

Lenovo Network

REST API Programming Guide

For Cloud Network Operating System 10.1

LenovoTM

Note: Before using this information and the product it supports, read the general information in the *Safety information and Environmental Notices and User Guide* documents on the *Lenovo Documentation CD* and the *Warranty Information* document that comes with the product.

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Preface

The *REST Programming Guide for Lenovo CNOS 10.1* describes how to configure and use the Cloud Network Operating System 10.1 software on the RackSwitch G8272 (referred to as G8272 throughout this document). For documentation on installing the switch physically, see the *Installation Guide* for your G8272.

Who Should Use This Guide

This guide is intended for network installers and system administrators engaged in configuring and maintaining a network. The administrator should be familiar with Ethernet concepts, IP addressing, Spanning Tree Protocol, and SNMP configuration parameters.

What You'll Find in This Guide

This guide will help you plan, implement, and administer Cloud NOS software. Where possible, each section provides feature overviews, usage examples, and configuration instructions. The following material is included:

This book contains the following chapters:

- [Chapter 1, "Introduction,"](#) gives an overview of the Lenovo REST API and how to start the server.
- [Chapter 2, "REST Server JSON Calls,"](#) describes the URIs and functions available in the REST API.
- [Appendix A, "Getting Help and Technical Assistance,"](#) describes where to get help with your product.
- [Appendix B, "Notices,"](#) contains legal notices.

Additional References

Additional information about installing and configuring the G8272 is available in the following guides:

- *Lenovo RackSwitch G8272 Installation Guide*
- *Lenovo Network Application Guide for Lenovo Cloud Network Operating System 10.1*
- *Lenovo Network Command Reference for Lenovo Cloud Network Operating System 10.1*

Typographic Conventions

The following table describes the typographic styles used in this book.

Table 1. *Typographic Conventions*

Typeface or Symbol	Meaning	Example
ABC123	This type is used for names of commands, files, and directories used within the text. It also depicts on-screen computer output and prompts.	View the <code>readme.txt</code> file. Main#
ABC123	This bold type appears in command examples. It shows text that must be typed in exactly as shown.	Main# sys
<ABC123>	This italicized type appears in command examples as a parameter placeholder. Replace the indicated text with the appropriate real name or value when using the command. Do not type the brackets. This also shows book titles, special terms, or words to be emphasized.	To establish a Telnet session, enter: host# telnet <IP address> Read your <i>User's Guide</i> thoroughly.
[]	Command items shown inside brackets are optional and can be used or excluded as the situation demands. Do not type the brackets.	host# ls [-a]
	The vertical bar () is used in command examples to separate choices where multiple options exist. Select only one of the listed options. Do not type the vertical bar.	host# set left right
AaBbCc123	This block type depicts menus, buttons, and other controls that appear in Web browsers and other graphical interfaces.	Click the Save button.

How to Get Help

If you need help, service, or technical assistance, visit our web site at the following address:

<http://www.ibm.com/support>

The warranty card received with your product provides details for contacting a customer support representative. If you are unable to locate this information, please contact your reseller. Before you call, prepare the following information:

- Serial number of the switch unit
- Software release version number
- Brief description of the problem and the steps you have already taken
- Technical support dump information (# **display tech-support**)

Chapter 1. Introduction

The Lenovo REST Application Programming Interface (API) enables you to remotely configure and manage a Lenovo switch using REST and HyperText Transfer Protocol (HTTP).

The REST (REpresentational State Transfer) architecture has six constraints:

- Uniform Interface
- Stateless
- Cacheable
- Client-Server
- Layered Systems
- Code on Demand

The REST API is a JavaScript Object Notation-based (JSON) wrapper around Lenovo's Python On-Box Scripting interface. It is a component of Configuration, Management, and Reporting (CMR) on CNOS.

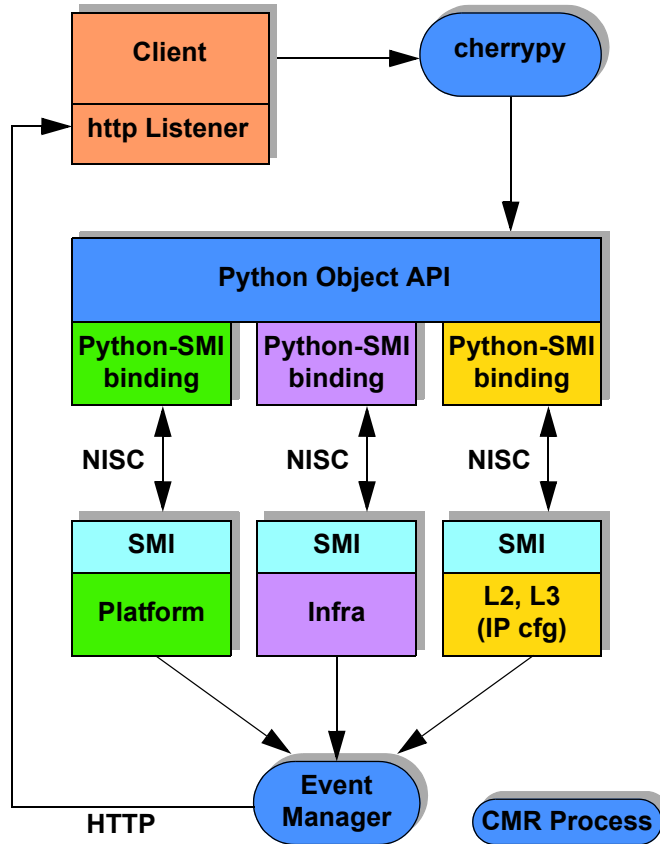
Note: The Lenovo REST API calls have been tested with:

- The Advanced Rest Client extension (version 6.19.17.118 or earlier) in Chrome
- The RESTClient extension in Firefox
- The Python3 http.client module

REST API Components

The following figure shows components of the REST API and JSON:

Figure 1. REST/JSON Components



The cherrypy server interprets the REST JSON code. When the cherrypy server receives a REST API request, it executes the appropriate Python code on Cloud NOS and translates it into a series of Simple Management Interface (SMI) calls. For each CLI connection through the console, SSH, or Telnet, a separate Cloud NOS process is spawned to service CLI commands.

Using the REST Server

This section discusses starting, stopping, and communicating with the REST server.

Starting and Stopping the REST Server

Use the CNOS CLI to start or stop the REST server.

Starting the REST Server

To start the REST server, in Command Mode on the switch, enter:

```
RS G8124(config) feature restApi
```

This starts the REST server (cherrypy) listening on port 8090 and writes the Process ID to the following PID file:

```
/var/run/restfib<VRF ID>.pid
```

where:

- *VRF ID* = 0 for the default Virtual Routing and Forwarding (VRF) ID
- *VRF ID* = 1 for the management Virtual Routing and Forwarding (VRF) ID

A separate REST server instance is created for each VRF ID created (one default, one management).

Stopping the REST Server

To stop the REST server, in Command Mode on the switch, enter:

```
RS G8124(config) no feature restApi
```

This stops the REST server from listening on port 8090 for all VRF IDs.

Communicating with the REST Server

To log onto the REST server, use the URL:

```
http://<switch address>:<port>/nos/api/login
```

Note: The default port is 8090.

Enter your username and password.

Note: You must be a “network-admin” user to use the REST API. Requests from users with other roles will be rejected.

The REST API uses the following types of HTTP methods:

- POST
- GET
- PUT
- DELETE

Request Formats

The format of a URI or URL for a resource depends upon which type of request is being sent.

Table 2. REST API URI/URL Conventions

Request Type	URI Format
POST	<code>http://<switch address>:<port>/nos/api/cfg/<resource>[parameters={<parameters>}]</code>
GET	<code>http://<switch address>:<port>/nos/api/cfg/<resource>/<ID></code>
PUT	<code>http://<switch address>:<port>/nos/api/cfg/<resource>[parameters={<parameters>}]</code>
DELETE	<code>http://<switch address>:<port>/nos/api/cfg/<resource>/<ID></code>

where:

Parameter	Description
<i>switch address:port</i>	The switch IP address and port where the REST server is installed.
<i>resource</i>	Any network or switch resource, such as an interface or a VLAN.
<i>parameters</i>	Additional parameters related to the request, presented in JSON format.

The following example shows a PUT request for interface ethernet1/1:

```
PUT /nos/api/cfg/interface/Ethernet1%2F1
{
  "duplex": "full",
  "if_name": "Ethernet1/1",
  "mtu": 1500,
  "admin_state": "up",
  "mac_addr": "a897.dcf8.1101",
  "speed": "10000"
}
```

Server Security

The REST API uses the local user database in CNOS 10.1 for authentication. All REST requests must be issued by a “network-admin” user. Requests made by any other type of user will be rejected by the REST API server.

The REST server uses cookies to identify sessions. Specifically, a cookie is assigned for each session, and its passback will be requested by the REST server. A REST API client must first issue a “Set-Cookie” request and then must pass the cookie back on all subsequent REST requests.

Getting the REST Server Status

To get the current status of the REST server, including the listening port number, enter:

```
display restApi server
```

REST Server Limitations

The following limitations apply to the REST server:

- Authentication via RADIUS or TACACS+ is not supported.
- REST API calls can *only* be made by a “network-admin” user. Requests made by any other type of user will be rejected by the REST API server.
- The only MIME type supported is “application/json”. Any other values, including no MIME type, will be rejected.
- Each request from a client must contain all information necessary for the REST server to fulfill the request. Requests with partial information will be ignored.

Chapter 2. REST Server JSON Calls

This chapter contains the JavaScript Object Notation (JSON) calls you can make to the REST server on the switch.

System

The following system URIs are available:

- /nos/api/system GET

Get System Properties

Gets basic properties of the system. All properties are version-independent.

Request

Request URI	/nos/api/system
Request Body (JSON)	

Response

```
{
  "switch_type": "{switch_type}",
  "fw_version": "{version}"
}
```

where:

Element	Description
switch_type	Switch platform type.
fw_version	The version number of the firmware running on the switch.

Interface

The following interface URIs are available:

- /nos/api/cfg/interface GET
- /nos/api/cfg/interface/<if_name> GET, PUT

The following interface commands are available:

- [Get All Interfaces](#)
- [Get Interface](#)
- [Update Interface](#)

Get All Interfaces

Get properties of all interfaces.

Request

Method Type Type	Get
Request URI	/nos/api/cfg/interface
Request Body (JSON)	

Response

Response Body (JSON)	<pre>[{ "if_name": "<if_name>", "duplex": "<duplex>", "speed": "<speed>", "mtu": {mtu}, "mac_addr": "<mac_addr>", "admin_state": "<admin_state>" }]</pre>
----------------------------	---

where:

Element	Description
if_name	The interface name (Str). Note: The interface must exist.
duplex	The communication method of the interface; auto, full, half.
speed	The communication speed of the interface; auto (auto negotiate), 10 (10Mb/s), 100 (100Mb/s), 1000 (1Gb/s), 10000 (10Gb/s), 40000 (40Gb/s).
mtu	The maximum transmission unit, in bytes; a positive integer from 64-9216.
mac_addr	The MAC address (in xxxx.xxxx,xxxx format).
admin_state	The admin status; up, down.

Get Interface

Get properties of one interface.

Request

Method Type	GET
Request URI	/nos/api/cfg/interface/<if_name>
Request Body (JSON)	

where:

Element	Description
<i>if_name</i>	The interface name (Str). Note: The interface must exist.

Response

Response Body (JSON)	<pre>{ "if_name": "<if_name>", "duplex": "<duplex>", "speed": "<speed>", "mtu": {mtu}, "mac_addr": "<mac_addr>", "admin_state": "<admin_state>" }</pre>
-------------------------	---

where:

Element	Description
<i>if_name</i>	The interface name (Str).
<i>duplex</i>	The communication method of the interface; auto, full, half.
<i>speed</i>	The communication speed of the interface; auto (auto negotiate), 10 (10Mb/s), 100 (100Mb/s), 1000 (1Gb/s), 10000 (10Gb/s), 40000 (40Gb/s).
<i>mtu</i>	The maximum transmission unit, in bytes; a positive integer from 64-9216.
<i>mac_addr</i>	The MAC address (in xxxx.xxxx,xxxx format).
<i>admin_state</i>	The admin status; up, down.

Update Interface

Update properties of one interface.

Request

Method Type	PUT
Request URI	/nos/api/cfg/interface/<if_name>
Request Body (JSON)	{ "if_name": "<if_name>", "mtu": {mtu}, "admin_state": "<admin_state>" }

where

Element	Description
<i>if_name</i>	The interface name (Str). Note: The interface must exist.
<i>mtu</i>	The maximum transmission unit, in bytes; a positive integer from 64-9216. Default value: 1500.
<i>admin_state</i>	The admin status; up (default), down.

Note: If an element is not specified in a PUT request, no update for that element will be performed.

Response

Response Body (JSON)	{ "if_name": "<if_name>", "duplex": "<duplex>", "speed": "<speed>", "mtu": "<mtu>", "mac_addr": "<mac_addr>", "admin_state": "<admin_state>" }
-------------------------	---

where:

Element	Description
<i>if_name</i>	The interface name (Str).
<i>duplex</i>	The communication method of the interface; auto, full, half.
<i>speed</i>	The communication speed of the interface; auto (auto negotiate), 10 (10Mb/s), 100 (100Mb/s), 1000 (1Gb/s), 10000 (10Gb/s), 40000 (40Gb/s).

Element	Description
mtu	The maximum transmission unit, in bytes; a positive integer from 64-9216.
mac_addr	The MAC address (in xxxx.xxxx,xxxx format).
admin_state	The admin status; up, down.

Example

Method Type	PUT
Request URI	/nos/api/cfg/interface/Ethernet1%2F5
Request Body (JSON)	<pre>{ "if_name": "Ethernet1/5", "duplex": "duplex-full", "speed": "auto", "mtu": 9216, "mac_addr": "0001_0200_0005", "admin_state": "up" }</pre>

LACP

The following LACP URIs are available:

- /nos/api/cfg/lacp GET, PUT

The following LACP commands are available:

- [Get LACP System Properties](#)
- [Update LACP System Properties](#)

Get LACP System Properties

Get the LACP properties of the system.

Request

Method Type	GET
Request URI	/nos/api/cfg/lacp
Request Body (JSON)	

Response

Response Body (JSON)	<pre>{ "sys_prio": "<sys_prio>", "max_bundle": "<max_bundle>", "interfaces": [{ "if_name": "<if_name>", "lag_mode": "<lag_mode>", "lacp_prio": "<lacp_prio>", "lacp_timeout": "<lacp_timeout>" }] }</pre>
-------------------------	---

where:

Element	Description
<i>sys_prio</i>	LACP system priority.; a positive integer from 1-65535. Default value: 32768.
<i>max_bundle</i>	The supported maximum number of links per LAG.; a positive integer.
<i>if_name</i>	Ethernet interface name (Str). Note: The interface must exist.
<i>lag_mode</i>	LAG mode; one of <code>lacp_active</code> , <code>lacp_passive</code> , <code>no_lacp</code>
<i>lacp_prio</i>	LACP priority for the physical port a positive integer from 1-65535. Default value: 32768.
<i>lacp_timeout</i>	LACP timeout for the physical port; one of <code>short</code> , <code>long</code> (default).

Update LACP System Properties

Update the LACP properties of the system.

Request

Method Type	PUT
Request URI	/nos/api/cfg/lacp
Request Body (JSON)	{ "sys_prio": "<sys_prio>", }

where:

Element	Description
<i>sys_prio</i>	LACP system priority; a positive integer from 1-65535. Default value: 32768.

Response

Response Body (JSON)	{ "sys_prio": "<sys_prio>", }
-------------------------	-------------------------------------

where:

Element	Description
<i>sys_prio</i>	LACP system priority; a positive integer from 1-65535. Default value: 32768.

LAG

The following LAG-related URIs are available:

- /nos/api/cfg/lag GET, POST, DELETE
- /nos/api/cfg/lag/{lag_id} GET, PUT, DELETE

The following LAG commands are available:

- [Get All LAGs](#)
- [Create LAG](#)
- [Get LAG](#)
- [Update LAG](#)
- [Delete LAG](#)

Get All LAGs

Get properties of all LAGs.

Request

Method Type	GET
Request URI	/nos/api/cfg/lag
Request Body (JSON)	

Response

Response Body (JSON)	<pre>[{ "lag_name": "<lag_name>", "lag_id": "<lag_id>", "interfaces": [{ "if_name": "<if_name>", "lag_mode": "<lag_mode>", "lacp_prio": "<lacp_prio>", "lacp_timeout": "<lacp_timeout>" }] }]</pre>
-------------------------	---

Create LAG

Creates a LAG.

Request

Method Type	POST
Request URI	/nos/api/cfg/lag
Request Body (JSON)	<pre>{ "lag_id": "<lag_id>", "interfaces": [{ "if_name": "<if_name>", "lag_mode": "<lag_mode>", "lacp_prio": "<lacp_prio>", "lacp_timeout": "<lacp_timeout>" }] }</pre>

where:

Element	Description
<i>lag_id</i>	LAG identifier; a positive integer from 1-4096.
<i>interfaces</i>	Physical interface members of the LAG. Up to 32 interfaces can be added.
<i>if_name</i>	Ethernet interface name (Str). Note: The interface must exist.
<i>lag_mode</i>	LAG mode; one of <code>lacp_active</code> , <code>lacp_passive</code> , <code>no_lacp</code> .
<i>lacp_prio</i>	(Optional) LACP priority for the physical port; a positive integer from 1-65535. Default value: 32768.
<i>lacp_timeout</i>	(Optional) LACP timeout for the physical port; one of <code>short</code> , <code>long</code> . Default value: <code>long</code> .

Response

Response Body (JSON)	<pre>{ "lag_id": "<lag_id>", "lag_name": "<lag_name>", "interfaces": [{ "if_name": "<if_name>", "lag_mode": "<lag_mode>", "lACP_prio": "<lACP_prio>", "lACP_timeout": "<lACP_timeout>" }] }</pre>
----------------------	---

where:

Element	Description
<i>lag_name</i>	LAG name.
<i>lag_id</i>	LAG identifier; a positive integer from 1-4096.
<i>interfaces</i>	Physical interface members of the LAG. Up to 32 interfaces can be added.
<i>if_name</i>	Ethernet interface name (Str). Note: The interface must exist.
<i>lag_mode</i>	LAG mode; one of <code>lACP_active</code> , <code>lACP_passive</code> , <code>no_lACP</code> .
<i>lACP_prio</i>	LACP priority for the physical port; a positive integer from 1-65535. Default value: 32768.
<i>lACP_timeout</i>	LACP timeout for the physical port; one of <code>short</code> , <code>long</code> . Default value: <code>long</code> .

Get LAG

Get properties of a LAG.

Request

Method Type	GET
Request URI	/nos/api/cfg/lag/<lag_id>
Request Body (JSON)	

Response

Response Body (JSON)	<pre>{ "lag_name": "<lag_name>", "lag_id": "<lag_id>", "interfaces": [{ "if_name": "<if_name>", "lag_mode": "<lag_mode>", "lACP_prio": "<lACP_prio>", "lACP_timeout": "<lACP_timeout>" }] }</pre>
-------------------------	---

where:

Element	Description
lag_name	LAG name.
lag_id	LAG identifier; a positive integer from 1-4096.
interfaces	Physical interface members of the LAG. Up to 32 interfaces can be added.
if_name	Ethernet interface name (Str). Note: The interface must exist.
lag_mode	LAG mode; one of <code>lACP_active</code> , <code>lACP_passive</code> , <code>no_lACP</code> .
lACP_prio	LACP priority for the physical port; a positive integer from 1-65535. Default value: 32768.
lACP_timeout	LACP timeout for the physical port; one of <code>short</code> , <code>long</code> . Default value: <code>long</code> .

Update LAG

Update the properties of a LAG.

Note: If an element is not specified in a PUT request, no update for that element will be performed.

Request

Method Type	PUT
Request URI	/nos/api/cfg/lag/<lag_id>
Request Body (JSON)	<pre>{ "lag_id": "<lag_id>", "interfaces": [{ "if_name": "<if_name>", "lag_mode": "<lag_mode>", "lACP_prio": "<lACP_prio>", "lACP_timeout": "<lACP_timeout>" }] }</pre>

where:

Element	Description
<i>lag_id</i>	LAG identifier; a positive integer from 1-4096.
<i>interfaces</i>	Physical interface members of the LAG. Up to 32 interfaces can be added.
<i>if_name</i>	Ethernet interface name (Str). Note: The interface must exist.
<i>lag_mode</i>	LAG mode; one of <code>lACP_active</code> , <code>lACP_passive</code> , <code>no_lACP</code> .
<i>lACP_prio</i>	(Optional) LACP priority for the physical port; a positive integer from 1-65535. Default value: 32768.
<i>lACP_timeout</i>	(Optional) LACP timeout for the physical port; one of <code>short</code> , <code>long</code> . Default value: <code>long</code> .

Response

Response Body (JSON)	<pre>{ "lag_id": "<lag_id>", "lag_name": "<lag_name>", "interfaces": [{ "if_name": "<if_name>", "lag_mode": "<lag_mode>", "lacp_prio": "<lacp_prio>", "lacp_timeout": "<lacp_timeout>" }] }</pre>
-------------------------	---

where:

Element	Description
<i>lag_name</i>	LAG name.
<i>lag_id</i>	LAG identifier; a positive integer from 1-4096.
<i>interfaces</i>	Physical interface members of the LAG. Up to 32 interfaces can be added.
<i>if_name</i>	Ethernet interface name (Str). Note: The interface must exist.
<i>lag_mode</i>	LAG mode; one of <code>lacp_active</code> , <code>lacp_passive</code> , <code>no_lacp</code> .
<i>lacp_prio</i>	LACP priority for the physical port; a positive integer from 1-65535. Default value: 32768.
<i>lacp_timeout</i>	LACP timeout for the physical port; one of <code>short</code> , <code>long</code> . Default value: <code>long</code> .

Delete LAG

Delete a LAG.

Request

Method Type	DELETE
Request URI	/nos/api/cfg/lag/<lag_id>
Request Body (JSON)	

where:

Element	Description
<i>lag_id</i>	LAG identifier; a positive integer from 1-4096.

Note: If there is no *lag_id* (*lag_id*=None or specified *lag_id* is "all"), all user-created LAGs will be deleted.

VLAN

The following VLAN-related URIs are available:

- /nos/api/cfg/vlan GET, POST
- /nos/api/cfg/vlan/<vlan_id> GET, PUT, DELETE

The following VLAN commands are available:

- [Get All VLANs](#)
- [Create VLAN](#)
- [Get VLAN](#)
- [Delete VLAN](#)

Get All VLANs

Get properties of all VLANs.

Request

Method Type	GET
Request URI	/nos/api/cfg/vlan/
Request Body (JSON)	

Response

Response Body (JSON)	<pre>[{ "vlan_name": "<vlan_name>", "vlan_id": "<vlan_id>", "admin_state": "<admin_state>", "mst_inst_id": "<mst_inst_id>", "interfaces": [{ "if_name": "<if_name>", "bridge_port_mode": "<bridge_port_mode>", "pvid": "<pvid>" }] }]</pre>
-------------------------	---

where:

Element	Description
<i>vlan_name</i>	The name of the VLAN.
<i>vlan_id</i>	VLAN number.; an integer from 2-3999.
<i>admin_state</i>	The admin status; one of up, down.
<i>mst_inst_id</i>	MST instance ID; an integer from 0-64. Default value: 0. Note: Instance 0 refers to the CIST.
<i>interfaces</i>	Interface members of a VLAN. Note: The interface members must exist.
<i>if_name</i>	Ethernet interface name (Str). Note: The ethernet interface must exist.

Create VLAN

Create a VLAN.

Request

Method Type	POST
Request URI	/nos/api/cfg/vlan
Request Body (JSON)	{ "vlan_name": "<vlan_name>", "vlan_id": "<vlan_id>", "admin_state": "<admin_state>", }

where:

Element	Description
<i>vlan_name</i>	VLAN name; a string up to 32 characters long. To create a vlan with the default name, the <i>vlan_name</i> field must be null.
<i>vlan_id</i>	VLAN number.; an integer from 2-3999.
<i>admin_state</i>	The admin status; one of up, down

Response

Response Body (JSON)	{ "vlan_name": "<vlan_name>", "vlan_id": "<vlan_id>", "admin_state": "<admin_state>", }
-------------------------	---

where:

Element	Description
<i>vlan_name</i>	The name of the VLAN.
<i>vlan_id</i>	VLAN number.; an integer from 2-3999.
<i>admin_state</i>	The admin status; one of up, down.

Get VLAN

Get properties of a VLAN.

Request

Method Type	GET
Request URI	/nos/api/cfg/vlan/<vlan_id>
Request Body (JSON)	

Response

Response Body (JSON)	<pre>{ "vlan_name": "<vlan_name>", "vlan_id": "<vlan_id>", "admin_state": "<admin_state>", "mst_inst_id": "<mst_inst_id>", "interfaces": [{ "if_name": "<if_name>", "bridge_port_mode": "<bridge_port_mode>", "pvid": "<pvid>" }] }</pre>
-------------------------	---

Update VLAN

Update properties of a VLAN.

Note: If an element is not specified in a PUT request, no update for that element will be performed.

Request

Method Type	PUT
Request URI	/nos/api/cfg/vlan/<vlan_id>
Request Body (JSON)	{ "vlan_name": "<vlan_name>", "admin_state": "<admin_state>", }

where:

Element	Description
<i>vlan_name</i>	VLAN name; a string up to 32 characters long. To change a vlan name with default name, the <i>vlan_name</i> field must be null.
<i>admin_state</i>	The admin status; one of up, down

Response

Response Body (JSON)	{ "vlan_name": "<vlan_name>", "vlan_id": "<vlan_id>", "admin_state": "<admin_state>", "mst_inst_id": "<mst_inst_id>", "interfaces": [{ "if_name": "<if_name>", "bridge_port_mode": "<bridge_port_mode>", "pvid": "<pvid>" }] }
-------------------------	--

Delete VLAN

Delete a VLAN.

Note: If the specified *vlan_id* is `a11`, all user-created VLANs will be deleted.

Request

Method Type	DELETE
Request URI	/nos/api/cfg/vlan/<vlan_id>
Request Body (JSON)	

VLAN Interface Properties

The following VLAN interface property URIs are available:

- /nos/api/cfg/vlan_interface GET, PUT

The following VLAN interface property commands are available:

- [Get VLAN Properties of All Interfaces](#)
- [Get VLAN Interface Properties](#)
- [Update VLAN Interface Properties](#)

Get VLAN Properties of All Interfaces

Get the VLAN properties of all Ethernet interfaces.

Request

Method Type	GET
Request URI	/nos/api/cfg/vlan_interface
Request Body (JSON)	

Response

Response Body (JSON)	<pre>[{ "if_name": "<if_name>", "bridge_port_mode": "<bridge_port_mode>", "pvid": "<pvid>", "vlans": ["<vlan_id>"] }]</pre>
-------------------------	---

where:

Element	Description
<i>if_name</i>	Ethernet interface name (Str). Note: The Ethernet interface must exist.
<i>bridge_port_mode</i>	Bridge port mode; one of access , trunk .
<i>pvid</i>	Native VLAN for a port (the access VLAN for access ports or the native VLAN for trunk ports); an integer from 1-3999. Default value: 1.
<i>vlans</i>	VLAN memberships; either all , none , or an integer from 1-3999.

Get VLAN Interface Properties

Get the VLAN properties of an Ethernet interface.

Request

Method Type	GET
Request URI	/nos/api/cfg/vlan_interface/<if_name>
Request Body (JSON)	

Response

Response Body (JSON)	{ "if_name": "<if_name>", "bridge_port_mode": "<bridge_port_mode>", "pvid": "<pvid>", "vlans": ["<vlan_id>"] }
-------------------------	---

where:

Element	Description
<i>if_name</i>	Ethernet interface name (Str). Note: The Ethernet interface must exist.
<i>bridge_port_mode</i>	Bridge port mode; one of access , trunk .
<i>pvid</i>	Native VLAN for a port (he access VLAN for access ports or the native VLAN for trunk ports); an integer from 1-3999. Default value: 1.
<i>vlans</i>	VLAN memberships; either all , none , or an integer from 1-3999.

Update VLAN Interface Properties

Update the VLAN properties of an Ethernet interface.

Request

Method Type	PUT
Request URI	/nos/api/cfg/vlan_interface/<if_name>
Request Body (JSON)	{ "if_name": "<if_name>", "bridge_port_mode": "<bridge_port_mode>", "pvid": "<pvid>", "vlans": ["<vlan_id>"] }

where:

Element	Description
<i>if_name</i>	Ethernet interface name (Str). Note: The Ethernet interface must exist.
<i>bridge_port_mode</i>	Bridge port mode; one of access, trunk
<i>pvid</i>	Native VLAN for a port (the access VLAN for access ports or the native VLAN for trunk ports); an integer from 1-3999. Default value: 1.
<i>vlans</i>	(Optional) VLAN memberships; all, none, or an integer from 1-3999.

Note: If an element is not specified in a PUT request, no update for that element will be performed.

Response

Response Body (JSON)	{ "if_name": "<if_name>", "bridge_port": "<bridge_port>", "bridge_port_mode": "<bridge_port_mode>", "pvid": "<pvid>", "vlans": ["<vlans>"] }
-------------------------	--

STP

The following STP URIs are available:

- /nos/api/cfg/stp_interface GET
- /nos/api/cfg/stp_interface/{if_name} GET, PUT

The following STP interface property commands are available:

- [Get STP Properties for All Interfaces](#)
- [Get STP Interface Properties](#)
- [Update STP Interface Properties](#)

Get STP Properties for All Interfaces

Get STP properties of all interfaces. These properties are supported by all STP modes.

Request

Method Type	GET
Request URI	/nos/api/cfg/stp_interface
Request Body (JSON)	

Response

Response Body (JSON)	<pre>[{ "if_name": "<if_name>", "edge_port": "<edge_port>", "bpdu_guard": "<bpdu_guard>" }]</pre>
-------------------------	---

where:

Element	Description
<i>if_name</i>	Interface name. Note: The interface must exist.
<i>edge_port</i>	Configures the interface as an edge port, which allows the port to automatically transition to the STP forwarding state; either yes or no (default).
<i>bpdu_guard</i>	Enables BPDU guard on a port, which automatically shuts down the interface upon receipt of a BPDU; either enable or disable (default).

Get STP Interface Properties

Get STP properties of one interface. These properties are supported by all STP modes.

Request

Method Type	GET
Request URI	/nos/api/cfg/stp_interface/<if_name>
Request Body (JSON)	

Response

Response Body (JSON)	{ "if_name": "<if_name>", "edge_port": "<edge_port>", "bpdu_guard": "<bpdu_guard>" }
-------------------------	--

Update STP Interface Properties

Update STP properties of one interface. These properties are supported by all STP modes.

Note: If an element is not specified in a PUT request, no update for that element will be performed.

Request

Method Type	PUT
Request URI	/nos/api/cfg/stp_interface/<if_name>
Request Body (JSON)	{ "if_name": "<if_name>", "edge_port": "<edge_port>", "bpdu_guard": "<bpdu_guard>" }

where:

Element	Description
<i>if_name</i>	Interface name. Note: The interface must exist.
<i>edge_port</i>	Configures the interface as an edge port, which allows the port to automatically transition to the STP forwarding state; either <code>yes</code> or <code>no</code> (default).
<i>bpdu_guard</i>	Enables BPDU guard on a port, which automatically shuts down the interface upon receipt of a BPDU; either <code>enable</code> or <code>disable</code> (default).

Response

Response Body (JSON)	{ "if_name": "<if_name>", "edge_port": "<edge_port>", "bpdu_guard": "<bpdu_guard>" }
-------------------------	--

MSTP

The following MSTP URIs are available:

- /nos/api/cfg/mstp GET, PUT
- /nos/api/cfg/mstp_instance GET, POST
- /nos/api/cfg/mstp_instance/<instance_number>
GET, PUT, DELETE
- /nos/api/cfg/mstp_interface/<instance_number>/<if_name>
GET, PUT

The following MSTP commands are available:

- [Get MSTP System Properties](#)
- [Update MSTP System Properties](#)
- [Get Properties of All MSTP Instances](#)
- [Create MSTP Instance](#)
- [Get MSTP Instance](#)
- [Update MSTP Instance](#)
- [Delete MSTP Instance](#)
- [Get Interface Properties of an MSTP Instance](#)
- [Update Interface Properties of an MSTP Instance](#)

Get MSTP System Properties

Update global MSTP properties of the system.

Request

Method Type	GET
Request URI	/nos/api/cfg/mstp
Request Body (JSON)	

Response

Response Body (JSON)	{ "region_name": "<region_name>" "revision": "<revision>" }
-------------------------	--

where:

Element	Description
<i>region_name</i>	Region name; a string up to 32 characters long.
<i>revision</i>	Revision number; an integer from 0-65535.

Update MSTP System Properties

Update global MSTP properties of the system.

Note: If an element is not specified in a PUT request, no update for that element will be performed.

Request

Method Type	PUT
Request URI	/nos/api/cfg/mstp
Request Body (JSON)	{ "region_name": "<region_name>" "revision": "<revision>" }

where:

Element	Description
<i>region_name</i>	Region name; a string up to 32 characters long.
<i>revision</i>	Revision number; an integer from 0-65535.

Response

Response Body (JSON)	{ "region_name": "<region_name>" "revision": "<revision>" }
-------------------------	--

Get Properties of All MSTP Instances

Get properties of all MSTP instances.

Request

Method Type	GET
Request URI	/nos/api/cfg/mstp_instance
Request Body (JSON)	

Response

Response Body (JSON)	<pre>[{ "instance_id": "<instance_id>", "instance_prio": "<instance_prio>", "vlans": [{ "vlan_id": "<vlan_id>" }] }]</pre>
-------------------------	--

where:

Element	Description
<i>instance_id</i>	MST instance ID; an integer from 0-64. Instance 0 refers to the CIST.
<i>instance_prio</i>	Sets the instance bridge priority; an integer from 0-61440. Default value: 32768.
<i>vlans</i>	Maps a range of VLANs to a multiple spanning tree instance (MSTI); an integer from 1-4094.

Create MSTP Instance

Create an MSTP instance.

Request

Method Type	POST
Request URI	/nos/api/cfg/mstp_instance
Request Body (JSON)	<pre>{ "instance_id": "<instance_id>", "instance_prio": "<instance_prio>", "vlans": [{ "vlan_id": "<vlan_id>" }] }</pre>

where:

Element	Description
<i>instance_id</i>	MST instance ID; an integer from 0-64. Instance 0 refers to the CIST.
<i>instance_prio</i>	Sets the instance bridge priority; an integer from 0-61440. Default value: 32768.
<i>vlans</i>	Maps a range of VLANs to a multiple spanning tree instance (MSTI); an integer from 1-4094.

Response

Response Body (JSON)	<pre>{ "instance_id": "<instance_id>", "instance_prio": "<instance_prio>", "vlans": [{ "vlan_id": "<vlan_id>" }] }</pre>
-------------------------	--

Get MSTP Instance

Get properties of an MSTP instance.

Request

Method Type	GET
Request URI	/nos/api/cfg/mstp_instance/<instance_id>
Request Body (JSON)	

Response

Response Body (JSON)	<pre>{ "instance_id": "<instance_id>", "instance_prio": "<instance_prio>", "vlans": [{ "vlan_id": "<vlan_id>" }] }</pre>
-------------------------	--

Update MSTP Instance

Update the properties of an MSTP instance.

Note: If an element is not specified in a PUT request, no update for that element will be performed.

Request

Method Type	PUT
Request URI	/nos/api/cfg/mstp_instance/<instance_id>
Request Body (JSON)	<pre>{ "instance_id": "<instance_id>", "instance_prio": "<instance_prio>", "vlans": [{ "vlan_id": "<vlan_id>" }] }</pre>

where:

Element	Description
<i>instance_id</i>	MST instance ID; an integer from 0-64. Instance 0 refers to the CIST.
<i>instance_prio</i>	Sets the instance bridge priority; an integer from 0-61440. Default value: 32768.
<i>vlans</i>	Maps a range of VLANs to a multiple spanning tree instance (MSTI); an integer from 1-4094.

Response

Response Body (JSON)	<pre>{ "instance_id": "<instance_id>", "instance_prio": "<instance_prio>", "vlans": [{ "vlan_id": "<vlan_id>" }] }</pre>
-------------------------	--

Delete MSTP Instance

Delete an MSTP instance.

Request

Method Type	DELETE
Request URI	/nos/api/cfg/mstp_instance/<instance_id>
Request Body (JSON)	

where:

Element	Description
<i>instance_id</i>	MST instance ID; an integer from 0-64. Instance 0 refers to the CIST.

Get Interface Properties of an MSTP Instance

Get properties of one interface in an MSTP instance.

Request

Method Type	GET
Request URI	/nos/api/cfg/mstp_interface/<instance_id>/<if_name>
Request Body (JSON)	

Response

Response Body (JSON)	{ "if_name": "<if_name>", "path_cost": "<path_cost>", "port_prio": "<port_prio>" }
-------------------------	--

where:

Element	Description
<i>if_name</i>	Interface name. Note: The interface must exist.
<i>path_cost</i>	The port path-cost value on the specified MST instance; either an integer from 1-200000000 or auto (default) to base the path-cost on port speed.
<i>port_prio</i>	The port priority, in increments of 32, on the specified MST instance; a multiple of 32 from 0-224. Default value: 128.

Update Interface Properties of an MSTP Instance

Update the properties of one interface in an MSTP instance.

Request

Method Type	PUT
Request URI	/nos/api/cfg/mstp_interface/{instance_id}/<if_name>
Request Body (JSON)	{ "if_name": "<if_name>", "path_cost": "<path_cost>", "port_prio": "<port_prio>" }

where:

Element	Description
<i>if_name</i>	Interface name. Note: The interface must exist.
<i>path_cost</i>	The port path-cost value on the specified MST instance; either an integer from 1-200000000 or auto (default) to base the path-cost on port speed.
<i>port_prio</i>	The port priority, in increments of 32, on the specified MST instance; a multiple of 32 from 0-224. Default value: 128.

Response

Response Body (JSON)	{ "if_name": "<if_name>", "path_cost": "<path_cost>", "port_prio": "<port_prio>" }
-------------------------	--

LLDP

The following LLDP URIs are available:

- /nos/api/cfg/lldp GET, PUT
- /nos/api/cfg/lldp/lldp_interface GET
- /nos/api/cfg/lldp/lldp_interface/{eth_if_name} GET, PUT
- /nos/api/cfg/lldp/lldp_interface/statistics/{eth_if_name} GET
- /nos/api/cfg/lldp/lldp_interface/neighbor/{eth_if_name} GET
- /nos/api/cfg/lldp/lldp_interface/neighbor GET

The following LLDP commands are available:

- [Get LLDP System Properties](#)
- [Update LLDP System Properties](#)
- [Get LLDP Properties for All Interfaces](#)
- [Get LLDP Interface Properties](#)
- [Update LLDP Interface Properties](#)
- [GET LLDP Interface Statistics](#)
- [GET LLDP Interface Neighbor information](#)
- [GET LLDP Neighbor Information for All Interfaces](#)

Get LLDP System Properties

Get global LLDP properties of the system.

Request

Method Type	GET
Request URI	/nos/api/cfg/lldp
Request Body (JSON)	

Response

Response Body (JSON)	{ "reinit delay": "<reinit delay>", "transit interval": "<transmit interval>", "transmit delay": "<transmit delay>" }
-------------------------	---

where:

Element	Description
<i>reinit delay</i>	The number of seconds until LLDP re-initialization is attempted on an interface; an integer from 1-10. Default value: 2 seconds.
<i>transmit interval</i>	The time interval, in seconds, between transmissions of LLDP messages; an integer from 5-32768. Default value: 30 seconds.
<i>transmit delay</i>	The number of seconds for transmission delay; an integer from 1-8192. Default value: 2 seconds.

Update LLDP System Properties

Update the global LLDP properties of the system.

Request

Method Type	PUT
Request URI	/nos/api/cfg/lldp
Request Body (JSON)	{ "reinit delay": "<reinit delay>", "transit interval": "<transmit interval>", "transmit delay": "<transmit delay>" }

where:

Element	Description
<i>reinit delay</i>	The number of seconds until LLDP re-initialization is attempted on an interface; an integer from 1-10. Default value: 2 seconds.
<i>transmit interval</i>	The time interval, in seconds, between transmissions of LLDP messages; an integer from 5-32768.. Default value: 30 seconds.
<i>transmit delay</i>	The number of seconds for transmission delay; an integer from 1-8192. Default value: 2 seconds.

Response

Response Body (JSON)	{ "reinit delay": "<reinit delay>", "transit interval": "<transmit interval>", "transmit delay": "<transmit delay>" }
-------------------------	---

Get LLDP Properties for All Interfaces

Get LLDP properties of all interfaces.

Request

Method Type	GET
Request URI	/nos/api/cfg/lldp/lldp_interface
Request Body (JSON)	

Response

Response Body (JSON)	<pre>[{ "if_name": "<if_name>", "ena_lldp_rx": "<ena_lldp_rx>", "ena_lldp_tx": "<ena_lldp_tx>" }]</pre>
-------------------------	---

where:

Element	Description
<i>if_name</i>	Ethernet interface name (Str). Note: The Ethernet interface must exist.
<i>ena_lldp_rx</i>	Enables or disables LLDP frame reception on a physical interface; one of yes (default), no.
<i>ena_lldp_tx</i>	Enables or disable sLLDP frame transmission on a physical interface; one of yes (default), no.

Get LLDP Interface Properties

Get LLDP properties of one interface.

Request

Method Type	GET
Request URI	/nos/api/cfg/lldp/lldp_interface/{eth_if_name}
Request Body (JSON)	

Response

Response Body (JSON)	{ "if_name": "<if_name>", "ena_lldp_rx": "<ena_lldp_rx>", "ena_lldp_tx": "<ena_lldp_tx>" }
-------------------------	--

Update LLDP Interface Properties

Update the LLDP properties of one interface.

Request

Method Type	PUT
Request URI	/nos/api/cfg/lldp/lldp_interface/<eth_if_name>
Request Body (JSON)	{ "if_name": "<if_name>", "ena_lldp_rx": "<ena_lldp_rx>", "ena_lldp_tx": "<ena_lldp_tx>" }

where:

Element	Description
<i>if_name</i>	Ethernet interface name (Str). Note: The Ethernet interface must exist.
<i>ena_lldp_rx</i>	Enables or disables LLDP frame reception on a physical interface; one of yes (default), no .
<i>ena_lldp_tx</i>	Enables or disable sLLDP frame transmission on a physical interface; one of yes (default), no .

Response

Response Body (JSON)	{ "if_name": "<if_name>", "ena_lldp_rx": "<ena_lldp_rx>", "ena_lldp_tx": "<ena_lldp_tx>" }
-------------------------	--

GET LLDP Interface Statistics

Get LLDP interface statistics per interface.

Request

Method Type	GET
Request URI	/nos/api/cfg/lldp/lldp_interface/statistics/<eth_if_name>
Request Body (JSON)	

Response

Response Body (JSON)	<pre>{ "total frames": "<total_frames>", "total tlvs discarded": "<total_tlvs_discarded>", "total frames transmitted": "<total_frames_transmitted>", "total errored frames": "<total_errored_frames>", "total frames discarded": "<total_frames_discarded>", "total entries aged": "<total_entries_aged>", "total tlvs unrecognized": "<total_tlvs_unrecognized>" }</pre>
-------------------------	---

where:

Element	Description
total frames	The total number of LLDP frames received.
total tlvs discarded	The total number of LLDP TLVs discarded.
total frames transmitted	The total number of LLDP frames transmitted.
total errored frames	The total number of frames received with errors.
total frames discarded	The total number of discarded frames.
total entries aged	The total number of entries aged out.
total tlvs unrecognized	The total number of unrecognized LLDP TLVs.

GET LLDP Interface Neighbor information

Get LLDP interface neighbor information

Request

Method Type	GET
Request URI	/nos/api/cfg/lldp/lldp_interface/neighbor/<eth_if_name>
Request Body (JSON)	

Response

Response Body (JSON)	{ "if_name": "<if_name>", "capability": "<capability>", "rx ttl": "<rx ttl>", "system name": "<system name>", "system description": "<system description>" }
-------------------------	--

where:

Element	Description
<i>if_name</i>	Ethernet interface name (Str). Note: The Ethernet interface must exist.
<i>capability</i>	Remote switch capability; one of (B) - Bridge, (R) - Router.
<i>rx ttl</i>	The TTL.
<i>system name</i>	Remote system name.
<i>system description</i>	Remote system description.

GET LLDP Neighbor Information for All Interfaces

Get LLDP neighbor information for all interfaces

Request

Method Type	GET
Request URI	/nos/api/cfg/lldp/lldp_interface/neighbor
Request Body (JSON)	

Response

Response Body (JSON)	<pre>[{ "if_name": "<if_name>", "capability": "<capability>", "rx_ttl": "<rx_ttl>", "system name": "<system name>", "system description": "<system description>" }]</pre>
-------------------------	---

where:

Element	Description
<i>if_name</i>	Ethernet interface name (Str). Note: The Ethernet interface must exist.
<i>capability</i>	Remote switch capability; one of (B) - Bridge, (R) - Router.
<i>rx_ttl</i>	The TTL.
<i>system name</i>	Remote system name.
<i>system description</i>	Remote system description.

VRF

The following VRF URIs are available:

- /nos/api/cfg/vrf GET
- /nos/api/cfg/vrf/<vrf_name> GET

The following VRF commands are available:

- [Get All VRFs](#)
- [Get VRF](#)

Get All VRFs

Get properties of all VRFs.

Request

Method Type	GET
Request URI	/nos/api/cfg/vrf
Request Body (JSON)	

Response

Response Body (JSON)	[{ "vrf_name": "<vrf_name>", "interfaces": ["<if_name>"] }]
-------------------------	--

where:

Element	Description
<i>vrf_name</i>	VRF name; a string up to 64 characters long.
<i>interfaces</i>	Interface members of the VRF. Note: The interfaces must exist.

Get VRF

Get properties of one VRF.

Request

Method Type	GET
Request URI	/nos/api/cfg/vrf/<vrf_name>
Request Body (JSON)	

Response

Response Body (JSON)	<pre>{ "vrf_name": "<vrf_name>", "interfaces": ["<if_name>"] }</pre>
-------------------------	--

IP Interface

The following IP interface URIs are available:

- /nos/api/cfg/ip_interface GET
- /nos/api/cfg/ip_interface/{if_name} GET, PUT

The following IP interface commands are available:

- [Get IP Properties of All Interfaces](#)
- [Get IP Interface Properties](#)
- [Update IP Interface Properties](#)

Get IP Properties of All Interfaces

Get IP properties of all interfaces.

Request

Method Type	GET
Request URI	/nos/api/cfg/ip_interface
Request Body (JSON)	

Response

Response Body (JSON)	<pre>[{ "if_name": "<if_name>", "bridge_port": "<bridge_port>", "mtu": {mtu}, "ip_addr": "<ip_addr>", "ip_prefix_len": "<ip_prefix_len>", "vrf_name": "<vrf_name>", "admin_state": "<admin_state>" }]</pre>
-------------------------	---

where:

Element	Description
<i>if_name</i>	IP interface name (Str). Note: The interface must exist.
<i>bridge_port</i>	Whether or not the port is a bridge port; one of yes (default), no.
<i>mtu</i>	The maximum transmission unit, in bytes; an integer from 64-9216. Default value: 1500.
<i>ip_addr</i>	IP address for the interface.
<i>ip_prefix_len</i>	IP address mask; a positive integer from 1-32.
<i>vrf_name</i>	The name of the VRF to which the interface belongs. Note: The named VRF must exist.
<i>admin_state</i>	The admin status; one of up, down.

Get IP Interface Properties

Get IP properties of one interface.

Request

Method Type	GET
Request URI	/nos/api/cfg/ip_interface/<ip_if_name>
Request Body (JSON)	

Response

Response Body (JSON)	<pre>{ "if_name": "<if_name>", "bridge_port": "<bridge_port>", "mtu": <mtu>, "ip_addr": "<ip_addr>", "ip_prefix_len": "<ip_prefix_len>", "vrf_name": "<vrf_name>", "admin_state": "<admin_state>" }</pre>
-------------------------	---

where:

Element	Description
<i>if_name</i>	IP interface name (Str). Note: The interface must exist.
<i>bridge_port</i>	Whether or not the port is a bridge port; one of yes (default), no .
<i>mtu</i>	The maximum transmission unit, in bytes; an integer from 64-9216. Default value: 1500.
<i>ip_addr</i>	IP address for the interface.
<i>ip_prefix_len</i>	IP address mask; a positive integer from 1-32.
<i>vrf_name</i>	The name of the VRF to which the interface belongs. Note: The named VRF must exist.
<i>admin_state</i>	The admin status; one of up , down .

Update IP Interface Properties

Update the IP properties of one interface.

Note: If an element is not specified in a PUT request, no update for that element will be performed.

Request

Method Type	PUT
Request URI	/nos/api/cfg/ip_interface/<ip_if_name>
Request Body (JSON)	{ "if_name": "<if_name>", "bridge_port": "<bridge_port>", "mtu": <mtu>, "ip_addr": "<ip_addr>", "ip_prefix_len": "<ip_prefix_len>", "vrf_name": "<vrf_name>", "admin_state": "<admin_state>" }

where:

Element	Description
<i>if_name</i>	IP interface name (Str). Note: The interface must exist.
<i>bridge_port</i>	Whether or not the port is a bridge port; one of yes (default), no.
<i>mtu</i>	The maximum transmission unit, in bytes; an integer from 64-9216. Default value: 1500.
<i>ip_addr</i>	IP address for the interface.
<i>ip_prefix_len</i>	IP address mask; a positive integer from 1-32.
<i>vrf_name</i>	The name of the VRF to which the interface belongs. Note: The named VRF must exist.
<i>admin_state</i>	The admin status; one of up, down.

Response

Response Body (JSON)	{ "if_name": "<if_name>", "bridge_port": "<bridge_port>", "mtu": <mtu>, "ip_addr": "<ip_addr>", "ip_prefix_len": "<ip_prefix_len>", "vrf_name": "<vrf_name>", "admin_state": "<admin_state>" }
-------------------------	--

ARP

The following ARP URIs are available:

- /nos/api/cfg/arp GET, PUT
- /nos/api/cfg/arp_interface GET
- /nos/api/cfg/arp_interface/<if_name> GET, PUT

The following ARP commands are available:

- [Get ARP System Properties](#)
- [Update ARP System Properties](#)
- [Get ARP Properties of All Interfaces](#)
- [Get ARP Interface Properties](#)
- [Update ARP Interface Properties](#)

Get ARP System Properties

Get global ARP properties of the system.

Request

Method Type	GET
Request URI	/nos/api/cfg/arp
Request Body (JSON)	

Response

Response Body (JSON)	{ "ageout_time": "<ageout_time>" }
-------------------------	--

where:

Element	Description
<i>ageout_time</i>	The global ARP entry age-out time, in seconds; an integer from 60-28800. Default value: 1500 seconds.

Update ARP System Properties

Update the global ARP properties of the system.

Request

Method Type	PUT
Request URI	/nos/api/cfg/arp
Request Body (JSON)	{ "ageout_time": "<ageout_time>" }

where:

Element	Description
<i>ageout_time</i>	The global ARP entry age-out time, in seconds; an integer from 60-28800. Default value: 1500 seconds.

Response

Response Body (JSON)	{ "ageout_time": "<ageout_time>" }
-------------------------	--

Get ARP Properties of All Interfaces

Get ARP properties of all interfaces.

Request

Method Type	GET
Request URI	/nos/api/cfg/arp_interface
Request Body (JSON)	

Response

Response Body (JSON)	[{ "if_name": "<if_name>", "ageout_time": "<ageout_time>" }]
-------------------------	---

where:

Element	Description
<i>if_name</i>	IP interface name (Str). Note: The interface must exist.
<i>ageout_time</i>	The global ARP entry age-out time, in seconds; an integer from 60-28800. Default value: 1500 seconds.

Get ARP Interface Properties

Get ARP properties of one interface.

Request

Method Type	GET
Request URI	/nos/api/cfg/arp_interface/<if_name>
Request Body (JSON)	

Response

Response Body (JSON)	[{ "if_name": "<if_name>", "ageout_time": "<ageout_time>" }]
-------------------------	---

where:

Element	Description
<i>if_name</i>	IP interface name (Str). Note: The interface must exist.
<i>ageout_time</i>	The global ARP entry age-out time, in seconds; an integer from 60-28800. Default value: 1500 seconds.

Update ARP Interface Properties

Update the ARP properties of one interface.

Request

Method Type	PUT
Request URI	/nos/api/cfg/arp_interface/<if_name>
Request Body (JSON)	

where:

Element	Description
<i>if_name</i>	The IP interface name (Str). Note: The interface must exist.
<i>ageout_time</i>	The global ARP entry age-out time, in seconds; an integer from 60-28800. Default value: 1500 seconds.

Response

Response Body (JSON)	[{ "if_name": "<if_name>", "ageout_time": "<ageout_time>" }]
-------------------------	---

where:

Element	Description
<i>if_name</i>	The IP interface name (Str).
<i>ageout_time</i>	The global ARP entry age-out time, in seconds; an integer from 60-28800. Default value: 1500 seconds.

Static ARP

The following static ARP URIs are available:

- /nos/api/cfg/arp_entry GET
- /nos/api/cfg/arp_entry/<if_name> GET, POST
- /nos/api/cfg/arp_entry/<if_name>/<ip_addr> GET, PUT, DELETE

The following static ARP commands are available:

- [Get Static ARP Entries of All Interfaces](#)
- [Get Static ARP Entries of One Interface](#)
- [Create Static ARP Entry](#)
- [Get Static ARP Entry](#)
- [Update Static ARP Entry](#)
- [Delete Static ARP Entry](#)

Get Static ARP Entries of All Interfaces

Get all static ARP entries of all interfaces.

Request

Method Type	GET
Request URI	/nos/api/cfg/arp_entry
Request Body (JSON)	

Response

Response Body (JSON)	<pre>[{ "if_name": "<if_name>", "ip_addr": "<ip_addr>", "mac_addr": "<mac_addr>" }]</pre>
-------------------------	---

where:

Element	Description
<i>if_name</i>	Interface name. Note: The interface must exist.
<i>ip_addr</i>	The IP address.
<i>mac_addr</i>	The MAC address (in <i>xxxx_xxxx_xxxx</i> format).

Get Static ARP Entries of One Interface

Get all static ARP entries under the specified interface.

Request

Method Type	GET
Request URI	/nos/api/cfg/arp_entry/<if_name>
Request Body (JSON)	

Response

Response Body (JSON)	[{ "if_name": "<if_name>", "ip_addr": "<ip_addr>", "mac_addr": "<mac_addr>" }]
-------------------------	--

where:

Element	Description
<i>if_name</i>	Interface name. Note: The interface must exist.
<i>ip_addr</i>	The IP address.
<i>mac_addr</i>	The MAC address (in <i>xxxx.xxxx.xxxx</i> format).

Create Static ARP Entry

Create a static ARP entry under the specified interface.

Request

Method Type	POST
Request URI	/nos/api/cfg/arp_entry/<if_name>
Request Body (JSON)	{ "if_name": "<if_name>", "ip_addr": "<ip_addr>", "mac_addr": "<mac_addr>" }

where:

Element	Description
<i>if_name</i>	Interface name. Note: The interface must exist.
<i>ip_addr</i>	The IP address.
<i>mac_addr</i>	The MAC address (in <i>xxxx_xxxx_xxxx</i> format).

Response

Response Body (JSON)	[{ "if_name": "<if_name>", "ip_addr": "<ip_addr>", "mac_addr": "<mac_addr>" }]
-------------------------	--

Get Static ARP Entry

Get one static ARP entry under the specified interface.

Request

Method Type	GET
Request URI	/nos/api/cfg/arp_entry/<if_name>/<ip_addr>
Request Body (JSON)	

Response

Response Body (JSON)	{ "if_name": "<if_name>", "ip_addr": "<ip_addr>", "mac_addr": "<mac_addr>" }
-------------------------	--

where:

Element	Description
<i>if_name</i>	Interface name. Note: The interface must exist.
<i>ip_addr</i>	The IP address.
<i>mac_addr</i>	The MAC address (in <i>xxxx_xxxx_xxxx</i> format).

Update Static ARP Entry

Update properties of one static ARP entry under the specified interface.

Request

Method Type	PUT
Request URI	/nos/api/cfg/arp_entry/<if_name>/<ip_addr>
Request Body (JSON)	{ "if_name": "<if_name>", "ip_addr": "<ip_addr>", "mac_addr": "<mac_addr>" }

where:

Element	Description
<i>if_name</i>	Interface name. Note: The interface must exist.
<i>ip_addr</i>	The IP address.
<i>mac_addr</i>	The MAC address (in <i>xxxx_xxxx_xxxx</i> format).

Response

Response Body (JSON)	{ "if_name": "<if_name>", "ip_addr": "<ip_addr>", "mac_addr": "<mac_addr>" }
-------------------------	--

Delete Static ARP Entry

Delete a static ARP entry under the specified interface.

Note: If the specified *ip_addr* is `all`, all static ARP entries under specified interface will be deleted.

Request

Method Type	DELETE
Request URI	<code>/nos/api/cfg/arp_entry/<if_name>/<ip_addr></code>
Request Body (JSON)	

Static Routes

The following static route URIs are available:

- `/nos/api/cfg/static_route_entry/<vrf_name>` GET, POST
- `/nos/api/cfg/static_route_entry/<vrf_name>/<ip_dest>/<ip_prefix_len>`
GET, PUT, DELETE

The following static route commands are available:

- [Get All Static Routes](#)
- [Create Static Route](#)
- [Get Static Route](#)
- [Update Static Route](#)
- [Delete Static Route](#)

Get All Static Routes

Get all static routes in the specified VRF.

Request

Method Type	GET
Request URI	/nos/api/cfg/static_route_entry/<vrf_name>
Request Body (JSON)	

Response

Response Body (JSON)	<pre>[{ "vrf_name": "<vrf_name>", "ip_dest": "<ip_dest>", "ip_prefix_len": "<ip_prefix_len>", "ip_gw": "<ip_gw>", "if_name": "<if_name>", "dist": "<dist>", "desc": "<desc>", "tag": "<tag>" }]</pre>
-------------------------	---

where:

Element	Description
<i>vrf_name</i>	The VRF name. Note: The named VRF must exist.
<i>ip_dest</i>	The destination IP network; 0.0.0.0 is the default gateway.
<i>ip_prefix_len</i>	The IP prefix length; an integer from 0-32, with 0 being the default gateway.
<i>ip_gw</i>	The gateway IP address.
<i>if_name</i>	Interface name used for communication. Note: The interface must exist.
<i>dist</i>	The distance value for the route; an integer from 1-255. Default value: 1.
<i>desc</i>	Description of the static route; a string.
<i>tag</i>	The tag value; an integer from 0-4294967295.

Create Static Route

Create a static route in the specified VRF.

Request

Method Type	POST
Request URI	/nos/api/cfg/static_route_entry/<vrf_name>
Request Body (JSON)	{ "vrf_name": "<vrf_name>", "ip_dest": "<ip_dest>", "ip_prefix_len": "<ip_prefix_len>", "ip_gw": "<ip_gw>", "if_name": "<if_name>", "dist": "<dist>", "desc": "<description>", "tag": "<tag>" }

where:

Element	Description
<i>vrf_name</i>	(Optional) The VRF name. Note: The named VRF must exist.
<i>ip_dest</i>	The destination IP network; 0.0.0.0 is the default gateway.
<i>ip_prefix_len</i>	The IP prefix length; an integer from 0-32, with 0 being the default gateway.
<i>ip_gw</i>	The gateway IP address.
<i>if_name</i>	Interface name used for communication. Note: The interface must exist.
<i>dist</i>	The distance value for the route; an integer from 1-255. Default value: 1.
<i>desc</i>	(Optional) Description of the static route; a string.
<i>tag</i>	(Optional) The tag value; an integer from 0-4294967295.

Response

Response Body (JSON)	{ "vrf_name": "<vrf_name>", "ip_dest": "<ip_dest>", "ip_prefix_len": "<ip_prefix_len>", "ip_gw": "<ip_gw>", "if_name": "<if_name>", "dist": "<dist>", "desc": "<description>", "tag": "<tag>" }
-------------------------	--

Get Static Route

Get a static route in the specified VRF.

Request

Method Type	GET
Request URI	/nos/api/cfg/static_route_entry/<vrf_name>/<ip_dest>/<ip_prefix_len>
Request Body (JSON)	

Response

Response Body (JSON)	<pre>{ "vrf_name": "<vrf_name>", "ip_dest": "<ip_dest>", "ip_prefix_len": "<ip_prefix_len>", "ip_gw": "<ip_gw>", "if_name": "<if_name>", "dist": "<dist>", "desc": "<description>", "tag": "<tag>" }</pre>
-------------------------	--

Update Static Route

Update a static route in the specified VRF.

Request

Method Type	PUT
Request URI	/nos/api/cfg/static_route_entry/<vrf_name>/<ip_dest>/<ip_prefix_len>
Request Body (JSON)	{ "vrf_name": "<vrf_name>", "ip_dest": "<ip_dest>", "ip_prefix_len": "<ip_prefix_len>", "ip_gw": "<ip_gw>", "if_name": "<if_name>", "dist": "<dist>", "desc": "<desc>", "tag": "<tag>" }

where:

Element	Description
<i>vrf_name</i>	The VRF name. Note: The named VRF must exist.
<i>ip_dest</i>	The destination IP network; 0.0.0.0 is the default gateway.
<i>ip_prefix_len</i>	The IP prefix length; an integer from 0-32, with 0 being the default gateway.
<i>ip_gw</i>	The gateway IP address.
<i>if_name</i>	Interface name used for communication. Note: The interface must exist.
<i>dist</i>	(Optional) The distance value for the route; an integer from 1-255. Default value: 1.
<i>desc</i>	(Optional) Description of the static route; a string.
<i>tag</i>	(Optional) The tag value; an integer from 0-4294967295.

Response

Response Body (JSON)	{ "vrf_name": "<vrf_name>", "ip_dest": "<ip_dest>", "ip_prefix_len": "<ip_prefix_len>", "ip_gw": "<ip_gw>", "if_name": "<if_name>", "dist": "<dist>", "desc": "<description>", "tag": "<tag>" }
-------------------------	--

Delete Static Route

Delete a static route in the specified VRF.

Note: If the specified *ip_dest* is a.l.l, all static routes entries in the specified interface will be deleted.

Request

Method Type	DELETE
Request URI	/nos/api/cfg/static_route_entry/<vrf_name>/<ip_dest>/<ip_prefix_len>
Request Body (JSON)	

VRRP

The following VRRP URIs are available:

- /nos/api/cfg/vrrp GET
- /nos/api/cfg/vrrp/<if_name> GET, POST
- /nos/api/cfg/vrrp/<if_name>/<vr_id> GET, PUT, DELETE

The following VRRP commands are available:

- [Get VRRP VRs of All Interfaces](#)
- [Get VRRP VRs of One Interface](#)
- [Create VRRP VR](#)
- [Get VRRP VR](#)
- [Update VRRP VR](#)
- [Delete VRRP VR](#)

Get VRRP VRs of All Interfaces

Get properties of all VRRP VRs of all interfaces.

Request

Method Type	GET
Request URI	/nos/api/cfg/vrrp
Request Body (JSON)	

Response

Response Body (JSON)	<pre>[{ "if_name": "<if_name>", "vr_id": "<vr_id>", "ip_addr": "<ip_addr>", "ad_intvl": "<ad_intvl>", "preempt": "<preempt>", "prio": "<prio>", "admin_state": "<admin_state>", "oper_state": "<oper_state>", "track_if": "<track_if>", "accept_mode": "<accept_mode>", "switch_back_delay": "<switch_back_delay>", "v2_compt": "<v2_compt>" }]</pre>
-------------------------	---

where:

Element	Description
<i>if_name</i>	Interface name. Note: The interface must exist.
<i>vr_id</i>	The VRRP session Virtual Router (VR) ID; an integer from 1-255. Default value is 0.
<i>ip_addr</i>	The IP address of the VR; a valid IPv4 address.
<i>ad_intvl</i>	Advertisement interval (The number of centi-seconds between advertisements for VRRPv3); a multiple of 5 from 5-4095. Default value: 100 centi-seconds.
<i>preempt</i>	Enable the preemption of a lower priority master; one of yes (default), no .
<i>prio</i>	The priority of the VR on the switch; an integer from 1-254. Default value: 100.
<i>admin_state</i>	Enable the VR one of up (default), down .

Element	Description
<i>oper_state</i>	The operation state of the VR; one of <i>master</i> , <i>backup</i> , <i>init</i> .
<i>track_if</i>	The interface to track by this VR. Default value: <i>none</i> . Note: If an interface is specified, it must exist.
<i>accept_mode</i>	Enables or disables the accept mode for this session; one of <i>yes</i> (default), <i>no</i> .
<i>switch_back_delay</i>	The switch back delay interval; an integer from 1-500000, or 0 to disable (default).
<i>v2_compt</i>	Enables backward compatibility for VRRPv2 for the VR; one of <i>yes</i> , <i>no</i> (default).

Get VRRP VRs of One Interface

Get properties of all VRRP VRs under one specified interface.

Request

Method Type	GET
Request URI	/nos/api/cfg/vrrp/<if_name>
Request Body (JSON)	

where:

Element	Description
<i>if_name</i>	Interface name. Note: The interface must exist.

Response

Response Body (JSON)	<pre>[{ "if_name": "<if_name>", "vr_id": "<vr_id>", "ip_addr": "<ip_addr>", "ad_intvl": "<ad_intvl>", "preempt": "<preempt>", "prio": "<prio>", "admin_state": "<admin_state>", "oper_state": "<oper_state>", "track_if": "<track_if>", "accept_mode": "<accept_mode>", "switch_back_delay": "<switch_back_delay>", "v2_compt": "<v2_compt>" }]</pre>
-------------------------	---

where:

Element	Description
<i>if_name</i>	Interface name. Note: The interface must exist.
<i>vr_id</i>	Virtual Router (VR) identifier; an integer from 1-255.
<i>ip_addr</i>	The IP address of the VR; a valid IPv4 address.
<i>ad_intvl</i>	Advertisement interval (The number of centi-seconds between advertisements for VRRPv3); a multiple of 5 from 5-4095. Default value: 100 centi-seconds.

Element	Description
<i>preempt</i>	Enable the preemption of a lower priority master; one of yes (default) , no .
<i>prio</i>	The priority of the VR on the switch; an integer from 1-254. Default value: 100.
<i>admin_state</i>	Enable the VR one of up (default), down .
<i>oper_state</i>	The operation state of the VR; one of master , backup , init .
<i>track_if</i>	The interface to track by this VR. Default value: none . Note: If an interface is specified, it must exist.
<i>accept_mode</i>	Enables or disables the accept mode for this session; one of yes (default), no .
<i>switch_back_delay</i>	The switch back delay interval; an integer from 1-500000, or 0 to disable (default).
<i>v2_compt</i>	Enables backward compatibility for VRRPv2 for the VR; one of yes , no (default).

Create VRRP VR

Create a VRRP VR.

Request

Method Type	POST
Request URI	/nos/api/cfg/vrrp/<if_name>
Request Body (JSON)	<pre>{ "if_name": "<if_name>", "vr_id": "<vr_id>", "ip_addr": "<ip_addr>", "ad_intvl": "<ad_intvl>", "preempt": "<preempt>", "prio": "<prio>", "admin_state": "<admin_state>", "track_if": "<track_if>", "accept_mode": "<accept_mode>", "switch_back_delay": "<switch_back_delay>", "v2_compt": "<v2_compt>" }</pre>

where:

Element	Description
<i>if_name</i>	Interface name. Note: The interface must exist.
<i>vr_id</i>	Virtual Router (VR) identifier; an integer from 1-255.
<i>ip_addr</i>	The IP address of the VR; a valid IPv4 address.
<i>ad_intvl</i>	Advertisement interval (The number of centi-seconds between advertisements for VRRPv3); a multiple of 5 from 5-4095. Default value: 100 centi-seconds.
<i>preempt</i>	Enable the preemption of a lower priority master; one of yes (default), no .
<i>prio</i>	The priority of the VR on the switch; an integer from 1-254. Default value: 100.
<i>admin_state</i>	Enable the VR one of up (default), down .
<i>oper_state</i>	The operation state of the VR; one of master , backup , init .
<i>track_if</i>	The interface to track by this VR. Default value: none. Note: If an interface is specified, it must exist.
<i>accept_mode</i>	Enables or disables the accept mode for this session; one of yes (default), no .

Element	Description
<i>switch_back_delay</i>	The switch back delay interval; an integer from 1-500000, or 0 to disable (default).
<i>v2_compt</i>	Enables backward compatibility for VRRPv2 for the VR; one of yes, no (default).

Response

Response Body (JSON)	<pre>[{ "if_name": "<if_name>", "vr_id": "<vr_id>", "ip_addr": "<ip_addr>", "ad_intvl": "<ad_intvl>", "preempt": "<preempt>", "prio": "<prio>", "admin_state": "<admin_state>", "oper_state": "<oper_state>", "track_if": "<track_if>", "accept_mode": "<accept_mode>", "switch_back_delay": "<switch_back_delay>", "v2_compt": "<v2_compt>" }]</pre>
-------------------------	---

where:

Element	Description
<i>if_name</i>	Interface name. Note: The interface must exist.
<i>vr_id</i>	Virtual Router (VR) identifier; an integer from 1-255.
<i>ip_addr</i>	The IP address of the VR; a valid IPv4 address.
<i>ad_intvl</i>	Advertisement interval (The number of centi-seconds between advertisements for VRRPv3); a multiple of 5 from 5-4095. Default value: 100 centi-seconds.
<i>preempt</i>	Enable the preemption of a lower priority master; one of yes (default) , no.
<i>prio</i>	The priority of the VR on the switch; an integer from 1-254. Default value: 100.
<i>admin_state</i>	Enable the VR one of up (default), down.
<i>oper_state</i>	The operation state of the VR; one of master, backup, init.
<i>track_if</i>	The interface to track by this VR. Default value: none. Note: If an interface is specified, it must exist.
<i>accept_mode</i>	Enables or disables the accept mode for this session; one of yes (default), no.

Element	Description
<i>switch_back_delay</i>	The switch back delay interval; an integer from 1-500000, or 0 to disable (default).
<i>v2_compt</i>	Enables backward compatibility for VRRPv2 for the VR; one of yes, no (default).

Get VRRP VR

Get properties of a VRRP VR.

Request

Method Type	GET
Request URI	/nos/api/cfg/vrrp/<if_name>/<vrid>
Request Body (JSON)	

Response

Response Body (JSON)	<pre>{ "if_name": "<if_name>", "vr_id": "<vr_id>", "ip_addr": "<ip_addr>", "ad_intvl": "<ad_intvl>", "preempt": "<preempt>", "prio": "<prio>", "admin_state": "<admin_state>", "oper_state": "<oper_state>", "track_if": "<track_if>", "accept_mode": "<accept_mode>", "switch_back_delay": "<switch_back_delay>", "v2_compt": "<v2_compt>" }</pre>
-------------------------	---

where:

Element	Description
<i>if_name</i>	Interface name. Note: The interface must exist.
<i>vr_id</i>	Virtual Router (VR) identifier; an integer from 1-255.
<i>ip_addr</i>	The IP address of the VR; a valid IPv4 address.
<i>ad_intvl</i>	Advertisement interval (The number of centi-seconds between advertisements for VRRPv3); a multiple of 5 from 5-4095. Default value: 100 centi-seconds.
<i>preempt</i>	Enable the preemption of a lower priority master; one of yes (default) , no .
<i>prio</i>	The priority of the VR on the switch; an integer from 1-254. Default value: 100.
<i>admin_state</i>	Enable the VR one of up (default), down .
<i>oper_state</i>	The operation state of the VR; one of master , backup , init .

Element	Description
<i>track_if</i>	The interface to track by this VR. Default value: none. Note: If an interface is specified, it must exist.
<i>accept_mode</i>	Enables or disables the accept mode for this session; one of yes (default), no .
<i>switch_back_delay</i>	The switch back delay interval; an integer from 1-500000, or 0 to disable (default).
<i>v2_compt</i>	Enables backward compatibility for VRRPv2 for the VR; one of yes , no (default).

Update VRRP VR

Update the properties of a VRRP VR.

Request

Method Type	PUT
Request URI	/nos/api/cfg/vrrp/<if_name>/<vrid>
Request Body (JSON)	<pre>{ "if_name": "<if_name>", "vr_id": "<vr_id>", "ip_addr": "<ip_addr>", "ad_intvl": "<ad_intvl>", "preempt": "<preempt>", "prio": "<prio>", "admin_state": "<admin_state>", "track_if": "<track_if>", "accept_mode": "<accept_mode>", "switch_back_delay": "<switch_back_delay>", "v2_compt": "<v2_compt>" }</pre>

where:

Element	Description
<i>if_name</i>	Interface name. Note: The interface must exist.
<i>vr_id</i>	Virtual Router (VR) identifier; an integer from 1-255.
<i>ip_addr</i>	The IP address of the VR; a valid IPv4 address.
<i>ad_intvl</i>	Advertisement interval (The number of centi-seconds between advertisements for VRRPv3); a multiple of 5 from 5-4095. Default value: 100 centi-seconds.
<i>preempt</i>	Enable the preemption of a lower priority master; one of yes (default) , no .
<i>prio</i>	The priority of the VR on the switch; an integer from 1-254. Default value: 100.
<i>admin_state</i>	Enable the VR; one of up (default), down .
<i>oper_state</i>	The operation state of the VR; one of master , backup , init .
<i>track_if</i>	The interface to track by this VR. Default value: none . Note: If an interface is specified, it must exist.
<i>accept_mode</i>	Enables or disables the accept mode for this session; one of yes (default), no .

Element	Description
<i>switch_back_delay</i>	The switch back delay interval; an integer from 1-500000, or 0 to disable (default).
<i>v2_compt</i>	Enables backward compatibility for VRRPv2 for the VR; one of yes, no (default).

Response

Response Body (JSON)	<pre>{ "if_name": "<if_name>", "vr_id": "<vr_id>", "ip_addr": "<ip_addr>", "ad_intvl": "<ad_intvl>", "preempt": "<preempt>", "prio": "<prio>", "admin_state": "<admin_state>", "oper_state": "<oper_state>", "track_if": "<track_if>", "accept_mode": "<accept_mode>", "switch_back_delay": "<switch_back_delay>", "v2_compt": "<v2_compt>" }</pre>
-------------------------	---

where:

Element	Description
<i>if_name</i>	Interface name. Note: The interface must exist.
<i>vr_id</i>	Virtual Router (VR) identifier; an integer from 1-255.
<i>ip_addr</i>	The IP address of the VR; a valid IPv4 address.
<i>ad_intvl</i>	Advertisement interval (The number of centi-seconds between advertisements for VRRPv3); a multiple of 5 from 5-4095. Default value: 100 centi-seconds.
<i>preempt</i>	Enable the preemption of a lower priority master; one of yes (default) , no.
<i>prio</i>	The priority of the VR on the switch; an integer from 1-254. Default value: 100.
<i>admin_state</i>	Enable the VR one of up (default), down.
<i>oper_state</i>	The operation state of the VR; one of master, backup, init.
<i>track_if</i>	The interface to track by this VR. Default value: none. Note: If an interface is specified, it must exist.
<i>accept_mode</i>	Enables or disables the accept mode for this session; one of yes (default), no.

Element	Description
<i>switch_back_delay</i>	The switch back delay interval; an integer from 1-500000, or 0 to disable (default).
<i>v2_compt</i>	Enables backward compatibility for VRRPv2 for the VR; one of yes, no (default).

Delete VRRP VR

Delete a VRRP VR.

Note: If the specified *vrid* is *a.l.l.*, all VRRP VRs entries in the specified interface will be deleted.

Request

Method Type	DELETE
Request URI	/nos/api/cfg/vrrp/<if_name>/<vrid>
Request Body (JSON)	

IGMP Snooping

The following IGMP snooping URIs are available:

- `/nos/api/cfg/igmp/snoop` GET, PUT
- `/nos/api/cfg/mc_vlan` GET
- `/nos/api/cfg/mc_vlan/<vlan_id>` GET, PUT

The following IGMP snooping commands are available:

- [Get IGMP Snooping System Properties](#)
- [Update IGMP Snooping System Properties](#)
- [Get IGMP Snooping Properties of All VLANs](#)
- [Get IGMP Snooping VLAN Properties](#)
- [Update IGMP Snooping VLAN Properties](#)

Get IGMP Snooping System Properties

Get global IGMP Snooping properties of the system.

Request

Method Type	GET
Request URI	/nos/api/cfg/igmp/snoop
Request Body (JSON)	

Response

Response Body (JSON)	{ "ena_igmp_snoop": "<ena_igmp_snoop>" }
-------------------------	--

where:

Element	Description
<i>ena_igmp_snoop</i>	Enables IGMP snooping globally on all VLANs; one of <i>yes</i> (default), <i>no</i> . If disabled globally, IGMP snooping is disabled on all VLANs, regardless of the per-VLAN setting of IGMP snooping. If IGMP snooping is enabled globally, the per-VLAN setting of IGMP snooping takes effect.

Update IGMP Snooping System Properties

Update the global IGMP Snooping properties of the system.

Request

Method Type	PUT
Request URI	/nos/api/cfg/igmp/snoop
Request Body (JSON)	{ "ena_igmp_snoop": "<ena_igmp_snoop>" }

where:

Element	Description
<i>ena_igmp_snoop</i>	Enables IGMP snooping globally on all VLANs; one of <i>yes</i> (default), <i>no</i> . If disabled globally, IGMP snooping is disabled on all VLANs, regardless of the per-VLAN setting of IGMP snooping. If IGMP snooping is enabled globally, the per-VLAN setting of IGMP snooping takes effect.

Response

Response Body (JSON)	{ "ena_igmp_snoop": "<ena_igmp_snoop>" }
-------------------------	--

Get IGMP Snooping Properties of All VLANs

Get the IGMP snooping properties of all VLANs.

Request

Method Type	GET
Request URI	/nos/api/cfg/mc_vlan
Request Body (JSON)	

Response

Response Body (JSON)	[{ "vlan_id": "<vlan_id>", "ena_igmp_snoop": "<ena_igmp_snoop>" }]
-------------------------	---

where:

Element	Description
<i>vlan_id</i>	VLAN number.
<i>ena_igmp_snoop</i>	Enables IGMP snooping on a VLAN; one of yes (default), no.

Get IGMP Snooping VLAN Properties

Get the IGMP snooping properties of one VLAN.

Request

Method Type	GET
Request URI	/nos/api/cfg/mc_vlan/<vlan_id>
Request Body (JSON)	

Response

Response Body (JSON)	[{ "vlan_id": "<vlan_id>", "ena_igmp_snoop": "<ena_igmp_snoop>" }]
-------------------------	---

where:

Element	Description
<i>vlan_id</i>	VLAN number.
<i>ena_igmp_snoop</i>	Enables IGMP snooping on a VLAN; one of yes (default), no.

Update IGMP Snooping VLAN Properties

Update the IGMP snooping properties of one VLAN.

Request

Method Type	PUT
Request URI	/nos/api/cfg/mc_vlan/<vlan_id>
Request Body (JSON)	

where:

Element	Description
<i>vlan_id</i>	VLAN number. Note: The specified VLAN must exist.
<i>ena_igmp_snoop</i>	Enables IGMP snooping on a VLAN; one of yes (default), no .

Response

Response Body (JSON)	{ "vlan_id": "<vlan_id>", "ena_igmp_snoop": "<ena_igmp_snoop>" }
-------------------------	---

where:

Element	Description
<i>vlan_id</i>	VLAN number.
<i>ena_igmp_snoop</i>	Enables IGMP snooping on a VLAN; one of yes (default), no .

Appendix A. Getting Help and Technical Assistance

If you need help, service, or technical assistance or just want more information about Lenovo products, you will find a wide variety of sources available from Lenovo to assist you.

Use this information to obtain additional information about Lenovo and Lenovo products, and determine what to do if you experience a problem with your Lenovo system or optional device.

Note: This section includes references to IBM web sites and information about obtaining service. IBM is Lenovo's preferred service provider for the System x, Flex System, and NeXtScale System products.

Before you call, make sure that you have taken these steps to try to solve the problem yourself.

If you believe that you require warranty service for your Lenovo product, the service technicians will be able to assist you more efficiently if you prepare before you call.

- Check all cables to make sure that they are connected.
- Check the power switches to make sure that the system and any optional devices are turned on.
- Check for updated software, firmware, and operating-system device drivers for your Lenovo product. The Lenovo Warranty terms and conditions state that you, the owner of the Lenovo product, are responsible for maintaining and updating all software and firmware for the product (unless it is covered by an additional maintenance contract). Your service technician will request that you upgrade your software and firmware if the problem has a documented solution within a software upgrade.
- If you have installed new hardware or software in your environment, check the [IBM ServerProven website](#) to make sure that the hardware and software is supported by your product.
- Go to the [IBM Support portal](#) to check for information to help you solve the problem.
- Gather the following information to provide to the service technician. This data will help the service technician quickly provide a solution to your problem and ensure that you receive the level of service for which you might have contracted.
 - Hardware and Software Maintenance agreement contract numbers, if applicable
 - Machine type number (if applicable—Lenovo 4-digit machine identifier)
 - Model number
 - Serial number
 - Current system UEFI and firmware levels
 - Other pertinent information such as error messages and logs

- Start the process of determining a solution to your problem by making the pertinent information available to the service technicians. The IBM service technicians can start working on your solution as soon as you have completed and submitted an Electronic Service Request.

You can solve many problems without outside assistance by following the troubleshooting procedures that Lenovo provides in the online help or in the Lenovo product documentation. The Lenovo product documentation also describes the diagnostic tests that you can perform. The documentation for most systems, operating systems, and programs contains troubleshooting procedures and explanations of error messages and error codes. If you suspect a software problem, see the documentation for the operating system or program.

Appendix B. Notices

Lenovo may not offer the products, services, or features discussed in this document in all countries. Consult your local Lenovo representative for information on the products and services currently available in your area.

Any reference to a Lenovo product, program, or service is not intended to state or imply that only that Lenovo product, program, or service may be used. Any functionally equivalent product, program, or service that does not infringe any Lenovo intellectual property right may be used instead. However, it is the user's responsibility to evaluate and verify the operation of any other product, program, or service.

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Lenovo (United States), Inc.
1009 Think Place - Building One
Morrisville, NC 27560
U.S.A.

Attention: Lenovo Director of Licensing

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Any references in this publication to non-Lenovo Web sites are provided for convenience only and do not in any manner serve as an endorsement of those Web sites. The materials at those Web sites are not part of the materials for this Lenovo product, and use of those Web sites is at your own risk.

Any performance data contained herein was determined in a controlled environment. Therefore, the result obtained in other operating environments may vary significantly. Some measurements may have been made on development-level systems and there is no guarantee that these measurements will be the same on generally available systems. Furthermore, some measurements may have been estimated through extrapolation. Actual results may vary. Users of this document should verify the applicable data for their specific environment.

Trademarks

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Internet Explorer, Microsoft, and Windows are trademarks of the Microsoft group of companies.

Linux is a registered trademark of Linus Torvalds.

Other company, product, or service names may be trademarks or service marks of others.

Important Notes

Processor speed indicates the internal clock speed of the microprocessor; other factors also affect application performance.

CD or DVD drive speed is the variable read rate. Actual speeds vary and are often less than the possible maximum.

When referring to processor storage, real and virtual storage, or channel volume, KB stands for 1 024 bytes, MB stands for 1 048 576 bytes, and GB stands for 1 073 741 824 bytes.

When referring to hard disk drive capacity or communications volume, MB stands for 1 000 000 bytes, and GB stands for 1 000 000 000 bytes. Total user-accessible capacity can vary depending on operating environments.

Maximum internal hard disk drive capacities assume the replacement of any standard hard disk drives and population of all hard-disk-drive bays with the largest currently supported drives that are available from Lenovo.

Maximum memory might require replacement of the standard memory with an optional memory module.

Each solid-state memory cell has an intrinsic, finite number of write cycles that the cell can incur. Therefore, a solid-state device has a maximum number of write cycles that it can be subjected to, expressed as total bytes written (TBW). A device that has exceeded this limit might fail to respond to system-generated commands or might be incapable of being written to. Lenovo is not responsible for replacement of a device that has exceeded its maximum guaranteed number of program/erase cycles, as documented in the Official Published Specifications for the device.

Lenovo makes no representations or warranties with respect to non-Lenovo products. Support (if any) for the non-Lenovo products is provided by the third party, not Lenovo.

Some software might differ from its retail version (if available) and might not include user manuals or all program functionality.

Recycling Information

Lenovo encourages owners of information technology (IT) equipment to responsibly recycle their equipment when it is no longer needed. Lenovo offers a variety of programs and services to assist equipment owners in recycling their IT products. For information on recycling Lenovo products, go to:

<http://www.lenovo.com/recycling>

Particulate Contamination

Attention: Airborne particulates (including metal flakes or particles) and reactive gases acting alone or in combination with other environmental factors such as humidity or temperature might pose a risk to the device that is described in this document.

Risks that are posed by the presence of excessive particulate levels or concentrations of harmful gases include damage that might cause the device to malfunction or cease functioning altogether. This specification sets forth limits for particulates and gases that are intended to avoid such damage. The limits must not be viewed or used as definitive limits, because numerous other factors, such as temperature or moisture content of the air, can influence the impact of particulates or environmental corrosives and gaseous contaminant transfer. In the absence of specific limits that are set forth in this document, you must implement practices that maintain particulate and gas levels that are consistent with the protection of human health and safety. If Lenovo determines that the levels of particulates or gases in your environment have caused damage to the device, Lenovo may condition provision of repair or replacement of devices or parts on implementation of appropriate remedial measures to mitigate such environmental contamination. Implementation of such remedial measures is a customer responsibility..

Contaminant	Limits
Particulate	<ul style="list-style-type: none"> The room air must be continuously filtered with 40% atmospheric dust spot efficiency (MERV 9) according to ASHRAE Standard 52.2¹. Air that enters a data center must be filtered to 99.97% efficiency or greater, using high-efficiency particulate air (HEPA) filters that meet MIL-STD-282. The deliquescent relative humidity of the particulate contamination must be more than 60%². The room must be free of conductive contamination such as zinc whiskers.
Gaseous	<ul style="list-style-type: none"> Copper: Class G1 as per ANSI/ISA 71.04-1985³ Silver: Corrosion rate of less than 300 Å in 30 days
<p>¹ ASHRAE 52.2-2008 - <i>Method of Testing General Ventilation Air-Cleaning Devices for Removal Efficiency by Particle Size</i>. Atlanta: American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.</p> <p>² The deliquescent relative humidity of particulate contamination is the relative humidity at which the dust absorbs enough water to become wet and promote ionic conduction.</p> <p>³ ANSI/ISA-71.04-1985. <i>Environmental conditions for process measurement and control systems: Airborne contaminants</i>. Instrument Society of America, Research Triangle Park, North Carolina, U.S.A.</p>	

Telecommunication Regulatory Statement

This product may not be certified in your country for connection by any means whatsoever to interfaces of public telecommunications networks. Further certification may be required by law prior to making any such connection. Contact a Lenovo representative or reseller for any questions.

Electronic Emission Notices

When you attach a monitor to the equipment, you must use the designated monitor cable and any interference suppression devices that are supplied with the monitor.

Federal Communications Commission (FCC) Statement

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Properly shielded and grounded cables and connectors must be used to meet FCC emission limits. Lenovo is not responsible for any radio or television interference caused by using other than recommended cables and connectors or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that might cause undesired operation.

Industry Canada Class A Emission Compliance Statement

This Class A digital apparatus complies with Canadian ICES-003.

Avis de Conformité à la Réglementation d'Industrie Canada

Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

Australia and New Zealand Class A Statement

Attention: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

European Union - Compliance to the Electromagnetic Compatibility Directive

This product is in conformity with the protection requirements of EU Council Directive 2004/108/EC (until April 19, 2016) and EU Council Directive 2014/30/EU (from April 20, 2016) on the approximation of the laws of the Member States relating to electromagnetic compatibility. Lenovo cannot accept responsibility for any failure to satisfy the protection requirements resulting from a non-recommended modification of the product, including the installation of option cards from other manufacturers.

This product has been tested and found to comply with the limits for Class A equipment according to European Standards harmonized in the Directives in compliance. The limits for Class A equipment were derived for commercial and industrial environments to provide reasonable protection against interference with licensed communication equipment.

Lenovo, Einsteinova 21, 851 01 Bratislava, Slovakia



Warning: This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Germany Class A Statement

Deutschsprachiger EU Hinweis:

Hinweis für Geräte der Klasse A EU-Richtlinie zur Elektromagnetischen Verträglichkeit

Dieses Produkt entspricht den Schutzanforderungen der EU-Richtlinie 2014/30/EU (früher 2004/108/EC) zur Angleichung der Rechtsvorschriften über die elektromagnetische Verträglichkeit in den EU-Mitgliedsstaaten und hält die Grenzwerte der Klasse A der Norm gemäß Richtlinie.

Um dieses sicherzustellen, sind die Geräte wie in den Handbüchern beschrieben zu installieren und zu betreiben. Des Weiteren dürfen auch nur von der Lenovo empfohlene Kabel angeschlossen werden. Lenovo übernimmt keine Verantwortung für die Einhaltung der Schutzanforderungen, wenn das Produkt ohne Zustimmung der Lenovo verändert bzw. wenn Erweiterungskomponenten von Fremdherstellern ohne Empfehlung der Lenovo gesteckt/eingebaut werden.

Deutschland:

Einhaltung des Gesetzes über die elektromagnetische Verträglichkeit von Betriebsmitteln

Dieses Produkt entspricht dem „Gesetz über die elektromagnetische Verträglichkeit von Betriebsmitteln“ EMVG (früher „Gesetz über die elektromagnetische Verträglichkeit von Geräten“). Dies ist die Umsetzung der EU-Richtlinie 2014/30/EU (früher 2004/108/EC) in der Bundesrepublik Deutschland.

Zulassungsbescheinigung laut dem Deutschen Gesetz über die elektromagnetische Verträglichkeit von Betriebsmitteln, EMVG vom 20. Juli 2007 (früher Gesetz über die elektromagnetische Verträglichkeit von Geräten), bzw. der EMV EU Richtlinie 2014/30/EU (früher 2004/108/EC), für Geräte der Klasse A.

Dieses Gerät ist berechtigt, in Übereinstimmung mit dem Deutschen EMVG das EG-Konformitätszeichen - CE - zu führen. Verantwortlich für die Konformitätserklärung nach Paragraph 5 des EMVG ist die Lenovo (Deutschland) GmbH, Meitnerstr. 9, D-70563 Stuttgart.

Informationen in Hinsicht EMVG Paragraph 4 Abs. (1) 4:

Das Gerät erfüllt die Schutzanforderungen nach EN 55024 und EN 55022 Klasse A.

Nach der EN 55022: „Dies ist eine Einrichtung der Klasse A. Diese Einrichtung kann im Wohnbereich Funkstörungen verursachen; in diesem Fall kann vom Betreiber verlangt werden, angemessene Maßnahmen durchzuführen und dafür aufzukommen.“

Nach dem EMVG: „Geräte dürfen an Orten, für die sie nicht ausreichend entstört sind, nur mit besonderer Genehmigung des Bundesministers für Post und Telekommunikation oder des Bundesamtes für Post und Telekommunikation betrieben werden. Die Genehmigung wird erteilt, wenn keine elektromagnetischen Störungen zu erwarten sind.“ (Auszug aus dem EMVG, Paragraph 3, Abs. 4). Dieses Genehmigungsverfahren ist nach Paragraph 9 EMVG in Verbindung mit der entsprechenden Kostenverordnung (Amtsblatt 14/93) kostenpflichtig.

Anmerkung: Um die Einhaltung des EMVG sicherzustellen sind die Geräte, wie in den Handbüchern angegeben, zu installieren und zu betreiben.

Japan VCCI Class A Statement

この装置は、クラス A 情報技術装置です。この装置を家庭環境で使用すると電波妨害を引き起こすことがあります。この場合には使用者が適切な対策を講ずるよう要求されることがあります。

VCCI-A

This is a Class A product based on the standard of the Voluntary Control Council for Interference (VCCI). If this equipment is used in a domestic environment, radio interference may occur, in which case the user may be required to take corrective actions.

Japan Electronics and Information Technology Industries Association (JEITA) Statement

高調波ガイドライン適合品

Japan Electronics and Information Technology Industries Association (JEITA)
Confirmed Harmonics Guidelines (products less than or equal to 20 A per phase)

高調波ガイドライン準用品

Japan Electronics and Information Technology Industries Association (JEITA)
Confirmed Harmonics Guidelines with Modifications (products greater than 20 A per phase).

Korea Communications Commission (KCC) Statement

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서 판매자 또는 사용자는 이 점을 주의하시기
바라며, 가정외의 지역에서 사용하는 것을 목
적으로 합니다.

This is electromagnetic wave compatibility equipment for business (Type A).
Sellers and users need to pay attention to it. This is for any areas other than home.

Russia Electromagnetic Interference (EMI) Class A statement

ВНИМАНИЕ! Настоящее изделие относится к классу А.
В жилых помещениях оно может создавать радиопомехи, для
снижения которых необходимы дополнительные меры

People's Republic of China Class A electronic emission statement

中华人民共和国“A类”警告声明

声明

此为A级产品，在生活环境中，该产品可能会造成无线电干扰。在这种情况下，可能需要用户对其干扰采取切实可行的措施。

Taiwan Class A compliance statement

警告使用者：
這是甲類的資訊產品，在
居住的環境中使用時，可
能會造成射頻干擾，在這種
情況下，使用者會被要求
採取某些適當的對策。

