RESTCONF Agent

This chapter contains the following topics:

About the RESTConf Agent

Cisco NX-OS RESTConf is an HTTP -based protocol for configuring data that YANG version 1 defines, using datastores in NETCONF.

NETCONF defines configuration datastores and a set of Create, Retrieve, Update, and Delete (CRUD) operations that can access these datastores. The YANG language defines the syntax and semantics of datastore content, operational data, protocol operations, and event notifications.

Cisco NX-OS RESTConf uses HTTP operations to provide CRUD operations on a conceptual datastore containing YANG-defined data. This data is compatible with a server which implements NETCONF datastores.

The RESTCONF protocol supports both XML and JSON payload encodings. User authentication happens through the HTTP Basic Authentication.

The following table shows the Protocol operations that the Cisco NX-OS RESTConf Agent supports:

RESTConf	NETCONF Equivalent
OPTIONS	NETCONF: none
HEAD	NETCONF: none
GET	NETCONF: <get-config>, <get>
POST	NETCONF: <edit-config> (operation="create")
PUT	NETCONF: <edit-config> (operation="create/replace")
PATCH	NETCONF: <edit-config> (operation="merge")
DELETE	NETCONF: <edit-config> (operation="delete")

Guidelines and Limitations

The RESTCONF Agent has the following guideline and limitation:

- Cisco NX-OS RESTCONF is based on an RFC draft entitled RESTCONF Protocol draft-ietf-netconf-restconf-10. See the https://tools.ietf.org/html/draft-ietf-netconf-restconf-10 document.

- RESTCONF does not support enhanced Role-Based Access Control (RBAC) as specified in RFC 6536. Only the users with a "network-admin" role are granted access to the RESTCONF agent.

Configuring the RESTConf Agent

The RESTConf Agent does not require any configuration in the configuration file (/etc/mtx.conf).

Using the RESTConf Agent

General Commands

- You can enable or disable the RESTCONF Agent [**no**] **feature restconf** command.

- Configure the following commands to enable HTTP or HTTPS access:

  - **feature nxapi**

  - **nxapi http port 80**

  - **nxapi https port 443**

General Control Commands

The available control commands for the RESTConf agent are:

restconfctl { status | start | restart | reload | stop }

Viewing the Agent Status

```
bash-4.2# restconfctl status
xosdsd is stopped
restconfctl is stopped
```

Starting the Agent

```
bash-4.2# restconfctl start
Starting Restconf Agent: [OK]
```

Sending a POST Request to the Server Using Curl

```
client-host % curl -X POST -H "Authorization: Basic YWRtaW46Y2lzY28=" -H "Content-Type:
application/yang.data+xml" -d '<always>enabled</always><rtrId>2.2.2.2</rtrId>'
"http://192.0.20.123/restconf/data/Cisco-NX-OS-device:System/bgp-items/inst-items/dom-items/Dom-list=default"
 -i

HTTP/1.1 201 Created
Server: nginx/1.7.10
Date: Tue, 27 Sep 2016 20:25:31 GMT
Transfer-Encoding: chunked
Connection: keep-alive
Set-Cookie: nxapi_auth=admin:147500853169574134
Status: 201 Created
Location: /System/bgp-items/inst-items/dom-items/Dom-list=default/always/rtrId/
```

Sending a GET Request to the Server Using Curl

```
client-host % curl -X GET -H "Authorization: Basic YWRtaW46Y2lzY28=" -H "Accept:
application/yang.data+xml"
"http://192.0.20.123/restconf/data/Cisco-NX-OS-device:System/bgp-items/inst-items/dom-items/Dom-list?content=config"
 -i

HTTP/1.1 200 OK
Server: nginx/1.7.10
Date: Tue, 27 Sep 2016 20:26:03 GMT
Content-Type: application/yang.data+xml
Content-Length: 395
Connection: keep-alive
Set-Cookie: nxapi_auth=admin:147500856185650327
Status: 200 OK

    <Dom-list>
        <name>default</name>
        <always>enabled</always>
        <bestPathIntvl>300</bestPathIntvl>
        <holdIntvl>180</holdIntvl>
        <kaIntvl>60</kaIntvl>
        <maxAsLimit>0</maxAsLimit>
        <pfxPeerTimeout>30</pfxPeerTimeout>
        <pfxPeerWaitTime>90</pfxPeerWaitTime>
        <reConnIntvl>60</reConnIntvl>
        <rtrId>2.2.2.2</rtrId>
    </Dom-list>
client-host %
```

Troubleshooting the RESTConf Agent

Troubleshooting Connectivity

- Enable the web server by issuing the **feature nxapi** command.

- Ensure that the **nxapi http port 80** command is configured to open up the port for HTTP

- Ensure that the **nxapi https port 443** command is configured to open up the port for HTTPS.

- Ping the management port of the switch to verify that the switch is reachable.

- In the Bash shell of the switch, execute the **service restconf status** command to check the agent status.