Introduction

- This package provides “configuration instances” of various aspect of the P802.1Qcp version D1.1 YANG modules
The following hi-level YANG structure and relationships were defined:

- **IETF System Management**
  - PAE System
  - ...
- **IETF Interface Management**
  - PAE
  - IP
  - Bridge Port
  - ...
- **IETF Routing**
  - IS-IS
  - OSPF
  - ...
- **802.1Q Bridge**
  - TPMR
  - Customer VLAN Bridge
  - Provider Bridge
  - ...

---

Marc Holness (mholness@ciena.com) - 3
The various bridge types (i.e., Two-Port MAC Relay, Customer VLAN Bridge, and Provider Bridge) are derivatives of this generic 802.1Q Bridge model.

It is an objective that this generic Bridge model can gracefully accommodate even more complex Bridges (e.g., Provider Backbone Bridges, etc.)
Generic IEEE 802.1Q Bridge Port Model

- The Bridge Port model is an augmentation (e.g., extension) of the IETF Interface Management Model (RFC 7223)

**Data attributes in white are generic Interface (RFC7223)**

**Data attributes in grey are IEEE 802.1Q Bridge Port specific**
Example Customer VLAN Bridge Configuration

- Configuration example of a **Customer VLAN Bridge** with two bridge ports

```xml
<bridges xc:operation="create">
  <bridge>
    <name>theCVB</name>
    <address>01-12-23-34-45-45-AF</address>
    <bridge-type>customer-vlan-bridge</bridge-type>
    <component>
      <name>myComponent</name>
      <type>c-vlan-component</type>
      <address>01-12-23-34-45-56</address>
    </component>
    <bridge-vlan>
      <vlan>
        <vid>1001</vid>
        <name>vid1001</name>
      </vlan>
    </bridge-vlan>
  </bridge>
</bridges>
```

- **a)** Bridge and associated C-VLAN Component created as a result of configuration
- **b)** Configure VLANs supported by the Bridge
Example Customer VLAN Bridge Configuration

c) CVLAN Bridge Ports are created and associated with the C-VLAN Component
Example Customer VLAN Bridge Configuration

d) Configure VLAN port membership via static VLAN registration entries.

```xml
<bridges xc:operation="create">
  <bridge>
    <name>theCVB</name>
    <component>
      <name>theComponent</name>
      <vlan-registration-entry>
        <database-id>42</database-id>
        <vids>2-300,1000-2000</vids>
        <entry-type>static</entry-type>
        <port-map>
          <port>1</port>
        </port-map>
        <port-map>
          <port>2</port>
        </port-map>
      </vlan-registration-entry>
    </component>
  </bridge>
</bridges>
```
Example Static FDB Entry Configuration

e) Configuration example of static FDB entries.

```xml
<bridges>
  <bridge>
    <name>theCVB</name>
    <component>
      <name>theComponent</name>
      <filtering-database>
        <filtering-entry>
          <database-id>12</database-id>
          <vids>1001</vids>
          <address>01-AB-BC-CD-DE-EF</address>
          <entry-type>static</entry-type>
          <port-map>
            <port>1</port>
          </port-map>
        </filtering-entry>
        <filtering-entry>
          <database-id>12</database-id>
          <vids>1001</vids>
          <address>01-AB-BC-CD-DE-EE</address>
          <entry-type>static</entry-type>
          <port-map>
            <port>2</port>
          </port-map>
        </filtering-entry>
      </filtering-database>
    </component>
  </bridge>
</bridges>
```
Example VID Translations Configuration

f) Configuration example of [ingress] VLAN identifier translations table.

```xml
<interfaces>
  <interface>
    <name>if1</name>
    <bridge-port>
      <vid-translations>
        <local-vid>20</local-vid>
        <relay-vid>1020</relay-vid>
      </vid-translations>
      <vid-translations>
        <local-vid>21</local-vid>
        <relay-vid>1021</relay-vid>
      </vid-translations>
    </bridge-port>
  </interface>
</interfaces>
```
Example VID Translations Configuration

g) Configuration example of priority code point encoding and decoding tables.

Reference Table 6-2 and 6-3 in 802.1Q-2014, clause 6.9.3.

```xml
<interfaces>
  <interface>
    <name>if1</name>
    <bridge-port>
      <pcp-decoding-table>
        <pcp>8P0D</pcp>
        <priority-map>
          <priority-code-point>1</priority-code-point>
          <priority>3</priority>
          <drop-eligible>false</drop-eligible>
        </priority-map>
        <priority-map>
          <priority-code-point>3</priority-code-point>
          <priority>1</priority>
          <drop-eligible>false</drop-eligible>
        </priority-map>
      </pcp-decoding-table>
      <pcp-encoding-table>
        <pcp>8P0D</pcp>
        <priority-map>
          <priority>3</priority>
          <drop-eligible>false</drop-eligible>
          <priority-code-point>1</priority-code-point>
        </priority-map>
      </pcp-encoding-table>
    </bridge-port>
  </interface>
</interfaces>
```
Example TPMR Configuration

- Configuration example of a **TPMR**

```xml
<bridges xc:operation="create">
  <bridge>
    <name>theTPMR</name>
    <address>01-12-23-34-45-AF</address>
    <bridge-type>two-port-mac-relay-bridge</bridge-type>
    <component>
      <name>myComponent</name>
      <type>d-bridge-component</type>
      <address>01-12-23-34-45-56</address>
    </component>
  </bridge>
</bridges>
```

a) Create the TPMR Bridge along with its Bridge Component
Example TPMR Configuration

b) Create Bridge Ports and associated with the Bridge Component

```xml
<interfaces xc:operation="create">
  <interface>
    <name>if1</name>
    <type>ethernetCsmacd</type>
    <bridge-port>
      <component-name>myComponent</component-name>
      <port-type>d-bridge-port</port-type>
    </bridge-port>
  </interface>
  <interface>
    <name>if2</name>
    <type>ethernetCsmacd</type>
    <bridge-port>
      <component-name>myComponent</component-name>
      <port-type>d-bridge-port</port-type>
    </bridge-port>
  </interface>
</interfaces>
```
Example Provider Edge Bridge Configuration

- Configuration example of a **Provider Edge Bridge** with two bridge ports

```xml
<bridges xc:operation="create">
    <bridge>
        <name>thePEB</name>
        <address>01-12-23-34-45-AF</address>
        <bridge-type>provider-edge-bridge</bridge-type>
    </bridge>
</bridges>
```

a) S-VLAN Component will be auto-created. This Component is associated with the Bridge (e.g., thePEB).
Example Provider Edge Bridge Configuration

2

```
<interfaces xc:operation="create">
  <interface>
    <name>if1</name>
    <type>ethernetCsmacd</type>
    <bridge-port>
      <port-type>customer-edge-port</port-type>
      <cvid-registration>
        <cvid>200</cvid>
        <svid>2000</svid>
      </cvid-registration>
    </bridge-port>
  </interface>
</interfaces>
```

b) A CEP is created along with the CVID registration entry associated with the CEP

c) As a result of the CEP creation, a C-VLAN Component will be auto-created.

d) A PEP gets auto-created based on the CEP and the SVID to which the CVID is mapped, and will be attached to the C-VLAN Component
**Example Provider Edge Bridge Configuration**

```
<bridges>
  <bridge>
    <name>thePEB</name>
    <component>
      <name>myCComp</name>
    </component>
  </bridge>
</bridges>
```

**e)** Associate the C-VLAN Component with the Bridge (i.e., thePEB)

**f)** A CNP will be auto-created and will be attached to the S-VLAN Component \({\{CEP, SVID}\} \rightarrow CNP\) associated with the Bridge (i.e., thePEB)
Example Provider Edge Bridge Configuration

<interfaces xc:operation="create">
  <interface>
    <name>if2</name>
    <type>ethernetCsmacd</type>
    <bridge-port>
      <component>mySComp</component>
      <port-type>provider-network-port</port-type>
    </bridge-port>
  </interface>
</interfaces>

g) A PNP is created and associated with the S-VLAN Component.
Backup Material

Provider Bridged Networks Service Interfaces
C-tagged Service Interface to a PBN
Port Based Service Interface to a PBN
S-tagged Service Interface to a PBN
RCSIs to a PBN
Remote Customer Access Ports (RCAPs)