NETCONF

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## **1. INITIALIZATION**

In this document, there provided examples of config file to request both getting data and setting data through ***Netconf.***

## **1.1 SET DATA -**

Connect to netopeer-server through netopeer2-cli with command -

Step 1 : connect --ssh --host <switch-ip> --login username

Step 2 : After Connecting to netopeer-server, users need to send an edit config request through netopeer-cli.

**Request Format** - *edit-config --target running --config=<config-file path>*

***Information - The config file format varies according to different yang modules, for this particular instance below is the provided example.***

## **1.2 GET DATA -**

Connect to netopeer2-server through netopeer2-cli with command -

Step 1 : connect --ssh --host <switch-ip> --login root

Step 2 : After Connecting to netopeer-server, users need to send a get request through netopeer2-cli.

**Request Format -** get –filter-xpath <path-according-to-yang-module>

## **2. Power Over Ethernet**

## **2.1** **SET DATA on Interface**

* + - Parameters of POE on particular interfaces are power limit, priority and device-description.

**CONFIG File -**

*<config xmlns="urn:ietf:params:xml:ns:netconf:base:1.0">*

*<pq:poe-settings xmlns:pq="urn:ietf:params:xml:ns:poe\_quantumnet">*

*<pq:interface>*

*<pq:name>gi1/0/8</pq:name>*

*<pq:limit>200</pq:limit>*

*<pq:priority>low</pq:priority>*

*<pq:powered-device-description>hii</pq:powered-device-description>*

*</pq:interface>*

*<pq:interface>*

*<pq:name>gi1/0/2</pq:name>*

*<pq:limit>300</pq:limit>*

*<pq:priority>high</pq:priority>*

*<pq:powered-device-description>hello</pq:powered-device-description>*

*</pq:interface>*

*</pq:poe-settings>*

*</config>*

## **2.2 SET DATA on Global Mode**

* + - Parameter of POE in Global Configuration is “class\_mode” it is either port or class.

**CONFIG File -**

*<config xmlns="urn:ietf:params:xml:ns:netconf:base:1.0">*

*<pq:poe-settings xmlns:pq="urn:ietf:params:xml:ns:poe\_quantumnet">*

*<pq:class\_mode>port</pq:class\_mode>*

*</pq:poe-settings>*

*</config>*

## **2.3 GET DATA on Interface**

* + - Get request for data of POE on an interface is -
      * *get --filter-xpath /poe\_get:poe-get/interface[index='2']*

**OUTPUT-**

*<data xmlns="urn:ietf:params:xml:ns:netconf:base:1.0">*

*<poe-get xmlns="urn:ietf:params:xml:ns:poe\_get">*

*<interface>*

*<index>2</index>*

*<admin\_st>1</admin\_st>*

*<oper\_st>2</oper\_st>*

*<power>0</power>*

*<priority>3</priority>*

*<class>1</class>*

*</interface>*

*</poe-get>*

*</data>*

## **3. IP Address**

## 

## **3.1 SET DATA**

* + - Parameters of Switch IP on particular interfaces or VLANs are , IP address and subnet mask.

**CONFIG File -**

*<config xmlns="urn:ietf:params:xml:ns:netconf:base:1.0">*

*<ip:ip\_config xmlns:ip="urn:ietf:params:xml:ns:ip\_interface\_set">*

*<ip:interface>*

*<ip:name>gi1/0/2</ip:name>*

*<ip:ip-address>10.10.10.1</ip:ip-address>*

*<ip:subnet-mask>255.255.255.0</ip:subnet-mask>*

*</ip:interface>*

*</ip:ip\_config>*

*</config>*

## **3.2 GET DATA**

* + - Get request for data of Switch IP is -
      * *get --filter-xpath /ipInterfaces:ipData/interface[index=’100000’]*

**OUTPUT-**

*<data xmlns="urn:ietf:params:xml:ns:netconf:base:1.0">*

*<ipData xmlns="urn:ietf:params:xml:ns:ip\_interfaces">*

*<interface>*

*<index>100000</index>*

*<ipAddress>192.168.100.12</ipAddress>*

*<subnetMask>255.255.255.0</subnetMask>*

*<owner>2</owner>*

*<adminStatus>2</adminStatus>*

*<operStatus>1</operStatus>*

*</interface>*

*</ipData>*

*</data>*

***NOTE - to get data of a particular interface the index will be according to port number i.e. if “gi1/0/1” index is 1 “gi1/0/2” index will be 2 and so on. And for getting data of particular VLAN the index starts from 100000 for VLAN 1 Index=100000, VLAN 2 Index= 100001 and so on.***

**4. FIRMWARE VERSION**

## **4.1 GET DATA**

* + - Get request for data of Switch Firmware Version is -

*get --filter-xpath /sh\_version:version/system\_version*

**OUTPUT-**

*<data xmlns="urn:ietf:params:xml:ns:netconf:base:1.0">*

*<version xmlns="urn:ietf:params:xml:ns:sh\_version">*

*<system\_version>*

*<index>1</index>*

*<image\_name>flash://system/images/image\_SW225-AC3-2.2.3.bin</image\_name>*

*<image\_version>2.2.3</image\_version>*

*<image\_date>09-Jul-2024</image\_date>*

*<image\_time>11:10:01</image\_time>*

*</system\_version>*

*<system\_version>*

*<index>2</index>*

*<image\_name>flash://system/images/\_image\_SW225-AC3-2.2.3.bin</image\_name>*

*<image\_version>2.2.3</image\_version>*

*<image\_date>01-Jul-2024</image\_date>*

*<image\_time>18:20:06</image\_time>*

*</system\_version>*

*</version>*

*</data>*

# **5. IP ROUTING**

## **5.1 SET DATA**

* + - Parameters of IP Routes are IP address ,subnet mask and Gateway(Next Hop).

**CONFIG File -**

*<config xmlns="urn:ietf:params:xml:ns:netconf:base:1.0">*

*<ipr:ip\_route\_config xmlns:ipr="urn:ietf:params:xml:ns:ip\_route">*

*<ipr:routes>*

*<ipr:index>7</ipr:index>*

*<ipr:ip-address>152.200.100.0</ipr:ip-address>*

*<ipr:subnet-mask>/24</ipr:subnet-mask>*

*<ipr:gateway>203.0.113.116</ipr:gateway>*

*</ipr:routes>*

*</ipr:ip\_route\_config>*

*</config>*

## **5.2 GET DATA**

## 

* + - Get request for data of IP Route is -

*get --filter-xpath /ip\_route\_get:ip\_route*

* + - Through this request all the ip routes of the switch will be displayed.

**OUTPUT-**

*<data xmlns="urn:ietf:params:xml:ns:netconf:base:1.0">*

*<ip\_route xmlns="urn:ietf:params:xml:ns:ip\_route\_get">*

*<routes>*

*<index>1</index>*

*<ipAddress>0.0.0.0</ipAddress>*

*<subnetMask>0.0.0.0</subnetMask>*

*<nextHop>192.168.100.1</nextHop>*

*<metric>8</metric>*

*</routes>*

*</ip\_route>*

*</data>*

# **6. SPANNING TREE**

## **6.1 SET DATA on interface**

* + - Parameters of STP on interface are port-priority , portfast, root guard and BPDU guard.

**CONFIG File -**

*<config xmlns="urn:ietf:params:xml:ns:netconf:base:1.0">*

*<stp:spanning-tree xmlns:stp="urn:ietf:params:xml:ns:stp-interface-config">*

*<stp:interface>*

*<stp:name>gi1/0/5</stp:name>*

*<stp:port-priority>128</stp:port-priority>*

*<stp:portfast>true</stp:portfast>*

*<stp:guard>true</stp:guard>*

*<stp:bpdu-guard>true</stp:bpdu-guard>*

*</stp:interface>*

*</stp:spanning-tree>*

*</config>*

## **6.2 SET DATA on Global Mode**

* + - Parameters of STP on Global Configuration are STP Mode , priority, hello time,Forward Time and Max Age.
    - Specify a different Index every time for the data store to understand that it is new data.

**CONFIG File -**

*<config xmlns="urn:ietf:params:xml:ns:netconf:base:1.0">*

*<stp:spanning-tree xmlns:stp="urn:ietf:params:xml:ns:stp-interface-config">*

*<stp:global>*

*<stp:index>1</stp:index>*

*<stp:stpMode>stp<t/stp:stpMode>*

*<stp:priority>61444</stp:priority>*

*<stp:helloTime>8</stp:helloTime>*

*<stp:forwardTime>15</stp:forwardTime>*

*<stp:maxAge>20</stp:maxAge>*

*</stp:global>*

*</stp:spanning-tree>*

*</config>*

## **6.3 GET DATA on Global Mode -**

* + - Get request for data of IP Route is -
      * *get --filter-xpath /get\_stp\_global:stp\_global*

***OUTPUT -***

*<data xmlns="urn:ietf:params:xml:ns:netconf:base:1.0">*

*<stp\_global xmlns="urn:ietf:params:xml:ns:get\_stp\_global">*

*<global>*

*<index>1</index>*

*<priority>32768</priority>*

*<rootCost>40000</rootCost>*

*<rootPort>1</rootPort>*

*<maxAge>2000</maxAge>*

*<helloTime>200</helloTime>*

*<forwardTime>1500</forwardTime>*

*</global>*

*</stp\_global>*

*</data>*

## **6.4 GET DATA on Interface -**

* + - Get request for data of STP on interface is -
      * *get --filter-xpath /stp\_interface\_get:stp/interface[index='1']*

***OUTPUT -***

*<data xmlns="urn:ietf:params:xml:ns:netconf:base:1.0">*

*<stp xmlns="urn:ietf:params:xml:ns:stp\_interface\_get">*

*<interface>*

*<index>1</index>*

*<priority>128</priority>*

*<state>5</state>*

*<admin\_status>1</admin\_status>*

*<path\_cost>20000</path\_cost>*

*</interface>*

*</stp>*

*</data>*

***NOTE - To get data of a particular interface the index will be according to port number i.e. if “gi1/0/1” index is 1 “gi1/0/2” index will be 2 and so on.***

# **7. VLAN**

## **7.1 SET DATA**

* + - Parameters of VLAN are VLAN ID and VLAN Description.
    - Specify VLAN ID which user want to configure or create.

**CONFIG File -**

*<config xmlns="urn:ietf:params:xml:ns:netconf:base:1.0">*

*<v:set xmlns:v="urn:ietf:params:xml:ns:vlan\_set">*

*<v:vlan>*

*<v:id>9</v:id>*

*<v:description>hello</v:description>*

*</v:vlan>*

*</v:set>*

*</config>*

## **7.2 GET DATA**

* + - Get request for data of VLAN is
      * *get --filter-xpath /vlan\_get:get*

***OUTPUT -***

*<data xmlns="urn:ietf:params:xml:ns:netconf:base:1.0">*

*<get xmlns="urn:ietf:params:xml:ns:vlan\_get">*

*<vlan>*

*<id>1</id>*

*<name/>*

*</vlan>*

*<vlan>*

*<id>8</id>*

*<name>QUANTUM</name>*

*</vlan>*

*</get>*

*</data>*