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# Provider Edge Bridge Instance Examples

# Introduction

- Review the use of the Bridge YANG by using instances and looking at the YANG tree

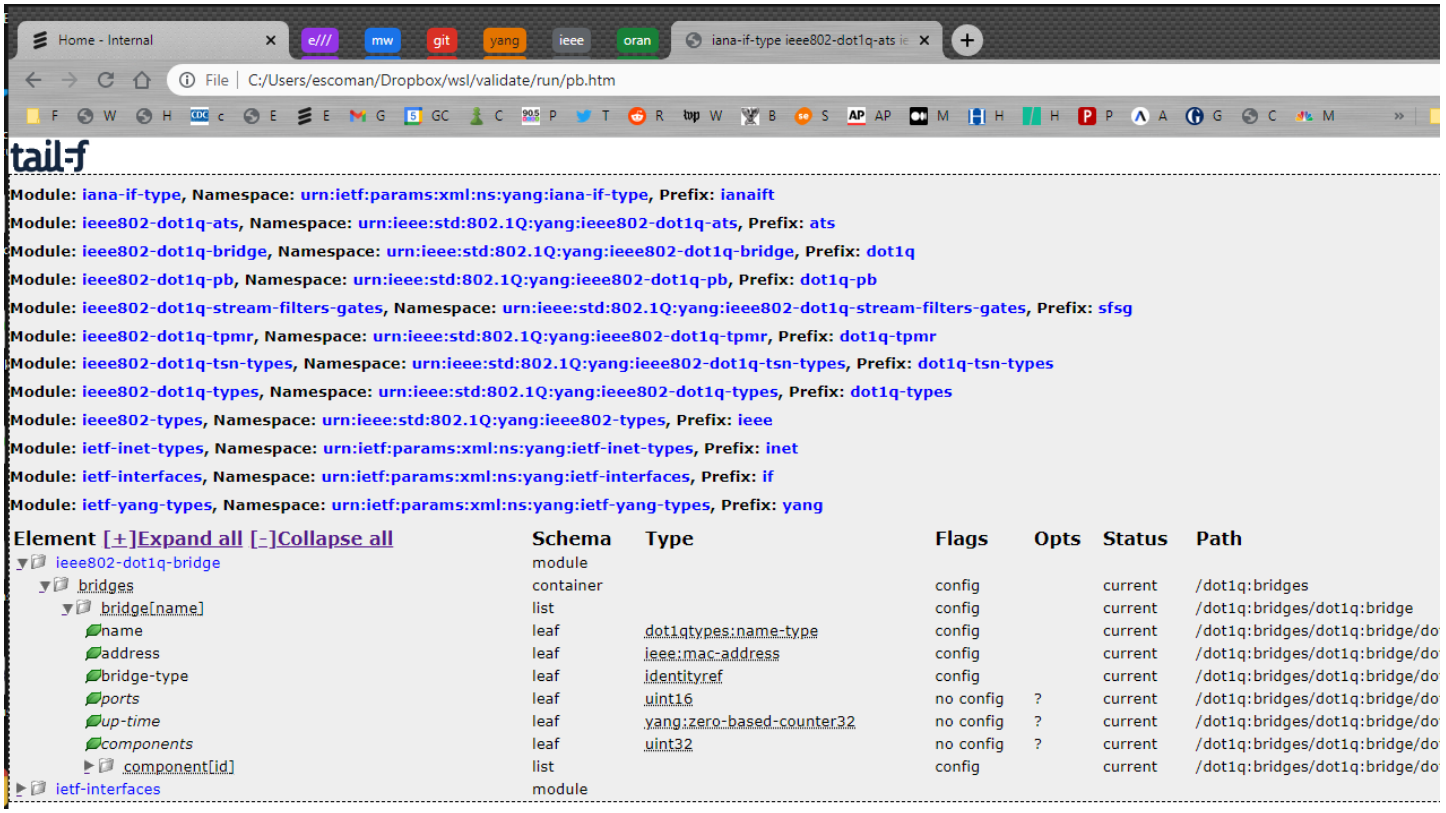
- Prior work and discussion include:
  - https://www.ieee802.org/1/files/public/docs2017/cp-mholness-YANG-instance-document-0317-v02.pdf
  - https://www.ieee802.org/1/files/public/docs2020/dk-fedyk-dot1aedk-simple-management-0520-v00.pdf
  - https://www.ieee802.org/1/files/public/docs2020/dk-fedyk-dot1aedk-vlan-discussion-0320-v01.pdf

# Simple Customer Bridge Example

- Goal:  Minimum instances needed to realize a simple customer bridge with one component and two ports

# The Tree

- The file pb.htm file has the full tree that can be used for the examples below



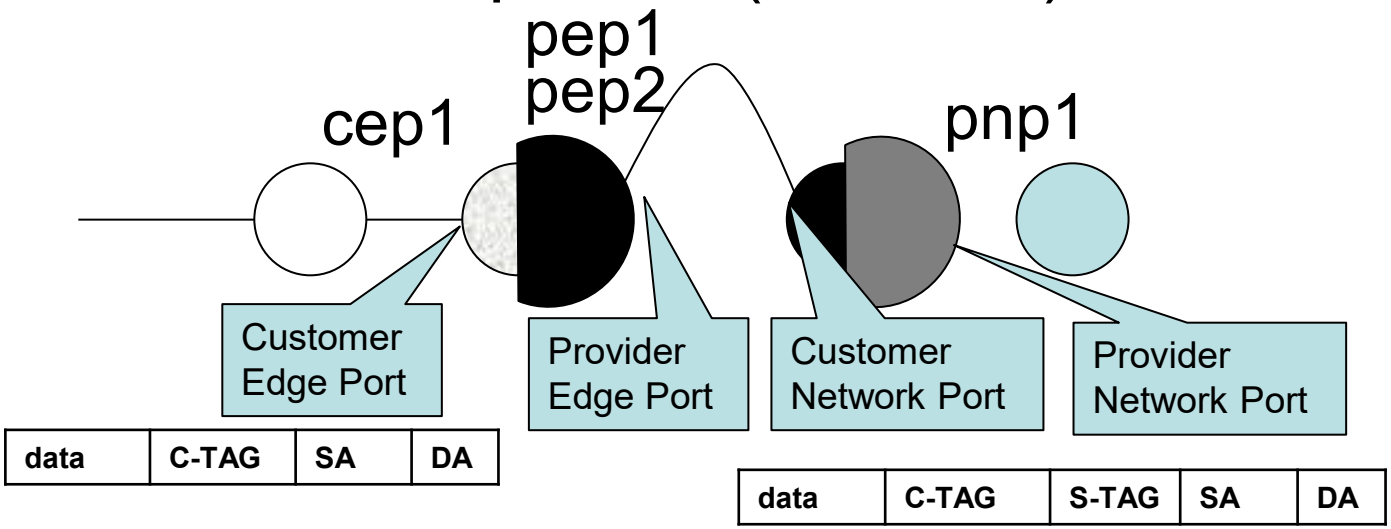
# Customer Bridge

```
<dot1q:bridge>
  <dot1q:name>theCVB</dot1q:name>
  <dot1q:address>10-20-30-40-50-AF</dot1q:address>
  <dot1q:bridge-type>dot1q:customer-vlan-bridge</dot1q:bridge-type>
  <dot1q:component>
    <dot1q:name>cvlan1</dot1q:name>
    <dot1q:id>2</dot1q:id>
    <dot1q:type>dot1q:c-vlan-component</dot1q:type>
    <dot1q:bridge-vlan>
      <dot1q:vlan>
        <dot1q:vid>10</dot1q:vid>
        <dot1q:name>cvid10</dot1q:name>
      </dot1q:vlan>
    </dot1q:bridge-vlan>
  </dot1q:component>
 </dot1q:bridge>
</dot1q:bridges>
```

```
<if:interface>
    <if:name>if1</if:name>
    <if:type>ia:ethernetCsmacd</if:type>
    <if:oper-status>up</if:oper-status>
    <if:statistics>
      <if:discontinuity-time>2021-10-11T16:14:00Z</if:discontinuity-time>
    </if:statistics>
    <dot1q:bridge-port>
      <dot1q:bridge-name>theCVB</dot1q:bridge-name>
      <dot1q:component-id>2</dot1q:component-id>
      <dot1q:port-type>dot1q:c-vlan-bridge-port</dot1q:port-type>
    </dot1q:bridge-port>
  </if:interface>
  <if:interface>
    <if:name>if2</if:name>
    <if:type>ia:ethernetCsmacd</if:type>
    <if:oper-status>up</if:oper-status>
    <if:statistics>
      <if:discontinuity-time>2021-10-11T16:14:00Z</if:discontinuity-time>
    </if:statistics>
    <dot1q:bridge-port>
      <dot1q:bridge-name>theCVB</dot1q:bridge-name>
      <dot1q:component-id>2</dot1q:component-id>
      <dot1q:port-type>dot1q:c-vlan-bridge-port</dot1q:port-type>
    </dot1q:bridge-port>
  </if:interface>
```

# Instance Example for Provider Edge Bridge (PEB)

- Goal: Create a minimum configuration for a Provider Edge Bridge
- For the example:
  - 2 C-components (cvid 10 and cvid 20)
  - 1 S-component (svid 200)



# Bridge and Components

```
<dot1q:bridge>
  <dot1q:name>my peb name</dot1q:name>
  <dot1q:address>10-20-30-40-50-60</dot1q:address>
  <dot1q:bridge-type>dot1q:provider-edge-
bridge</dot1q:bridge-type>
  <dot1q:component>
    <dot1q:name>svlan1</dot1q:name>
    <dot1q:id>1</dot1q:id>
    <dot1q:type>dot1q:s-vlan-component</dot1q:type>
    <dot1q:bridge-vlan>
      <dot1q:vlan>
        <dot1q:vid>200</dot1q:vid>
        <dot1q:name>svid200</dot1q:name>
      </dot1q:vlan>
    </dot1q:bridge-vlan>
  </dot1q:component>
```

```
<dot1q:component>
  <dot1q:name>cvlan1</dot1q:name>
  <dot1q:id>2</dot1q:id>
  <dot1q:type>dot1q:c-vlan-component</dot1q:type>
  <dot1q:bridge-vlan>
    <dot1q:vlan>
      <dot1q:vid>10</dot1q:vid>
      <dot1q:name>cvid10</dot1q:name>
    </dot1q:vlan>
  </dot1q:bridge-vlan>
</dot1q:component>
<dot1q:component>
  <dot1q:name>cvlan2</dot1q:name>
  <dot1q:id>3</dot1q:id>
  <dot1q:type>dot1q:c-vlan-component</dot1q:type>
  <dot1q:bridge-vlan>
    <dot1q:vlan>
      <dot1q:vid>20</dot1q:vid>
      <dot1q:name>cvid20</dot1q:name>
    </dot1q:vlan>
  </dot1q:bridge-vlan>
</dot1q:component>
</dot1q:bridge>
```

# Interfaces

- Customer Edge Port is an Interface
- CEP is where the PEP mapping occurs using the cvid-registration list

```
<if:interface>
   <if:name>cep1</if:name>
   <if:type>ia:bridge</if:type>
   <if:oper-status>up</if:oper-status>
   <if:statistics>
     <if:discontinuity-time>2021-10-11T16:14:00Z</if:discontinuity-time>
   </if:statistics>
   <dot1q:bridge-port>
    <dot1q:bridge-name>my peb name</dot1q:bridge-name>
    <dot1q:component-id>2</dot1q:component-id>
    <dot1q:port-type>dot1q:customer-edge-port</dot1q:port-type>
    <dot1q-pb:cvid-registration>
      <dot1q-pb:cvid>10</dot1q-pb:cvid>
      <dot1q-pb:svid>200</dot1q-pb:svid>
      <dot1q-pb:untagged-pep>false</dot1q-pb:untagged-pep>
      <dot1q-pb:untagged-cep>false</dot1q-pb:untagged-cep>
    </dot1q-pb:cvid-registration>
    <dot1q-pb:cvid-registration>
      <dot1q-pb:cvid>20</dot1q-pb:cvid>
      <dot1q-pb:svid>200</dot1q-pb:svid>
      <dot1q-pb:untagged-pep>false</dot1q-pb:untagged-pep>
      <dot1q-pb:untagged-cep>false</dot1q-pb:untagged-cep>
    </dot1q-pb:cvid-registration>
   </dot1q:bridge-port>
 </if:interface>
```

# Interfaces (continued)

- Provider Network Port is an Interface

```
<if:interface>
    <if:name>pnp1</if:name>
    <if:type>ia:bridge</if:type>
    <if:oper-status>up</if:oper-status>
    <if:statistics>
       <if:discontinuity-time>2021-10-11T16:14:00Z</if:discontinuity-time>
    </if:statistics>
    <dot1q:bridge-port>
      <dot1q:bridge-name>my peb name</dot1q:bridge-name>
      <dot1q:component-id>1</dot1q:component-id>
      <dot1q:port-type>dot1q:provider-network-port</dot1q:port-type>
      <dot1q:pvid>200</dot1q:pvid>
    </dot1q:bridge-port>
  </if:interface>
```

# Discussion

- Provider Edge Port is not currently modeled as an Interface
- This is providing troublesome for security enhancements that need to sit in-between the c-tag and s-tag
- For this example a new Identity was created so that the a Provider Edge Port could be modeled as an interface

# PEP Interface

```
<if:interface>
    <if:name>pep1</if:name>
    <if:type>ia:bridge</if:type>
    <if:oper-status>up</if:oper-status>
    <if:statistics>
      <if:discontinuity-time>2021-10-
11T16:14:00Z</if:discontinuity-time>
    </if:statistics>
    <dot1q:bridge-port>
      <dot1q:bridge-name>my peb name</dot1q:bridge-name>
      <dot1q:component-id>1</dot1q:component-id>
      <dot1q:port-type>dot1q:provider-edge-port</dot1q:port-type>
      <dot1q:pvid>10</dot1q:pvid>
      <dot1q:default-priority>5</dot1q:default-priority>
      <dot1q:acceptable-frame>admit-all-
frames</dot1q:acceptable-frame>
      <dot1q:enable-ingress-filtering>true</dot1q:enable-ingress-
filtering>
    </dot1q:bridge-port>
  </if:interface>
```

```
<if:interface>
    <if:name>pep2</if:name>
    <if:type>ia:bridge</if:type>
    <if:oper-status>up</if:oper-status>
    <if:statistics>
      <if:discontinuity-time>2021-10-
11T16:14:00Z</if:discontinuity-time>
    </if:statistics>
    <dot1q:bridge-port>
      <dot1q:bridge-name>my peb name</dot1q:bridge-name>
      <dot1q:component-id>1</dot1q:component-id>
      <dot1q:port-type>dot1q:provider-edge-port</dot1q:port-type>
      <dot1q:pvid>20</dot1q:pvid>
      <dot1q:default-priority>5</dot1q:default-priority>
      <dot1q:acceptable-frame>admit-all-
frames</dot1q:acceptable-frame>
      <dot1q:enable-ingress-filtering>true</dot1q:enable-ingress-
filtering>
    </dot1q:bridge-port>
  </if:interface>
```