3 NETCONF YANG API 典型使用实例

3.1 接口管理

3.1.1 查看光模块信息

命令行

display transceiver interface *ge 1/0/1* verbose

NETCONF YANG API

功能	XPATH
查看光模块信息	device-state/optical-module-infos

操作实例

- 请求示例

```
<?xml version="1.0" encoding="UTF-8"?>
<rpc xmlns="urn:ietf:params:xml:ns:netconf:base:1.0" message-id="1">
 <get>
  <filter type="subtree">
   <device-state xmlns="urn:huawei:params:xml:ns:yang:huawei-device">
    <optical-module-infos>
     <interface-list>
      <interface-name>GigabitEthernet1/0/1</interface-name>
     </interface-list>
    </optical-module-infos>
   </device-state>
  </filter>
 </get>
</rpc>
```

- 响应示例

```
<?xml version="1.0" encoding="utf-8"?>
<data xmlns="urn:ietf:params:xml:ns:netconf:base:1.0">
 <device-state xmlns="urn:huawei:params:xml:ns:yang:huawei-device">
  <optical-module-infos>
   <interface-list>
    <interface-name>GigabitEthernet1/0/1</interface-name>
    <physical-index>1</physical-index>
    <present>true</present>
    <optical-module-info>
     <vendor-name/>
     <serial-number/>
     <type>unknown</type>
     <transfer-mode>not-support</transfer-mode>
     <tx-power-high-threshold>0.0</tx-power-high-threshold>
     <tx-power-low-threshold>0.0</tx-power-low-threshold>
     <rx-power-high-threshold>0.0</rx-power-high-threshold>
     <rx-power-low-threshold>0.0</rx-power-low-threshold>
    </optical-module-info>
   </interface-list>
  </optical-module-infos>
 </device-state>
</data>
```

3.1.2 查看接口状态

命令行

display interface

display this interface

NETCONF YANG API

功能	XPATH
查看接口状态	/ietf-interfaces:interfaces-state/interface/name /ietf-interfaces:interfaces-state/interface/type /ietf-interfaces:interfaces-state/interface/admin-status /ietf-interfaces:interfaces-state/interface/oper-status /ietf-interfaces:interfaces-state/interface/last-change /ietf-interfaces:interfaces-state/interface/if-index /ietf-interfaces:interfaces-state/interface/phys-address /ietf-interfaces:interfaces-state/interface/speed /ietf-interfaces:interfaces-state/interface/statistics /ietf-interfaces:interfaces-state/interface/huawei-interfaces:common/description /ietf-interfaces:interfaces-state/interface/hw-ethernet:physical-state/speed /ietf-interfaces:interfaces-state/interface/hw-ethernet:physical-state/duplex

操作实例

- 请求示例

```
<?xml version='1.0' encoding='UTF-8'?>
<rpc message-id="1" xmlns="urn:ietf:params:xml:ns:netconf:base:1.0">
 <get>
  <filter type="subtree">
   <if:interfaces-state xmlns:if="urn:ietf:params:xml:ns:yang:ietf-interfaces">
    <if:interface>
     <if:name>XGigabitEthernet1/0/3</if:name>
    </if:interface>
   </if:interfaces-state>
  </filter>
 </get>
</rpc>
```

- 响应示例

```
##### Ok Reply or Operation Successful #####
<?xml version='1.0' encoding='UTF-8'?>
<rpc-reply xmlns="urn:ietf:params:xml:ns:netconf:base:1.0" message-id="1">
 <data>
```

```
  <interfaces-state xmlns="urn:ietf:params:xml:ns:yang:ietf-interfaces">
    <interface>
      <name>XGigabitEthernet1/0/3</name>
      <type xmlns:iana-if-type="urn:ietf:params:xml:ns:yang:iana-if-type">iana-if-
type:ethernetCsmacd</type>
      <admin-status>down</admin-status>
      <oper-status>down</oper-status>
      <if-index>201</if-index>
      <phys-address>00:e0:fc:12:34:56<//phys-address>
      <speed>10000000000</speed>
      <statistics>
        <in-octets>0</in-octets>
        <in-unicast-pkts>0</in-unicast-pkts>
        <in-broadcast-pkts>0</in-broadcast-pkts>
        <in-multicast-pkts>0</in-multicast-pkts>
        <in-discards>0</in-discards>
        <in-errors>0</in-errors>
        <out-octets>0</out-octets>
        <out-unicast-pkts>0</out-unicast-pkts>
        <out-broadcast-pkts>0</out-broadcast-pkts>
        <out-multicast-pkts>0</out-multicast-pkts>
        <out-discards>0</out-discards>
        <out-errors>0</out-errors>
        <description xmlns="urn:huawei:params:xml:ns:yang:huawei-interface">
          <in-bandwidth>0</in-bandwidth>
          <out-bandwidth>0</out-bandwidth>
        </ethernet-statistics>
      </statistics>
      <description xmlns="urn:huawei:params:xml:ns:yang:huawei-interface">toN10</description>
      <common xmlns="urn:huawei:params:xml:ns:yang:huawei-interfaces">
        <description>toN10</description>
      </common>
      <ethernet xmlns="urn:huawei:params:xml:ns:yang:huawei-interface">
        <speed>10Gbps</speed>
        <duplex>full</duplex>
      </ethernet>
    <physical-state xmlns="urn:huawei:params:xml:ns:yang:huawei-ethernet">
      <speed>10Gbps</speed>
      <duplex>full</duplex>
     </physical-state>
    </interface>
   </interfaces-state>
  </data>
</rpc-reply>
```

3.1.3 查看所有接口信息

命令行

display interface

NETCONF YANG API

功能	XPATH
查看所有接口信息	/ietf-interfaces:interfaces-state/interface

操作实例

- 请求示例

```
<?xml version="1.0" encoding="UTF-8"?>
<rpc xmlns="urn:ietf:params:xml:ns:netconf:base:1.0" message-id="1">
```

```
 <get>
  <filter type="subtree">
   <interfaces-state xmlns="urn:ietf:params:xml:ns:yang:ietf-interfaces">
    <interface>
     <name />
    </interface>
   </interfaces-state>
  </filter>
 </get>
</rpc>
```

- 响应示例

```
<?xml version="1.0" encoding="utf-8"?>
<data xmlns="urn:ietf:params:xml:ns:netconf:base:1.0">
 <interfaces-state xmlns="urn:ietf:params:xml:ns:yang:ietf-interfaces">
  <interface>
   <name>NULL0</name>
  </interface>
  <interface>
   <name>MEth1/0/1</name>
  </interface>
  <interface>
   <name>MEth1/0/2</name>
  </interface>
  <interface>
   <name>Vlanif1</name>
  </interface>
  <interface>
   <name>GigabitEthernet1/0/1</name>
  </interface>
  <interface>
   <name>GigabitEthernet1/0/2</name>
  </interface>
  <interface>
   <name>GigabitEthernet1/0/3</name>
  </interface>
  <interface>
   <name>GigabitEthernet1/0/4</name>
  </interface>
   <name>Vlanif1032</name>
  </interface>
  <interface>
   <name>Vlanif216</name>
  </interface>
  <interface>
   <name>Eth-Trunk1</name>
  </interface>
  <interface>
   <name>Eth-Trunk10</name>
  </interface>
  <interface>
   <name>Vlanif100</name>
  </interface>
  <interface>
   <name>LoopBack0</name>
  </interface>
  <interface>
   <name>Eth-Trunk5</name>
  </interface>
 </interfaces-state>
</data>
```

3.1.4 查看接口的运行状态

命令行

display interface

display interface brief

NETCONF YANG API

功能	XPATH
查看接口运行状态	/ietf-interfaces:interfaces-state/interface/statistics

操作实例

- 请求示例

```
<?xml version="1.0" encoding="UTF-8"?>
<rpc xmlns="urn:ietf:params:xml:ns:netconf:base:1.0" message-id="1">
  <get>
    <filter type="subtree">
      <interfaces-state xmlns="urn:ietf:params:xml:ns:yang:ietf-interfaces">
        <interface>
          <statistics />
        </interface>
      </interfaces-state>
    </filter>
  </get>
</rpc>
```

- 响应示例

```
<?xml version="1.0" encoding="UTF-8"?><rpc-reply xmlns="urn:ietf:params:xml:ns:netconf:base:1.0"
message-id="1">
    <data>
        <interfaces-state xmlns="urn:ietf:params:xml:ns:yang:ietf-interfaces">
            <interface>
                <statistics>
                    <in-octets>1538722</in-octets>
                    <in-unicast-pkts>0</in-unicast-pkts>
                    <in-broadcast-pkts>0</in-broadcast-pkts>
                    <in-multicast-pkts>9559</in-multicast-pkts>
                    <in-discards>0</in-discards>
                    <in-errors>0</in-errors>
                    <out-octets>1538722</out-octets>
                    <out-unicast-pkts>0</out-unicast-pkts>
                    <out-broadcast-pkts>0</out-broadcast-pkts>
                    <out-multicast-pkts>9559</out-multicast-pkts>
                    <out-discards>0</out-discards>
                    <out-errors>0</out-errors>
                    <ethernet-statistics xmlns="urn:huawei:params:xml:ns:yang:huawei-ethernet">
                        <in-bandwidth>0</in-bandwidth>
                        <out-bandwidth>0</out-bandwidth>
                    </ethernet-statistics>
                </statistics>
            </interface>
            <interface>
                <statistics>
                    <in-octets>0</in-octets>
                    <in-unicast-pkts>0</in-unicast-pkts>
                    <in-broadcast-pkts>0</in-broadcast-pkts>
                    <in-multicast-pkts>0</in-multicast-pkts>
                    <in-discards>0</in-discards>
                    <in-errors>0</in-errors>
                    <out-octets>0</out-octets>
                    <out-unicast-pkts>0</out-unicast-pkts>
                    <out-broadcast-pkts>0</out-broadcast-pkts>
                    <out-multicast-pkts>0</out-multicast-pkts>
                    <out-discards>0</out-discards>
                    <out-errors>0</out-errors>
                    <ethernet-statistics xmlns="urn:huawei:params:xml:ns:yang:huawei-ethernet">
```



```
                    <in-bandwidth>0</in-bandwidth>
                    <out-bandwidth>0</out-bandwidth>
                  </ethernet-statistics>
                </statistics>
              </interface>
            </interfaces-state>
          </data>
</rpc-reply>
```

3.1.5 配置接口速率

命令行

interface *ge 1/0/1*

speed *1000*

NETCONF YANG API

功能	XPATH
配置以太网接口速率	/ietf-interfaces:interfaces/interface/hw-ethernet:physical-config/speed

操作实例

- 请求示例

```
<?xml version='1.0' encoding='UTF-8'?>
<rpc message-id="1" xmlns="urn:ietf:params:xml:ns:netconf:base:1.0">
 <edit-config>
  <target>
    <running/>
  </target>
  <config>
    <if:interfaces xmlns:if="urn:ietf:params:xml:ns:yang:ietf-interfaces">
      <if:interface>
        <if:name>GigabitEthernet1/0/1</if:name>
        <if:type xmlns:iana-if-type="urn:ietf:params:xml:ns:yang:iana-if-type">iana-if-type:ethernetCsmacd</if:type>
        <hw-ethernet:physical-config xmlns:hw-ethernet="urn:huawei:params:xml:ns:yang:huawei-ethernet">
          <hw-ethernet:speed>100Mbps</hw-ethernet:speed>
        </hw-ethernet:physical-config>
      </if:interface>
    </if:interfaces>
  </config>
 </edit-config>
</rpc>
```

- 响应示例

```
<?xml version='1.0' encoding='UTF-8'?>
<rpc-reply xmlns="urn:ietf:params:xml:ns:netconf:base:1.0" message-id="1">
 <ok/>
</rpc-reply>
```

3.2 VLAN

3.2.1 创建单个 VLAN

命令行

vlan *10*

NETCONF YANG API

功能	XPATH
创建单个VLAN	/huawei-vlan:vlans/id

操作实例

- 请求示例

```
<?xml version='1.0' encoding='UTF-8'?>
<rpc message-id="1" xmlns="urn:ietf:params:xml:ns:netconf:base:1.0">
  <edit-config>
    <target>
      <running/>
    </target>
    <config>
      <huawei-vlan:vlans xmlns:huawei-vlan="urn:huawei:params:xml:ns:yang:huawei-vlan">
        <huawei-vlan:vlan>
          <huawei-vlan:id>100</huawei-vlan:id>
        </huawei-vlan:vlan>
      </huawei-vlan:vlans>
    </config>
  </edit-config>
</rpc>
```

- 响应示例

```
<?xml version='1.0' encoding='UTF-8'?>
<rpc-reply xmlns="urn:ietf:params:xml:ns:netconf:base:1.0" message-id="1">
  <ok/>
</rpc-reply>
```

3.2.2 配置接口的链路类型

方法 1 配置接口链路类型为 access

- 命令行

  interface *GigabitEthernet1/0/1*

  port default vlan *15*

- NETCONF YANG API

功能	XPATH
配置接口的链路类型	/ietf-interfaces:interfaces/interface/huawei-vlan:vlan/default-vlan

- 操作实例

  请求示例

```
<?xml version="1.0" encoding="UTF-8"?>
<rpc xmlns="urn:ietf:params:xml:ns:netconf:base:1.0" message-id="1">
```

```
 <edit-config>
  <target>
   <running/>
  </target>
  <error-option>rollback-on-error</error-option>
  <config>
   <if:interfaces xmlns:if="urn:ietf:params:xml:ns:yang:ietf-interfaces">
    <if:interface>
     <if:name>GigabitEthernet1/0/1</if:name>
     <if:type xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-type">ianaift:ethernetCsmacd</
if:type>
      <huawei-vlan:vlan xmlns:huawei-vlan="urn:huawei:params:xml:ns:yang:huawei-vlan">
       <huawei-vlan:default-vlan>15</huawei-vlan:default-vlan>
      </huawei-vlan:vlan>
    </if:interface>
   </if:interfaces>
  </config>
 </edit-config>
</rpc>
```

响应示例

```
<?xml version="1.0" encoding="utf-8"?>
<rpc-reply xmlns="urn:ietf:params:xml:ns:netconf:base:1.0" message-id="1">
 <ok/>
</rpc-reply>
```

方法 2 配置接口链路类型为 trunk

- 命令行

  interface *GigabitEthernet1/0/1*

  port link-type trunk

  port trunk pvid vlan *2*

  port trunk allow-pass vlan *7*

- NETCONF YANG API

功能	XPATH
配置接口的链路类型	/ietf-interfaces:interfaces/interface/huawei-vlan:vlan/port-link-type /ietf-interfaces:interfaces/interface/huawei-vlan:vlan/default-vlan /ietf-interfaces:interfaces/interface/huawei-vlan:vlan/trunk/trunk-vlan

- 操作实例

  请求示例

```
<?xml version="1.0" encoding="UTF-8"?>
<rpc xmlns="urn:ietf:params:xml:ns:netconf:base:1.0" message-id="1">
 <edit-config>
  <target>
   <running/>
  </target>
  <error-option>rollback-on-error</error-option>
  <config>
   <if:interfaces xmlns:if="urn:ietf:params:xml:ns:yang:ietf-interfaces">
    <if:interface>
     <if:name>GigabitEthernet1/0/1</if:name>
     <if:type xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-type">ianaift:ethernetCsmacd</
if:type>
```



```
        <huawei-vlan:vlan xmlns:huawei-vlan="urn:huawei:params:xml:ns:yang:huawei-vlan">
          <huawei-vlan:port-link-type>trunk</huawei-vlan:port-link-type>
          <huawei-vlan:default-vlan>2</huawei-vlan:default-vlan>
          <huawei-vlan:trunk>
            <huawei-vlan:trunk-vlan>7</huawei-vlan:trunk-vlan>
          </huawei-vlan:trunk>
        </huawei-vlan:vlan>
      </if:interface>
    </if:interfaces>
  </config>
 </edit-config>
</rpc>
```

响应示例

```
<?xml version="1.0" encoding="utf-8"?>
<rpc-reply xmlns="urn:ietf:params:xml:ns:netconf:base:1.0" message-id="1">
 <ok/>
</rpc-reply>
```

方法 3 配置接口链路类型为 hybrid

- 命令行

  interface *ge 1/0/1*

  port link-type hybrid

  port hybrid pvid vlan *2*

  port hybrid tagged vlan *7*

- NETCONF YANG API

功能	XPATH
配置接口的链路类型	/ietf-interfaces:interfaces/interface/huawei-vlan:vlan/port-link-type /ietf-interfaces:interfaces/interface/huawei-vlan:vlan/default-vlan /ietf-interfaces:interfaces/interface/huawei-vlan:vlan/link-type/hybrid/hybrid/tagged-vlan

- 操作实例

  请求示例

```
<?xml version="1.0" encoding="UTF-8"?>
<rpc xmlns="urn:ietf:params:xml:ns:netconf:base:1.0" message-id="1">
 <edit-config>
  <target>
   <running/>
  </target>
  <error-option>rollback-on-error</error-option>
  <config>
   <if:interfaces xmlns:if="urn:ietf:params:xml:ns:yang:ietf-interfaces">
    <if:interface>
     <if:name>GigabitEthernet1/0/1</if:name>
     <if:type xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-type">ianaift:ethernetCsmacd</
if:type>
      <huawei-vlan:vlan xmlns:huawei-vlan="urn:huawei:params:xml:ns:yang:huawei-vlan">
       <huawei-vlan:port-link-type>hybrid</huawei-vlan:port-link-type>
       <huawei-vlan:default-vlan>2</huawei-vlan:default-vlan>
       <huawei-vlan:hybrid>
        <huawei-vlan:tagged-vlan>7</huawei-vlan:tagged-vlan>
       </huawei-vlan:hybrid>
```

```
        </huawei-vlan:vlan>
      </if:interface>
    </if:interfaces>
  </config>
 </edit-config>
</rpc>
```

响应示例

```
<?xml version="1.0" encoding="utf-8"?>
<rpc-reply xmlns="urn:ietf:params:xml:ns:netconf:base:1.0" message-id="1">
 <ok/>
</rpc-reply>
```

3.3 以太网链路聚合

3.3.1 创建 Eth-Trunk 接口

命令行

interface eth-trunk *10*

NETCONF YANG API

功能	XPATH
创建Eth-Trunk接口	/ietf-interfaces:interfaces/interface

操作实例

- 请求示例

```
<?xml version="1.0" encoding="utf-8"?>
<rpc xmlns="urn:ietf:params:xml:ns:netconf:base:1.0" message-id="1">
 <edit-config>
  <target>
   <running/>
  </target>
  <config>
   <interfaces xmlns="urn:ietf:params:xml:ns:yang:ietf-interfaces">
    <interface>
     <name>Eth-Trunk10</name>
     <type xmlns:iana-if-type="urn:ietf:params:xml:ns:yang:iana-if-type">iana-if-
type:ethernetCsmacd</type>
      <enabled>true</enabled>
    </interface>
   </interfaces>
  </config>
 </edit-config>
</rpc>
```

- 响应示例

```
<?xml version="1.0" encoding="utf-8"?>
<rpc-reply xmlns="urn:ietf:params:xml:ns:netconf:base:1.0" message-id="1">
 <ok/>
</rpc-reply>
```

3.3.2 将接口加入到指定 Eth-Trunk 中

命令行

interface eth-trunk *10*

trunkport *XGigabitEthernet1/0/1*

NETCONF YANG API

功能	XPATH
将接口加入到指定Eth-Trunk中	/ietf-interfaces:interfaces/interface/huawei-eth-trunk:eth-trunk/assign-interface

操作实例

- 请求示例

```
<?xml version="1.0" encoding="utf-8"?>
<rpc xmlns="urn:ietf:params:xml:ns:netconf:base:1.0" message-id="1">
  <edit-config>
    <target>
      <running/>
    </target>
    <config>
      <interfaces xmlns="urn:ietf:params:xml:ns:yang:ietf-interfaces" nc:operation="replace"
xmlns:nc="urn:ietf:params:xml:ns:netconf:base:1.0">
        <interface>
          <name>Eth-Trunk10</name>
          <type xmlns:iana-if-type="urn:ietf:params:xml:ns:yang:iana-if-type">iana-if-
type:ethernetCsmacd</type>
          <eth-trunk xmlns="urn:huawei:params:xml:ns:yang:huawei-eth-trunk">
            <assign-interface>XGigabitEthernet1/0/1</assign-interface>
          </eth-trunk>
        </interface>
        <interface>
          <name>XGigabitEthernet1/0/1</name>
          <type xmlns:iana-if-type="urn:ietf:params:xml:ns:yang:iana-if-type">iana-if-
type:ethernetCsmacd</type>
        </interface>
      </interfaces>
    </config>
  </edit-config>
</rpc>
```

- 响应示例

```
<?xml version="1.0" encoding="utf-8"?>
<rpc-reply xmlns="urn:ietf:params:xml:ns:netconf:base:1.0" message-id="1">
  <ok/>
</rpc-reply>
```

3.3.3 配置链路聚合模式为 LACP 模式

命令行

interface eth-trunk *10*

mode lacp

NETCONF YANG API

功能	XPATH
配置链路聚合模式为LACP模式	/ietf-interfaces:interfaces/interface/huawei-eth-trunk:eth-trunk/trunk-work-mode

操作实例

- 请求示例

```
<?xml version="1.0" encoding="utf-8"?>
<rpc xmlns="urn:ietf:params:xml:ns:netconf:base:1.0" message-id="1">
  <edit-config>
    <target>
      <running/>
    </target>
    <config>
      <interfaces xmlns="urn:ietf:params:xml:ns:yang:ietf-interfaces" nc:operation="replace"
xmlns:nc="urn:ietf:params:xml:ns:netconf:base:1.0">
        <interface>
          <name>Eth-Trunk10</name>
          <type xmlns:iana-if-type="urn:ietf:params:xml:ns:yang:iana-if-type">iana-if-
type:ethernetCsmacd</type>
          <eth-trunk xmlns="urn:huawei:params:xml:ns:yang:huawei-eth-trunk">
            <trunk-work-mode>lacp</trunk-work-mode>
            <assign-interface>XGigabitEthernet1/0/1</assign-interface>
          </eth-trunk>
          <enabled>true</enabled>
        </interface>
        <interface>
          <name>XGigabitEthernet1/0/1</name>
          <type xmlns:iana-if-type="urn:ietf:params:xml:ns:yang:iana-if-type">iana-if-
type:ethernetCsmacd</type>
        </interface>
      </interfaces>
    </config>
  </edit-config>
</rpc>
```

- 响应示例

```
<?xml version="1.0" encoding="utf-8"?>
<rpc-reply xmlns="urn:ietf:params:xml:ns:netconf:base:1.0" message-id="1">
  <ok/>
</rpc-reply>
```

3.3.4 查看 Eth-Trunk 接口的配置信息

命令行

display eth-trunk

NETCONF YANG API

功能	XPATH
查看Eth-Trunk接口的配置信息	/huawei-eth-trunk:eth-trunk-state/interface

操作实例

- 请求示例

```
<?xml version='1.0' encoding='UTF-8'?>
<rpc message-id="1" xmlns="urn:ietf:params:xml:ns:netconf:base:1.0">
 <get>
  <filter type="subtree">
   <hw-eth-trunk:eth-trunk-state xmlns:hw-eth-trunk="urn:huawei:params:xml:ns:yang:huawei-eth-trunk">
    <hw-eth-trunk:interface>
     <hw-eth-trunk:name>Eth-Trunk10</hw-eth-trunk:name>
    </hw-eth-trunk:interface>
   </hw-eth-trunk:eth-trunk-state>
  </filter>
 </get>
</rpc>
```

- 响应示例

```
<?xml version="1.0" encoding="utf-8"?>
<data xmlns="urn:ietf:params:xml:ns:netconf:base:1.0">
 <eth-trunk-state xmlns="urn:huawei:params:xml:ns:yang:huawei-eth-trunk">
  <interface>
   <name>Eth-Trunk10</name>
   <trunk-work-mode>manual</trunk-work-mode>
   <load-balance>src-dst-ip</load-balance>
   <least-active-num>1</least-active-num>
   <max-bandwidth-affected>32</max-bandwidth-affected>
   <oper-status>down</oper-status>
   <up-port-num>0</up-port-num>
  </interface>
 </eth-trunk-state>
</data>
```

3.3.5 将接口从指定 Eth-Trunk 中删除

命令行

interface eth-trunk *10*

undo trunkport *XGigabitEthernet1/0/1*

NETCONF YANG API

功能	XPATH
将接口从指定Eth-Trunk中删除	/ietf-interfaces:interfaces/interface/huawei-eth-trunk:eth-trunk/assign-interface

操作实例

- 请求示例

```
<?xml version="1.0" encoding="utf-8"?>
<rpc xmlns="urn:ietf:params:xml:ns:netconf:base:1.0" message-id="1">
 <edit-config>
  <target>
   <running/>
  </target>
  <config>
   <interfaces xmlns="urn:ietf:params:xml:ns:yang:ietf-interfaces" nc:operation="merge" xmlns:nc="urn:ietf:params:xml:ns:netconf:base:1.0">
    <interface>
```



```
        <name>Eth-Trunk10</name>
        <type xmlns:iana-if-type="urn:ietf:params:xml:ns:yang:iana-if-type">iana-if-
type:ethernetCsmacd</type>
        <eth-trunk xmlns="urn:huawei:params:xml:ns:yang:huawei-eth-trunk">
          <trunk-work-mode>lacp</trunk-work-mode>
          <assign-interface nc:operation="delete">XGigabitEthernet1/0/1</assign-interface>
        </eth-trunk>
      </interface>
      <interface>
        <name>XGigabitEthernet1/0/1</name>
        <type xmlns:iana-if-type="urn:ietf:params:xml:ns:yang:iana-if-type">iana-if-
type:ethernetCsmacd</type>
      </interface>
    </interfaces>
  </config>
 </edit-config>
</rpc>
```

- 响应示例

```
<?xml version="1.0" encoding="utf-8"?>
<rpc-reply xmlns="urn:ietf:params:xml:ns:netconf:base:1.0" message-id="1">
 <ok/>
</rpc-reply>
```

3.3.6 删除 Eth-Trunk 接口

命令行

undo interface eth-trunk *10*

NETCONF YANG API

功能	XPATH
删除Eth-Trunk接口	/ietf-interfaces:interfaces/interface

操作实例

- 请求示例

```
<?xml version="1.0" encoding="utf-8"?>
<rpc xmlns="urn:ietf:params:xml:ns:netconf:base:1.0" message-id="1">
 <edit-config>
  <target>
   <running/>
  </target>
  <config>
   <interfaces xmlns="urn:ietf:params:xml:ns:yang:ietf-interfaces" nc:operation="merge"
xmlns:nc="urn:ietf:params:xml:ns:netconf:base:1.0">
     <interface nc:operation="delete">
       <name>Eth-Trunk10</name>
       <type xmlns:iana-if-type="urn:ietf:params:xml:ns:yang:iana-if-type">iana-if-
type:ethernetCsmacd</type>
     </interface>
   </interfaces>
  </config>
 </edit-config>
</rpc>
```

- 响应示例

```
<?xml version="1.0" encoding="utf-8"?>
<rpc-reply xmlns="urn:ietf:params:xml:ns:netconf:base:1.0" message-id="1">
 <ok/>
</rpc-reply>
```

3.4 STP

3.4.1 配置接口为边缘端口

命令行

interface *GigabitEthernet1/0/1*

stp edged-port enable

NETCONF YANG API

功能	XPATH
配置接口为边缘端口	/ietf-interfaces:interfaces/interface/huawei-stp:stp/edged-port-enable

操作实例

- 请求示例

```
<?xml version='1.0' encoding='UTF-8'?>
<rpc message-id="1" xmlns="urn:ietf:params:xml:ns:netconf:base:1.0">
 <edit-config>
  <target>
   <running/>
  </target>
  <config>
   <if:interfaces xmlns:if="urn:ietf:params:xml:ns:yang:ietf-interfaces">
    <if:interface>
     <if:name>GigabitEthernet1/0/1</if:name>
     <if:type xmlns:iana-if-type="urn:ietf:params:xml:ns:yang:iana-if-type">iana-if-type:ethernetCsmacd</if:type>
      <huawei-stp:stp xmlns:huawei-stp="urn:huawei:params:xml:ns:yang:huawei-stp">
       <huawei-stp:edged-port-enable>true</huawei-stp:edged-port-enable>
      </huawei-stp:stp>
    </if:interface>
   </if:interfaces>
  </config>
 </edit-config>
</rpc>
```

- 响应示例

```
<?xml version="1.0" encoding="utf-8"?>
<rpc-reply xmlns="urn:ietf:params:xml:ns:netconf:base:1.0" message-id="1">
 <ok/>
</rpc-reply>
```

3.4.2 查看生成树状态

命令行

display stp

NETCONF YANG API

功能	XPATH
查看生成树状态	/huawei-stp:stp-state-get

操作实例

- 请求示例

```
<?xml version="1.0" encoding="UTF-8"?>
<rpc xmlns="urn:ietf:params:xml:ns:netconf:base:1.0" message-id="1">
  <huawei-stp:stp-state-get xmlns:huawei-stp="urn:huawei:params:xml:ns:yang:huawei-stp">
    <huawei-stp:request-num>10</huawei-stp:request-num>
    <huawei-stp:filter-condition>
      <huawei-stp:process-id>0</huawei-stp:process-id>
      <huawei-stp:mstid-vlan-id>0</huawei-stp:mstid-vlan-id>
      <huawei-stp:interface-name>GigabitEthernet1/0/1</huawei-stp:interface-name>
    </huawei-stp:filter-condition>
  </huawei-stp:stp-state-get>
</rpc>
```

- 响应示例

```
<?xml version="1.0" encoding="utf-8"?>
<rpc-reply xmlns="urn:ietf:params:xml:ns:netconf:base:1.0" message-id="1">
  <stp-state-get xmlns="urn:huawei:params:xml:ns:yang:huawei-stp">
    <has-more>false</has-more>
    <stp-state>
      <process-id>0</process-id>
      <mstid-vlan-id>0</mstid-vlan-id>
      <interface-name>GigabitEthernet1/0/1</interface-name>
      <mode>mstp</mode>
      <role>designated</role>
      <status>discarding</status>
      <protection>loopback</protection>
    </stp-state>
  </stp-state-get>
</rpc-reply>
```

3.5 IP 业务

3.5.1 配置接口 IP 地址

命令行

interface Vlanif10

description *uplink*

ip address *192.168.2.1 255.255.255.0*

NETCONF YANG API

功能	XPATH
配置接口的描述信息	/ietf-interfaces:interfaces/interface/name /ietf-interfaces:interfaces/interface/description
配置接口IP地址	/ietf-interfaces:interfaces/interface/ietf-ip:ipv4/address/ip /ietf-interfaces:interfaces/interface/ietf-ip:ipv4/address/prefix-length

操作实例

- 请求示例

```
<?xml version="1.0" encoding="utf-8"?>
<rpc xmlns="urn:ietf:params:xml:ns:netconf:base:1.0" message-id="1">
  <edit-config>
    <target>
      <running/>
    </target>
    <config>
      <if:interfaces xmlns:if="urn:ietf:params:xml:ns:yang:ietf-interfaces">
        <if:interface>
          <if:name>Vlanif10</if:name>
          <if:description>uplink</if:description>
          <if:type xmlns:iana-if-type="urn:ietf:params:xml:ns:yang:iana-if-type">iana-if-type:propVirtual</
if:type>
          <ip:ipv4 xmlns:ip="urn:ietf:params:xml:ns:yang:ietf-ip">
            <ip:address>
              <ip:ip>192.168.2.1</ip:ip>
              <ip:prefix-length>24</ip:prefix-length>
            </ip:address>
          </ip:ipv4>
        </if:interface>
      </if:interfaces>
    </config>
  </edit-config>
</rpc>
```

- 响应示例

```
<?xml version="1.0" encoding="utf-8"?>
<rpc-reply xmlns="urn:ietf:params:xml:ns:netconf:base:1.0" message-id="1">
  <ok/>
</rpc-reply>
```

3.5.2 查看接口的 IP 地址信息

命令行

display ip interface brief *Vlanif10*

NETCONF YANG API

功能	XPATH
查看接口的IP地址信息	/ietf-interfaces:interfaces-state/interface

操作实例

- 请求示例

```
<?xml version='1.0' encoding='UTF-8'?>
<rpc message-id="1" xmlns="urn:ietf:params:xml:ns:netconf:base:1.0">
 <get>
  <filter type="subtree">
   <if:interfaces-state xmlns:if="urn:ietf:params:xml:ns:yang:ietf-interfaces">
    <if:interface>
     <if:name>Vlanif10</if:name>
    </if:interface>
   </if:interfaces-state>
  </filter>
 </get>
</rpc>
```

- 响应示例

```
<?xml version="1.0" encoding="utf-8"?>
<data xmlns="urn:ietf:params:xml:ns:netconf:base:1.0">
 <interfaces-state xmlns="urn:ietf:params:xml:ns:yang:ietf-interfaces">
  <interface>
   <name>Vlanif10</name>
   <type xmlns:iana-if-type="urn:ietf:params:xml:ns:yang:iana-if-type">iana-if-type:propVirtual</
type>
   <admin-status>up</admin-status>
   <oper-status>down</oper-status>
   <if-index>71</if-index>
   <phys-address>00:e0:fc:12:34:56</phys-address>
   <description xmlns="urn:huawei:params:xml:ns:yang:huawei-interface">uplink</description>
   <common xmlns="urn:huawei:params:xml:ns:yang:huawei-interfaces">
    <description>uplink</description>
   </common>
   <ipv4 xmlns="urn:ietf:params:xml:ns:yang:ietf-ip">
    <forwarding>false</forwarding>
    <mtu>1500</mtu>
    <address>
     <ip>192.168.2.1</ip>
     <netmask>255.255.255.0</netmask>
     <origin>static</origin>
    </address>
   </ipv4>
   <ipv6 xmlns="urn:ietf:params:xml:ns:yang:ietf-ip">
    <forwarding>false</forwarding>
   </ipv6>
  </interface>
 </interfaces-state>
</data>
```

3.6 静态路由

3.6.1 配置静态路由

命令行

ip route-static *10.1.1.1 255.255.255.0 192.168.10.1*

NETCONF YANG API

功能	XPATH
配置静态路由	/ietf-routing:routing/routing-instance/routing-protocols/routing-protocol/type /ietf-routingrouting/routing-instance/routing-protocols/routing-protocol/name /ietf-routingrouting/routing-instance/routing-protocols/routing-protocol/static-routes/ietf-ipv4-unicast-routing:ipv4/route/destination-prefix /ietf-routingrouting/routing-instance/routing-protocols/routing-protocol/static-routes/ietf-ipv4-unicast-routing:ipv4/route/next-hop/next-hop-address

操作实例

- 请求示例

```
<?xml version='1.0' encoding='UTF-8'?>
<rpc message-id="1" xmlns="urn:ietf:params:xml:ns:netconf:base:1.0">
 <edit-config>
  <target>
   <running/>
  </target>
  <config>
 <rt:routing xmlns:rt="urn:ietf:params:xml:ns:yang:ietf-routing">
      <rt:routing-instance>
        <rt:name>default-routing-instance</rt:name>
        <rt:routing-protocols>
          <rt:routing-protocol>
            <rt:type>rt:static</rt:type>
            <rt:name>default-routing-instance</rt:name>
            <rt:static-routes>
              <v4ur:ipv4 xmlns:v4ur="urn:ietf:params:xml:ns:yang:ietf-ipv4-unicast-routing"
nc:operation="merge" xmlns:nc="urn:ietf:params:xml:ns:netconf:base:1.0">
                <v4ur:route>
                  <v4ur:destination-prefix>10.1.1.1/24</v4ur:destination-prefix>
                  <v4ur:next-hop>
                    <hw-v4sr:ipv4-address-nexthop xmlns:hw-v4sr="urn:huawei:params:xml:ns:yang:hw-
ipv4-static-route">
                      <hw-v4sr:next-hop-address>192.168.10.1</hw-v4sr:next-hop-address>
                    </hw-v4sr:ipv4-address-nexthop>
                  </v4ur:next-hop>
                </v4ur:route>
              </v4ur:ipv4>
            </rt:static-routes>
```

```
          </rt:routing-protocol>
        </rt:routing-protocols>
      </rt:routing-instance>
    </rt:routing>
  </config>
  </edit-config>
</rpc>
```

- 响应示例

```
<?xml version="1.0" encoding="utf-8"?>
<rpc-reply xmlns="urn:ietf:params:xml:ns:netconf:base:1.0" message-id="1">
  <ok/>
</rpc-reply>
```

3.7 OSPF

3.7.1 配置 OSPF 功能

配置思路

采用如下的思路配置OSPF功能：

1. **配置接口IP地址及接口描述。**
2. **配置接口的OSPF功能，包括OSPF认证方式，O...**

配置步骤

1. 配置接口IP地址及接口描述。
   - 命令行

     interface Vlanif10

     description *uplink*

     ip address *10.1.1.2 255.255.255.0*
   - NETCONF YANG API

功能	XPATH
配置接口的描述信息	/ietf-interfaces:interfaces/interface/name /ietf-interfaces:interfaces/interface/description
配置接口IP地址	/ietf-interfaces:interfaces/interface/ietf-ip:ipv4/address/ip /ietf-interfaces:interfaces/interface/ietf-ip:ipv4/address/prefix-length

   - 操作实例

     请求示例

```
<?xml version='1.0' encoding='UTF-8'?>
<rpc message-id="1" xmlns="urn:ietf:params:xml:ns:netconf:base:1.0">
  <edit-config>
```

```
  <target>
    <running/>
  </target>
  <config>
    <if:interfaces xmlns:if="urn:ietf:params:xml:ns:yang:ietf-interfaces">
      <if:interface>
        <if:name>Vlanif10</if:name>
        <if:description>uplink</if:description>
        <if:type xmlns:iana-if-type="urn:ietf:params:xml:ns:yang:iana-if-type">iana-if-
type:propVirtual</if:type>
        <ip:ipv4 xmlns:ip="urn:ietf:params:xml:ns:yang:ietf-ip">
          <ip:address>
            <ip:ip>10.1.1.2</ip:ip>
            <ip:prefix-length>24</ip:prefix-length>
          </ip:address>
        </ip:ipv4>
      </if:interface>
    </if:interfaces>
  </config>
 </edit-config>
</rpc>
```

响应示例

```
<?xml version="1.0" encoding="utf-8"?>
<rpc-reply xmlns="urn:ietf:params:xml:ns:netconf:base:1.0" message-id="1">
 <ok/>
</rpc-reply>
```

2. 配置全局OSPF功能。
   - 命令行

     ospf *100*

     area *0*

     network *192.168.1.0 0.0.0.255*
   - NETCONF YANG API

功能	XPATH
配置接口的OSPF功能	/routing:routing/routing-instance/routing-protocols/routing-protocol/huawei-ospf:ospf/instance/process-id /routing:routing/routing-instance/routing-protocols/routing-protocol/huawei-ospf:ospf/instance/area/area-id /routing:routing/routing-instance/routing-protocols/routing-protocol/huawei-ospf:ospf/instance/area/network

   - 操作实例

     请求示例

```
<?xml version='1.0' encoding='UTF-8'?>
<rpc message-id="1" xmlns="urn:ietf:params:xml:ns:netconf:base:1.0">
 <edit-config>
  <target>
    <running/>
  </target>
  <config>
```



```
    <rt:routing xmlns:rt="urn:ietf:params:xml:ns:yang:ietf-routing">
      <rt:routing-instance>
        <rt:name>1</rt:name>
        <rt:routing-protocols>
          <rt:routing-protocol>
            <rt:type xmlns:huawei-ospf="urn:huawei:params:xml:ns:yang:huawei-ospf">huawei-
ospf:ospf-routing-protocol</rt:type>
            <rt:name>ospf</rt:name>
            <hw-ospf:ospf xmlns:hw-ospf="urn:huawei:params:xml:ns:yang:huawei-ospf">
              <hw-ospf:instance>
                <hw-ospf:process-id>100</hw-ospf:process-id>
                <hw-ospf:area>
                  <hw-ospf:area-id>0</hw-ospf:area-id>
                  <hw-ospf:network>192.168.1.0/24</hw-ospf:network>
                </hw-ospf:area>
              </hw-ospf:instance>
            </hw-ospf:ospf>
          </rt:routing-protocol>
        </rt:routing-protocols>
      </rt:routing-instance>
    </rt:routing>
  </config>
 </edit-config>
</rpc>
```

响应示例

```
<?xml version="1.0" encoding="utf-8"?>
<rpc-reply xmlns="urn:ietf:params:xml:ns:netconf:base:1.0" message-id="1">
 <ok/>
</rpc-reply>
```

3. 配置接口的OSPF功能，包括OSPF认证方式，OSPF接口的cost值，OSPF接口的网络类型以及BFD联动OSPF。
   - 命令行

     ospf authentication-mode hmac-sha256

     ospf cost *10*

     ospf network-type p2p

     ospf bfd enable

     ospf bfd min-tx-interval *200* min-rx-interval *200*
   - NETCONF YANG API

功能	XPATH
配置接口的OSPF功能	/ietf-interfaces:interfaces/interface/huawei-ospf:ospf/ospf-process-id /ietf-interfaces:interfaces/interface/huawei-ospf:ospf/area-id /ietf-interfaces:interfaces/interface/huawei-ospf:ospf/cost-value /ietf-interfaces:interfaces/interface/huawei-ospf:ospf/network-type /ietf-interfaces:interfaces/interface/huawei-ospf:ospf/bfd/enable /ietf-interfaces:interfaces/interface/huawei-ospf:ospf/bfd/receive-interval /ietf-interfaces:interfaces/interface/huawei-ospf:ospf/bfd/transmit-interval /ietf-interfaces:interfaces/interface/huawei-ospf:ospf/authentication/authentication-mode

- 操作实例

  请求示例

```
<?xml version='1.0' encoding='UTF-8'?>
<rpc message-id="1" xmlns="urn:ietf:params:xml:ns:netconf:base:1.0">
 <edit-config>
  <target>
   <running/>
  </target>
  <config>
   <rt:routing xmlns:rt="urn:ietf:params:xml:ns:yang:ietf-routing">
    <rt:routing-instance>
     <rt:name>1</rt:name>
     <rt:routing-protocols>
      <rt:routing-protocol>
       <rt:type xmlns:huawei-ospf="urn:huawei:params:xml:ns:yang:huawei-ospf">huawei-ospf:ospf-routing-protocol</rt:type>
        <rt:name>ospf</rt:name>
        <hw-ospf:ospf xmlns:hw-ospf="urn:huawei:params:xml:ns:yang:huawei-ospf">
         <hw-ospf:instance>
          <hw-ospf:process-id>100</hw-ospf:process-id>
          <hw-ospf:area>
           <hw-ospf:area-id>0</hw-ospf:area-id>
           <hw-ospf:network>192.168.1.0/24</hw-ospf:network>
          </hw-ospf:area>
         </hw-ospf:instance>
        </hw-ospf:ospf>
      </rt:routing-protocol>
     </rt:routing-protocols>
    </rt:routing-instance>
```

```
    </rt:routing>
    <if:interfaces xmlns:if="urn:ietf:params:xml:ns:yang:ietf-interfaces">
      <if:interface>
        <if:name>Vlanif10</if:name>
        <if:type xmlns:iana-if-type="urn:ietf:params:xml:ns:yang:iana-if-type">iana-if-
type:propVirtual</if:type>
        <hw-ospf:ospf xmlns:hw-ospf="urn:huawei:params:xml:ns:yang:huawei-ospf">
          <hw-ospf:ospf-process-id>100</hw-ospf:ospf-process-id>
          <hw-ospf:area-id>0</hw-ospf:area-id>
          <hw-ospf:cost-value>10</hw-ospf:cost-value>
          <hw-ospf:network-type>p2p</hw-ospf:network-type>
          <hw-ospf:bfd>
            <hw-ospf:enable>true</hw-ospf:enable>
            <hw-ospf:receive-interval>200</hw-ospf:receive-interval>
            <hw-ospf:transmit-interval>200</hw-ospf:transmit-interval>
          </hw-ospf:bfd>
          <hw-ospf:authentication>
            <hw-ospf:authentication-mode>hmac-sha256</hw-ospf:authentication-mode>
          </hw-ospf:authentication>
        </hw-ospf:ospf>
      </if:interface>
    </if:interfaces>
  </config>
 </edit-config>
</rpc>
```

响应示例

```
<?xml version="1.0" encoding="utf-8"?>
<rpc-reply xmlns="urn:ietf:params:xml:ns:netconf:base:1.0" message-id="1">
  <ok/>
</rpc-reply>
```

3.7.2 查看 OSPF 邻居信息

命令行

display ospf peer

NETCONF YANG API

功能	XPATH
查看OSPF中各区域邻居的信息	/huawei-ospf:ospf-peer-get/get-num /huawei-ospf:ospf-peer-get/ospf-peer

操作实例

- 请求示例

```
<?xml version="1.0" encoding="UTF-8"?>
<rpc xmlns="urn:ietf:params:xml:ns:netconf:base:1.0" message-id="1">
  <hw-ospf:ospf-peer-get xmlns:hw-ospf="urn:huawei:params:xml:ns:yang:huawei-ospf">
    <hw-ospf:get-num>1</hw-ospf:get-num>
    <hw-ospf:ospf-peer>
      <hw-ospf:process-id>1</hw-ospf:process-id>
      <hw-ospf:search-type>all</hw-ospf:search-type>
    </hw-ospf:ospf-peer>
  </hw-ospf:ospf-peer-get>
</rpc>
```

- 响应示例

```
<?xml version='1.0' encoding='UTF-8'?>
<rpc-reply xmlns="urn:ietf:params:xml:ns:netconf:base:1.0" message-id="1">
```

```
 <ospf-peer-get xmlns="urn:huawei:params:xml:ns:yang:huawei-ospf">
  <ospf-peer-details>
   <process-id>1</process-id>
   <area-id>0.0.0.0</area-id>
   <interface>Vlanif100</interface>
   <neighbor-id>10.220.98.37</neighbor-id>
   <state>full</state>
  </ospf-peer-details>
  <summary>2</summary>
  <has-more>false</has-more>
 </ospf-peer-get>
</rpc-reply>
```

3.8 BGP

3.8.1 配置 BGP

命令行

bgp *100*

peer *192.168.10.10* as-number *200*

network *192.168.10.10 24*

import-route *direct* route-policy *a*

maximum load-balancing *6*

NETCONF YANG API

功能	XPATH
创建BGP进程	/routing:routing/routing-instance/routing-protocols/routing-protocol/huawei-bgp:bgp-routing/bgp-router/local-as-number
创建BGP对等体	/routing:routing/routing-instance/routing-protocols/routing-protocol/huawei-bgp:bgp-routing/bgp-neighbors/bgp-neighbor/peer-address /routing:routing/routing-instance/routing-protocols/routing-protocol/huawei-bgp:bgp-routing/bgp-neighbors/bgp-neighbor/remote-as
配置BGP路由发布	/routing:routing/routing-instance/routing-protocols/routing-protocol/huawei-bgp:bgp-routing/bgp-router/af-configuration/ipv4/unicast/networks/ip-prefix

功能	XPATH
配置BGP路由引入	/routing:routing/routing-instance/routing-protocols/routing-protocol/huawei-bgp:bgp-routing/bgp-router/af-configuration/ipv4/unicast/protocol/direct
配置BGP路由负载分担	/routing:routing/routing-instance/routing-protocols/routing-protocol/huawei-bgp:bgp-routing/bgp-router/af-configuration/ipv4/unicast/load-balancing/max-number

操作实例

- 请求示例

```
<?xml version="1.0" encoding="utf-8"?>
<rpc xmlns="urn:ietf:params:xml:ns:netconf:base:1.0" message-id="1">
 <edit-config>
  <target>
   <running/>
  </target>
  <config>
   <rt:routing xmlns:rt="urn:ietf:params:xml:ns:yang:ietf-routing" nc:operation="merge"
xmlns:nc="urn:ietf:params:xml:ns:netconf:base:1.0">
    <rt:routing-instance>
     <rt:name>bgp</rt:name>
     <rt:type>rt:default-routing-instance</rt:type>
     <rt:routing-protocols>
      <rt:routing-protocol>
       <rt:type xmlns:hw-bgp="urn:huawei:params:xml:ns:yang:huawei-bgp">hw-bgp:bgp-routing-
protocol</rt:type>
       <rt:name>bgp</rt:name>
       <hw-bgp:bgp-routing xmlns:hw-bgp="urn:huawei:params:xml:ns:yang:huawei-bgp">
        <hw-bgp:bgp-router>
         <hw-bgp:local-as-number>100</hw-bgp:local-as-number>
         <hw-bgp:af-configuration>
          <hw-bgp:ipv4>
           <hw-bgp:unicast>
            <hw-bgp:networks>
             <hw-bgp:ip-prefix>192.168.10.10/24</hw-bgp:ip-prefix>
            </hw-bgp:networks>
            <hw-bgp:load-balancing>
             <hw-bgp:max-number>6</hw-bgp:max-number>
            </hw-bgp:load-balancing>
            <hw-bgp:protocol>
             <hw-bgp:direct>true</hw-bgp:direct>
            </hw-bgp:protocol>
           </hw-bgp:unicast>
          </hw-bgp:ipv4>
         </hw-bgp:af-configuration>
        </hw-bgp:bgp-router>
        <hw-bgp:bgp-neighbors>
         <hw-bgp:bgp-neighbor nc:operation="merge">
          <hw-bgp:peer-address>192.168.10.10</hw-bgp:peer-address>
          <hw-bgp:remote-as>200</hw-bgp:remote-as>
         </hw-bgp:bgp-neighbor>
        </hw-bgp:bgp-neighbors>
       </hw-bgp:bgp-routing>
      </rt:routing-protocol>
     </rt:routing-protocols>
    </rt:routing-instance>
```

```
    </rt:routing>
  </config>
 </edit-config>
</rpc>
```

- 响应示例

```
<?xml version="1.0" encoding="utf-8"?>
<rpc-reply xmlns="urn:ietf:params:xml:ns:netconf:base:1.0" message-id="1">
 <ok/>
</rpc-reply>
```

3.8.2 设置允许从对等体收到的路由数量

命令行

peer *192.168.10.10* route-limit *55*

NETCONF YANG API

功能	XPATH
设置允许从对等体收到的路由数量	/routing:routing/routing-instance/routing-protocols/routing-protocol/huawei-bgp:bgp-routing/bgp-router/huawei-bgp-vpn:bgp-af-ipv4-vpn-instances/bgp-af-ipv4-vpn-instance/bgp-peers/bgpPeer/route-limit/number

操作实例

- 请求示例

```
<?xml version="1.0" encoding="utf-8"?>
<rpc xmlns="urn:ietf:params:xml:ns:netconf:base:1.0" message-id="1">
 <edit-config>
  <target>
   <running/>
  </target>
  <config>
   <hw-l3vpn:vpn-instances xmlns:hw-l3vpn="urn:huawei:params:xml:ns:yang:huawei-l3vpn"
nc:operation="merge" xmlns:nc="urn:ietf:params:xml:ns:netconf:base:1.0">
    <hw-l3vpn:vpn-instance nc:operation="merge" xmlns:nc="urn:ietf:params:xml:ns:netconf:base:
1.0">
     <hw-l3vpn:vpn-instance-name>huawei</hw-l3vpn:vpn-instance-name>
     <hw-bgp-vpn:ipv4-family xmlns:hw-bgp-vpn="urn:huawei:params:xml:ns:yang:huawei-bgp-
l3vpn">
      <hw-bgp-vpn:route-distinguisher>1:10</hw-bgp-vpn:route-distinguisher>
     </hw-bgp-vpn:ipv4-family>
    </hw-l3vpn:vpn-instance>
   </hw-l3vpn:vpn-instances>
   <rt:routing xmlns:rt="urn:ietf:params:xml:ns:yang:ietf-routing" nc:operation="merge"
xmlns:nc="urn:ietf:params:xml:ns:netconf:base:1.0">
    <rt:routing-instance>
     <rt:name>bgp</rt:name>
     <rt:type>rt:default-routing-instance</rt:type>
     <rt:routing-protocols>
      <rt:routing-protocol>
       <rt:type xmlns:hw-bgp="urn:huawei:params:xml:ns:yang:huawei-bgp">hw-bgp:bgp-routing-
protocol</rt:type>
       <rt:name>bgp</rt:name>
       <hw-bgp:bgp-routing xmlns:hw-bgp="urn:huawei:params:xml:ns:yang:huawei-bgp">
        <hw-bgp:bgp-router>
```

```
            <hw-bgp:local-as-number>100</hw-bgp:local-as-number>
            <hw-bgp-vpn:bgp-af-ipv4-vpn-instances xmlns:hw-bgp-
vpn="urn:huawei:params:xml:ns:yang:huawei-bgp-l3vpn" nc:operation="merge"
xmlns:nc="urn:ietf:params:xml:ns:netconf:base:1.0">
              <hw-bgp-vpn:bgp-af-ipv4-vpn-instance>
                <hw-bgp-vpn:vpn-instance-name>huawei</hw-bgp-vpn:vpn-instance-name>
                <hw-bgp-vpn:bgp-peers>
                  <hw-bgp-vpn:bgpPeer>
                    <hw-bgp-vpn:peer-addr>192.168.10.10</hw-bgp-vpn:peer-addr>
                    <hw-bgp-vpn:remote-as>200</hw-bgp-vpn:remote-as>
                    <hw-bgp-vpn:route-limit nc:operation="merge">
                      <hw-bgp-vpn:number>55</hw-bgp-vpn:number>
                    </hw-bgp-vpn:route-limit>
                  </hw-bgp-vpn:bgpPeer>
                </hw-bgp-vpn:bgp-peers>
              </hw-bgp-vpn:bgp-af-ipv4-vpn-instance>
            </hw-bgp-vpn:bgp-af-ipv4-vpn-instances>
          </hw-bgp:bgp-router>
        </hw-bgp:bgp-routing>
      </rt:routing-protocol>
    </rt:routing-protocols>
  </rt:routing-instance>
 </rt:routing>
</config>
</edit-config>
</rpc>
```

- 响应示例

```
<?xml version="1.0" encoding="utf-8"?>
<rpc-reply xmlns="urn:ietf:params:xml:ns:netconf:base:1.0" message-id="1">
 <ok/>
</rpc-reply>
```

3.8.3 配置指定对等体采用伪 AS 号与本端建立连接

命令行

peer *192.168.10.10* fake-as 300

NETCONF YANG API

功能	XPATH
配置指定对等体采用伪AS号与本端建立连接	/routing:routing/routing-instance/routing-protocols/routing-protocol/huawei-bgp:bgp-routing/bgp-router/huawei-bgp-vpn:bgp-af-ipv4-vpn-instances/bgp-af-ipv4-vpn-instance/bgp-peers/bgpPeer/fake-as/as-number

操作实例

- 请求示例

```
<?xml version="1.0" encoding="utf-8"?>
<rpc xmlns="urn:ietf:params:xml:ns:netconf:base:1.0" message-id="1">
 <edit-config>
  <target>
   <running/>
  </target>
  <config>
   <rt:routing xmlns:rt="urn:ietf:params:xml:ns:yang:ietf-routing" nc:operation="merge"
```

```
xmlns:nc="urn:ietf:params:xml:ns:netconf:base:1.0">
      <rt:routing-instance>
        <rt:name>bgp</rt:name>
        <rt:type>rt:default-routing-instance</rt:type>
        <rt:routing-protocols>
          <rt:routing-protocol>
            <rt:type xmlns:hw-bgp="urn:huawei:params:xml:ns:yang:huawei-bgp">hw-bgp:bgp-routing-
protocol</rt:type>
            <rt:name>bgp</rt:name>
            <hw-bgp:bgp-routing xmlns:hw-bgp="urn:huawei:params:xml:ns:yang:huawei-bgp">
              <hw-bgp:bgp-router>
                <hw-bgp:local-as-number>100</hw-bgp:local-as-number>
              </hw-bgp:bgp-router>
              <hw-bgp:bgp-neighbors>
                <hw-bgp:bgp-neighbor>
                  <hw-bgp:peer-address>192.168.10.10</hw-bgp:peer-address>
                  <hw-bgp:remote-as>200</hw-bgp:remote-as>
                  <hw-bgp:fake-as>
                    <hw-bgp:as-number>300</hw-bgp:as-number>
                  </hw-bgp:fake-as>
                </hw-bgp:bgp-neighbor>
              </hw-bgp:bgp-neighbors>
            </hw-bgp:bgp-routing>
          </rt:routing-protocol>
        </rt:routing-protocols>
      </rt:routing-instance>
    </rt:routing>
  </config>
 </edit-config>
</rpc>
```

- 响应示例

```
<?xml version="1.0" encoding="utf-8"?>
<rpc-reply xmlns="urn:ietf:params:xml:ns:netconf:base:1.0" message-id="1">
 <ok/>
</rpc-reply>
```

3.9 ACL

3.9.1 创建高级 ACL 规则

命令行

acl number *3003*

rule *5* permit tcp source *1.1.1.0 0.0.0.255*

NETCONF YANG API

功能	XPATH
创建高级ACL规则	/ietf-acl:access-lists/access-list/access-control-list-name /ietf-acl:access-lists/access-list/access-control-list-type /ietf-acl:access-lists/access-list/access-list-entries/access-list-entry/rule-name /ietf-acl:access-lists/access-list/access-list-entries/access-list-entry/matches/protocol /ietf-acl:access-lists/access-list/access-list-entries/access-list-entry/matches/source-ipv4-network /ietf-acl:access-lists/access-list/access-list-entries/access-list-entry/actions/permit

操作实例

- 请求示例

```
<?xml version='1.0' encoding='UTF-8'?>
<rpc message-id="1" xmlns="urn:ietf:params:xml:ns:netconf:base:1.0">
 <edit-config>
  <target>
   <running/>
  </target>
  <config>
   <access-control-list:access-lists xmlns:access-control-list="urn:ietf:params:xml:ns:yang:ietf-acl"
nc:operation="merge" xmlns:nc="urn:ietf:params:xml:ns:netconf:base:1.0">
    <access-control-list:access-list>
     <access-control-list:access-control-list-name>3003</access-control-list:access-control-list-
name>
      <access-control-list:access-control-list-type>IP-access-control-list</access-control-list:access-
control-list-type>
      <access-control-list:access-list-entries>
       <access-control-list:access-list-entry>
        <access-control-list:rule-name>5</access-control-list:rule-name>
        <access-control-list:matches>
         <access-control-list:protocol>6</access-control-list:protocol>
         <access-control-list:source-ipv4-network>1.1.1.0/24</access-control-list:source-ipv4-
network>
        </access-control-list:matches>
    <access-control-list:actions>
     <access-control-list:permit/>
    </access-control-list:actions>
       </access-control-list:access-list-entry>
      </access-control-list:access-list-entries>
    </access-control-list:access-list>
   </access-control-list:access-lists>
  </config>
 </edit-config>
</rpc>
```

- 响应示例

```
<?xml version="1.0" encoding="utf-8"?>
<rpc-reply xmlns="urn:ietf:params:xml:ns:netconf:base:1.0" message-id="1">
```

```
 <ok/>
</rpc-reply>
```

3.9.2 修改高级 ACL 规则

命令行

acl number *3500*

rule *5* permit tcp source *2.2.2.0 0.0.0.255*

NETCONF YANG API

功能	XPATH
修改高级ACL规则	/ietf-acl:access-lists/access-list/access-control-list-name /ietf-acl:access-lists/access-list/access-control-list-type /ietf-acl:access-lists/access-list/access-list-entries/access-list-entry/rule-name /ietf-acl:access-lists/access-list/access-list-entries/access-list-entry/matches/protocol /ietf-acl:access-lists/access-list/access-list-entries/access-list-entry/matches/source-ipv4-network /ietf-acl:access-lists/access-list/access-list-entries/access-list-entry/actions/permit

操作实例

- 请求示例

```
<?xml version='1.0' encoding='UTF-8'?>
<rpc message-id="1" xmlns="urn:ietf:params:xml:ns:netconf:base:1.0">
 <edit-config>
  <target>
   <running/>
  </target>
  <config>
   <access-control-list:access-lists xmlns:access-control-list="urn:ietf:params:xml:ns:yang:ietf-acl"
nc:operation="merge" xmlns:nc="urn:ietf:params:xml:ns:netconf:base:1.0">
    <access-control-list:access-list>
     <access-control-list:access-control-list-name>3500</access-control-list:access-control-list-
name>
      <access-control-list:access-control-list-type>IP-access-control-list</access-control-list:access-
control-list-type>
      <access-control-list:access-list-entries>
       <access-control-list:access-list-entry>
        <access-control-list:rule-name>5</access-control-list:rule-name>
        <access-control-list:matches>
         <access-control-list:protocol>6</access-control-list:protocol>
         <access-control-list:source-ipv4-network>2.2.2.0/24</access-control-list:source-ipv4-
network>
        </access-control-list:matches>
```

```
      <access-control-list:actions>
       <access-control-list:permit/>
      </access-control-list:actions>
          </access-control-list:access-list-entry>
        </access-control-list:access-list-entries>
       </access-control-list:access-list>
      </access-control-list:access-lists>
    </config>
  </edit-config>
</rpc>
```

- 响应示例

```
<?xml version="1.0" encoding="utf-8"?>
<rpc-reply xmlns="urn:ietf:params:xml:ns:netconf:base:1.0" message-id="1">
  <ok/>
</rpc-reply>
```

3.9.3 删除高级 ACL 规则

命令行

acl *3500*

undo rule permit tcp source *2.2.2.2 0.0.0.255*

NETCONF YANG API

功能	XPATH
删除高级ACL规则	/ietf-acl:access-lists/access-list/access-control-list-name /ietf-acl:access-lists/access-list/access-control-list-type /ietf-acl:access-lists/access-list/access-list-entries/access-list-entry/rule-name /ietf-acl:access-lists/access-list/access-list-entries/access-list-entry/matches/protocol /ietf-acl:access-lists/access-list/access-list-entries/access-list-entry/matches/source-ipv4-network /ietf-acl:access-lists/access-list/access-list-entries/access-list-entry/actions/permit

操作实例

- 请求示例

```
<?xml version='1.0' encoding='UTF-8'?>
<rpc message-id="1" xmlns="urn:ietf:params:xml:ns:netconf:base:1.0">
  <edit-config>
    <target>
      <running/>
    </target>
    <config>
      <access-control-list:access-lists xmlns:access-control-list="urn:ietf:params:xml:ns:yang:ietf-acl"
```

```
nc:operation="merge" xmlns:nc="urn:ietf:params:xml:ns:netconf:base:1.0">
       <access-control-list:access-list>
         <access-control-list:access-control-list-name>3500</access-control-list:access-control-list-
name>
          <access-control-list:access-control-list-type>IP-access-control-list</access-control-list:access-
control-list-type>
          <access-control-list:access-list-entries nc:operation="delete">
            <access-control-list:access-list-entry>
              <access-control-list:rule-name>5</access-control-list:rule-name>
              <access-control-list:matches>
                <access-control-list:protocol>6</access-control-list:protocol>
                <access-control-list:source-ipv4-network>2.2.2.0/24</access-control-list:source-ipv4-
network>
              </access-control-list:matches>
        <access-control-list:actions>
         <access-control-list:permit/>
        </access-control-list:actions>
            </access-control-list:access-list-entry>
          </access-control-list:access-list-entries>
        </access-control-list:access-list>
      </access-control-list:access-lists>
    </config>
  </edit-config>
</rpc>
```

- 响应示例

```
<?xml version="1.0" encoding="utf-8"?>
<rpc-reply xmlns="urn:ietf:params:xml:ns:netconf:base:1.0" message-id="1">
  <ok/>
</rpc-reply>
```

3.10 QoS

3.10.1 配置入接口限速

命令行

interface *XGigabitEthernet1/0/2*

qos lr inbound cir *300* cbs *700*

NETCONF YANG API

功能	XPATH
配置入接口限速	/ietf-interfaces:interfaces/interface/huawei-qos:qos/meter/meter-type/alone/meter-field

操作实例

- 请求示例

```
<?xml version="1.0" encoding="utf-8"?>
<rpc xmlns="urn:ietf:params:xml:ns:netconf:base:1.0" message-id="1">
 <edit-config>
  <target>
   <running/>
  </target>
  <config>
```

```
 <if:interfaces xmlns:if="urn:ietf:params:xml:ns:yang:ietf-interfaces">
  <if:interface>
   <if:name>XGigabitEthernet1/0/2</if:name>
   <if:type xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-type">ianaift:ethernetCsmacd</if:type>
   <qos:qos xmlns:qos="urn:huawei:params:xml:ns:yang:huawei-qos">
    <qos:meter>
     <qos:meter-field>
      <qos:direction>inbound</qos:direction>
      <qos:cir>300</qos:cir>
      <qos:cbs>7000</qos:cbs>
     </qos:meter-field>
    </qos:meter>
   </qos:qos>
  </if:interface>
 </if:interfaces>
</config>
</edit-config>
</rpc>
```

- 响应示例

```
<?xml version="1.0" encoding="utf-8"?>
 <rpc-reply xmlns="urn:ietf:params:xml:ns:netconf:base:1.0" message-id="1">
  <ok/>
</rpc-reply>
```

3.10.2 配置出接口限速

命令行

interface *XGigabitEthernet1/0/2*

qos lr outbound cir *300* cbs *700*

NETCONF YANG API

功能	XPATH
配置出接口限速	/ietf-interfaces:interfaces/interface/huawei-qos:qos/meter/meter-type/alone/meter-field

操作实例

- 请求示例

```
<?xml version="1.0" encoding="utf-8"?>
<rpc xmlns="urn:ietf:params:xml:ns:netconf:base:1.0" message-id="1">
 <edit-config>
  <target>
   <running/>
  </target>
  <config>
   <if:interfaces xmlns:if="urn:ietf:params:xml:ns:yang:ietf-interfaces">
    <if:interface>
     <if:name>XGigabitEthernet1/0/2</if:name>
     <if:type xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-type">ianaift:ethernetCsmacd</
if:type>
      <qos:qos xmlns:qos="urn:huawei:params:xml:ns:yang:huawei-qos">
       <qos:meter>
        <qos:meter-field>
         <qos:direction>outbound</qos:direction>
         <qos:cir>300</qos:cir>
         <qos:cbs>7000</qos:cbs>
```

```
            </qos:meter-field>
          </qos:meter>
        </qos:qos>
      </if:interface>
    </if:interfaces>
  </config>
 </edit-config>
</rpc>
```

- 响应示例

```
<?xml version="1.0" encoding="utf-8"?>
<rpc-reply xmlns="urn:ietf:params:xml:ns:netconf:base:1.0" message-id="1">
 <ok/>
</rpc-reply>
```

3.10.3 配置基于 MQC 的流量监管

配置思路

采用如下的思路配置基于MQC的流量监管：

1. **创建用于匹配流量特征的ACL。**
2. **创建基于ACL的流分类。**
3. **创建动作为流量监管的流行为。**
4. **创建流策略。**
5. **应用流策略。**

配置步骤

1. 创建用于匹配流量特征的ACL。
   - 命令行

     acl number *3003*

     rule *5* permit tcp source *1.1.1.0 0.0.0.255*
   - NETCONF YANG API

功能	XPATH
创建用于匹配流量特征的ACL	/ietf-acl:access-lists/access-list/access-control-list-name /ietf-acl:access-lists/access-list/access-control-list-type /ietf-acl:access-lists/access-list/access-list-entries/access-list-entry/rule-name /ietf-acl:access-lists/access-list/access-list-entries/access-list-entry/matches/protocol /ietf-acl:access-lists/access-list/access-list-entries/access-list-entry/matches/source-ipv4-network /ietf-acl:access-lists/access-list/access-list-entries/access-list-entry/actions/permit

- 操作实例

  请求示例

```
<?xml version='1.0' encoding='UTF-8'?>
<rpc message-id="1" xmlns="urn:ietf:params:xml:ns:netconf:base:1.0">
 <edit-config>
  <target>
   <running/>
  </target>
  <config>
   <access-control-list:access-lists xmlns:access-control-list="urn:ietf:params:xml:ns:yang:ietf-acl" nc:operation="merge" xmlns:nc="urn:ietf:params:xml:ns:netconf:base:1.0">
    <access-control-list:access-list>
     <access-control-list:access-control-list-name>3003</access-control-list:access-control-list-name>
      <access-control-list:access-control-list-type>IP-access-control-list</access-control-list:access-control-list-type>
      <access-control-list:access-list-entries>
       <access-control-list:access-list-entry>
        <access-control-list:rule-name>5</access-control-list:rule-name>
        <access-control-list:matches>
         <access-control-list:protocol>6</access-control-list:protocol>
         <access-control-list:source-ipv4-network>1.1.1.0/24</access-control-list:source-ipv4-network>
        </access-control-list:matches>
    <access-control-list:actions>
     <access-control-list:permit/>
    </access-control-list:actions>
       </access-control-list:access-list-entry>
      </access-control-list:access-list-entries>
    </access-control-list:access-list>
   </access-control-list:access-lists>
  </config>
 </edit-config>
</rpc>
```

  响应示例

```
<?xml version="1.0" encoding="utf-8"?>
<rpc-reply xmlns="urn:ietf:params:xml:ns:netconf:base:1.0" message-id="1">
```

```
 <ok/>
</rpc-reply>
```

2. 创建基于ACL的流分类。
   - 命令行

     traffic classifier *c1* operator or

     if-match acl *3500*
   - NETCONF YANG API

功能	XPATH
创建基于ACL的流分类	/huawei-mqc:mqc/traffic-classifier/name /huawei-mqc:mqc/traffic-classifier/operator /huawei-mqc:mqc/traffic-classifier/match-condition/acl

   - 操作实例

     请求示例

```
<?xml version='1.0' encoding='UTF-8'?>
<rpc message-id="1" xmlns="urn:ietf:params:xml:ns:netconf:base:1.0">
 <edit-config>
  <target>
   <running/>
  </target>
  <config>
   <hw-mqc:mqc xmlns:hw-mqc="urn:huawei:params:xml:ns:yang:huawei-mqc">
    <hw-mqc:traffic-classifier>
     <hw-mqc:name>c1</hw-mqc:name>
     <hw-mqc:operator>true</hw-mqc:operator>
     <hw-mqc:match-condition>
      <hw-mqc:acl>3500</hw-mqc:acl>
     </hw-mqc:match-condition>
    </hw-mqc:traffic-classifier>
   </hw-mqc:mqc>
  </config>
 </edit-config>
</rpc>
```

     响应示例

```
<?xml version="1.0" encoding="utf-8"?>
<rpc-reply xmlns="urn:ietf:params:xml:ns:netconf:base:1.0" message-id="1">
 <ok/>
</rpc-reply>
```

3. 创建动作为流量监管的流行为。
   - 命令行

     traffic behavior *b1*

     car cir *1000* pir *10000*
   - NETCONF YANG API

功能	XPATH
创建动作为流量监管的流行为	/huawei-mqc:mqc/traffic-behaviour/name /huawei-mqc:mqc/traffic-behaviour/car/cir /huawei-mqc:mqc/traffic-behaviour/car/pir

- 操作实例

  请求示例

```
<?xml version='1.0' encoding='UTF-8'?>
<rpc message-id="1" xmlns="urn:ietf:params:xml:ns:netconf:base:1.0">
 <edit-config>
  <target>
   <running/>
  </target>
  <config>
   <hw-mqc:mqc xmlns:hw-mqc="urn:huawei:params:xml:ns:yang:huawei-mqc">
    <hw-mqc:traffic-behaviour>
     <hw-mqc:name>b1</hw-mqc:name>
     <hw-mqc:car>
      <hw-mqc:cir>1000</hw-mqc:cir>
      <hw-mqc:pir>10000</hw-mqc:pir>
     </hw-mqc:car>
    </hw-mqc:traffic-behaviour>
   </hw-mqc:mqc>
  </config>
 </edit-config>
</rpc>
```

  响应示例

```
<?xml version="1.0" encoding="utf-8"?>
<rpc-reply xmlns="urn:ietf:params:xml:ns:netconf:base:1.0" message-id="1">
 <ok/>
</rpc-reply>
```

4. 创建流策略。
   - 命令行

     traffic policy *p1*

     classifier *c1* behavior *b1*
   - NETCONF YANG API

功能	XPATH
创建流策略	/huawei-mqc:mqc/traffic-policy/name /huawei-mqc:mqc/traffic-policy/rule/traffic-classifier /huawei-mqc:mqc/traffic-policy/rule/traffic-behaviour

   - 操作实例

     请求示例

```
<?xml version='1.0' encoding='UTF-8'?>
<rpc message-id="1" xmlns="urn:ietf:params:xml:ns:netconf:base:1.0">
 <edit-config>
  <target>
   <running/>
  </target>
  <config>
   <hw-mqc:mqc xmlns:hw-mqc="urn:huawei:params:xml:ns:yang:huawei-mqc">
    <hw-mqc:traffic-classifier>
     <hw-mqc:name>c1</hw-mqc:name>
     <hw-mqc:operator>true</hw-mqc:operator>
     <hw-mqc:match-condition>
      <hw-mqc:acl>3500</hw-mqc:acl>
     </hw-mqc:match-condition>
    </hw-mqc:traffic-classifier>
    <hw-mqc:traffic-behaviour>
     <hw-mqc:name>b1</hw-mqc:name>
     <hw-mqc:car>
      <hw-mqc:cir>1000</hw-mqc:cir>
      <hw-mqc:pir>10000</hw-mqc:pir>
     </hw-mqc:car>
    </hw-mqc:traffic-behaviour>
    <hw-mqc:traffic-policy>
     <hw-mqc:name>p1</hw-mqc:name>
     <hw-mqc:rule>
      <hw-mqc:traffic-classifier>c1</hw-mqc:traffic-classifier>
      <hw-mqc:traffic-behaviour>b1</hw-mqc:traffic-behaviour>
     </hw-mqc:rule>
    </hw-mqc:traffic-policy>
   </hw-mqc:mqc>
  </config>
 </edit-config>
</rpc>
```

响应示例

```
<?xml version="1.0" encoding="utf-8"?>
<rpc-reply xmlns="urn:ietf:params:xml:ns:netconf:base:1.0" message-id="1">
 <ok/>
</rpc-reply>
```

5. 应用流策略。
   - 命令行

     interface *GigabitEthernet1/0/1*

     traffic-policy *p1* inbound
   - NETCONF YANG API

功能	XPATH
应用流策略	/huawei-mqc-apply:mqc-apply/traffic-policy-apply/name /huawei-mqc-apply:mqc-apply/traffic-policy-apply/interface/name /huawei-mqc-apply:mqc-apply/traffic-policy-apply/interface/inbound

   - 操作实例

     请求示例

```
<?xml version="1.0" encoding="utf-8"?>
<rpc xmlns="urn:ietf:params:xml:ns:netconf:base:1.0" message-id="1">
```

```
<edit-config>
  <target>
    <running/>
  </target>
  <config>
    <if:interfaces xmlns:if="urn:ietf:params:xml:ns:yang:ietf-interfaces">
      <if:interface>
        <if:name>GigabitEthernet1/0/1</if:name>
        <if:type xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-type">ianaift:ethernetCsmacd</
if:type>
      </if:interface>
    </if:interfaces>
    <hw-mqc:mqc xmlns:hw-mqc="urn:huawei:params:xml:ns:yang:huawei-mqc">
      <hw-mqc:traffic-classifier>
        <hw-mqc:name>c1</hw-mqc:name>
        <hw-mqc:operator>true</hw-mqc:operator>
        <hw-mqc:match-condition>
          <hw-mqc:acl>3500</hw-mqc:acl>
        </hw-mqc:match-condition>
      </hw-mqc:traffic-classifier>
      <hw-mqc:traffic-behaviour>
        <hw-mqc:name>b1</hw-mqc:name>
        <hw-mqc:car>
          <hw-mqc:cir>1000</hw-mqc:cir>
          <hw-mqc:pir>10000</hw-mqc:pir>
        </hw-mqc:car>
      </hw-mqc:traffic-behaviour>
      <hw-mqc:traffic-policy>
        <hw-mqc:name>p1</hw-mqc:name>
        <hw-mqc:rule>
          <hw-mqc:traffic-classifier>c1</hw-mqc:traffic-classifier>
          <hw-mqc:traffic-behaviour>b1</hw-mqc:traffic-behaviour>
        </hw-mqc:rule>
      </hw-mqc:traffic-policy>
    </hw-mqc:mqc>
    <hw-mqc-ap:mqc-apply xmlns:hw-mqc-ap="urn:huawei:params:xml:ns:yang:huawei-mqc-
apply">
      <hw-mqc-ap:traffic-policy-apply>
        <hw-mqc-ap:name>p1</hw-mqc-ap:name>
        <hw-mqc-ap:interface>
          <hw-mqc-ap:name>GigabitEthernet1/0/1</hw-mqc-ap:name>
          <hw-mqc-ap:inbound/>
        </hw-mqc-ap:interface>
      </hw-mqc-ap:traffic-policy-apply>
    </hw-mqc-ap:mqc-apply>
  </config>
</edit-config>
</rpc>
```

响应示例

```
<?xml version="1.0" encoding="utf-8"?>
<rpc-reply xmlns="urn:ietf:params:xml:ns:netconf:base:1.0" message-id="1">
  <ok/>
</rpc-reply>
```

3.10.4 配置重标记内部优先级

配置思路

采用如下的思路配置重标记内部优先级：

1. **创建用于匹配流量特征的ACL。**
2. **创建基于ACL的流分类。**
3. **创建动作为重标记内部优先级的流行为。**
4. **创建流策略。**

5. **应用流策略。**

配置步骤

1. 创建用于匹配流量特征的ACL。
   - 命令行

     acl number *3003*

     rule *5* permit tcp source *1.1.1.0 0.0.0.255*
   - NETCONF YANG API

功能	XPATH
创建用于匹配流量特征的ACL	/ietf-acl:access-lists/access-list/access-control-list-name /ietf-acl:access-lists/access-list/access-control-list-type /ietf-acl:access-lists/access-list/access-list-entries/access-list-entry/rule-name /ietf-acl:access-lists/access-list/access-list-entries/access-list-entry/matches/protocol /ietf-acl:access-lists/access-list/access-list-entries/access-list-entry/matches/source-ipv4-network /ietf-acl:access-lists/access-list/access-list-entries/access-list-entry/actions/permit

   - 操作实例

     请求示例

```
<?xml version='1.0' encoding='UTF-8'?>
<rpc message-id="1" xmlns="urn:ietf:params:xml:ns:netconf:base:1.0">
 <edit-config>
  <target>
   <running/>
  </target>
  <config>
   <access-control-list:access-lists xmlns:access-control-list="urn:ietf:params:xml:ns:yang:ietf-acl" nc:operation="merge" xmlns:nc="urn:ietf:params:xml:ns:netconf:base:1.0">
    <access-control-list:access-list>
     <access-control-list:access-control-list-name>3003</access-control-list:access-control-list-name>
     <access-control-list:access-control-list-type>IP-access-control-list</access-control-list:access-control-list-type>
     <access-control-list:access-list-entries>
      <access-control-list:access-list-entry>
       <access-control-list:rule-name>5</access-control-list:rule-name>
       <access-control-list:matches>
        <access-control-list:protocol>6</access-control-list:protocol>
        <access-control-list:source-ipv4-network>1.1.1.0/24</access-control-list:source-ipv4-network>
       </access-control-list:matches>
   <access-control-list:actions>
```

```
      <access-control-list:permit/>
     </access-control-list:actions>
         </access-control-list:access-list-entry>
       </access-control-list:access-list-entries>
     </access-control-list:access-list>
    </access-control-list:access-lists>
  </config>
 </edit-config>
</rpc>
```

响应示例

```
<?xml version="1.0" encoding="utf-8"?>
<rpc-reply xmlns="urn:ietf:params:xml:ns:netconf:base:1.0" message-id="1">
 <ok/>
</rpc-reply>
```

2. 创建基于ACL的流分类。
   - 命令行

     traffic classifier *c1* operator or

     if-match acl *3003*
   - NETCONF YANG API

功能	XPATH
创建基于ACL的流分类	/huawei-mqc:mqc/traffic-classifier/name /huawei-mqc:mqc/traffic-classifier/operator /huawei-mqc:mqc/traffic-classifier/match-condition/acl

   - 操作实例

     请求示例

```
<?xml version='1.0' encoding='UTF-8'?>
<rpc message-id="1" xmlns="urn:ietf:params:xml:ns:netconf:base:1.0">
 <edit-config>
  <target>
   <running/>
  </target>
  <config>
   <hw-mqc:mqc xmlns:hw-mqc="urn:huawei:params:xml:ns:yang:huawei-mqc">
    <hw-mqc:traffic-classifier>
     <hw-mqc:name>c1</hw-mqc:name>
     <hw-mqc:operator>true</hw-mqc:operator>
     <hw-mqc:match-condition>
      <hw-mqc:acl>3003</hw-mqc:acl>
     </hw-mqc:match-condition>
    </hw-mqc:traffic-classifier>
   </hw-mqc:mqc>
  </config>
 </edit-config>
</rpc>
```

     响应示例

```
<?xml version="1.0" encoding="utf-8"?>
<rpc-reply xmlns="urn:ietf:params:xml:ns:netconf:base:1.0" message-id="1">
 <ok/>
</rpc-reply>
```

3. 创建动作为重标记内部优先级的流行为。

- 命令行

  traffic behavior *b1*

  remark local-precedence *0*

- NETCONF YANG API

功能	XPATH
创建动作为重标记内部优先级的流行为	/huawei-mqc:mqc/traffic-behaviour/name /huawei-mqc:mqc/traffic-behaviour/remark-local-precedence/precedence-value

- 操作实例

  请求示例

```
<?xml version='1.0' encoding='UTF-8'?>
<rpc message-id="1" xmlns="urn:ietf:params:xml:ns:netconf:base:1.0">
 <edit-config>
  <target>
   <running/>
  </target>
  <config>
   <hw-mqc:mqc xmlns:hw-mqc="urn:huawei:params:xml:ns:yang:huawei-mqc">
    <hw-mqc:traffic-behaviour>
     <hw-mqc:name>b1</hw-mqc:name>
     <hw-mqc:dscp-value>46</hw-mqc:dscp-value>
     <hw-mqc:remark-local-precedence>
      <hw-mqc:precedence-value>0</hw-mqc:precedence-value>
     </hw-mqc:remark-local-precedence>
    </hw-mqc:traffic-behaviour>
   </hw-mqc:mqc>
  </config>
 </edit-config>
</rpc>
```

  响应示例

```
<?xml version="1.0" encoding="utf-8"?>
<rpc-reply xmlns="urn:ietf:params:xml:ns:netconf:base:1.0" message-id="1">
 <ok/>
</rpc-reply>
```

4. 创建流策略。

- 命令行

  traffic policy *p1*

  classifier *c1* behavior *b1*

- NETCONF YANG API

功能	XPATH
创建流策略	/huawei-mqc:mqc/traffic-policy/name /huawei-mqc:mqc/traffic-policy/rule/traffic-classifier /huawei-mqc:mqc/traffic-policy/rule/traffic-behaviour

- 操作实例

  请求示例

```
<?xml version='1.0' encoding='UTF-8'?>
<rpc message-id="1" xmlns="urn:ietf:params:xml:ns:netconf:base:1.0">
 <edit-config>
  <target>
   <running/>
  </target>
  <config>
   <hw-mqc:mqc xmlns:hw-mqc="urn:huawei:params:xml:ns:yang:huawei-mqc">
    <hw-mqc:traffic-policy>
     <hw-mqc:name>p1</hw-mqc:name>
     <hw-mqc:rule>
      <hw-mqc:traffic-classifier>c1</hw-mqc:traffic-classifier>
      <hw-mqc:traffic-behaviour>b1</hw-mqc:traffic-behaviour>
     </hw-mqc:rule>
    </hw-mqc:traffic-policy>
   </hw-mqc:mqc>
  </config>
 </edit-config>
</rpc>
```

  响应示例

```
<?xml version="1.0" encoding="utf-8"?>
<rpc-reply xmlns="urn:ietf:params:xml:ns:netconf:base:1.0" message-id="1">
 <ok/>
</rpc-reply>
```

5. 应用流策略。
   - 命令行

     interface *GigabitEthernet1/0/1*

     traffic-policy *p1* inbound

   - NETCONF YANG API

功能	XPATH
应用流策略	/huawei-mqc-apply:mqc-apply/traffic-policy-apply/name /huawei-mqc-apply:mqc-apply/traffic-policy-apply/interface/name /huawei-mqc-apply:mqc-apply/traffic-policy-apply/interface/inbound

   - 操作实例

     请求示例

```
<?xml version="1.0" encoding="utf-8"?>
<rpc xmlns="urn:ietf:params:xml:ns:netconf:base:1.0" message-id="1">
 <edit-config>
  <target>
   <running/>
  </target>
  <config>
   <if:interfaces xmlns:if="urn:ietf:params:xml:ns:yang:ietf-interfaces">
    <if:interface>
     <if:name>GigabitEthernet1/0/1</if:name>
     <if:type xmlns:ianaift="urn:ietf:params:xml:ns:yang:iana-if-type">ianaift:ethernetCsmacd</
if:type>
```



```
      </if:interface>
    </if:interfaces>
    <hw-mqc:mqc xmlns:hw-mqc="urn:huawei:params:xml:ns:yang:huawei-mqc">
      <hw-mqc:traffic-classifier>
        <hw-mqc:name>c1</hw-mqc:name>
        <hw-mqc:operator>true</hw-mqc:operator>
        <hw-mqc:match-condition>
          <hw-mqc:acl>3003</hw-mqc:acl>
        </hw-mqc:match-condition>
      </hw-mqc:traffic-classifier>
      <hw-mqc:traffic-behaviour>
        <hw-mqc:name>b1</hw-mqc:name>
        <hw-mqc:car>
          <hw-mqc:cir>1000</hw-mqc:cir>
          <hw-mqc:pir>10000</hw-mqc:pir>
        </hw-mqc:car>
      </hw-mqc:traffic-behaviour>
      <hw-mqc:traffic-policy>
        <hw-mqc:name>p1</hw-mqc:name>
        <hw-mqc:rule>
          <hw-mqc:traffic-classifier>c1</hw-mqc:traffic-classifier>
          <hw-mqc:traffic-behaviour>b1</hw-mqc:traffic-behaviour>
        </hw-mqc:rule>
      </hw-mqc:traffic-policy>
    </hw-mqc:mqc>
    <hw-mqc-ap:mqc-apply xmlns:hw-mqc-ap="urn:huawei:params:xml:ns:yang:huawei-mqc-
apply">
      <hw-mqc-ap:traffic-policy-apply>
        <hw-mqc-ap:name>p1</hw-mqc-ap:name>
        <hw-mqc-ap:interface>
          <hw-mqc-ap:name>GigabitEthernet1/0/1</hw-mqc-ap:name>
          <hw-mqc-ap:inbound/>
        </hw-mqc-ap:interface>
      </hw-mqc-ap:traffic-policy-apply>
    </hw-mqc-ap:mqc-apply>
  </config>
 </edit-config>
</rpc>
```

响应示例

```
<?xml version="1.0" encoding="utf-8"?>
<rpc-reply xmlns="urn:ietf:params:xml:ns:netconf:base:1.0" message-id="1">
 <ok/>
</rpc-reply>
```