Example: Configuring E-LINE and E-LAN Services for a PBB Network on MX Series Routers

The IEEE 802.1ah provider backbone bridge (PBB) is a new standard for connecting and interoperating with provider backbone networks. PBB for MX Series routers supports Ethernet private line (E-LINE) and Ethernet transparent LAN (E-LAN) services on the same PBBN network. In an E-LINE service, premises are connected with a point-to-point Ethernet link. E-LAN services are the multipoint version of E-LINE services and are ideal for multi-site companies that require a transparent Layer 2 Virtual LAN.

The MX Series routers provides a solution to deliver these services, including:

- Class of service (CoS)—Reliably deliver the correct amount of bandwidth and quality of service to subscribers.
- Connectivity fault management (CFM)—Monitor, isolate and verify faults in the network.
- Multiple Spanning Tree Protocol (MSTP)—Ensure that services are carried through a loop-free topology for multiple optimization.

This example describes how to configure two E-LAN services and two E-LINE services for one customer on a PBBN, and demonstrates:

- How to configure an MX Series router to load-balance traffic on a per-VLAN basis to optimally utilize links in the PBBN.
- How to configure an MX Series router to carry E-LINE and E-LAN traffic (from the same customer or multiple customers) on the same PBBN.

To configure services in a PBBN, perform these tasks:

- Requirements on page 2
- Overview and Topology on page 2
- Configuring E-LINE and E-LAN Services on BEB1 (Sangiovese) on page 8
- Configuring E-LINE Service on BEB2 (Barbera) on page 17
- Configuring E-LAN Services on BEB3 (Malbec) on page 22
- Configuring E-LINE and E-LAN Services on BEB4 (Cubs) on page 29
- Configuring Routing Instances and Interfaces on ES1 (Pinot Noir) on page 38
- Configuring a Routing Instance and Interfaces on ES3 (Dolcetto) on page 42
- Configuring a Routing Instance and Interfaces on ES4 (Reds) on page 45
- Configuring a Routing Instance and Interfaces on BCB1 (Syrah) on page 49
- Configuring a Routing Instance and Interfaces on BCB2 (Cabernet) on page 53
- Verification on page 57
Requirements

This example uses the following hardware and software components:

- JUNOS Release 10.0 or later for MX Series routers
- 9 MX Series routers in a PBB configuration

Before you configure the routers for PBB and services, be sure you have:

- Installed your MX Series routers.
- Performed the initial router configuration.

Overview and Topology

Figure 1 displays the E-LAN service topology for this example. A provider backbone bridge network (PBBN) containing Backbone Core Bridge 1 and 2 (BCB1 and BCB2) provide services for Provider Bridged Networks 1, 2, and 3 (PBN1, PBN2, and PBN3). PBN1 contains Backbone Edge Bridge 1 and 2 (BEB1 and BEB2) and Edge Switches 1 (ES1). PBN2 contains BEB3 and ES3. PBN3 contains BEB4 and ES4. All connecting lines between the PBBN, PBN1, PBN2, and PBN3 represent the E-LAN service.

The active paths shown in the topology are based on the MSTP configuration in the PBBN core network and the resulting paths for all traffic through the network.
Figure 1: Network Topology for E-LAN Service in a Provider Bridged Network

Figure 2 displays the E-LINE service topology for this example. The two E-LINEs are shown using the default path created through the MSTP configuration. The active paths shown in the topology are based on the MSTP configuration in the PBBN core network and the resulting paths for all traffic through the network. A PBBN provides services for provider bridged networks in BEB1, BEB2, and BEB3.
Table 1 shows the different properties that will be configured for E-LINE and E-LAN services on the MX Series routers in the topology.

Table 1: Components of the Topology for Configuring E-LINE and E-LAN Service on MX Series Routers

<table>
<thead>
<tr>
<th>Property</th>
<th>Settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Backbone edge bridges</td>
<td>PBN1 contains:</td>
</tr>
<tr>
<td></td>
<td>■ BEB1</td>
</tr>
<tr>
<td></td>
<td>■ BEB2</td>
</tr>
<tr>
<td></td>
<td>PBN2 contains:</td>
</tr>
<tr>
<td></td>
<td>■ BEB3</td>
</tr>
<tr>
<td></td>
<td>PBN3 contains:</td>
</tr>
<tr>
<td></td>
<td>■ BEB4</td>
</tr>
</tbody>
</table>
Table 1: Components of the Topology for Configuring E-LINE and E-LAN Service on MX Series Routers (continued)

<table>
<thead>
<tr>
<th>Property</th>
<th>Settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Backbone core bridges</td>
<td>The PBBN contains the following BCBs:</td>
</tr>
<tr>
<td></td>
<td>■ BCB1</td>
</tr>
<tr>
<td></td>
<td>■ BCB2</td>
</tr>
<tr>
<td>Edge switches</td>
<td>The edge switches are connected to the following BEBs:</td>
</tr>
<tr>
<td></td>
<td>■ ES1—Connected to BEB1 and BEB2.</td>
</tr>
<tr>
<td></td>
<td>■ ES3—Connected to BEB3.</td>
</tr>
<tr>
<td></td>
<td>■ ES4—Connected to BEB4.</td>
</tr>
<tr>
<td>Backbone core bridges</td>
<td>The PBBN contains the following BCBs:</td>
</tr>
<tr>
<td></td>
<td>■ BCB1</td>
</tr>
<tr>
<td></td>
<td>■ BCB2</td>
</tr>
<tr>
<td>BEB1 (Sangiovese) configuration</td>
<td>BEB1 is physically connected to BCB1 and BCB2 in the following manner:</td>
</tr>
<tr>
<td></td>
<td>■ Connected to BCB1 through interface ge-1/3/9</td>
</tr>
<tr>
<td></td>
<td>■ Connected to BCB2 through interface ge-1/3/0</td>
</tr>
<tr>
<td></td>
<td>The following routing instance is configured for the B-component (PBBN):</td>
</tr>
<tr>
<td></td>
<td>■ The routing instance name is pbbn-1.</td>
</tr>
<tr>
<td></td>
<td>■ The pseudo-logical interface is cbp0.0</td>
</tr>
<tr>
<td></td>
<td>■ The logical interfaces ge-1/3/0.0 and ge-1/3/9.0 are associated with pbbn-1.</td>
</tr>
<tr>
<td></td>
<td>■ MSTP is configured for the routing instance.</td>
</tr>
<tr>
<td></td>
<td>■ The routing instance has the bridging domains eline-bvlan and elan-bvlan.</td>
</tr>
<tr>
<td></td>
<td>The following routing instance is configured for the I-component (PBN) for E-LAN services:</td>
</tr>
<tr>
<td></td>
<td>■ The routing instance name is pbn-1–for-elan.</td>
</tr>
<tr>
<td></td>
<td>■ The pseudo-logical interface is pip0.1.</td>
</tr>
<tr>
<td></td>
<td>■ The logical interfaces ge-2/0/0.3 and ge-2/0/0.4 are associated with the routing instance pbn-1–for-elan.</td>
</tr>
<tr>
<td></td>
<td>■ The bridging domain is elan-svlans.</td>
</tr>
<tr>
<td></td>
<td>■ The service groups are elan1 and elan2.</td>
</tr>
<tr>
<td></td>
<td>■ The peer PBBN routing instance is pbbn-1.</td>
</tr>
<tr>
<td></td>
<td>The following routing instance is configured for the I-component (PBN):</td>
</tr>
<tr>
<td></td>
<td>■ The routing instance name is pbn-1–for-eline.</td>
</tr>
<tr>
<td></td>
<td>■ The pseudo-logical interface is pip0.0.</td>
</tr>
<tr>
<td></td>
<td>■ The logical interfaces ge-2/0/0.1 and ge-2/0/0.2 are associated with the routing instance pbn-1–for-eline.</td>
</tr>
<tr>
<td></td>
<td>■ The bridging domains are bd1 and eline-svlans.</td>
</tr>
<tr>
<td></td>
<td>■ The service group is eline1.</td>
</tr>
<tr>
<td></td>
<td>■ The peer PBBN routing instance is pbbn-1.</td>
</tr>
</tbody>
</table>
Table 1: Components of the Topology for Configuring E-LINE and E-LAN Service on MX Series Routers (continued)

<table>
<thead>
<tr>
<th>Property</th>
<th>Settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>BEB2 (Barbera) configuration</td>
<td>BEB2 is physically connected to BCB1 and BCB2 in the following manner:</td>
</tr>
<tr>
<td></td>
<td>• Connected to BCB1 through interface ge-1/3/0</td>
</tr>
<tr>
<td></td>
<td>• Connected to BCB2 through interface ge-2/3/0</td>
</tr>
<tr>
<td></td>
<td>The following routing instance is configured for the B-component (PBBN):</td>
</tr>
<tr>
<td></td>
<td>• The routing instance name is pbbn-1.</td>
</tr>
<tr>
<td></td>
<td>• The pseudo-logical interface is cbp0.0</td>
</tr>
<tr>
<td></td>
<td>• The logical interfaces ge-1/3/0.0 and ge-1/3/9.0 are associated with pbbn-1.</td>
</tr>
<tr>
<td></td>
<td>• MSTP is configured for the routing instance.</td>
</tr>
<tr>
<td></td>
<td>• The routing instance has the bridging domains eline-bvlan and elan-bvlan.</td>
</tr>
<tr>
<td></td>
<td>The following routing instance for E-LINE service is configured for the I-component (PBN):</td>
</tr>
<tr>
<td></td>
<td>• The routing instance name is pbn-1-for-eline.</td>
</tr>
<tr>
<td></td>
<td>• The pseudo-logical interface is pip0.0</td>
</tr>
<tr>
<td></td>
<td>• The logical interfaces ge-1/0/0.1 and ge-1/0/0.2 are associated with the routing instance pbn-1-for-eline.</td>
</tr>
<tr>
<td></td>
<td>• The bridging domains are bd1 and elane-svlans.</td>
</tr>
<tr>
<td></td>
<td>• The service group is eline2.</td>
</tr>
<tr>
<td></td>
<td>• The peer PBBN routing instance is pbbn-1.</td>
</tr>
<tr>
<td></td>
<td>BEB3 (Malbec) configuration</td>
</tr>
<tr>
<td></td>
<td>BEB3 is physically connected to BCB2 through interface ge-1/3/9.</td>
</tr>
<tr>
<td></td>
<td>The following routing instance is configured for the B-component (PBBN):</td>
</tr>
<tr>
<td></td>
<td>• The routing instance name is pbbn-1.</td>
</tr>
<tr>
<td></td>
<td>• The pseudo-logical interface is cbp0.0</td>
</tr>
<tr>
<td></td>
<td>• The logical interfaces ge-1/3/9.0 and ge-2/3/0.0 are associated with pbbn-1.</td>
</tr>
<tr>
<td></td>
<td>• MSTP is configured for the routing instance.</td>
</tr>
<tr>
<td></td>
<td>• The routing instance has the bridging domain elan-bvlan.</td>
</tr>
<tr>
<td></td>
<td>The following routing instance is configured for the I-component (PBN) for E-LAN services:</td>
</tr>
<tr>
<td></td>
<td>• The routing instance name is pbn-2-for-elan.</td>
</tr>
<tr>
<td></td>
<td>• The pseudo-logical interface is pip0.1</td>
</tr>
<tr>
<td></td>
<td>• The logical interfaces ge-2/0/0.3 and ge-2/0/0.4 are associated with routing instance pbn-2for-elan.</td>
</tr>
<tr>
<td></td>
<td>• The bridging domain is elane-svlans.</td>
</tr>
<tr>
<td></td>
<td>• The service groups are elan1 and elan2.</td>
</tr>
<tr>
<td></td>
<td>• The peer PBBN routing instance is pbbn-1.</td>
</tr>
</tbody>
</table>
Table 1: Components of the Topology for Configuring E-LINE and E-LAN Service on MX Series Routers (continued)

<table>
<thead>
<tr>
<th>Property</th>
<th>Settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>BEB 4 (Cubs) configuration</td>
<td>BEB4 is physically connected to BCB1 and BCB2 in the following manner:</td>
</tr>
<tr>
<td></td>
<td>■ Connected to BCB1 through interfaces ge-2/0/5 and ge-2/1/5</td>
</tr>
<tr>
<td></td>
<td>■ Connected to BCB2 through interfaces ge-2/0/5 and ge-2/0/6</td>
</tr>
<tr>
<td></td>
<td>The following routing instance is configured for the B-component (PBBN):</td>
</tr>
<tr>
<td></td>
<td>■ The routing instance name is pbbn-1.</td>
</tr>
<tr>
<td></td>
<td>■ The pseudo-logical interface is cbp0.0</td>
</tr>
<tr>
<td></td>
<td>■ The logical interfaces ge-1/0/4.0 and ge-1/2/2.0 are associated with pbbn-1.</td>
</tr>
<tr>
<td></td>
<td>■ MSTP is configured for the routing instance.</td>
</tr>
<tr>
<td></td>
<td>■ The routing instance has the bridging domains eline-bvlan and elan-bvlan.</td>
</tr>
<tr>
<td></td>
<td>The following routing instance is configured for the I-component (PBN) for E-LAN services:</td>
</tr>
<tr>
<td></td>
<td>■ The routing instance name is pbn3-for-elan.</td>
</tr>
<tr>
<td></td>
<td>■ The pseudo-logical interface is pip0.1</td>
</tr>
<tr>
<td></td>
<td>■ The logical interfaces ge-1/0/0.3 and ge-1/0/0.4 are associated with routing instance pbn-3-for-elan.</td>
</tr>
<tr>
<td></td>
<td>■ The bridging domain is elan-svlans.</td>
</tr>
<tr>
<td></td>
<td>■ The service groups are elan1 and elan2.</td>
</tr>
<tr>
<td></td>
<td>■ The peer PBBN routing instance is pbbn-1.</td>
</tr>
<tr>
<td></td>
<td>The following routing instance is configured for the I-component (PBN):</td>
</tr>
<tr>
<td></td>
<td>■ The routing instance name is pbn-3-for-eline.</td>
</tr>
<tr>
<td></td>
<td>■ The pseudo-logical interface is pip0.0</td>
</tr>
<tr>
<td></td>
<td>■ The logical interfaces ge-2/0/0.1 and ge-2/0/0.2 are associated with the routing instance pbn-1-for-eline.</td>
</tr>
<tr>
<td></td>
<td>■ The bridging domain is eline-svlans.</td>
</tr>
<tr>
<td></td>
<td>■ The service groups are eline1 and eline2.</td>
</tr>
<tr>
<td></td>
<td>■ The peer PBBN routing instance is pbbn-1.</td>
</tr>
<tr>
<td>BCB 1 (Syrah) configuration</td>
<td>BCB1 is physically connected to the BEBs in the following manner:</td>
</tr>
<tr>
<td></td>
<td>■ Connected to BEB1 through interface ge-1/3/9</td>
</tr>
<tr>
<td></td>
<td>■ Connected to BEB2 through interface ge-1/3/0</td>
</tr>
<tr>
<td></td>
<td>■ Connected to BEB3 through interface ge-2/3/0</td>
</tr>
<tr>
<td></td>
<td>■ Connected to BEB4 through interface ge-1/0/4</td>
</tr>
<tr>
<td></td>
<td>The following routing instance is configured for the PBBN:</td>
</tr>
<tr>
<td></td>
<td>■ The routing instance name is pbbn-1.</td>
</tr>
<tr>
<td></td>
<td>■ The logical interfaces ge-1/3/0.0, ge-1/3/9.0, ge-2/1/5.0, ge-2/3/0.0, and ge-2/3/9.0 are associated with pbbn-1.</td>
</tr>
<tr>
<td></td>
<td>■ MSTP is configured for the routing instance.</td>
</tr>
<tr>
<td></td>
<td>■ The routing instance has the bridging domains eline-bvlan and elan-bvlan.</td>
</tr>
</tbody>
</table>

Overview and Topology
Table 1: Components of the Topology for Configuring E-LINE and E-LAN Service on MX Series Routers (continued)

<table>
<thead>
<tr>
<th>Property</th>
<th>Settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>BCB 2 (Cabernet) configuration</td>
<td>BCB2 is physically connected to the BEBs in the following manner:</td>
</tr>
<tr>
<td></td>
<td>■ Connected to BEB1 through interface ge-1/3/0</td>
</tr>
<tr>
<td></td>
<td>■ Connected to BEB2 through interface ge-2/3/0</td>
</tr>
<tr>
<td></td>
<td>■ Connected to BEB3 through interface ge-1/3/9</td>
</tr>
<tr>
<td></td>
<td>The following routing instance is configured for the PBBN:</td>
</tr>
<tr>
<td></td>
<td>■ The routing instance name is pbbn-1</td>
</tr>
<tr>
<td></td>
<td>■ The logical interfaces ge-1/3/0.0, ge-1/3/9.0, ge-2/0/6.0, ge-2/3/0.0, and ge-2/3/9.0 are associated with pbbn-1.</td>
</tr>
<tr>
<td></td>
<td>■ MSTP is configured for the routing instance.</td>
</tr>
<tr>
<td></td>
<td>■ The routing instance has the bridging domains eline-bvlan and elan-bvlan.</td>
</tr>
</tbody>
</table>

| ES1 (Pinot Noir) configuration  | ES1, ES3, and ES4 are physically connected to the BEBs in the following manner: |
|                                 | ■ ES1 is connected to BEB1 through interface ge-2/0/0 and BEB2 through interface ge-1/0/0 |
|                                 | ■ ES3 is connected to BEB3 through interface ge-2/0/0                     |
|                                 | ■ ES4 is connected to BEB4 through interface ge-1/0/0                     |

| ES3 (Dolcetto) configuration    | ES1, ES3, and ES4 are physically connected to the BEBs in the following manner: |
|                                 | ■ ES1 is connected to BEB1 through interface ge-2/0/0 and BEB2 through interface ge-1/0/0 |
|                                 | ■ ES3 is connected to BEB3 through interface ge-2/0/0                     |
|                                 | ■ ES4 is connected to BEB4 through interface ge-1/0/0                     |

| ES4 (Reds) configuration        | ES1, ES3, and ES4 are physically connected to the BEBs in the following manner: |
|                                 | ■ ES1 is connected to BEB1 through interface ge-2/0/0 and BEB2 through interface ge-1/0/0 |
|                                 | ■ ES3 is connected to BEB3 through interface ge-2/0/0                     |
|                                 | ■ ES4 is connected to BEB4 through interface ge-1/0/0                     |

To configure services, configure separate routing instances for the PBBN (B-component) and PBN (I-component) on the BEB1, BEB2, BEB3, and BEB4. BCB1 and BCB2 require only a routing instance for the B-component. ES1, ES2, ES3, and ES4 require a routing instance, but not for the B-component.

Multiple Spanning Tree Protocol (MSTP) is configured to provide fast failover and load-balancing benefits to VLANs in the PBBN.

Configuring E-LINE and E-LAN Services on BEB1 (Sangiovese)

Table 2 contains the services configured for BEB1 as well as the correlating service virtual local area networks (S-VLANs), service identifiers (I-SIDS), and backbone virtual local area networks (B-VLANs).

Table 2: BEB1 Mapping

<table>
<thead>
<tr>
<th>Service</th>
<th>S-VLAN</th>
<th>I-SID</th>
<th>B-VLAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>elan1</td>
<td>1300</td>
<td>10300</td>
<td>3350</td>
</tr>
<tr>
<td>elan2</td>
<td>1400</td>
<td>10400</td>
<td>3350</td>
</tr>
<tr>
<td>eline1</td>
<td>2100</td>
<td>10100</td>
<td>3150</td>
</tr>
</tbody>
</table>
To configure E-LINE and E-LAN services on the MX Series router BEB1 in a PBBN, perform these tasks:

- Configuring a Routing Instance for E-LINE Services on BEB1 on page 9
- Configuring a PBN Routing Instance for E-LAN Services on BEB1 on page 10
- Configuring a PBBN Routing Instance on BEB1 on page 12
- Configuring the Interfaces on BEB1 on page 14

Configuring a Routing Instance for E-LINE Services on BEB1

### CLI Quick Configuration

To quickly configure the PBN (I-component) routing instance for E-LINE services, copy the following commands and paste them into the router terminal window:

```
[edit]
set routing-instances pbn-1-for-eline instance-type virtual-switch
set routing-instances pbn-1-for-eline interface ge-2/0/0.1
set routing-instances pbn-1-for-eline interface pip0.0
set routing-instances pbn-1-for-eline bridge-domains bd1 vlan-id 10
set routing-instances pbn-1-for-eline bridge-domains eline-svlans vlan-id-list 2100
set routing-instances pbn-1-for-eline pbb-options peer-instance pbbn-1
set routing-instances pbn-1-for-eline service-groups eline1 service-type eline
set routing-instances pbn-1-for-eline service-groups eline1 pbb-service-options isid 10100 interface ge-2/0/0.1
```

### Step-by-Step Procedure

To configure the PBN (I-component) routing instance for E-LINE service:

1. Configure the PBN routing instance `pbn-1-for-eline` and specify the instance type as `virtual-switch` to provide support for Layer 2 bridging:

   ```
   [edit routing-instances]
   user@beb1# set pbn-1-for-eline instance-type virtual-switch
   ```

2. Configure the logical interfaces for the PBN routing instance:

   ```
   [edit routing-instances]
   user@beb1# set pbn-1-for-eline interface ge-2/0/0.1
   ```

3. Configure a provider instance port (PIP) pseudo-logical interface to provide a connection between customer routing instances (PBN I-component) and the provider routing instance (PBBN B-component):

   ```
   [edit routing-instances]
   user@beb1# set pbn-1-for-eline interface pip0.0
   ```

4. Configure the provider bridge domain `bd1` and `eline-svlans` for E-LINE services:

   ```
   [edit routing-instances]
   user@beb1# set pbn-1-for-eline bridge-domains bd1 vlan-id 10
   user@beb1# set pbn-1-for-eline bridge-domains eline-svlans vlan-id-list 2100
   ```

5. Configure the peer PBBN routing instance (here, the peer PBBN is `pbbn-1`):

   ```
   [edit routing-instances]
   user@beb1# set pbn-1-for-eline pbb-options peer-instance pbbn-1
   ```
6. Configure service groups and the type of service they will provide for the routing instance (here, service groups \texttt{eline1} and \texttt{eline2} are configured for \texttt{eline} service):

   \begin{verbatim}
   [edit routing-instances ]
   user@beb1# set pbn-1-for-eline service-groups eline1 service-type eline
   user@beb1# set pbn-1-for-eline service-groups eline1 pbb-service-options
   isid 10100 interface ge-2/0/0.1
   \end{verbatim}

   **Results** Check the results of the configuration:

   \begin{verbatim}
   user@beb1> show configuration
   routing-instances {
   pbn-1-for-elan {
   instance-type virtual-switch;
   interface ge-2/0/0.1;
   interface pip0.0;
   bridge-domains {
   bd1 {
   vlan-id 10;
   }
   eline-svlans {
   vlan-id-list [ 2100 ];
   }
   }
   pbb-options {
   peer-instance pbbn-1;
   }
   service-groups {
   eline1 {
   service-type eline;
   pbb-service-options {
   isid 10100 interface ge-2/0/0.1;
   }
   }
   }
   }
   }
   \end{verbatim}

**Configuring a PBN Routing Instance for E-LAN Services on BEB1**

**CLI Quick Configuration** To quickly configure a PBN (I-component) routing instance for E-LAN services, copy the following commands and paste them into the router terminal window:

\begin{verbatim}
[edit]
set routing-instances pbn-1-for-elan instance-type virtual-switch
set routing-instances pbn-1-for-elan interface ge-2/0/0.3
set routing-instances pbn-1-for-elan interface ge-2/0/0.4
set routing-instances pbn-1-for-elan interface pip0.1
set routing-instances pbn-1-for-elan bridge-domains elan-svlans vlan-id-list 1300
set routing-instances pbn-1-for-elan bridge-domains elan-svlans vlan-id-list 1400
set routing-instances pbn-1-for-elan pbb-options peer-instance pbbn-1
set routing-instances pbn-1-for-elan service-groups elan1 service-type elan
\end{verbatim}
set routing-instances pbn-1-for-elan service-groups elan1 pbb-service-options isid 10300 vlan-id-list 1300
set routing-instances pbn-1-for-elan service-groups elan2 service-type elan
set routing-instances pbn-1-for-elan service-groups elan2 pbb-service-options isid 10400 vlan-id-list 1400

Step-by-Step Procedure

To configure the PBN (I-component) routing instance for E-LAN service:

1. Configure the PBN routing instance `pbn-1-for-elan` and specify the instance type as `virtual-switch` to provide support for Layer 2 bridging:

   ```
   [edit routing-instances]
   user@beb1# set pbn-1-for-elan instance-type virtual-switch
   ```

2. Configure the logical interfaces for the PBN routing instance:

   ```
   [edit routing-instances]
   user@beb1# set pbn-1-for-elan interface ge-2/0/0.3
   user@beb1# set pbn-1-for-elan interface ge-2/0/0.4
   ```

3. Configure a provider instance port (PIP) pseudo-logical interface to provide a connection between customer routing instances (PBN I-component) and the provider routing instance (PBBN B-component):

   ```
   [edit routing-instances]
   user@beb1# set pbn-1-for-elan interface pip0.1
   ```

4. Configure the provider bridge domain `elan-svlans` for E-LAN services:

   ```
   [edit routing-instances]
   user@beb1# set pbn-1-for-elan bridge-domains elan-svlans vlan-id-list 1300
   user@beb1# set pbn-1-for-elan bridge-domains elan-svlans vlan-id-list 1400
   ```

5. Configure the peer PBBN routing instance (here, the peer PBBN is `pbbn-1`):

   ```
   [edit routing-instances]
   user@beb1# set pbn-1-for-elan pbb-options peer-instance pbbn-1
   ```

6. Configure service groups and the type of service they will provide for the routing instance (here, service groups `elan1` and `elan2` are configured for `elan` service):

   ```
   [edit routing-instances]
   user@beb1# set pbn-1-for-elan service-groups elan1 service-type elan
   user@beb1# set pbn-1-for-elan service-groups elan1 pbb-service-options isid 10300 vlan-id-list 1300
   user@beb1# set pbn-1-for-elan service-groups elan2 service-type elan
   user@beb1# set pbn-1-for-elan service-groups elan2 pbb-service-options isid 10400 vlan-id-list 1400
   ```

Results

Check the results of the configuration:

```bash
user@beb1> show configuration
routing-instances {
    pbn-1-for-elan { 
        instance-type virtual-switch;
        interface ge-2/0/0.3;
        interface ge-2/0/0.4;
    }
```
Configuring a PBBN Routing Instance on BEB1

CLI Quick Configuration

To quickly configure a routing instance for a PBBN, copy the following commands and paste them into the router terminal window:

```
[edit]
set routing-instances pbbn-1 instance-type virtual-switch
set routing-instances pbbn-1 interface ge-1/3/0.0
set routing-instances pbbn-1 interface ge-1/3/9.0
set routing-instances pbbn-1 interface cbp0.0
set routing-instances pbbn-1 protocols mstp configuration-name pbbn-1
set routing-instances pbbn-1 protocols mstp interface ge-1/3/0
set routing-instances pbbn-1 protocols mstp interface ge-1/3/9
set routing-instances pbbn-1 bridge-domains elan-bvlan vlan-id 3350
set routing-instances pbbn-1 pbb-options vlan-id 3350 isid-list 10300
set routing-instances pbbn-1 pbb-options vlan-id 3350 isid-list 10400
set routing-instances pbbn-1 pbb-options vlan-id 3150 isid-list 10100
```

Step-by-Step Procedure

To configure the PBBN (B-component) routing instance:

1. Configure the PBBN routing instance `pbbn-1` and specify the instance type as `virtual-switch` to provide support for Layer 2 bridging:

   ```
   [edit routing-instances]
   user@beb1# set pbbn-1 instance-type virtual-switch
   ```

2. Configure the logical interfaces for the PBBN routing instance:

   ```
   [edit routing-instances]
   ```
user@beb1# set pbbn-1 interface ge-1/3/0.0
user@beb1# set pbbn-1 interface ge-1/3/9.0

3. Configure a customer backbone port (CBP) pseudo-logical interface to provide a connection between customer routing instances (PBN I-component) and the provider routing instance (PBBN B-component):

   [edit routing-instances]
   user@beb1# set pbbn-1 interface cbp0.0

4. Configure Multiple Spanning Tree Protocol (MSTP) for the PBBN routing instance to ensure a loop-free topology:

   [edit routing-instances]
   user@beb1# set pbbn-1 protocols mstp configuration-name pbbn-1
   user@beb1# set pbbn-1 protocols mstp interface ge-1/3/0
   user@beb1# set pbbn-1 protocols mstp interface ge-1/3/9

5. Configure the provider bridge domains elan-bvlan and eline-bvlan for E-LINE and E-LAN services:

   [edit routing-instances]
   user@beb1# set pbbn-1 bridge-domains elan-bvlan vlan-id 3350

6. Configure PBB options to provide the PBBN with B-VLAN to I-SID mapping information in the bridge-domain:

   [edit routing-instances]
   user@beb1# set pbbn-1 pbb-options vlan-id 3350 isid-list 10300
   user@beb1# set pbbn-1 pbb-options vlan-id 3350 isid-list 10400
   user@beb1# set pbbn-1 pbb-options vlan-id 3150 isid-list 10100

Results
Check the results of the configuration:

   user@beb1> show configuration
   routing-instances {
      pbbn-1 {
         instance-type virtual-switch;
         interface ge-1/3/0.0;
         interface ge-1/3/9.0;
         interface cbp0.0;
         protocols {
            mstp {
               configuration-name pbbn-1;
               interface ge-1/3/0;
               interface ge-1/3/9;
            }
         }
         bridge-domains {
            elan-bvlan {
               vlan-id 3350;
            }
            eline-bvlan {
               vlan-id 3150;
               bridge-options {
               }
            }
         }
      }
   }

Configuring a PBBN Routing Instance on BEB1

13
Configuring the Interfaces on BEB1

CLI Quick Configuration
To quickly configure the interfaces on BEB1, copy the following commands and paste them into the router terminal window:

```
[edit]
set interfaces ge-1/3/0 description "Connected to BCB2 cabernet ge-1/3/0"
set interfaces ge-1/3/0 unit 0 family bridge interface-mode trunk
set interfaces ge-1/3/0 unit 0 family bridge vlan-id-list 3000-4000
set interfaces ge-1/3/9 description "Connected to BCB1 syrah ge-1/3/9"
set interfaces ge-1/3/9 unit 0 family bridge interface-mode trunk
set interfaces ge-1/3/9 unit 0 family bridge vlan-id-list 3000-4000
set interfaces ge-2/0/0 description "Connected to pinotnoir ge-2/0/0"
set interfaces ge-2/0/0 unit 0 family bridge interface-mode trunk
set interfaces ge-2/0/0 unit 0 family bridge vlan-id-list 2100
set interfaces ge-2/0/0 unit 1 family bridge vlan-id-list 1300
set interfaces ge-2/0/0 unit 4 family bridge vlan-id-list 1400
set interfaces cbp0 unit 0 family bridge interface-mode trunk
set interfaces cbp0 unit 0 family bridge bridge-domain-type bvlan
set interfaces cbp0 unit 0 family bridge isid-list all
set interfaces pip0 unit 0 family bridge interface-mode trunk
set interfaces pip0 unit 0 family bridge bridge-domain-type svlan
set interfaces pip0 unit 0 family bridge isid-list all-service-groups
set interfaces pip0 unit 1 family bridge interface-mode trunk
set interfaces pip0 unit 1 family bridge bridge-domain-type svlan
set interfaces pip0 unit 1 family bridge isid-list all-service-groups
```

Step-by-Step Procedure
To configure interfaces on BEB1:

1. Configure interface ge-1/3/0:

   ```
   [edit interfaces]
   user@beb1# set ge-1/3/0 description "Connected to BCB2 cabernet ge-1/3/0"
   user@beb1# set ge-1/3/0 unit 0 family bridge interface-mode trunk
   user@beb1# set ge-1/3/0 unit 0 family bridge vlan-id-list 3000-4000
   ```

2. Configure interface ge-1/3/9:

   ```
   [edit interfaces]
   user@beb1# set ge-1/3/9 description "Connected to BCB1 syrah ge-1/3/9"
   user@beb1# set ge-1/3/9 unit 0 family bridge interface-mode trunk
   user@beb1# set ge-1/3/9 unit 0 family bridge vlan-id-list 3000-4000
   ```
3. Configure interface ge-2/0/0:

```
[edit interfaces]
user@beb1# set ge-2/0/0 description "Connected to pinotnoir ge-2/0/0"
user@beb1# set ge-2/0/0 flexible-vlan-tagging
user@beb1# set ge-2/0/0 unit 1 family bridge interface-mode trunk
user@beb1# set ge-2/0/0 unit 1 family bridge vlan-id-list 2100
user@beb1# set ge-2/0/0 unit 3 family bridge interface-mode trunk
user@beb1# set ge-2/0/0 unit 3 family bridge vlan-id-list 1300
user@beb1# set ge-2/0/0 unit 4 family bridge interface-mode trunk
user@beb1# set ge-2/0/0 unit 4 family bridge vlan-id-list 1400
```

4. Configure interface cpb0:

```
[edit interfaces]
user@beb1# set cpb0 unit 0 family bridge interface-mode trunk
user@beb1# set cpb0 unit 0 family bridge bridge-domain-type bvlan
user@beb1# set cpb0 unit 0 family bridge isid-list all
```

5. Configure interface pip0:

```
[edit interfaces]
user@beb1# set pip0 unit 0 family bridge interface-mode trunk
user@beb1# set pip0 unit 0 family bridge bridge-domain-type svlan
user@beb1# set pip0 unit 0 family bridge isid-list all-service-groups
user@beb1# set pip0 unit 1 family bridge interface-mode trunk
user@beb1# set pip0 unit 1 family bridge bridge-domain-type svlan
user@beb1# set pip0 unit 1 family bridge isid-list all-service-groups
```

**Results**

Check the results of the configuration:

```
user@beb1> show configuration
interfaces {
  ge-1/0/5 {
    unit 0 {
      family bridge {
        interface-mode trunk;
        vlan-id-list 3150;
      }
    }
  }
  ge-1/3/0 {
    description "Connected to BCB2 cabernet ge-1/3/0";
    unit 0 {
      family bridge {
        interface-mode trunk;
        vlan-id-list 3000-4000;
      }
    }
  }
  ge-1/3/9 {
    description "Connected to BCB1 syrah ge-1/3/9";
    unit 0 {
      family bridge {
        interface-mode trunk;
        vlan-id-list 3000-4000;
      }
    }
  }
```

Configuring the Interfaces on BEB1
ge-2/0/0 {
  description "Connected to ES1 pinotnoir ge-2/0/0";
  flexible-vlan-tagging;
  unit 1 {
    family bridge {
      interface-mode trunk;
      vlan-id-list 2100;
    }
  }
  unit 3 {
    family bridge {
      interface-mode trunk;
      vlan-id-list 1300;
    }
  }
  unit 4 {
    family bridge {
      interface-mode trunk;
      vlan-id-list 1400;
    }
  }
}

cbp0 {
  unit 0 {
    family bridge {
      interface-mode trunk;
      bridge-domain-type bvlan;
      isid-list all;
    }
  }
}

pip0 {
  unit 0 {
    family bridge {
      interface-mode trunk;
      bridge-domain-type svlan;
      isid-list all-service-groups;
    }
  }
  unit 1 {
    family bridge {
      interface-mode trunk;
      bridge-domain-type svlan;
      isid-list all-service-groups;
    }
  }
}

Configuring the Interfaces on BEB1
**Configuring E-LINE Service on BEB2 (Barbera)**

Table 3 contains the service configured for BEB2 as well as the correlating S-VLAN, I-SID, and B-VLAN.

<table>
<thead>
<tr>
<th>Service</th>
<th>S-VLAN</th>
<th>I-SID</th>
<th>B-VLAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>eline2</td>
<td>1200</td>
<td>10200</td>
<td>3150</td>
</tr>
</tbody>
</table>

To configure E-LINE service on the MX Series router BEB2 in a PBBN, perform these tasks:

- Configuring a PBN Routing Instance for E-LINE Services on BEB2 on page 17
- Configuring a PBBN Routing Instance on BEB2 on page 19
- Configuring the Interfaces on BEB2 on page 20

### Configuring a PBN Routing Instance for E-LINE Services on BEB2

**CLI Quick Configuration**

To quickly configure the PBN (I-component) routing instance for E-LINE services, copy the following commands and paste them into the router terminal window:

```
[edit]
set routing-instances pbn-1-for-eline instance-type virtual-switch
set routing-instances pbn-1-for-eline interface ge-1/0/0.2
set routing-instances pbn-1-for-eline interface pip0.0
set routing-instances pbn-1-for-eline bridge-domains eline-svlans
set routing-instances pbn-1-for-eline bridge-domains eline-svlans vlan-id-list
   1200
set routing-instances pbn-1-for-eline pbb-options peer-instance pbbn-1
set routing-instances pbn-1-for-eline service-groups eline2 service-type eline
set routing-instances pbn-1-for-eline service-groups eline2 pbb-service-options
   isid 10200 interface ge-1/0/0.2
```

**Step-by-Step Procedure**

To configure the PBN (I-component) routing instance for E-LINE service:

1. Configure the PBN routing instance `pbn-1-for-eline` and specify the instance type as `virtual-switch` to provide support for Layer 2 bridging:
   
   ```
   [edit routing-instances]
   user@beb2# set pbn-1-for-eline instance-type virtual-switch
   ```

2. Configure the logical interfaces for the PBN routing instance:

   ```
   [edit routing-instances]
   user@beb2# set pbn-1-for-eline interface ge-1/0/0.1
   ```

3. Configure a provider instance port (PIP) pseudo-logical interface to provide a connection between customer routing instances (PBN I-component) and the provider routing instance (PBBN B-component):
4. Configure the provider bridge domain **eline-svlans** for E-LINE services:

```
[edit routing-instances]
user@beb2# set pbn-1-for-eline interface pip0.0
```

5. Configure the peer PBBN routing instance (here, the peer PBBN is **pbbn-1**):

```
[edit routing-instances]
user@beb1# set pbn-1-for-eline pbb-options peer-instance pbbn-1
```

6. Configure service groups and the type of service they will provide for the routing instance (here, service groups **eline1** and **eline2** are configured for **eline** service):

```
[edit routing-instances]
user@beb2# set pbn-1-for-eline service-groups eline2 service-type eline
user@beb2# set pbn-1-for-eline service-groups eline2 pbb-service-options
  isid 10200 interface ge-1/0/0.2
```

**Results**

Check the results of the configuration:

```
user@beb2> show configuration
routi∗ng-instances {
  pbn-1-for-eline {
    instance-type virtual-switch;
    interface ge-1/0/0.2;
    interface pip0.0;
    bridge-domains {
      eline-svlans {
        vlan-id-list [ 1200 ];
      }
    }
  }
  pbb-options {
    peer-instance pbbn-1;
  }
  service-groups {
    eline2 {
      service-type eline;
      pbb-service-options {
        isid 10200 interface ge-1/0/0.2;
      }
    }
  }
}
```
Configuring a PBBN Routing Instance on BEB2

**CLI Quick Configuration**

To quickly configure a routing instance for a PBBN, copy the following commands and paste them into the router terminal window:

```plaintext
[edit]
set routing-instances pbbn-1 instance-type virtual-switch
set routing-instances pbbn-1 interface ge-1/3/0.0
set routing-instances pbbn-1 interface ge-2/3/0.0
set routing-instances pbbn-1 interface cbp0.0
set routing-instances pbbn-1 protocols mstp configuration-name pbbn-1
set routing-instances pbbn-1 protocols mstp interface ge-1/3/0
set routing-instances pbbn-1 protocols mstp interface ge-2/3/0
set routing-instances pbbn-1 bridge-domains eline-bvlan vlan-id 3150
set routing instances pbbn-1 pbb-options vlan-id 3150 isid-list 10200
```

**Step-by-Step Procedure**

To configure the PBBN (B-component) routing instance:

1. Configure the PBBN routing instance `pbbn-1` and specify the instance type as `virtual-switch` to provide support for Layer 2 bridging:

   ```plaintext
   [edit routing-instances]
   user@beb2# set pbbn-1 instance-type virtual-switch
   ```

2. Configure the logical interfaces for the PBBN routing instance:

   ```plaintext
   [edit routing-instances]
   user@beb2# set pbbn-1 interface ge-1/3/0.0
   user@beb2# set pbbn-1 interface ge-2/3/0.0
   ```

3. Configure a customer backbone port (CBP) pseudo-logical interface to provide a connection between customer routing instances (PBN I-component) and the provider routing instance (PBBN B-component):

   ```plaintext
   [edit routing-instances]
   user@beb2# set pbbn-1 interface cbp0.0
   ```

4. Configure Multiple Spanning Tree Protocol (MSTP) for the PBBN routing instance to ensure a loop-free topology:

   ```plaintext
   [edit routing-instances]
   user@beb2# set pbbn-1 protocols mstp configuration-name pbbn-1
   user@beb2# set pbbn-1 protocols mstp interface ge-1/3/0
   user@beb2# set pbbn-1 protocols mstp interface ge-2/3/0
   ```

5. Configure the provider bridge domain `eline-bvlan` for E-LINE services:

   ```plaintext
   [edit routing-instances]
   user@beb2# set pbbn-1 bridge-domains eline-bvlan vlan-id 3150
   ```

6. Configure PBB options to provide the PBBN with B-VLAN to I-SID mapping information in the bridge-domain:

   ```plaintext
   [edit routing-instances]
   user@beb2# set pbbn-1 pbb-options vlan-id 3150 isid-list 10200
   ```
Results
Check the results of the configuration:

```
user@beb2> show configuration
routing-instances {
  pbbn-1 {
    instance-type virtual-switch;
    interface ge-1/3/0.0;
    interface ge-2/3/0.0;
    interface cbp0.0;
    protocols {
      mstp {
        configuration-name pbbn-1;
        interface ge-1/3/0;
        interface ge-2/3/0;
      }
    }
  }
  bridge-domains {
    e line-bvlan {
      vlan-id 3150;
      bridge-options {
      }
    }
    pbb-options {
      vlan-id 3150 isid-list [ 10200 ];
    }
  }
}
```

Configuring the Interfaces on BEB2

**CLI Quick Configuration**
To quickly configure the interfaces on BEB2, copy the following commands and paste them into the router terminal window:

```
[edit]
set interfaces ge-1/0/0 description "Connected to ES1 pinotnoir ge-1/0/0"
set interfaces ge-1/0/0 flexible-vlan-tagging
set interfaces ge-1/0/0 unit 2 family bridge interface-mode trunk
set interfaces ge-1/0/0 unit 2 family bridge vlan-id-list 1200
set interfaces ge-1/3/0 description "Connected to BCB1 syrah ge-1/3/0"
set interfaces ge-1/3/0 unit 0 family bridge interface-mode trunk
set interfaces ge-1/3/0 unit 3 family bridge vlan-id-list 3000-4000
set interfaces ge-2/3/0 description "Connected to BCB2 cabernet ge-2/3/0"
set interfaces ge-2/3/0 unit 0 family bridge interface-mode trunk
set interfaces ge-2/3/0 unit 0 family bridge vlan-id-list 3000-4000
set interfaces cbp0 unit 0 family bridge interface-mode trunk
set interfaces cbp0 unit 0 family bridge bridge-domain-type bvlan
set interfaces cbp0 unit 0 family bridge isid-list all
set interfaces pip0 unit 0 family bridge interface-mode trunk
set interfaces pip0 unit 0 family bridge bridge-domain-type svlan
set interfaces pip0 unit 0 family bridge isid-list all-service-groups
set interfaces pip0 unit 1 family bridge interface-mode trunk
set interfaces pip0 unit 1 family bridge bridge-domain-type svlan
set interfaces pip0 unit 1 family bridge isid-list all-service-groups
```
Step-by-Step Procedure  To configure interfaces on BEB2:

1. Configure interface ge-1/0/0:

   [edit interfaces]
   user@beb2# set ge-1/0/0 description "Connected to ES1 pinotnoir ge-1/0/0"
   user@beb2# set ge-1/0/0 flexible-vlan-tagging
   user@beb2# set ge-1/0/0 unit 2 family bridge interface-mode trunk
   user@beb2# set ge-1/0/0 unit 2 family bridge vlan-id-list 1200

2. Configure interface ge-1/3/0:

   [edit interfaces]
   user@beb2# set ge-1/3/0 description "Connected to BCB1 syrah ge-1/3/0"
   user@beb2# set ge-1/3/0 unit 0 family bridge interface-mode trunk
   user@beb2# set ge-1/3/0 unit 3 family bridge vlan-id-list 3000-4000

3. Configure interface ge-2/3/0:

   [edit interfaces]
   user@beb2# set ge-2/3/0 description "Connected to BCB2 cabernet ge-2/3/0"
   user@beb2# set ge-2/3/0 unit 0 family bridge interface-mode trunk
   user@beb2# set ge-2/3/0 unit 0 family bridge vlan-id-list 3000-4000

4. Configure interface cpb0:

   [edit interfaces]
   user@beb2# set cpb0 unit 0 family bridge interface-mode trunk
   user@beb2# set cpb0 unit 0 family bridge bridge-domain-type bvlan
   user@beb2# set cpb0 unit 0 family bridge isid-list all

5. Configure interface pip0:

   [edit interfaces]
   user@beb2# set pip0 unit 0 family bridge interface-mode trunk
   user@beb2# set pip0 unit 0 family bridge bridge-domain-type svlan
   user@beb2# set pip0 unit 0 family bridge isid-list all-service-groups
   user@beb2# set pip0 unit 1 family bridge interface-mode trunk
   user@beb2# set pip0 unit 1 family bridge bridge-domain-type svlan
   user@beb2# set pip0 unit 1 family bridge isid-list all-service-groups

Results  Check the results of the configuration:

   user@beb2> show configuration
   interfaces {
     ge-1/0/0 {
       description "Connected to ES1 pinotnoir ge-1/0/0"
       flexible-vlan-tagging;
       unit 2 {
         family bridge {
           interface-mode trunk;
           vlan-id-list 1200;
         }
       }
     }
     ge-1/3/0 {
       description "Connected to CS1 syrah ge-1/3/0";
     }
   }
Configuring E-LAN Services on BEB3 (Malbec)

Table 4 contains the services configured for BEB3 as well as the correlating S-VLANs, I-SIDs, and B-VLANs.

Table 4: BEB2 Mapping

<table>
<thead>
<tr>
<th>Service</th>
<th>S-VLAN</th>
<th>I-SID</th>
<th>B-VLAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>elan1</td>
<td>1300</td>
<td>10300</td>
<td>3350</td>
</tr>
</tbody>
</table>

Configuring E-LAN Services on BEB3 (Malbec)

Table 4 contains the services configured for BEB3 as well as the correlating S-VLANs, I-SIDs, and B-VLANs.
Table 4: BEB2 Mapping (continued)

<table>
<thead>
<tr>
<th>Service</th>
<th>S-VLAN</th>
<th>I-SID</th>
<th>B-VLAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>elan2</td>
<td>1400</td>
<td>10400</td>
<td>3350</td>
</tr>
</tbody>
</table>

To configure E-LAN services on the MX Series router BEB3 in a PBBN, perform these tasks:

- Configuring a PBN Routing Instance for E-LAN Services on BEB3 on page 23
- Configuring a PBBN Routing Instance on BEB3 (Malbec) on page 25
- Configuring the Interfaces on BEB3 on page 26

Configuring a PBN Routing Instance for E-LAN Services on BEB3

**CLI Quick Configuration**

To quickly configure a PBN (I-component) routing instance for E-LAN services, copy the following commands and paste them into the router terminal window:

```text
[edit]
set routing-instances pbn-2-for-elan instance-type virtual-switch
set routing-instances pbn-2-for-elan interface ge-2/0/0.3
set routing-instances pbn-2-for-elan interface ge-2/0/0.4
set routing-instances pbn-2-for-elan interface pip0.1
set routing-instances pbn-2-for-elan bridge-domains elan-svlans vlan-id-list 1300
set routing-instances pbn-2-for-elan bridge-domains elan-svlans vlan-id-list 1400
set routing-instances pbn-2-for-elan pbb-options peer-instance pbbn-1
set routing-instances pbn-2-for-elan service-groups elan1 service-type elan
set routing-instances pbn-2-for-elan service-groups elan1 pbb-service-options isid 10300 vlan-id-list 1300
set routing-instances pbn-2-for-elan service-groups elan2 service-type elan
set routing-instances pbn-2-for-elan service-groups elan2 pbb-service-options isid 10400 vlan-id-list 1400
```

**Step-by-Step Procedure**

To configure the PBN (I-component) routing instance for E-LAN service:

1. Configure the PBN routing instance `pbn-2-for-elan` and specify the instance type as `virtual-switch` to provide support for Layer 2 bridging:

   ```text
   [edit routing-instances]
   user@beb3# set pbn-2-for-elan instance-type virtual-switch
   ```

2. Configure the logical interfaces for the PBN routing instance:

   ```text
   [edit routing-instances]
   user@beb3# set pbn-2-for-elan interface ge-2/0/0.3
   user@beb3# set pbn-2-for-elan interface ge-2/0/0.4
   ```

3. Configure a provider instance port (PIP) pseudo-logical interface to provide a connection between customer routing instances (PBN I-component) and the provider routing instance (PBBN B-component):

   ```text
   [edit routing-instances]
   user@beb3# set pbn-2-for-elan interface pip0.1
   ```

4. Configure the provider bridge domain `elan-svlans` for E-LAN services:
5. Configure the peer PBBN routing instance (here, the peer PBBN is pbbn-1):

   [edit routing-instances]
   user@beb3# set pbn-2-for-elan pbb-options peer-instance pbbn-1

6. Configure service groups and the type of service they will provide for the routing instance (here, service groups elan1 and elan2 are configured for elan service):

   [edit routing-instances]
   user@beb3# set pbn-2-for-elan service-groups elan1 service-type elan
   user@beb3# set pbn-2-for-elan service-groups elan1 pbb-service-options
   isid 10300 vlan-id-list 1300
   user@beb3# set pbn-2-for-elan service-groups elan2 service-type elan
   user@beb3# set pbn-2-for-elan service-groups elan2 pbb-service-options
   isid 10400 vlan-id-list 1400

Results  Check the results of the configuration:

   user@beb3> show configuration
   pbn-2-for-elan {
     instance-type virtual-switch;
     interface ge-2/0/0.3;
     interface ge-2/0/0.4;
     interface pip0.1;
     bridge-domains {
       elan1-svlan {
         vlan-id 1300;
       }
       elan2-svlan {
         vlan-id 1400;
       }
     }
     pbb-options {
       peer-instance pbbn-1;
     }
     service-groups {
       inactive: elan1 {
         service-type elan;
         pbb-service-options {
           isid 10300 vlan-id-list 1300;
         }
       }
       elan2 {
         service-type elan;
         pbb-service-options {
           isid 10400 vlan-id-list 1400;
         }
       }
     }
   }
Configuring a PBBN Routing Instance on BEB3 (Malbec)

CLI Quick Configuration
To quickly configure a routing instance for a PBBN, copy the following commands and paste them into the router terminal window:

```plaintext
[edit]
set routing-instances pbbn-1 instance-type virtual-switch
set routing-instances pbbn-1 interface ge-1/3/9.0
set routing-instances pbbn-1 interface ge-2/3/0.0
set routing-instances pbbn-1 interface cbp0.0
set routing-instances pbbn-1 protocols mstp configuration-name pbbn-1
set routing-instances pbbn-1 protocols mstp interface ge-1/3/9
set routing-instances pbbn-1 protocols mstp interface ge-2/3/0
set routing-instances pbbn-1 pbb-options vlan-id 3350 isid-list 10300
set routing-instances pbbn-1 pbb-options vlan-id 3350 isid-list 10400
```

Step-by-Step Procedure
To configure the PBBN (B-component) routing instance:

1. Configure the PBBN routing instance `pbbn-1` and specify the instance type as virtual-switch to provide support for Layer 2 bridging:

   ```plaintext
   [edit routing-instances]
   user@beb3# set pbbn-1 instance-type virtual-switch
   ```

2. Configure the logical interfaces for the PBBN routing instance:

   ```plaintext
   [edit routing-instances]
   user@beb3# set pbbn-1 interface ge-1/3/9.0
   user@beb3# set pbbn-1 interface ge-2/3/0.0
   ```

3. Configure a customer backbone port (CBP) pseudo-logical interface to provide a connection between customer routing instances (PBN I-component) and the provider routing instance (PBBN B-component):

   ```plaintext
   [edit routing-instances]
   user@beb3# set pbbn-1 interface cbp0.0
   ```

4. Configure Multiple Spanning Tree Protocol (MSTP) for the PBBN routing instance to ensure a loop-free topology:

   ```plaintext
   [edit routing-instances]
   user@beb3# set pbbn-1 protocols mstp configuration-name pbbn-1
   user@beb3# set pbbn-1 protocols mstp interface ge-1/3/9
   user@beb3# set pbbn-1 protocols mstp interface ge-2/3/0
   ```

5. Configure the provider bridge domain `elan-bvlan` for E-LAN services:

   ```plaintext
   [edit routing-instances]
   user@beb3# set pbbn-1 bridge-domains elan-bvlan vlan-id 3350
   ```

6. Configure PBB options to provide the PBBN with B-VLAN to I-SID mapping information in the bridge-domain:

   ```plaintext
   [edit routing-instances]
   user@beb3# set pbbn-1 pbb-options vlan-id 3350 isid-list 10300
   user@beb3# set pbbn-1 pbb-options vlan-id 3350 isid-list 10400
   ```
Check the results of the configuration:

```
user@beb3> show configuration
routing-instances {
  pbbn-1 {
    instance-type virtual-switch;
    interface ge-1/3/9.0;
    interface ge-2/3/0.0;
    interface cbp0.0;
    protocols {
      mstp {
        configuration-name pbbn-1;
        interface ge-1/3/9;
        interface ge-2/3/0;
      }
    }
  }
}
bridge-domains {
  elan-bvlan {
    vlan-id 3350;
  }
}
pbb-options {
  vlan-id 3350 isid-list [ 10300 10400 ];
}
```

### Configuring the Interfaces on BEB3

**CLI Quick Configuration**

To quickly configure the interfaces on BEB3, copy the following commands and paste them into the router terminal window:

```
[edit]
set interfaces ge-1/3/9 description "Connected to BCB2 cabernet ge-1/3/9"
set interfaces ge-1/3/9 unit 0 family bridge interface-mode trunk
set interfaces ge-1/3/9 unit 0 family bridge vlan-id-list 3000-4000
set interfaces ge-2/0/0 description "Connected to ES3 dolcetto ge-2/0/0"
set interfaces ge-2/0/0 unit 0 family bridge interface-mode trunk
set interfaces ge-2/0/0 unit 0 family bridge vlan-id-list 13000
set interfaces ge-2/0/0 unit 0 family bridge vlan-id-list 14000
set interfaces ge-2/3/0 description "Connected to BCB1 syrah ge-2/3/0"
set interfaces ge-2/3/0 unit 0 family bridge interface-mode trunk
set interfaces ge-2/3/0 unit 0 family bridge vlan-id-list 3000-4000
set interfaces cbp0 unit 0 family bridge interface-mode trunk
set interfaces cbp0 unit 0 family bridge bridge-domain-type bvlan
set interfaces cbp0 unit 0 family bridge isid-list all
set interfaces pip0 unit 0 family bridge interface-mode trunk
set interfaces pip0 unit 0 family bridge bridge-domain-type svlan
set interfaces pip0 unit 0 family bridge isid-list all-service-groups
set interfaces pip0 unit 1 family bridge interface-mode trunk
set interfaces pip0 unit 1 family bridge bridge-domain-type svlan
set interfaces pip0 unit 1 family bridge isid-list all-service-groups
```
Step-by-Step Procedure  To configure interfaces on BEB3:

1. Configure interface ge-1/3/9:

   [edit interfaces]
   user@beb3# set ge-1/3/9 description "Connected to CS2 cabernet ge-1/3/9"
   user@beb3# set ge-1/3/9 unit 0 family bridge interface-mode trunk
   user@beb3# set ge-1/3/9 unit 0 family bridge vlan-id-list 3000-4000

2. Configure interface ge-2/0/0:

   [edit interfaces]
   user@beb3# set ge-2/0/0 description "Connected to ES3 dolcetto ge-2/0/0"
   user@beb3# set ge-2/0/0 flexible-vlan-tagging
   user@beb3# set ge-2/0/0 unit 3 family bridge interface-mode trunk
   user@beb3# set ge-2/0/0 unit 3 family bridge vlan-id-list 1300
   user@beb3# set ge-2/0/0 unit 4 family bridge interface-mode trunk
   user@beb3# set ge-2/0/0 unit 4 family bridge vlan-id-list 1400

3. Configure interface ge-2/3/0:

   [edit interfaces]
   user@beb3# set ge-2/3/0 description "Connected to BCB1 syrah ge-2/3/0"
   user@beb3# set ge-2/3/0 unit 0 family bridge interface-mode trunk
   user@beb3# set ge-2/3/0 unit 0 family bridge vlan-id-list 3000-4000

4. Configure interface cpb0:

   [edit interfaces]
   user@beb3# set cpb0 unit 0 family bridge interface-mode trunk
   user@beb3# set cpb0 unit 0 family bridge bridge-domain-type bvlan
   user@beb3# set cpb0 unit 0 family bridge isid-list all

5. Configure interface pip0:

   [edit interfaces]
   user@beb3# set pip0 unit 0 family bridge interface-mode trunk
   user@beb3# set pip0 unit 0 family bridge bridge-domain-type svlan
   user@beb3# set pip0 unit 0 family bridge isid-list all-service-groups
   user@beb3# set pip0 unit 1 family bridge interface-mode trunk
   user@beb3# set pip0 unit 1 family bridge bridge-domain-type svlan
   user@beb3# set pip0 unit 1 family bridge isid-list all-service-groups

Results  Check the results of the configuration:

user@beb3> show configuration
interfaces {
  ge-1/3/9 {
    description "Connected to BCB2 cabernet ge-1/3/9";
    unit 0 {
      family bridge {
        interface-mode trunk;
        vlan-id-list 3000-4000;
      }
    }
  }
  ge-2/0/0 {
description "Connected to ES3 dolcetto ge-2/0/0";
flexible-vlan-tagging;
unit 3 {
    family bridge {
        interface-mode trunk;
        vlan-id-list 1300;
    }
}
unit 4 {
    family bridge {
        interface-mode trunk;
        vlan-id-list 1400;
    }
}
ge-2/3/0 {
    description "Connected to BCB1 syrah ge-2/3/0";
    unit 0 {
        family bridge {
            interface-mode trunk;
            vlan-id-list 3000-4000;
        }
    }
}
cbp0 {
    unit 0 {
        family bridge {
            interface-mode trunk;
            bridge-domain-type bvlan;
            isid-list all;
        }
    }
}
pip0 {
    unit 0 {
        family bridge {
            interface-mode trunk;
            bridge-domain-type svlan;
            isid-list all-service-groups;
        }
    }
    unit 1 {
        family bridge {
            interface-mode trunk;
            bridge-domain-type svlan;
            isid-list all-service-groups;
        }
    }
}
**Configuring E-LINE and E-LAN Services on BEB4 (Cubs)**

Table 5 contains the services configured for BEB4 as well as the correlating S-VLANs, I-SIDs, and B-VLANs.

**Table 5: BEB4 Mapping**

<table>
<thead>
<tr>
<th>Service</th>
<th>S-VLAN</th>
<th>I-SID</th>
<th>B-VLAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>eline1</td>
<td>1200</td>
<td>10100</td>
<td>3150</td>
</tr>
<tr>
<td>eline2</td>
<td>1300</td>
<td>10200</td>
<td>3150</td>
</tr>
<tr>
<td>elan1</td>
<td>1400</td>
<td>10300</td>
<td>3350</td>
</tr>
<tr>
<td>elan2</td>
<td>1500</td>
<td>10400</td>
<td>3350</td>
</tr>
</tbody>
</table>

To configure E-LINE and E-LAN services on the MX Series router BEB4 in a PBBN, perform these tasks:

- Configuring a Routing Instance for E-LINE Services on BEB4 on page 29
- Configuring a PBN Routing Instance for E-LAN Services on BEB4 on page 31
- Configuring a PBBN Routing Instance on BEB4 on page 33
- Configuring the Interfaces on BEB4 on page 35

**Configuring a Routing Instance for E-LINE Services on BEB4**

**CLI Quick Configuration**

To quickly configure the PBN (I-component) routing instance for E-LINE services, copy the following commands and paste them into the router terminal window:

```
[edit]
sset routing-instances pbn-3-for-eline instance-type virtual-switch
set routing-instances pbn-3-for-eline interface ge-1/0/0.1
set routing-instances pbn-3-for-eline interface ge-1/0/0.2
set routing-instances pbn-3-for-eline interface pip0.0
set routing-instances pbn-3-for-eline bridge-domains eline-svlans vlan-id-list 1200
set routing-instances pbn-3-for-eline bridge-domains eline-svlans vlan-id-list 2100
set routing-instances pbn-3-for-eline pbb-options peer-instance pbbn-1
set routing-instances pbn-3-for-eline service-groups elinel service-type eline
set routing-instances pbn-3-for-eline service-groups elinel pbb-service-options isid 10100 interface ge-1/0/0.1
set routing-instances pbn-3-for-eline service-groups eline2 service-type eline
set routing-instances pbn-3-for-eline service-groups eline2 pbb-service-options isid 10200 interface ge-1/0/0.2
```
Step-by-Step Procedure

To configure the PBN (I-component) routing instance for E-LINE service:

1. Configure the PBN routing instance `pbn3-for-eline` and specify the instance type as `virtual-switch` to provide support for Layer 2 bridging:

   ```
   [edit routing-instances]
   user@beb4# set pbn-3-for-eline instance-type virtual-switch
   ```

2. Configure the logical interfaces for the PBN routing instance:

   ```
   [edit routing-instances]
   user@beb4# set pbn-3-for-eline interface ge-1/0/0.1
   user@beb4# set pbn-3-for-eline interface ge-1/0/0.2
   ```

3. Configure a provider instance port (PIP) pseudo-logical interface to provide a connection between customer routing instances (PBN I-component) and the provider routing instance (PBBN B-component):

   ```
   [edit routing-instances]
   user@beb4# set pbn-3-for-eline interface pip0.0
   ```

4. Configure the provider bridge domain `eline-svlans` for E-LINE services:

   ```
   [edit routing-instances]
   user@beb4# set pbn-3-for-eline bridge-domains eline-svlans vlan-id-list 1200
   user@beb4# set pbn-3-for-eline bridge-domains eline-svlans vlan-id-list 2100
   ```

5. Configure the peer PBBN routing instance (here, the peer PBBN is `pbbn-1`):

   ```
   [edit routing-instances]
   user@beb4# set pbn-3-for-eline pbb-options peer-instance pbbn-1
   ```

6. Configure service groups and the type of service they will provide for the routing instance (here, service groups `eline1` and `eline1` are configured for `eline` service):

   ```
   [edit routing-instances]
   user@beb4# set pbn-3-for-eline service-groups eline1 service-type eline
   user@beb4# set pbn-3-for-eline service-groups eline1 pbb-service-options
   isid 10100 interface ge-1/0/0.1
   user@beb1# set pbn-3-for-eline service-groups eline2 service-type eline
   user@beb1# set pbn-3-for-eline service-groups eline2 pbb-service-options
   isid 10200 interface ge-1/0/0.2
   ```

Results

Check the results of the configuration:

```
user@beb4> show configuration
routing-instances {
  pbn-3-for-eline {
    instance-type virtual-switch;
    interface ge-1/0/0.1;
    interface ge-1/0/0.2;
    interface pip0.0;
    bridge-domains {
      eline-svlans {
```
Configuring a PBN Routing Instance for E-LAN Services on BEB4

CLI Quick Configuration
To quickly configure a PBN (I-component) routing instance for E-LAN services, copy the following commands and paste them into the router terminal window:

```plaintext
[edit]
set routing-instances pbn-3-for-elan instance-type virtual-switch
set routing-instances pbn-3-for-elan interface ge-1/0/0.3
set routing-instances pbn-3-for-elan interface ge-1/0/0.4
set routing-instances pbn-3-for-elan interface pip0.1
set routing-instances pbn-3-for-elan bridge-domains elan-svlans vlan-id-list 1300
set routing-instances pbn-3-for-elan bridge-domains elan-svlans vlan-id-list 1400
set routing-instances pbn-3-for-elan pbb-options peer-instance pbbn-1
set routing-instances pbn-3-for-elan service-groups elan1 service-type elan
set routing-instances pbn-3-for-elan service-groups elan1 pbb-service-options
  isid 10300 vlan-id-list 1300
set routing-instances pbn-3-for-elan service-groups elan2 service-type elan
set routing-instances pbn-3-for-elan service-groups elan2 pbb-service-options
  isid 10400 vlan-id-list 1400
```

Step-by-Step Procedure
To configure the PBN (I-component) routing instance for E-LAN service:

1. Configure the PBN routing instance `pbn3-for-elan` and specify the instance type as `virtual-switch` to provide support for Layer 2 bridging:

   ```plaintext
   [edit routing-instances]
   user@beb4# set pbn-3-for-elan instance-type virtual-switch
   ```

2. Configure the logical interfaces for the PBN routing instance:

   ```plaintext
   [edit routing-instances]
   user@beb4# set pbn-3-for-elan interface ge-1/0/0.3
   ```
user@beb4# set pbn-3-for-elan interface ge-1/0/0.4

3. Configure a provider instance port (PIP) pseudo-logical interface to provide a connection between customer routing instances (PBN I-component) and the provider routing instance (PBBN B-component):

   [edit routing-instances]
   user@beb4# set pbn-3-for-elan interface pip0.1

4. Configure the provider bridge domain elan-svlans for E-LAN services:

   [edit routing-instances]
   user@beb4# set pbn-3-for-elan bridge-domains elan-svlans vlan-id-list 1300
   user@beb4# set pbn-3-for-elan bridge-domains elan-svlans vlan-id-list 1400

5. Configure the peer PBBN routing instance (here, the peer PBBN is pbbn-1):

   [edit routing-instances]
   user@beb4# set pbn-3-for-elan pbb-options peer-instance pbbn-1

6. Configure service groups and the type of service they will provide for the routing instance (here, service groups elan1 and elan2 are configured for elan service):

   [edit routing-instances]
   user@beb4# set pbn-3-for-elan service-groups elan1 service-type elan
   user@beb4# set pbn-3-for-elan service-groups elan1 pbb-service-options isid 10300 vlan-id-list 1300
   user@beb4# set pbn-3-for-elan service-groups elan2 service-type elan
   user@beb4# set pbn-3-for-elan service-groups elan2 pbb-service-options isid 10400 vlan-id-list 1400

Results

Check the results of the configuration:

   user@beb4> show configuration
   routing-instances {
   pbn-3-for-elan {
     instance-type virtual-switch;
     interface ge-1/0/0.3;
     interface ge-1/0/0.4;
     interface pip0.1;
     bridge-domains {
       elan-svlans {
         vlan-id-list [ 1300 1400 ];
       }
     }
   }
   pbb-options {
     peer-instance pbbn-1;
   }
   service-groups {
     elan1 {
       service-type elan;
       pbb-service-options {
         isid 10300 vlan-id-list 1300;
       }
     }
   }
}
Configuring a PBBN Routing Instance on BEB4

**CLI Quick Configuration**

To quickly configure a routing instance for a PBBN, copy the following commands and paste them into the router terminal window:

```
[edit]
set routing-instances pbbn-1 instance-type virtual-switch
set routing-instances pbbn-1 interface ge-1/0/4.0
set routing-instances pbbn-1 interface ge-1/2/2.0
set routing-instances pbbn-1 interface cbp0.0
set routing-instances pbbn-1 protocols mstp configuration-name pbbn-1
set routing-instances pbbn-1 protocols mstp interface ge-1/0/4
set routing-instances pbbn-1 protocols mstp interface ge-1/2/2
set routing-instances pbbn-1 bridge-domains elan-bvlan vlan-id 3350
set routing-instances pbbn-1 bridge-domains eline-bvlan vlan-id 3150
set routing-instances pbbn-1 pbb-options vlan-id 3350 isid-list 10300
set routing-instances pbbn-1 pbb-options vlan-id 3350 isid-list 10400
set routing-instances pbbn-1 pbb-options vlan-id 3150 isid-list 10100
set routing-instances pbbn-1 pbb-options vlan-id 3150 isid-list 10200
```

**Step-by-Step Procedure**

To configure the PBBN (B-component) routing instance:

1. Configure the PBBN routing instance **pbbn-1** and specify the instance type as **virtual-switch** to provide support for Layer 2 bridging:

   ```
   [edit routing-instances]
   user@beb4# set pbbn-1 instance-type virtual-switch
   ```

2. Configure the logical interfaces for the PBBN routing instance:

   ```
   [edit routing-instances]
   user@beb4# set pbbn-1 interface ge-1/0/4.0
   user@beb4# set pbbn-1 interface ge-1/2/2.0
   ```

3. Configure a customer backbone port (CBP) pseudo-logical interface to provide a connection between customer routing instances (PBN I-component) and the provider routing instance (PBBN B-component):

   ```
   [edit routing-instances]
   user@beb4# set pbbn-1 interface cbp0.0
   ```

4. Configure Multiple Spanning Tree Protocol (MSTP) for the PBBN routing instance to ensure a loop-free topology:

   ```
   [edit routing-instances]
   user@beb4# set pbbn-1 protocols mstp configuration-name pbbn-1
   ```
5. Configure the provider bridge domains `elan-bvlan` and `eline-bvlan` for E-LINE and E-LAN services:

```
[edit routing-instances]
user@beb4# set pbbn-1 bridge-domains elan-bvlan vlan-id 3350
user@beb4# set pbbn-1 bridge-domains eline-bvlan vlan-id 3150
```

6. Configure PBB options to provide the PBBN with B-VLAN to I-SID mapping information in the bridge-domain:

```
[edit routing-instances]
user@beb4# set pbbn-1 pbb-options vlan-id 3350 isid-list 10300
user@beb4# set pbbn-1 pbb-options vlan-id 3350 isid-list 10400
user@beb4# set pbbn-1 pbb-options vlan-id 3150 isid-list 10100
user@beb4# set pbbn-1 pbb-options vlan-id 3150 isid-list 10200
```

Results

Check the results of the configuration:

```
user@beb4> show configuration
routing-instances {
  pbbn-1 {
    instance-type virtual-switch;
    interface ge-1/0/4.0;
    interface ge-1/2/2.0;
    interface cbp0.0;
    protocols {
      mstp {
        configuration-name pbbn-1;
        interface ge-1/0/4;
        interface ge-1/2/2;
      }
    }
    bridge-domains {
      elan-bvlan {
        vlan-id 3350;
      }
      eline-bvlan {
        vlan-id 3150;
      }
    }
    pbb-options {
      vlan-id 3350 isid-list [ 10300 10400 ];
      vlan-id 3150 isid-list [ 10100 10200 ];
    }
  }
}
```
Configuring the Interfaces on BEB4

**CLI Quick Configuration**
To quickly configure the interfaces on BEB4, copy the following commands and paste them into the router terminal window:

```plaintext
[edit]
set interfaces ge-1/0/0 description "Connected to ES4 Reds ge-1/0/0"
set interfaces ge-1/0/0 flexible-vlan-tagging
set interfaces ge-1/0/0 encapsulation flexible-ethernet-services
set interfaces ge-1/0/0 unit 1 family bridge interface-mode trunk
set interfaces ge-1/0/0 unit 1 family bridge vlan-id-list 2100
set interfaces ge-1/0/0 unit 1 family bridge vlan-rewrite translate 1100 2100
set interfaces ge-1/0/0 unit 2 family bridge interface-mode trunk
set interfaces ge-1/0/0 unit 2 family bridge vlan-id-list 1200
set interfaces ge-1/0/0 unit 3 family bridge interface-mode trunk
set interfaces ge-1/0/0 unit 3 family bridge vlan-id-list 1300
set interfaces ge-1/0/0 unit 4 family bridge interface-mode trunk
set interfaces ge-1/0/0 unit 4 family bridge vlan-id-list 1400
set interfaces ge-1/0/4 description "Connected to BCB1 Syrah ge-2/1/5"
set interfaces ge-1/0/4 unit 0 family bridge interface-mode trunk
set interfaces ge-1/0/4 unit 0 family bridge vlan-id-list 3000-4000
set interfaces ge-1/2/2 description "Connected to BCB2 Cabernet ge-2/0/6"
set interfaces ge-1/2/2 unit 0 family bridge interface-mode trunk
set interfaces ge-1/2/2 unit 0 family bridge vlan-id-list 3000-4000
set interfaces cbp0 unit 0 family bridge interface-mode trunk
set interfaces cbp0 unit 0 family bridge bridge-domain-type bvlan
set interfaces cbp0 unit 0 family bridge isid-list all
set interfaces pip0 unit 0 family bridge interface-mode trunk
set interfaces pip0 unit 0 family bridge bridge-domain-type svlan
set interfaces pip0 unit 0 family bridge isid-list all-service-groups
set interfaces pip0 unit 1 family bridge interface-mode trunk
set interfaces pip0 unit 1 family bridge bridge-domain-type svlan
set interfaces pip0 unit 1 family bridge isid-list all-service-groups
```
Step-by-Step Procedure  To configure interfaces on BEB4:

1. Configure interface ge-1/0/0:

   NOTE: Traffic from ES4 on interface ge-1/0/0 is translated from VLAN 1100 to VLAN 2100 by including the statement vlan-rewrite.

   [edit interfaces]
   user@beb4# set ge-1/0/0 description "Connected to ES4 Reds ge-1/0/0"
   user@beb4# set ge-1/0/0 flexible-vlan-tagging
   user@beb4# set ge-1/0/0 encapsulation flexible-ethernet-services
   user@beb4# set ge-1/0/0 unit 1 family bridge interface-mode trunk
   user@beb4# set ge-1/0/0 unit 1 family bridge vlan-id-list 2100
   user@beb4# set ge-1/0/0 unit 1 family bridge vlan-rewrite translate 1100 2100
   user@beb4# set ge-1/0/0 unit 2 family bridge interface-mode trunk
   user@beb4# set ge-1/0/0 unit 2 family bridge vlan-id-list 1200
   user@beb4# set ge-1/0/0 unit 3 family bridge interface-mode trunk
   user@beb4# set ge-1/0/0 unit 3 family bridge vlan-id-list 1300
   user@beb4# set ge-1/0/0 unit 4 family bridge interface-mode trunk
   user@beb4# set ge-1/0/0 unit 4 family bridge vlan-id-list 1400

2. Configure interface ge-1/0/4:

   [edit interfaces]
   user@beb4# set ge-1/0/4 description "Connected to BCB1 Syrah ge-2/1/5"
   user@beb4# set ge-1/0/4 unit 0 family bridge interface-mode trunk
   user@beb4# set ge-1/0/4 unit 0 family bridge vlan-id-list 3000-4000

3. Configure interface ge-1/2/2:

   [edit interfaces]
   user@beb4# set ge-1/2/2 description "Connected to BCB2 Cabernet ge-2/0/6"
   user@beb4# set ge-1/2/2 unit 0 family bridge interface-mode trunk
   user@beb4# set ge-1/2/2 unit 0 family bridge vlan-id-list 3000-4000

4. Configure interface cpb0:

   [edit interfaces]
   user@beb3# set cpb0 unit 0 family bridge interface-mode trunk
   user@beb3# set cpb0 unit 0 family bridge bridge-domain-type bvlan
   user@beb3# set cpb0 unit 0 family bridge isid-list all

5. Configure interface pip0:

   [edit interfaces]
   user@beb3# set pip0 unit 0 family bridge interface-mode trunk
   user@beb3# set pip0 unit 0 family bridge bridge-domain-type svlan
   user@beb3# set pip0 unit 0 family bridge isid-list all-service-groups
   user@beb3# set pip0 unit 1 family bridge interface-mode trunk
   user@beb3# set pip0 unit 1 family bridge bridge-domain-type svlan
user@beb3# set pip0 unit 1 family bridge isid-list all-service-groups

Results Check the results of the configuration:

user@beb4> show configuration
interfaces {
ge-1/0/0 {
  description "Connected to ES4 Reds ge-1/0/0";
  flexible-vlan-tagging;
  encapsulation flexible-ethernet-services;
  unit 1 {
    family bridge {
      interface-mode trunk;
      vlan-id-list 2100;
      vlan-rewrite {
        translate 1100 2100;
        # trunk port VLAN translation from vlan1100 to vlan2100
      }
    }
  }
  unit 2 {
    family bridge {
      interface-mode trunk;
      vlan-id-list 1200;
    }
  }
  unit 3 {
    family bridge {
      interface-mode trunk;
      vlan-id-list 1300;
    }
  }
  unit 4 {
    family bridge {
      interface-mode trunk;
      vlan-id-list 1400;
    }
  }
} ge-1/0/4 {
  description "Connected to BCB1 Syrah ge-2/1/5";
  unit 0 {
    family bridge {
      interface-mode trunk;
      vlan-id-list 3000-4000;
    }
  }
} ge-1/2/2 {
  description "Connected to BCB2 Cabernet ge-2/0/6";
  unit 0 {
    family bridge {
      interface-mode trunk;
    }
  }
}
Table 6 contains the information about how the customer VLAN (C-VLAN) is mapped to the services VLAN (S-VLAN) on ES1.

<table>
<thead>
<tr>
<th>Service</th>
<th>C-VLAN</th>
<th>S-VLAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>E-LINE</td>
<td>100</td>
<td>1100</td>
</tr>
<tr>
<td>E-LINE</td>
<td>200</td>
<td>1200</td>
</tr>
<tr>
<td>E-LAN</td>
<td>300</td>
<td>1300</td>
</tr>
<tr>
<td>E-LAN</td>
<td>400</td>
<td>1400</td>
</tr>
</tbody>
</table>
To configure routing instances and interfaces on the MX Series router called ES1 in a PBBN in the topology shown in Figure 1, perform these tasks:

- Configuring a Routing Instance for ES1 on page 39
- Configuring the Interfaces on ES1 on page 40

### Configuring a Routing Instance for ES1

#### CLI Quick Configuration

To quickly configure a routing instance for ES1, copy the following commands and paste them into the router terminal window:

```
[edit]
set routing-instances cust-1 instance-type virtual-switch
set routing-instances cust-1 interface ge-1/0/0.1
set routing-instances cust-1 interface ge-1/0/0.2
set routing-instances cust-1 interface ge-1/0/0.3
set routing-instances cust-1 interface ge-1/0/0.4
set routing-instances cust-1 interface ge-1/1/0.0
set routing-instances cust-1 interface ge-2/0/0.1
set routing-instances cust-1 interface ge-2/0/0.2
set routing-instances cust-1 interface ge-2/0/0.3
set routing-instances cust-1 interface ge-2/0/0.4
set routing-instances cust-1 bridge-domains bds vlan-id-list 100
set routing-instances cust-1 bridge-domains bds vlan-id-list 200
set routing-instances cust-1 bridge-domains bds vlan-id-list 300
set routing-instances cust-1 bridge-domains bds vlan-id-list 400
```

#### Step-by-Step Procedure

To configure the routing instance for ES1:

1. Configure the routing instance `cust-1` and specify the instance type as `virtual-switch` to provide support for Layer 2 bridging:

   ```
   [edit routing-instances]
   user@es1# set cust-1 instance-type virtual-switch
   ```

2. Configure the logical interfaces for the PBN routing instance:

   ```
   [edit routing-instances]
   user@es1# set cust-1 interface ge-1/0/0.1
   user@es1# set cust-1 interface ge-1/0/0.2
   user@es1# set cust-1 interface ge-1/0/0.3
   user@es1# set cust-1 interface ge-1/0/0.4
   user@es1# set cust-1 interface ge-1/1/0.0
   user@es1# set cust-1 interface ge-2/0/0.1
   user@es1# set cust-1 interface ge-2/0/0.2
   user@es1# set cust-1 interface ge-2/0/0.3
   user@es1# set cust-1 interface ge-2/0/0.4
   ```

3. Configure the bridge domain `bds`:

   ```
   [edit routing-instances]
   user@es1# set cust-1 bridge-domains bds vlan-id-list 100
   user@es1# set cust-1 bridge-domains bds vlan-id-list 200
   user@es1# set cust-1 bridge-domains bds vlan-id-list 300
   user@es1# set cust-1 bridge-domains bds vlan-id-list 400
   ```
Results

Check the results of the configuration:

```
user@beb4> show configuration
routing-instances {
  cust-1 {
    instance-type virtual-switch;
    interface ge-1/0/0.1;
    interface ge-1/0/0.2;
    interface ge-1/0/0.3;
    interface ge-1/0/0.4;
    interface ge-1/1/0.0;
    interface ge-2/0/0.1;
    interface ge-2/0/0.2;
    interface ge-2/0/0.3;
    interface ge-2/0/0.4;
    bridge-domains {
      bds {
        vlan-id-list [ 100 200 300 400 ];
      }
    }
  }
}
```

Configuring the Interfaces on ES1

CLI Quick Configuration

To quickly configure the interfaces on ES1, copy the following commands and paste them into the router terminal window:

```
[edit]
set interfaces ge-1/0/0 description "Connected to BEB2 barbera ge-1/0/0"
set interfaces ge-1/0/0 flexible-vlan-tagging
set interfaces ge-1/0/0 unit 2 vlan-id 1200
set interfaces ge-1/0/0 unit 2 family bridge interface-mode trunk
set interfaces ge-1/1/0/0 unit 2 family bridge inner-vlan-id-list 200
set interfaces ge-1/1/0/0 unit 0 family bridge interface-mode trunk
set interfaces ge-1/1/0/0 unit 0 family bridge vlan-id-list 100
set interfaces ge-1/1/0/0 unit 0 family bridge vlan-id-list 200
set interfaces ge-1/1/0/0 unit 0 family bridge vlan-id-list 300
set interfaces ge-1/1/0/0 unit 0 family bridge vlan-id-list 400
set interfaces ge-2/0/0 description "Connected to AS1 sangiovese ge-2/0/0"
set interfaces ge-2/0/0 flexible-vlan-tagging
set interfaces ge-2/0/0 unit 1 vlan-id 2100
set interfaces ge-2/0/0 unit 1 family bridge interface-mode trunk
set interfaces ge-2/0/0 unit 1 family bridge inner-vlan-id-list 100
set interfaces ge-2/0/0 unit 3 vlan-id 1300
set interfaces ge-2/0/0 unit 3 family bridge interface-mode trunk
set interfaces ge-2/0/0 unit 3 family bridge inner-vlan-id-list 300
set interfaces ge-2/0/0 unit 4 vlan-id 1400
set interfaces ge-2/0/0 unit 4 family bridge interface-mode trunk
set interfaces ge-2/0/0 unit 4 family bridge inner-vlan-id-list 400
```

Step-by-Step Procedure

To configure interfaces on ES1:

1. Configure interface ge-1/0/0:
2. Configure interface ge-1/1/0:

```
[edit interfaces]
user@es1# set ge-1/1/0 unit 0 family bridge interface-mode trunk
user@es1# set ge-1/1/0 unit 0 family bridge vlan-id-list 100
user@es1# set ge-1/1/0 unit 0 family bridge vlan-id-list 200
user@es1# set ge-1/1/0 unit 0 family bridge vlan-id-list 300
user@es1# set ge-1/1/0 unit 0 family bridge vlan-id-list 400
```

3. Configure interface ge-2/0/0:

```
[edit interfaces]
user@es1# set ge-2/0/0 unit 1 family bridge interface-mode trunk
user@es1# set ge-2/0/0 unit 1 family bridge vlan-id-list 100
user@es1# set ge-2/0/0 unit 1 family bridge vlan-id-list 200
user@es1# set ge-2/0/0 unit 1 family bridge vlan-id-list 300
user@es1# set ge-2/0/0 unit 1 family bridge vlan-id-list 400
user@es1# set ge-2/0/0 unit 3 family bridge interface-mode trunk
user@es1# set ge-2/0/0 unit 3 family bridge inner-vlan-id-list 100
user@es1# set ge-2/0/0 unit 3 family bridge inner-vlan-id-list 300
user@es1# set ge-2/0/0 unit 4 family bridge interface-mode trunk
user@es1# set ge-2/0/0 unit 4 family bridge inner-vlan-id-list 100
user@es1# set ge-2/0/0 unit 4 family bridge inner-vlan-id-list 300
user@es1# set ge-2/0/0 unit 4 family bridge inner-vlan-id-list 400
```

**Results** Check the results of the configuration:

```
user@es1> show configuration
interfaces {
  ge-1/0/0 {
    description "Connected to BEB2 barbera ge-1/0/0";
    flexible-vlan-tagging;
    unit 2 {
      vlan-id 1200;
      family bridge {
        interface-mode trunk;
        inner-vlan-id-list [ 200 ];
      }
    }
  }
  ge-1/1/0 {
    unit 0 {
      family bridge {
        interface-mode trunk;
        vlan-id-list [ 100 200 300 400 ];
      }
    }
  }
  ge-2/0/0 {
    description "Connected to BEB1 sangiovese ge-2/0/0";
  }
}
```
Configuring a Routing Instance and Interfaces on ES3 (Dolcetto)

Table 7 contains the information about how the customer VLAN (C-VLAN) is mapped to the services VLAN (S-VLAN) on ES3.

Table 7: ES3 C-VLAN to S-VLAN Mapping

<table>
<thead>
<tr>
<th>Service</th>
<th>C-VLAN</th>
<th>S-VLAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>E-LAN</td>
<td>300</td>
<td>1300</td>
</tr>
<tr>
<td>E-LAN</td>
<td>400</td>
<td>1400</td>
</tr>
</tbody>
</table>

To configure routing instances and interfaces on the MX Series router called ES3 in a PBBN in the topology shown in Figure 1, perform these tasks:

- Configuring a Routing Instance for ES3 on page 42
- Configuring the Interfaces on ES3 on page 43

Configuring a Routing Instance for ES3

CLI Quick Configuration  To quickly configure a routing instance for ES3, copy the following commands and paste them into the router terminal window:

```
[edit]
set routing-instances cust-1 instance-type virtual-switch
set routing-instances cust-1 interface ge-2/0/0.3
```
```plaintext
set routing-instances cust-1 interface ge-2/0/0.4
set routing-instances cust-1 interface ge-2/1/0.0
set routing-instances cust-1 bridge-domains bds vlan-id-list 300
set routing-instances cust-1 bridge-domains bds vlan-id-list 400
```

### Step-by-Step Procedure

To configure the routing instance for ES3:

1. Configure the routing instance `cust-1` and specify the instance type as `virtual-switch` to provide support for Layer 2 bridging:

   ```plaintext
   [edit routing-instances]
   user@es3# set cust-1 instance-type virtual-switch
   ```

2. Configure the logical interfaces for the PBN routing instance:

   ```plaintext
   [edit routing-instances]
   user@es3# set cust-1 interface ge-2/0/0.3
   user@es3# set cust-1 interface ge-2/0/0.4
   user@es3# set cust-1 interface ge-2/1/0.0
   ```

3. Configure the bridge domain `bds`:

   ```plaintext
   [edit routing-instances]
   user@es3# set cust-1 bridge-domains bds vlan-id-list 300
   user@es3# set cust-1 bridge-domains bds vlan-id-list 400
   ```

### Results

Check the results of the configuration:

```plaintext
user@es3> show configuration
routing-instances {
  cust-1 {
    instance-type virtual-switch;
    interface ge-2/0/0.3;
    interface ge-2/0/0.4;
    interface ge-2/1/0.0;
    bridge-domains {
      bds {
        vlan-id-list [ 300 400 ];
      }
    }
  }
}
```

### Configuring the Interfaces on ES3

#### CLI Quick Configuration

To quickly configure the interfaces on ES3, copy the following commands and paste them into the router terminal window:

```plaintext
[edit]
set interfaces ge-1/1/0 unit 0 family bridge interface-mode trunk
set interfaces ge-1/1/0 unit 0 family bridge vlan-id-list 300
set interfaces ge-1/1/0 unit 0 family bridge vlan-id-list 400
set interfaces ge-2/0/0 description "Connected to BEB3 malbec ge-2/0/0"
set interfaces ge-2/0/0 flexible-vlan-tagging
```
set interfaces ge-2/0/0 unit 3 vlan-id 1300
set interfaces ge-2/0/0 unit 3 family bridge interface-mode trunk
set interfaces ge-2/0/0 unit 3 family bridge inner-vlan-id-list 300
set interfaces ge-2/0/0 unit 4 vlan-id 1400
set interfaces ge-2/0/0 unit 4 family bridge interface-mode trunk
set interfaces ge-2/0/0 unit 4 family bridge inner-vlan-id-list 400

Step-by-Step Procedure

To configure interfaces on ES3:

1. Configure interface ge-1/1/0:

   [edit interfaces]
   user@es3# set ge-1/1/0 unit 0 family bridge interface-mode trunk
   user@es3# set ge-1/1/0 unit 0 family bridge vlan-id-list 300
   user@es3# set ge-1/1/0 unit 0 family bridge vlan-id-list 400

2. Configure interface ge-2/0/0:

   [edit interfaces]
   user@es3# set ge-2/0/0 description "Connected to BEB3 malbec ge-2/0/0"
   user@es3# set ge-2/0/0 flexible-vlan-tagging
   user@es3# set ge-2/0/0 unit 3 vlan-id 1300
   user@es3# set ge-2/0/0 unit 3 family bridge interface-mode trunk
   user@es3# set ge-2/0/0 unit 3 family bridge inner-vlan-id-list 300
   user@es3# set ge-2/0/0 unit 4 vlan-id 1400
   user@es3# set ge-2/0/0 unit 4 family bridge interface-mode trunk
   user@es3# set ge-2/0/0 unit 4 family bridge inner-vlan-id-list 400

Results

Check the results of the configuration:

user@es3> show configuration
interfaces {
  ge-1/1/0 {
    unit 0 {
      family bridge {
        interface-mode trunk;
        vlan-id-list [ 300 400 ];
      }
    }
  }
  ge-2/0/0 {
    description "Connected to BEB3 malbec ge-2/0/0";
    flexible-vlan-tagging;
    unit 3 {
      vlan-id 1300;
      family bridge {
        interface-mode trunk;
        inner-vlan-id-list 300;
      }
    }
    unit 4 {
      vlan-id 1400;
      family bridge {
        interface-mode trunk;
        inner-vlan-id-list 400;
      }
    }
  }
}
Configuring a Routing Instance and Interfaces on ES4 (Reds)

Table 8 contains the information about how the customer VLAN (C-VLAN) is mapped to the services VLAN (S-VLAN) on ES4.

<table>
<thead>
<tr>
<th>Service</th>
<th>C-VLAN</th>
<th>S-VLAN</th>
</tr>
</thead>
<tbody>
<tr>
<td>E-LINE</td>
<td>100</td>
<td>1100</td>
</tr>
<tr>
<td>E-LINE</td>
<td>200</td>
<td>1200</td>
</tr>
<tr>
<td>E-LAN</td>
<td>300</td>
<td>1300</td>
</tr>
<tr>
<td>E-LAN</td>
<td>400</td>
<td>1400</td>
</tr>
</tbody>
</table>

To configure routing instances and interfaces on the MX Series router called ES4 in a PBBN in the topology shown in Figure 1, perform these tasks:

- Configuring a Routing Instance for ES4 on page 45
- Configuring the Interfaces on ES4 on page 46

**Configuring a Routing Instance for ES4**

**CLI Quick Configuration**

To quickly configure a routing instance for ES4, copy the following commands and paste them into the router terminal window:

```
[edit]
set routing-instances cust-1 instance-type virtual-switch
set routing-instances cust-1 interface ge-1/0/0.1
set routing-instances cust-1 interface ge-1/0/0.2
set routing-instances cust-1 interface ge-1/0/0.3
set routing-instances cust-1 interface ge-1/0/0.4
set routing-instances cust-1 interface ge-1/0/3.1
set routing-instances cust-1 interface ge-1/0/3.2
set routing-instances cust-1 interface ge-1/0/3.3
set routing-instances cust-1 interface ge-1/0/3.4
set routing-instances cust-1 bridge-domains bds vlan-id-list 100
set routing-instances cust-1 bridge-domains bds vlan-id-list 200
set routing-instances cust-1 bridge-domains bds vlan-id-list 300
set routing-instances cust-1 bridge-domains bds vlan-id-list 400
```

**Step-by-Step Procedure**

To configure the routing instance for ES4:

1. Configure the routing instance **cust-1** and specify the instance type as **virtual-switch** to provide support for Layer 2 bridging:
2. Configure the logical interfaces for the PBN routing instance:

   [edit routing-instances]
   user@es4# set cust-1 instance-type virtual-switch

   user@es4# set cust-1 interface ge-1/0/0.1
   user@es4# set cust-1 interface ge-1/0/0.2
   user@es4# set cust-1 interface ge-1/0/0.3
   user@es4# set cust-1 interface ge-1/0/0.4
   user@es4# set cust-1 interface ge-1/0/3.1
   user@es4# set cust-1 interface ge-1/0/3.2
   user@es4# set cust-1 interface ge-1/0/3.3
   user@es4# set cust-1 interface ge-1/0/3.4

3. Configure the bridge domain bds:

   [edit routing-instances]
   user@es4# set cust-1 bridge-domains bds vlan-id-list 100
   user@es4# set cust-1 bridge-domains bds vlan-id-list 200
   user@es4# set cust-1 bridge-domains bds vlan-id-list 300
   user@es4# set cust-1 bridge-domains bds vlan-id-list 400

Results

Check the results of the configuration:

user@es4> show configuration
routing-instances {
   cust-1 {
      instance-type virtual-switch;
      interface ge-1/0/0.1;
      interface ge-1/0/0.2;
      interface ge-1/0/0.3;
      interface ge-1/0/0.4;
      interface ge-1/0/3.1;
      interface ge-1/0/3.2;
      interface ge-1/0/3.3;
      interface ge-1/0/3.4;
      bridge-domains {
         bds {
            vlan-id-list [ 100 200 300 400 ];
         }
      }
   }
}

Configuring the Interfaces on ES4

CLI Quick Configuration

To quickly configure the interfaces on ES4, copy the following commands and paste them into the router terminal window:

   [edit]
   set interfaces interface-set vuni-set1 interface ge-1/0/3 unit 1
   set interfaces interface-set vuni-set1 interface ge-1/0/3 unit 3
   set interfaces interface-set vuni-set1 interface ge-1/0/3 unit 4
To configure interfaces on ES4:

1. Configure the interface sets vuni-set1 and vuni-set2:

   [edit interfaces]
   user@es4# set interface-set vuni-set1 interface ge-1/0/3 unit 1
   user@es4# set interface-set vuni-set1 interface ge-1/0/3 unit 3
   user@es4# set interface-set vuni-set1 interface ge-1/0/3 unit 4
   user@es4# set interface-set vuni-set2 interface ge-1/0/3 unit 2

2. Configure interface ge-1/0/0:

   [edit interfaces]
   user@es4# set ge-1/0/0 description "Connected to BEB4 Cubs ge-1/0/0"
   user@es4# set ge-1/0/0 flexible-vlan-tagging
   user@es4# set ge-1/0/0 unit 1 vlan-id 1100
   user@es4# set ge-1/0/0 unit 1 family bridge interface-mode trunk
   user@es4# set ge-1/0/0 unit 1 family bridge inner-vlan-id-list 100
   user@es4# set ge-1/0/0 unit 2 vlan-id 1200
   user@es4# set ge-1/0/0 unit 2 family bridge interface-mode trunk
   user@es4# set ge-1/0/0 unit 2 family bridge inner-vlan-id-list 200
   user@es4# set ge-1/0/0 unit 3 vlan-id 1300
   user@es4# set ge-1/0/0 unit 3 family bridge interface-mode trunk
   user@es4# set ge-1/0/0 unit 3 family bridge inner-vlan-id-list 300
   user@es4# set ge-1/0/0 unit 4 vlan-id 1400
   user@es4# set ge-1/0/0 unit 4 family bridge interface-mode trunk
   user@es4# set ge-1/0/0 unit 4 family bridge inner-vlan-id-list 400

3. Configure interface ge-1/0/3:

   [edit interfaces]
user@es4# set ge-1/0/3 description "Connected to Gigabit switch"
user@es4# set ge-1/0/3 flexible-vlan-tagging
user@es4# set ge-1/0/3 unit 1 vlan-id 1100
user@es4# set ge-1/0/3 unit 1 family bridge interface-mode trunk
user@es4# set ge-1/0/3 unit 1 family bridge inner-vlan-id-list 100
user@es4# set ge-1/0/3 unit 2 vlan-id 1200
user@es4# set ge-1/0/3 unit 2 family bridge interface-mode trunk
user@es4# set ge-1/0/3 unit 2 family bridge inner-vlan-id-list 200
user@es4# set ge-1/0/3 unit 3 vlan-id 1300
user@es4# set ge-1/0/3 unit 3 family bridge interface-mode trunk
user@es4# set ge-1/0/3 unit 3 family bridge inner-vlan-id-list 300
user@es4# set ge-1/0/3 unit 4 vlan-id 1400
user@es4# set ge-1/0/3 unit 4 family bridge interface-mode trunk
user@es4# set ge-1/0/3 unit 4 family bridge inner-vlan-id-list 400

Results
Check the results of the configuration:

user@es4# show configuration
interfaces {
    interface-set vuni-set1 {
        interface ge-1/0/3 {
            unit 1;
            unit 3;
            unit 4;
        }
    }
    interface-set vuni-set2 {
        interface ge-1/0/3 {
            unit 2;
        }
    }
}
ge-1/0/0 {
    description "Connected to BEB4 Cubs ge-1/0/0";
    flexible-vlan-tagging;
    # each unit
    unit 1 {
        vlan-id 1100;
        family bridge {
            interface-mode trunk;
            inner-vlan-id-list [ 100 ];
        }
    }
    unit 2 {
        vlan-id 1200;
        family bridge {
            interface-mode trunk;
            inner-vlan-id-list [ 200 ];
        }
    }
    unit 3 {
        vlan-id 1300;
        family bridge {
            interface-mode trunk;
            inner-vlan-id-list 300;
        }
    }
}
Configuring a Routing Instance and Interfaces on BCB1 (Syrah)

To configure routing instances and interfaces on the MX Series router called BCB1 in a PBBN in the topology shown in Figure 1, perform these tasks:

■ Configuring a Routing Instance for BCB1 on page 49
■ Configuring the Interfaces on BCB1 on page 51

Configuring a Routing Instance for BCB1

CLI Quick Configuration  To quickly configure a routing instance for BCB1, copy the following commands and paste them into the router terminal window:
Step-by-Step Procedure

To configure the routing instance for BCB1:

1. Configure the routing instance `pbbn-1` and specify the instance type as `virtual-switch` to provide support for Layer 2 bridging:

   ```
   [edit]
   set routing-instances pbbn-1 instance-type virtual-switch
   ``

2. Configure the logical interfaces for the PBN routing instance:

   ```
   [edit]
   set routing-instances pbbn-1 interface ge-1/3/0.0
   set routing-instances pbbn-1 interface ge-1/3/9.0
   set routing-instances pbbn-1 interface ge-2/1/5.0
   set routing-instances pbbn-1 interface ge-2/3/0.0
   set routing-instances pbbn-1 interface ge-2/3/9.0
   ``

3. Configure MSTP:

   ```
   [edit]
   set routing-instances pbbn-1 protocols mstp configuration-name pbbn-1
   set routing-instances pbbn-1 protocols mstp bridge-priority 4k
   set routing-instances pbbn-1 protocols mstp interface ge-1/3/0
   set routing-instances pbbn-1 protocols mstp interface ge-1/3/9
   set routing-instances pbbn-1 protocols mstp interface ge-2/1/5
   set routing-instances pbbn-1 protocols mstp interface ge-2/3/0
   set routing-instances pbbn-1 protocols mstp interface ge-2/3/9
   ``

4. Configure the bridge domain `bds`:

   ```
   [edit]
   set routing-instances pbbn-1 bridge-domains elan-bvlan vlan-id 3350
   set routing-instances pbbn-1 bridge-domains eline-bvlan vlan-id-list 3150
   ``

Results

Check the results of the configuration:

```
user@ebcb1> show configuration
routing-instances {
  pbbn-1 {
    instance-type virtual-switch;
  }
```
interface ge-1/3/0.0;
interface ge-1/3/9.0;
interface ge-2/1/5.0;
interface ge-2/3/0.0;
interface ge-2/3/9.0;
protocols {
    mstp {
        configuration-name pbbn-1;
        bridge-priority 4k;
        interface ge-1/3/0;
        interface ge-1/3/9;
        interface ge-2/1/5;
        interface ge-2/3/0;
        interface ge-2/3/9;
    }
} bridge-domains {
    elan-bvlan {
        vlan-id 3350;
    }
    eline-bvlan {
        vlan-id 3150;
    }
} }

Configuring the Interfaces on BCB1

CLI Quick Configuration  To quickly configure the interfaces on BCB1, copy the following commands and paste them into the router terminal window:

[edit]
set interfaces ge-1/3/0 description "Connected to BEB2 barbera ge-1/3/0"
set interfaces ge-1/3/0 enable
set interfaces ge-1/3/0 unit 0 family bridge interface-mode trunk
set interfaces ge-1/3/0 unit 0 family bridge vlan-id-list 3000-4000
set interfaces ge-1/3/9 description "Connected to BEB1 sangiovese ge-1/3/9"
set interfaces ge-1/3/9 unit 0 family bridge interface-mode trunk
set interfaces ge-1/3/9 unit 0 family bridge vlan-id-list 3000-4000
set interfaces ge-2/1/5 description "Connected to BEB4 Cubs ge-1/0/4"
set interfaces ge-2/1/5 unit 0 family bridge interface-mode trunk
set interfaces ge-2/1/5 unit 0 family bridge vlan-id-list 3000-4000
set interfaces ge-2/3/0 description "Connected to BEB3 malbec ge-2/3/0"
set interfaces ge-2/3/0 unit 0 family bridge interface-mode trunk
set interfaces ge-2/3/0 unit 0 family bridge vlan-id-list 3000-4000
set interfaces ge-2/3/9 description "Connected to BCB2 cabernet ge-2/3/9"
set interfaces ge-2/3/9 unit 0 family bridge interface-mode trunk
set interfaces ge-2/3/9 unit 0 family bridge vlan-id-list 3000-4000
Step-by-Step Procedure To configure interfaces on BCB1:

1. Configure interface ge-1/3/0:

   [edit interfaces]
   user@bcb1# set ge-1/3/0 description "Connected to BEB2 barbera ge-1/3/0"
   user@bcb1# set ge-1/3/0 enable
   user@bcb1# set ge-1/3/0 unit 0 family bridge interface-mode trunk
   user@bcb1# set ge-1/3/0 unit 0 family bridge vlan-id-list 3000-4000

2. Configure interface ge-1/3/9:

   set interfaces ge-1/3/9 description "Connected to BEB1 sangiovese ge-1/3/9"

   [edit interfaces]
   user@bcb1# set ge-1/3/9 unit 0 family bridge interface-mode trunk
   user@bcb1# set ge-1/3/9 unit 0 family bridge vlan-id-list 3000-4000

3. Configure interface ge-2/1/5:

   [edit interfaces]
   user@bcb1# set ge-2/1/5 description "Connected to BEB4 Cubs ge-1/0/4"
   user@bcb1# set ge-2/1/5 unit 0 family bridge interface-mode trunk
   user@bcb1# set ge-2/1/5 unit 0 family bridge vlan-id-list 3000-4000

4. Configure interface ge-2/3/0:

   [edit interfaces]
   user@bcb1# set ge-2/3/0 description "Connected to BEB3 malbec ge-2/3/0"
   user@bcb1# set ge-2/3/0 unit 0 family bridge interface-mode trunk
   user@bcb1# set ge-2/3/0 unit 0 family bridge vlan-id-list 3000-4000

5. Configure interface ge-2/3/9:

   [edit interfaces]
   user@bcb1# set ge-2/3/9 description "Connected to BCB2 cabernet ge-2/3/9"
   user@bcb1# set ge-2/3/9 unit 0 family bridge interface-mode trunk
   user@bcb1# set ge-2/3/9 unit 0 family bridge vlan-id-list 3000-4000

Results Check the results of the configuration:

user@bcb1> show configuration
interfaces {
  ge-1/3/0 {
    description "Connected to BEB2 barbera ge-1/3/0";
    enable;
    unit 0 {
      family bridge {
        interface-mode trunk;
        vlan-id-list 3000-4000;
      }
    }
  }
  ge-1/3/9 {
    description "Connected to BEB1 sangiovese ge-1/3/9";
    unit 0 {
      family bridge {

```
Configuring a Routing Instance and Interfaces on BCB2 (Cabernet)

To configure routing instances and interfaces on the MX Series router called BCB2 in a PBBN in the topology shown in Figure 1, perform these tasks:

- Configuring a Routing Instance for BCB2 on page 53
- Configuring the Interfaces on BCB2 on page 55

Configuring a Routing Instance for BCB2

**CLI Quick Configuration**

To quickly configure a routing instance for BCB2, copy the following commands and paste them into the router terminal window:

```
edit
set routing-instances pbbn-1 instance-type virtual-switch
set routing-instances pbbn-1 interface ge-1/3/0.0
set routing-instances pbbn-1 interface ge-1/3/9.0
set routing-instances pbbn-1 interface ge-2/1/5.0
set routing-instances pbbn-1 interface ge-2/3/0.0
set routing-instances pbbn-1 interface ge-2/3/9.0
```
Step-by-Step Procedure

To configure the routing instance for BCB2:

1. Configure the routing instance pbbn-1 and specify the instance type as virtual-switch to provide support for Layer 2 bridging:

   ```
   [edit routing-instances]
   user@bcb2# set pbbn-1 instance-type virtual-switch
   ```

2. Configure the logical interfaces for the PBN routing instance:

   ```
   [edit routing-instances]
   user@bcb2# set pbbn-1 interface ge-1/3/0.0
   user@bcb2# set pbbn-1 interface ge-1/3/9.0
   user@bcb2# set pbbn-1 interface ge-2/1/5.0
   user@bcb2# set pbbn-1 interface ge-2/3/0.0
   user@bcb2# set pbbn-1 interface ge-2/3/9.0
   ```

3. Configure MSTP:

   ```
   [edit routing-instances]
   user@bcb2# set pbbn-1 protocols mstp configuration-name pbbn-1
   user@bcb2# set pbbn-1 protocols mstp bridge-priority 4k
   user@bcb2# set pbbn-1 protocols mstp interface ge-1/3/0
   user@bcb2# set pbbn-1 protocols mstp interface ge-1/3/9
   user@bcb2# set pbbn-1 protocols mstp interface ge-2/1/5
   user@bcb2# set pbbn-1 protocols mstp interface ge-2/3/0
   user@bcb2# set pbbn-1 protocols mstp interface ge-2/3/9
   ```

4. Configure the bridge domain bds:

   ```
   [edit routing-instances]
   user@bcb2# set pbbn-1 bridge-domains elan-bvlan vlan-id 3350
   user@bcb2# set pbbn-1 bridge-domains eline-bvlan vlan-id-list 3150
   ```

Results

Check the results of the configuration:

```bash
user@bcb2> show configuration
routing-instances {
    pbbn-1 {
        instance-type virtual-switch;
        interface ge-1/3/0.0;
        interface ge-1/3/9.0;
        interface ge-2/0/6.0;
        interface ge-2/3/0.0;
        interface ge-2/3/9.0;
        protocols {
            mstp {
```
configuration-name pbbn-1;
bridge-priority 4k;
interface ge-1/3/0;
interface ge-1/3/9;
interface ge-2/0/6;
interface ge-2/3/0;
interface ge-2/3/9;
}
}
bridge-domains {
  elan-bvlan {
    vlan-id 3350;
  }
  eline-bvlan {
    vlan-id-list 3150;
  }
}
}

Configuring the Interfaces on BCB2

**CLI Quick Configuration**

To quickly configure the interfaces on BCB2, copy the following commands and paste them into the router terminal window:

```
[edit]
set interfaces ge-1/3/0 description "Connected to BEB2 barbera ge-1/3/0"
set interfaces ge-1/3/0 enable
set interfaces ge-1/3/0 unit 0 family bridge interface-mode trunk
set interfaces ge-1/3/0 unit 0 family bridge vlan-id-list 3000-4000
set interfaces ge-1/3/9 description "Connected to BEB1 sangiovese ge-1/3/9"
set interfaces ge-1/3/9 unit 0 family bridge interface-mode trunk
set interfaces ge-1/3/9 unit 0 family bridge vlan-id-list 3000-4000
set interfaces ge-2/1/5 description "Connected to BEB4 Cubs ge-1/0/4"
set interfaces ge-2/1/5 unit 0 family bridge interface-mode trunk
set interfaces ge-2/1/5 unit 0 family bridge vlan-id-list 3000-4000
set interfaces ge-2/3/0 description "Connected to BEB3 malbec ge-2/3/0"
set interfaces ge-2/3/0 unit 0 family bridge interface-mode trunk
set interfaces ge-2/3/0 unit 0 family bridge vlan-id-list 3000-4000
set interfaces ge-2/3/9 description "Connected to BCB1 syrah ge-2/3/9"
set interfaces ge-2/3/9 unit 0 family bridge interface-mode trunk
set interfaces ge-2/3/9 unit 0 family bridge vlan-id-list 3000-4000
```

**Step-by-Step Procedure**

To configure interfaces on BCB2:

1. Configure interface ge-1/3/0:

   ```
   [edit interfaces]
   user@bcb2# set ge-1/3/0 description "Connected to BEB2 barbera ge-1/3/0"
   user@bcb2# set ge-1/3/0 enable
   user@bcb2# set ge-1/3/0 unit 0 family bridge interface-mode trunk
   user@bcb2# set ge-1/3/0 unit 0 family bridge vlan-id-list 3000-4000
   ```

2. Configure interface ge-1/3/9:

   ```
   set interfaces ge-1/3/9 description "Connected to BEB1 sangiovese ge-1/3/9"
   ```
3. Configure interface ge-2/1/5:

```
[edit interfaces]
user@bcb2# set ge-2/1/5 description "Connected to BEB4 Cubs ge-1/0/4"
user@bcb2# set ge-2/1/5 unit 0 family bridge interface-mode trunk
user@bcb2# set ge-2/1/5 unit 0 family bridge vlan-id-list 3000-4000
```

4. Configure interface ge-2/3/0:

```
[edit interfaces]
user@bcb2# set ge-2/3/0 description "Connected to BEB3 malbec ge-2/3/0"
user@bcb2# set ge-2/3/0 unit 0 family bridge interface-mode trunk
user@bcb2# set ge-2/3/0 unit 0 family bridge vlan-id-list 3000-4000
```

5. Configure interface ge-2/3/9:

```
[edit interfaces]
user@bcb2# set ge-2/3/9 description "Connected to BCB1 syrah ge-2/3/9"
user@bcb2# set ge-2/3/9 unit 0 family bridge interface-mode trunk
user@bcb2# set ge-2/3/9 unit 0 family bridge vlan-id-list 3000-4000
```

Results

Check the results of the configuration:

```
user@bcb2> show configuration
interfaces {
  ge-1/3/0 {
    description "Connected to BEB1 sangiovese ge-1/3/0";
    unit 0 {
      family bridge {
        interface-mode trunk;
        vlan-id-list 3000-4000;
      }
    }
  }
  ge-1/3/9 {
    description "Connected to BEB3 malbec ge-1/3/9";
    unit 0 {
      family bridge {
        interface-mode trunk;
        vlan-id-list 3000-4000;
      }
    }
  }
  ge-2/0/6 {
    unit 0 {
      family bridge {
        interface-mode trunk;
        vlan-id-list 3000-4000;
      }
    }
  }
}
```
Verification

To confirm that the configuration is working properly, perform these tasks:

- Verifying E-LINE and E-LAN Service on BEB1 on page 57
- Verifying E-LINE and E-LAN Service on BEB2 on page 59
- Verifying E-LINE and E-LAN Service on BEB3 on page 61
- Verifying E-LINE and E-LAN Service on BEB4 on page 62
- Verifying E-LINE and E-LAN Service on BCB1 on page 64
- Verifying E-LINE and E-LAN Service on BCB2 on page 65
- Verifying E-LINE and E-LAN Service on ES1 on page 66
- Verifying E-LINE and E-LAN Service on ES3 on page 66
- Verifying E-LINE and E-LAN Service on ES4 on page 67

Verifying E-LINE and E-LAN Service on BEB1

Purpose
Verify the E-LINE and E-LAN service configuration in the backbone instance (B-component) on BEB1 and in the remote backbone edge bridge (PBBN).

Action
Use the following operational mode commands:

```
user@beb1> show l2-learning backbone-instance
Backbone Routing Instance : pbbn-1, PBBN-ID: 0
Backbone Bridging domain : elan-bvlan, VLAN-ID : 3350
Flags (P2P -ELINE service, MP -ELAN service)
ML -Many svlans to 1 isid, OL -One svlan to 1 isid)

ISID  PBN  Provider  S-VLAN  Flags  Backbone Destination MAC
Routing  Bridging  Domain

Verification  57
Verifying E-LINE and E-LAN Service on BEB1
### Statistics enabled, Non configured MAC

**Routing instance:** pbbn-1  
**Bridging domain:** eline-bvlan, VLAN: 3150

<table>
<thead>
<tr>
<th>MAC address</th>
<th>MAC flags</th>
<th>Logical interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>00:1f:12:b8:38:11</td>
<td>D</td>
<td>ge-1/3/9.0</td>
</tr>
<tr>
<td>00:1f:12:b8:3f:b0</td>
<td>D</td>
<td>ge-1/3/9.0</td>
</tr>
<tr>
<td>00:22:83:32:d8:11</td>
<td>D</td>
<td>ge-1/3/9.0</td>
</tr>
</tbody>
</table>

**MAC flags:** (S - static MAC, D - dynamic MAC, SE - Statistics enabled, NM - Non configured MAC)

**Routing instance:** pbn-1-for-elan  
**Bridging domain:** elan-svlans-vlan-1300, ISID: 10300, VLAN: 1300

<table>
<thead>
<tr>
<th>MAC address</th>
<th>MAC flags</th>
<th>Logical interface</th>
<th>Remote MAC address</th>
</tr>
</thead>
<tbody>
<tr>
<td>00:00:00:00:01</td>
<td>D</td>
<td>ge-2/0/0.3</td>
<td>00:21:59:05:37:b0</td>
</tr>
<tr>
<td>00:00:00:00:02</td>
<td>D</td>
<td>pip0.1</td>
<td>00:21:59:05:37:b0</td>
</tr>
<tr>
<td>00:00:02:00:09:01</td>
<td>D</td>
<td>pip0.1</td>
<td>00:21:59:05:37:b0</td>
</tr>
</tbody>
</table>

**Routing instance:** pbn-1-for-elan  
**Bridging domain:** elan-svlans-vlan-1400, ISID: 10400, VLAN: 1400

<table>
<thead>
<tr>
<th>MAC address</th>
<th>MAC flags</th>
<th>Logical interface</th>
<th>Remote MAC address</th>
</tr>
</thead>
<tbody>
<tr>
<td>00:16:47:e3:5a:9b</td>
<td>D</td>
<td>pip0.1</td>
<td>00:21:59:05:37:b0</td>
</tr>
<tr>
<td>00:00:05:00:00:01</td>
<td>D</td>
<td>ge-2/0/0.4</td>
<td></td>
</tr>
</tbody>
</table>

### Meaning

Both operational mode commands `show l2-learning backbone-instance` and `show l2-learning provider-instance` show the B-component and I-component routing instances configured. The command `show l2-learning backbone-instance` also shows all the mappings from the B-component routing instance to the I-component routing instances. Likewise, the command `show l2-learning provider-instance` shows the mapping from the I-component routing instance to the corresponding B-component routing instance. PBBN routing instance pbbn-1 contains the bridging domains elan-bvlan and eline-bvlan. The command `show l2-learning remote-backbone-edge-bridge` shows all remote BEB MACs.

The field **Time before expiry** shows the expiring timer:

- If a timer value is displayed, it means that C-MACS are not learned behind this remote BEB.
- If a timer value is not displayed, it means that C-MACS are learned behind this remote BEB.

To display the learned C-MACs behind the remote BEB, issue the command `show bridge mac-table`. The command will also show that for routing instance pbn-1-for-elan, learning is occurs through the pseudo-logical interface pip0.1.

### Verifying E-LINE and E-LAN Service on BEB2

**Purpose**  
Verify the E-LINE and E-LAN service configuration in the backbone instance (B-component) on BEB2 and in the remote backbone edge bridge (PBBN).
Action

Use the following operational mode commands:

```
user@beb2> show 12-learning backbone-instance
Backbone Routing Instance : pbbn-1, PBBN-ID: 0
Backbone Bridging domain : eline-bvlan, VLAN-ID : 3150

Flags (P2P -ELINE service, MP -ELAN service)
    M1 -Many svlans to 1 isid, O1 -One svlan to 1 isid)

ISID      PBN               Provider          S-VLAN  Flags    Backbone
Routing           Bridging                           Destination
Instance          Domain                             MAC
10200     pbn-1-for-eline   eline-svlans-vlan-1200 1200 M1,P2P 01:1e:86:00:27:d8

user@beb2> show 12-learning provider-instance
PBN Routing Instance: pbn-1-for-eline
Flags (P2P -ELINE service, MP -ELAN service, M1 -Many svlans to 1 isid, O1 -One svlan to 1 isid)

PBN               S-VLAN   ISID       PBBN             B-VLAN  Flags
Bridging                              Bridging
Domain                                Domain
eline-svlans-vlan-1200 1200 10200     eline-bvlan      3150    M1,P2P

user@beb2> show 12-learning remote-backbone-edge-bridge
Remote backbone edge bridge information per provider backbone bridge network (PBBN)

RBEB flags (S -Static)

PBBN Routing instance : pbbn-1

RBEB MAC Time before Flags
Address      expiry (SS:MS)
00:21:59:aa:7f:b0           :             
00:22:83:32:df:b0           :             
```

Meaning

Both operational mode commands show 12-learning backbone-instance and show 12-learning provider-instance show the B-component and I-Component routing instances configured. The command show 12-learning backbone-instance also shows all the mappings from the B-component routing instance to the I-component routing instances. Likewise, the command show 12-learning provider-instance shows the mapping from the I-component routing instance to the corresponding B-component routing instance. PBBN routing instance pbbn-1 contains the bridging domain eline-bvlan. The command show 12-learning remote-backbone-edge-bridge shows all remote BEB MACs.

The field Time before expiry shows the expiring timer:

- If a timer value is displayed, it means that C-MACS are not learned behind this remote BEB.
- If a timer value is not displayed, it means that C-MACS are learned behind this remote BEB.

To display the learned C-MACs behind the remote BEB, issue the command show bridge mac-table. The command will also show that for routing instance pbn-1-for-eline, learning occurs through the pseudo-logical interface pip0.1.
Verifying E-LINE and E-LAN Service on BEB3

**Purpose**
Verify the E-LINE and E-LAN service configuration in the backbone instance (B-component) on BEB3 and in the remote backbone edge bridge (PBBN).

**Action**
Use the following operational mode commands:

```
user@beb3> show l2-learning backbone-instance
Backbone Routing Instance : pbbn-1, PBBN-ID: 0
Backbone Bridging domain : elan-bvlan, VLAN-ID : 3350

Flags (P2P -ELINE service, MP -ELAN service)
M1 -Many svlans to 1 isid, O1 -One svlan to 1 isid)

<table>
<thead>
<tr>
<th>ISID</th>
<th>PBN</th>
<th>Provider</th>
<th>S-VLAN</th>
<th>Flags</th>
<th>Backbone</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Routing</td>
<td>Bridging</td>
<td>Destination</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Routing</td>
<td>Bridging</td>
<td>Domain</td>
<td>MAC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>instance</td>
<td>domain</td>
<td>MAC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10400</td>
<td>pbn-2-for-elan</td>
<td>elan-svlans-vlan-1400</td>
<td>1400 M1,MP</td>
<td>01:1e:86:00:28:a0</td>
<td></td>
</tr>
<tr>
<td>10300</td>
<td>pbn-2-for-elan</td>
<td>elan-svlans-vlan-1300</td>
<td>1300 M1,MP</td>
<td>01:1e:86:00:28:3c</td>
<td></td>
</tr>
</tbody>
</table>
```

```
user@beb3> show l2-learning provider-instance
PBN Routing Instance: pbn-2-for-elan
Flags (P2P -ELINE service, MP -ELAN service,
M1 -Many svlans to 1 isid, O1 -One svlan to 1 isid)

<table>
<thead>
<tr>
<th>PBN</th>
<th>S-VLAN</th>
<th>ISID</th>
<th>PBBN</th>
<th>B-VLAN</th>
<th>Flags</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bridging</td>
<td>Domain</td>
<td>Domain</td>
<td>MAC</td>
<td></td>
<td></td>
</tr>
<tr>
<td>elan1-svlan</td>
<td>1300</td>
<td>10300</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>elan2-svlan</td>
<td>1400</td>
<td>10400</td>
<td>elan-bvlan</td>
<td>3350</td>
<td>M1,MP</td>
</tr>
</tbody>
</table>
```

```
user@beb3> show l2-learning remote-backbone-edge-bridge
Remote backbone edge bridge information per provider backbone bridge network (PBBN)

RBEB flags (S -Static)

PBBN Routing instance : pbbn-1

<table>
<thead>
<tr>
<th>RBEB MAC Address</th>
<th>Time before expiry (SS:MS)</th>
<th>Flags</th>
</tr>
</thead>
<tbody>
<tr>
<td>00:1f:12:b8:3f:b0</td>
<td>770 :502</td>
<td></td>
</tr>
<tr>
<td>00:21:59:aa:7f:b0</td>
<td>180 :503</td>
<td></td>
</tr>
</tbody>
</table>
```

```
user@beb3> show bridge mac-table
MAC flags (S -static MAC, D -dynamic MAC,
SE -Statistics enabled, NM -Non configured MAC)

Routing instance : pbbn-1
Bridging domain : elan-bvlan, VLAN : 3350

<table>
<thead>
<tr>
<th>MAC address</th>
<th>MAC flags</th>
<th>Logical address</th>
<th>interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>00:1f:12:b8:38:11</td>
<td>D</td>
<td>ge-2/3/0.0</td>
<td></td>
</tr>
<tr>
<td>00:21:59:aa:77:19</td>
<td>D</td>
<td>ge-2/3/0.0</td>
<td></td>
</tr>
<tr>
<td>00:21:59:aa:78:11</td>
<td>D</td>
<td>ge-2/3/0.0</td>
<td></td>
</tr>
</tbody>
</table>
```

MAC flags (S -static MAC, D -dynamic MAC,
SE -Statistics enabled, NM -Non configured MAC)
Meaning

Both operational mode commands `show l2-learning backbone-instance` and `show l2-learning provider-instance` show the B-component and I-component routing instances configured. The command `show l2-learning backbone-instance` also shows all the mappings from the B-component routing instance to the I-component routing instances. Likewise, the command `show l2-learning provider-instance` shows the mapping from the I-component routing instance to the corresponding B-component routing instance. PBBN routing instance `pbbn-1` contains the bridging domain `elan-bvlan`. The command `show l2-learning remote-backbone-edge-bridge` shows all remote BEB MACs.

The field `Time before expiry` shows the expiring timer:

- If a timer value is displayed, it means that C-MACS are not learned behind this remote BEB.
- If a timer value is not displayed, it means that C-MACS are learned behind this remote BEB.

To display the learned C-MACs behind the remote BEB, issue the command `show bridge mac-table`. The command will also show that for routing instance `pbbn-2-for-elan`, learning occurs through the pseudo-logical interface `pip0.1`.

Verifying E-LINE and E-LAN Service on BEB4

Purpose

Verify the E-LINE and E-LAN service configuration in the backbone instance (B-component) on BEB4 and in the remote backbone edge bridge (PBBN).

Action

Use the following operational mode commands:

```
user@beb4> show l2-learning backbone-instance
Backbone Routing Instance : pbbn-1, PBBN-ID: 0
Backbone Bridging domain : elan-bvlan, VLAN-ID : 3350

Flags (P2P -ELINE service, MP -ELAN service)
    M1 -Many svlans to 1 isid, O1 -One svlan to 1 isid)

ISID  PBN   Provider  S-VLAN  Flags  Backbone Destination
       Routing Bridging
```

```
<table>
<thead>
<tr>
<th>Instance</th>
<th>Domain</th>
<th>MAC</th>
</tr>
</thead>
<tbody>
<tr>
<td>10400</td>
<td>pbn-3-for-elan</td>
<td>elan-svlans-vlan-1400 1400 O1,MP</td>
</tr>
<tr>
<td>10300</td>
<td>pbn-3-for-elan</td>
<td>elan-svlans-vlan-1300 1300 M1,MP</td>
</tr>
</tbody>
</table>

Backbone Routing Instance : pbbn-1, PBBN-ID: 0  
Backbone Bridging domain : eline-bvlan, VLAN-ID : 3150

Flags (P2P -ELINE service, MP -ELAN service)  
M1 -Many svlans to 1 isid, O1 -One svlan to 1 isid)

<table>
<thead>
<tr>
<th>ISID</th>
<th>PBN</th>
<th>Provider</th>
<th>S-VLAN</th>
<th>Flags</th>
<th>Backbone Destination</th>
</tr>
</thead>
<tbody>
<tr>
<td>10200</td>
<td>pbn-3-for-eline</td>
<td>eline-svlans-vlan-1200 1200 M1,P2P</td>
<td>01:1e:86:00:27:d8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10100</td>
<td>pbn-3-for-eline</td>
<td>eline-svlans-vlan-2100 2100 M1,P2P</td>
<td>01:1e:86:00:27:74</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Remote backbone edge bridge information per provider backbone bridge network (PBBN)

RBEB flags (S - Static)

<table>
<thead>
<tr>
<th>Routing instance : pbbn-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>RBEB MAC</td>
</tr>
<tr>
<td>Address</td>
</tr>
<tr>
<td>00:21:59:aa:7f:b0</td>
</tr>
<tr>
<td>00:22:83:32:df:b0</td>
</tr>
</tbody>
</table>

MAC flags (S - static MAC, D - dynamic MAC, SE - Statistics enabled, NM - Non configured MAC)

Routing instance : pbbn-1  
Bridging domain : elan-bvlan, VLAN : 3350  
MAC address flags interface  
00:21:59:aa:75:d4 D ge-1/0/4.0  
00:21:59:aa:78:11 D ge-1/0/4.0  
MAC flags (S - static MAC, D - dynamic MAC, SE - Statistics enabled, NM - Non configured MAC)
Routing instance: pbbn-1
Bridging domain: eline-bvlan, VLAN: 3150

<table>
<thead>
<tr>
<th>MAC address</th>
<th>MAC flags</th>
<th>Logical interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>00:21:59:aa:75:d4</td>
<td>D</td>
<td>ge-1/0/4.0</td>
</tr>
<tr>
<td>00:21:59:aa:78:11</td>
<td>D</td>
<td>ge-1/0/4.0</td>
</tr>
<tr>
<td>00:21:59:aa:7f:b0</td>
<td>D</td>
<td>ge-1/0/4.0</td>
</tr>
<tr>
<td>00:22:83:32:d8:11</td>
<td>D</td>
<td>ge-1/0/4.0</td>
</tr>
<tr>
<td>00:22:83:32:df:b0</td>
<td>D</td>
<td>ge-1/0/4.0</td>
</tr>
</tbody>
</table>

MAC flags (S - static MAC, D - dynamic MAC, SE - Statistics enabled, NM - Non configured MAC)

Routing instance: pbn-1-for-elan
Bridging domain: elan-svlans-vlan-1300, ISID: 10300, VLAN: 1300

<table>
<thead>
<tr>
<th>MAC address</th>
<th>MAC flags</th>
<th>Logical interface</th>
<th>Remote MAC address</th>
</tr>
</thead>
<tbody>
<tr>
<td>00:00:00:00:00:01</td>
<td>D</td>
<td>pip0.1</td>
<td>00:21:59:aa:7f:b0</td>
</tr>
<tr>
<td>00:00:00:00:00:02</td>
<td>D</td>
<td>pip0.1</td>
<td>00:21:59:05:37:b0</td>
</tr>
<tr>
<td>00:00:02:00:09:01</td>
<td>D</td>
<td>pip0.1</td>
<td>00:21:59:05:37:b0</td>
</tr>
</tbody>
</table>

Routing instance: pbn-1-for-elan
Bridging domain: elan-svlans-vlan-1400, ISID: 10400, VLAN: 1400

<table>
<thead>
<tr>
<th>MAC address</th>
<th>MAC flags</th>
<th>Logical interface</th>
<th>Remote MAC address</th>
</tr>
</thead>
<tbody>
<tr>
<td>00:16:47:e3:5a:9b</td>
<td>D</td>
<td>pip0.1</td>
<td>00:21:59:05:37:b0</td>
</tr>
<tr>
<td>00:00:05:00:00:01</td>
<td>D</td>
<td>pip0.1</td>
<td>00:21:59:aa:7f:b0</td>
</tr>
</tbody>
</table>

Meaning

Both operational mode commands `show l2-learning backbone-instance` and `show l2-learning provider-instance` show the B-component and I-Component routing instances configured. The command `show l2-learning backbone-instance` also shows all the mappings from the B-component routing instance to the I-component routing instances. Likewise, the command `show l2-learning provider-instance` shows the mapping from the I-component routing instance to the corresponding B-component routing instance. PBBN routing instance `pbbn-1` contains the bridging domain `elan-bvlan`. The command `show l2-learning remote-backbone-edge-bridge` shows all remote BEB MACs.

The field Time before expiry shows the expiring timer:

- If a timer value is displayed, it means that C-MACS are not learned behind this remote BEB.
- If a timer value is not displayed, it means that C-MACS are learned behind this remote BEB.

To display the learned C-MACs behind the remote BEB, issue the command `show bridge mac-table`. The command will also show that for routing instance `pbn-3-for-eline`, learning is occurs through the pseudo-logical interface `pip0.0`.

Verifying E-LINE and E-LAN Service on BCB1

Purpose

Verify the E-LINE and E-LAN service configuration on BCB1.
**Action**  Use the following operational mode commands:

```
user@bcb1> show bridge mac-table
```

MAC flags (S -static MAC, D -dynamic MAC, SE -Statistics enabled, NM -Non configured MAC)

Routing instance : pbbn-1
Bridging domain : elan-bvlan, VLAN : 3350

<table>
<thead>
<tr>
<th>MAC address</th>
<th>MAC flags</th>
<th>Logical interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>00:1f:12:b8:38:11</td>
<td>D</td>
<td>ge-2/1/5.0</td>
</tr>
<tr>
<td>00:1f:12:b8:3f:b0</td>
<td>D</td>
<td>ge-2/1/5.0</td>
</tr>
<tr>
<td>00:21:59:05:37:19</td>
<td>D</td>
<td>ge-2/3/0.0</td>
</tr>
<tr>
<td>00:21:59:aa:78:11</td>
<td>D</td>
<td>ge-1/3/9.0</td>
</tr>
<tr>
<td>00:21:59:aa:7f:b0</td>
<td>D</td>
<td>ge-1/3/9.0</td>
</tr>
</tbody>
</table>

Routing instance : pbbn-1
Bridging domain : eline-bvlan-vlan-3150, VLAN : 3150

<table>
<thead>
<tr>
<th>MAC address</th>
<th>MAC flags</th>
<th>Logical interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>00:1f:12:b8:38:11</td>
<td>D</td>
<td>ge-2/1/5.0</td>
</tr>
<tr>
<td>00:1f:12:b8:3f:b0</td>
<td>D</td>
<td>ge-2/1/5.0</td>
</tr>
<tr>
<td>00:21:59:05:37:19</td>
<td>D</td>
<td>ge-2/3/0.0</td>
</tr>
<tr>
<td>00:21:59:aa:78:11</td>
<td>D</td>
<td>ge-1/3/9.0</td>
</tr>
<tr>
<td>00:21:59:aa:7f:b0</td>
<td>D</td>
<td>ge-1/3/9.0</td>
</tr>
</tbody>
</table>

**Meaning**  The operational mode command `show bridge mac-table` displays the learned backbone MACs in the PBBN transport network. It also shows the two bridging domains `elan-bvlan` and `eline-bvlan` under the `pbbn-1` routing instance. Notice that C-MACs are not learned on BCB1.

**Verifying E-LINE and E-LAN Service on BCB2**

**Purpose**  Verify the E-LINE and E-LAN service configuration on BCB2.

**Action**  Use the following operational mode commands:

```
user@bcb1> show bridge mac-table
```

MAC flags (S -static MAC, D -dynamic MAC, SE -Statistics enabled, NM -Non configured MAC)

Routing instance : pbbn-1
Bridging domain : elan-bvlan, VLAN : 3350

<table>
<thead>
<tr>
<th>MAC address</th>
<th>MAC flags</th>
<th>Logical interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>00:1f:12:b8:38:11</td>
<td>D</td>
<td>ge-2/3/9.0</td>
</tr>
</tbody>
</table>

Routing instance : pbbn-1
Bridging domain : eline-bvlan-vlan-3150, VLAN : 3150

<table>
<thead>
<tr>
<th>MAC address</th>
<th>MAC flags</th>
<th>Logical interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>00:1f:12:b8:38:11</td>
<td>D</td>
<td>ge-2/3/9.0</td>
</tr>
<tr>
<td>00:21:59:aa:7f:b0</td>
<td>D</td>
<td>ge-1/3/0.0</td>
</tr>
<tr>
<td>00:22:83:32:df:b0</td>
<td>D</td>
<td>ge-1/3/0.0</td>
</tr>
</tbody>
</table>
Meaning  The operational mode command `show bridge mac-table` displays the learned backbone MACs in the PBBN transport network. It also shows the two bridging domains `elan-bvlan` and `eline-bvlan` under the `pbbn-1` routing instance. Notice that C-MACs are not learned on BCB2.

**Verifying E-LINE and E-LAN Service on ES1**

**Purpose** Verify the E-LINE and E-LAN service configuration on ES1.

**Action** Use the following operational mode commands:

```
user@es1> show bridge mac-table
```

**Routing instance : cust-1**

Bridging domain : bds-vlan-0200, VLAN : 200

<table>
<thead>
<tr>
<th>MAC address</th>
<th>MAC</th>
<th>Logical interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>00:EE:01:00:02:00</td>
<td>D ge-1/1/0.0</td>
<td></td>
</tr>
<tr>
<td>00:EE:04:00:02:00</td>
<td>D ge-1/0/0.0</td>
<td></td>
</tr>
</tbody>
</table>

Routing instance : cust-1

Bridging domain : bds-vlan-0300, VLAN : 300

<table>
<thead>
<tr>
<th>MAC address</th>
<th>MAC</th>
<th>Logical interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>00:00:00:00:00:01</td>
<td>D ge-1/1/0.0</td>
<td></td>
</tr>
<tr>
<td>00:00:00:00:00:02</td>
<td>D ge-2/0/0.3</td>
<td></td>
</tr>
<tr>
<td>00:00:02:00:09:01</td>
<td>D ge-2/0/0.3</td>
<td></td>
</tr>
</tbody>
</table>

Routing instance : cust-1

Bridging domain : bds-vlan-0400, VLAN : 400

<table>
<thead>
<tr>
<th>MAC address</th>
<th>MAC</th>
<th>Logical interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>00:00:05:00:00:01</td>
<td>D ge-1/1/0.0</td>
<td></td>
</tr>
<tr>
<td>00:16:47:e3:5a:9b</td>
<td>D ge-2/0/0.4</td>
<td></td>
</tr>
</tbody>
</table>

Meaning  The operational mode command `show bridge mac-table` displays the routing instance `cust-1` and the associated bridging domains and MAC addresses learned in the bridging domain.

**Verifying E-LINE and E-LAN Service on ES3**

**Purpose** Verify the E-LINE and E-LAN service configuration on ES3.
Action
Use the following operational mode commands:

user@es3> show bridge mac-table

Routing instance : cust-1
Bridging domain : bds-vlan-0300, VLAN : 300

<table>
<thead>
<tr>
<th>MAC address</th>
<th>MAC flags</th>
<th>Logical interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>00:00:00:00:00:01</td>
<td>D</td>
<td>ge-2/0/0.3</td>
</tr>
<tr>
<td>00:00:00:00:00:02</td>
<td>D</td>
<td>ge-1/1/0.0</td>
</tr>
<tr>
<td>00:00:02:00:00:09:01</td>
<td>D</td>
<td>ge-1/1/0.0</td>
</tr>
</tbody>
</table>

Routing instance : cust-1
Bridging domain : bds-vlan-0400, VLAN : 400

<table>
<thead>
<tr>
<th>MAC address</th>
<th>MAC flags</th>
<th>Logical interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>00:00:05:00:00:01</td>
<td>D</td>
<td>ge-2/0/0.4</td>
</tr>
<tr>
<td>00:16:47:e3:5a:9b</td>
<td>D</td>
<td>ge-1/1/0.0</td>
</tr>
</tbody>
</table>

Meaning
The operational mode command `show bridge mac-table` displays the routing instance `cust-1` and the associated bridging domain and MAC addresses learned in the bridging domain.

Verifying E-LINE and E-LAN Service on ES4

Purpose
Verify the E-LINE and E-LAN service configuration on ES4.

Action
Use the following operational mode commands:

user@es4> show bridge mac-table

Routing instance : cust-1
Bridging domain : bds-vlan-0200, VLAN : 200

<table>
<thead>
<tr>
<th>MAC address</th>
<th>MAC flags</th>
<th>Logical interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>00:EE:01:00:02:00</td>
<td>D</td>
<td>ge-1/0/0.2</td>
</tr>
<tr>
<td>00:EE:04:00:02:00</td>
<td>D</td>
<td>ge-1/0/3.0</td>
</tr>
</tbody>
</table>

Routing instance : cust-1
Bridging domain : bds-vlan-0300, VLAN : 300

<table>
<thead>
<tr>
<th>MAC address</th>
<th>MAC flags</th>
<th>Logical interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>00:00:00:00:00:01</td>
<td>D</td>
<td>ge-1/0/0.3</td>
</tr>
<tr>
<td>00:00:00:00:00:02</td>
<td>D</td>
<td>ge-1/0/0.3</td>
</tr>
<tr>
<td>00:00:02:00:00:09:01</td>
<td>D</td>
<td>ge-1/0/0.3</td>
</tr>
</tbody>
</table>

Routing instance : cust-1
Bridging domain : bds-vlan-0400, VLAN : 400

<table>
<thead>
<tr>
<th>MAC address</th>
<th>MAC flags</th>
<th>Logical interface</th>
</tr>
</thead>
</table>
Meaning  The operational mode command `show bridge mac-table` displays the routing instance `cust-1` and the associated bridging domains and MAC addresses learned in each bridging domain.

Related Topics  ■ Understanding Provider Backbone Bridging on MX Series Routers
■ Example: Configuring CoS for a PBB Network on MX Series Routers
■ Example: Configuring Connectivity Fault Management for a PBB Network on MX series Routers