ZebOS-XP®
Network Platform

Version 1.4
Extended Performance

Shortest Path Bridging
Configuration Guide

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Contents

Preface

This guide describes how to configure Shortest Path Bridging (SPB) in ZebOS-XP.

Audience

This guide is intended for network administrators and other engineering professionals who configure SPB.

Conventions

Table P-1 shows the conventions used in this guide.

Table P-1: Conventions

Convention	Description
Italics	Emphasized terms; titles of books
Note:	Special instructions, suggestions, or warnings
`monospaced type`	Code elements such as commands, functions, parameters, files, and directories

Contents

This guide contains these chapters:

- Chapter 1, *Shortest Path Bridging - MAC Configuration*
- Chapter 2, *SPB MST Configuration*
- Chapter 3, *SPBM Layer 2 VPN Configuration*
- Chapter 4, *Shortest Path Bridging - VID Configuration*
- Chapter 5, *SPBV CFM Configuration*

Related Documents

Use this guide with these command references for details about the commands used in the configurations.

- *Shortest Path Bridging Command Reference*
- *Network Services Module Command Reference*
- *Carrier Ethernet Command Reference*
- *Carrier Ethernet Configuration Guide*

Note: All ZebOS-XP technical manuals are available to licensed customers at http://www.ipinfusion.com/support/document_list.

Chapter Organization

The chapters in this guide are organized into these major sections:

- An overview that explains a configuration in words
- Topology with a diagram that shows the devices and connections used in the configuration
- Configuration steps in a table for each device where the left-hand side shows the commands you enter and the right-hand side explains the actions that the commands perform
- Validation which shows commands and their output that verify the configuration

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CHAPTER 1 Shortest Path Bridging - MAC Configuration

This chapter shows how to configure backbone edge bridges (BEBs) and backbone core bridges (BCBs) for Shortest Path Bridging - MAC (SPBM).

The boundary between the core MAC-in-MAC SPBM domain and the edge customer 802.1Q domain is handled by BEBs. BEBs can contain an I-Component or B-Component or both an I-Component and B-Component:

- The I-Component maps Service VLAN identifiers (S-VIDs) to service instance identifiers (I-SIDs) and adds a PBB header without a B-Tag.
- The B-Component maps I-SIDs to backbone VIDs (B-VIDs) and adds a PBB header with a B-Tag.

In this document, “BEB” refers to a backbone edge bridge having *both* I and B components.

BCBs act as transit nodes, forwarding packets based on outer VLAN identifier (B-VID) and destination MAC address (B-DA).

Topology

The procedures in this chapter show how to set up the configuration shown in Figure 1-1.

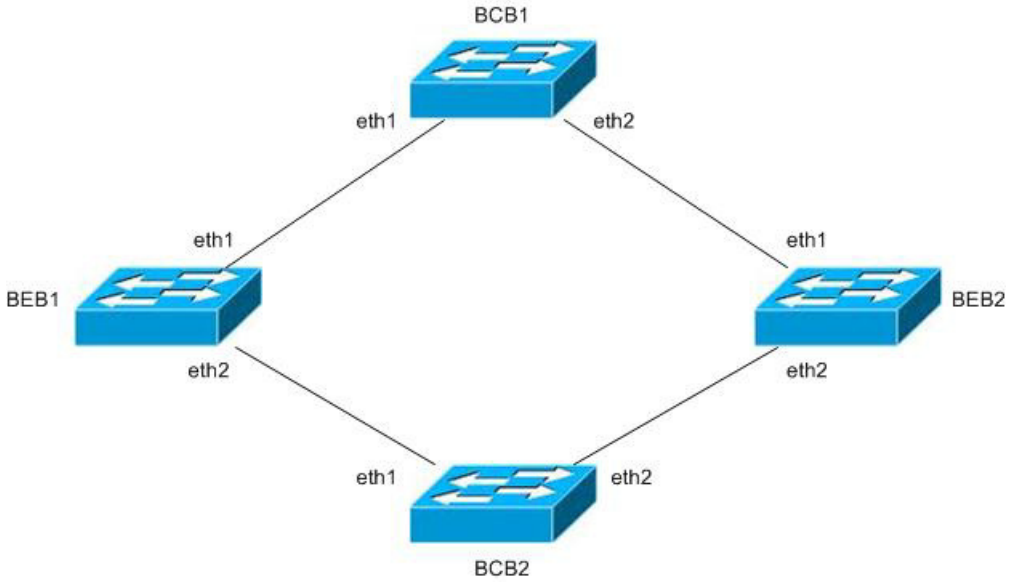

Figure 1-1: BEB and BCB Configuration

BEB Configuration

BEB1

`#configure terminal`	Enter configure mode
`(config)#bridge beb mac 1111.aaaa.1111 1 protocol provider-mstp`	Configure bridge 1 as an I-component bridge
`(config)#bridge beb mac aaaa.aaaa.aaaa backbone protocol spbm`	Configure the backbone SPBM BEB bridge
`(config)#vlan database`	Enter VLAN database mode
`(config-vlan)#vlan 10 type service point-point bridge 1 state enable`	Configure VLAN 10 as a service VLAN associated with bridge 1
`(config-vlan)#vlan 20 type service point-point bridge 1 state enable`	Configure VLAN 20 as a service VLAN associated with bridge 1
`(config-vlan)#vlan 30 type service point-point bridge 1 state enable`	Configure VLAN 30 as a service VLAN associated with bridge 1
`(config-vlan)#vlan 40 type service point-point bridge 1 state enable`	Configure VLAN 40 as a service VLAN associated with bridge 1
`(config-vlan)#vlan 100 type backbone point-point state enable`	Configure VLAN 100 associated with the backbone bridge
`(config-vlan)#vlan 200 type backbone point-point state enable`	Configure VLAN 200 associated with the backbone bridge
`(config-vlan)#vlan 300 type backbone point-point state enable`	Configure VLAN 300 associated with the backbone bridge
`(config-vlan)#vlan 400 type backbone point-point state enable`	Configure VLAN 400 associated with the backbone bridge
`(config-vlan)#exit`	Exit VLAN database mode
`(config)#pbb isid list`	Enter PBB I-SID mode
`(pbb-isid)#isid 10 name IPIQA1 i-component 1`	Configure I-SID 10 with the name IPIQA1
`(pbb-isid)#isid 20 name IPIQA2 i-component 1`	Configure I-SID 20 with the name IPIQA2
`(pbb-isid)#isid 30 name IPIQA3 i-component 1`	Configure I-SID 30 with the name IPIQA3
`(pbb-isid)#isid 40 name IPIQA4 i-component 1`	Configure I-SID 40 with the name IPIQA4
`(pbb-isid)#exit`	Exit PBB I-SID mode
`(config)#isis-spb configuration bridge backbone`	Enter ISIS-SPB configure mode
`(isis-spb-config)#isis-spb multi-topology-id 3996`	Configure the MTID
`(isis-spb-config)#no isis-spb system id`	Delete the ISIS-SPB system identifier
`(isis-spb-config)#isis-spb system-id 11.11.11.11.11.11`	Configure the system identifier for the SPB bridge
`(isis-spb-config)#exit`	Exit ISIS-SPB configure mode
`(config)#spanning-tree mst configuration`	Enter MST configure mode
`(config-mst)#bridge backbone instance spbm`	Associate the port to the SPBM instance

`(config-mst)#bridge backbone instance spbm vlan 100`	Associate VLAN 100 to the SPBM instance
`(config-mst)#bridge backbone instance spbm vlan 200`	Associate VLAN 200 to the SPBM instance
`(config-mst)#bridge backbone instance spbm vlan 300`	Associate VLAN 300 to the SPBM instance
`(config-mst)#bridge backbone instance spbm vlan 400`	Associate VLAN 400 to the SPBM instance
`(config-mst)#exit`	Exit MST configure mode
`(config)#spb configuration`	Enter SPB configure mode
`(spb-config)#bridge backbone spsourceid 1111`	Configure the shortest path source identifier for the SPB bridge
`(spb-config)#bridge backbone spb vlan 100 ect 1`	Map BVLAN 100 to the default MTID and the the default ECT algorithm
`(spb-config)#bridge backbone spb vlan 200 ect 2`	Map BVLAN 200 to the default MTID and ECT algorithm 2
`(spb-config)#bridge backbone instance spbm vlan 300 ect 1 mtid 3996`	Map BVLAN 100 to MTID 3996 and the default ECT algorithm
`(spb-config)#bridge backbone instance spbm vlan 400 ect 2 mtid 3996`	Map BVLAN 400 to MTID 3996 and ECT algorithm 2
`(spb-config)#exit`	Exit SPB configure mode
`(config)#interface eth1`	Enter interface mode
`(config-if)#switchport`	Configure the interface as a layer 2 interface
`(config-if)#bridge-group backbone`	Configure the interface as part of the backbone bridge
`(config-if)#switchport mode pnp`	Configure the interface as a PNP (Provider Network Port)
`(config-if)#switchport beb provider-network bvlan all`	Associate the PNP with all BVLANs
`(config-if)#bridge-group backbone instance spbm`	Associate the interface to the SPBM instance
`(config-if)#exit`	Exit interface mode
`(config)#interface eth2`	Enter interface mode
`(config-if)#switchport`	Configure the interface as a layer 2 interface
`(config-if)#bridge-group backbone`	Configure the interface as part of the backbone bridge
`(config-if)#switchport mode pnp`	Configure the interface as a PNP (Provider Network Port)
`(config-if)#switchport beb provider-network bvlan all`	Associate the PNP with all BVLANs
`(config-if)#bridge-group backbone instance spbm`	Associate the interface to the SPBM instance
`(config-if)#exit`	Exit interface mode
`(config)#interface pip.1`	Enter PIP interface mode
`(config-if)#switchport beb vlan 10 pip`	Associate VLAN 10 to the PIP port
`(config-if)#switchport beb pip backbone-source-mac aaaa.1111.aaaa`	Configure the PIP port with the assigned MAC identifier
`(config-if)#exit`	Exit PIP interface mode
`(config)#interface cbp.1`	Enter CBP interface mode

`(config-if)#switchport beb customer-backbone instance add 10 bvlan 100 mode rxtx`	Associate I-SID 10 to BVLAN 100 with the required mode
`(config-if)#switchport beb customer-backbone instance add 20 bvlan 200 mode rxtx`	Associate I-SID 20 to BVLAN 200 with the required mode
`(config-if)#switchport beb customer-backbone instance add 30 bvlan 300 mode rxtx`	Associate I-SID 30 to BVLAN 300 with the required mode
`(config-if)#switchport beb customer-backbone instance add 40 bvlan 400 mode rxtx`	Associate I-SID 40 to BVLAN 400 with the required mode
`(config-if)#exit`	Exit CBP interface mode
`(config)#interface eth3`	Enter interface mode
`(config-if)#switchport`	Configure the interface as a layer 2 interface
`(config-if)#bridge-group 1`	Associate the interface to bridge 1
`(config-if)#switchport mode cnp`	Configure the interface as a CNP (Customer Network Port)
`(config-if)#switchport beb vlan 10 cnp`	Associate the interface with VLAN 10
`(config-if)#switchport beb customer-network svlan add 10 instance 10`	Map VLAN 10 to I-SID 10
`(config-if)#exit`	Exit interface mode
`(config)#isis-spb configuration bridge backbone`	Enter ISIS-SPB configure mode
`(isis-spb-config)#isis-spb lsp-refresh-interval 100`	Configure the LSP refresh interval
`(isis-spb-config)#end`	Exit configure mode

BEB2

`#configure terminal`	Enter configure mode
`(config)#bridge beb mac 3333.cccc.3333 1 protocol provider-mstp`	Configure bridge 1 as an I-component bridge
`(config)#bridge beb mac cccc.cccc.cccc backbone protocol spbm`	Configure the backbone SPBM BEB bridge
`(config)#vlan database`	Enter VLAN database mode
`(config-vlan)#vlan 10 type service point-point bridge 1 state enable`	Configure VLAN 10 as a service VLAN associated with bridge 1
`(config-vlan)#vlan 20 type service point-point bridge 1 state enable`	Configure VLAN 20 as a service VLAN associated with bridge 1
`(config-vlan)#vlan 30 type service point-point bridge 1 state enable`	Configure VLAN 30 as a service VLAN associated with bridge 1
`(config-vlan)#vlan 40 type service point-point bridge 1 state enable`	Configure VLAN 40 as a service VLAN associated with bridge 1
`(config-vlan)#vlan 100 type backbone point-point state enable`	Configure VLAN 100 associated with the backbone bridge
`(config-vlan)#vlan 200 type backbone point-point state enable`	Configure VLAN 200 associated with the backbone bridge
`(config-vlan)#vlan 300 type backbone point-point state enable`	Configure VLAN 300 associated with the backbone bridge
`(config-vlan)#vlan 400 type backbone point-point state enable`	Configure VLAN 400 associated with the backbone bridge

(config-vlan)#exit	Exit VLAN database mode
(config)#pbb isid list	Enter PBB I-SID mode
(pbb-isid)#isid 10 name IPIQA1 i-component 1	Configure I-SID 10 with the name IPIQA1
(pbb-isid)#isid 20 name IPIQA2 i-component 1	Configure I-SID 20 with the name IPIQA2
(pbb-isid)#isid 30 name IPIQA3 i-component 1	Configure I-SID 30 with the name IPIQA3
(pbb-isid)#isid 40 name IPIQA4 i-component 1	Configure I-SID 40 with the name IPIQA4
(pbb-isid)#exit	Exit PBB I-SID mode
(config)#isis-spb configuration bridge backbone	Enter ISIS-SPB configure mode
(isis-spb-config)#isis-spb multi-topology-id 3996	Configure the MTID
(isis-spb-config)#no isis-spb system id	Delete the ISIS-SPB system identifier
(isis-spb-config)#isis-spb system-id 33.33.33.33.33.33	Configure the system identifier for the SPB bridge
(isis-spb-config)#exit	Exit ISIS-SPB configure mode
(config)#spanning-tree mst configuration	Enter MST configure mode
(config-mst)#bridge backbone instance spbm	Associate the port to the SPBM instance
(config-mst)#bridge backbone instance spbm vlan 100	Associate VLAN 100 to the SPBM instance
(config-mst)#bridge backbone instance spbm vlan 200	Associate VLAN 200 to the SPBM instance
(config-mst)#bridge backbone instance spbm vlan 300	Associate VLAN 300 to the SPBM instance
(config-mst)#bridge backbone instance spbm vlan 400	Associate VLAN 400 to the SPBM instance
(config-mst)#exit	Exit MST configure mode
(config)#spb configuration	Enter SPB configure mode
(spb-config)#bridge backbone spsourceid 3333	Configure the shortest path source identifier for the SPB bridge
(spb-config)#bridge backbone spb vlan 100 ect 1	Map BVLAN 100 to the default MTID and the default ECT algorithm
(spb-config)#bridge backbone spb vlan 200 ect 2	Map BVLAN 200 to the default MTID and ECT algorithm 2
(spb-config)#bridge backbone instance spbm vlan 300 ect 1 mtid 3996	Map BVLAN 100 to MTID 3996 and the default ECT algorithm
(spb-config)#bridge backbone instance spbm vlan 400 ect 2 mtid 3996	Map BVLAN 400 to MTID 3996 and ECT algorithm 2
(spb-config)#exit	Exit SPB configure mode
(config)#interface eth1	Enter interface mode
(config-if)#switchport	Configure the interface as a layer 2 interface
(config-if)#bridge-group backbone	Configure the interface as part of the backbone bridge
(config-if)#switchport mode pnp	Configure the interface as a PNP (Provider Network Port)
(config-if)#switchport beb provider-network bvlan all	Associate the PNP with all BVLANs
(config-if)#bridge-group backbone instance spbm	Associate the interface to the SPBM instance

`(config-if)#exit`	Exit interface mode
`(config)#interface eth2`	Enter interface mode
`(config-if)#switchport`	Configure the interface as a layer 2 interface
`(config-if)#bridge-group backbone`	Configure the interface as part of the backbone bridge
`(config-if)#switchport mode pnp`	Configure the interface as a PNP (Provider Network Port)
`(config-if)#switchport beb provider-network bvlan all`	Associate the PNP with all BVLANs
`(config-if)#bridge-group backbone instance spbm`	Associate the interface to the SPBM instance
`(config-if)#exit`	Exit interface mode
`(config)#interface pip.1`	Enter PIP interface mode
`(config-if)#switchport beb vlan 10 pip`	Associate VLAN 10 to the pip port
`(config-if)#switchport beb pip backbone-source-mac cccc.1111.cccc`	Configure the pip port with the assigned MAC identifier
`(config-if)#exit`	Exit PIP interface mode
`(config)#interface cbp.1`	Enter CBP interface mode
`(config-if)#switchport beb customer-backbone instance add 10 bvlan 100 mode rxtx`	Associate I-SID 10 to BVLAN 100 with the required mode
`(config-if)#switchport beb customer-backbone instance add 20 bvlan 200 mode rxtx`	Associate I-SID 20 to BVLAN 200 with the required mode
`(config-if)#switchport beb customer-backbone instance add 30 bvlan 300 mode rxtx`	Associate I-SID 30 to BVLAN 300 with the required mode
`(config-if)#switchport beb customer-backbone instance add 40 bvlan 400 mode rxtx`	Associate I-SID 40 to BVLAN 400 with the required mode
`(config-if)#exit`	Exit CBP interface mode
`(config)#interface eth3`	Enter interface mode
`(config-if)#switchport`	Configure the interface as a layer 2 interface
`(config-if)#bridge-group 1`	Associate the interface to bridge 1
`(config-if)#switchport mode cnp`	Configure the interface as a CNP (Customer Network Port)
`(config-if)#switchport beb vlan 10 cnp`	Associate the interface with VLAN 10
`(config-if)#switchport beb customer-network svlan add 10 instance 10`	Map VLAN 10 to I-SID 10
`(config-if)#exit`	Exit interface mode
`(config)#isis-spb configuration bridge backbone`	Enter ISIS-SPB configure mode
`(isis-spb-config)#isis-spb lsp-refresh-interval 100`	Configure the LSP refresh interval if required.
`(isis-spb-config)#end`	Exit configure mode

BCB Configuration

BCB1

`#configure terminal`	Enter configure mode
`(config)#bridge 1 protocol spbm`	Configure the SPBM core bridge 1
`(config)#vlan database`	Enter VLAN database mode
`(config-vlan)#vlan 100 type service point-point bridge 1 state enable`	Configure VLAN 100 as a service VLAN associated with bridge 1
`(config-vlan)#vlan 100 type service point-point bridge 1 state enable`	Configure VLAN 200 as a service VLAN associated with bridge 1
`(config-vlan)#vlan 100 type service point-point bridge 1 state enable`	Configure VLAN 300 as a service VLAN associated with bridge 1
`(config-vlan)#vlan 100 type service point-point bridge 1 state enable`	Configure VLAN 400 as a service VLAN associated with bridge 1
`(config-vlan)#exit`	Exit VLAN database mode
`(config)#isis-spb configuration bridge 1`	Enter ISIS-SPB configure mode
`(config)#isis-spb multi-topology-id 3996`	Configure the MTID
`(config)#no isis-spb system-id`	Remove the ISIS-SPB system identifier
`(isis-spb-config)#isis-spb system-id 22.22.22.22.22.22`	Configure the system identifier for the SPB core bridge
`(isis-spb-config)#exit`	Exit ISIS-SPB configure mode
`(config)#spanning-tree mst configuration`	Enter MST configure mode
`(config-mst)#bridge 1 instance spbm`	Create a SPBM instance for bridge1
`(config-mst)#bridge 1 instance spbm vlan 100`	Associate VLAN 100 to the SPBM instance
`(config-mst)#bridge 1 instance spbm vlan 200`	Associate VLAN 200 to the SPBM instance
`(config-mst)#bridge 1 instance spbm vlan 300`	Associate VLAN 300 to the SPBM instance
`(config-mst)#bridge 1 instance spbm vlan 400`	Associate VLAN 400 to the SPBM instance
`(config-mst)#exit`	Exit MST configure mode
`(config)#spb configuration`	Enter SPB configure mode
`(spb-config)#bridge 1 spsourceid 2222`	Configure the shortest path source identifier for the SPB core bridge
`(spb-config)#bridge 1 instance spbm vlan 100 ect 1`	Map BVLAN 100 to the default MTID and the default ECT algorithm
`(spb-config)#bridge 1 instance spbm vlan 200 ect 2`	Map BVLAN 200 to the default MTID and ECT algorithm 2
`(spb-config)#bridge 1 instance spbm vlan 300 ect 1 mtid 3996`	Map BVLAN 100 to MTID 3996 and the default ECT algorithm
`(spb-config)#bridge 1 instance spbm vlan 400 ect 2 mtid 3996`	Map BVLAN 400 to MTID 3996 and ECT algorithm 2
`(spb-config)#exit`	Exit configure mode
`(config)#interface eth1`	Enter interface mode
`(config-if)#switchport`	Configure the interface as a layer 2 interface

(config-if)#bridge-group 1	Configure the interface as part of bridge 1
(config-if)#switchport mode provider-network	Configure the interface as a provider network
(config-if)#switchport provider-network allowed vlan all	Associate the interface with all VLANs
(config-if)#bridge-group 1 instance spbm	Associate the interface to the SPBM instance
(config-if)#exit	Exit interface mode
(config)#interface eth2	Enter interface mode
(config-if)#switchport	Configure the interface as a layer 2 interface
(config-if)#bridge-group 1	Configure the interface as part of bridge 1
(config-if)#switchport mode provider-network	Configure the interface as a provider network
(config-if)#switchport provider-network allowed vlan all	Associate the interface with all VLANs
(config-if)#bridge-group 1 instance spbm	Associate the interface to the SPBM instance
(config-if)#exit	Exit interface mode
(config)#isis-spb configuration bridge backbone	Enter ISIS-SPB configure mode
(isis-spb-config)#isis-spb lsp-refresh-interval 100	Configure the LSP refresh interval if required.
(isis-spb-config)#end	Exit configure mode

BCB2

#configure terminal	Enter configure mode
(config)#bridge 1 protocol spbm	Configure the SPBM core bridge with the bridge identifier
(config)#vlan database	Enter the VLAN database
(config-vlan)#vlan 100 type service point-point bridge 1 state enable	Configure VLAN 100 as a service VLAN associated with bridge 1
(config-vlan)#vlan 100 type service point-point bridge 1 state enable	Configure VLAN 200 as a service VLAN associated with bridge 1
(config-vlan)#vlan 100 type service point-point bridge 1 state enable	Configure VLAN 300 as a service VLAN associated with bridge 1
(config-vlan)#vlan 100 type service point-point bridge 1 state enable	Configure VLAN 400 as a service VLAN associated with bridge 1
(config-vlan)#exit	Exit the VLAN database
(config)#isis-spb configuration bridge 1	Enter ISIS-SPB configure mode
(config)#isis-spb multi-topology-id 3996	Configure the MTID
(config)#no isis-spb system-id	Remove the ISIS-SPB system identifier
(isis-spb-config)#isis-spb system-id 44.44.44.44.44.44	Configure the system identifier for the SPB core bridge
(isis-spb-config)#exit	Exit ISIS-SPB configure mode
(config)#spanning-tree mst configuration	Enter MST configure mode
(config-mst)#bridge 1 instance spbm	Create a SPBM instance for bridge1
(config-mst)#bridge 1 instance spbm vlan 100	Associate VLAN 100 to the SPBM instance
(config-mst)#bridge 1 instance spbm vlan 200	Associate VLAN 200 to the SPBM instance

(config-mst)#bridge 1 instance spbm vlan 300	Associate VLAN 300 to the SPBM instance
(config-mst)#bridge 1 instance spbm vlan 400	Associate VLAN 400 to the SPBM instance
(config-mst)#exit	Exit MST configure mode
(config)#spb configuration	Enter SPB configure mode
(spb-config)#bridge 1 spsourceid 4444	Configure the shortest path source identifier for the SPB core bridge
(spb-config)#bridge 1 instance spbm vlan 100 ect 1	Map BVLAN 100 to the default MTID and the default ECT algorithm
(spb-config)#bridge 1 instance spbm vlan 200 ect 2	Map BVLAN 200 to the default MTID and ECT algorithm 2
(spb-config)#bridge 1 instance spbm vlan 300 ect 1 mtid 3996	Map BVLAN 100 to MTID 3996 and the default ECT algorithm
(spb-config)#bridge 1 instance spbm vlan 400 ect 2 mtid 3996	Map BVLAN 400 to MTID 3996 and ECT algorithm 2
(spb-config)#exit	Exit configure mode
(config)#interface eth1	Enter interface mode
(config-if)#switchport	Configure the interface as a layer 2 interface
(config-if)#bridge-group 1	Configure the interface as part of bridge 1
(config-if)#switchport mode provider-network	Configure the interface as a provider network
(config-if)#switchport provider-network allowed vlan all	Associate the interface to all VLANs
(config-if)#bridge-group 1 instance spbm	Associate the interface to the SPBM instance
(config-if)#exit	Exit interface mode
(config)#interface eth2	Enter interface mode
(config-if)#switchport	Configure the interface as a layer 2 interface
(config-if)#bridge-group 1	Configure the interface as part of bridge 1
(config-if)#switchport mode provider-network	Configure the interface as a provider network
(config-if)#switchport provider-network allowed vlan all	Associate the interface to all VLANs
(config-if)#bridge-group 1 instance spbm	Associate the interface to the SPBM instance
(config-if)#exit	Exit interface mode
(config)#isis-spb configuration bridge backbone	Enter ISIS-SPB configure mode
(isis-spb-config)#isis-spb lsp-refresh-interval 100	Configure the LSP refresh interval
(isis-spb-config)#end	Exit configure mode

Validation

show spb adjacency interface

BEB1

```
#show spb adjacency interface eth1
```

```
Path_cost    - 200000
Admin_state - UP
Port ID - 32771
Port priority - 128

NEIGHBOUR DETAILS
-------------------------------------
Sys_id               - 22.22.22.22.22.22

State                - Up

Agreement digest     - 0000000c3bb3e50b841e54a2bba02b30d472f94f

MCID
Conf Digest          - 53230e45d4dcaa828270a4162846b9c8

AUX_MCID
Conf Digest          - 53230e45d4dcaa828270a4162846b9c8
```

BEB2

```
#show spb adjacency interface eth1

Path_cost    - 200000
Admin_state - UP
Port ID - 32771
Port priority - 128

NEIGHBOUR DETAILS
-------------------------------------
Sys_id               - 22.22.22.22.22.22

State                - Up

Agreement digest     - 0000000c3bb3e50b841e54a2bba02b30d472f94f

MCID
Conf Digest          - 53230e45d4dcaa828270a4162846b9c8

AUX_MCID
Conf Digest          - 53230e45d4dcaa828270a4162846b9c8
```

BCB1

```
#show spb adjacency interface eth1

Path_cost    - 200000
Admin_state - UP
Port ID - 32771
Port priority - 128

NEIGHBOUR DETAILS
-------------------------------------
Sys_id               - 11.11.11.11.11.11

State                - Up
```



```
Agreement digest     - 0000000c6ff4a22f8b4749bf16f9b45edb90bd3f

MCID
Conf Digest          - 53230e45d4dcaa828270a4162846b9c8

AUX_MCID
Conf Digest          - 53230e45d4dcaa828270a4162846b9c8
```

BCB2

```
#show spb adjacency interface eth1

Path_cost    - 200000
Admin_state - UP
Port ID - 32771
Port priority - 128

NEIGHBOUR DETAILS
-------------------------------------
Sys_id               - 11.11.11.11.11.11

State                - Up

Agreement digest     - 0000000c6ff4a22f8b4749bf16f9b45edb90bd3f

MCID
Conf Digest          - 53230e45d4dcaa828270a4162846b9c8

AUX_MCID
Conf Digest          - 53230e45d4dcaa828270a4162846b9c8
```

show isis-spb neighbors

BEB1

```
#show isis-spb neighbors

System Id      Interface   SNPA               State  Holdtime  Type Protocol
---------      ---------   ----               ------ --------- ---- --------
MTID : 0
2222.2222.2222 eth1        5254.000c.3b03     Up     25        L1   IS-IS

MTID : 3996
2222.2222.2222 eth1        5254.000c.3b03     Up     25        L1   IS-IS

MTID : 0
4444.4444.4444 eth2        5254.0043.021e     Up     24        L1   IS-IS

MTID : 3996
4444.4444.4444 eth2        5254.0043.021e     Up     24        L1   IS-IS

Total Number of Neighbor(s): 4
```

BEB2

```
#show isis-spb neighbors

System Id      Interface   SNPA               State  Holdtime  Type Protocol
```

```
---------      ---------   ----               ------ --------- ---- --------
MTID : 0
2222.2222.2222 eth1        5254.004b.e806      Up     22        L1   IS-IS

MTID : 3996
2222.2222.2222 eth1        5254.004b.e806      Up     22        L1   IS-IS

MTID : 0
4444.4444.4444 eth2        5254.00c5.66cd      Up     20        L1   IS-IS

MTID : 3996
4444.4444.4444 eth2        5254.00c5.66cd      Up     20        L1   IS-IS

Total Number of Neighbor(s): 4
```

BCB1

```
#sh isis-spb neighbors

System Id      Interface   SNPA               State  Holdtime  Type Protocol
---------      ---------   ----               ------ --------- ---- --------
MTID : 0
1111.1111.1111 eth1        5254.0000.8a36      Up     24        L1   IS-IS

MTID : 3996
1111.1111.1111 eth1        5254.0000.8a36      Up     24        L1   IS-IS

MTID : 0
3333.3333.3333 eth2        5254.00fb.2afa        Up     21        L1   IS-IS

MTID : 3996
3333.3333.3333 eth2        5254.00fb.2afa        Up     21        L1   IS-IS

Total Number of Neighbor(s): 4
```

BCB2

```
BCB2#show isis-spb neighbors

System Id      Interface   SNPA               State  Holdtime  Type Protocol
---------      ---------   ----               ------ --------- ---- --------
MTID : 0
1111.1111.1111 eth1        5254.00be.ed60      Up     23        L1   IS-IS

MTID : 3996
1111.1111.1111 eth1        5254.00be.ed60      Up     23        L1   IS-IS

MTID : 0
3333.3333.3333 eth2        5254.008e.afb8       Up     20        L1   IS-IS

MTID : 3996
3333.3333.3333 eth2        5254.008e.afb8       Up     20        L1   IS-IS

Total Number of Neighbor(s): 4
```

show isis-spb lsp

BEB1

```
#show isis-spb lsp
ISIS Link State Database
---------------------------------
LSP ID                 LSP Seq Num    LSP Checksum     LSP Hold Time    OL
Flag
-----                  -----------    ------------     -------------    --
Bridge Instance: backbone
1111.1111.1111.00-00*  0x0000003A      0x526D           1116             0
2222.2222.2222.00-00   0x00000044      0x73BB           1103             0
3333.3333.3333.00-00   0x00000045      0xAD57           1103             0
4444.4444.4444.00-00   0x00000043      0x20D5           1103             0
Total numer of LSP(s): 4
```

BEB2

```
#show isis-spb lsp
ISIS Link State Database
---------------------------------
LSP ID                 LSP Seq Num    LSP Checksum     LSP Hold Time    OL
Flag
-----                  -----------    ------------     -------------    --
Bridge Instance: backbone
1111.1111.1111.00-00   0x0000003C      0x4E6F           1192             0
2222.2222.2222.00-00   0x00000046      0x6FBD           1178             0
3333.3333.3333.00-00*  0x00000047      0xA959           1178             0
4444.4444.4444.00-00   0x00000045      0x1CD7           1178             0
Total numer of LSP(s): 4
```

BCB1

#show isis-spb lsp

```
ISIS Link State Database
------------------------
LSP ID                 LSP Seq Num    LSP Checksum     LSP Hold Time    OL
Flag
-----                  -----------    ------------     -------------    --
Bridge Instance: 1
1111.1111.1111.00-00   0x0000003C      0x4E6F           1140             0
2222.2222.2222.00-00*  0x00000046      0x6FBD           1127             0
3333.3333.3333.00-00   0x00000047      0xA959           1127             0
4444.4444.4444.00-00   0x00000045      0x1CD7           1127             0
Total numer of LSP(s): 4
```

BCB2

```
#show isis-spb lsp
ISIS Link State Database
------------------------
LSP ID                 LSP Seq Num    LSP Checksum     LSP Hold Time    OL
Flag
-----                  -----------    ------------     -------------    --
Bridge Instance: 1
1111.1111.1111.00-00   0x0000003C      0x4E6F           1115             0
2222.2222.2222.00-00   0x00000046      0x6FBD           1102             0
3333.3333.3333.00-00   0x00000047      0xA959           1102             0
```

```
4444.4444.4444.00-00*  0x00000045      0x1CD7           1102              0
Total numer of LSP(s): 4
```

show isis-spb topology

BEB1

```
#show isis-spb topology
IS-IS paths to level-1 bridges
System Id            Metric     Next-Hop             Interface   SNPA
MT ID: 0, ECT ID: 1
1111.1111.1111       --
2222.2222.2222       200000     2222.2222.2222       eth1
5254.000c.3b03
3333.3333.3333       400000     2222.2222.2222       eth1
5254.000c.3b03
4444.4444.4444       200000     4444.4444.4444       eth2
5254.0043.021e
MT ID: 0, ECT ID: 2
1111.1111.1111       --
2222.2222.2222       200000     2222.2222.2222       eth1
5254.000c.3b03
3333.3333.3333       400000     4444.4444.4444       eth2
5254.0043.021e
4444.4444.4444       200000     4444.4444.4444       eth2
5254.0043.021e

MT ID: 3996, ECT ID: 1
1111.1111.1111       --
2222.2222.2222       200000     2222.2222.2222       eth1
5254.000c.3b03
3333.3333.3333       400000     2222.2222.2222       eth1
5254.000c.3b03
4444.4444.4444       200000     4444.4444.4444       eth2
5254.0043.021e
MT ID: 3996, ECT ID: 2
1111.1111.1111       --
2222.2222.2222       200000     2222.2222.2222       eth1
5254.000c.3b03
3333.3333.3333       400000     4444.4444.4444       eth2
5254.0043.021e
4444.4444.4444       200000     4444.4444.4444       eth2
5254.0043.021e
```

BEB2

```
#show isis-spb topology
IS-IS paths to level-1 bridges
System Id            Metric     Next-Hop             Interface   SNPA
MT ID: 0, ECT ID: 1
1111.1111.1111       400000     2222.2222.2222       eth1
5254.004b.e806
2222.2222.2222       200000     2222.2222.2222       eth1
5254.004b.e806
3333.3333.3333       --
4444.4444.4444       200000     4444.4444.4444       eth2
5254.00c5.66cd
MT ID: 0, ECT ID: 2
1111.1111.1111       400000     4444.4444.4444       eth2
5254.00c5.66cd
```

```
2222.2222.2222       200000     2222.2222.2222       eth1
5254.004b.e806
3333.3333.3333       --
4444.4444.4444       200000     4444.4444.4444       eth2
5254.00c5.66cd

MT ID: 3996, ECT ID: 1
1111.1111.1111       400000     2222.2222.2222       eth1
5254.004b.e806
2222.2222.2222       200000     2222.2222.2222       eth1
5254.004b.e806
3333.3333.3333       --
4444.4444.4444       200000     4444.4444.4444       eth2
5254.00c5.66cd
MT ID: 3996, ECT ID: 2
1111.1111.1111       400000     4444.4444.4444       eth2
5254.00c5.66cd
2222.2222.2222       200000     2222.2222.2222       eth1
5254.004b.e806
3333.3333.3333       --
4444.4444.4444       200000     4444.4444.4444       eth2
5254.00c5.66cd
```

BCB1

```
#show isis-spb topology
IS-IS paths to level-1 bridges
System Id            Metric     Next-Hop             Interface   SNPA
MT ID: 0, ECT ID: 1
1111.1111.1111       200000     1111.1111.1111       eth1
5254.0000.8a36
2222.2222.2222       --
3333.3333.3333       200000     3333.3333.3333       eth2
5254.00fb.2afa
4444.4444.4444       400000     1111.1111.1111       eth1
5254.0000.8a36
MT ID: 0, ECT ID: 2
1111.1111.1111       200000     1111.1111.1111       eth1
5254.0000.8a36
2222.2222.2222       --
3333.3333.3333       200000     3333.3333.3333       eth2
5254.00fb.2afa
4444.4444.4444       400000     3333.3333.3333       eth2
5254.00fb.2afa

MT ID: 3996, ECT ID: 1
1111.1111.1111       200000     1111.1111.1111       eth1
5254.0000.8a36
2222.2222.2222       --
3333.3333.3333       200000     3333.3333.3333       eth2
5254.00fb.2afa
4444.4444.4444       400000     1111.1111.1111       eth1
5254.0000.8a36
MT ID: 3996, ECT ID: 2
1111.1111.1111       200000     1111.1111.1111       eth1
5254.0000.8a36
2222.2222.2222       --
3333.3333.3333       200000     3333.3333.3333       eth2
5254.00fb.2afa
4444.4444.4444       400000     3333.3333.3333       eth2
5254.00fb.2afa
```

BCB2

```
#show isis-spb topology
IS-IS paths to level-1 bridges
System Id            Metric     Next-Hop             Interface   SNPA
MT ID: 0, ECT ID: 1
1111.1111.1111       200000     1111.1111.1111       eth1
5254.00be.ed60
2222.2222.2222       400000     1111.1111.1111       eth1
5254.00be.ed60
3333.3333.3333       200000     3333.3333.3333       eth2
5254.008e.afb8
4444.4444.4444       --
MT ID: 0, ECT ID: 2
1111.1111.1111       200000     1111.1111.1111       eth1
5254.00be.ed60
2222.2222.2222       400000     3333.3333.3333       eth2
5254.008e.afb8
3333.3333.3333       200000     3333.3333.3333       eth2
5254.008e.afb8
4444.4444.4444       --

MT ID: 3996, ECT ID: 1
1111.1111.1111       200000     1111.1111.1111       eth1
5254.00be.ed60
2222.2222.2222       400000     1111.1111.1111       eth1
5254.00be.ed60
3333.3333.3333       200000     3333.3333.3333       eth2
5254.008e.afb8
4444.4444.4444       --
MT ID: 3996, ECT ID: 2
1111.1111.1111       200000     1111.1111.1111       eth1
5254.00be.ed60
2222.2222.2222       400000     3333.3333.3333       eth2
5254.008e.afb8
3333.3333.3333       200000     3333.3333.3333       eth2
5254.008e.afb8
4444.4444.4444       --
```

show isis-spb fdb

BEB1

```
#show isis-spb fdb

SPB Forwarding Database:
[U - Unicast, M - Multicast]
  I/P INTERFACE  DESTINATION-ADDRESS  B-VID  O/P INTERFACE
  -------------  -------------------  -----  ------------
MTID : 0, ECT ALGO : 1
U if/eth1        cc.cc.11.11.cc.cc    100    if/eth1
MTID : 0, ECT ALGO : 2
U if/eth2        cc.cc.11.11.cc.cc    200    if/eth2
MTID : 3996, ECT ALGO : 1
U if/eth1        cc.cc.11.11.cc.cc    300    if/eth1
MTID : 3996, ECT ALGO : 2
U if/eth2        cc.cc.11.11.cc.cc    400    if/eth2
MTID : 0, ECT ALGO : 1
M if/00          03.20.ea.00.00.50    100    if/eth1
```

```
MTID : 0, ECT ALGO : 2
M if/00          03.20.ea.00.00.28    200    if/eth2
MTID : 3996, ECT ALGO : 1
M if/00          03.20.ea.00.00.78    300    if/eth1
MTID : 3996, ECT ALGO : 2
M if/00          03.20.ea.00.00.14    400    if/eth2
Number of Unicast Records: 4
Number of Multicast Records: 4
```

BEB2

```
#sh isis-spb fdb

SPB Forwarding Database:
[U - Unicast, M - Multicast]
  I/P INTERFACE  DESTINATION-ADDRESS  B-VID  O/P INTERFACE
  -------------  -------------------  -----  ------------
MTID : 0, ECT ALGO : 1
U if/eth1        aa.aa.11.11.aa.aa    100    if/eth1
MTID : 0, ECT ALGO : 2
U if/eth2        aa.aa.11.11.aa.aa    200    if/eth2
MTID : 3996, ECT ALGO : 1
U if/eth1        aa.aa.11.11.aa.aa    300    if/eth1
MTID : 3996, ECT ALGO : 2
U if/eth2        aa.aa.11.11.aa.aa    400    if/eth2
MTID : 0, ECT ALGO : 1
M if/00          03.b0.a0.00.00.50    100    if/eth1
MTID : 0, ECT ALGO : 2
M if/00          03.b0.a0.00.00.28    200    if/eth2
MTID : 3996, ECT ALGO : 1
M if/00          03.b0.a0.00.00.78    300    if/eth1
MTID : 3996, ECT ALGO : 2
M if/00          03.b0.a0.00.00.14    400    if/eth2
Number of Unicast Records: 4
Number of Multicast Records: 4
```

BCB1

```
#show isis-spb fdb

SPB Forwarding Database:
[U - Unicast, M - Multicast]
  I/P INTERFACE  DESTINATION-ADDRESS  B-VID  O/P INTERFACE
  -------------  -------------------  -----  ------------
MTID : 0, ECT ALGO : 1
U if/eth1        aa.aa.11.11.aa.aa    100    if/eth1
U if/eth2        cc.cc.11.11.cc.cc    100    if/eth2
MTID : 0, ECT ALGO : 2
U if/eth1        aa.aa.11.11.aa.aa    200    if/eth1
U if/eth2        cc.cc.11.11.cc.cc    200    if/eth2
MTID : 3996, ECT ALGO : 1
U if/eth1        aa.aa.11.11.aa.aa    300    if/eth1
U if/eth2        cc.cc.11.11.cc.cc    300    if/eth2
MTID : 3996, ECT ALGO : 2
U if/eth1        aa.aa.11.11.aa.aa    400    if/eth1
U if/eth2        cc.cc.11.11.cc.cc    400    if/eth2
MTID : 0, ECT ALGO : 1
M if/eth1        03.20.ea.00.00.50    100    if/eth2
```

```
M if/eth2        03.b0.a0.00.00.50    100    if/eth1
MTID : 3996, ECT ALGO : 1
M if/eth1        03.20.ea.00.00.78    300    if/eth2
M if/eth2        03.b0.a0.00.00.78    300    if/eth1
Number of Unicast Records: 8
Number of Multicast Records: 4
```

BCB2

```
BCB2#show isis-spb fdb

SPB Forwarding Database:
[U - Unicast, M - Multicast]
  I/P INTERFACE  DESTINATION-ADDRESS  B-VID  O/P INTERFACE
  -------------  -------------------  -----  ------------
MTID : 0, ECT ALGO : 1
U if/eth1        aa.aa.11.11.aa.aa    100    if/eth1
U if/eth2        cc.cc.11.11.cc.cc    100    if/eth2
MTID : 0, ECT ALGO : 2
U if/eth1        aa.aa.11.11.aa.aa    200    if/eth1
U if/eth2        cc.cc.11.11.cc.cc    200    if/eth2
MTID : 3996, ECT ALGO : 1
U if/eth1        aa.aa.11.11.aa.aa    300    if/eth1
U if/eth2        cc.cc.11.11.cc.cc    300    if/eth2
MTID : 3996, ECT ALGO : 2
U if/eth1        aa.aa.11.11.aa.aa    400    if/eth1
U if/eth2        cc.cc.11.11.cc.cc    400    if/eth2
MTID : 0, ECT ALGO : 2
M if/eth1        03.20.ea.00.00.28    200    if/eth2
M if/eth2        03.b0.a0.00.00.28   200    if/eth1
MTID : 3996, ECT ALGO : 2
M if/eth1        03.20.ea.00.00.14    400    if/eth2
M if/eth2        03.b0.a0.00.00.14    400    if/eth1
Number of Unicast Records: 8
Number of Multicast Records: 4
```

show isis-spb configuration

BEB1

```
#show isis-spb configuration
Bridge Name: backbone
lsp ignore errors:no
lsp general interval(sec): 30
lsp refresh interval(sec): 100
maximum lsp lifetime(sec): 1200
spf interval exp(Minimum Delay in Milli Seconds): 500
spf interval exp(Maximim Delay in Milli Seconds): 50000
overload bit set:no
System Id: 1111.1111.1111
interface: eth1
 hello-multiplier: 3
 hello-interval(sec): 10
 lsp-interval(millisec): 33
 retransmit-interval(sec): 5
interface: eth2
 hello-multiplier: 3
```

```
 hello-interval(sec): 10
 lsp-interval(millisec): 33
 retransmit-interval(sec): 5
```

BEB2

```
#show isis-spb configuration
Bridge Name: backbone
lsp ignore errors:no
lsp general interval(sec): 30
lsp refresh interval(sec): 100
maximum lsp lifetime(sec): 1200
spf interval exp(Minimum Delay in Milli Seconds): 500
spf interval exp(Maximim Delay in Milli Seconds): 50000
overload bit set:no
System Id: 3333.3333.3333
interface: eth1
 hello-multiplier: 3
 hello-interval(sec): 10
 lsp-interval(millisec): 33
 retransmit-interval(sec): 5
interface: eth2
 hello-multiplier: 3
 hello-interval(sec): 10
 lsp-interval(millisec): 33
 retransmit-interval(sec): 5
```

BCB1

```
#show isis-spb configuration
Bridge Name: 1
lsp ignore errors:no
lsp general interval(sec): 30
lsp refresh interval(sec): 100
maximum lsp lifetime(sec): 1200
spf interval exp(Minimum Delay in Milli Seconds): 500
spf interval exp(Maximim Delay in Milli Seconds): 50000
overload bit set:no
System Id: 2222.2222.2222
interface: eth1
 hello-multiplier: 3
 hello-interval(sec): 10
 lsp-interval(millisec): 33
 retransmit-interval(sec): 5
interface: eth2
 hello-multiplier: 3
 hello-interval(sec): 10
 lsp-interval(millisec): 33
```

BCB2

```
#show isis-spb configuration
Bridge Name: 1
lsp ignore errors:no
lsp general interval(sec): 30
lsp refresh interval(sec): 100
maximum lsp lifetime(sec): 1200
spf interval exp(Minimum Delay in Milli Seconds): 500
spf interval exp(Maximim Delay in Milli Seconds): 50000
```

```
overload bit set:no
System Id: 4444.4444.4444
interface: eth1
 hello-multiplier: 3
 hello-interval(sec): 10
 lsp-interval(millisec): 33
 retransmit-interval(sec): 5
interface: eth2
 hello-multiplier: 3
 hello-interval(sec): 10
 lsp-interval(millisec): 33
 retransmit-interval(sec): 5
```

CHAPTER 2 SPB MST Configuration

This chapter shows how to configure MSTP (Multiple Spanning Tree Protocol) to work with SPB.

MSTP and SPB connect all bridges with a single Common and Internal Spanning Tree (CIST) that supports the automatic determination of each region, choosing its maximum possible extent. The connectivity calculated for the CIST provides the CST (Common Spanning Tree) for interconnecting the regions, and an Internal Spanning Tree (IST) within each region. MSTP calculates a number of independent Multiple Spanning Tree Instances (MSTIs) within each region, and ensures that frames with a given VLAN identifier (VID) are assigned to one and only one of the MSTIs or the IST within the region. SPB calculates symmetric sets of Shortest Path Trees (SPTs), each rooted at a bridge within a region, and ensures that frames for any given VLAN are assigned to the same symmetric SPT set within the region.

Note: You must perform the procedures in this chapter *in addition to* those in Chapter 1, *Shortest Path Bridging - MAC Configuration*.

Topology

Refer to Figure 1-1 on page 9.

BEB Configuration

BEB1

`#configure terminal`	Enter configure mode
`(config)#vlan database`	Enter VLAN database mode
`(config-vlan)#vlan 50 type service point-point bridge 1 state enable`	Configure VLAN 50 as a service VLAN associated with bridge 1
`(config-vlan)#vlan 60 type service point-point bridge 1 state enable`	Configure VLAN 60 as a service VLAN associated with bridge 1
`(config-vlan)#vlan 500 type backbone point-point state enable`	Configure VLAN 500 as a backbone VLAN
`(config-vlan)#vlan 600 type backbone point-point state enable`	Configure VLAN 600 as a backbone VLAN
`(config-vlan)#exit`	Exit VLAN database mode
`(config)#spanning-tree mst configuration`	Enter MST configure mode
`(config-mst)#bridge backbone instance 1`	Create MST instance 1 for the bridge backbone
`(config-mst)#bridge backbone instance 1 vlan 500`	Associate VLAN 500 to MST instance 1
`(config-mst)#bridge backbone instance 2`	Create MST instance 2 for the bridge backbone
`(config-mst)#bridge backbone instance 2 vlan 600`	Associate VLAN 600 to MST instance 2
`(config-mst)#exit`	Exit MST configure mode

(config)#interface eth1	Enter interface mode
(config-if)#bridge-group backbone instance 1	Associate the port to MST instance 1
(config-if)#bridge-group backbone instance 2	Associate the port to MST instance 2
(config-if)#exit	Exit interface mode
(config)#interface eth2	Enter interface mode
(config-if)#bridge-group backbone instance 1	Associate the port to MST instance 1
(config-if)#bridge-group backbone instance 2	Associate the port to MST instance 2
(config-if)#exit	Exit interface mode

BEB2

#configure terminal	Enter configure mode
(config)#vlan database	Enter VLAN database mode
(config-vlan)#vlan 50 type service point-point bridge 1 state enable	Configure VLAN 50 as a service VLAN associated with bridge 1
(config-vlan)#vlan 60 type service point-point bridge 1 state enable	Configure VLAN 60 as a service VLAN associated with bridge 1
(config-vlan)#vlan 500 type backbone point-point state enable	Configure VLAN 500 as a backbone VLAN
(config-vlan)#vlan 600 type backbone point-point state enable	Configure VLAN 600 as a backbone VLAN
(config-vlan)#exit	Exit VLAN database mode
(config)#spanning-tree mst configuration	Enter MST configure mode
(config-mst)#bridge backbone instance 1	Configure MST Instance 1
(config-mst)#bridge backbone instance 1 vlan 500	Associate VLAN 500 to MST instance 1
(config-mst)#bridge backbone instance 2	Configure MST Instance 2
(config-mst)#bridge backbone instance 2 vlan 600	Associate VLAN 600 to MST instance 2
(config-mst)#exit	Exit MST configure mode
(config)#interface eth1	Enter interface mode
(config-if)#bridge-group backbone instance 1	Associate the port to MST instance 1
(config-if)#bridge-group backbone instance 2	Associate the port to MST instance 2
(config-if)#exit	Exit interface mode
(config)#interface eth2	Enter interface mode
(config-if)#bridge-group backbone instance 1	Associate the port to MST instance 1
(config-if)#bridge-group backbone instance 2	Associate the port to MST instance 2
(config-if)#exit	Exit interface mode

BCB Configuration

BCB1

`#configure terminal`	Enter configure mode
`(config)#vlan database`	Enter VLAN database mode
`(config-vlan)#vlan 500 type service point-point bridge 1 state enable`	Configure VLAN 500 as a service VLAN associated with bridge 1
`(config-vlan)#vlan 600 type service point-point bridge 1 state enable`	Configure VLAN 600 as a service VLAN associated with bridge 1
`(config-vlan)#exit`	Exit VLAN database mode
`(config)#spanning-tree mst configuration`	Enter MST configure mode
`(config-mst)#bridge backbone instance 1`	Configure MST Instance 1
`(config-mst)#bridge backbone instance 1 vlan 500`	Associate VLAN 500 to MST instance 1
`(config-mst)#bridge backbone instance 2`	Configure MST Instance 2
`(config-mst)#bridge backbone instance 2 vlan 600`	Associate VLAN 600 to MST instance 2
`(config-mst)#exit`	Exit MST configure mode
`(config)#interface eth1`	Enter interface mode
`(config-if)#bridge-group backbone instance 1`	Associate the port to MST instance 1
`(config-if)#bridge-group backbone instance 2`	Associate the port to MST instance 2
`(config-if)#exit`	Exit interface mode
`(config)#interface eth2`	Enter interface mode
`(config-if)#bridge-group backbone instance 1`	Associate the port to MST instance 1
`(config-if)#bridge-group backbone instance 2`	Associate the port to MST instance 2
`(config-if)#exit`	Exit interface mode

BCB2

`#configure terminal`	Enter configure mode
`(config)#vlan database`	Enter VLAN database mode
`(config-vlan)#vlan 500 type service point-point bridge 1 state enable`	Configure VLAN 500 as a service VLAN associated with bridge 1
`(config-vlan)#vlan 600 type service point-point bridge 1 state enable`	Configure VLAN 600 as a service VLAN associated with bridge 1
`(config-vlan)#exit`	Exit VLAN database mode
`(config)#spanning-tree mst configuration`	Enter MST configure mode
`(config-mst)#bridge backbone instance 1`	Configure MST Instance 1
`(config-mst)#bridge backbone instance 1 vlan 500`	Associate VLAN 500 to MST instance 1

(config-mst)#bridge backbone instance 2	Configure MST Instance 2
(config-mst)#bridge backbone instance 2 vlan 600	Associate VLAN 600 to MST instance 2
(config-mst)#exit	Exit MST configure mode
(config)#interface eth1	Enter interface mode
(config-if)#bridge-group backbone instance 1	Associate the port to MST instance 1
(config-if)#bridge-group backbone instance 2	Associate the port to MST Instance 2
(config-if)#exit	Exit interface mode
(config)#interface eth2	Enter interface mode
(config-if)#bridge-group backbone instance 1	Associate the port to MST instance 1
(config-if)#bridge-group backbone instance 2	Associate the port to MST instance 2
(config-if)#exit	Exit interface mode

Validation

show spanning-tree mst detail

BEB1

```
#show spanning-tree mst detail
% backbone: Bridge up - Spanning Tree Enabled  - topology change detected
% backbone: Root Path Cost 0 - Root Port 0 -  Bridge Priority 32768
% backbone: Forward Delay 15 - Hello Time 2 - Max Age 20 - Transmit Hold Count 6
% backbone: CIST Root Id 8000525400008a36
% backbone: CIST Reg Root Id 8000525400008a36
% backbone: CIST Bridge Id 8000525400008a36
% backbone: 10 topology change(s)  - last topology change Wed Oct 17 11:48:43 2012

% backbone: portfast bpdu-filter disabled
% backbone: portfast bpdu-guard disabled
% backbone: portfast errdisable timeout disabled
% backbone: portfast errdisable timeout interval 300 sec
%   eth2: Port Number 4 - Ifindex 4 - Port Id 8004 - Role Designated - State Forwarding
%   eth2: Designated External Path Cost 0 -Internal Path Cost 0
%   eth2: Configured Path Cost 200000  - Add type Explicit ref count 4
%   eth2: Designated Port Id 8004 - Priority 128  -
%   eth2: Root 8000525400008a36
%   eth2: Designated Bridge 8000525400008a36
%   eth2: Message Age 0 - Max Age 20
%   eth2: Hello Time 2 - Forward Delay 15
%   eth2: Forward Timer 0 - Msg Age Timer 0 - Hello Timer 1 - topo change timer 0
%   eth2: forward-transitions 2
%   eth2: Version Shortest Path Bridging - Received SPB - Send SPB
%   eth2: No portfast configured - Current  portfast off
%   eth2: bpdu-guard  default  - Current bpdu-guard off
%   eth2: bpdu-filter default  - Current bpdu-filter off
```

```
%   eth2: no root guard configured     - Current root guard off
%   eth2: Configured Link Type point-to-point - Current point-to-point
%   eth2: No auto-edge configured - Current port Auto Edge off
%
%   eth1: Port Number 3 - Ifindex 3 - Port Id 8003 - Role Designated - State Forwarding
%   eth1: Designated External Path Cost 0 -Internal Path Cost 0
%   eth1: Configured Path Cost 200000  - Add type Explicit ref count 4
%   eth1: Designated Port Id 8003 - Priority 128  -
%   eth1: Root 8000525400008a36
%   eth1: Designated Bridge 8000525400008a36
%   eth1: Message Age 0 - Max Age 20
%   eth1: Hello Time 2 - Forward Delay 15
%   eth1: Forward Timer 0 - Msg Age Timer 0 - Hello Timer 1 - topo change timer 0
%   eth1: forward-transitions 1
%   eth1: Version Shortest Path Bridging - Received SPB - Send SPB
%   eth1: No portfast configured - Current  portfast off
%   eth1: bpdu-guard  default  - Current bpdu-guard off
%   eth1: bpdu-filter default  - Current bpdu-filter off
%   eth1: no root guard configured     - Current root guard off
%   eth1: Configured Link Type point-to-point - Current point-to-point
%   eth1: No auto-edge configured - Current port Auto Edge off
%
% Instance  1:  Vlans: 500
% backbone: MSTI Root Path Cost 0 -MSTI Root Port 0 - MSTI Bridge Priority 32768
% backbone: MSTI Root Id 8001525400008a36
% backbone: MSTI Bridge Id 8001525400008a36
%   eth2: Port Number 4 - Ifindex 4 - Port Id 8004 - Role Designated - State Forwarding
%   eth2: Designated Internal Path Cost 0  - Designated Port Id 8004
%   eth2: Configured Internal Path Cost 200000
%   eth2: Configured CST External Path cost 200000
%   eth2: CST Priority 128  - MSTI Priority 128
%   eth2: Designated Root 8001525400008a36
%   eth2: Designated Bridge 8001525400008a36
%   eth2: Message Age 0 - Max Age 0
%   eth2: Hello Time 2 - Forward Delay 15
%   eth2: Forward Timer 0 - Msg Age Timer 0 - Hello Timer 1
%   eth1: Port Number 3 - Ifindex 3 - Port Id 8003 - Role Designated - State Forwarding
%   eth1: Designated Internal Path Cost 0  - Designated Port Id 8003
%   eth1: Configured Internal Path Cost 200000
%   eth1: Configured CST External Path cost 200000
%   eth1: CST Priority 128  - MSTI Priority 128
%   eth1: Designated Root 8001525400008a36
%   eth1: Designated Bridge 8001525400008a36
%   eth1: Message Age 0 - Max Age 0
%   eth1: Hello Time 2 - Forward Delay 15
%   eth1: Forward Timer 0 - Msg Age Timer 0 - Hello Timer 1

% Instance  2:  Vlans: 600
% backbone: MSTI Root Path Cost 0 -MSTI Root Port 0 - MSTI Bridge Priority 32768
% backbone: MSTI Root Id 8002525400008a36
```

```
% backbone: MSTI Bridge Id 8002525400008a36
%   eth2: Port Number 4 - Ifindex 4 - Port Id 8004 - Role Designated - State Forwarding
%   eth2: Designated Internal Path Cost 0  - Designated Port Id 8004
%   eth2: Configured Internal Path Cost 200000
%   eth2: Configured CST External Path cost 200000
%   eth2: CST Priority 128  - MSTI Priority 128
%   eth2: Designated Root 8002525400008a36
%   eth2: Designated Bridge 8002525400008a36
%   eth2: Message Age 0 - Max Age 0
%   eth2: Hello Time 2 - Forward Delay 15
%   eth2: Forward Timer 0 - Msg Age Timer 0 - Hello Timer 1
%   eth1: Port Number 3 - Ifindex 3 - Port Id 8003 - Role Designated - State Forwarding
%   eth1: Designated Internal Path Cost 0  - Designated Port Id 8003
%   eth1: Configured Internal Path Cost 200000
%   eth1: Configured CST External Path cost 200000
%   eth1: CST Priority 128  - MSTI Priority 128
%   eth1: Designated Root 8002525400008a36
%   eth1: Designated Bridge 8002525400008a36
%   eth1: Message Age 0 - Max Age 0
%   eth1: Hello Time 2 - Forward Delay 15
%   eth1: Forward Timer 0 - Msg Age Timer 0 - Hello Timer 1

% Instance  4092:  Vlans: 100, 200, 300, 400
% backbone: MSTI Root Path Cost 0 -MSTI Root Port 0 - MSTI Bridge Priority 32768
% backbone: MSTI Root Id 8ffc525400008a36
% backbone: MSTI Bridge Id 8ffc525400008a36
%   eth2: Port Number 4 - Ifindex 4 - Port Id 8004 - Role Designated - State Forwarding
%   eth2: Designated Internal Path Cost 0  - Designated Port Id 8004
%   eth2: Configured Internal Path Cost 200000
%   eth2: Configured CST External Path cost 200000
%   eth2: CST Priority 128  - MSTI Priority 128
%   eth2: Designated Root 8ffc525400008a36
%   eth2: Designated Bridge 8ffc525400008a36
%   eth2: Message Age 0 - Max Age 0
%   eth2: Hello Time 2 - Forward Delay 15
%   eth2: Forward Timer 0 - Msg Age Timer 0 - Hello Timer 1
%   eth1: Port Number 3 - Ifindex 3 - Port Id 8003 - Role Designated - State Forwarding
%   eth1: Designated Internal Path Cost 0  - Designated Port Id 8003
%   eth1: Configured Internal Path Cost 200000
%   eth1: Configured CST External Path cost 200000
%   eth1: CST Priority 128  - MSTI Priority 128
%   eth1: Designated Root 8ffc525400008a36
%   eth1: Designated Bridge 8ffc525400008a36
%   eth1: Message Age 0 - Max Age 0
%   eth1: Hello Time 2 - Forward Delay 15
%   eth1: Forward Timer 0 - Msg Age Timer 0 - Hello Timer 1
```

CHAPTER 3 SPBM Layer 2 VPN Configuration

This chapter shows how to configure Layer 2 VPN for Shortest Path Bridging - MAC (SPBM).

The Layer 2 VPN over SPB topology uses Backbone Edge Bridges (BEBs) to terminate Layer 2 VPNs. The control plane uses IS-IS for forwarding at a Layer 2 level. Only the BEB bridges are aware of any VPN and associated MAC addresses while the backbone bridges simply forward traffic at the backbone MAC (B-MAC) level.

The backbone switches know how to reach every B-MAC using the shortest path determined by IS-IS. All switches in the backbone know only B-MAC addresses to make forwarding decisions while the BEB knows both the B-MAC and Customer MAC (C-MAC) for each VPN. A backbone Service Instance Identifier (I-SID) is assigned on the BEB to each VLAN. All VLANs in the network that share the same I-SID can participate in the same VPN.

Note: You must perform the procedures in this chapter *in addition to* those in Chapter 1, *Shortest Path Bridging - MAC Configuration*.

Topology

Refer to Figure 1-1 on page 9.

BEB1

`#configure terminal`	Enter configure mode
`(config)#ip vrf vpn1 isid 10`	Assign an I-SID to the VRF for advertising over the SPB network
`(config)#interface eth4`	Enter interface mode
`(config-if)#ip vrf forwarding vpn1`	Enable IP VRF forwarding on the interface for vpn1
`(config-if)#ip address 1.1.1.1/24`	Configure an IP address for the interface
`(config-if)#no shutdown`	Enable the interface
`(config-if)#exit`	Exit interface mode
`(config)#spb configuration`	Enter SPB configure mode
`B2(spb-config)#ipvpn enable`	Enable the IPVPN
`B2(spb-config)#exit`	Exit SPB configure mode
`(config)#ip route vrf vpn1 3.3.3.0/24 eth4`	Configure a static VRF route
`(config)#ip route vrf vpn1 5.5.5.0/30 1.1.1.10 eth4`	Configure a static VRF route
`(config)#end`	Exit configure mode
`#configure terminal`	Enter configure mode
`(config)#ip vrf vpn2 isid 40`	Assign an I-SID to the VRF for advertising over the SPB network
`(config)#int eth5`	Enter interface mode
`(config-if)#ip vrf forwarding vpn2`	Enable IP VRF forwarding on the interface for vpn2

(config-if)#ip address 11.11.11.11/24	Configure an IP address for the interface
(config-if)#no shutdown	Enable the interface
(config-if)#exit	Exit interface mode
(config)#ip route vrf vpn2 33.33.33.0/24 eth5	Configure a static VRF route
(config)#ip route vrf vpn2 55.55.55.0/30 11.11.11.110 eth5	Configure a static VRF route
(config)#end	Exit configure mode

BEB2

#configure terminal	Enter configure mode
(config)#ip vrf vpn1 isid 10	Assign an I-SID to the VRF for advertising over SPB network
(config)#interface eth4	Enter interface mode
(config-if)#ip vrf forwarding vpn1	Enable IP VRF forwarding on the interface for vpn1
(config-if)#ip address 2.2.2.2/24	Configure an IP address for the interface
(config-if)#no shutdown	Enable the interface
(config-if)#exit	Exit interface mode
(config)#spb configuration	Enter SPB configure mode
(spb-config)#ipvpn enable	Enable IPVPN feature
(spb-config)#exit	Exit SPB configure mode
(config)#ip route vrf vpn1 4.4.4.0/24 eth4	Configure a static VRF route
(config)#ip route vrf vpn1 6.6.6.0/30 1.1.1.10 eth4	Configure a static VRF route
(config)#end	Exit configure mode
#configure terminal	Enter configure mode
(config)#ip vrf vpn2 isid 40	Assign an I-SID to the VRF for advertising over the SPB network
(config)#int eth5	Enter interface mode
(config-if)#ip vrf forwarding vpn2	Enable IP VRF forwarding on the interface for vpn2
(config-if)#ip address 22.22.22.22/24	Configure an IP address for the interface
(config-if)#no shutdown	Enable the interface
(config-if)#exit	Exit interface mode
(config)#ip route vrf vpn2 44.44.44.0/24 eth5	Configure a static VRF route
(config)#ip route vrf vpn2 66.66.66.0/30 22.22.22.220 eth5	Configure a static VRF route
(config)#end	Exit configure mode

Validation

show ip route vrf database

BEB1

```
#sh ip route vrf vpn1 database
Codes: K - kernel, C - connected, S - static, R - RIP, B - BGP
       O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       > - selected route, * - FIB route, p - stale info

C    *> 1.1.1.0/24 is directly connected, eth4
i L1    2.2.2.0/24 [0/0] is directly connected, eth1 inactive, 01:23:48
S    *> 3.3.3.0/24 [1/0] is directly connected, eth4
i L1    4.4.4.0/24 [0/0] is directly connected, eth1 inactive, 01:23:48
S    *> 5.5.5.0/30 [1/0] via 1.1.1.10, eth4
i L1    6.6.6.0/30 [0/0] is directly connected, eth1 inactive, 01:23:48

Gateway of last resort is not set
```

BEB2

```
#show ip route vrf vpn2 database
Codes: K - kernel, C - connected, S - static, R - RIP, B - BGP
       O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
       i - IS-IS, L1 - IS-IS level-1, L2 - IS-IS level-2, ia - IS-IS inter area
       > - selected route, * - FIB route, p - stale info

i L1    11.11.11.0/24 [0/0] is directly connected, eth2 inactive, 01:25:12
C    *> 22.22.22.0/24 is directly connected, eth5
i L1    33.33.33.0/24 [0/0] is directly connected, eth2 inactive, 01:25:12
S    *> 44.44.44.0/24 [1/0] is directly connected, eth5
i L1    55.55.55.0/30 [0/0] is directly connected, eth2 inactive, 01:25:12
S    *> 66.66.66.0/30 [1/0] via 22.22.22.220, eth5

Gateway of last resort is not set
```

CHAPTER 4 Shortest Path Bridging - VID Configuration

This chapter shows how to configure Shortest Path Bridging - VID (SBPV).

Topology

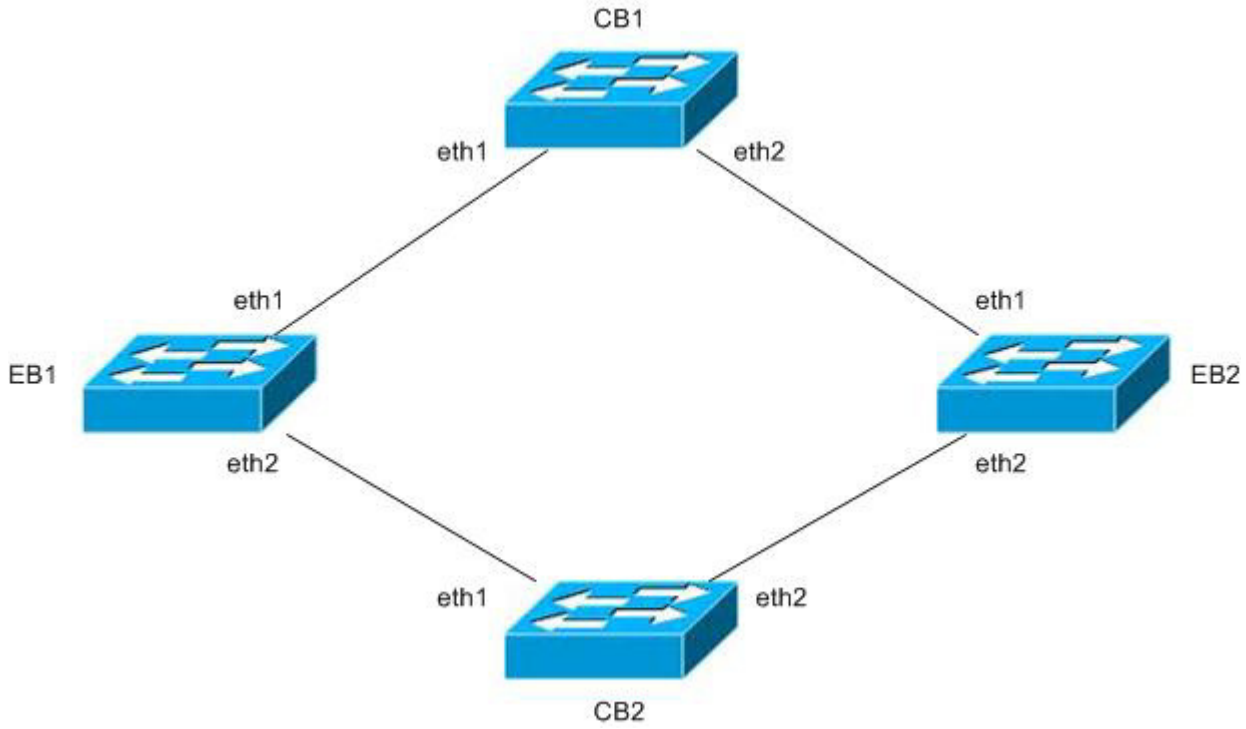

Figure 4-1: SPBV Topology

Figure 4-1 uses these generic terms to refer to network devices:

- EB means Edge Bridge which can be a:
  - Customer Edge Bridge (CEB)
  - Provider Edge Bridge (PEB)
  - Backbone Edge Bridge (BEB)
- CB means Core Bridge which can be a:
  - Customer Core Bridge (CCB)
  - Provider Core Bridge (PCB)
  - Backbone Core Bridge (BCB)

Customer Bridges (CEB and CCB)

This section shows how to configure Customer Edge Bridges (CEBs) and Customer Core Bridges (CCBs).

CEB1

#configuration terminal	Enter configuration mode
(config)#bridge 1 protocol spbv cvlan edge	Configure bridge 1 as an SPBV customer edge bridge
(config)#vlan database	Enter VLAN database mode
(config-vlan)#vlan 100 bridge 1 state enable	Configure VLAN 100 on bridge 1
(config-vlan)#vlan 200 bridge 1 state enable	Configure VLAN 200 on bridge 1
(config-vlan)#vlan 300 bridge 1 state enable	Configure VLAN 300 on bridge 1
(config-vlan)#vlan 400 bridge 1 state enable	Configure VLAN 400 on bridge 1
(config-vlan)#exit	Exit VLAN database mode
(config)#isis-spb configuration bridge 1	Enter ISIS-SPB mode
(isis-spb-config)#isis-spb multi-topology-id 3996	Set an MTID.
(isis-spb-config)#no isis-spb system id	Reset the ISIS-SPB system identifier it its default value (0)
(isis-spb-config)#isis-spb system-id 11.11.11.11.11.11	Set the ISIS-SPB system identifier
(isis-spb-config)#exit	Exit ISIS-SPB mode
(config)#spanning-tree mst configuration	Enter MST mode
(config-mst)#bridge 1 instance spbv	Associate bridge 1 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 100	Associate VLAN 100 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 200	Associate VLAN 200 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 300	Associate VLAN 300 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 400	Associate VLAN 400 to the SPBV instance
(config-mst)#exit	Exit MST mode
(config)#spb configuration	Enter SPB mode
(spb-config)#bridge 1 spbv mode manual	Set the SPVID allocation mode to manual
(spb-config)#bridge 1 spbv bvlan 100 spvid 3611	Associate base VLAN 100 to SPVID 3611
(spb-config)#bridge 1 spbv bvlan 200 spvid 3612	Associate base VLAN 200 to SPVID 3612
(spb-config)#bridge 1 spbv bvlan 300 spvid 3613	Associate base VLAN 300 to SPVID 3613
(spb-config)#bridge 1 spbv bvlan 400 spvid 3614	Associate base VLAN 400 to SPVID 3614
(spb-config)#bridge 1 instance spbv vlan 100 ect 1	Associate VLAN 100 to ECT algorithm 1
(spb-config)#bridge 1 instance spbv vlan 200 ect 2	Associate VLAN 200 to ECT algorithm 2
(spb-config)#bridge 1 instance spbv vlan 300 ect 1 mtid 3996	Associate VLAN 300 to ECT algorithm 1 and MTID 3996
(spb-config)#bridge 1 instance spbv vlan 400 ect 2 mtid 3996	Associate VLAN 400 to ECT algorithm 2 and MTID 3996
(spb-config)#exit	Exit SPB mode
(config)#interface eth1	Enter interface mode

(config-if)#switchport	Configure the interface as layer 2
(config-if)#bridge-group 1	Configure the interface as part of the bridge
(config-if)#switchport mode trunk	Configure the interface as a trunk
(config-if)#switchport trunk allowed vlan all	Allow all VLANs to transmit from the interface
(config-if)#exit	Exit interface mode
(config)#interface eth2	Enter interface mode
(config-if)#switchport	Configure the interface as layer 2
(config-if)#bridge-group 1	Configure the interface as part of the bridge
(config-if)#switchport mode trunk	Configure the interface as a trunk
(config-if)#switchport trunk allowed vlan all	Allow all VLANs to transmit from the interface
(config-if)#exit	Exit interface mode
(config)#interface eth3	Enter the eth3 interface configuration mode
(config-if)#switchport	Configure the interface as layer 2
(config-if)#bridge-group 1	Configure the interface as part of the bridge
(config-if)#switchport mode trunk	Configure the interface as a trunk
(config-if)#switchport trunk allowed vlan all	Allow all VLANs to transmit from the interface
(config-if)#bridge 1 spbv bvlan 100 group-mac 0100.5e00.0100 mode rxtx sr 0	Assign a group-mac address to the base VLAN
(config-if)#bridge 1 spbv bvlan 200 group-mac 0100.5e00.0200 mode rxtx sr 0	Assign a group-mac address to the base VLAN
(config-if)#bridge 1 spbv bvlan 300 group-mac 0100.5e00.0300 mode rxtx sr 0	Assign a group-mac address to the base VLAN
(config-if)#bridge 1 spbv bvlan 400 group-mac 0100.5e00.0400 mode rxtx sr 0	Assign a group-mac address to the base VLAN
(config-if)#exit	Exit interface mode
(config)#end	Exit configuration mode

CEB2

#configuration terminal	Enter configuration mode
(config)#bridge 1 protocol spbv cvlan edge	Configure bridge 1 as an SPBV customer edge bridge
(config)#vlan database	Enter VLAN database mode
(config-vlan)#vlan 100 bridge 1 state enable	Configure VLAN 100 on bridge 1
(config-vlan)#vlan 200 bridge 1 state enable	Configure VLAN 200 on bridge 1
(config-vlan)#vlan 300 bridge 1 state enable	Configure VLAN 300 on bridge 1
(config-vlan)#vlan 400 bridge 1 state enable	Configure VLAN 400 on bridge 1
(config-vlan)#exit	Exit VLAN database mode
(config)#isis-spb configuration bridge 1	Enter ISIS-SPB mode
(isis-spb-config)#isis-spb multi-topology-id 3996	Set an MTID.
(isis-spb-config)#no isis-spb system id	Reset the ISIS-SPB system identifier it its default value (0)
(isis-spb-config)#isis-spb system-id 44.44.44.44.44.44	Set the ISIS-SPB system identifier

(isis-spb-config)#exit	Exit ISIS-SPB mode
(config)#spanning-tree mst configuration	Enter MST mode
(config-mst)#bridge 1 instance spbv	Associate bridge 1 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 100	Associate VLAN 100 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 200	Associate VLAN 200 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 300	Associate VLAN 300 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 400	Associate VLAN 400 to the SPBV instance
(config-mst)#exit	Exit MST mode
(config)#spb configuration	Enter SPB mode
(spb-config)#bridge 1 spbv mode manual	Set the SPVID allocation mode to manual
(spb-config)#bridge 1 spbv bvlan 100 spvid 3641	Associate base VLAN 100 to SPVID 3641
(spb-config)#bridge 1 spbv bvlan 200 spvid 3642	Associate base VLAN 200 to SPVID 3642
(spb-config)#bridge 1 spbv bvlan 300 spvid 3643	Associate base VLAN 300 to SPVID 3643
(spb-config)#bridge 1 spbv bvlan 400 spvid 3644	Associate base VLAN 400 to SPVID 3644
(spb-config)#bridge 1 instance spbv vlan 100 ect 1	Associate VLAN 100 to ECT algorithm 1
(spb-config)#bridge 1 instance spbv vlan 200 ect 2	Associate VLAN 200 to ECT algorithm 2
(spb-config)#bridge 1 instance spbv vlan 300 ect 1 mtid 3996	Associate VLAN 300 to ECT algorithm 1 and MTID 3996
(spb-config)#bridge 1 instance spbv vlan 400 ect 2 mtid 3996	Associate VLAN 400 to ECT algorithm 2 and MTID 3996
(spb-config)#exit	Exit SPB mode
(config)#interface eth1	Enter interface mode
(config-if)#switchport	Configure the interface as layer 2
(config-if)#bridge-group 1	Configure the interface as part of the bridge
(config-if)#switchport mode trunk	Configure the interface as a trunk
(config-if)#switchport trunk allowed vlan all	Allow all VLANs to transmit from the interface
(config-if)#exit	Exit interface mode
(config)#interface eth2	Enter interface mode
(config-if)#switchport	Configure the interface as layer 2
(config-if)#bridge-group 1	Configure the interface as part of the bridge
(config-if)#switchport mode trunk	Configure the interface as a trunk
(config-if)#switchport trunk allowed vlan all	Allow all VLANs to transmit from the interface
(config-if)#exit	Exit interface mode
(config)#interface eth3	Enter the eth3 interface configuration mode
(config-if)#switchport	Configure the interface as layer 2
(config-if)#bridge-group 1	Configure the interface as part of the bridge
(config-if)#switchport mode trunk	Configure the interface as a trunk
(config-if)#switchport trunk allowed vlan all	Allow all VLANs to transmit from the interface

(config-if)#bridge 1 spbv bvlan 100 group-mac 0100.5e00.0100 mode rxtx sr 0	Assign a group-mac address to the base VLAN
(config-if)#bridge 1 spbv bvlan 200 group-mac 0100.5e00.0200 mode rxtx sr 0	Assign a group-mac address to the base VLAN
(config-if)#bridge 1 spbv bvlan 300 group-mac 0100.5e00.0300 mode rxtx sr 0	Assign a group-mac address to the base VLAN
(config-if)#bridge 1 spbv bvlan 400 group-mac 0100.5e00.0400 mode rxtx sr 0	Assign a group-mac address to the base VLAN
(config-if)#exit	Exit interface mode
(config)#end	Exit configuration mode

CCB1

#configuration terminal	Enter configuration mode
(config)#bridge 1 protocol spbv cvlan	Configure bridge 1 as an SPBV customer core bridge
(config)#vlan database	Enter VLAN database mode
(config-vlan)#vlan 100 bridge 1 state enable	Configure VLAN 100 on bridge 1
(config-vlan)#vlan 200 bridge 1 state enable	Configure VLAN 200 on bridge 1
(config-vlan)#vlan 300 bridge 1 state enable	Configure VLAN 300 on bridge 1
(config-vlan)#vlan 400 bridge 1 state enable	Configure VLAN 400 on bridge 1
(config-vlan)#exit	Exit VLAN database mode
(config)#isis-spb configuration bridge 1	Enter ISIS-SPB mode
(isis-spb-config)#isis-spb multi-topology-id 3996	Set an MTID.
(isis-spb-config)#no isis-spb system id	Reset the ISIS-SPB system identifier it its default value (0)
(isis-spb-config)#isis-spb system-id 22.22.22.22.22.22	Set the ISIS-SPB system identifier
(isis-spb-config)#exit	Exit ISIS-SPB mode
(config)#spanning-tree mst configuration	Enter MST mode
(config-mst)#bridge 1 instance spbv	Associate bridge 1 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 100	Associate VLAN 100 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 200	Associate VLAN 200 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 300	Associate VLAN 300 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 400	Associate VLAN 400 to the SPBV instance
(config-mst)#exit	Exit MST mode
(config)#spb configuration	Enter SPB mode
(spb-config)#bridge 1 instance spbv vlan 100 ect 1	Associate VLAN 100 to ECT algorithm 1
(spb-config)#bridge 1 instance spbv vlan 200 ect 2	Associate VLAN 200 to ECT algorithm 2
(spb-config)#bridge 1 instance spbv vlan 300 ect 1 mtid 3996	Associate VLAN 300 to ECT algorithm 1 and MTID 3996
(spb-config)#bridge 1 instance spbv vlan 400 ect 2 mtid 3996	Associate VLAN 400 to ECT algorithm 2 and MTID 3996

(spb-config)#exit	Exit SPB mode
(config)#interface eth1	Enter interface mode
(config-if)#switchport	Configure the interface as layer 2
(config-if)#bridge-group 1	Configure the interface as part of the bridge
(config-if)#switchport mode trunk	Configure the interface as a trunk
(config-if)#switchport trunk allowed vlan all	Allow all VLANs to transmit from the interface
(config-if)#exit	Exit interface mode
(config)#interface eth2	Enter interface mode
(config-if)#switchport	Configure the interface as layer 2
(config-if)#bridge-group 1	Configure the interface as part of the bridge
(config-if)#switchport mode trunk	Configure the interface as a trunk
(config-if)#switchport trunk allowed vlan all	Allow all VLANs to transmit from the interface
(config-if)#exit	Exit interface mode

CCB2

#configuration terminal	Enter configuration mode
(config)#bridge 1 protocol spbv cvlan	Configure bridge 1 as an SPBV customer core bridge
(config)#vlan database	Enter VLAN database mode
(config-vlan)#vlan 100 bridge 1 state enable	Configure VLAN 100 on bridge 1
(config-vlan)#vlan 200 bridge 1 state enable	Configure VLAN 200 on bridge 1
(config-vlan)#vlan 300 bridge 1 state enable	Configure VLAN 300 on bridge 1
(config-vlan)#vlan 400 bridge 1 state enable	Configure VLAN 400 on bridge 1
(config-vlan)#exit	Exit VLAN database mode
(config)#isis-spb configuration bridge 1	Enter ISIS-SPB mode
(isis-spb-config)#isis-spb multi-topology-id 3996	Set an MTID.
(isis-spb-config)#no isis-spb system id	Reset the ISIS-SPB system identifier it its default value (0)
(isis-spb-config)#isis-spb system-id 33.33.33.33.33.33	Set the ISIS-SPB system identifier
(isis-spb-config)#exit	Exit ISIS-SPB mode
(config)#spanning-tree mst configuration	Enter MST mode
(config-mst)#bridge 1 instance spbv	Associate bridge 1 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 100	Associate VLAN 100 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 200	Associate VLAN 200 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 300	Associate VLAN 300 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 400	Associate VLAN 400 to the SPBV instance
(config-mst)#exit	Exit MST mode
(config)#spb configuration	Enter SPB mode
(spb-config)#bridge 1 instance spbv vlan 100 ect 1	Associate VLAN 100 to ECT algorithm 1

(spb-config)#bridge 1 instance spbv vlan 200 ect 2	Associate VLAN 200 to ECT algorithm 2
(spb-config)#bridge 1 instance spbv vlan 300 ect 1 mtid 3996	Associate VLAN 300 to ECT algorithm 1 and MTID 3996
(spb-config)#bridge 1 instance spbv vlan 400 ect 2 mtid 3996	Associate VLAN 400 to ECT algorithm 2 and MTID 3996
(spb-config)#exit	Exit SPB mode
(config)#interface eth1	Enter interface mode
(config-if)#switchport	Configure the interface as layer 2
(config-if)#bridge-group 1	Configure the interface as part of the bridge
(config-if)#switchport mode trunk	Configure the interface as a trunk
(config-if)#switchport trunk allowed vlan all	Allow all VLANs to transmit from the interface
(config-if)#exit	Exit interface mode
(config)#interface eth2	Enter interface mode
(config-if)#switchport	Configure the interface as layer 2
(config-if)#bridge-group 1	Configure the interface as part of the bridge
(config-if)#switchport mode trunk	Configure the interface as a trunk
(config-if)#switchport trunk allowed vlan all	Allow all VLANs to transmit from the interface
(config-if)#exit	Exit interface mode

Provider Bridges (PEB and PCB)

This section shows how to configure Provider Edge Bridges (PEBs) and Provider Core Bridges (PCBs).

PEB1

#configuration terminal	Enter configuration mode
(config)#bridge 1 protocol spbv svlan edge	Configure bridge 1 as an SPBV provider edge bridge
(config)#vlan database	Enter VLAN database mode
(config-vlan)#vlan 10 bridge 1 state enable	Configure VLAN 10 on bridge 1
(config-vlan)#vlan 20 bridge 1 state enable	Configure VLAN 20 on bridge 1
(config-vlan)#vlan 30 bridge 1 state enable	Configure VLAN 30 on bridge 1
(config-vlan)#vlan 40 bridge 1 state enable	Configure VLAN 40 on bridge 1
(config-vlan)#vlan 100 type service multipoint-multipoint bridge 1 state enable	Configure VLAN 100 as a service VLAN
(config-vlan)#vlan 200 type service multipoint-multipoint bridge 1 state enable	Configure VLAN 200 as a service VLAN
(config-vlan)#vlan 300 type service multipoint-multipoint bridge 1 state enable	Configure VLAN 300 as a service VLAN
(config-vlan)#vlan 400 type service multipoint-multipoint bridge 1 state enable	Configure VLAN 400 as a service VLAN
(config-vlan)#exit	Exit VLAN database mode
(config)#isis-spb configuration bridge 1	Enter ISIS-SPB mode

(isis-spb-config)#isis-spb multi-topology-id 3996	Set an MTID.
(isis-spb-config)#no isis-spb system id	Reset the ISIS-SPB system identifier it its default value (0)
(isis-spb-config)#isis-spb system-id 11.11.11.11.11.11	Set the ISIS-SPB system identifier
(isis-spb-config)#exit	Exit ISIS-SPB mode
(config)#cvlan registration table map1 bridge 1	Enter CVLAN registration mode
(config-cvlan-registration)#cvlan 10 svlan 100	Map customer VLAN 10 to service VLAN 100
(config-cvlan-registration)#cvlan 20 svlan 200	Map customer VLAN 20 to service VLAN 200
(config-cvlan-registration)#cvlan 30 svlan 300	Map customer VLAN 30 to service VLAN 300
(config-cvlan-registration)#cvlan 40 svlan 400	Map customer VLAN 40 to service VLAN 400
(config)#spb configuration	Enter SPB mode
(spb-config)#bridge 1 spbv mode manual	Set the SPVID allocation mode to manual
(spb-config)#bridge 1 spbv bvlan 100 spvid 3611	Associate base VLAN 100 to SPVID 3611
(spb-config)#bridge 1 spbv bvlan 200 spvid 3612	Associate base VLAN 200 to SPVID 3612
(spb-config)#bridge 1 spbv bvlan 300 spvid 3613	Associate base VLAN 300 to SPVID 3613
(spb-config)#bridge 1 spbv bvlan 400 spvid 3614	Associate base VLAN 400 to SPVID 3614
(spb-config)#exit	Exit SPB mode
(config)#spanning-tree mst configuration	Enter MST mode
(config-mst)#bridge 1 instance spbv	Associate bridge 1 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 100	Associate VLAN 100 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 200	Associate VLAN 200 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 300	Associate VLAN 300 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 400	Associate VLAN 400 to the SPBV instance
(config-mst)#exit	Exit MST mode
(config)#spb configuration	Enter SPB mode
(spb-config)#bridge 1 instance spbv vlan 100 ect 1	Associate VLAN 100 to ECT algorithm 1
(spb-config)#bridge 1 instance spbv vlan 200 ect 2	Associate VLAN 200 to ECT algorithm 2
(spb-config)#bridge 1 instance spbv vlan 300 ect 1 mtid 3996	Associate VLAN 300 to ECT algorithm 1 and MTID 3996
(spb-config)#bridge 1 instance spbv vlan 400 ect 2 mtid 3996	Associate VLAN 400 to ECT algorithm 2 and MTID 3996
(spb-config)#exit	Exit SPB mode
(config)#interface eth1	Enter interface mode
(config-if)#switchport	Configure the interface as layer 2
(config-if)#bridge-group 1	Configure the interface as part of the bridge
(config-if)#switchport mode provider-network	Configure the port type as provider network

(config-if)#switchport provider-network allowed vlan all	Allow all VLANs to transmit from the interface
(config-if)#exit	Exit interface mode
(config)#interface eth2	Enter interface mode
(config-if)#switchport	Configure the interface as layer 2
(config-if)#bridge-group 1	Configure the interface as part of the bridge
(config-if)#switchport mode provider-network	Configure the port type as provider network
(config-if)#switchport provider-network allowed vlan all	Allow all VLANs to transmit from the interface
(config-if)#exit	Exit interface mode
(config)#interface eth3	Enter interface mode
(config-if)#switchport	Configure the interface as layer 2
(config-if)#bridge-group 1	Configure the interface as part of the bridge
(config-if)#switchport mode customer-edge hybrid	Configure the port type as customer edge hybrid
(config-if)#switchport mode customer-edge hybrid acceptable-frame-type all	Configure the port to accept all frame types
(config-if)#switchport customer-edge hybrid allowed vlan all	Allow all VLANs created on the interface
(config-if)#switchport customer-edge vlan registration map1	Associate map1 with the interface
(config-if)#bridge 1 spbv bvlan 100 group-mac 0100.5e00.0100 mode rxtx sr 0	Assign a group-mac address to the base VLAN
(config-if)#bridge 1 spbv bvlan 200 group-mac 0100.5e00.0200 mode rxtx sr 0	Assign a group-mac address to the base VLAN
(config-if)#bridge 1 spbv bvlan 300 group-mac 0100.5e00.0300 mode rxtx sr 0	Assign a group-mac address to the base VLAN
(config-if)#bridge 1 spbv bvlan 400 group-mac 0100.5e00.0400 mode rxtx sr 0	Assign a group-mac address to the base VLAN
(config-if)#end	Exit configuration mode

PEB2

#configuration terminal	Enter configuration mode
(config)#bridge 1 protocol spbv svlan edge	Configure bridge 1 as an SPBV provider edge bridge
(config)#vlan database	Enter VLAN database mode
(config-vlan)#vlan 10 bridge 1 state enable	Configure VLAN 10 on bridge 1
(config-vlan)#vlan 20 bridge 1 state enable	Configure VLAN 20 on bridge 1
(config-vlan)#vlan 30 bridge 1 state enable	Configure VLAN 30 on bridge 1
(config-vlan)#vlan 40 bridge 1 state enable	Configure VLAN 40 on bridge 1
(config-vlan)#vlan 100 type service multipoint-multipoint bridge 1 state enable	Configure VLAN 100 as a service VLAN
(config-vlan)#vlan 200 type service multipoint-multipoint bridge 1 state enable	Configure VLAN 200 as a service VLAN

(config-vlan)#vlan 300 type service multipoint-multipoint bridge 1 state enable	Configure VLAN 300 as a service VLAN
(config-vlan)#vlan 400 type service multipoint-multipoint bridge 1 state enable	Configure VLAN 400 as a service VLAN
(config-vlan)#exit	Exit VLAN database mode
(config)#isis-spb configuration bridge 1	Enter ISIS-SPB mode
(isis-spb-config)#isis-spb multi-topology-id 3996	Set an MTID.
(isis-spb-config)#no isis-spb system id	Reset the ISIS-SPB system identifier it its default value (0)
(isis-spb-config)#isis-spb system-id 44.44.44.44.44.44	Set the ISIS-SPB system identifier
(isis-spb-config)#exit	Exit ISIS-SPB mode
(config)#cvlan registration table map1 bridge 1	Enter CVLAN registration mode
(config-cvlan-registration)#cvlan 10 svlan 100	Map customer VLAN 10 to service VLAN 100
(config-cvlan-registration)#cvlan 20 svlan 200	Map customer VLAN 20 to service VLAN 200
(config-cvlan-registration)#cvlan 30 svlan 300	Map customer VLAN 30 to service VLAN 300
(config-cvlan-registration)#cvlan 40 svlan 400	Map customer VLAN 40 to service VLAN 400
(config)#spb configuration	Enter SPB mode
(spb-config)#bridge 1 spbv mode manual	Set the SPVID allocation mode to manual
(spb-config)#bridge 1 spbv bvlan 100 spvid 3641	Associate base VLAN 100 to SPVID 3641
(spb-config)#bridge 1 spbv bvlan 200 spvid 3642	Associate base VLAN 200 to SPVID 3642
(spb-config)#bridge 1 spbv bvlan 300 spvid 3643	Associate base VLAN 300 to SPVID 3643
(spb-config)#bridge 1 spbv bvlan 400 spvid 3644	Associate base VLAN 400 to SPVID 3644
(spb-config)#exit	Exit SPB mode
(config)#spanning-tree mst configuration	Enter MST mode
(config-mst)#bridge 1 instance spbv	Associate bridge 1 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 100	Associate VLAN 100 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 200	Associate VLAN 200 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 300	Associate VLAN 300 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 400	Associate VLAN 400 to the SPBV instance
(config-mst)#exit	Exit MST mode
(config)#spb configuration	Enter SPB mode
(spb-config)#bridge 1 instance spbv vlan 100 ect 1	Associate VLAN 100 to ECT algorithm 1
(spb-config)#bridge 1 instance spbv vlan 200 ect 2	Associate VLAN 200 to ECT algorithm 2
(spb-config)#bridge 1 instance spbv vlan 300 ect 1 mtid 3996	Associate VLAN 300 to ECT algorithm 1 and MTID 3996
(spb-config)#bridge 1 instance spbv vlan 400 ect 2 mtid 3996	Associate VLAN 400 to ECT algorithm 2 and MTID 3996

(spb-config)#exit	Exit SPB mode
(config)#interface eth1	Enter interface mode
(config-if)#switchport	Configure the interface as layer 2
(config-if)#bridge-group 1	Configure the interface as part of the bridge
(config-if)#switchport mode provider-network	Configure the port type as provider network
(config-if)#switchport provider-network allowed vlan all	Allow all VLANs to transmit from the interface
(config-if)#exit	Exit interface mode
(config)#interface eth2	Enter interface mode
(config-if)#switchport	Configure the interface as layer 2
(config-if)#bridge-group 1	Configure the interface as part of the bridge
(config-if)#switchport mode provider-network	Configure the port type as provider network
(config-if)#switchport provider-network allowed vlan all	Allow all VLANs to transmit from the interface
(config-if)#exit	Exit interface mode
(config)#interface eth3	Enter interface mode
(config-if)#switchport	Configure the interface as layer 2
(config-if)#bridge-group 1	Configure the interface as part of the bridge
(config-if)#switchport mode customer-edge hybrid	Configure the port type as customer edge hybrid
(config-if)#switchport mode customer-edge hybrid acceptable-frame-type all	Configure the port to accept all frame types
(config-if)#switchport customer-edge hybrid allowed vlan all	Allow all VLANs created on the interface
(config-if)#switchport customer-edge vlan registration map1	Associate map1 with the interface
(config-if)#bridge 1 spbv bvlan 100 group-mac 0100.5e00.0100 mode rxtx sr 0	Assign a group-mac address to the base VLAN
(config-if)#bridge 1 spbv bvlan 200 group-mac 0100.5e00.0200 mode rxtx sr 0	Assign a group-mac address to the base VLAN
(config-if)#bridge 1 spbv bvlan 300 group-mac 0100.5e00.0300 mode rxtx sr 0	Assign a group-mac address to the base VLAN
(config-if)#bridge 1 spbv bvlan 400 group-mac 0100.5e00.0400 mode rxtx sr 0	Assign a group-mac address to the base VLAN
(config-if)#end	Exit configuration mode

PCB1

#configuration terminal	Enter configuration mode
(config)#bridge 1 protocol spbv svlan	Configure bridge 1 as an SPBV provider core bridge
(config)#vlan database	Enter VLAN database mode
(config-vlan)#vlan 100 type service multipoint-multipoint bridge 1 state enable	Configure VLAN 100 as a service VLAN
(config-vlan)#vlan 200 type service multipoint-multipoint bridge 1 state enable	Configure VLAN 200 as a service VLAN

`(config-vlan)#vlan 300 type service multipoint-multipoint bridge 1 state enable`	Configure VLAN 300 as a service VLAN
`(config-vlan)#vlan 400 type service multipoint-multipoint bridge 1 state enable`	Configure VLAN 400 as a service VLAN
`(config-vlan)#exit`	Exit VLAN database mode
`(config)#isis-spb configuration bridge 1`	Enter ISIS-SPB mode
`(isis-spb-config)#isis-spb multi-topology-id 3996`	Set an MTID.
`(isis-spb-config)#no isis-spb system id`	Reset the ISIS-SPB system identifier it its default value (0)
`(isis-spb-config)#isis-spb system-id 22.22.22.22.22.22`	Set the ISIS-SPB system identifier
`(isis-spb-config)#exit`	Exit ISIS-SPB mode
`(config)#spanning-tree mst configuration`	Enter MST mode
`(config-mst)#bridge 1 instance spbv`	Associate bridge 1 to the SPBV instance
`(config-mst)#bridge 1 instance spbv vlan 100`	Associate VLAN 100 to the SPBV instance
`(config-mst)#bridge 1 instance spbv vlan 200`	Associate VLAN 200 to the SPBV instance
`(config-mst)#bridge 1 instance spbv vlan 300`	Associate VLAN 300 to the SPBV instance
`(config-mst)#bridge 1 instance spbv vlan 400`	Associate VLAN 400 to the SPBV instance
`(config-mst)#exit`	Exit MST mode
`(config)#spb configuration`	Enter SPB mode
`(spb-config)#bridge 1 instance spbv vlan 100 ect 1`	Associate VLAN 100 to ECT algorithm 1
`(spb-config)#bridge 1 instance spbv vlan 200 ect 2`	Associate VLAN 200 to ECT algorithm 2
`(spb-config)#bridge 1 instance spbv vlan 300 ect 1 mtid 3996`	Associate VLAN 300 to ECT algorithm 1 and MTID 3996
`(spb-config)#bridge 1 instance spbv vlan 400 ect 2 mtid 3996`	Associate VLAN 400 to ECT algorithm 2 and MTID 3996
`(config)#interface eth1`	Enter interface mode
`(config-if)#switchport`	Configure the interface as layer 2
`(config-if)#bridge-group 1`	Configure the interface as part of the bridge
`(config-if)#switchport mode provider-network`	Configure the port type as provider network
`(config-if)#switchport provider-network allowed vlan all`	Allow all VLANs to transmit from the interface
`(config-if)#exit`	Exit interface mode
`(config)#interface eth2`	Enter interface mode
`(config-if)#switchport`	Configure the interface as layer 2
`(config-if)#bridge-group 1`	Configure the interface as part of the bridge
`(config-if)#switchport mode provider-network`	Configure the port type as provider network
`(config-if)#switchport provider-network allowed vlan all`	Allow all VLANs to transmit from the interface
`(config-if)#exit`	Exit interface mode

PCB2

#configuration terminal	Enter configuration mode
(config)#bridge 1 protocol spbv svlan	Configure bridge 1 as an SPBV provider core bridge
(config)#vlan database	Enter VLAN database mode
(config-vlan)#vlan 100 type service multipoint-multipoint bridge 1 state enable	Configure VLAN 100 as a service VLAN
(config-vlan)#vlan 200 type service multipoint-multipoint bridge 1 state enable	Configure VLAN 200 as a service VLAN
(config-vlan)#vlan 300 type service multipoint-multipoint bridge 1 state enable	Configure VLAN 300 as a service VLAN
(config-vlan)#vlan 400 type service multipoint-multipoint bridge 1 state enable	Configure VLAN 400 as a service VLAN
(config-vlan)#exit	Exit VLAN database mode
(config)#isis-spb configuration bridge 1	Enter ISIS-SPB mode
(isis-spb-config)#isis-spb multi-topology-id 3996	Set an MTID.
(isis-spb-config)#no isis-spb system id	Reset the ISIS-SPB system identifier it its default value (0)
(isis-spb-config)#isis-spb system-id 33.33.33.33.33.33	Set the ISIS-SPB system identifier
(isis-spb-config)#exit	Exit ISIS-SPB mode
(config)#spanning-tree mst configuration	Enter MST mode
(config-mst)#bridge 1 instance spbv	Associate bridge 1 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 100	Associate VLAN 100 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 200	Associate VLAN 200 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 300	Associate VLAN 300 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 400	Associate VLAN 400 to the SPBV instance
(config-mst)#exit	Exit MST mode
(config)#spb configuration	Enter SPB mode
(spb-config)#bridge 1 instance spbv vlan 100 ect 1	Associate VLAN 100 to ECT algorithm 1
(spb-config)#bridge 1 instance spbv vlan 200 ect 2	Associate VLAN 200 to ECT algorithm 2
(spb-config)#bridge 1 instance spbv vlan 300 ect 1 mtid 3996	Associate VLAN 300 to ECT algorithm 1 and MTID 3996
(spb-config)#bridge 1 instance spbv vlan 400 ect 2 mtid 3996	Associate VLAN 400 to ECT algorithm 2 and MTID 3996
(spb-config)#exit	Exit SPB mode
(config)#interface eth1	Enter interface mode
(config-if)#switchport	Configure the interface as layer 2
(config-if)#bridge-group 1	Configure the interface as part of the bridge
(config-if)#switchport mode provider-network	Configure the port type as provider network
(config-if)#switchport provider-network allowed vlan all	Allow all VLANs to transmit from the interface

(config-if)#exit	Exit interface mode
(config)#interface eth2	Enter interface mode
(config-if)#switchport	Configure the interface as layer 2
(config-if)#bridge-group 1	Configure the interface as part of the bridge
(config-if)#switchport mode provider-network	Configure the port type as provider network
(config-if)#switchport provider-network allowed vlan all	Allow all VLANs to transmit from the interface
(config-if)#exit	Exit interface mode

Provider Backbone Bridges (BEB and BCB)

This section shows how to configure Backbone Edge Bridges (BEBs) and Backbone Core Bridges (BCBs).

BEB1

#configuration terminal	Enter configuration mode
(config)#bridge beb mac 1111.aaaa.1111 1 protocol provider-mstp	Configure bridge 1 as an I-component bridge
(config)#bridge beb mac aaaa.aaaa.aaaa backbone protocol spbm	Configure the backbone SPBM BEB bridge
(config)#vlan database	Enter VLAN database mode
(config-vlan)#vlan 10 type service point-point bridge 1 state enable	Configure VLAN 10 as a service VLAN and associate it with bridge 1
(config-vlan)#vlan 20 type service point-point bridge 1 state enable	Configure VLAN 20 as a service VLAN and associate it with bridge 1
(config-vlan)#vlan 30 type service point-point bridge 1 state enable	Configure VLAN 30 as a service VLAN and associate it with bridge 1
(config-vlan)#vlan 40 type service point-point bridge 1 state enable	Configure VLAN 40 as a service VLAN and associate it with bridge 1
(config-vlan)#vlan 100 type backbone point-point state enable	Configure VLAN 100 and associate it with backbone bridge
(config-vlan)#vlan 200 type backbone point-point state enable	Configure VLAN 200 and associate it with backbone bridge
(config-vlan)#vlan 300 type backbone point-point state enable	Configure VLAN 300 and associate it with backbone bridge
(config-vlan)#vlan 400 type backbone point-point state enable	Configure VLAN 400 and associate it with backbone bridge
(config-vlan)#exit	Exit VLAN database mode
(config)#pbb isid list	Enter the PBB ISID configuration mode
(pbb-isid)#isid 10 name IPIQA1 i-component 1	Configure ISID 10 with the name as IPIQA1
(pbb-isid)#isid 20 name IPIQA2 i-component 1	Configure ISID 20 with the name as IPIQA2
(pbb-isid)#isid 30 name IPIQA3 i-component 1	Configure ISID 30 with the name as IPIQA3
(pbb-isid)#isid 40 name IPIQA4 i-component 1	Configure ISID 40 with the name as IPIQA4
(pbb-isid)#exit	Exit the PBB ISID configuration mode

(config)#isis-spb configuration bridge backbone	Enter ISIS-SPB mode
(isis-spb-config)#isis-spb multi-topology-id 3996	Set an MTID.
(isis-spb-config)#no isis-spb system id	Reset the ISIS-SPB system identifier it its default value (0)
(isis-spb-config)#isis-spb system-id 11.11.11.11.11.11	Set the ISIS-SPB system identifier
(isis-spb-config)#exit	Exit ISIS-SPB mode
(config)#spb configuration	Enter SPB mode
(spb-config)#bridge backbone spbv mode manual	Set the SPVID allocation mode to manual
(spb-config)#bridge backbone spbv bvlan 100 spvid 3611	Associate base VLAN 100 to SPVID 3611
(spb-config)#bridge backbone spbv bvlan 200 spvid 3612	Associate base VLAN 200 to SPVID 3612
(spb-config)#bridge backbone spbv bvlan 300 spvid 3613	Associate base VLAN 300 to SPVID 3613
(spb-config)#bridge backbone spbv bvlan 400 spvid 3614	Associate base VLAN 400 to SPVID 3614
(config)#spanning-tree mst configuration	Enter MST mode
(config-mst)#bridge backbone instance spbv	Associate the bridge backbone to the SPBV instance
(config-mst)#bridge backbone instance spbv vlan 100	Associate VLAN 100 to the SPBV instance
(config-mst)#bridge backbone instance spbv vlan 200	Associate VLAN 200 to the SPBV instance
(config-mst)#bridge backbone instance spbv vlan 300	Associate VLAN 300 to the SPBV instance
(config-mst)#bridge backbone instance spbv vlan 400	Associate VLAN 400 to the SPBV instance
(config-mst)#exit	Exit MST mode
(config)#spb configuration	Enter SPB mode
(spb-config)#bridge backbone instance spbv vlan 100 ect 1	Associate VLAN 100 to ECT algorithm 1
(spb-config)#bridge backbone instance spbv vlan 200 ect 2	Associate VLAN 200 to ECT algorithm 2
(spb-config)#bridge backbone instance spbv vlan 300 ect 1 mtid 3996	Associate VLAN 300 to ECT algorithm 1 and MTID 3996
(spb-config)#bridge backbone instance spbv vlan 400 ect 2 mtid 3996	Associate VLAN 400 to ECT algorithm 2 and MTID 3996
(spb-config)#exit	Exit SPB mode
(config)#interface eth1	Enter interface mode
(config-if)#switchport	Configure the interface as layer 2
(config-if)#bridge-group backbone	Configure the interface as part of the bridge
(config-if)#switchport mode pnp	Configure the interface as a provider network port
(config-if)#switchport beb provider-network bvlan all	Allow all VLANs to transmit from the interface
(config-if)#exit	Exit interface mode
(config)#interface eth2	Enter interface mode

(config-if)#switchport	Configure the interface as layer 2
(config-if)#bridge-group backbone	Configure the interface as part of the bridge
(config-if)#switchport mode pnp	Configure the interface as a provider network port
(config-if)#switchport beb provider-network bvlan all	Allow all VLANs to transmit from the interface
(config-if)#exit	Exit interface mode
(config)#interface pip1	Enter interface mode
(config-if)#switchport beb pip backbone-source-mac aaaa.1111.aaaa	Set the default backbone MAC address for the provider instance port
(config-if)#exit	Exit the interface mode
(config)#interface eth3	Enter interface mode
(config-if)#switchport	Configure the interface as layer 2
(config-if)#bridge-group 1	Associate the port to bridge-group
(config-if)#switchport mode cnp	Configure the interface as a customer network port
(config-if)#Swtichport beb port vlan 10 cnp	Associate VLAN 10 with the interface
(config-if)#exit	Exit the interface mode
(config)#interface eth4	Enter interface mode
(config-if)#switchport	Configure the interface as layer 2
(config-if)#bridge-group backbone	Associate the interface to the bridge
(config-if)#switchport mode cbp	Configure the interface as a customer backbone port
(config-if)#no shut	Enable the interface
(config-if)#bridge backbone spbv bvlan 100 group-mac 0100.5e00.0100 mode rxtx sr 0	Assign a group-mac address to the base VLAN
(config-if)#bridge backbone spbv bvlan 200 group-mac 0100.5e00.0200 mode rxtx sr 0	Assign a group-mac address to the base VLAN
(config-if)#bridge backbone spbv bvlan 300 group-mac 0100.5e00.0300 mode rxtx sr 0	Assign a group-mac address to the base VLAN
(config-if)#bridge backbone spbv bvlan 400 group-mac 0100.5e00.0400 mode rxtx sr 0	Assign a group-mac address to the base VLAN
(config-if)#end	Exit configuration mode

BEB2

#configuration terminal	Enter configuration mode
(config)#bridge beb mac 1111.bbbb.1111 1 protocol provider-mstp	Configure bridge 1 as an I-component bridge
(config)#bridge beb mac bbbb.bbbb.bbbb backbone protocol spbm	Configure the backbone SPBM BEB bridge
(config)#vlan database	Enter VLAN database mode
(config-vlan)#vlan 10 type service point-point bridge 1 state enable	Configure VLAN 10 as a service VLAN and associate it with bridge 1
(config-vlan)#vlan 20 type service point-point bridge 1 state enable	Configure VLAN 20 as a service VLAN and associate it with bridge 1

(config-vlan)#vlan 30 type service point-point bridge 1 state enable	Configure VLAN 30 as a service VLAN and associate it with bridge 1
(config-vlan)#vlan 40 type service point-point bridge 1 state enable	Configure VLAN 40 as a service VLAN and associate it with bridge 1
(config-vlan)#vlan 100 type backbone point-point state enable	Configure VLAN 100 and associate it with backbone bridge
(config-vlan)#vlan 200 type backbone point-point state enable	Configure VLAN 200 and associate it with backbone bridge
(config-vlan)#vlan 300 type backbone point-point state enable	Configure VLAN 300 and associate it with backbone bridge
(config-vlan)#vlan 400 type backbone point-point state enable	Configure VLAN 400 and associate it with backbone bridge
(config-vlan)#exit	Exit VLAN database mode
(config)#pbb isid list	Enter the PBB ISID configuration mode
(pbb-isid)#isid 10 name IPIQA1 i-component 1	Configure ISID 10 with the name as IPIQA1
(pbb-isid)#isid 20 name IPIQA2 i-component 1	Configure ISID 20 with the name as IPIQA2
(pbb-isid)#isid 30 name IPIQA3 i-component 1	Configure ISID 30 with the name as IPIQA3
(pbb-isid)#isid 40 name IPIQA4 i-component 1	Configure ISID 40 with the name as IPIQA4
(pbb-isid)#exit	Exit the PBB ISID configuration mode
(config)#isis-spb configuration bridge backbone	Enter ISIS-SPB mode
(isis-spb-config)#isis-spb multi-topology-id 3996	Set an MTID.
(isis-spb-config)#no isis-spb system id	Reset the ISIS-SPB system identifier it its default value (0)
(isis-spb-config)#isis-spb system-id 44.44.44.44.44.44	Set the ISIS-SPB system identifier
(isis-spb-config)#exit	Exit ISIS-SPB mode
(config)#spb configuration	Enter SPB mode
(spb-config)#bridge backbone spbv mode manual	Set the SPVID allocation mode to manual
(spb-config)#bridge backbone spbv bvlan 100 spvid 3641	Associate base VLAN 100 to SPVID 3611
(spb-config)#bridge backbone spbv bvlan 200 spvid 3642	Associate base VLAN 200 to SPVID 3612
(spb-config)#bridge backbone spbv bvlan 300 spvid 3643	Associate base VLAN 300 to SPVID 3613
(spb-config)#bridge backbone spbv bvlan 400 spvid 3644	Associate base VLAN 400 to SPVID 3614
(config)#spanning-tree mst configuration	Enter MST mode
(config-mst)#bridge backbone instance spbv	Associate the bridge backbone to the SPBV instance
(config-mst)#bridge backbone instance spbv vlan 100	Associate VLAN 100 to the SPBV instance
(config-mst)#bridge backbone instance spbv vlan 200	Associate VLAN 200 to the SPBV instance
(config-mst)#bridge backbone instance spbv vlan 300	Associate VLAN 300 to the SPBV instance
(config-mst)#bridge backbone instance spbv vlan 400	Associate VLAN 400 to the SPBV instance

(config-mst)#exit	Exit MST mode
(config)#spb configuration	Enter SPB mode
(spb-config)#bridge 1 instance spbv vlan 100 ect 1	Associate VLAN 100 to ECT algorithm 1
(spb-config)#bridge 1 instance spbv vlan 200 ect 2	Associate VLAN 200 to ECT algorithm 2
(spb-config)#bridge 1 instance spbv vlan 300 ect 1 mtid 3996	Associate VLAN 300 to ECT algorithm 1 and MTID 3996
(spb-config)#bridge 1 instance spbv vlan 400 ect 2 mtid 3996	Associate VLAN 400 to ECT algorithm 2 and MTID 3996
(spb-config)#exit	Exit SPB mode
(config)#interface eth1	Enter interface mode
(config-if)#switchport	Configure the interface as layer 2
(config-if)#bridge-group backbone	Configure the interface as part of the bridge
(config-if)#switchport mode pnp	Configure the interface as a provider network port
(config-if)#switchport beb provider-network bvlan all	Allow all VLANs to transmit from the interface
(config-if)#exit	Exit interface mode
(config)#interface eth2	Enter interface mode
(config-if)#switchport	Configure the interface as layer 2
(config-if)#bridge-group backbone	Configure the interface as part of the bridge
(config-if)#switchport mode pnp	Configure the interface as a provider network port
(config-if)#switchport beb provider-network bvlan all	Allow all VLANs to transmit from the interface
(config-if)#exit	Exit interface mode
(config)#interface pip1	Enter interface mode
(config-if)#switchport beb pip backbone-source-mac aaaa.4444.aaaa	Set the default backbone MAC address for the provider instance port
(config-if)#exit	Exit the interface mode
(config)#interface eth3	Enter interface mode
(config-if)#switchport	Configure the interface as layer 2
(config-if)#bridge-group 1	Associate the port to the bridge-group
(config-if)#switchport mode cnp	Configure the interface as a customer network port
(config-if)#switchport beb port vlan 10 cnp	Associate VLAN 10 with the interface
(config-if)#exit	Exit the interface mode
(config)#interface eth4	Enter interface mode
(config-if)#switchport	Configure the interface as layer 2
(config-if)#bridge-group backbone	Associate the port to the bridge-group
(config-if)#switchport mode cbp	Configure the interface as a customer backbone port
(config-if)#no shut	Enable the interface
(config-if)#bridge backbone spbv bvlan 100 group-mac 0100.5e00.0100 mode rxtx sr 0	Assign a group-mac address to the base VLAN
(config-if)#bridge backbone spbv bvlan 200 group-mac 0100.5e00.0200 mode rxtx sr 0	Assign a group-mac address to the base VLAN

(config-if)#bridge backbone spbv bvlan 300 group-mac 0100.5e00.0300 mode rxtx sr 0	Assign a group-mac address to the base VLAN
(config-if)#bridge backbone spbv bvlan 400 group-mac 0100.5e00.0400 mode rxtx sr 0	Assign a group-mac address to the base VLAN
(config-if)#end	Exit configuration mode

BCB1

#configuration terminal	Enter configuration mode
(config)#bridge 1 protocol spbv bcb	Configure bridge 1 as an SPBV backbone core bridge
(config)#vlan database	Enter VLAN database mode
(config-vlan)#vlan 100 type service multipoint-multipoint bridge 1 state enable	Configure VLAN 100 as a service VLAN
(config-vlan)#vlan 200 type service multipoint-multipoint bridge 1 state enable	Configure VLAN 200 as a service VLAN
(config-vlan)#vlan 300 type service multipoint-multipoint bridge 1 state enable	Configure VLAN 300 as a service VLAN
(config-vlan)#vlan 400 type service multipoint-multipoint bridge 1 state enable	Configure VLAN 400 as a service VLAN
(config-vlan)#exit	Exit VLAN database mode
(config)#isis-spb configuration bridge 1	Enter ISIS-SPB mode
(isis-spb-config)#isis-spb multi-topology-id 3996	Set an MTID.
(isis-spb-config)#no isis-spb system id	Reset the ISIS-SPB system identifier it its default value (0)
(isis-spb-config)#isis-spb system-id 22.22.22.22.22.22	Set the ISIS-SPB system identifier
(isis-spb-config)#exit	Exit ISIS-SPB mode
(config)#spanning-tree mst configuration	Enter MST mode
(config-mst)#bridge 1 instance spbv	Associate bridge 1 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 100	Associate VLAN 100 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 200	Associate VLAN 200 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 300	Associate VLAN 300 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 400	Associate VLAN 400 to the SPBV instance
(config-mst)#exit	Exit MST mode
(config)#spb configuration	Enter SPB mode
(spb-config)#bridge 1 instance spbv vlan 100 ect 1	Associate VLAN 100 to ECT algorithm 1
(spb-config)#bridge 1 instance spbv vlan 200 ect 2	Associate VLAN 200 to ECT algorithm 2
(spb-config)#bridge 1 instance spbv vlan 300 ect 1 mtid 3996	Associate VLAN 300 to ECT algorithm 1 and MTID 3996
(spb-config)#bridge 1 instance spbv vlan 400 ect 2 mtid 3996	Associate VLAN 400 to ECT algorithm 2 and MTID 3996
(spb-config)#exit	Exit SPB mode
(config)#interface eth1	Enter interface mode

(config-if)#switchport	Configure the interface as layer 2
(config-if)#bridge-group 1	Configure the interface as part of the bridge
(config-if)#switchport mode provider-network	Configure the interface as a provider network
(config-if)#switchport provider-network vlan all	Allow all VLANs to transmit from the interface
(config-if)#exit	Exit interface mode
(config)#interface eth2	Enter interface mode
(config-if)#switchport	Configure the interface as layer 2
(config-if)#bridge-group 1	Configure the interface as part of the bridge
(config-if)#switchport mode provider-network	Configure the interface as a provider network
(config-if)#switchport provider-network vlan all	Allow all VLANs to transmit from the interface
(config-if)#exit	Exit interface mode

BCB2

#configuration terminal	Enter configuration mode
(config)#bridge 1 protocol spbv bcb	Configure bridge 1 as an SPBV backbone core bridge
(config)#vlan database	Enter VLAN database mode
(config-vlan)#vlan 100 type service multipoint-multipoint bridge 1 state enable	Configure VLAN 100 as a service VLAN
(config-vlan)#vlan 200 type service multipoint-multipoint bridge 1 state enable	Configure VLAN 200 as a service VLAN
(config-vlan)#vlan 300 type service multipoint-multipoint bridge 1 state enable	Configure VLAN 300 as a service VLAN
(config-vlan)#vlan 400 type service multipoint-multipoint bridge 1 state enable	Configure VLAN 400 as a service VLAN
(config-vlan)#exit	Exit VLAN database mode
(config)#isis-spb configuration bridge 1	Enter ISIS-SPB mode
(isis-spb-config)#isis-spb multi-topology-id 3996	Set an MTID.
(isis-spb-config)#no isis-spb system id	Reset the ISIS-SPB system identifier it its default value (0)
(isis-spb-config)#isis-spb system-id 33.33.33.33.33.33	Set the ISIS-SPB system identifier
(isis-spb-config)#exit	Exit ISIS-SPB mode
(config)#spanning-tree mst configuration	Enter MST mode
(config-mst)#bridge 1 instance spbv	Associate bridge 1 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 100	Associate VLAN 100 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 200	Associate VLAN 200 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 300	Associate VLAN 300 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 400	Associate VLAN 400 to the SPBV instance
(config-mst)#exit	Exit MST mode
(config)#spb configuration	Enter SPB mode

(spb-config)#bridge 1 instance spbv vlan 100 ect 1	Associate VLAN 100 to ECT algorithm 1
(spb-config)#bridge 1 instance spbv vlan 200 ect 2	Associate VLAN 200 to ECT algorithm 2
(spb-config)#bridge 1 instance spbv vlan 300 ect 1 mtid 3996	Associate VLAN 300 to ECT algorithm 1 and MTID 3996
(spb-config)#bridge 1 instance spbv vlan 400 ect 2 mtid 3996	Associate VLAN 400 to ECT algorithm 2 and MTID 3996
(spb-config)#exit	Exit SPB mode
(config)#interface eth1	Enter interface mode
(config-if)#switchport	Configure the interface as layer 2
(config-if)#bridge-group 1	Configure the interface as part of the bridge
(config-if)#switchport mode provider-network	Configure the interface as a provider network
(config-if)#switchport provider-network vlan all	Allow all VLANs to transmit from the interface
(config-if)#exit	Exit interface mode
(config)#interface eth2	Enter interface mode
(config-if)#switchport	Configure the interface as layer 2
(config-if)#bridge-group 1	Configure the interface as part of the bridge
(config-if)#switchport mode provider-network	Configure the interface as a provider network
(config-if)#switchport provider-network vlan all	Allow all VLANs to transmit from the interface
(config-if)#exit	Exit interface mode

Validation

show spb adjacency interface

EB1

```
#show spb adjacency interface eth1

Path_cost    - 200000
Admin_state - UP
Port ID - 32771
Port priority - 128

NEIGHBOUR DETAILS
---------------------
Sys_id               - 22.22.22.22.22.22

State                - Up

Agreement digest     - 00000003d25d96f264aebea2af795568001a56b6
```

```
MCID
Conf Digest          - e90bbfac7bd7df62cea10769874a13af

AUX_MCID
Conf Digest          - e90bbfac7bd7df62cea10769874a13af
```

EB2

```
#show spb adjacency interface eth1

Path_cost    - 200000
Admin_state - UP
Port ID - 32771
Port priority - 128

NEIGHBOUR DETAILS
---------------------
Sys_id               - 22.22.22.22.22.22

State                - Up

Agreement digest     - 00000003d25d96f264aebea2af795568001a56b6

MCID
Conf Digest          - e90bbfac7bd7df62cea10769874a13af

AUX_MCID
Conf Digest          - e90bbfac7bd7df62cea10769874a13af
```

CB1

```
#show spb adjacency interface eth1

Path_cost    - 200000
Admin_state - UP
Port ID - 32771
Port priority - 128

NEIGHBOUR DETAILS
---------------------
Sys_id               - 11.11.11.11.11.11

State                - Up

Agreement digest     - 00000003b4391959dd755185f98dabca2b10ab36

MCID
Conf Digest          - e90bbfac7bd7df62cea10769874a13af

AUX_MCID
Conf Digest          - e90bbfac7bd7df62cea10769874a13af
```


CB2

```
#show spb adjacency interface eth1

Path_cost    - 200000
Admin_state - UP
Port ID - 32771
Port priority - 128

NEIGHBOUR DETAILS
---------------------
Sys_id               - 11.11.11.11.11.11

State                - Up

Agreement digest     - 00000003b4391959dd755185f98dabca2b10ab36

MCID
Conf Digest          - e90bbfac7bd7df62cea10769874a13af

AUX_MCID
Conf Digest          - e90bbfac7bd7df62cea10769874a13af
```

show isis-spb neighbors

EB1

```
#show isis-spb neighbors

System Id      Interface   SNPA           State  Holdtime  Type Protocol
---------      ---------   ----                 -----  --------  ---- --------
MTID : 0
2222.2222.2222 eth1        5254.00bc.35f2      Up     21        L1   IS-IS

MTID : 3996
2222.2222.2222 eth1        5254.00bc.35f2      Up     21        L1   IS-IS

MTID : 0
3333.3333.3333 eth2        5254.00c9.a4e9      Up     27        L1   IS-IS

MTID : 3996
3333.3333.3333 eth2        5254.00c9.a4e9      Up     27        L1   IS-IS

Total Number of Neighbor(s): 4
```

EB2

```
#show isis-spb neighbors

System Id      Interface   SNPA           State  Holdtime  Type Protocol
---------      ---------   ----                 -----  --------  ---- --------
MTID : 0
```

```
2222.2222.2222 eth1        5254.0059.3211      Up     27        L1   IS-IS

MTID : 3996
2222.2222.2222 eth1        5254.0059.3211      Up     27        L1   IS-IS

MTID : 0
3333.3333.3333 eth2        5254.006a.ed3f      Up     23        L1   IS-IS

MTID : 3996
3333.3333.3333 eth2        5254.006a.ed3f      Up     23        L1   IS-IS

Total Number of Neighbor(s): 4
```

CB1

```
#sh isis-spb neighbors

System Id      Interface   SNPA           State  Holdtime  Type Protocol
---------      ---------   ----                  -----  --------  ---- --------
MTID : 0
1111.1111.1111 eth1        5254.00aa.a026      Up     23        L1   IS-IS

MTID : 3996
1111.1111.1111 eth1        5254.00aa.a026      Up     23        L1   IS-IS

MTID : 0
4444.4444.4444 eth2        5254.00d5.382f      Up     20        L1   IS-IS

MTID : 3996
4444.4444.4444 eth2        5254.00d5.382f      Up     20        L1   IS-IS

Total Number of Neighbor(s): 4
```

CB2

```
#show isis-spb neighbors

System Id      Interface   SNPA           State  Holdtime  Type Protocol
---------      ---------   ----                  -----  --------  ---- --------
MTID : 0
1111.1111.1111 eth1        5254.007d.4792      Up     24        L1   IS-IS

MTID : 3996
1111.1111.1111 eth1        5254.007d.4792      Up     24        L1   IS-IS

MTID : 0
4444.4444.4444 eth2        5254.0030.4521      Up     22        L1   IS-IS

MTID : 3996
4444.4444.4444 eth2        5254.0030.4521      Up     22        L1   IS-IS

Total Number of Neighbor(s): 4
```

show isis-spb lsp

EB1

```
#show isis-spb lsp
ISIS Link State Database
------------------------
LSP ID                 LSP Seq Num    LSP Checksum     LSP Hold Time    OL Flag
------                 -----------    ------------     -------------    -------
Bridge Instance: 1
1111.1111.1111.00-00*  0x00000004      0xBD16           639               0
2222.2222.2222.00-00   0x00000005      0x5D40          698               0
3333.3333.3333.00-00   0x00000005      0xC77F           675               0
4444.4444.4444.00-00   0x00000004      0x436C           685               0
Total numer of LSP(s): 4
```

EB2

```
#show isis-spb lsp
ISIS Link State Database
------------------------
LSP ID                 LSP Seq Num    LSP Checksum     LSP Hold Time    OL Flag
------                 -----------    ------------     -------------    -------
Bridge Instance: 1
1111.1111.1111.00-00   0x00000004      0xBD16           612               0
2222.2222.2222.00-00   0x00000005      0x5D40           671               0
3333.3333.3333.00-00   0x00000005      0xC77F           648               0
4444.4444.4444.00-00*  0x00000004      0x436C           659               0
Total numer of LSP(s): 4
```

CB1

```
#show isis-spb lsp
ISIS Link State Database
------------------------
LSP ID                 LSP Seq Num    LSP Checksum     LSP Hold Time    OL Flag
------                 -----------    ------------     -------------    -------
Bridge Instance: 1
1111.1111.1111.00-00   0x00000004      0xBD16           587               0
2222.2222.2222.00-00*  0x00000005      0x5D40           645               0
3333.3333.3333.00-00   0x00000005      0xC77F           622               0
4444.4444.4444.00-00   0x00000004      0x436C           633               0
Total numer of LSP(s): 4
```

CB2

```
#show isis-spb lsp
ISIS Link State Database
------------------------
LSP ID                 LSP Seq Num    LSP Checksum     LSP Hold Time    OL Flag
------                 -----------    ------------     -------------    -------
Bridge Instance: 1
1111.1111.1111.00-00   0x00000004      0xBD16            539               0
```

```
2222.2222.2222.00-00   0x00000005      0x5D40            597               0
3333.3333.3333.00-00*  0x00000005      0xC77F           574               0
4444.4444.4444.00-00   0x00000004      0x436C            585               0
Total numer of LSP(s): 4
```

show isis-spb topology

EB1

```
#show isis-spb topology
IS-IS paths to level-1 bridges
System Id            Metric     Next-Hop             Interface   SNPA
MT ID: 0, ECT ID: 1
1111.1111.1111       --
2222.2222.2222       200000     2222.2222.2222       eth1        5254.00bc.35f2
3333.3333.3333       200000     3333.3333.3333       eth2        5254.00c9.a4e9
4444.4444.4444       400000     2222.2222.2222       eth1        5254.00bc.35f2
MT ID: 0, ECT ID: 2
1111.1111.1111       --
2222.2222.2222       200000     2222.2222.2222       eth1        5254.00bc.35f2
3333.3333.3333       200000     3333.3333.3333       eth2        5254.00c9.a4e9
4444.4444.4444       400000     3333.3333.3333       eth2        5254.00c9.a4e9

MT ID: 3996, ECT ID: 1
1111.1111.1111       --
2222.2222.2222       200000     2222.2222.2222       eth1        5254.00bc.35f2
3333.3333.3333       200000     3333.3333.3333       eth2        5254.00c9.a4e9
4444.4444.4444       400000     2222.2222.2222       eth1        5254.00bc.35f2
MT ID: 3996, ECT ID: 2
1111.1111.1111       --
2222.2222.2222       200000     2222.2222.2222       eth1        5254.00bc.35f2
3333.3333.3333       200000     3333.3333.3333       eth2        5254.00c9.a4e9
4444.4444.4444       400000     3333.3333.3333       eth2        5254.00c9.a4e9
```

EB2

```
#show isis-spb topology
IS-IS paths to level-1 bridges
System Id            Metric     Next-Hop             Interface   SNPA
MT ID: 0, ECT ID: 1
1111.1111.1111       400000     2222.2222.2222       eth1        5254.0059.3211
2222.2222.2222       200000     2222.2222.2222       eth1        5254.0059.3211
3333.3333.3333       200000     3333.3333.3333       eth2        5254.006a.ed3f
4444.4444.4444       --
MT ID: 0, ECT ID: 2
1111.1111.1111       400000     3333.3333.3333       eth2        5254.006a.ed3f
2222.2222.2222       200000     2222.2222.2222       eth1        5254.0059.3211
3333.3333.3333       200000     3333.3333.3333       eth2        5254.006a.ed3f
4444.4444.4444       --

MT ID: 3996, ECT ID: 1
```

```
1111.1111.1111       400000     2222.2222.2222       eth1        5254.0059.3211
2222.2222.2222       200000     2222.2222.2222       eth1        5254.0059.3211
3333.3333.3333       200000     3333.3333.3333       eth2        5254.006a.ed3f
4444.4444.4444       --
MT ID: 3996, ECT ID: 2
1111.1111.1111       400000     3333.3333.3333       eth2        5254.006a.ed3f
2222.2222.2222       200000     2222.2222.2222       eth1        5254.0059.3211
3333.3333.3333       200000     3333.3333.3333       eth2        5254.006a.ed3f
4444.4444.4444       --
```

CB1

```
#show isis-spb topology
IS-IS paths to level-1 bridges
System Id            Metric     Next-Hop             Interface   SNPA
MT ID: 0, ECT ID: 1
1111.1111.1111       200000     1111.1111.1111       eth1        5254.00aa.a026
2222.2222.2222       --
3333.3333.3333       400000     1111.1111.1111       eth1        5254.00aa.a026
4444.4444.4444       200000     4444.4444.4444       eth2        5254.00d5.382f
MT ID: 0, ECT ID: 2
1111.1111.1111       200000     1111.1111.1111       eth1        5254.00aa.a026
2222.2222.2222       --
3333.3333.3333       400000     4444.4444.4444       eth2        5254.00d5.382f
4444.4444.4444       200000     4444.4444.4444       eth2        5254.00d5.382f

MT ID: 3996, ECT ID: 1
1111.1111.1111       200000     1111.1111.1111       eth1        5254.00aa.a026
2222.2222.2222       --
3333.3333.3333       400000     1111.1111.1111       eth1        5254.00aa.a026
4444.4444.4444       200000     4444.4444.4444       eth2        5254.00d5.382f
MT ID: 3996, ECT ID: 2
1111.1111.1111       200000     1111.1111.1111       eth1        5254.00aa.a026
2222.2222.2222       --
3333.3333.3333       400000     4444.4444.4444       eth2        5254.00d5.382f
4444.4444.4444       200000     4444.4444.4444       eth2        5254.00d5.382f
```

CB2

```
#show isis-spb topology
IS-IS paths to level-1 bridges
System Id            Metric     Next-Hop             Interface   SNPA
MT ID: 0, ECT ID: 1
1111.1111.1111       200000     1111.1111.1111       eth1        5254.007d.4792
2222.2222.2222       400000     1111.1111.1111       eth1        5254.007d.4792
3333.3333.3333       --
4444.4444.4444       200000     4444.4444.4444       eth2        5254.0030.4521
MT ID: 0, ECT ID: 2
1111.1111.1111       200000     1111.1111.1111       eth1        5254.007d.4792
2222.2222.2222       400000     4444.4444.4444       eth2        5254.0030.4521
3333.3333.3333       --
4444.4444.4444       200000     4444.4444.4444       eth2        5254.0030.4521
```

```
MT ID: 3996, ECT ID: 1
1111.1111.1111       200000     1111.1111.1111       eth1        5254.007d.4792
2222.2222.2222       400000     1111.1111.1111       eth1        5254.007d.4792
3333.3333.3333       --
4444.4444.4444       200000     4444.4444.4444       eth2        5254.0030.4521
MT ID: 3996, ECT ID: 2
1111.1111.1111       200000     1111.1111.1111       eth1        5254.007d.4792
2222.2222.2222       400000     4444.4444.4444       eth2        5254.0030.4521
3333.3333.3333       --
4444.4444.4444       200000     4444.4444.4444       eth2        5254.0030.4521
```

show isis-spb fdb

EB1

```
#show isis-spb fdb

SPB Forwarding Database:
[U - Unicast, M - Multicast]
  I/P INTERFACE  DESTINATION-ADDRESS  SPVID/B-VID  O/P INTERFACE
  -------------  -------------------  ----------  ------------
MTID : 0, ECT ALGO : 1
U if/**          xx.xx.xx.xx.xx.xx    3611          if/eth1 if/eth2
MTID : 0, ECT ALGO : 2
U if/**          xx.xx.xx.xx.xx.xx    3612          if/eth1 if/eth2
MTID : 3996, ECT ALGO : 1
U if/**          xx.xx.xx.xx.xx.xx    3613          if/eth1 if/eth2
MTID : 3996, ECT ALGO : 2
U if/**          xx.xx.xx.xx.xx.xx    3614          if/eth1 if/eth2
MTID : 0, ECT ALGO : 1
M if/**          01.00.5e.00.01.00    3611          if/eth1
MTID : 0, ECT ALGO : 2
M if/**          01.00.5e.00.02.00    3612          if/eth2
MTID : 3996, ECT ALGO : 1
M if/**          01.00.5e.00.03.00    3613          if/eth1
MTID : 3996, ECT ALGO : 2
M if/**          01.00.5e.00.04.00    3614          if/eth2
Number of Unicast Records: 4
Number of Multicast Records: 4
```

EB2

```
#sh isis-spb fdb

SPB Forwarding Database:
[U - Unicast, M - Multicast]
  I/P INTERFACE  DESTINATION-ADDRESS  SPVID/B-VID  O/P INTERFACE
  -------------  -------------------  ----------  ------------
MTID : 0, ECT ALGO : 1
U if/**          xx.xx.xx.xx.xx.xx    3641          if/eth2 if/eth1
```

```
MTID : 0, ECT ALGO : 2
U if/**          xx.xx.xx.xx.xx.xx    3642          if/eth2 if/eth1
MTID : 3996, ECT ALGO : 1
U if/**          xx.xx.xx.xx.xx.xx    3643          if/eth2 if/eth1
MTID : 3996, ECT ALGO : 2
U if/**          xx.xx.xx.xx.xx.xx    3644          if/eth2 if/eth1
MTID : 0, ECT ALGO : 1
M if/**          01.00.5e.00.01.00    3641          if/eth1
MTID : 0, ECT ALGO : 2
M if/**          01.00.5e.00.02.00    3642          if/eth2
MTID : 3996, ECT ALGO : 1
M if/**          01.00.5e.00.03.00    3643          if/eth1
MTID : 3996, ECT ALGO : 2
M if/**          01.00.5e.00.04.00    3644          if/eth2
Number of Unicast Records: 4
Number of Multicast Records: 4
```

CB1

```
#show isis-spb fdb

SPB Forwarding Database:
[U - Unicast, M - Multicast]
  I/P INTERFACE  DESTINATION-ADDRESS  SPVID/B-VID  O/P INTERFACE
  -------------  -------------------  ----------  ------------
MTID : 0, ECT ALGO : 1
U if/eth1        xx.xx.xx.xx.xx.xx    3611          if/eth2
U if/eth2        xx.xx.xx.xx.xx.xx    3641          if/eth1
MTID : 3996, ECT ALGO : 1
U if/eth1        xx.xx.xx.xx.xx.xx    3613          if/eth2
U if/eth2        xx.xx.xx.xx.xx.xx    3643          if/eth1
MTID : 0, ECT ALGO : 1
M if/eth1        01.00.5e.00.01.00    3611          if/eth2
M if/eth2        01.00.5e.00.01.00    3641          if/eth1
MTID : 3996, ECT ALGO : 1
M if/eth1        01.00.5e.00.03.00    3613          if/eth2
M if/eth2        01.00.5e.00.03.00    3643          if/eth1
Number of Unicast Records: 4
Number of Multicast Records: 4
```

CB2

```
#show isis-spb fdb

SPB Forwarding Database:
[U - Unicast, M - Multicast]
  I/P INTERFACE  DESTINATION-ADDRESS  SPVID/B-VID  O/P INTERFACE
  -------------  -------------------  ----------  ------------
MTID : 0, ECT ALGO : 2
U if/eth1        xx.xx.xx.xx.xx.xx    3612          if/eth2
U if/eth2        xx.xx.xx.xx.xx.xx    3642          if/eth1
MTID : 3996, ECT ALGO : 2
```

```
U if/eth1        xx.xx.xx.xx.xx.xx    3614          if/eth2
U if/eth2        xx.xx.xx.xx.xx.xx    3644          if/eth1
MTID : 0, ECT ALGO : 2
M if/eth1        01.00.5e.00.02.00    3612          if/eth2
M if/eth2        01.00.5e.00.02.00    3642          if/eth1
MTID : 3996, ECT ALGO : 2
M if/eth1        01.00.5e.00.04.00    3614          if/eth2
M if/eth2        01.00.5e.00.04.00    3644          if/eth1
Number of Unicast Records: 4
Number of Multicast Records: 4
```

show isis-spb configuration

EB1

```
#show isis-spb configuration
Bridge Name: 1
lsp ignore errors:no
lsp general interval(sec): 30
lsp refresh interval(sec): 900
maximum lsp lifetime(sec): 1200
spf interval exp(Minimum Delay in Milli Seconds): 500
spf interval exp(Maximim Delay in Milli Seconds): 50000
overload bit set:no
System Id: 1111.1111.1111
interface: eth1
 hello-multiplier: 3
 hello-interval(sec): 10
 lsp-interval(millisec): 33
 retransmit-interval(sec): 5
interface: eth2
 hello-multiplier: 3
 hello-interval(sec): 10
 lsp-interval(millisec): 33
 retransmit-interval(sec): 5
interface: eth3
 hello-multiplier: 3
 hello-interval(sec): 10
 lsp-interval(millisec): 33
 retransmit-interval(sec): 5
```

EB2

```
#show isis-spb configuration
Bridge Name: 1
lsp ignore errors:no
lsp general interval(sec): 30
lsp refresh interval(sec): 900
maximum lsp lifetime(sec): 1200
spf interval exp(Minimum Delay in Milli Seconds): 500
spf interval exp(Maximim Delay in Milli Seconds): 50000
```



```
overload bit set:no
System Id: 4444.4444.4444
interface: eth1
 hello-multiplier: 3
 hello-interval(sec): 10
 lsp-interval(millisec): 33
 retransmit-interval(sec): 5
interface: eth2
 hello-multiplier: 3
 hello-interval(sec): 10
 lsp-interval(millisec): 33
 retransmit-interval(sec): 5
interface: eth3
 hello-multiplier: 3
 hello-interval(sec): 10
 lsp-interval(millisec): 33
 retransmit-interval(sec): 5
```

CB1

```
#show isis-spb configuration
Bridge Name: 1
lsp ignore errors:no
lsp general interval(sec): 30
lsp refresh interval(sec): 900
maximum lsp lifetime(sec): 1200
spf interval exp(Minimum Delay in Milli Seconds): 500
spf interval exp(Maximim Delay in Milli Seconds): 50000
overload bit set:no
System Id: 2222.2222.2222
interface: eth1
 hello-multiplier: 3
 hello-interval(sec): 10
 lsp-interval(millisec): 33
 retransmit-interval(sec): 5
interface: eth2
 hello-multiplier: 3
 hello-interval(sec): 10
 lsp-interval(millisec): 33
 retransmit-interval(sec): 5
```

CB2:

```
#show isis-spb configuration
Bridge Name: 1
lsp ignore errors:no
lsp general interval(sec): 30
lsp refresh interval(sec): 900
maximum lsp lifetime(sec): 1200
spf interval exp(Minimum Delay in Milli Seconds): 500
spf interval exp(Maximim Delay in Milli Seconds): 50000
overload bit set:no
```

```
System Id: 3333.3333.3333
interface: eth1
 hello-multiplier: 3
 hello-interval(sec): 10
 lsp-interval(millisec): 33
 retransmit-interval(sec): 5
interface: eth2
 hello-multiplier: 3
 hello-interval(sec): 10
 lsp-interval(millisec): 33
 retransmit-interval(sec): 5
```

show spbv bridge vid-translation-table

EB1

```
#show spbv bridge 1 vid-translation-table
EGRESS TABLE INFORMATION
SPVID       BVID            SYSTEM_ID
3642            200            44.44.44.44.44.44
3641            100            44.44.44.44.44.44
3643            300            44.44.44.44.44.44
3644            400            44.44.44.44.44.44


INGRESS TABLE INFORMATION
BVID        SPVID            SYSTEM_ID
200           3612             11.11.11.11.11.11
100           3611             11.11.11.11.11.11
300           3613             11.11.11.11.11.11
400           3614             11.11.11.11.11.11
```

EB2

```
#show spbv bridge 1 vid-translation-table
EGRESS TABLE INFORMATION
SPVID       BVID            SYSTEM_ID
3612            200            11.11.11.11.11.11
3611            100            11.11.11.11.11.11
3613            300            11.11.11.11.11.11
3614            400            11.11.11.11.11.11


INGRESS TABLE INFORMATION
BVID        SPVID            SYSTEM_ID
200           3642             44.44.44.44.44.44
100           3641             44.44.44.44.44.44
300           3643             44.44.44.44.44.44
400           3644             44.44.44.44.44.44
```

show bridge spb

EB1

```
#show bridge spb 1

Bridge details
-------------------------------

B-MAC                - 00.00.00.00.00.00

System ID            - 11.11.11.11.11.11

Bridge_priority      - 32768

MCID                 - e90bbfac7bd7df62cea10769874a13af

AUX_MCID             - e90bbfac7bd7df62cea10769874a13af

CIST Root ID         - 8000525400aaa026

SPSourceID           - 0

BVID                  SPVID
  200                   3612
  100                   3611
  300                   3613
  400                   3614


SPVID-POOL           - 3600 to 3999

Agreement Digest    - 00000003b4391959dd755185f98dabca2b10ab36

Agreement_digest_convention_capabilities - 0
Agreement_digest_convention_id - 2

Agreement_digest_format_capabilities - 0
Agreement_digest_format_id - 0
```

EB2

```
#sh bridge spb 1

Bridge details
-------------------------------

B-MAC                - 00.00.00.00.00.00

System ID            - 44.44.44.44.44.44
```

```
Bridge_priority      - 32768

MCID                 - e90bbfac7bd7df62cea10769874a13af

AUX_MCID             - e90bbfac7bd7df62cea10769874a13af

CIST Root ID         - 8000525400aaa026

SPSourceID           - 0

BVID                  SPVID
  200                   3642
  100                   3641
  300                   3643
  400                   3644


SPVID-POOL           - 3600 to 3999

Agreement Digest    - 0000000414bedf08fb342a65f5176aa74078331a

Agreement_digest_convention_capabilities - 0
Agreement_digest_convention_id - 2

Agreement_digest_format_capabilities - 0
Agreement_digest_format_id - 0
```

CB1

```
#sh bridge spb 1

Bridge details
------------------------------

B-MAC                - 00.00.00.00.00.00

System ID            - 22.22.22.22.22.22

Bridge_priority      - 32768

MCID                 - e90bbfac7bd7df62cea10769874a13af

AUX_MCID             - e90bbfac7bd7df62cea10769874a13af

CIST Root ID         - 8000525400aaa026

SPSourceID           - 0

BVID                  SPVID
  200                   0
  100                   0
```

```
  300                   0
  400                   0


SPVID-POOL            - 3600 to 3999

Agreement Digest    - 00000003d25d96f264aebea2af795568001a56b6

Agreement_digest_convention_capabilities - 0
Agreement_digest_convention_id - 2

Agreement_digest_format_capabilities - 0
Agreement_digest_format_id - 0
```

CB2

```
#sh bridge spb 1

Bridge details
-------------------------------

B-MAC                 - 00.00.00.00.00.00

System ID             - 33.33.33.33.33.33

Bridge_priority       - 32768

MCID                  - e90bbfac7bd7df62cea10769874a13af

AUX_MCID              - e90bbfac7bd7df62cea10769874a13af

CIST Root ID          - 8000525400aaa026

SPSourceID            - 0

BVID                   SPVID
  200                   0
  100                   0
  300                   0
  400                   0


SPVID-POOL            - 3600 to 3999

Agreement Digest    - 00000003f69a617073fabd493f2bc1096b6e879a

Agreement_digest_convention_capabilities - 0
Agreement_digest_convention_id - 2

Agreement_digest_format_capabilities - 0
Agreement_digest_format_id - 0
```

show spb bridge instance vlan

EB1

```
#sh spb bridge 1 instance spbv vlan

VID   MODE  MTID  ECT       MAC                ISID  ISID-STAT
200   SPBV  0     80c202

100   SPBV  0     80c201

300   SPBV  3996  80c201

400   SPBV  3996  80c202
```

EB2

```
#sh spb bridge 1 instance spbv vlan

VID   MODE  MTID  ECT       MAC                ISID  ISID-STAT
200   SPBV  0     80c202

100   SPBV  0     80c201

300   SPBV  3996  80c201

400   SPBV  3996  80c202
```

CB1

```
#sh spb bridge 1 instance spbv vlan

VID   MODE  MTID  ECT       MAC                ISID  ISID-STAT
200   SPBV  0     80c202

100   SPBV  0     80c201

300   SPBV  3996  80c201

400   SPBV  3996  80c202
```

CB2

```
#sh spb bridge 1 instance spbv vlan

VID   MODE  MTID  ECT       MAC                ISID  ISID-STAT
200   SPBV  0     80c202

100   SPBV  0     80c201

300   SPBV  3996  80c201

400   SPBV  3996  80c202
```

CHAPTER 5 SPBV CFM Configuration

This chapter shows how to configure CFM (Connectivity Fault Management) to work with Shortest Path Bridging - VID (SBPV).

Topology

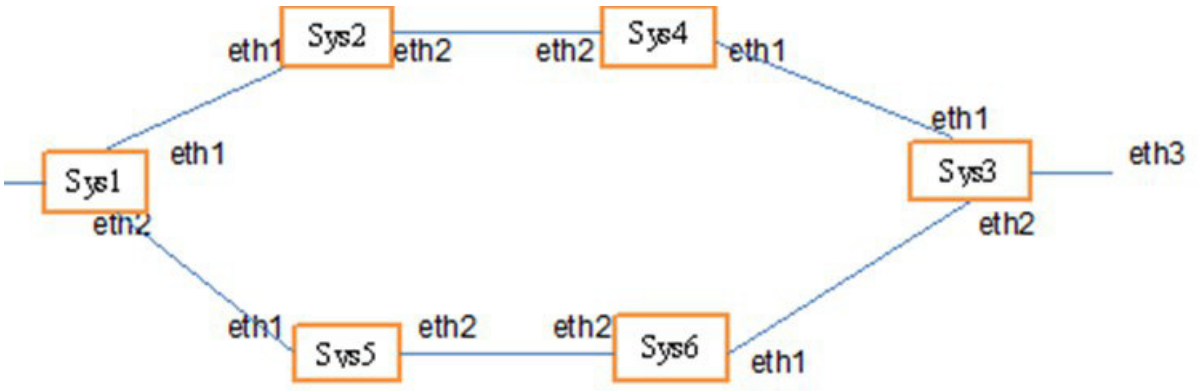

Figure 5-1: SPBV Topology

This chapter uses these generic terms to refer to network devices:

- EB means Edge Bridge which can be a:
  - Customer Edge Bridge (CEB)
  - Provider Edge Bridge (PEB)
  - Backbone Edge Bridge (BEB)
- CB means Core Bridge which can be a:
  - Customer Core Bridge (CCB)
  - Provider Core Bridge (PCB)
  - Backbone Core Bridge (BCB)

Provider Backbone Bridges (BEB and BCB)

BEB1 - SYS1

`#conf t`	Enter configure mode
`(config)#bridge beb mac aaaa.aaaa.aaaa backbone protocol spbv`	Configure backbone bridge with spbv protocol
`(config)#vlan database`	Enter vlan data base mode

(config-vlan)#vlan 100 type backbone point-point state enable	Configure vlan 100 and associate it with the backbone bridge
(config-vlan)#vlan 200 type backbone point-point state enable	Configure vlan 200 and associate it with the backbone bridge
(config-vlan)#vlan 300 type backbone point-point state enable	Configure vlan 300 and associate it with the backbone bridge
(config-vlan)#vlan 400 type backbone point-point state enable	Configure vlan 400 and associate it with the backbone bridge
(config-vlan)#exit	Exit vlan database mode
(config)#isis-spb configuration bridge backbone	Enter isis-spb mode
(isis-spb-config)#isis-spb multi-topology-id 3996	Set an MTID
(isis-spb-config)#no isis-spb system-id	Reset isis-spb system identifier to its default value 0
(isis-spb-config)#isis-spb system-id 11.11.11.11.11.11	Set isis-system identifier
(isis-spb-config)#exit	Exit from isis-spb mode
(config)#spanning-tree mst configuration	Enter MST mode
(config-mst)#bridge backbone instance spbv	Associate the bridge backbone to spbv instance
(config-mst)#bridge backbone instance spbv vlan 1	Associate vlan 1 to spbv instance
(config-mst)#bridge backbone instance spbv vlan 100	Associate vlan 100 to spbv instance
(config-mst)#bridge backbone instance spbv vlan 200	Associate vlan 200 to spbv instance
(config-mst)#bridge backbone instance spbv vlan 300	Associate vlan 300 to spbv instance
(config-mst)#bridge backbone instance spbv vlan 400	Associate vlan 400 to spbv instance
(config-mst)#exit	Exit from mst mode
(config)#bridge backbone spb enable	Enable spb protocol on backbone
(config)#spb configuration	Enter spb mode
(spb-config)#bridge backbone spbv mode manual	Set the spvid allocation mode to manual
(spb-config)#bridge backbone spbv bvlan 1 spvid 3619	Associate vlan 100 to spvid 3619
(spb-config)#bridge backbone spbv bvlan 100 spvid 3611	Associate vlan 100 to spvid 3611
(spb-config)#bridge backbone spbv bvlan 200 spvid 3612	Associate vlan 200 to spvid 3612
(spb-config)#bridge backbone spbv bvlan 300 spvid 3613	Associate vlan 300 to spvid 3613
(spb-config)#bridge backbone spbv bvlan 400 spvid 3614	Associate vlan 400 to spvid 3614
(spb-config)#bridge backbone instance spbv vlan 100 ect 1	Associate vlan 100 to ect algo 1
(spb-config)#bridge backbone instance spbv vlan 200 ect 2	Associate vlan 200 to ect algo 2

(spb-config)#bridge backbone instance spbv vlan 300 ect 1 mtid 3996	Associate vlan 300 to ect1 and mtid 3996
(spb-config)#bridge backbone instance spbv vlan 400 ect 2 mtid 3996	Associate vlan 400 to ect2 and mtid 3996
(spb-config)#exit	Exit from spb mode
(config)#int eth1	Enter interface mode
(config-if)#switchport	Configure the interface as layer 2
(config-if)#bridge-group backbone	Configure interface as a part of bridge
(config-if)#switchport mode pnp	Configure the interface as a provider network port
(config-if)#switchport beb provider-network bvlan add 100	Allow vlan 100 to transmit from this interface
(config-if)#switchport beb provider-network bvlan add 200	Allow vlan 200 to transmit from this interface
(config-if)#switchport beb provider-network bvlan add 300	Allow vlan 300 to transmit from this interface
(config-if)#switchport beb provider-network bvlan add 400	Allow vlan 400 to transmit from this interface
(config-if)#spb enable	Enable spb at interface
(config-if)#no shutdown	Configure Interface to up mode
(config-if)#exit	Exit from interface
(config)#int eth2	Enter interface mode
(config-if)#switchport	Configure interface as a part of bridge
(config-if)#bridge-group backbone	Configure interface as a part of bridge
(config-if)#switchport mode pnp	Configure the interface as a provider network port
(config-if)#switchport beb provider-network bvlan add 100	Allow vlan 100 to transmit from this interface
(config-if)#switchport beb provider-network bvlan add 200	Allow vlan 200 to transmit from this interface
(config-if)#switchport beb provider-network bvlan add 300	Allow vlan 300 to transmit from this interface
(config-if)#switchport beb provider-network bvlan add 400	Allow vlan 400 to transmit from this interface
(config-if)#spb enable	Enable spb at interface
(config-if)#no shutdown	Configure Interface to up mode
(config-if)#exit	Exit from interface
(config)#interface eth3	Enter interface mode
(config-if)#switchport	Configure interface as a part of bridge
(config-if)#bridge-group backbone	Configure interface as a part of bridge
(config-if)#switchport mode cbp	Configure the interface as a customer backbone bridge
(config-if)#switchport beb customer-backbone instance add 100 bvlan 100	Allow vlan 100 to transmit from this interface
(config-if)#switchport beb dispatch service 100	Enable interface to dispatch vlan 100
(config-if)#switchport beb customer-backbone instance add 200 bvlan 200	Allow vlan 200 to transmit from this interface

(config-if)#switchport beb dispatch service 200	Enable interface to dispatch vlan 200
(config-if)#switchport beb customer-backbone instance add 300 bvlan 300	Allow vlan 300 to transmit from this interface
(config-if)#switchport beb dispatch service 300	Enable interface to dispatch vlan 300
(config-if)#switchport beb customer-backbone instance add 400 bvlan 400	Allow vlan 400 to transmit from this interface
(config-if)#switchport beb dispatch service 400	Enable interface to dispatch vlan 400
(config-if)#end	Exit configuration mode
(config)#ethernet cfm pbb domain-name type character-string name MD1 pbb-domain-type bvlan level 5 mip-creation default backbone	Create MD level 5
(config-ether-cfm-pbb)#service pbb ma-type string ma-name MA1 vlan 100 mip-creation default	Creating maintenance association MA1 on vlan 100
(config-ether-cfm-pbb)#ex	Exit from pbb mode
(config)#interface eth3	Enter interface mode
(config-if)#ethernet cfm pbb mep up mpid 1 domain-name MD1 vlan 100 local-vid 100 backbone	Creating up mepid 1 on domain MD1 and vlan 100
(config-if-eth-cfm-pbb-mep)#cc multicast state enable	Enable multicast
(config-if-eth-cfm-pbb-mep)#exit	Exit from pbb mode
(config-if)#exit	Exit from interface mode
(config)#ethernet cfm pbb domain-name type character-string name MD1 pbb-domain-type bvlan level 5 mip-creation default backbone	Entering in pbb mode in MD1
(config-ether-cfm-pbb)#mep pbb crosscheck mpid 2 vlan 100	Crosscheck to beb2 mpid 2
(config-ether-cfm-pbb)#ex	Exit from pbb mode

BEB2 - SYS3

#conf t	Enter configure mode
(config)#bridge beb mac bbbb.bbbb.bbbb backbone protocol spbv	Configure backbone bridge with spbv protocol
(config)#vlan database	Enter vlan data base mode
(config-vlan)#vlan 100 type backbone point-point state enable	Configure vlan 100 and associate it with the backbone bridge
(config-vlan)#vlan 200 type backbone point-point state enable	Configure vlan 200 and associate it with the backbone bridge
(config-vlan)#vlan 300 type backbone point-point state enable	Configure vlan 300 and associate it with the backbone bridge
(config-vlan)#vlan 400 type backbone point-point state enable	Configure vlan 400 and associate it with the backbone bridge
(config-vlan)#exit	Exit vlan database mode

(config)#isis-spb configuration bridge backbone	Enter isis-spb mode
(isis-spb-config)#isis-spb multi-topology-id 3996	Set an MTID
(isis-spb-config)#no isis-spb system-id	Reset isis-spb system identifier to its default value 0
(isis-spb-config)#isis-spb system-id 33.33.33.33.33.33	Set isis-system identifier
(isis-spb-config)#exit	Exit from isis-spb mode
(config)#spanning-tree mst configuration	Enter MST mode
(config-mst)#bridge backbone instance spbv	Associate the bridge backbone to spbv instance
(config-mst)#bridge backbone instance spbv vlan 1	Associate vlan 1 to spbv instance
(config-mst)#bridge backbone instance spbv vlan 100	Associate vlan 100 to spbv instance
(config-mst)#bridge backbone instance spbv vlan 200	Associate vlan 200 to spbv instance
(config-mst)#bridge backbone instance spbv vlan 300	Associate vlan 300 to spbv instance
(config-mst)#bridge backbone instance spbv vlan 400	Associate vlan 400 to spbv instance
(config-mst)#exit	Exit from mst mode
(config)#bridge backbone spb enable	Enable spb protocol on backbone
(config)#spb configuration	Enter spb mode
(spb-config)#bridge backbone spbv mode manual	Set the spvid allocation mode to manual
(spb-config)#bridge backbone spbv bvlan 1 spvid 3640	Associate vlan 100 to spvid 3640
(spb-config)#bridge backbone spbv bvlan 100 spvid 3641	Associate vlan 100 to spvid 3641
(spb-config)#bridge backbone spbv bvlan 200 spvid 3642	Associate vlan 200 to spvid 3642
(spb-config)#bridge backbone spbv bvlan 300 spvid 3643	Associate vlan 300 to spvid 3643
(spb-config)#bridge backbone spbv bvlan 400 spvid 3644	Associate vlan 400 to spvid 3644
(spb-config)#bridge backbone instance spbv vlan 100 ect 1	Associate vlan 100 to ect algo 1
(spb-config)#bridge backbone instance spbv vlan 200 ect 2	Associate vlan 200 to ect algo 2
(spb-config)#bridge backbone instance spbv vlan 300 ect 1 mtid 3996	Associate vlan 300 to ect1 and mtid 3996
(spb-config)#bridge backbone instance spbv vlan 400 ect 2 mtid 3996	Associate vlan 400 to ect2 and mtid 3996
(spb-config)#exit	Exit from spb mode
(config)#int eth1	Enter interface mode
(config-if)#switchport	Configure the interface as layer 2
(config-if)#bridge-group backbone	Configure interface as a part of bridge

(config-if)#switchport mode pnp	Configure the interface as a provider network port
(config-if)#switchport beb provider-network bvlan add 100	Allow vlan 100 to transmit from this interface
(config-if)#switchport beb provider-network bvlan add 200	Allow vlan 200 to transmit from this interface
(config-if)#switchport beb provider-network bvlan add 300	Allow vlan 300 to transmit from this interface
(config-if)#switchport beb provider-network bvlan add 400	Allow vlan 400 to transmit from this interface
(config-if)#spb enable	Enable spb at interface
(config-if)#no shutdown	Configure Interface to up mode
(config-if)#exit	Exit from interface
(config)#int eth2	Enter interface mode
(config-if)#switchport	Configure interface as a part of bridge
(config-if)#bridge-group backbone	Configure interface as a part of bridge
(config-if)#switchport mode pnp	Configure the interface as a provider network port
(config-if)#switchport beb provider-network bvlan add 100	Allow vlan 100 to transmit from this interface
(config-if)#switchport beb provider-network bvlan add 200	Allow vlan 200 to transmit from this interface
(config-if)#switchport beb provider-network bvlan add 300	Allow vlan 300 to transmit from this interface
(config-if)#switchport beb provider-network bvlan add 400	Allow vlan 400 to transmit from this interface
(config-if)#spb enable	Enable spb at interface
(config-if)#no shutdown	Configure Interface to up mode
(config-if)#exit	Exit from interface
(config)#interface eth3	Enter interface mode
(config-if)#switchport	Configure interface as a part of bridge
(config-if)#bridge-group backbone	Configure interface as a part of bridge
(config-if)#switchport mode cbp	Configure the interface as a customer backbone bridge
(config-if)#switchport beb customer-backbone instance add 100 bvlan 100	Allow vlan 100 to transmit from this interface
(config-if)#switchport beb dispatch service 100	Enable interface to dispatch vlan 100
(config-if)#switchport beb customer-backbone instance add 200 bvlan 200	Allow vlan 200 to transmit from this interface
(config-if)#switchport beb dispatch service 200	Enable interface to dispatch vlan 200
(config-if)#switchport beb customer-backbone instance add 300 bvlan 300	Allow vlan 300 to transmit from this interface
(config-if)#switchport beb dispatch service 300	Enable interface to dispatch vlan 300
(config-if)#switchport beb customer-backbone instance add 400 bvlan 400	Allow vlan 400 to transmit from this interface
(config-if)#switchport beb dispatch service 400	Enable interface to dispatch vlan 400

(config-if)#end	Exit configuration mode
(config)#ethernet cfm pbb domain-name type character-string name MD1 pbb-domain-type bvlan level 5 mip-creation default backbone	Create MD level 5
(config-ether-cfm-pbb)#service pbb ma-type string ma-name MA1 vlan 100 mip-creation default	Creating maintenance association MA1 on vlan 100
(config-ether-cfm-pbb)#ex	Exit from pbb mode
(config)#interface eth3	Enter interface mode
(config-if)#ethernet cfm pbb mep up mpid 2 domain-name MD1 vlan 100 local-vid 100 backbone	Creating up mepid 2 on domain MD1 and vlan 100
(config-if-eth-cfm-pbb-mep)#cc multicast state enable	Enable multicast
(config-if-eth-cfm-pbb-mep)#exit	Exit from pbb mode
(config-if)#exit	Exit from interface mode
(config)#ethernet cfm pbb domain-name type character-string name MD1 pbb-domain-type bvlan level 5 mip-creation default backbone	Entering in pbb mode in MD1
(config-ether-cfm-pbb)#mep pbb crosscheck mpid 1 vlan 100	Crosscheck to beb1 mpid 1
(config-ether-cfm-pbb)#ex	Exit from pbb mode

BCB2 - SYS2

#conf t	Enter configuration mode
(config)#bridge 1 protocol spbv bcb	Configure bridge 1 as an SPBV backbone core bridge
(config)#vlan database	Enter VLAN database mode
(config-vlan)#vlan 100 type service point-point bridge 1 state enable	Configure VLAN 100 as a service VLAN
(config-vlan)#vlan 200 type service point-point bridge 1 state enable	Configure VLAN 200 as a service VLAN
(config-vlan)#vlan 300 type service point-point bridge 1 state enable	Configure VLAN 300 as a service VLAN
(config-vlan)#vlan 400 type service point-point bridge 1 state enable	Configure VLAN 400 as a service VLAN
(config-vlan)#exit	Exit VLAN database mode
(config)#isis-spb configuration bridge 1	Enter ISIS-SPB mode
(isis-spb-config)#isis-spb multi-topology-id 3996	Set an MTID
(isis-spb-config)#no isis-spb system-id	Reset the ISIS-SPB system identifier it its default value (0)
(isis-spb-config)#isis-spb system-id 22.22.22.22.22.22	Set the ISIS-SPB system identifier
(isis-spb-config)#exit	Exit ISIS-SPB mode

localdomain(config)#spanning-tree mst configuration	Enter MST mode
(config-mst)#bridge 1 instance spbv	Associate bridge 1 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 1	Associate VLAN 1 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 100	Associate VLAN 100 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 200	Associate VLAN 200 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 300	Associate VLAN 300 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 400	Associate VLAN 400 to the SPBV instance
(config-mst)#exit	Exit MST mode
(config)#spb configuration	Enter SPB mode
(spb-config)#bridge 1 instance spbv vlan 100 ect 1	Associate VLAN 100 to ECT algorithm 1
(spb-config)#bridge 1 instance spbv vlan 200 ect 2	Associate VLAN 200 to ECT algorithm 2
(spb-config)#bridge 1 instance spbv vlan 300 ect 1 mtid 3996	Associate VLAN 300 to ECT algorithm 1 and MTID 3996
(spb-config)#bridge 1 instance spbv vlan 400 ect 2 mtid 3996	Associate VLAN 400 to ECT algorithm 2 and MTID 3996
(spb-config)#ex	Exit SPB mode
(config)#bridge 1 spb enable	Enable spb at bridge
(config)#interface eth1	Enter interface mode
(config-if)#switchport	Configure the interface as layer 2
(config-if)#bridge-group 1	Configure the interface as part of the bridge
(config-if)#switchport mode pnp	Configure the interface as a provider network
(config-if)#switchport beb provider-network bvlan add 100	Allow all VLAN 100 to transmit from the interface
(config-if)#switchport beb provider-network bvlan add 200	Allow all VLAN 200 to transmit from the interface
(config-if)#switchport beb provider-network bvlan add 300	Allow all VLAN 300 to transmit from the interface
(config-if)#switchport beb provider-network bvlan add 400	Allow all VLAN 400 to transmit from the interface
(config-if)#spb enable	Enable spb at interface
(config-if)#no shutdown	Configure Interface to up mode
(config-if)#exit	Exit from interface level
(config)#interface eth2	Enter interface mode
(config-if)#switchport	Configure the interface as layer 2
(config-if)#bridge-group 1	Configure the interface as part of the bridge
(config-if)#switchport mode pnp	Configure the interface as a provider network
(config-if)#switchport beb provider-network bvlan add 100	Allow all VLAN 100 to transmit from the interface

(config-if)#switchport beb provider-network bvlan add 200	Allow all VLAN 200 to transmit from the interface
(config-if)#switchport beb provider-network bvlan add 300	Allow all VLAN 300 to transmit from the interface
(config-if)#switchport beb provider-network bvlan add 400	Allow all VLAN 400 to transmit from the interface
(config-if)#spb enable	Enable spb at interface
(config-if)#no shutdown	Configure Interface to up mode
(config-if)#exit	Exit from interface level
(config)# ethernet cfm configure default-md-level level 5 mip-creation default bridge 1	Create MD level 5

BCB3 - SYS4

#conf t	Enter configuration mode
(config)#bridge 1 protocol spbv bcb	Configure bridge 1 as an SPBV backbone core bridge
(config)#vlan database	Enter VLAN database mode
(config-vlan)#vlan 100 type service point-point bridge 1 state enable	Configure VLAN 100 as a service VLAN
(config-vlan)#vlan 200 type service point-point bridge 1 state enable	Configure VLAN 200 as a service VLAN
(config-vlan)#vlan 300 type service point-point bridge 1 state enable	Configure VLAN 300 as a service VLAN
(config-vlan)#vlan 400 type service point-point bridge 1 state enable	Configure VLAN 400 as a service VLAN
(config-vlan)#exit	Exit VLAN database mode
(config)#isis-spb configuration bridge 1	Enter ISIS-SPB mode
(isis-spb-config)#isis-spb multi-topology-id 3996	Set an MTID
(isis-spb-config)#no isis-spb system-id	Reset the ISIS-SPB system identifier it its default value (0)
(isis-spb-config)#isis-spb system-id 44.44.44.44.44.44	Set the ISIS-SPB system identifier
(isis-spb-config)#exit	Exit ISIS-SPB mode
localdomain(config)#spanning-tree mst configuration	Enter MST mode
(config-mst)#bridge 1 instance spbv	Associate bridge 1 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 1	Associate VLAN 1 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 100	Associate VLAN 100 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 200	Associate VLAN 200 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 300	Associate VLAN 300 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 400	Associate VLAN 400 to the SPBV instance

(config-mst)#exit	Exit MST mode
(config)#spb configuration	Enter SPB mode
(spb-config)#bridge 1 instance spbv vlan 100 ect 1	Associate VLAN 100 to ECT algorithm 1
(spb-config)#bridge 1 instance spbv vlan 200 ect 2	Associate VLAN 200 to ECT algorithm 2
(spb-config)#bridge 1 instance spbv vlan 300 ect 1 mtid 3996	Associate VLAN 300 to ECT algorithm 1 and MTID 3996
(spb-config)#bridge 1 instance spbv vlan 400 ect 2 mtid 3996	Associate VLAN 400 to ECT algorithm 2 and MTID 3996
(spb-config)#ex	Exit SPB mode
(config)#bridge 1 spb enable	Enable spb at bridge
(config)#interface eth1	Enter interface mode
(config-if)#switchport	Configure the interface as layer 2
(config-if)#bridge-group 1	Configure the interface as part of the bridge
(config-if)#switchport mode pnp	Configure the interface as a provider network
(config-if)#switchport beb provider-network bvlan add 100	Allow all VLAN 100 to transmit from the interface
(config-if)#switchport beb provider-network bvlan add 200	Allow all VLAN 200 to transmit from the interface
(config-if)#switchport beb provider-network bvlan add 300	Allow all VLAN 300 to transmit from the interface
(config-if)#switchport beb provider-network bvlan add 400	Allow all VLAN 400 to transmit from the interface
(config-if)#spb enable	Enable spb at interface
(config-if)#no shutdown	Configure Interface to up mode
(config-if)#exit	Exit from interface level
(config)#interface eth2	Enter interface mode
(config-if)#switchport	Configure the interface as layer 2
(config-if)#bridge-group 1	Configure the interface as part of the bridge
(config-if)#switchport mode pnp	Configure the interface as a provider network
(config-if)#switchport beb provider-network bvlan add 100	Allow all VLAN 100 to transmit from the interface
(config-if)#switchport beb provider-network bvlan add 200	Allow all VLAN 200 to transmit from the interface
(config-if)#switchport beb provider-network bvlan add 300	Allow all VLAN 300 to transmit from the interface
(config-if)#switchport beb provider-network bvlan add 400	Allow all VLAN 400 to transmit from the interface
(config-if)#spb enable	Enable spb at interface
(config-if)#no shutdown	Configure Interface to up mode
(config-if)#exit	Exit from interface level
(config)# ethernet cfm configure default-md-level level 5 mip-creation default bridge 1	Create MD level 5

BCB4 - SYS5

#conf t	Enter configuration mode
(config)#bridge 1 protocol spbv bcb	Configure bridge 1 as an SPBV backbone core bridge
(config)#vlan database	Enter VLAN database mode
(config-vlan)#vlan 100 type service point-point bridge 1 state enable	Configure VLAN 100 as a service VLAN
(config-vlan)#vlan 200 type service point-point bridge 1 state enable	Configure VLAN 200 as a service VLAN
(config-vlan)#vlan 300 type service point-point bridge 1 state enable	Configure VLAN 300 as a service VLAN
(config-vlan)#vlan 400 type service point-point bridge 1 state enable	Configure VLAN 400 as a service VLAN
(config-vlan)#exit	Exit VLAN database mode
(config)#isis-spb configuration bridge 1	Enter ISIS-SPB mode
(isis-spb-config)#isis-spb multi-topology-id 3996	Set an MTID
(isis-spb-config)#no isis-spb system-id	Reset the ISIS-SPB system identifier it its default value (0)
(isis-spb-config)#isis-spb system-id 55.55.55.55.55.55	Set the ISIS-SPB system identifier
(isis-spb-config)#exit	Exit ISIS-SPB mode
localdomain(config)#spanning-tree mst configuration	Enter MST mode
(config-mst)#bridge 1 instance spbv	Associate bridge 1 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 1	Associate VLAN 1 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 100	Associate VLAN 100 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 200	Associate VLAN 200 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 300	Associate VLAN 300 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 400	Associate VLAN 400 to the SPBV instance
(config-mst)#exit	Exit MST mode
(config)#spb configuration	Enter SPB mode
(spb-config)#bridge 1 instance spbv vlan 100 ect 1	Associate VLAN 100 to ECT algorithm 1
(spb-config)#bridge 1 instance spbv vlan 200 ect 2	Associate VLAN 200 to ECT algorithm 2
(spb-config)#bridge 1 instance spbv vlan 300 ect 1 mtid 3996	Associate VLAN 300 to ECT algorithm 1 and MTID 3996
(spb-config)#bridge 1 instance spbv vlan 400 ect 2 mtid 3996	Associate VLAN 400 to ECT algorithm 2 and MTID 3996
(spb-config)#ex	Exit SPB mode
(config)#bridge 1 spb enable	Enable spb at bridge
(config)#interface eth1	Enter interface mode

(config-if)#switchport	Configure the interface as layer 2
(config-if)#bridge-group 1	Configure the interface as part of the bridge
(config-if)#switchport mode pnp	Configure the interface as a provider network
(config-if)#switchport beb provider-network bvlan add 100	Allow all VLAN 100 to transmit from the interface
(config-if)#switchport beb provider-network bvlan add 200	Allow all VLAN 200 to transmit from the interface
(config-if)#switchport beb provider-network bvlan add 300	Allow all VLAN 300 to transmit from the interface
(config-if)#switchport beb provider-network bvlan add 400	Allow all VLAN 400 to transmit from the interface
(config-if)#spb enable	Enable spb at interface
(config-if)#no shutdown	Configure Interface to up mode
(config-if)#exit	Exit from interface level
(config)#interface eth2	Enter interface mode
(config-if)#switchport	Configure the interface as layer 2
(config-if)#bridge-group 1	Configure the interface as part of the bridge
(config-if)#switchport mode pnp	Configure the interface as a provider network
(config-if)#switchport beb provider-network bvlan add 100	Allow all VLAN 100 to transmit from the interface
(config-if)#switchport beb provider-network bvlan add 200	Allow all VLAN 200 to transmit from the interface
(config-if)#switchport beb provider-network bvlan add 300	Allow all VLAN 300 to transmit from the interface
(config-if)#switchport beb provider-network bvlan add 400	Allow all VLAN 400 to transmit from the interface
(config-if)#spb enable	Enable spb at interface
(config-if)#no shutdown	Configure Interface to up mode
(config-if)#exit	Exit from interface level
(config)# ethernet cfm configure default-md-level level 5 mip-creation default bridge 1	Create MD level 5

BCB2 - SYS6

#conf t	Enter configuration mode
(config)#bridge 1 protocol spbv bcb	Configure bridge 1 as an SPBV backbone core bridge
(config)#vlan database	Enter VLAN database mode
(config-vlan)#vlan 100 type service point-point bridge 1 state enable	Configure VLAN 100 as a service VLAN
(config-vlan)#vlan 200 type service point-point bridge 1 state enable	Configure VLAN 200 as a service VLAN
(config-vlan)#vlan 300 type service point-point bridge 1 state enable	Configure VLAN 300 as a service VLAN
(config-vlan)#vlan 400 type service point-point bridge 1 state enable	Configure VLAN 400 as a service VLAN

(config-vlan)#exit	Exit VLAN database mode
(config)#isis-spb configuration bridge 1	Enter ISIS-SPB mode
(isis-spb-config)#isis-spb multi-topology-id 3996	Set an MTID
(isis-spb-config)#no isis-spb system-id	Reset the ISIS-SPB system identifier it its default value (0)
(isis-spb-config)#isis-spb system-id 66.66.66.66.66.66	Set the ISIS-SPB system identifier
(isis-spb-config)#exit	Exit ISIS-SPB mode
localdomain(config)#spanning-tree mst configuration	Enter MST mode
(config-mst)#bridge 1 instance spbv	Associate bridge 1 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 1	Associate VLAN 1 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 100	Associate VLAN 100 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 200	Associate VLAN 200 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 300	Associate VLAN 300 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 400	Associate VLAN 400 to the SPBV instance
(config-mst)#exit	Exit MST mode
(config)#spb configuration	Enter SPB mode
(spb-config)#bridge 1 instance spbv vlan 100 ect 1	Associate VLAN 100 to ECT algorithm 1
(spb-config)#bridge 1 instance spbv vlan 200 ect 2	Associate VLAN 200 to ECT algorithm 2
(spb-config)#bridge 1 instance spbv vlan 300 ect 1 mtid 3996	Associate VLAN 300 to ECT algorithm 1 and MTID 3996
(spb-config)#bridge 1 instance spbv vlan 400 ect 2 mtid 3996	Associate VLAN 400 to ECT algorithm 2 and MTID 3996
(spb-config)#ex	Exit SPB mode
(config)#bridge 1 spb enable	Enable spb at bridge
(config)#interface eth1	Enter interface mode
(config-if)#switchport	Configure the interface as layer 2
(config-if)#bridge-group 1	Configure the interface as part of the bridge
(config-if)#switchport mode pnp	Configure the interface as a provider network
(config-if)#switchport beb provider-network bvlan add 100	Allow all VLAN 100 to transmit from the interface
(config-if)#switchport beb provider-network bvlan add 200	Allow all VLAN 200 to transmit from the interface
(config-if)#switchport beb provider-network bvlan add 300	Allow all VLAN 300 to transmit from the interface
(config-if)#switchport beb provider-network bvlan add 400	Allow all VLAN 400 to transmit from the interface
(config-if)#spb enable	Enable spb at interface
(config-if)#no shutdown	Configure Interface to up mode

(config-if)#exit	Exit from interface level
(config)#interface eth2	Enter interface mode
(config-if)#switchport	Configure the interface as layer 2
(config-if)#bridge-group 1	Configure the interface as part of the bridge
(config-if)#switchport mode pnp	Configure the interface as a provider network
(config-if)#switchport beb provider-network bvlan add 100	Allow all VLAN 100 to transmit from the interface
(config-if)#switchport beb provider-network bvlan add 200	Allow all VLAN 200 to transmit from the interface
(config-if)#switchport beb provider-network bvlan add 300	Allow all VLAN 300 to transmit from the interface
(config-if)#switchport beb provider-network bvlan add 400	Allow all VLAN 400 to transmit from the interface
(config-if)#spb enable	Enable spb at interface
(config-if)#no shutdown	Configure Interface to up mode
(config-if)#exit	Exit from interface level
(config)# ethernet cfm configure default-md-level level 5 mip-creation default bridge 1	Create MD level 5

Provider Bridges (PEB and PCB)

PEB1 - EDGE - SYS1

#conf t	Enter configure mode
(config)#bridge 1 protocol spbv svlan edge	Configure bridge 1 as an SPBV provider edge bridge
(config)#vlan database	Enter VLAN database mode
(config-vlan)#vlan 10 type customer bridge 1 state enable	Configure VLAN 10 on bridge 1
(config-vlan)#vlan 20 type customer bridge 1 state enable	Configure VLAN 20 on bridge 1
(config-vlan)#vlan 30 type customer bridge 1 state enable	Configure VLAN 30 on bridge 1
(config-vlan)#vlan 40 type customer bridge 1 state enable	Configure VLAN 40 on bridge 1
(config-vlan)#vlan 100 type service multipoint-multipoint bridge 1 state enable	Configure VLAN 100 as a service VLAN
(config-vlan)#vlan 200 type service multipoint-multipoint bridge 1 state enable	Configure VLAN 200 as a service VLAN
(config-vlan)#vlan 300 type service multipoint-multipoint bridge 1 state enable	Configure VLAN 300 as a service VLAN

(config-vlan)#vlan 400 type service multipoint-multipoint bridge 1 state enable	Configure VLAN 400 as a service VLAN
(config-vlan)#ex	Exit VLAN database mode
(config)#isis-spb configuration bridge 1	Enter ISIS-SPB mode
(isis-spb-config)#isis-spb multi-topology-id 3996	Set an MTID
(isis-spb-config)#isis-spb system-id 11.11.11.11.11.11	Set the ISIS-SPB system identifier
(isis-spb-config)#exit	Exit ISIS-SPB mode
(config)#cvlan registration table map1 bridge 1	Enter CVLAN registration mode
(config-cvlan-registration)#cvlan 10 svlan 100	Map customer VLAN 10 to service VLAN 100
(config-cvlan-registration)#cvlan 20 svlan 200	Map customer VLAN 20 to service VLAN 200
(config-cvlan-registration)#cvlan 30 svlan 300	Map customer VLAN 30 to service VLAN 300
(config-cvlan-registration)#cvlan 40 svlan 400	Map customer VLAN 40 to service VLAN 400
(config-cvlan-registration)#ex	Exit from vlan database mode
(config)#bridge 1 spb enable	Enable spb in bridge 1
(config)#spanning-tree mst configuration	Enter MST mode
(config-mst)#bridge 1 instance spbv	Associate bridge 1 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 1	Associate VLAN 1 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 100	Associate VLAN 100 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 200	Associate VLAN 200 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 300	Associate VLAN 300 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 400	Associate VLAN 400 to the SPBV instance
(config-mst)#ex	Exit MST mode
(config)#spb configuration	Enter SPB mode
(spb-config)#bridge 1 spbv mode manual	spbv mode manual Set the SPVID allocation mode to manual
(spb-config)#bridge 1 spbv bvlan 1 spvid 3619	Associate base VLAN 1 to SPVID 3619
(spb-config)#bridge 1 spbv bvlan 100 spvid 3611	Associate base VLAN 100 to SPVID 3611
(spb-config)#bridge 1 spbv bvlan 200 spvid 3612	Associate base VLAN 200 to SPVID 3612
(spb-config)#bridge 1 spbv bvlan 300 spvid 3613	Associate base VLAN 300 to SPVID 3613
(spb-config)#bridge 1 spbv bvlan 400 spvid 3614	Associate base VLAN 400 to SPVID 3614
(spb-config)#bridge 1 instance spbv vlan 100 ect 1	Associate VLAN 100 to ECT algorithm 1

(spb-config)#bridge 1 instance spbv vlan 200 ect 2	Associate VLAN 200 to ECT algorithm 2
(spb-config)#bridge 1 instance spbv vlan 300 ect 1 mtid 3996	Associate VLAN 300 to ECT algorithm 1 and MTID 3996
(spb-config)#bridge 1 instance spbv vlan 400 ect 2 mtid 3996	Associate VLAN 400 to ECT algorithm 2 and MTID 3996
(spb-config)#ex	Exit SPB mode
(config)#interface eth2	Enter interface mode
(config-if)#switchport	Configure the interface as layer 2
(config-if)#bridge-group 1	Configure the interface as part of the bridge
(config-if)#switchport mode provider-network	Configure the port type as provider network
(config-if)#switchport provider-network allowed vlan add 100	Allow all VLAN 100 to transmit from the interface
(config-if)#switchport provider-network allowed vlan add 200	Allow all VLAN 200 to transmit from the interface
(config-if)#switchport provider-network allowed vlan add 300	Allow all VLAN 300 to transmit from the interface
(config-if)#switchport provider-network allowed vlan add 400	Allow all VLAN 400 to transmit from the interface
(config-if)#spb enable	Enable spb at interface
(config-if)#no shutdown	Bring up interface
(config-if)#ex	Exit interface mode
(config)#interface eth1	Enter interface mode
(config-if)#switchport	Configure the interface as layer 2
(config-if)#bridge-group 1	Configure the interface as part of the bridge
(config-if)#switchport mode provider-network	Configure the port type as provider network
(config-if)#switchport provider-network allowed vlan add 100	Allow all VLAN 100 to transmit from the interface
(config-if)#switchport provider-network allowed vlan add 200	Allow all VLAN 200 to transmit from the interface
(config-if)#switchport provider-network allowed vlan add 300	Allow all VLAN 300 to transmit from the interface
(config-if)#switchport provider-network allowed vlan add 400	Allow all VLAN 400 to transmit from the interface
(config-if)#spb enable	Enable spb at interface
(config-if)#no shutdown	Bring up interface
(config-if)#ex	Exit interface mode
(config)#interface eth3	Enter interface mode
(config-if)#switchport	Configure the interface as layer 2
(config-if)#bridge-group 1	Configure the interface as part of the bridge
(config-if)#switchport mode customer-edge hybrid	Configure the port type as customer edge hybrid
(config-if)#switchport mode customer-edge hybrid acceptable-frame-type all	Configure the port to accept all frame types

(config-if)#switchport customer-edge hybrid allowed vlan all	Allow all VLANs created on the interface
(config-if)#switchport customer-edge vlan registration map1	Associate map1 with the interface
(config-if)#no shutdown	Bring up interface
(config-if)#ex	Exit interface mode
(config)#ethernet cfm domain-name type character-string name MD1 level 5 mip-creation default bridge 1	Create domain level 5 at PEB1
(config-ether-cfm)#service ma-type string ma-name MA1 vlan 100 mip-creation default	Create maintenance association MA1 inside MD1
(config-ether-cfm)#mep crosscheck mpid 2 vlan 100	Crosscheck mep at PEB2 mpid 2
(config-ether-cfm)#ex	Exit Etherent CFM mode
(config)#interface eth1	Enter interface mode
(config-if)#ethernet cfm mep down mpid 1 active true domain MD1 vlan 100 local-vid 100 bridge 1	Create down MEP
(config-if-eth-cfm-mep)#cc multicast state enable	Enable cc multicast
(config-if-eth-cfm-mep)#ex	Exit CFM MEP mode

PEB2-EDGE-SYS3

#conf t	Enter configure mode
(config)#bridge 1 protocol spbv svlan edge	Configure bridge 1 as an SPBV provider edge bridge
(config)#vlan database	Enter VLAN database mode
(config-vlan)#vlan 10 type customer bridge 1 state enable	Configure VLAN 10 on bridge 1
(config-vlan)#vlan 20 type customer bridge 1 state enable	Configure VLAN 20 on bridge 1
(config-vlan)#vlan 30 type customer bridge 1 state enable	Configure VLAN 30 on bridge 1
(config-vlan)#vlan 40 type customer bridge 1 state enable	Configure VLAN 40 on bridge 1
(config-vlan)#vlan 100 type service multipoint-multipoint bridge 1 state enable	Configure VLAN 100 as a service VLAN
(config-vlan)#vlan 200 type service multipoint-multipoint bridge 1 state enable	Configure VLAN 200 as a service VLAN
(config-vlan)#vlan 300 type service multipoint-multipoint bridge 1 state enable	Configure VLAN 300 as a service VLAN
(config-vlan)#vlan 400 type service multipoint-multipoint bridge 1 state enable	Configure VLAN 400 as a service VLAN
(config-vlan)#ex	Exit VLAN database mode

(config)#isis-spb configuration bridge 1	Enter ISIS-SPB mode
(isis-spb-config)#isis-spb multi-topology-id 3996	Set an MTID
(isis-spb-config)#isis-spb system-id 33.33.33.33.33.33	Set the ISIS-SPB system identifier
(isis-spb-config)#exit	Exit ISIS-SPB mode
(config)#cvlan registration table map1 bridge 1	Enter CVLAN registration mode
(config-cvlan-registration)#cvlan 10 svlan 100	Map customer VLAN 10 to service VLAN 100
(config-cvlan-registration)#cvlan 20 svlan 200	Map customer VLAN 20 to service VLAN 200
(config-cvlan-registration)#cvlan 30 svlan 300	Map customer VLAN 30 to service VLAN 300
(config-cvlan-registration)#cvlan 40 svlan 400	Map customer VLAN 40 to service VLAN 400
(config-cvlan-registration)#ex	Exit from vlan database mode
(config)#bridge 1 spb enable	Enable spb in bridge 1
(config)#spanning-tree mst configuration	Enter MST mode
(config-mst)#bridge 1 instance spbv	Associate bridge 1 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 1	Associate VLAN 1 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 100	Associate VLAN 100 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 200	Associate VLAN 200 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 300	Associate VLAN 300 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 400	Associate VLAN 400 to the SPBV instance
(config-mst)#ex	Exit MST mode
(config)#spb configuration	Enter SPB mode
(spb-config)#bridge 1 spbv mode manual	spbv mode manual Set the SPVID allocation mode to manual
(spb-config)#bridge 1 spbv bvlan 1 spvid 3640	Associate base VLAN 1 to SPVID 3640
(spb-config)#bridge 1 spbv bvlan 100 spvid 3641	Associate base VLAN 100 to SPVID 3641
(spb-config)#bridge 1 spbv bvlan 200 spvid 3642	Associate base VLAN 200 to SPVID 3642
(spb-config)#bridge 1 spbv bvlan 300 spvid 3643	Associate base VLAN 300 to SPVID 3643
(spb-config)#bridge 1 spbv bvlan 400 spvid 3644	Associate base VLAN 400 to SPVID 3644
(spb-config)#bridge 1 instance spbv vlan 100 ect 1	Associate VLAN 100 to ECT algorithm 1
(spb-config)#bridge 1 instance spbv vlan 200 ect 2	Associate VLAN 200 to ECT algorithm 2
(spb-config)#bridge 1 instance spbv vlan 300 ect 1 mtid 3996	Associate VLAN 300 to ECT algorithm 1 and MTID 3996

(spb-config)#bridge 1 instance spbv vlan 400 ect 2 mtid 3996	Associate VLAN 400 to ECT algorithm 2 and MTID 3996
(spb-config)#ex	Exit SPB mode
(config)#interface eth2	Enter interface mode
(config-if)#switchport	Configure the interface as layer 2
(config-if)#bridge-group 1	Configure the interface as part of the bridge
(config-if)#switchport mode provider-network	Configure the port type as provider network
(config-if)#switchport provider-network allowed vlan add 100	Allow all VLAN 100 to transmit from the interface
(config-if)#switchport provider-network allowed vlan add 200	Allow all VLAN 200 to transmit from the interface
(config-if)#switchport provider-network allowed vlan add 300	Allow all VLAN 300 to transmit from the interface
(config-if)#switchport provider-network allowed vlan add 400	Allow all VLAN 400 to transmit from the interface
(config-if)#spb enable	Enable spb at interface
(config-if)#no shutdown	Bring up interface
(config-if)#ex	Exit interface mode
(config)#interface eth1	Enter interface mode
(config-if)#switchport	Configure the interface as layer 2
(config-if)#bridge-group 1	Configure the interface as part of the bridge
(config-if)#switchport mode provider-network	Configure the port type as provider network
(config-if)#switchport provider-network allowed vlan add 100	Allow all VLAN 100 to transmit from the interface
(config-if)#switchport provider-network allowed vlan add 200	Allow all VLAN 200 to transmit from the interface
(config-if)#switchport provider-network allowed vlan add 300	Allow all VLAN 300 to transmit from the interface
(config-if)#switchport provider-network allowed vlan add 400	Allow all VLAN 400 to transmit from the interface
(config-if)#spb enable	Enable spb at interface
(config-if)#no shutdown	Bring up interface
(config-if)#ex	Exit interface mode
(config)#interface eth3	Enter interface mode
(config-if)#switchport	Configure the interface as layer 2
(config-if)#bridge-group 1	Configure the interface as part of the bridge
(config-if)#switchport mode customer-edge hybrid	Configure the port type as customer edge hybrid
(config-if)#switchport mode customer-edge hybrid acceptable-frame-type all	Configure the port to accept all frame types
(config-if)#switchport customer-edge hybrid allowed vlan all	Allow all VLANs created on the interface
(config-if)#switchport customer-edge vlan registration map1	Associate map1 with the interface

(config-if)#no shutdown	Bring up interface
(config-if)#ex	Exit interface mode
(config)#ethernet cfm domain-name type character-string name MD1 level 5 mip-creation default bridge 1	Create domain level 5 at PEB1
(config-ether-cfm)#service ma-type string ma-name MA1 vlan 100 mip-creation default	Create maintenance association MA1 inside MD1
(config-ether-cfm)#mep crosscheck mpid 1 vlan 100	Crosscheck mep at PEB1 mpid 1
(config-ether-cfm)#ex	Exit Ethernet CFM mode
(config)#interface eth1	Enter interface mode
(config-if)#ethernet cfm mep down mpid 2 active true domain MD1 vlan 100 local-vid 100 bridge 1	Create down MEP1
(config-if-eth-cfm-mep)#cc multicast state enable	Enable cc multicast
(config-if-eth-cfm-mep)#ex	Exit CFM MEP mode

PCB1 - SYS2

(config)#con terminal	Enter configuration mode
(config)#bridge 1 protocol spbv svlan	Configure bridge 1 as an SPBV provider core bridge
(config)#vlan database	Enter VLAN database mode
(config-vlan)#vlan 100 type service multipoint-multipoint bridge 1 state enable	Configure VLAN 100 as a service VLAN
(config-vlan)#vlan 200 type service multipoint-multipoint bridge 1 state enable	Configure VLAN 200 as a service VLAN
(config-vlan)#vlan 300 type service multipoint-multipoint bridge 1 state enable	Configure VLAN 300 as a service VLAN
(config-vlan)#vlan 400 type service multipoint-multipoint bridge 1 state enable	Configure VLAN 400 as a service VLAN
(config-vlan)#exit	Exit VLAN database mode
(config)#isis-spb configuration bridge 1	Enter ISIS-SPB mode
(isis-spb-config)#isis-spb multi-topology-id 3996	Set an MTID
(isis-spb-config)#isis-spb system-id 22.22.22.22.22.22	Set the ISIS-SPB system identifier
(isis-spb-config)#exit	Exit ISIS-SPB mode
(config)#spanning-tree mst configuration	Enter MST mode
(config-mst)#bridge 1 instance spbv	Associate bridge 1 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 1	Associate VLAN 1 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 100	Associate VLAN 100 to the SPBV instance

(config-mst)#bridge 1 instance spbv vlan 200	Associate VLAN 200 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 300	Associate VLAN 300 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 400	Associate VLAN 400 to the SPBV instance
(config-mst)#exit	Exit MST mode
(config)#spb configuration	Enter SPB mode
(spb-config)#bridge 1 instance spbv vlan 100 ect 1	Associate VLAN 100 to ECT algorithm 1
(spb-config)#bridge 1 instance spbv vlan 200 ect 2	Associate VLAN 200 to ECT algorithm 2
(spb-config)#bridge 1 instance spbv vlan 300 ect 1 mtid 3996	Associate VLAN 300 to ECT algorithm 1 and MTID 3996
(spb-config)#bridge 1 instance spbv vlan 400 ect 2 mtid 3996	Associate VLAN 400 to ECT algorithm 2 and MTID 3996
(spb-config)#ex	Exit SPB mode
(config)#interface eth2	Enter interface mode
(config-if)#switchport	Configure the interface as layer 2
(config-if)#bridge-group 1	Configure the interface as part of the bridge
(config-if)#switchport mode provider-network	Configure the port type as provider network
(config-if)#switchport provider-network allowed vlan add 100	Allow all VLAN 100 to transmit from the interface
(config-if)#switchport provider-network allowed vlan add 200	Allow all VLAN 200 to transmit from the interface
(config-if)#switchport provider-network allowed vlan add 300	Allow all VLAN 300 to transmit from the interface
(config-if)#switchport provider-network allowed vlan add 400	Allow all VLAN 400 to transmit from the interface
(config-if)#exit	Exit interface mode
(config)#interface eth1	Enter interface mode
(config-if)#switchport	Configure the interface as layer 2
(config-if)#bridge-group 1	Configure the interface as part of the bridge
(config-if)#switchport mode provider-network	Configure the port type as provider network
(config-if)#switchport provider-network allowed vlan add 100	Allow all VLAN 100 to transmit from the interface
(config-if)#switchport provider-network allowed vlan add 200	Allow all VLAN 200 to transmit from the interface
(config-if)#switchport provider-network allowed vlan add 300	Allow all VLAN 300 to transmit from the interface
(config-if)#switchport provider-network allowed vlan add 400	Allow all VLAN 400 to transmit from the interface
(config-if)#exit	Exit interface mode
(config)# ethernet cfm configure default-md-level level 5 mip-creation default bridge 1	Create MD level 5

PCB2-SYS4

(config)#con terminal	Enter configuration mode
(config)#bridge 1 protocol spbv svlan	Configure bridge 1 as an SPBV provider core bridge
(config)#vlan database	Enter VLAN database mode
(config-vlan)#vlan 100 type service multipoint-multipoint bridge 1 state enable	Configure VLAN 100 as a service VLAN
(config-vlan)#vlan 200 type service multipoint-multipoint bridge 1 state enable	Configure VLAN 200 as a service VLAN
(config-vlan)#vlan 300 type service multipoint-multipoint bridge 1 state enable	Configure VLAN 300 as a service VLAN
(config-vlan)#vlan 400 type service multipoint-multipoint bridge 1 state enable	Configure VLAN 400 as a service VLAN
(config-vlan)#exit	Exit VLAN database mode
(config)#isis-spb configuration bridge 1	Enter ISIS-SPB mode
(isis-spb-config)#isis-spb multi-topology-id 3996	Set an MTID
(isis-spb-config)#isis-spb system-id 44.44.44.44.44.44	Set the ISIS-SPB system identifier
(isis-spb-config)#exit	Exit ISIS-SPB mode
(config)#spanning-tree mst configuration	Enter MST mode
(config-mst)#bridge 1 instance spbv	Associate bridge 1 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 1	Associate VLAN 1 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 100	Associate VLAN 100 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 200	Associate VLAN 200 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 300	Associate VLAN 300 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 400	Associate VLAN 400 to the SPBV instance
(config-mst)#exit	Exit MST mode
(config)#spb configuration	Enter SPB mode
(spb-config)#bridge 1 instance spbv vlan 100 ect 1	Associate VLAN 100 to ECT algorithm 1
(spb-config)#bridge 1 instance spbv vlan 200 ect 2	Associate VLAN 200 to ECT algorithm 2
(spb-config)#bridge 1 instance spbv vlan 300 ect 1 mtid 3996	Associate VLAN 300 to ECT algorithm 1 and MTID 3996
(spb-config)#bridge 1 instance spbv vlan 400 ect 2 mtid 3996	Associate VLAN 400 to ECT algorithm 2 and MTID 3996
(spb-config)#ex	Exit SPB mode
(config)#interface eth2	Enter interface mode

(config-if)#switchport	Configure the interface as layer 2
(config-if)#bridge-group 1	Configure the interface as part of the bridge
(config-if)#switchport mode provider-network	Configure the port type as provider network
(config-if)#switchport provider-network allowed vlan add 100	Allow all VLAN 100 to transmit from the interface
(config-if)#switchport provider-network allowed vlan add 200	Allow all VLAN 200 to transmit from the interface
(config-if)#switchport provider-network allowed vlan add 300	Allow all VLAN 300 to transmit from the interface
(config-if)#switchport provider-network allowed vlan add 400	Allow all VLAN 400 to transmit from the interface
(config-if)#exit	Exit interface mode
(config)#interface eth1	Enter interface mode
(config-if)#switchport	Configure the interface as layer 2
(config-if)#bridge-group 1	Configure the interface as part of the bridge
(config-if)#switchport mode provider-network	Configure the port type as provider network
(config-if)#switchport provider-network allowed vlan add 100	Allow all VLAN 100 to transmit from the interface
(config-if)#switchport provider-network allowed vlan add 200	Allow all VLAN 200 to transmit from the interface
(config-if)#switchport provider-network allowed vlan add 300	Allow all VLAN 300 to transmit from the interface
(config-if)#switchport provider-network allowed vlan add 400	Allow all VLAN 400 to transmit from the interface
(config-if)#exit	Exit interface mode
(config)# ethernet cfm configure default-md-level level 5 mip-creation default bridge 1	Create MD level 5

PCB3 - SYS5

(config)#con terminal	Enter configuration mode
(config)#bridge 1 protocol spbv svlan	Configure bridge 1 as an SPBV provider core bridge
(config)#vlan database	Enter VLAN database mode
(config-vlan)#vlan 100 type service multipoint-multipoint bridge 1 state enable	Configure VLAN 100 as a service VLAN
(config-vlan)#vlan 200 type service multipoint-multipoint bridge 1 state enable	Configure VLAN 200 as a service VLAN
(config-vlan)#vlan 300 type service multipoint-multipoint bridge 1 state enable	Configure VLAN 300 as a service VLAN
(config-vlan)#vlan 400 type service multipoint-multipoint bridge 1 state enable	Configure VLAN 400 as a service VLAN

(config-vlan)#exit	Exit VLAN database mode
(config)#isis-spb configuration bridge 1	Enter ISIS-SPB mode
(isis-spb-config)#isis-spb multi-topology-id 3996	Set an MTID
(isis-spb-config)#isis-spb system-id 55.55.55.55.55.55	Set the ISIS-SPB system identifier
(isis-spb-config)#exit	Exit ISIS-SPB mode
(config)#spanning-tree mst configuration	Enter MST mode
(config-mst)#bridge 1 instance spbv	Associate bridge 1 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 1	Associate VLAN 1 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 100	Associate VLAN 100 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 200	Associate VLAN 200 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 300	Associate VLAN 300 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 400	Associate VLAN 400 to the SPBV instance
(config-mst)#exit	Exit MST mode
(config)#spb configuration	Enter SPB mode
(spb-config)#bridge 1 instance spbv vlan 100 ect 1	Associate VLAN 100 to ECT algorithm 1
(spb-config)#bridge 1 instance spbv vlan 200 ect 2	Associate VLAN 200 to ECT algorithm 2
(spb-config)#bridge 1 instance spbv vlan 300 ect 1 mtid 3996	Associate VLAN 300 to ECT algorithm 1 and MTID 3996
(spb-config)#bridge 1 instance spbv vlan 400 ect 2 mtid 3996	Associate VLAN 400 to ECT algorithm 2 and MTID 3996
(spb-config)#ex	Exit SPB mode
(config)#interface eth2	Enter interface mode
(config-if)#switchport	Configure the interface as layer 2
(config-if)#bridge-group 1	Configure the interface as part of the bridge
(config-if)#switchport mode provider-network	Configure the port type as provider network
(config-if)#switchport provider-network allowed vlan add 100	Allow all VLAN 100 to transmit from the interface
(config-if)#switchport provider-network allowed vlan add 200	Allow all VLAN 200 to transmit from the interface
(config-if)#switchport provider-network allowed vlan add 300	Allow all VLAN 300 to transmit from the interface
(config-if)#switchport provider-network allowed vlan add 400	Allow all VLAN 400 to transmit from the interface
(config-if)#exit	Exit interface mode
(config)#interface eth1	Enter interface mode
(config-if)#switchport	Configure the interface as layer 2
(config-if)#bridge-group 1	Configure the interface as part of the bridge

(config-if)#switchport mode provider-network	Configure the port type as provider network
(config-if)#switchport provider-network allowed vlan add 100	Allow all VLAN 100 to transmit from the interface
(config-if)#switchport provider-network allowed vlan add 200	Allow all VLAN 200 to transmit from the interface
(config-if)#switchport provider-network allowed vlan add 300	Allow all VLAN 300 to transmit from the interface
(config-if)#switchport provider-network allowed vlan add 400	Allow all VLAN 400 to transmit from the interface
(config-if)#exit	Exit interface mode
(config)# ethernet cfm configure default-md-level level 5 mip-creation default bridge 1	Create MD level 5

PCB4 - SYS6

(config)#con terminal	Enter configuration mode
(config)#bridge 1 protocol spbv svlan	Configure bridge 1 as an SPBV provider core bridge
(config)#vlan database	Enter VLAN database mode
(config-vlan)#vlan 100 type service multipoint-multipoint bridge 1 state enable	Configure VLAN 100 as a service VLAN
(config-vlan)#vlan 200 type service multipoint-multipoint bridge 1 state enable	Configure VLAN 200 as a service VLAN
(config-vlan)#vlan 300 type service multipoint-multipoint bridge 1 state enable	Configure VLAN 300 as a service VLAN
(config-vlan)#vlan 400 type service multipoint-multipoint bridge 1 state enable	Configure VLAN 400 as a service VLAN
(config-vlan)#exit	Exit VLAN database mode
(config)#isis-spb configuration bridge 1	Enter ISIS-SPB mode
(isis-spb-config)#isis-spb multi-topology-id 3996	Set an MTID
(isis-spb-config)#isis-spb system-id 66.66.66.66.66.66	Set the ISIS-SPB system identifier
(isis-spb-config)#exit	Exit ISIS-SPB mode
(config)#spanning-tree mst configuration	Enter MST mode
(config-mst)#bridge 1 instance spbv	Associate bridge 1 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 1	Associate VLAN 1 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 100	Associate VLAN 100 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 200	Associate VLAN 200 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 300	Associate VLAN 300 to the SPBV instance

(config-mst)#bridge 1 instance spbv vlan 400	Associate VLAN 400 to the SPBV instance
(config-mst)#exit	Exit MST mode
(config)#spb configuration	Enter SPB mode
(spb-config)#bridge 1 instance spbv vlan 100 ect 1	Associate VLAN 100 to ECT algorithm 1
(spb-config)#bridge 1 instance spbv vlan 200 ect 2	Associate VLAN 200 to ECT algorithm 2
(spb-config)#bridge 1 instance spbv vlan 300 ect 1 mtid 3996	Associate VLAN 300 to ECT algorithm 1 and MTID 3996
(spb-config)#bridge 1 instance spbv vlan 400 ect 2 mtid 3996	Associate VLAN 400 to ECT algorithm 2 and MTID 3996
(spb-config)#ex	Exit SPB mode
(config)#interface eth2	Enter interface mode
(config-if)#switchport	Configure the interface as layer 2
(config-if)#bridge-group 1	Configure the interface as part of the bridge
(config-if)#switchport mode provider-network	Configure the port type as provider network
(config-if)#switchport provider-network allowed vlan add 100	Allow all VLAN 100 to transmit from the interface
(config-if)#switchport provider-network allowed vlan add 200	Allow all VLAN 200 to transmit from the interface
(config-if)#switchport provider-network allowed vlan add 300	Allow all VLAN 300 to transmit from the interface
(config-if)#switchport provider-network allowed vlan add 400	Allow all VLAN 400 to transmit from the interface
(config-if)#exit	Exit interface mode
(config)#interface eth1	Enter interface mode
(config-if)#switchport	Configure the interface as layer 2
(config-if)#bridge-group 1	Configure the interface as part of the bridge
(config-if)#switchport mode provider-network	Configure the port type as provider network
(config-if)#switchport provider-network allowed vlan add 100	Allow all VLAN 100 to transmit from the interface
(config-if)#switchport provider-network allowed vlan add 200	Allow all VLAN 200 to transmit from the interface
(config-if)#switchport provider-network allowed vlan add 300	Allow all VLAN 300 to transmit from the interface
(config-if)#switchport provider-network allowed vlan add 400	Allow all VLAN 400 to transmit from the interface
(config-if)#exit	Exit interface mode
(config)# ethernet cfm configure default-md-level level 5 mip-creation default bridge 1	Create MD level 5

Customer Bridges (CEB and CCB)

CEB1 - SYS1

(config)#conf ter	Enter configuration mode
(config)#bridge 1 protocol spbv cvlan edge	Configure bridge 1 as an SPBV customer edge bridge
(config)#vlan database	Enter VLAN database mode
(config-vlan)#vlan 100 bridge 1 state enable	Configure VLAN 100 on bridge 1
(config-vlan)#vlan 200 bridge 1 state enable	Configure VLAN 200 on bridge 1
(config-vlan)#vlan 300 bridge 1 state enable	Configure VLAN 300 on bridge 1
(config-vlan)#vlan 400 bridge 1 state enable	Configure VLAN 400 on bridge 1
(config-vlan)#ex	Exit VLAN database mode
(config)#isis-spb configuration bridge 1	Enter ISIS-SPB mode
(isis-spb-config)#isis-spb multi-topology-id 3996	Set an MTID
(isis-spb-config)#no isis-spb system-id	Reset the ISIS-SPB system identifier it its default value (0)
(isis-spb-config)#isis-spb system-id 11.11.11.11.11.11	Set the ISIS-SPB system identifier
(isis-spb-config)#exit	Exit ISIS-SPB mode
(config)#spanning-tree mst configuration	Enter MST mode
(config-mst)#bridge 1 instance spbv	Associate bridge 1 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 1	Associate VLAN 1 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 100	Associate VLAN 100 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 200	Associate VLAN 200 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 300	Associate VLAN 300 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 400	Associate VLAN 400 to the SPBV instance
(config-mst)#ex	Exit MST mode
(config)#spb configuration	Enter SPB mode
(spb-config)#bridge 1 spbv mode manual	Set the SPVID allocation mode to manual
(spb-config)#bridge 1 spbv bvlan 1 spvid 3619	Associate base VLAN 1 to SPVID 3619
(spb-config)#bridge 1 spbv bvlan 100 spvid 3611	Associate base VLAN 100 to SPVID 3611
(spb-config)#bridge 1 spbv bvlan 200 spvid 3612	Associate base VLAN 200 to SPVID 3612

(spb-config)#bridge 1 spbv bvlan 300 spvid 3613	Associate base VLAN 300 to SPVID 3613
(spb-config)#bridge 1 spbv bvlan 400 spvid 3614	Associate base VLAN 400 to SPVID 3614
(spb-config)#bridge 1 instance spbv vlan 100 ect 1	Associate VLAN 100 to ECT algorithm 1
(spb-config)#bridge 1 instance spbv vlan 200 ect 2	Associate VLAN 200 to ECT algorithm 2
(spb-config)#bridge 1 instance spbv vlan 300 ect 1 mtid 3996	Associate VLAN 300 to ECT algorithm 1 and MTID 3996
(spb-config)#bridge 1 instance spbv vlan 400 ect 2 mtid 3996	Associate VLAN 400 to ECT algorithm 2 and MTID 3996
(spb-config)#ex	Exit SPB mode
(config)#interface eth1	Enter interface mode
(config-if)#switchport	Configure the interface as layer 2
(config-if)#no shutdown	Bring up interface
(config-if)#bridge-group 1	Configure the interface as part of the bridge
(config-if)#switchport mode trunk	Configure the interface as a trunk
(config-if)#switchport trunk allowed vlan add 100	Allow all VLAN 100 to transmit from the interface
(config-if)#switchport trunk allowed vlan add 200	Allow all VLAN 200 to transmit from the interface
(config-if)#switchport trunk allowed vlan add 300	Allow all VLAN 300 to transmit from the interface
(config-if)#switchport trunk allowed vlan add 400	Allow all VLAN 400 to transmit from the interface
(config-if)#ex	Exit interface mode
(config)#interface eth2	Enter interface mode
(config-if)#switchport	Configure the interface as layer 2
(config-if)#no shutdown	Bring up interface
(config-if)#bridge-group 1	Configure the interface as part of the bridge
(config-if)#switchport mode trunk	Configure the interface as a trunk
(config-if)#switchport trunk allowed vlan add 100	Allow all VLAN 100 to transmit from the interface
(config-if)#switchport trunk allowed vlan add 200	Allow all VLAN 200 to transmit from the interface
(config-if)#switchport trunk allowed vlan add 300	Allow all VLAN 300 to transmit from the interface
(config-if)#switchport trunk allowed vlan add 400	Allow all VLAN 400 to transmit from the interface
(config-if)#ex	Exit interface mode
(config)#interface eth3	Enter interface mode
(config-if)#switchport	Configure the interface as layer 2
(config-if)#no shutdown	Bring up interface
(config-if)#bridge-group 1	Configure the interface as part of the bridge
(config-if)#switchport mode trunk	Configure the interface as a trunk

(config-if)#switchport trunk allowed vlan add 100	Allow all VLAN 100 to transmit from the interface
(config-if)#switchport trunk allowed vlan add 200	Allow all VLAN 200 to transmit from the interface
(config-if)#switchport trunk allowed vlan add 300	Allow all VLAN 300 to transmit from the interface
(config-if)#switchport trunk allowed vlan add 400	Allow all VLAN 400 to transmit from the interface
(config-if)#ex	Exit interface mode
(config)#ethernet cfm domain-name type character-string name MD1 level 5 mip-creation default bridge 1	Create domain with name MD1 and level 5
(config-ether-cfm)#service ma-type string ma-name MA1 vlan 100 mip-creation default	Create maintenance association MA1
(config-ether-cfm)#mep crosscheck mpid 2 vlan 100	Crosscheck mpid 2 on ceb2
(config-ether-cfm)#exit	Exit Ethernet CFM mode
(config)#interface eth1	Enter interface mode
(config-if)#ethernet cfm mep down mpid 1 active true domain MD1 vlan 100 local-vid 100 bridge 1	Create dowm mpid 1
(config-if-eth-cfm-mep)#cc multicast state enable	Enable cc multicast
(config-if-eth-cfm-mep)#end	Exit CFM MEP mode

CEB2 - SYS3

(config)#conf ter	Enter configuration mode
(config)#bridge 1 protocol spbv cvlan edge	Configure bridge 1 as an SPBV customer edge bridge
(config)#vlan database	Enter VLAN database mode
(config-vlan)#vlan 100 bridge 1 state enable	Configure VLAN 100 on bridge 1
(config-vlan)#vlan 200 bridge 1 state enable	Configure VLAN 200 on bridge 1
(config-vlan)#vlan 300 bridge 1 state enable	Configure VLAN 300 on bridge 1
(config-vlan)#vlan 400 bridge 1 state enable	Configure VLAN 400 on bridge 1
(config-vlan)#ex	Exit VLAN database mode
(config)#isis-spb configuration bridge 1	Enter ISIS-SPB mode
(isis-spb-config)#isis-spb multi-topology-id 3996	Set an MTID
(isis-spb-config)#no isis-spb system-id	Reset the ISIS-SPB system identifier it its default value (0)
(isis-spb-config)#isis-spb system-id 33.33.33.33.33.33	Set the ISIS-SPB system identifier
(isis-spb-config)#exit	Exit ISIS-SPB mode
(config)#spanning-tree mst configuration	Enter MST mode

(config-mst)#bridge 1 instance spbv	Associate bridge 1 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 1	Associate VLAN 1 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 100	Associate VLAN 100 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 200	Associate VLAN 200 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 300	Associate VLAN 300 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 400	Associate VLAN 400 to the SPBV instance
(config-mst)#ex	Exit MST mode
(config)#spb configuration	Enter SPB mode
(spb-config)#bridge 1 spbv mode manual	Set the SPVID allocation mode to manual
(spb-config)#bridge 1 spbv bvlan 1 spvid 3640	Associate base VLAN 100 to SPVID 3640
(spb-config)#bridge 1 spbv bvlan 100 spvid 3641	Associate base VLAN 100 to SPVID 3641
(spb-config)#bridge 1 spbv bvlan 200 spvid 3642	Associate base VLAN 200 to SPVID 3642
(spb-config)#bridge 1 spbv bvlan 300 spvid 3643	Associate base VLAN 300 to SPVID 3643
(spb-config)#bridge 1 spbv bvlan 400 spvid 3644	Associate base VLAN 400 to SPVID 3644
(spb-config)#bridge 1 instance spbv vlan 100 ect 1	Associate VLAN 100 to ECT algorithm 1
(spb-config)#bridge 1 instance spbv vlan 200 ect 2	Associate VLAN 200 to ECT algorithm 2
(spb-config)#bridge 1 instance spbv vlan 300 ect 1 mtid 3996	Associate VLAN 300 to ECT algorithm 1 and MTID 3996
(spb-config)#bridge 1 instance spbv vlan 400 ect 2 mtid 3996	Associate VLAN 400 to ECT algorithm 2 and MTID 3996
(spb-config)#ex	Exit SPB mode
(config)#interface eth1	Enter interface mode
(config-if)#switchport	Configure the interface as layer 2
(config-if)#no shutdown	Bring up interface
(config-if)#bridge-group 1	Configure the interface as part of the bridge
(config-if)#switchport mode trunk	Configure the interface as a trunk
(config-if)#switchport trunk allowed vlan add 100	Allow all VLAN 100 to transmit from the interface
(config-if)#switchport trunk allowed vlan add 200	Allow all VLAN 200 to transmit from the interface
(config-if)#switchport trunk allowed vlan add 300	Allow all VLAN 300 to transmit from the interface
(config-if)#switchport trunk allowed vlan add 400	Allow all VLAN 400 to transmit from the interface
(config-if)#ex	Exit interface mode
(config)#interface eth2	Enter interface mode

(config-if)#switchport	Configure the interface as layer 2
(config-if)#no shutdown	Bring up interface
(config-if)#bridge-group 1	Configure the interface as part of the bridge
(config-if)#switchport mode trunk	Configure the interface as a trunk
(config-if)#switchport trunk allowed vlan add 100	Allow all VLAN 100 to transmit from the interface
(config-if)#switchport trunk allowed vlan add 200	Allow all VLAN 200 to transmit from the interface
(config-if)#switchport trunk allowed vlan add 300	Allow all VLAN 300 to transmit from the interface
(config-if)#switchport trunk allowed vlan add 400	Allow all VLAN 400 to transmit from the interface
(config-if)#ex	Exit interface mode
(config)#interface eth3	Enter interface mode
(config-if)#switchport	Configure the interface as layer 2
(config-if)#no shutdown	Bring up interface
(config-if)#bridge-group 1	Configure the interface as part of the bridge
(config-if)#switchport mode trunk	Configure the interface as a trunk
(config-if)#switchport trunk allowed vlan add 100	Allow all VLAN 100 to transmit from the interface
(config-if)#switchport trunk allowed vlan add 200	Allow all VLAN 200 to transmit from the interface
(config-if)#switchport trunk allowed vlan add 300	Allow all VLAN 300 to transmit from the interface
(config-if)#switchport trunk allowed vlan add 400	Allow all VLAN 400 to transmit from the interface
(config-if)#ex	Exit interface mode
(config)#ethernet cfm domain-name type character-string name MD1 level 5 mip-creation default bridge 1	Create domain with name MD1 and level 5
(config-ether-cfm)#service ma-type string ma-name MA1 vlan 100 mip-creation default	Create maintenance association MA1
(config-ether-cfm)#mep crosscheck mpid 1 vlan 100	Crosscheck mpid 1 on ceb1
(config-ether-cfm)#exit	Exit Ethernet CFM mode
(config)#interface eth1	Enter interface mode
(config-if)#ethernet cfm mep down mpid 2 active true domain MD1 vlan 100 local-vid 100 bridge 1	Create down mpid 2
(config-if-eth-cfm-mep)#cc multicast state enable	Enable cc multicast
(config-if-eth-cfm-mep)#end	Exit CFM MEP mode

CCB1 - SYS2

(config)#conf ter	Enter configuration mode
(config)#bridge 1 protocol spbv cvlan	Configure bridge 1 as an SPBV customer core bridge
(config)#vlan database	Enter VLAN database mode
(config-vlan)#vlan 100 bridge 1 state enable	Configure VLAN 100 on bridge 1
(config-vlan)#vlan 200 bridge 1 state enable	Configure VLAN 200 on bridge 1
(config-vlan)#vlan 300 bridge 1 state enable	Configure VLAN 300 on bridge 1
(config-vlan)#vlan 400 bridge 1 state enable	Configure VLAN 400 on bridge 1
(config-vlan)#ex	Exit VLAN database mode
(config)#isis-spb configuration bridge 1	Enter ISIS-SPB mode
(isis-spb-config)#isis-spb multi-topology-id 3996	Set an MTID
(isis-spb-config)#no isis-spb system-id	Reset the ISIS-SPB system identifier it its default value (0)
(isis-spb-config)#isis-spb system-id 22.22.22.22.22.22	Set the ISIS-SPB system identifier
(isis-spb-config)#exit	Exit ISIS-SPB mode
(config)#spanning-tree mst configuration	Enter MST mode
(config-mst)#bridge 1 instance spbv	Associate bridge 1 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 1	Associate VLAN 1 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 100	Associate VLAN 100 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 200	Associate VLAN 200 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 300	Associate VLAN 300 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 400	Associate VLAN 400 to the SPBV instance
(config-mst)#ex	Exit MST mode
(config)#spb configuration	Enter SPB mode
(spb-config)#bridge 1 instance spbv vlan 100 ect 1	Associate VLAN 100 to ECT algorithm 1
(spb-config)#bridge 1 instance spbv vlan 200 ect 2	Associate VLAN 200 to ECT algorithm 2
(spb-config)#bridge 1 instance spbv vlan 300 ect 1 mtid 3996	Associate VLAN 300 to ECT algorithm 1 and MTID 3996
(spb-config)#bridge 1 instance spbv vlan 400 ect 2 mtid 3996	Associate VLAN 400 to ECT algorithm 2 and MTID 3996
(spb-config)#ex	Exit SPB mode
(config)#interface eth1	Enter interface mode
(config-if)#switchport	Configure the interface as layer 2
(config-if)#bridge-group 1	Configure the interface as part of the bridge

(config-if)#switchport mode trunk	Configure the interface as a trunk
(config-if)#switchport trunk allowed vlan add 100	Allow all VLAN 100 transmit from the interface
(config-if)#switchport trunk allowed vlan add 200	Allow all VLAN 200 transmit from the interface
(config-if)#switchport trunk allowed vlan add 300	Allow all VLAN 300 transmit from the interface
(config-if)#switchport trunk allowed vlan add 400	Allow all VLAN 400 transmit from the interface
(config-if)#ex	Exit interface mode
(config)#interface eth2	Enter interface mode
(config-if)#switchport	Configure the interface as layer 2
(config-if)#bridge-group 1	Configure the interface as part of the bridge
(config-if)#switchport mode trunk	Configure the interface as a trunk
(config-if)#switchport trunk allowed vlan add 100	Allow all VLAN 100 transmit from the interface
(config-if)#switchport trunk allowed vlan add 200	Allow all VLAN 200 transmit from the interface
(config-if)#switchport trunk allowed vlan add 300	Allow all VLAN 300 transmit from the interface
(config-if)#switchport trunk allowed vlan add 400	Allow all VLAN 400 transmit from the interface
(config-if)#ex	Exit interface mode
(config)# ethernet cfm configure default-md-level level 5 mip-creation default bridge 1	Create MD level 5

CCB2 - SYS4

(config)#conf ter	Enter configuration mode
(config)#bridge 1 protocol spbv cvlan	Configure bridge 1 as an SPBV customer core bridge
(config)#vlan database	Enter VLAN database mode
(config-vlan)#vlan 100 bridge 1 state enable	Configure VLAN 100 on bridge 1
(config-vlan)#vlan 200 bridge 1 state enable	Configure VLAN 200 on bridge 1
(config-vlan)#vlan 300 bridge 1 state enable	Configure VLAN 300 on bridge 1
(config-vlan)#vlan 400 bridge 1 state enable	Configure VLAN 400 on bridge 1
(config-vlan)#ex	Exit VLAN database mode
(config)#isis-spb configuration bridge 1	Enter ISIS-SPB mode
(isis-spb-config)#isis-spb multi-topology-id 3996	Set an MTID
(isis-spb-config)#no isis-spb system-id	Reset the ISIS-SPB system identifier it its default value (0)

(isis-spb-config)#isis-spb system-id 44.44.44.44.44.44	Set the ISIS-SPB system identifier
(isis-spb-config)#exit	Exit ISIS-SPB mode
(config)#spanning-tree mst configuration	Enter MST mode
(config-mst)#bridge 1 instance spbv	Associate bridge 1 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 1	Associate VLAN 1 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 100	Associate VLAN 100 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 200	Associate VLAN 200 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 300	Associate VLAN 300 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 400	Associate VLAN 400 to the SPBV instance
(config-mst)#ex	Exit MST mode
(config)#spb configuration	Enter SPB mode
(spb-config)#bridge 1 instance spbv vlan 100 ect 1	Associate VLAN 100 to ECT algorithm 1
(spb-config)#bridge 1 instance spbv vlan 200 ect 2	Associate VLAN 200 to ECT algorithm 2
(spb-config)#bridge 1 instance spbv vlan 300 ect 1 mtid 3996	Associate VLAN 300 to ECT algorithm 1 and MTID 3996
(spb-config)#bridge 1 instance spbv vlan 400 ect 2 mtid 3996	Associate VLAN 400 to ECT algorithm 2 and MTID 3996
(spb-config)#ex	Exit SPB mode
(config)#interface eth1	Enter interface mode
(config-if)#switchport	Configure the interface as layer 2
(config-if)#bridge-group 1	Configure the interface as part of the bridge
(config-if)#switchport mode trunk	Configure the interface as a trunk
(config-if)#switchport trunk allowed vlan add 100	Allow all VLAN 100 transmit from the interface
(config-if)#switchport trunk allowed vlan add 200	Allow all VLAN 200 transmit from the interface
(config-if)#switchport trunk allowed vlan add 300	Allow all VLAN 300 transmit from the interface
(config-if)#switchport trunk allowed vlan add 400	Allow all VLAN 400 transmit from the interface
(config-if)#ex	Exit interface mode
(config)#interface eth2	Enter interface mode
(config-if)#switchport	Configure the interface as layer 2
(config-if)#no shutdown	
(config-if)#bridge-group 1	Configure the interface as part of the bridge
(config-if)#switchport mode trunk	Configure the interface as a trunk
(config-if)#switchport trunk allowed vlan add 100	Allow all VLAN 100 transmit from the interface

(config-if)#switchport trunk allowed vlan add 200	Allow all VLAN 200 transmit from the interface
(config-if)#switchport trunk allowed vlan add 300	Allow all VLAN 300 transmit from the interface
(config-if)#switchport trunk allowed vlan add 400	Allow all VLAN 400 transmit from the interface
(config-if)#ex	Exit interface mode
(config)#ethernet cfm configure default-md-level level 5 mip-creation default bridge 1	Create MD level 5

CCB3 - SYS5

(config)#conf ter	Enter configuration mode
(config)#bridge 1 protocol spbv cvlan	Configure bridge 1 as an SPBV customer core bridge
(config)#vlan database	Enter VLAN database mode
(config-vlan)#vlan 100 bridge 1 state enable	Configure VLAN 100 on bridge 1
(config-vlan)#vlan 200 bridge 1 state enable	Configure VLAN 200 on bridge 1
(config-vlan)#vlan 300 bridge 1 state enable	Configure VLAN 300 on bridge 1
(config-vlan)#vlan 400 bridge 1 state enable	Configure VLAN 400 on bridge 1
(config-vlan)#ex	Exit VLAN database mode
(config)#isis-spb configuration bridge 1	Enter ISIS-SPB mode
(isis-spb-config)#isis-spb multi-topology-id 3996	Set an MTID
(isis-spb-config)#no isis-spb system-id	Reset the ISIS-SPB system identifier it its default value (0)
(isis-spb-config)#isis-spb system-id 55.55.55.55.55	Set the ISIS-SPB system identifier
(isis-spb-config)#exit	Exit ISIS-SPB mode
(config)#spanning-tree mst configuration	Enter MST mode
(config-mst)#bridge 1 instance spbv	Associate bridge 1 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 1	Associate VLAN 1 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 100	Associate VLAN 100 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 200	Associate VLAN 200 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 300	Associate VLAN 300 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 400	Associate VLAN 400 to the SPBV instance
(config-mst)#ex	Exit MST mode
(config)#spb configuration	Enter SPB mode

(spb-config)#bridge 1 instance spbv vlan 100 ect 1	Associate VLAN 100 to ECT algorithm 1
(spb-config)#bridge 1 instance spbv vlan 200 ect 2	Associate VLAN 200 to ECT algorithm 2
(spb-config)#bridge 1 instance spbv vlan 300 ect 1 mtid 3996	Associate VLAN 300 to ECT algorithm 1 and MTID 3996
(spb-config)#bridge 1 instance spbv vlan 400 ect 2 mtid 3996	Associate VLAN 400 to ECT algorithm 2 and MTID 3996
(spb-config)#ex	Exit SPB mode
(config)#interface eth1	Enter interface mode
(config-if)#switchport	Configure the interface as layer 2
(config-if)#bridge-group 1	Configure the interface as part of the bridge
(config-if)#switchport mode trunk	Configure the interface as a trunk
(config-if)#switchport trunk allowed vlan add 100	Allow all VLAN 100 transmit from the interface
(config-if)#switchport trunk allowed vlan add 200	Allow all VLAN 200 transmit from the interface
(config-if)#switchport trunk allowed vlan add 300	Allow all VLAN 300 transmit from the interface
(config-if)#switchport trunk allowed vlan add 400	Allow all VLAN 400 transmit from the interface
(config-if)#ex	Exit interface mode
(config)#interface eth2	Enter interface mode
(config-if)#switchport	Configure the interface as layer 2
(config-if)#bridge-group 1	Configure the interface as part of the bridge
(config-if)#switchport mode trunk	Configure the interface as a trunk
(config-if)#switchport trunk allowed vlan add 100	Allow all VLAN 100 transmit from the interface
(config-if)#switchport trunk allowed vlan add 200	Allow all VLAN 200 transmit from the interface
(config-if)#switchport trunk allowed vlan add 300	Allow all VLAN 300 transmit from the interface
(config-if)#switchport trunk allowed vlan add 400	Allow all VLAN 400 transmit from the interface
(config-if)#ex	Exit interface mode
(config)#ethernet cfm configure default-md-level level 5 mip-creation default bridge 1	Create MD level 5

CCB4 - SYS6

(config)#conf ter	Enter configuration mode
(config)#bridge 1 protocol spbv cvlan	Configure bridge 1 as an SPBV customer core bridge
(config)#vlan database	Enter VLAN database mode
(config-vlan)#vlan 100 bridge 1 state enable	Configure VLAN 100 on bridge 1

(config-vlan)#vlan 200 bridge 1 state enable	Configure VLAN 200 on bridge 1
(config-vlan)#vlan 300 bridge 1 state enable	Configure VLAN 300 on bridge 1
(config-vlan)#vlan 400 bridge 1 state enable	Configure VLAN 400 on bridge 1
(config-vlan)#ex	Exit VLAN database mode
(config)#isis-spb configuration bridge 1	Enter ISIS-SPB mode
(isis-spb-config)#isis-spb multi-topology-id 3996	Set an MTID
(isis-spb-config)#no isis-spb system-id	Reset the ISIS-SPB system identifier it its default value (0)
(isis-spb-config)#isis-spb system-id 66.66.66.66.66.66	Set the ISIS-SPB system identifier
(isis-spb-config)#exit	Exit ISIS-SPB mode
(config)#spanning-tree mst configuration	Enter MST mode
(config-mst)#bridge 1 instance spbv	Associate bridge 1 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 1	Associate VLAN 1 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 100	Associate VLAN 100 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 200	Associate VLAN 200 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 300	Associate VLAN 300 to the SPBV instance
(config-mst)#bridge 1 instance spbv vlan 400	Associate VLAN 400 to the SPBV instance
(config-mst)#ex	Exit MST mode
(config)#spb configuration	Enter SPB mode
(spb-config)#bridge 1 instance spbv vlan 100 ect 1	Associate VLAN 100 to ECT algorithm 1
(spb-config)#bridge 1 instance spbv vlan 200 ect 2	Associate VLAN 200 to ECT algorithm 2
(spb-config)#bridge 1 instance spbv vlan 300 ect 1 mtid 3996	Associate VLAN 300 to ECT algorithm 1 and MTID 3996
(spb-config)#bridge 1 instance spbv vlan 400 ect 2 mtid 3996	Associate VLAN 400 to ECT algorithm 2 and MTID 3996
(spb-config)#ex	Exit SPB mode
(config)#interface eth1	Enter interface mode
(config-if)#switchport	Configure the interface as layer 2
(config-if)#bridge-group 1	Configure the interface as part of the bridge
(config-if)#switchport mode trunk	Configure the interface as a trunk
(config-if)#switchport trunk allowed vlan add 100	Allow all VLAN 100 transmit from the interface
(config-if)#switchport trunk allowed vlan add 200	Allow all VLAN 200 transmit from the interface
(config-if)#switchport trunk allowed vlan add 300	Allow all VLAN 300 transmit from the interface

(config-if)#switchport trunk allowed vlan add 400	Allow all VLAN 400 transmit from the interface
(config-if)#ex	Exit interface mode
(config)#interface eth2	Enter interface mode
(config-if)#switchport	Configure the interface as layer 2
(config-if)#no shutdown	Bring up interface
(config-if)#bridge-group 1	Configure the interface as part of the bridge
(config-if)#switchport mode trunk	Configure the interface as a trunk
(config-if)#switchport trunk allowed vlan add 100	Allow all VLAN 100 transmit from the interface
(config-if)#switchport trunk allowed vlan add 200	Allow all VLAN 200 transmit from the interface
(config-if)#switchport trunk allowed vlan add 300	Allow all VLAN 300 transmit from the interface
(config-if)#switchport trunk allowed vlan add 400	Allow all VLAN 400 transmit from the interface
(config-if)#ex	Exit interface mode
(config)#ethernet cfm configure default-md-level level 5 mip-creation default bridge 1	Create MD level 5

Validation

show spb adjacency interface eth1

BEB1

```
#show spb adjacency interface eth1

Path_cost    - 200000
Admin_state - UP
Port ID - 32771
Port priority - 128

NEIGHBOUR DETAILS
---------------------
Sys_id               - 22.22.22.22.22.22

State                - Up

Agreement digest     - 0000000413a5dcfd5f8eb5e83a20bd7e44d2833a

MCID
Conf Digest          - 228e2fa8e9a3db74307fd564f43993d3

AUX_MCID
Conf Digest          - 228e2fa8e9a3db74307fd564f43993d3
```

```
#show spb adjacency interface eth2

Path_cost    - 200000
Admin_state - UP
Port ID - 32772
Port priority - 128

NEIGHBOUR DETAILS
---------------------
Sys_id               - 55.55.55.55.55.55

State                - Up

Agreement digest     - 000000059a8a55a823ca0add34383b3e64404cda

MCID
Conf Digest          - 228e2fa8e9a3db74307fd564f43993d3

AUX_MCID
Conf Digest          - 228e2fa8e9a3db74307fd564f43993d3
```

BEB2

```
#show spb adjacency interface eth1

Path_cost    - 200000
Admin_state - UP
Port ID - 32771
Port priority - 128

NEIGHBOUR DETAILS
---------------------
Sys_id               - 44.44.44.44.44.44

State                - Up

Agreement digest     - 00000004560725l3f61421ab7fbed2bd85305f9e

MCID
Conf Digest          - 228e2fa8e9a3db74307fd564f43993d3

AUX_MCID
Conf Digest          - 228e2fa8e9a3db74307fd564f43993d3

#show spb adjacency interface eth2

Path_cost    - 200000
Admin_state - UP
Port ID - 32772
Port priority - 128
```

```
NEIGHBOUR DETAILS
---------------------
Sys_id               - 66.66.66.66.66.66

State                - Up

Agreement digest     - 000000067826a975d4488ae95ddebaebe1ead860

MCID
Conf Digest          - 228e2fa8e9a3db74307fd564f43993d3

AUX_MCID
Conf Digest          - 228e2fa8e9a3db74307fd564f43993d3

#
```

BCB1

```
#show spb adjacency interface eth1

Path_cost    - 200000
Admin_state - UP
Port ID - 32771
Port priority - 128

NEIGHBOUR DETAILS
---------------------
Sys_id               - 11.11.11.11.11.11

State                - Up

Agreement digest     - 00000003aca1ea104da8d58a40f96ec29997003e

MCID
Conf Digest          - 228e2fa8e9a3db74307fd564f43993d3

AUX_MCID
Conf Digest          - 228e2fa8e9a3db74307fd564f43993d3

#show spb adjacency interface eth2

Path_cost    - 200000
Admin_state - UP
Port ID - 32772
Port priority - 128

NEIGHBOUR DETAILS
---------------------
Sys_id               - 44.44.44.44.44.44
```

```
State                - Up

Agreement digest     - 00000004560725l3f61421ab7fbed2bd85305f9e

MCID
Conf Digest          - 228e2fa8e9a3db74307fd564f43993d3

AUX_MCID
Conf Digest          - 228e2fa8e9a3db74307fd564f43993d3
```

BCB2

```
#show spb adjacency interface eth1

Path_cost    - 200000
Admin_state - UP
Port ID - 32771
Port priority - 128

NEIGHBOUR DETAILS
---------------------
Sys_id               - 33.33.33.33.33.33

State                - Up

Agreement digest     - 00000004cc9f85f494acc159b03e03af579f6828

MCID
Conf Digest          - 228e2fa8e9a3db74307fd564f43993d3

AUX_MCID
Conf Digest          - 228e2fa8e9a3db74307fd564f43993d3

#show spb adjacency interface eth2

Path_cost    - 200000
Admin_state - UP
Port ID - 32772
Port priority - 128

NEIGHBOUR DETAILS
---------------------
Sys_id               - 22.22.22.22.22.22

State                - Up

Agreement digest     - 0000000413a5dcfd5f8eb5e83a20bd7e44d2833a

MCID
Conf Digest          - 228e2fa8e9a3db74307fd564f43993d3
```

```
AUX_MCID
Conf Digest          - 228e2fa8e9a3db74307fd564f43993d3
```

BCB3

```
#show spb adjacency interface eth1

Path_cost    - 200000
Admin_state - UP
Port ID - 32771
Port priority - 128

NEIGHBOUR DETAILS
---------------------
Sys_id               - 11.11.11.11.11.11

State                - Up

Agreement digest     - 00000003aca1ea104da8d58a40f96ec29997003e

MCID
Conf Digest          - 228e2fa8e9a3db74307fd564f43993d3

AUX_MCID
Conf Digest          - 228e2fa8e9a3db74307fd564f43993d3

#show spb adjacency interface eth2

Path_cost    - 200000
Admin_state - UP
Port ID - 32772
Port priority - 128

NEIGHBOUR DETAILS
---------------------
Sys_id               - 66.66.66.66.66.66

State                - Up

Agreement digest     - 000000067826a975d4488ae95ddebaebe1ead860

MCID
Conf Digest          - 228e2fa8e9a3db74307fd564f43993d3

AUX_MCID
Conf Digest          - 228e2fa8e9a3db74307fd564f43993d3

#
```

BCB4

```
(config)#show spb adjacency interface eth1
```

```
Path_cost    - 200000
Admin_state - UP
Port ID - 32771
Port priority - 128

NEIGHBOUR DETAILS
---------------------
Sys_id               - 33.33.33.33.33.33

State                - Up

Agreement digest     - 00000004cc9f85f494acc159b03e03af579f6828

MCID
Conf Digest          - 228e2fa8e9a3db74307fd564f43993d3

AUX_MCID
Conf Digest          - 228e2fa8e9a3db74307fd564f43993d3

(config)#show spb adjacency interface eth2

Path_cost    - 200000
Admin_state - UP
Port ID - 32772
Port priority - 128

NEIGHBOUR DETAILS
---------------------
Sys_id               - 55.55.55.55.55.55

State                - Up

Agreement digest     - 000000059a8a55a823ca0add34383b3e64404cda

MCID
Conf Digest          - 228e2fa8e9a3db74307fd564f43993d3

AUX_MCID
Conf Digest          - 228e2fa8e9a3db74307fd564f43993d3

(config)#
```

show isis-spb neighbors

BEB1

```
#show isis-spb neighbors

System Id      Interface   SNPA               State  Holdtime  Type Protocol
```

```
---------      ---------   ----               -----  --------  ---- --------
MTID : 0
2222.2222.2222 eth1        5254.00cf.ae36     Up     29        L1   IS-IS

MTID : 3996
2222.2222.2222 eth1        5254.00cf.ae36     Up     29        L1   IS-IS

MTID : 0
5555.5555.5555 eth2        5254.0050.ed46     Up     27        L1   IS-IS

MTID : 3996
5555.5555.5555 eth2        5254.0050.ed46     Up     27        L1   IS-IS

Total Number of Neighbor(s): 4
#
```

BEB2

```
#show isis-spb neighbors

System Id      Interface   SNPA               State  Holdtime  Type Protocol
---------      ---------   ----               -----  --------  ---- --------
MTID : 0
4444.4444.4444 eth1        5254.0008.9001     Up     25        L1   IS-IS

MTID : 3996
4444.4444.4444 eth1        5254.0008.9001     Up     25        L1   IS-IS

MTID : 0
6666.6666.6666 eth2        5254.0082.6d85     Up     21        L1   IS-IS

MTID : 3996
6666.6666.6666 eth2        5254.0082.6d85     Up     21        L1   IS-IS

Total Number of Neighbor(s): 4
BCB1
#show isis-spb neighbors

System Id      Interface   SNPA               State  Holdtime  Type Protocol
---------      ---------   ----               -----  --------  ---- --------
MTID : 0
1111.1111.1111 eth1        5254.00c1.99a1     Up     25        L1   IS-IS

MTID : 3996
1111.1111.1111 eth1        5254.00c1.99a1     Up     25        L1   IS-IS

MTID : 0
4444.4444.4444 eth2        5254.001e.5b61     Up     27        L1   IS-IS

MTID : 3996
4444.4444.4444 eth2        5254.001e.5b61     Up     27        L1   IS-IS
```



```
Total Number of Neighbor(s): 4
```

BCB2

```
#show isis-spb neighbors

System Id      Interface   SNPA            State  Holdtime  Type Protocol
---------      ---------   ----            -----  --------  ---- --------
MTID : 0
3333.3333.3333 eth1        5254.00fc.eb11  Up     22        L1   IS-IS

MTID : 3996
3333.3333.3333 eth1        5254.00fc.eb11  Up     22        L1   IS-IS

MTID : 0
2222.2222.2222 eth2        5254.0004.43e4  Up     26        L1   IS-IS

MTID : 3996
2222.2222.2222 eth2        5254.0004.43e4  Up     26        L1   IS-IS

Total Number of Neighbor(s): 4
#
```

BCB3

```
#show isis-spb neighbors

System Id      Interface   SNPA            State  Holdtime  Type Protocol
---------      ---------   ----            -----  --------  ---- --------
MTID : 0
1111.1111.1111 eth1        5254.0026.26f8  Up     22        L1   IS-IS

MTID : 3996
1111.1111.1111 eth1        5254.0026.26f8  Up     22        L1   IS-IS

MTID : 0
6666.6666.6666 eth2        5254.0052.ab54  Up     29        L1   IS-IS

MTID : 3996
6666.6666.6666 eth2        5254.0052.ab54  Up     29        L1   IS-IS

Total Number of Neighbor(s): 4
```

BCB4

```
(config)#show isis-spb neighbors

System Id      Interface   SNPA            State  Holdtime  Type Protocol
---------      ---------   ----            -----  --------  ---- --------
MTID : 0
3333.3333.3333 eth1        5254.007e.8af2  Up     25        L1   IS-IS

MTID : 3996
```

```
3333.3333.3333 eth1        5254.007e.8af2      Up     25        L1   IS-IS

MTID : 0
5555.5555.5555 eth2        5254.00fd.caa0      Up     28        L1   IS-IS

MTID : 3996
5555.5555.5555 eth2        5254.00fd.caa0      Up     28        L1   IS-IS

Total Number of Neighbor(s): 4
```

show isis-spb fdb

BEB1

```
#show isis-spb fdb

SPB Forwarding Database:
[U - Unicast, M - Multicast]
  I/P INTERFACE  DESTINATION-ADDRESS  SPVID/B-VID  O/P INTERFACE
  -------------  -------------------  ----------  ------------
MTID : 0, ECT ALGO : 1
U if/**          xx.xx.xx.xx.xx.xx    3611          if/eth1 if/eth2
U if/**          xx.xx.xx.xx.xx.xx    3619          if/eth1 if/eth2
MTID : 0, ECT ALGO : 2
U if/**          xx.xx.xx.xx.xx.xx    3612          if/eth1 if/eth2
MTID : 3996, ECT ALGO : 1
U if/**          xx.xx.xx.xx.xx.xx    3613          if/eth1 if/eth2
MTID : 3996, ECT ALGO : 2
U if/**          xx.xx.xx.xx.xx.xx    3614          if/eth1 if/eth2

Number of Unicast Records: 5
Number of Multicast Records: 0
```

BEB2

```
#show isis-spb fdb

SPB Forwarding Database:
[U - Unicast, M - Multicast]
  I/P INTERFACE  DESTINATION-ADDRESS  SPVID/B-VID  O/P INTERFACE
  -------------  -------------------  ----------  ------------
MTID : 0, ECT ALGO : 1
U if/**          xx.xx.xx.xx.xx.xx    3640          if/eth1 if/eth2
U if/**          xx.xx.xx.xx.xx.xx    3641          if/eth1 if/eth2
MTID : 0, ECT ALGO : 2
U if/**          xx.xx.xx.xx.xx.xx    3642          if/eth1 if/eth2
MTID : 3996, ECT ALGO : 1
U if/**          xx.xx.xx.xx.xx.xx    3643          if/eth1 if/eth2
MTID : 3996, ECT ALGO : 2
U if/**          xx.xx.xx.xx.xx.xx    3644          if/eth1 if/eth2

Number of Unicast Records: 5
```



```
Number of Multicast Records: 0
```

BCB1

```
(config)#show isis-spb fdb

SPB Forwarding Database:
[U - Unicast, M - Multicast]
  I/P INTERFACE  DESTINATION-ADDRESS  SPVID/B-VID  O/P INTERFACE
  -------------  -------------------  ----------  ------------
MTID : 0, ECT ALGO : 1
U if/eth1        xx.xx.xx.xx.xx.xx    3611          if/eth2
U if/eth1        xx.xx.xx.xx.xx.xx    3619          if/eth2
U if/eth2        xx.xx.xx.xx.xx.xx    3640          if/eth1
U if/eth2        xx.xx.xx.xx.xx.xx    3641          if/eth1
MTID : 0, ECT ALGO : 2
U if/eth1        xx.xx.xx.xx.xx.xx    3612          if/eth2
MTID : 3996, ECT ALGO : 1
U if/eth1        xx.xx.xx.xx.xx.xx    3613          if/eth2
U if/eth2        xx.xx.xx.xx.xx.xx    3643          if/eth1
MTID : 3996, ECT ALGO : 2
U if/eth1        xx.xx.xx.xx.xx.xx    3614          if/eth2

Number of Unicast Records: 8
Number of Multicast Records: 0
```

BCB2

```
#show isis-spb fdb

SPB Forwarding Database:
[U - Unicast, M - Multicast]
  I/P INTERFACE  DESTINATION-ADDRESS  SPVID/B-VID  O/P INTERFACE
  -------------  -------------------  ----------  ------------
MTID : 0, ECT ALGO : 1
U if/eth1        xx.xx.xx.xx.xx.xx    3640          if/eth2
U if/eth1        xx.xx.xx.xx.xx.xx    3641          if/eth2
U if/eth2        xx.xx.xx.xx.xx.xx    3611          if/eth1
U if/eth2        xx.xx.xx.xx.xx.xx    3619          if/eth1
MTID : 0, ECT ALGO : 2
U if/eth1        xx.xx.xx.xx.xx.xx    3642          if/eth2
MTID : 3996, ECT ALGO : 1
U if/eth1        xx.xx.xx.xx.xx.xx    3643          if/eth2
U if/eth2        xx.xx.xx.xx.xx.xx    3613          if/eth1
MTID : 3996, ECT ALGO : 2
U if/eth1        xx.xx.xx.xx.xx.xx    3644          if/eth2

Number of Unicast Records: 8
Number of Multicast Records: 0
```

BCB3

```
#show isis-spb fdb
```

```
SPB Forwarding Database:
[U - Unicast, M - Multicast]
  I/P INTERFACE  DESTINATION-ADDRESS  SPVID/B-VID  O/P INTERFACE
  -------------  -------------------  ----------  ------------
MTID : 0, ECT ALGO : 1
U if/eth1        xx.xx.xx.xx.xx.xx    3611          if/eth2
U if/eth1        xx.xx.xx.xx.xx.xx    3619          if/eth2
MTID : 0, ECT ALGO : 2
U if/eth1        xx.xx.xx.xx.xx.xx    3612          if/eth2
U if/eth2        xx.xx.xx.xx.xx.xx    3642          if/eth1
MTID : 3996, ECT ALGO : 1
U if/eth1        xx.xx.xx.xx.xx.xx    3613          if/eth2
MTID : 3996, ECT ALGO : 2
U if/eth1        xx.xx.xx.xx.xx.xx    3614          if/eth2
U if/eth2        xx.xx.xx.xx.xx.xx    3644          if/eth1

Number of Unicast Records: 7
Number of Multicast Records: 0
```

BCB4

```
#show isis-spb fdb

SPB Forwarding Database:
[U - Unicast, M - Multicast]
  I/P INTERFACE  DESTINATION-ADDRESS  SPVID/B-VID  O/P INTERFACE
  -------------  -------------------  ----------  ------------
MTID : 0, ECT ALGO : 1
U if/eth1        xx.xx.xx.xx.xx.xx    3640          if/eth2
U if/eth1        xx.xx.xx.xx.xx.xx    3641          if/eth2
MTID : 0, ECT ALGO : 2
U if/eth1        xx.xx.xx.xx.xx.xx    3642          if/eth2
U if/eth2        xx.xx.xx.xx.xx.xx    3612          if/eth1
MTID : 3996, ECT ALGO : 1
U if/eth1        xx.xx.xx.xx.xx.xx    3643          if/eth2
MTID : 3996, ECT ALGO : 2
U if/eth1        xx.xx.xx.xx.xx.xx    3644          if/eth2
U if/eth2        xx.xx.xx.xx.xx.xx    3614          if/eth1

Number of Unicast Records: 7
Number of Multicast Records: 0
```

show spbv bridge backbone vid-translation-table

BEB1

```
#show spbv bridge backbone vid-translation-table
EGRESS TABLE INFORMATION
SPVID       BVID            SYSTEM_ID
3641            100            33.33.33.33.33.33
3640              1            33.33.33.33.33.33
3643            300            33.33.33.33.33.33
```



```
3642            200             33.33.33.33.33.33
3644            400             33.33.33.33.33.33


INGRESS TABLE INFORMATION
BVID        SPVID            SYSTEM_ID
100           3611             11.11.11.11.11.11
1           3619             11.11.11.11.11.11
300           3613             11.11.11.11.11.11
200           3612             11.11.11.11.11.11
400           3614             11.11.11.11.11.11


#
```

BEB2

```
# show spbv bridge backbone vid-translation-table
EGRESS TABLE INFORMATION
SPVID       BVID             SYSTEM_ID
3612            200             11.11.11.11.11.11
3611            100             11.11.11.11.11.11
3614            400             11.11.11.11.11.11
3613            300             11.11.11.11.11.11
3619              1             11.11.11.11.11.11


INGRESS TABLE INFORMATION
BVID        SPVID            SYSTEM_ID
300           3643             33.33.33.33.33.33
100           3641             33.33.33.33.33.33
1           3640             33.33.33.33.33.33
200           3642             33.33.33.33.33.33
400           3644             33.33.33.33.33.33
```

show bridge spb

BEB1

```
#show bridge spb backbone


Bridge details
-------------------------------

B-MAC               - aa.aa.aa.aa.aa.aa

System ID           - 11.11.11.11.11.11

Bridge_priority     - 32768

MCID                - 228e2fa8e9a3db74307fd564f43993d3
```

```
AUX_MCID              - 228e2fa8e9a3db74307fd564f43993d3

CIST Root ID          - 8000525400c199a1

SPSourceID            - 0

BVID                   SPVID
  100                    3611
  1                     3619
  300                    3613
  200                    3612
  400                    3614


SPVID-POOL            - 3600 to 3999

 Global SPVID Table :    3611 ,    3612 ,    3613 ,    3614 ,    3619 ,    3640 ,    3641
,    3642 ,    3643 ,    3644 ,
 Local SPVID Table :    3611 ,    3612 ,    3613 ,    3614 ,    3619 ,
Agreement Digest    - 00000003aca1ea104da8d58a40f96ec29997003e

Agreement_digest_convention_capabilities - 0
Agreement_digest_convention_id - 2

Agreement_digest_format_capabilities - 0
Agreement_digest_format_id - 0

#
```

BEB2

```
#show bridge spb backbone


Bridge details
--------------------------------

B-MAC                 - bb.bb.bb.bb.bb.bb

System ID             - 33.33.33.33.33.33

Bridge_priority       - 32768

MCID                  - 228e2fa8e9a3db74307fd564f43993d3

AUX_MCID              - 228e2fa8e9a3db74307fd564f43993d3

CIST Root ID          - 8000525400fceb11

SPSourceID            - 0
```



```
BVID                  SPVID
  100                   3641
  1                   3640
  300                   3643
  200                   3642
  400                   3644


SPVID-POOL           - 3600 to 3999

 Global SPVID Table :    3611 ,    3612 ,    3613 ,    3614 ,    3619 ,    3640 ,    3641
,    3642 ,    3643 ,    3644 ,
 Local SPVID Table :    3640 ,    3641 ,    3642 ,    3643 ,    3644 ,
Agreement Digest    - 00000004cc9f85f494acc159b03e03af579f6828

Agreement_digest_convention_capabilities - 0
Agreement_digest_convention_id - 2

Agreement_digest_format_capabilities - 0
Agreement_digest_format_id - 0
```

BCB1

```
(config)#show bridge spb 1


Bridge details
--------------------------------

B-MAC                - 00.00.00.00.00.00

System ID            - 22.22.22.22.22.22

Bridge_priority      - 32768

MCID                 - 228e2fa8e9a3db74307fd564f43993d3

AUX_MCID             - 228e2fa8e9a3db74307fd564f43993d3

CIST Root ID         - 8000525400cfae36

SPSourceID           - 0

BVID                  SPVID
  100                   0
  1                   0
  300                   0
  200                   0
  400                   0
```

```
SPVID-POOL           - 3600 to 3999

 Global SPVID Table :    3611 ,    3612 ,    3613 ,    3614 ,    3619 ,    3640 ,    3641
,    3642 ,    3643 ,    3644 ,
 Local SPVID Table :
Agreement Digest    - 0000000413a5dcfd5f8eb5e83a20bd7e44d2833a

Agreement_digest_convention_capabilities - 0
Agreement_digest_convention_id - 2

Agreement_digest_format_capabilities - 0
Agreement_digest_format_id - 0
```

BCB2

```
#show bridge spb 1


Bridge details
-------------------------------

B-MAC                - 00.00.00.00.00.00

System ID            - 44.44.44.44.44.44

Bridge_priority      - 32768

MCID                 - 228e2fa8e9a3db74307fd564f43993d3

AUX_MCID             - 228e2fa8e9a3db74307fd564f43993d3

CIST Root ID         - 8000525400089001

SPSourceID           - 0

BVID                  SPVID
  100                   0
  1                    0
  300                   0
  200                   0
  400                   0


SPVID-POOL           - 3600 to 3999

 Global SPVID Table :    3611 ,    3612 ,    3613 ,    3614 ,    3619 ,    3640 ,    3641
,    3642 ,    3643 ,    3644 ,
 Local SPVID Table :
Agreement Digest    - 00000004560725l3f61421ab7fbed2bd85305f9e

Agreement_digest_convention_capabilities - 0
Agreement_digest_convention_id - 2
```



```
Agreement_digest_format_capabilities - 0
Agreement_digest_format_id – 0
```

BCB3

```
#show bridge spb 1


Bridge details
-------------------------------

B-MAC                - 00.00.00.00.00.00

System ID            - 55.55.55.55.55.55

Bridge_priority      - 32768

MCID                 - 228e2fa8e9a3db74307fd564f43993d3

AUX_MCID             - 228e2fa8e9a3db74307fd564f43993d3

CIST Root ID         - 800052540050ed46

SPSourceID           - 0

BVID                  SPVID
  100                   0
  1                    0
  300                   0
  200                   0
  400                   0


SPVID-POOL           - 3600 to 3999

 Global SPVID Table :    3611 ,    3612 ,    3613 ,    3614 ,    3619 ,    3640 ,    3641
,    3642 ,    3643 ,    3644 ,
 Local SPVID Table :
Agreement Digest    - 000000059a8a55a823ca0add34383b3e64404cda

Agreement_digest_convention_capabilities - 0
Agreement_digest_convention_id - 2

Agreement_digest_format_capabilities - 0
Agreement_digest_format_id - 0
```

BCB4

```
#show bridge spb 1


Bridge details
```

```
--------------------------------

B-MAC                - 00.00.00.00.00.00

System ID            - 66.66.66.66.66.66

Bridge_priority      - 32768

MCID                 - 228e2fa8e9a3db74307fd564f43993d3

AUX_MCID             - 228e2fa8e9a3db74307fd564f43993d3

CIST Root ID         - 8000525400826d85

SPSourceID           - 0

BVID                  SPVID
  100                   0
  1                    0
  300                   0
  200                   0
  400                   0


SPVID-POOL           - 3600 to 3999

 Global SPVID Table :    3611 ,    3612 ,    3613 ,    3614 ,    3619 ,    3640 ,    3641
,    3642 ,    3643 ,    3644 ,
 Local SPVID Table :
Agreement Digest    - 000000067826a975d4488ae95ddebaebe1ead860

Agreement_digest_convention_capabilities - 0
Agreement_digest_convention_id - 2

Agreement_digest_format_capabilities - 0
Agreement_digest_format_id - 0
```

Show Local and Remote Maintenance Points

```
#show ethernet cfm pbb maintenance-points local mep domain-name MD1 backbone
MPID   DOMAIN_NAME   LEVEL    TYPE   Doamin-Type   VLAN   ISID    Topology-type   PORT
CC-Status    Mac-address  RDI
--------------------------------------------------------------------------------
-------------------------------------
1       MD1           5       MEP    bvlan       100     0      default       eth3
enabled      5254.00b1.8422  False


#show ethernet cfm pbb maintenance-points remote domain-name MD1 vlan 100 backbone
MPID     LEVEL     VLAN     MEP-UP    Remote Mac         RDI
------------------------------------------------------------
```



```
2         5             100         Yes    5254.0002.3023     False
```

Show that LBM and LBR is Working

```
#ping ethernet pbb mac  5254.0002.3023 unicast source 1 domain-name MD1 vlan 100
backbone
 success rate is  100 (5/5)
```

Show that LTM and LTR is Working

```
#traceroute pbb ethernet 5254.0002.3023 domain-name MD1 vlan 100 backbone
 source mac       Hops     Relay-action
  5254.00cf.ae36       1       RlyFDB
  5254.001e.5b61       3       RlyFDB
  5254.0002.3023       5       RlyHit
  5254.0004.43e4       2       RlyFDB
  5254.0008.9001       4       RlyFDB
```

Index