remote ID: 33554471
```

```
Remote MAC address: c472.95a6.beec
Chassis MAC address: c472.95a6.bec5
```

show nv satellite redundancy

To display if a host is active or standby, providing priorities for both the local and partner device, and, where required, describing the different sections of the priority, use the **show nv satellite redundancy** command in the EXEC mode.

show nv satellite redundancy [**brief**] [**satellite** *satellite-id*]

Syntax Description

brief	Displays redundancy information in brief.
satellite *satellite-id*	Displays the redundancy information based on the specified satellite device.

Command Default

No default behavior or values.

Command Modes

EXEC mode

Command History

Release	Modification
Release 6.0.2	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Example

This example shows a sample output of the **show nv satellite redundancy** command:

```
RP/0/RSP0/CPU0:router show nv satellite redundancy
Satellite 210:
  Local Priority:  0x0008000000010011
    Configured priority: 0
    Number of hops: 1
  Remote Priority: 0x00088000000e0000
    Number of hops: 14

Satellite 211:
  Local Priority:  0x0008000000020010
    Configured priority: 0
    Number of hops: 2
  Remote Priority: 0x00088000000d0001
    Number of hops: 13

Satellite 212:
  Local Priority:  0x0008000000030011
    Configured priority: 0
    Number of hops: 3
  Remote Priority: 0x00088000000c0000
    Number of hops: 12

Satellite 213:
  Local Priority:  0x0008000000040010
    Configured priority: 0
```

```
    Number of hops: 4
  Remote Priority: 0x00088000000b0001
    Number of hops: 11

Satellite 214:
  Local Priority:  0x0008000000050011
    Configured priority: 0
    Number of hops: 5
  Remote Priority: 0x00088000000a0000
    Number of hops: 10

Satellite 215:
  Local Priority:  0x0008000000060010
    Configured priority: 0
    Number of hops: 6
  Remote Priority: 0x0008800000090001
    Number of hops: 9
```

This example shows a sample output of the **show nv satellite redundancy** command when the **brief** keyword is used:

```
RP/0/RSP0/CPU0:router show nv satellite redundancy brief
Satellite:        | Local Priority:    | Remote Priority:
------------------|--------------------|--------------------
210               | 0x0008000000010011 | 0x00088000000e0000
211               | 0x0008000000020010 | 0x00088000000d0001
212               | 0x0008000000030011 | 0x00088000000c0000
213               | 0x0008000000040010 | 0x00088000000b0001
214               | 0x0008000000050011 | 0x00088000000a0000
215               | 0x0008000000060010 | 0x0008800000090001
216               | 0x0008000000070011 | 0x0008800000080000
299               | 0x0008000000080010 | 0x0008800000070001
300               | 0x0008000000090011 | 0x0008800000060000
301               |         No remote host connected
360               | 0x00080000000e0011 | 0x0008800000010000
700               | 0x0008000000010001 | 0x0008800000010000
702               | 0x0008000000010001 | 0x0008800000010000
703               | 0x0008000000010000 | 0x0008800000010001
704               | 0x0008000000010001 | 0x0008800000010000
705               | 0x0008000000010000 | 0x0008800000010001
706               | 0x0008000000010001 | 0x0008800000010000
800               | 0x00080000000a0011 | 0x0008800000050000
801               | 0x00080000000b0010 | 0x0008800000040001
802               | 0x00080000000c0011 | 0x0008800000030000
803               | 0x00080000000d0010 | 0x0008800000020001
1000              | 0x0008000000010001 | 0x0008800000010000
```

This example shows a sample output of the **show nv satellite redundancy** command when the **satellite** keyword is used:

```
RP/0/RSP0/CPU0:router show nv satellite redundancy satellite 702
Satellite 702:
  Local Priority:  0x0008000000010001
    Configured priority: 0
    Number of hops: 1
  Remote Priority: 0x0008800000010000
    Number of hops: 1
```

show nv satellite status

To display the status of a Satellite Network Virtualization (Satellite nV) system, use the **show nv satellite status** command in the EXEC mode. The command displays information such as the overall status of the satellite, connection details, and a brief summary of the status of the satellite.

show nv satellite status [[summary] | [brief] [satellite *satellite-id* **] [conflicts]]**

Syntax Description

summary	(Optional) Displays summary information about the number of satellites with each status in the system.
brief	(Optional) Displays brief information only.
satellite *satellite-id*	(Optional) Displays information about the satellite specified using *satellite-id*.
conflicts	(Optional) Displays current status conflicts.

Command Default

No default behavior or values.

Command Modes

EXEC mode

Command History

Release	Modification
Release 4.2.1	This command was introduced.
Release 26.2.1	The TLS and TCP connection types were introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Example

These examples display information about the satellites using the **show nv satellite status** command.

```
RP/0/RSP0/CPU0:router#show nv satellite status
Satellite 1000
--------------
  Status: Connected (Stable)
  Type: ncs5001
  Description: sat1000
  Displayed device name: Sat1000
  MAC address: c472.95a6.bec5
  IPv4 address: 100.1.1.1 (VRF: default)
  Serial Number: FOC1930R2AL
  Supported connection type: TCP
  Remote version: Compatible (latest version)
    IOFPGA: 0.17
    MB_MIFPGA: 0.17
    BIOS: 1.09
    XR: 6.2.1.16I (Latest)
  Received candidate fabric ports:
    nVFabric-TenGigE0/0/38-39 (permanent)
    nVFabric-HundredGigE0/1/0-3 (permanent)
  Configured satellite fabric links:
    Bundle-Ether901
```

```
---------------
  Status: Satellite Ready
  Remote ports: TenGigE0/0/0-37
  Discovered satellite fabric links:
    TenGigE0/0/1/0: Satellite Ready; No conflict
    TenGigE0/1/0/4/1: Satellite Ready; No conflict
```

This example shows how to display brief information about the satellites using the **show nv satellite status brief** command:

```
RP/0/RSP0/CPU0:router# show nv satellite status brief
Sat-ID  Type         IP Address    MAC address     Status
------  --------     ------------  --------------  --------------------------------
100     asr9000v     10.0.133.1    8478.ac02.2994  Connected (In sync)
```

The table below describes significant fields in the **show nv satellite status** display.

Table 2: show nv satellite status Field Descriptions

Field	Description

State	Overall status of the satellite. It consists of two parts:
	• **Connection status**
	  • **Not connected**: The satellite could not be connected to because of insufficient connectivity information (for example, missing IP address).
	  • **Connecting**: The satellite is being connected to but connection has not been fully established.
	  • **Authentication failed**: The satellite was connected to but no session was established because the authentication parameters were incorrect.
	  • **Incorrect serial**: The satellite was connected to but no session was established because the serial numbers did not match.
	  • **Incorrect version**: The satellite was connected to but no session was established because the version was not supported.
	  • **Connected**: The satellite has been successfully connected to and a session has been successfully established.
	• **Chassis and application status**
	  • **In sync**: The chassis and application configuration specified by the user has been successfully configured on the shelf.
	  • **Out of sync**: The chassis and application configuration specified by the user is being configured on the router, possibly retrying due to earlier failures.
	  • **Invalid**: The chassis and application configuration specified by the user cannot be configured on the shelf (for example, due to invalid configuration for the specified shelf).

Type	Type of the satellite.

Description	Description of the satellite
IPv4 address	IPv4 address used to connect to the satellite
Received Serial Number	Serial number of the satellite
Configured Serial Number	Serial number configured by the user
Supported Conection Type	The connection types refer to the transport protocol and security layer used to establish the data session between a host and satellite: • TLS connection: When the connection type is TLS, communication between the host and satellite device is encrypted. The authentication mode on 8011-4G24Y4H-I and 8011-32Y8L2H2FH satellite types must be set to enabled on the satellite device. • TCP connection: When the connection type is TCP, the authentication mode on 8011-4G24Y4H-I and 8011-32Y8L2H2FH satellite types must be set to disabled on the satellite device. On the satellite device, use the set sdac system-mode satellite command to verify whether authentication mode is enabled or disabled.
Remote version	Version of the software on the satellite
Chassis Status	Summary of chassis level configuration status
Configured applications	Summary of each application configured on the satellite

show nv satellite topology

To display detailed topology information for nVSatellite deployments and view information for a particular interface, a specific satellite, or filtered by distance (hops) from the host device, use the **show nv satellite topology** command in the EXEC mode.

This command displays topology details for nVSatellite devices connected to a Cisco router, including:

- Which satellites are connected
- How they are interconnected (fabric links)
- MAC addresses, serial numbers, redundancy status, and link details.

You can choose the sequence or order in which satellite devices appear in the command output:

- distance: Satellites are listed by their number of hops from the main host/router (directly connected satellites appear first, then those further away).
- satellite id: Satellites are listed according to their unique ID numbers, such as Satellite 101, 102, and 103.

show nv satellite topology [[**output-format** *format*] | [**interface** *interface-name*] [**satellite** *satellite-id*] [**sorted-by** { **distance** | **satellite-id** }]]

Syntax Description

interface *interface-name*	Displays the host (main router) interface being used for nVSatellite connectivity.
output-format *format*	Displays the topology information in these formats: • DOT • graphML
satellite *satellite-id*	Lists all satellites connected to the host, directly or indirectly with their unique IDs.
sorted-by	Sorts the topology information based on distance metric or satellite ID.
distance	Sorts the topology information based on the distance metric. The distance metric represents the number of hops from the host.
satellite-id	Sorts the topology information based on the connected satellites, their serial numbers, MAC addresses, and details for their fabric links to the host and to each other.

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
Release 26.2.1	This command was introduced and is supported on: • 8011-4G24Y4H-I • 8011-32Y8L2H2FH

The output shows that the router's interface GigabitEthernet0/1/0/0 is actively discovering nVsatellite devices in Redundancy-Group 1. Satellite 102 is detected, showing its serial number, MAC address, and several fabric links. One link connects directly to the host, while others are present but not yet identified on the remote end. The physical interface GigabitEthernet0/0/0/6 on Satellite 102 is directly connected to the host router's GigabitEthernet0/1/0/0 interface.

```
Router#show nv satellite topology

Tue Sep 17 05:56:38.635 PDT
GigabitEthernet0/1/0/0
----------------------
  Redundancy-Group: 1
  Discovery status: Running
  Satellites:
    Satellite 102 (BVID 2002)
    -------------------------
      Received Serial Number: PyS102
      MAC address: 00aa.c000.0102
      Satellite fabric links:
        GigabitEthernet0/0/0/6 (nVFabGigE102/0/0/6) (Remote ID: 0x900):
          Host (GigabitEthernet0/1/0/0)
        GigabitEthernet0/0/0/7 (nVFabGigE102/0/0/7) (Remote ID: 0xa00):
          Remote port not yet identified
        GigabitEthernet0/0/0/10 (nVFabGigE102/0/0/10) (Remote ID: 0xd00):
          Remote port not yet identified
        GigabitEthernet0/0/0/11 (nVFabGigE102/0/0/11) (Remote ID: 0xe00):
          Remote port not yet identified
```

The output shows the router's interface (GigabitEthernet0/1/0/1) in Redundancy-Group 1, actively discovering connected satellites. Multiple satellites (103, 104, 105, 106) are listed with their serial numbers, MAC addresses, and details of their fabric links to the host and to each other. The output highlights direct host connections, inter-satellite links (some using VLANs or marked as not redundant), and one satellite link to a remote host device.

```
Router#show nv satellite topology sorted-by satellite-id
Tue Sep 17 06:01:03.745 PDT
GigabitEthernet0/1/0/1
----------------------
  Redundancy-Group: 1
  Discovery status: Running
  Satellites:
    Satellite 103 (VID 2)
    ---------------------
      Received Serial Number: PyS003
      MAC address: 0200.05a7.0003
      Satellite fabric links:
        GigabitEthernet0/0/0/1 (nVFabGigE103/0/0/1) (Remote ID: 0x300):
          Host (GigabitEthernet0/1/0/1)
        GigabitEthernet0/0/2 (nVFabGigE103/0/0/2) (Remote ID: 0x2):
          Sat 104 (GigabitlEthernet0/0/3 (Remote ID: 0x3)) (VLAN 10)
    Satellite 104 (VID 3)
```

```
---------------------
  Received Serial Number: PyS004
  MAC address: 0200.05a7.0004
  Satellite fabric links:
    GigabitEthernet0/0/3 (nVFabGigE104/0/0/3) (Remote ID: 0x3):
      Sat 103 (GigabitEthernet0/0/2 (Remote ID: 0x2)) (VLAN 10)
    GigabitEthernet0/0/9 (nVFabGigE104/0/0/9) (Remote ID: 0x9):
      Sat 105 (GigabitEthernet0/0/11 (Remote ID: 0xb)) (Not Redundant)
    GigabitEthernet0/0/5 (nVFabGigE104/0/0/5) (Remote ID: 0x5):
      Sat 106 (GigabitEthernet0/0/7 (Remote ID: 0x7))
Satellite 105 (VID 4) (Not Redundant)
-------------------------------------
  Received Serial Number: PyS005
  MAC address: 0200.05a7.0005
  Satellite fabric links:
    GigabitEthernet0/0/11 (nVFabGigE105/0/0/11) (Remote ID: 0xb):
      Sat 104 (GigabitEthernet0/0/9 (Remote ID: 0x9))
Satellite 106 (VID 5)
---------------------
  Received Serial Number: PyS006
  MAC address: 0200.05a7.0006
  Satellite fabric links:
    GigabitEthernet0/0/7 (nVFabGigE106/0/0/7) (Remote ID: 0x7):
      Sat 104 (GigabitEthernet0/0/5 (Remote ID: 0x5))
    GigabitEthernet0/0/0/6 (nVFabGigE106/0/0/6) (Remote ID: 0x800):
      Remote Host (MAC: 02ba.c000.0000)
```

show nv satellite uptime

To display how long the satellite has been booted, and the reasons of the reloads, use the **show nv satellite uptime** command in the EXEC mode.

show nv satellite uptime [**satellite** *satellite-id*]

Syntax Description

satellite *satellite-id*	Displays the uptime information based on the specified satellite device.

Command Default

No default behavior or values.

Command Modes

EXEC mode

Command History

Release	Modification
Release 6.0.2	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Example

This example shows a sample output of the **show nv satellite uptime** command:

```
RP/0/RSP0/CPU0:router show nv satellite uptime
x0Sun May 14 16:39:44.245 UTC
Sat-ID     | Last Started       | Reload Information
-----------|--------------------|--------------------------------------------
100          17:08:08 27 Apr 17   Initial boot
       S/W   17:08:08 27 Apr 17   Switch to satellite mode.
```

This example shows a sample output of the **show nv satellite redundancy** command when the **satellite** keyword is used:

```
RP/0/RSP0/CPU0:router show nv satellite uptime satellite 100
Sun May 14 16:39:48.738 UTC
Satellite 100:
   System: Last reloaded at 17:08:08 27 Apr 17
           Initial boot
      S/W: Last reloaded at 17:08:08 27 Apr 17
           Switch to satellite mode.
```

show nv satellite version

To display information about the satellite software version, use the **show nv satellite version** command in the EXEC mode.

show nv satellite version [**satellite** *satellite-id*] [**summary**]

Syntax Description

satellite *satellite-id*	(Optional) Displays the version information of the specified satellite.
summary	(Optional) Displays an overview of the state of multiple satellites.

Command Default

No default behavior or values.

Command Modes

EXEC mode

Command History

Release	Modification
Release 26.2.1	This command is supported with these satellite devices: • 8011-4G24Y4H-I • 8011-32Y8L2H2FH
Release 6.0.2	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Example

This example shows a sample output of the **show nv satellite version** command:

```
RP/0/RSP0/CPU0:router show nv satellite version
Sun May 14 17:13:36.718 UTC
Satellite 100
-------------
  Remote versions:
    Active: Compatible (latest)
      IOFPGA: 0.17
      MB_MIFPGA: 0.16
      DB_MIFPGA: 0.16
      BIOS: 1.11
      XR: 6.3.1.12I (Recommended: 6.3.1.20I)
```

This example shows a sample output of the **show nv satellite version** command when the **summary** keyword is used:

```
RP/0/RSP0/CPU0:router show nv satellite version summary
Mon May 15 08:17:52.904 PDT
```

```
                    |       Number of Satellites
Compatibility       |  Active  | Transferred | Committed
--------------------|----------|-------------|-----------
Compatible (latest)          5             0           0
Unknown                      0             1           1
--------------------|----------|-------------|-----------
```

show nv satellite install

To display the status of the install operations on a network Virtualization (nV) satellite system, use the **show nv satellite install** command in the EXEC mode. The command displays the overall installation status, package details, and reference information.

- The **packages** keyword allows filtering by active, committed, or inactive packages, optionally for a specific satellite.
- The **references** keyword allows viewing references by image or SMU names.
- The **operation** *operation-id* keyword can be used to query a specific install operation by its ID.

show nv satellite install { **brief operation** *operation-id* | **in-progress operation** *operation-id* | **operation** *operation-id* | **packages** { **active satellite** *satellite-id* | **committed satellite** *satellite-id* | **inactive satellite** *satellite-id* | **satellite** *satellite-id* } | **references** { **image** *image-name* | **smu** *smu-name* } | **verbose** { **in-progress** *operation-id* | **operation** *operation-id* } }

Syntax Description

brief	Displays brief information about all the satellite systems.
verbose	Displays detailed information about nV satellite systems including the status and timing of updates or installs.
in-progress	Displays install operations that are currently in progress
operation *operation-id*	Displays information about a specific install operation identified by the operation ID.
packages	Displays information about the packages on the satellite system.
active | **committed** | **inactive**	Shows active, inactive, or committed packages on the satellite.
satellite *satellite-id*	Displays install packages information for the specified satellite ID.
references	Displays information about the references on the satellite system—A named collection of files on the host, which can be used to initiate install operations by referring to the reference name instead of individual files. The reference files can be either image files or Software Maintenance Upgrade (SMU) packages.
image | **smu**	• image—Specifies the name of the image reference. • smu—Specifies the name of the SMU reference.

Command Default

No default behavior or values.

Command Modes

EXEC mode

Command History

Release	Modification
Release 26.2.1	This command is supported with these satellite devices: • 8011-4G24Y4H-I • 8011-32Y8L2H2FH
Release 6.0.2	This command was introduced.

Usage Guidelines

- To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is prevents command usage, contact your AAA administrator.
- To display package information, the satellite must be able to send the information. The control session must be up before using the **show nv satellite install packages** command.

Example

This truncated output provides information about the software packages installed on satellite device 200.

```
Router#show nv satellite install packages satellite 200
  Active Packages: 150
        xr-8000-af-ea version=25.3.1.09I
        xr-8000-aib version=25.3.1.09I
        xr-8000-bfd version=25.3.1.09I
…
  Inactive Packages: 0
  Committed Packages: 150
        xr-8000-af-ea version=25.3.1.09I
        xr-8000-aib version=25.3.1.09I
        xr-8000-bfd version=25.3.1.09I
```

Example

This command output shows a successful update operation on satellite 300 using the specified update file, with clear start and end times for the operation.

```
Router#show nv satellite install verbose
Thu Feb 26 07:03:00.463 UTC
Install Op 1: install nv satellite 300 update file harddisk:/8000-aarch64.tgz
_____________________________________________________________

  1 satellite has successfully completed the update operation.
  Operation started:  09:19:01 24 Feb 26
  Operation ended:    09:34:31 24 Feb 26
  Satellites:
  -----------
    300    Completed: 09:34:31 24 Feb 26
```

Example

This command output shows that install operation ID 37 is an Update (Up) operation running on satellite ID 100. It shows the time it started and is currently 32% complete, with no end time yet since it is still in progress.

```
Router#show nv satellite install in-progress
Tue Mar  3 23:19:34.896 UTC
Key for fields:
  Op: Tr - Transfer; Up - Update;     Rp - Replace
      Ac - Activate; De - Deactivate; Rm - Remove
      Ab - Abort;    RC - Ref-create; RD - Ref-delete
Op-ID Op Sat-ID Start Time         End Time           Progress
----- -- ------ ------------------ ------------------ -------------------------
37    Up 100    23:15:59 03 Mar 26                   [=====-             ] 32%
```

Example

This command output shows the Image References section that lists image reference names along with the count of files associated with each reference. The SMU References section lists references related to Software Maintenance Updates (SMUs), also showing the reference names and the files included.

```
Router#show nv satellite install references
Sun Apr 5 22:55:16.529 UTC
Image References
----------------
Reference: ImageRef_hDqpCX, file count: 1
8000-golden-aarch64-26.2.1.31I-with_2029_sudi_hack.iso


SMU References
--------------
Reference: SmuRef_nkiMvk, file count: 1
satellite_smu_26.2.1.31I.tar

Reference: smu, file count: 1
sat_bundle.cfg
```

telnet satellite

To telnet to a satellite using the satellite ID (if the satellite is connected) or the VRF and the IP address of the satellite (if the satellite is not connected), use the **telnet satellite** command in EXEC mode.

telnet satellite {*satellite-id* | **vrf** *vrf ip-address*}

Syntax Description

satellite-id	Specifies the satellite ID.
vrf *vrf*	Specifies the configured VRF name of the satellite. **Note** The VRF must always be specified by the user. If the user has configured any IP address configuration, then the VRF is either *default* or the configured VRF name. Else, the VRF is the hidden satellite VRF name (**nVSatellite).
ip-address	Specifies the IP-address of the satellite in the format: a.b.c.d

Command Default

None

Command Modes

EXEC mode

Command History

Release	Modification
Release 5.3.2	This command was introduced.

Usage Guidelines

The **telnet** command is not supported on these satellites:

- 8011-4G24Y4H-I
- 8011-32Y8L2H2FH

Example

This example shows how to telnet to a satellite using the satellite ID:

```
RP/0/RSP0/CPU0:router # telnet satellite 100
```

This example shows how to telnet to a satellite using the VRF and IP-address of the satellite:

```
RP/0/RSP0/CPU0:router # telnet satellite vrf default 10.51.76.163
```

upgrade

To configure automated upgrade of the satellite image, use the **upgrade** command in nV Satellite configuration mode.

upgrade { **on-connect** | **on-first-connect** } { **reference** *reference-name* | **image-name** *image-reference-name* }

Syntax Description

on-connect	Automatic upgrade takes place when the satellite connects.
on-first-connect	Automatic upgrade takes place only the first-time satellite connects.
reference *reference-name*	Specify a reference list of software packages. The **reference ref_name** parameter points to a predefined named list of software packages, which is used to determine the images for the upgrade.
image-name *image-reference-name*	Specify the image reference name within a list to be used for the upgrade.

Command Default

Auto upgrade is disabled by default.

Command Modes

Satellite Network Virtualization Configuration

Command History

Release	Modification
Release 5.3.2	This command was introduced.
Release 6.3.1	The option **on-first-connect** was introduced.
Release 6.6.1	The option **reference** *ref-name* was introduced.

Usage Guidelines

For dual-head satellite systems, the auto upgrade configuration must only be applied on one host, that is, the host that the satellite will install from. There is currently no checking for this, and if the user applies the configuration on both hosts and the hosts have different satellite versions installed, then the satellite may go into a loop of installing, until either:

- the configuration is removed from one host OR
- the satellite version activated on both hosts is the same

Note

- Starting with Cisco IOS XR Software Release 6.6.1, for the Cisco NCS 5000 Series Satellite, auto upgrade to a reference list of software packages is possible with an optional reference keyword and reference name along with the upgrade [on-connect | on-first-connect] configuration.
- On Cisco ASR 9000 Series Router host running IOS XR 64 Bit operating system, auto upgrade for the Cisco NCS 5000 Series satellite is only possible with the reference list due to restrictions in supporting the satellite nV pie.
- Starting with Cisco IOS XR Software Release 26.2.1, Cisco 8000 Series Satellite auto upgrade requires an image reference.

Example

This example shows how to configure nV satellite auto image upgrade on a satellite:

```
RP/0/RSP0/CPU0:router # configure
RP/0/RSP0/CPU0:router(config)# nv
RP/0/RSP0/CPU0:router(config-nv)# satellite 200 upgrade on-connect


RP/0/RSP0/CPU0:router # configure
RP/0/RSP0/CPU0:router(config)# nv
RP/0/RSP0/CPU0:router(config-nv)# satellite 200 upgrade on-first-connect
```

set sdac system-mode satellite

To configure the device to operate in satellite mode under the Satellite Discovery and Control (SDAC) framework, to enable or disable authentication, and to select port modes, use the **set sdac system-mode satellite** command in the EXEC mode on the satellite device console.

set sdac system-mode satellite [**port-mode** *mode*] [**auth-mode** *mode*]

Syntax Description

set	Configures or enables the feature or parameter on the satellite device.
sdac	Manages satellite device discovery and control using SDAC protocol.
system-mode	Specifies the mode of operation for the SDAC system.
satellite	Sets the system mode to satellite, indicating this device acts as a satellite in the network.
port-mode	Sets the port speeds on the satellite device to a predetermined set of values. See Port mode configuration for the available options. These options exist only on the 8011-32Y8L2H2FH satellite.
auth-mode{enabled | disabled}	Authentication mode • auth-mode enabled: Enables enhanced authentication of a satellite to a host (default satellite mode). Use this mode if the host supports enhanced authentication. • auth-mode disabled: Disables enhanced authentication. Use this mode if the host does not support enhanced authentication.

Table 3: Port mode configuration

Mode	Description
3x100-40x10	3 x 100G ports (ports 0 to 2) and 40 x 10G ports (ports 4 to 43). Port 3 is disabled.
3x100-40x25	3 x 100G ports (ports 0 to 2) and 40 x 25G ports (ports 4 to 43). Port 3 is disabled.
4x100-32x10	4 x 100G ports (ports 0 to 3) and 32 x 10G ports (ports 12 to 43). Ports 4 to 11 are disabled.

Mode	Description
default	2 x 400G ports (ports 0 and 3) and 32 x 10G ports (ports 12 to 43). Ports 4 to 11 are disabled.

Command Default

The **auth-mode enabled** is the default satellite mode.

Command Modes

EXEC

Command History

Release	Modification
Release 26.2.1	This command was introduced and is supported on: • 8011-4G24Y4H-I • 8011-32Y8L2H2FH

Usage Guidelines

- The default satellite mode uses **auth-mode enabled**.
- To use this command, enter it in the EXEC mode on the satellite device console.
- Changing authentication or system mode may reload the router and remove all configuration.

Example

The command is executed on the satellite device. If the authentication mode (system mode) changes as a result of this command, this output is seen and the router reloads:

```
Router:Sat100#set sdac system-mode satellite auth-mode enabled
Thu Mar  5 15:54:53.882 UTC
WARNING: All configuration will be removed and the router will be reloaded.
Do you with to continue? [confirm (y/n)]
```

If the router is already in authentication mode, the command confirms this and does not reload or change the configuration:

```
Router:Sat100#set sdac system-mode satellite auth-mode enabled
Thu Mar  5 15:56:22.646 UTC
Current system mode is already set to desired mode.
Current system mode: Satellite mode (satellite authentication enabled)
```



Network Virtualization Edge System Commands

This module describes the commands used to configure the nV Edge system on the Cisco ASR 9000 Series Router.

This feature is not supported on Cisco ASR 9000 Series Router from Release 6.0.1 onwards.

- nv edge control serial, on page 46
- nv edge interface, on page 47
- show nv edge control control-link-protocols, on page 48
- show nv edge data forwarding, on page 49

nv edge control serial

To enable nV Edge system on the router, use the **nv edge control serial** command in Admin Configuration mode.

nv edge control serial *serial-number rack-number*

Syntax Description

serial-number	The serial numbers of the devices in the nV Edge system.
rack-number	Rack number. The chassis that you enter this command becomes Rack 0 and the other chassis in the nV Edge system becomes Rack 1.

Command Default

No default behavior or values

Command Modes

Admin Configuration mode

Command History

Release	Modification
Release 4.2.1	This command was introduced.
Release 6.0.1	nV Edge System is no longer supported on ASR 9000 Series Routers.

Usage Guidelines

Choose any one of the chassis as Rack 0 and enter the **nv edge control serial** *serial-number rack-number* command in admin configuration mode. The other chassis becomes Rack 1.

Example

This example shows how to enter admin configuration mode and enable nV Edge system on the router using the **nv edge control serial** *serial-number rack-number* command:

```
RP/0/RSP0/CPU0:router # admin
RP/0/RSP0/CPU0:router(admin)# configure
RP/0/RSP0/CPU0:router(admin-config)#nv edge control serial 123456ABCDE rack 0
RP/0/RSP0/CPU0:router(admin-config)#nv edge control serial 789012ABCDE rack 1
RP/0/RSP0/CPU0:router(admin-config)#commit
```

nv edge interface

To enable interchassis data link, use the **nv edge interface** command in interface configuration mode.

nv edge interface

Syntax Description

This command has no keywords or arguments.

Command Default

No default behavior or values

Command Modes

Interface Configuration

Command History

Release	Modification
Release 4.2.1	This command was introduced.
Release 6.0.1	nV Edge System is no longer supported on ASR 9000 Series Routers.

Usage Guidelines

Connect the Interchassis Data links to the 10 Gigabit Ethernet ports before issuing the **nv edge interface** command. You can only use 10 Gigabit Ethernet interfaces for interchassis data links. Use this command on both sides of the interchassis data link.

Example

This example shows how to enter interface configuration mode and enable Interchassis Data links using the **nv edge interface** command:

```
RP/0/RSP0/CPU0:router # configure
RP/0/RSP0/CPU0:router(config)#interface TenGigE 0/0/0/0
RP/0/RSP0/CPU0:router(config-if)#nv edge interface
RP/0/RSP0/CPU0:router(config-if)#commit
```

show nv edge control control-link-protocols

To display the status of interchassis control links, use the **show nv edge control control-link-protocols** command in Admin EXEC mode.

show nv edge control control-link-protocols location *node-id*

Syntax Description

location	(Optional) Specifies the location of the interface.
node-id	(Optional) Node-id entered in the *rack/slot/module* notation.

Command Default

No default behavior or values

Command Modes

Admin EXEC mode

Command History

Release	Modification
Release 4.2.1	This command was introduced.
Release 6.0.1	nV Edge System is no longer supported on ASR 9000 Series Routers.

Usage Guidelines

Connect the Interchassis Data links to the 10 Gigabit Ethernet ports before issuing the **nv edge interface** command. You can only use 10 Gigabit Ethernet interfaces for interchassis data links. Use this command on both sides of the interchassis data link.

After connecting the inter chassis control links, you need not configure them as it is on by default. Use the **show nv edge control control-link-protocols location** *node-id* command in EXEC mode to display the status of the interchassis control links.

Example

This example shows how to view the status of the interchassis control links using the **show nv edge control control-link-protocols location** *node-id* command:

```
RP/0/RSP0/CPU0:router#show nv edge control control-link-protocols location 0/RSP0/CPU0

Priority lPort Remote_lPort UDLD STP
======== ===== ============ ==== ========
0 0/RSP0/CPU0/12 1/RSP0/CPU0/12 UP Forwarding
1 0/RSP0/CPU0/13 1/RSP1/CPU0/13 UP Blocking
2 0/RSP1/CPU0/12 1/RSP1/CPU0/12 UP On Partner RSP
3 0/RSP1/CPU0/13 1/RSP0/CPU0/13 UP On Partner RSP
```

show nv edge data forwarding

To display the status of interchassis data links, use the **show nv edge data forwarding** command in Admin EXEC mode.

show nv edge data forwarding

Syntax Description

This command has no keywords or arguments.

Command Default

No default behavior or values

Command Modes

Admin EXEC mode

Command History

Release	Modification
Release 4.2.1	This command was introduced.
Release 6.0.1	nV Edge System is no longer supported on ASR 9000 Series Routers.

Usage Guidelines

No specific guidelines impact the use of this command.

Example

This example shows how to view the status of the interchassis control links using the **show nv edge control control-link-protocols location** *node-id* command:

```
RP/0/RSP0/CPU0:router#show nv edge control control-link-protocols location 0/RSP0/CPU0

Priority lPort Remote_lPort UDLD STP
======== ===== ============ ==== ========
0 0/RSP0/CPU0/12 1/RSP0/CPU0/12 UP Forwarding
1 0/RSP0/CPU0/13 1/RSP1/CPU0/13 UP Blocking
2 0/RSP1/CPU0/12 1/RSP1/CPU0/12 UP On Partner RSP
3 0/RSP1/CPU0/13 1/RSP0/CPU0/13 UP On Partner RSP
```