Migration Configuration

This chapter contains the following sections:

Configuring the BGP Route Reflector on a Spine

In this procedure, you will add the Cisco Dynamic Fabric Automation-specific BGP configuration on the spine and identify the BGP route reflector.

Before You Begin

Before configuring the Border Gateway Protocol (BGP), you should have upgraded the spine switch software.

SUMMARY STEPS

1. **configure terminal**
2. switch (config) # **feature bgp**
3. switch (config) # **router bgp** *bgp-as*
4. switch (config-router) # **address-family ipv4 unicast**
5. switch (config-router) # **maximum-paths** [**ibgp**]
6. switch (config-router-af) # **additional-paths send**
7. switch (config-router-af) # **additional-paths selection route-map** *All-paths*
8. switch (config-router) # **address-family ipv6 unicast**
9. switch (config-router) # **maximum-paths** [**ibgp**]
10. switch (config-router-af) # **additional-paths send**
11. switch (config-router-af) # **additional-paths selection route-map**
12. switch (config-router) # **address-family vpnv4 unicast**
13. switch (config-router-af) # **additional-paths send**
14. switch (config-router-af) # **additional-paths receive**
15. switch (config-router-af) # **additional-paths selection route-map**
16. switch (config-router) # **address-family vpnv6 unicast**
17. switch (config-router-af) # **additional-paths send**
18. switch (config-router-af) # **additional-paths receive**
19. switch (config-router-af) # **additional-paths selection route-map**
20. switch (config-router) # **neighbor** {*ip-addr* | *ip-prefixlength* | *ipv6-addr* | *ipv6-prefixlength* } [**remote-as** {*as-num* [,*as-num*]}
21. switch (config-router-neighbor) # **address-family ipv4 unicast**
22. switch (config-router-neighbor-af) # **send-community**
23. switch (config-router-neighbor-af) # **send-community** [**extended**]
24. **[route-reflector-client]**
25. switch (config-router-neighbor) # **address-family ipv6 unicast**
26. switch (config-router-neighbor-af) # **send-community** [**extended**]
27. **[route-reflector-client]**
28. switch (config-router-neighbor) # **address-family vpnv4 unicast**
29. switch (config-router-neighbor-af) # **send-community** [**extended**]
30. **[route-reflector-client]**
31. switch (config-router-neighbor-af) # **capability additional-paths receive**
32. switch (config-router-neighbor)**address-family-vpnv6 unicast**
33. switch (config-router-neighbor-af) # **send-community** [**extended**]
34. **[route-reflector-client]**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**configure terminal**	Enters configuration mode
Step 2	switch (config) # **feature bgp**	Enables the Border Gateway Protocol (BGP). You must enable the BGP feature before you can configure BGP
Step 3	switch (config) # **router bgp** *bgp-as*	Configures a Border Gateway Protocol process for an interface. The as-number is the number of an autonomous system that identifies the router to other BGP routers and tags that the routing information passed along. The AS number can be a 16-bit integer or a 32-bit integer in the form of a higher 16-bit decimal number and a lower 16-bit decimal number in xx.xx format
Step 4	switch (config-router) # **address-family ipv4 unicast**	Enters the address family mode and configures submode commands for the Border Gateway Protocol (BGP)
Step 5	switch (config-router) # **maximum-paths** [**ibgp**]	Controls the maximum number of parallel routes that the Border Gateway Protocol (BGP) can support.
Step 6	switch (config-router-af) # **additional-paths send**	Configures the capability of sending additional paths to and from the BGP peers.
Step 7	switch (config-router-af) # **additional-paths selection route-map** *All-paths*	.
Step 8	switch (config-router) # **address-family ipv6 unicast**	Enter the address family mode and configures submode commands for the BGP.
Step 9	switch (config-router) # **maximum-paths** [**ibgp**]	Controls the maximum number of parallel routes that the BGP can support
Step 10	switch (config-router-af) # **additional-paths send**	Configures the capability of sending additional paths to and from the BGP peers.
Step 11	switch (config-router-af) # **additional-paths selection route-map**	.
Step 12	switch (config-router) # **address-family vpnv4 unicast**	Enters the address family mode and configures submode commands for the Border Gateway Protocol (BGP)
Step 13	switch (config-router-af) # **additional-paths send**	Configures the capability of sending additional paths to and from the BGP peers.
Step 14	switch (config-router-af) # **additional-paths receive**	Configures the capability of receiving additional paths to and from the BGP peers
Step 15	switch (config-router-af) # **additional-paths selection route-map**	.
Step 16	switch (config-router) # **address-family vpnv6 unicast**	Enters the address family mode and configures submode commands for the Border Gateway Protocol (BGP)
Step 17	switch (config-router-af) # **additional-paths send**	Configures the capability of sending additional paths to and from the BGP peers.

	Command or Action	Purpose
Step 18	switch (config-router-af) # **additional-paths receive**	Configures the capability of receiving additional paths to and from the BGP peers
Step 19	switch (config-router-af) # **additional-paths selection route-map**	.
Step 20	switch (config-router) # **neighbor** {*ip-addr* | *ip-prefixlength* | *ipv6-addr* | *ipv6-prefixlength* } [**remote-as** {*as-num* [,*as-num*]}	Configures a BGP neighbor (router, vrf) and enters neighbor configuration mode.
Step 21	switch (config-router-neighbor) # **address-family ipv4 unicast**	Enters the address family mode or a virtual routing and forwarding (VRF) address-family mode to configure submode commands for the BGP.
Step 22	switch (config-router-neighbor-af) # **send-community**	Sends a BGP community attribute to a peer.
Step 23	switch (config-router-neighbor-af) # **send-community** [**extended**]	Sends a BGP community attribute to a peer
Step 24	**[route-reflector-client]**	Configures the router as a BGP route reflector and configures the specified neighbor as its client.
Step 25	switch (config-router-neighbor) # **address-family ipv6 unicast**	Enters the address family mode configure submode commands for the BGP.
Step 26	switch (config-router-neighbor-af) # **send-community** [**extended**]	Sends a BGP community attribute to a peer
Step 27	**[route-reflector-client]**	Configures the router as a BGP route reflector and configures the specified neighbor as its client.
Step 28	switch (config-router-neighbor) # **address-family vpnv4 unicast**	Enters the address family mode configure submode commands for the BGP.
Step 29	switch (config-router-neighbor-af) # **send-community** [**extended**]	Sends a BGP community attribute to a peer
Step 30	**[route-reflector-client]**	Configures the router as a BGP route reflector and configures the specified neighbor as its client.
Step 31	switch (config-router-neighbor-af) # **capability additional-paths receive**	Configures BGP to advertise the capability of sending and receiving additional paths to and from the BGP peers.
Step 32	switch (config-router-neighbor)**address-family-vpnv6 unicast**	Enters the address family mode configure submode commands for the BGP.
Step 33	switch (config-router-neighbor-af) # **send-community** [**extended**]	.
Step 34	**[route-reflector-client]**	Configures the router as a BGP route reflector and configures the specified neighbor as its client.

The following example shows a configuration of the BGP route reflector on the spine.

```
switch # configure terminal
switch (config) # feature bgp
switch (config) # router bgp 1.1
 switch (config-router) # router-id 1.1.1.4
 switch (config-router) # address-family ipv4 unicast
  switch (config-router-af) # redistribute hmm route-map AM
  switch (config-router) # maximum-paths ibgp 2
  switch (config-router-af) # additional-paths send
  switch (config-router-af) # additional-paths selection route-map ALL-PATHS
 switch (config-router) # address-family ipv6 unicast
  switch (config-router-af) # maximum-paths ibgp 2
  switch (config-router-af) # additional-paths send
  switch (config-router-af) # additional-paths selection route-map ALL-PATHS
 switch (config-router) # address-family vpnv4 unicast
  switch (config-router-af) # additional-paths send
  switch (config-router-af) # additional-paths receive
  switch (config-router-af) # additional-paths selection route-map ALL-PATHS
 switch (config-router) # address-family vpnv6 unicast
  switch (config-router-af) # additional-paths send
  switch (config-router-af) # additional-paths receive
  switch (config-router-af) # additional-paths selection route-map ALL-PATHS
switch (config-router) # neighbor 1.1.1.1 remote-as 1.1<--- Route-Reflector Spine IP=1.1.1.1

  switch (config-router-neighbor) # address-family ipv4 unicast
  switch (config-router-neighbor-af) # send-community
   switch (config-router-neighbor-af) # send-community extended
   switch (config-router-neighbor-af) # route-reflector-client
  switch (config-router-neighbor) # address-family ipv6 unicast
   switch (config-router-neighbor-af) # send-community extended
   switch (config-router-neighbor-af) # route-reflector-client
  switch (config-router-neighbor) # address-family vpnv4 unicast
   switch (config-router-neighbor-af) # send-community extended
   switch (config-router-neighbor-af) # route-reflector-client
  switch (config-router-neighbor) # address-family vpnv6 unicast
   switch (config-router-neighbor-af) # send-community extended
   switch (config-router-neighbor-af) # route-reflector-client
```

Configuring the Virtual Network Identifier Range

In this procedure, you will configure the virtual network (VN) segment id of the virtual LAN (VLAN).

Before You Begin

Before the configuring the segment-id, you should have upgraded the spine switch software.

SUMMARY STEPS

1. switch (config) # **install feature-set fabricpath**
2. switch (config) # **feature-set fabricpath**
3. Device (config) # **feature vn-segment-vlan-based**
4. switch (config) # **vni** [*vn-id* | [*-vni-id*]]
5. switch (config-vlan) # **vn-segment** *segment-id*

DETAILED STEPS

	Command or Action	Purpose
Step 1	switch (config) # **install feature-set fabricpath**	Install FabricPath feature set on the switch.
Step 2	switch (config) # **feature-set fabricpath**	Enables the FabricPath feature set on the switch
Step 3	Device (config) # **feature vn-segment-vlan-based**	Enables virtual LAN (VLAN) based virtual network (VN) segment feature on a device when used in global configuration mode. Can be enabled only if the feature-set fabricpath is enabled on the device.
Step 4	switch (config) # **vni** [*vn-id* | [*-vni-id*]]	Configures a virtual network identifier range
Step 5	switch (config-vlan) # **vn-segment** *segment-id*	Configures the virtual network segment id of the virtual LAN (VLAN).

In this example, you configure the segment id 4099.

```
switch (config)# install feature-set fabricpath
switch (config)# feature-set fabricpath
switch (config)# feature vn-segment-vlan-based
switch (config)# vni 300001-3000010
```

What to Do Next

Upgrade the first border leaf pair.

Configuring SVIs and HSRPs on Border Leafs

In this procedure, you will:

- Enable TF fabric forwarding on switched virtual interfaces (SVIs) without vn-segment involvement on both border leaf devices and the same for non-default VRF VLANs
- Enable Hot Standby Routing Protocol (HSRP) VIPs on the border leaf

Before You Begin

Prior to this procedure, you should have upgraded the border leaf software.

SUMMARY STEPS

1. switch (config) # **feature hsrp**
2. switch (config) # **interface** *type-number*
3. switch (config-if) # **no shutdown**
4. switch (config-if) # **no ip redirects**
5. switch (config-if) # **ip address** *ip-address-mask*
6. switch (config-if) # **ipv6 address** {*addr* | [**eui64**] [**route-preference** *preference*] [**secondary**] [**tag** *tag-id*] | **use-link-local-only** }
7. switch (config-if) # **ip router ospf area** *instance-tag* **area** *area-id* [**secondaries none**]
8. switch (config-if) # **fabric forwarding anycast-gateway-mac** *mac-address*
9. switch (config-if) # **hrsp version 2**
10. switch (config-if-hsrp) # **hsrp** *group-number* [**ip4** | **ipv6**]
11. switch (config-if-hsrp) #**preempt** [**delay** {**minimum** *min-delay* | **reload** *rel-delay* | **sync** | *sync-delay*}]
12. switch (config-if-hsrp) # **priority** *level* [**forwarding-threshold lower** *lower-value* **upper** *upper-value*]
13. switch (config-if-hsrp) # **ip** [**autoconfig** | *ip-address* [**secondary**]]
14. switch (config-if-) # **hsrp** *group-number* [**ip4** | **ipv6**]
15. switch (config-if-hsrp) # **mac-address** *mac-address*
16. switch (config-if-hsrp) # **preempt** [**delay** {**minimum** *min-delay* | **reload** *rel-delay* | **sync** | *sync-delay*}]
17. switch (config-if-hsrp) # **priority** *level* [**forwarding-threshold lower** *lower-value* **upper** *upper-value*]
18. switch (config-if-hsrp) # **ip** [**autoconfig** |*ip-address* [**secondary**]]
19. switch (config-if-) # **hsrp** *group-number* [**ip4** |**ipv6**]
20. switch (config-if-hsrp) # **mac-address** *mac-address*
21. switch (config-if-hsrp) # **preempt** [**delay** {**minimum** *min-delay* | **reload** *rel-delay* | **sync**|*sync-delay*}]
22. switch (config-if-hsrp) # **priority** *level* [**forwarding-threshold lower** *lower-value* **upper** *upper-value*]
23. switch (config-if-hsrp) # **ip** [**autoconfig** | *ip-address* [**secondary**]]

DETAILED STEPS

	Command or Action	Purpose
Step 1	switch (config) # **feature hsrp**	Enters Hot Standby Router Protocol (HSRP) configuration mode and enables HSRP.
Step 2	switch (config) # **interface** *type-number*	Specifies an interface type and number.
Step 3	switch (config-if) # **no shutdown**	Disables the shutdown function on an instance of the BGP.
Step 4	switch (config-if) # **no ip redirects**	
Step 5	switch (config-if) # **ip address** *ip-address-mask*	Specifies a primary IP address for an interface.
Step 6	switch (config-if) # **ipv6 address** {*addr* | [**eui64**] [**route-preference** *preference*] [**secondary**] [**tag** *tag-id*] | **use-link-local-only** }	Configures an IPv6 address on an interface.

	Command or Action	Purpose
Step 7	switch (config-if) # **ip router ospf area** *instance-tag* **area** *area-id* [**secondaries none**]	Specifies the Open Shortest Path First (OSPF) instance and area for an interface.
Step 8	switch (config-if) # **fabric forwarding anycast-gateway-mac** *mac-address*	Specifics the MAC address of the server-facing ports across all leaf nodes. The anycast gateway MAC address is used per interface, therefore it is replicated across all the switch virtual interfaces (SVI) that are supporting proxy gateway or anycast gateway.
Step 9	switch (config-if) # **hrsp version 2**	Configures the Hot Standby Redundancy Protocol (HSRP) version 2.
Step 10	switch (config-if-hsrp) # **hsrp** *group-number* [**ip4** | **ipv6**]	Enters HSRP configuration mode and creates an HSRP group.
Step 11	switch (config-if-hsrp) #**preempt** [**delay** {**minimum** *min-delay* | **reload** *rel-delay* | **sync** | *sync-delay*}]	Configures a preemption delay.
Step 12	switch (config-if-hsrp) # **priority** *level* [**forwarding-threshold lower** *lower-value* **upper** *upper-value*]	Sets the priority level within an HSRP group.
Step 13	switch (config-if-hsrp) # **ip** [**autoconfig** | *ip-address* [**secondary**]]	Assigns a virtual address to an HSRP group.
Step 14	switch (config-if-) # **hsrp** *group-number* [**ip4** | **ipv6**]	Enters HSRP configuration mode and creates an HSRP group.
Step 15	switch (config-if-hsrp) # **mac-address** *mac-address*	Configures a static MAC address for a Layer 3 interface.
Step 16	switch (config-if-hsrp) # **preempt** [**delay** {**minimum** *min-delay* | **reload** *rel-delay* | **sync** | *sync-delay*}]	Configures a preemption delay.
Step 17	switch (config-if-hsrp) # **priority** *level* [**forwarding-threshold lower** *lower-value* **upper** *upper-value*]	Sets the priority level within an HSRP group.
Step 18	switch (config-if-hsrp) # **ip** [**autoconfig** |*ip-address* [**secondary**]]	Assigns a virtual address to an HSRP group.
Step 19	switch (config-if-) # **hsrp** *group-number* [**ip4** |**ipv6**]	Enters HSRP configuration mode and creates an HSRP group.
Step 20	switch (config-if-hsrp) # **mac-address** *mac-address*	Configures a static MAC address for a Layer 3 interface.
Step 21	switch (config-if-hsrp) # **preempt** [**delay** {**minimum** *min-delay* | **reload** *rel-delay* | **sync**|*sync-delay*}]	Configures a preemption delay.
Step 22	switch (config-if-hsrp) # **priority** *level* [**forwarding-threshold lower** *lower-value* **upper** *upper-value*]	Sets the priority level within an HSRP group.

	Command or Action	Purpose
Step 23	switch (config-if-hsrp) # **ip** [**autoconfig** | *ip-address* [**secondary**]]	Assigns a virtual address to an HSRP group.

The following example configures the SVI interfaces for default/non-default VRFs, as well associated HSRP and dummy HSRP groups with anycast Gateway MAC addresses.

```
switch (config) # feature hsrp
switch (config) # interface Vlan20
switch (config-if) # no shutdown
switch (config-if) #  no ip redirects
switch (config-if) # ip address 20.1.1.104/24
switch (config-if) # ipv6 address 20:1::104/64
switch (config-if) # ip router ospf 1 area 0.0.0.
switch (config-if) # fabric forwarding mode anycast gateway
switch (config-if) # hsrp version 2
switch (config-if) # hrsp 20
switch (config-if-hsrp) # preempt
switch (config-if-hsrp) # priority 110
switch (config-if-hsrp) # ip 20.1.1.100
switch (config-if) # hsrp 20 ipv6
switch (config-if-hsrp) # preempt
switch (config-if-hsrp) # priority 110
switch (config-if-hsrp) # ip 20.1.1.100
switch (config-if) # hsrp 50
switch (config-if-hsrp) # mac-address DEAD.0000.DEAF
switch (config-if-hsrp) # preempt
switch (config-if-hsrp) # priority 110
switch (config-if-hsrp) # ip 20.1.1.200
switch (config-if) # hsrp 50 ipv6
switch (config-if-hsrp) # mac-address DEAD.0000.DEAF
switch (config-if-hsrp) # preempt
switch (config-if-hsrp) # priority 110
switch (config-if-hsrp) # ip 20.1.1.200
```

Configuring Border Leaves for DFA

Use the following commands to configure an upgraded border leaf.

Before You Begin

Prior to configuring the border leaf, you should have upgraded the border leaf software.

SUMMARY STEPS

1. switch # **configure terminal**
2. switch (config)# **install feature-set fabricpath**
3. switch (config) # **install feature-set fabric**
4. **feature-set fabricpath**
5. switch (config) #**feature-set fabric**
6. switch (config) #**feature fabric** *forwarding*
7. switch (config) #**feature bgp**
8. switch (config) #**feature isis**
9. switch (config) # **feature fabric multicast**
10. switch (config) #**feature vn-segment-vlan-based**
11. switch (config) #**system fabric reserved-vlans** *vlan-id range*
12. switch (config)#**system fabric core-vlans** *vlan-id -subrange*
13. switch (config) #**fabric forwarding identifier** *id*
14. switch (config) #**fabric forwarding anycast-gateway-mac** *mac-address*
15. switch (config) #**fabric forwarding switch-role** [**border**] {**leaf** | **spine**}
16. switch (config) #**fabricpath domain default**
17. switch (config) #**ip multicast fabric-forwarding**
18. switch (config) #**vlan** *fabric-control-vland-id*
19. switch (config--vlan) #**mode fabricpath**
20. switch (config) #**interface Vlan** *fabric-control-vlan-number*
21. switch (config-if) #**no shutdown**
22. switch (config-if) #**ip address** *ip-address-mask*
23. switch (config-if) #**fabric forwarding** *control-segment*
24. switch (config) #**route-map** *map-tag*
25. switch (config-route-map) #**set path-selection all advertise**
26. switch (config-s) #**ip access-list** *access-list-name*
27. switch (config-s-acl)#**permit ip** *source destination*
28. switch (config) #**ipv6 access-list** *access-list-name*
29. switch (config-acl) #*sequence-number***permit** *protocol*
30. switch (config) #**route-map** *map-tag* [**deny** | **permit**] [*sequence-number*]
31. switch (config-route-map) #**match interface** {*interface-type number* [*,interface-type number...*]}
32. switch (config) #**route-map** *map-tag* [**deny** | **permit**] [*sequence-number*]
33. switch (config-route-map) #**match ip address** *prefix-list name [prefix-list name..] access-list-name*
34. switch (config) #**route-map** *map-tag* [**deny** | **permit**] [*sequence-number*]
35. switch (config-route-map) #**match interface** *{interface-type number[,interface-type number...]}*
36. switch (config) #**route-map** *map-tag* [**deny** | **permit**] [*sequence-number*]
37. switch (config-route-map) #**match ip address** *prefix-list name [prefix-list name..] access-list-name*
38. Device (config) #**router bgp** *as-number*
39. Device (config-router) #**address-family ipv4 unicast**

40. Device (config-router-af) #**redistribute hmm route-map** *map-name*
41. switch (config-router-af) #**maximum-paths [ibgp]** *number-paths*
42. switch (config-router-af) #**additional-paths receive**
43. switch (config-router) #**address-family ipv6 unicast**
44. switch (config-router-af) #**redistribute hmm route-map** *map-name*
45. switch (config-router-af) #**maximum-path [ibgp]** *number-paths*
46. switch (config-router-af) #**additional-paths-receive**
47. switch (config) #**address-family vpnv4 unicast**
48. switch (config-router-af) #**additional-paths receive**
49. switch (config-router) #**address-family vpnv6 unicast**
50. switch (config-router-af) #**additional-paths receive**
51. switch (config-router) #**neighbor** {*ip-addr* |*ip-prefixlentgth*} [**remote-as** {*as-num* [,*as-num*] |**route-map** *map name*}
52. switch (config-router-neighbor) #**address-family ipv4 unicast**
53. switch (config-router-neighbor-af) #**send community** *text*

DETAILED STEPS

	Command or Action	Purpose
Step 1	switch # **configure terminal**	Enters global configuration mode.
Step 2	switch (config)# **install feature-set fabricpath**	Install FabricPath feature set on the switch.
Step 3	switch (config) # **install feature-set fabric**	
Step 4	**feature-set fabricpath**	
Step 5	switch (config) #**feature-set fabric**	
Step 6	switch (config) #**feature fabric** *forwarding*	Enables the Host Mobility Manager (HMM) and release specific HMM configuration commands.
Step 7	switch (config) #**feature bgp**	Enables the Border Gateway Protocol (BGP). You must enable the BGP feature before you can configure BGP.
Step 8	switch (config) #**feature isis**	Enables intermediate-system-to-intermediate-system (ISIS) for FabricPath core.
Step 9	switch (config) # **feature fabric multicast**	Enables multicast feature.
Step 10	switch (config) #**feature vn-segment-vlan-based**	Enables virtual LAN (VLAN) based virtual network (VN) segment feature on a device when used in global configuration mode. Can be enabled only if the feature-set fabricpath is enabled on the device.
Step 11	switch (config) #**system fabric reserved-vlans** *vlan-id range*	Pre-allocates a range of regular Vlans to be used by the fabric.

	Command or Action	Purpose
Step 12	switch (config)#**system fabric core-vlans** *vlan-id -subrange*	Defines a range of Vlans from within the reserved-vlans to be used as a fabric-control-vlan and tenant bridge-domain-vlans.
Step 13	switch (config) #**fabric forwarding identifier** *id*	Specifies a fabric forwarding identifier.
Step 14	switch (config) #**fabric forwarding anycast-gateway-mac** *mac-address*	Specifies the MAC address of the server-facing ports across all leaf nodes. The anycast gateway MAC address is used per interface, so it is replicated across all the switch virtual interfaces (SVI) that are supporting proxy gateway or anycast gateway.
Step 15	switch (config) #**fabric forwarding switch-role** [**border**] {**leaf** | **spine**}	Defines the switch role. Leaf adds tenant (vrf) functionality; border leaf adds the ability to connect with routers.
Step 16	switch (config) #**fabricpath domain default**	Enters the global FabricPath Layer 2 ISIS configuration mode.
Step 17	switch (config) #**ip multicast fabric-forwarding**	Enables DFA multicast operation in passive mode. Enables PIM passive mode over the fabric, as well as on the host-facing interfaces (without the need for "ip pim sparse-mode" on a leaf. On a border leaf, PIM on the host-facing interfaces is disabled by default.
Step 18	switch (config) #**vlan** *fabric-control-vland-id*	Specifies the VLAN IDs of the allowed FabrichPath VLANs in the anycast bundle.
Step 19	switch (config--vlan) #**mode fabricpath**	Enables the VLAN as a FabricPath VLAN.
Step 20	switch (config) #**interface Vlan** *fabric-control-vlan-number*	Creates the corresponding layer 3 Vlan interface.
Step 21	switch (config-if) #**no shutdown**	Disables the shutdown function on an instance of the BGP.
Step 22	switch (config-if) #**ip address** *ip-address-mask*	Configures the IP address to be used as BGP endpoints.
Step 23	switch (config-if) #**fabric forwarding** *control-segment*	Specifies this interface to be the DFA control-segment. There must only be one interface of this type.
Step 24	switch (config) #**route-map** *map-tag*	Specifies a route map by identifying route map name (map-tag). Maximum size is 63 characters. This mame should be the same as when configuring the BGP additional-paths.
Step 25	switch (config-route-map) #**set path-selection all advertise**	Sets path selection criteria for Border Gateway Protocol (BGP).
Step 26	switch (config-s) #**ip access-list** *access-list-name*	Defines an IP4 access list access control list (ACL) in order to enable filtering for packets.
Step 27	switch (config-s-acl)#**permit ip** *source destination*	Creates an access control list (ACL) rule that permits traffic matching its conditions. The source destination identifies the source network address and the destination network address.
Step 28	switch (config) #**ipv6 access-list** *access-list-name*	Creates an IPv6 access control list (ACL) or enters IP access list configuration mode for a specific ACL.

	Command or Action	Purpose
Step 29	switch (config-acl) #*sequence-number***permit** *protocol*	Configures a permit rule in an IPv6 ACL.
Step 30	switch (config) #**route-map** *map-tag* [**deny** | **permit**] [*sequence-number*]	Pre-defines a route-map for redistribution HMM host ruotes. Name should be kept the same as in the BGP **redistribute-hmm route map** command.
Step 31	switch (config-route-map) #**match interface** {*interface-type number* [*,interface-type number...*]}	Matches an interface in a route map. Use match interface command to provide a list of interfaces to match a route against. Route next-hop addresses that are reached by one of these interfaces result in a match for the route map.
Step 32	switch (config) #**route-map** *map-tag* [**deny** | **permit**] [*sequence-number*]	Specifies a route map by identifying route map name (map-tag). Maximum size is 63 characters.
Step 33	switch (config-route-map) #**match ip address** *prefix-list name [prefix-list name..] access-list-name*	Distributes routes that have a destination IPv6 network number address that is permitted by a standard access list, an expanded list, or a prefix list, or to perform policy routing on packets.
Step 34	switch (config) #**route-map** *map-tag* [**deny** | **permit**] [*sequence-number*]	Specifies a route map by identifying route map name (map-tag). Maximum size is 63 characters.
Step 35	switch (config-route-map) #**match interface** *{interface-type number[,interface-type number...]}*	Matches an interface in a route map. Use match interface command to provide a list of interfaces to match a route against. Route next-hop addresses that are reached by one of these interfaces result in a match for the route map.
Step 36	switch (config) #**route-map** *map-tag* [**deny** | **permit**] [*sequence-number*]	Specifies a route map by identifying route map name (map-tag). Maximum size is 63 characters.
Step 37	switch (config-route-map) #**match ip address** *prefix-list name [prefix-list name..] access-list-name*	Distributes routes that have a destination IPv6 network number address that is permitted by a standard access list, an expanded list, or a prefix list, or to perform policy routing on packets.
Step 38	Device (config) #**router bgp** *as-number*	Configures a Border Gateway Protocol process for an interface. The as-number is the number of an autonomous system that identifies the router to other BGP routers and tags that the routing information passed along. The AS number can be a 16-bit integer or a 32-bit integer in the form of a higher 16-bit decimal number and a lower 16-bit decimal number in xx.xx format.
Step 39	Device (config-router) #**address-family ipv4 unicast**	Enters the address family mode or a virtual routing and forwarding (VRF) address-family mode and configures submode commands for the Border Gateway Protocol (BGP).
Step 40	Device (config-router-af) #**redistribute hmm route-map** *map-name*	Enables redistribution of IPv4 and IPv6 Host Mobility Manager (HMM) routes through specific route maps.
Step 41	switch (config-router-af) #**maximum-paths [ibgp]** *number-paths*	Controls the maximum number of parallel routes that the Border Gateway Protocol (BGP) can support.

	Command or Action	Purpose
Step 42	switch (config-router-af) #**additional-paths receive**	Configures the capability of receiving additional paths to and from the BGP peers.
Step 43	switch (config-router) #**address-family ipv6 unicast**	Enters the address family mode or a virtual routing and forwarding (VRF) address-family mode and configure submode commands for the Border Gateway Protocol (BGP).
Step 44	switch (config-router-af) #**redistribute hmm route-map** *map-name*	Enables redistribution of IPv4 and IPv6 Host Mobility Manager (HMM) routes through specific route maps.
Step 45	switch (config-router-af) #**maximum-path [ibgp]** *number-paths*	Controls the maximum number of parallel routes that the BGP can support.
Step 46	switch (config-router-af) #**additional-paths-receive**	Configures the capability of receiving additional paths to and from the BGP peers.
Step 47	switch (config) #**address-family vpnv4 unicast**	Enters the address family mode or a virtual routing and forwarding (VRF) address-family mode and configure submode commands for the Border Gateway Protocol (BGP).
Step 48	switch (config-router-af) #**additional-paths receive**	Configures the capability of receiving additional paths to and from the BGP peers.
Step 49	switch (config-router) #**address-family vpnv6 unicast**	Enters the address family mode or a virtual routing and forwarding (VRF) address-family mode and configure submode commands for the Border Gateway Protocol (BGP).
Step 50	switch (config-router-af) #**additional-paths receive**	Configures the capability of receiving additional paths to and from the BGP peers.
Step 51	switch (config-router) #**neighbor** {*ip-addr* |*ip-prefixlentgth*} [**remote-as** {*as-num* [,*as-num*] |**route-map** *map name*}	Configures a BGP neighbor (router, vrf) and enters neighbor configuration mode.
Step 52	switch (config-router-neighbor) #**address-family ipv4 unicast**	Enters the address family mode or a virtual routing and forwarding (VRF) address-family mode to configure submode commands for the BGP.
Step 53	switch (config-router-neighbor-af) #**send community** *text*	Sends a message to the active user session. Text string can be up to 80 alphanumeric characters and is case-sensitive.

The follow example shows the core configuration for a border leaf.

```
N6K4#
!
switch (config)# install feature-set fabricpath
switch (config)# install feature-set fabric
switch (config)# feature-set fabricpath
switch (config)# feature fabric forwarding
switch (config)# feature bgp
switch (config)# feature isis
switch (config)# feature fabric multicast
switch (config)# feature interface-vlan
```

```
switch (config)# feature vn-segment-vlan-based

switch (config)# system fabric dynamic-vlans 20-21, 201-202, 1001-1010
switch (config)# system fabric core-vlans 1001-1002
switch (config)# fabric forwarding identifier 100
switch (config)# fabric forwarding anycast-gateway-mac.DEAD.0000.DEAF
switch (config)# fabric forwarding switch-role leaf
switch (config)# fabricpath domain default
switch (config)# ip multicast fabric-forwarding

switch (config)# vlan 1001-1010
switch (config-vlan)# mode fabricpath

switch (config) # interface Vlan1
 switch (config-if) # no shutdown
 switch (config-if) # ip address 1.1.1.4/24
 switch (config-if) # fabric forwarding control-segment

switch (config) # route-map ALL-PATHS permit 10
switch (config-route-map) # set path-selection all advertise

switch (config-s)# ip access-list HOSTS
switch (config-s-acl)# 10 permit ip any any
switch (config-s)# ipv6 access-list hosts-v6
switch (config-s-acl)# 10 permit ipv6 any any

switch (config) # route-map AM deny 10
switch (config-route-map) # match interface Vlan1
switch (config) # route-map AM permit 20
switch (config-route-map) # match ip address HOSTS
switch (config) # route-map hosts-v6 permit 20
switch (config-route-map) # match ipv6 address hosts-v6

switch (config) # router bgp 1.1
 switch (config-router) # address-family ipv4 unicast
  switch (config-router-af) # redistribute hmm route-map AM
  switch (config-router-af) # maximum-paths ibgp 2
  switch (config-router-af) # additional-paths receive
  switch (config-router-af) # additional-paths selection route-map ALL PATHS
 switch (config-router) # address-family ipv6 unicast
  switch (config-router-af) # redistribute hmm route-map hosts-v6
  switch (config-router-af) # maximum-paths ibgp 2
  switch (config-router-af) # additional-paths receive
  switch (config-router-af) # addtional-path seelction route-map ALL PATHS
 switch (config-router) # address-family vpnv4 unicast
  switch (config-router-af) # additional-paths receive
 switch (config-router) # address-family vpnv6 unicast
  switch (config-router-af) # additional-paths receive
 switch (config-router) # neighbor 1.1.1.1 remote-as 1.1
  switch (config-router-neighbor) # address-family ipv4 unicast
   switch (config-router-neighbor-af) # send-community both


N6K4#
```

Configuring a Host-facing Interface

In this procedure, you will:

- Allocate a new VLAN ID and an unused virtual network identifier (VNI) and tie them together
- Create the corresponding layer 3 VLAN interface and put it into the VRF
- Configure the appropriate fabric forwarding mode

SUMMARY STEPS

1. switch (config) # **vlan** *vland-ids*
2. switch (config--vlan) # **mode fabricpath**
3. switch (config-vlan) # **vn-segment** *vni*
4. switch (config-vlan) # **interface** *type-number*
5. switch (config-vlan-if) # **ip address** *p-address-mask*
6. switch (config-vlan-if) # **[ip pim sparse-mode]**
7. switch (config-vlan-if) # **fabric forwarding anycast-gateway-mac** *mac-address*
8. switch (config-vlan-if) # **no shutdown**

DETAILED STEPS

	Command or Action	Purpose
Step 1	switch (config) # **vlan** *vland-ids*	Specifies the VLAN IDs of the allowed FabrichPath VLANs in the anycast bundle
Step 2	switch (config--vlan) # **mode fabricpath**	Enables the VLAN as a FabricPath VLAN.
Step 3	switch (config-vlan) # **vn-segment** *vni*	Configures the virtual network (VN) segment id of the VLAN.
Step 4	switch (config-vlan) # **interface** *type-number*	Specifies an interface type and number
Step 5	switch (config-vlan-if) # **ip address** *p-address-mask*	Specifies a primary IP address for an interface
Step 6	switch (config-vlan-if) # **[ip pim sparse-mode]**	
Step 7	switch (config-vlan-if) # **fabric forwarding anycast-gateway-mac** *mac-address*	Specifies the MAC address of the server-facing ports across all leaf nodes. The anycast gateway MAC address is used per interface, so it is replicated across all the switch virtual interfaces (SVI) that are supporting proxy gateway or anycast gateway.
Step 8	switch (config-vlan-if) # **no shutdown**	Disables the shutdown function on an instance of the BGP

The following example adds a host-facing tenant interface (Vlan).

```
switch (config-)# vlan 1001-1010
 switch (config-vlan)# mode fabricpath
 switch (config-vlan)# vn-segment
switch (config-vlan) # interface Vlan1
  switch (config-vlan-if) # ip address 1.1.1.4/24
  switch (config-vlan-if) # [ip pim sparse-model]
 switch (config-vlan-if) # fabric forwarding anycast-gateway-mac DEAD.0000.DEAF
 switch (config-vlan-if) # no shutdown
```

Adding a Tenant (VRF) Instance on a Leaf

In this procedure, you will:

- Configure a profile named "vrf-tenant-profile"
- Allocate a VLAN
- Create a VRF instance
- Configure the route distinguisher and route targets
- Tie the vni/segment ID to the VRF
- Create an L3 VLAN and configure it with the same IP address/mask as the fabric control VLAN interface to map the BGP endpoint and the VRF BD Vlan

SUMMARY STEPS

1. switch # **configure profile** *vrf-tenant-profile*
2. switch # **configure terminal**
3. switch (config-profile) # **apply profile** *vrf-tenant-profile*
4. switch (config-profile) # **vlan** *vland-ids*
5. switch (config--profile-vlan) # **mode fabricpath**
6. switch (config-profile-vlan) # **vn-segment** *vni*
7. switch (config-profile) # **vrf context** *name*
8. switch (config-profile-vrf) # **rd** *route-distinguisher*
9. switch (config-profile-vrf) # **address-family-ipv4 unicast**
10. switch (config-profile-vrf--af) # **route-target import** *route-target-ext-community*
11. switch (config-profile-vrf-af) # **route-target export** *route-target-ext-community*
12. switch (config-profile-vrf) # **vni** [*vni-id* | [*-vni-id*]]
13. switch (config-profile-vrf) # **interface** *type-number*
14. switch (config-profile-if-vrf) # **vrf member** *name*
15. switch (config-profile-if-vrf) # **ip address** *ip-address-mask*
16. switch (config-profile-if-vrf) # **no shutdown**
17. switch (config-profile-if) # **router bgp** *as-number*
18. switch (config-profile-if) # **vrf** *name*
19. switch (config-profile-if-vrf) # **address-family ipv4 multicast**
20. switch (config-profile-if-vrf) # **address-family ipv4 multicast**
21. switch (config-profile-if-vrf-af) # **redistribute hmm route-map** *map-name*

DETAILED STEPS

	Command or Action	Purpose
Step 1	switch # **configure profile** *vrf-tenant-profile*	Configures profile and enters configuration profile mode to configure profile parameters.
Step 2	switch # **configure terminal**	Enters global configuration mode.
Step 3	switch (config-profile) # **apply profile** *vrf-tenant-profile*	Applies a configuration profile to configure hosts.
Step 4	switch (config-profile) # **vlan** *vland-ids*	Specifies the VLAN IDs of the allowed FabricPath VLANs in the anycast bundle
Step 5	switch (config--profile-vlan) # **mode fabricpath**	Enables the VLAN as a FabricPath VLAN.
Step 6	switch (config-profile-vlan) # **vn-segment** *vni*	Configures the virtual network (VN) segment id of the VLAN.
Step 7	switch (config-profile) # **vrf context** *name*	Creates a virtual routing and forwarding instances (VRF) and enters VRF configuration mode. The name of the VRF can be any case-sensitive, alphanumeric string up to 32 characters.
Step 8	switch (config-profile-vrf) # **rd** *route-distinguisher*	Creates routing and forwarding tables
Step 9	switch (config-profile-vrf) # **address-family-ipv4 unicast**	Enters the address family mode or a virtual routing and forwarding (VRF) address-family mode and configures submode commands for the Border Gateway Protocol (BGP)
Step 10	switch (config-profile-vrf--af) # **route-target import** *route-target-ext-community*	Creates a route-target extended community for a virtual routing and forwarding (VRF) instance
Step 11	switch (config-profile-vrf-af) # **route-target export** *route-target-ext-community*	Creates a route-target extended community for a virtual routing and forwarding (VRF) instance
Step 12	switch (config-profile-vrf) # **vni** [*vni-id* | [*-vni-id*]]	Configures the virtual network identifier (VNI) in global configuration mode. **Note** You can specify a single ID or a range. For example, 4099, 5000-5005
Step 13	switch (config-profile-vrf) # **interface** *type-number*	Specifies an interface type and number
Step 14	switch (config-profile-if-vrf) # **vrf member** *name*	Creates a VPN routing and forwarding instance (VRF) or enters the VRF configuration mode to configure submode commands for the Intermediate System-to-Intermediate System Intradomain Routing Protocol (IS-IS)
Step 15	switch (config-profile-if-vrf) # **ip address** *ip-address-mask*	Specifies a primary IP address for an interface
Step 16	switch (config-profile-if-vrf) # **no shutdown**	Disables the shutdown function on an instance of the BGP
Step 17	switch (config-profile-if) # **router bgp** *as-number*	Configures a Border Gateway Protocol process for an interface. The as-number is the number of an autonomous system that identifies the

	Command or Action	Purpose
		router to other BGP routers and tags that the routing information passed along. The AS number can be a 16-bit integer or a 32-bit integer in the form of a higher 16-bit decimal number and a lower 16-bit decimal number in xx.xx format
Step 18	switch (config-profile-if) # **vrf** *name*	Creates a VPN routing and forwarding instance (VRF) or enters the VRF configuration mode to configure submode commands for the Intermediate System-to-Intermediate System Intradomain Routing Protocol (IS-IS)
Step 19	switch (config-profile-if-vrf) # **address-family ipv4 multicast**	Enters the address family mode or a virtual routing and forwarding (VRF) address-family mode and configures submode commands for the Border Gateway Protocol (BGP)
Step 20	switch (config-profile-if-vrf) # **address-family ipv4 multicast**	Enters the address family mode or a virtual routing and forwarding (VRF) address-family mode and configures submode commands for the Border Gateway Protocol (BGP)
Step 21	switch (config-profile-if-vrf-af) # **redistribute hmm route-map** *map-name*	Enables redistribution of IPv4 Host Mobility Manager (HMM) routes through specific route maps

The following example configures the profile name and the adds the tenant vrf profile and associated parameters

```
switch # configure profile vrf-tenant-profile
switch # configure terminal
switch (config-profile)) # apply profile vrf-tenant-profile
switch (config-profile)# vlan 1001-1010
 switch (config-profile-vlan)# mode fabricpath
 switch (config-profile-vlan)# vn-segment
switch (config-profile) # vrf context VRF2
switch (config-profile-vrf) # rd auto
 switch (config-profile-vrf) # address-family ipv4 unicast
  switch (config-profile-vrf-af) #  route-target import 7000:1
  switch (config-profile-vrf-af) #  route-target export 7000:1
switch (config-profile-vrf) # vni 7000
 switch (config-profile-vrf) # interface Vlan1
 switch (config-profile-if-vrf) # vrf VRF2
  switch (config-profile-if-vrf) # ip address 1.1.1.4/24
 switch (config-profile-if-vrf) # no shutdown
switch (config-profile-if) # router bgp 1.1
switch (config-profile-if) # vrf VRF2
  switch (config-profile-if-vrf) # address-family ipv4 multicast
  switch (config-profile-if-vrf) # address-family ipv4 unicast
   switch (config-profile-if-vrf-af) # redistribute hmm route-map AM
```

Adding a Host-facing Tenant Interface (Vlan)

When you add a host-facing tenant interface (Vlan), you:

- Allocate a new Vlan ID and an unused vni and tie them together
- Create the corresponding layer 3 interface, put it into the VRF

- Configure the appropriate fabric forwarding mode

SUMMARY STEPS

1. switch (config) # **vlan** *vland-ids*
2. switch (config--vlan) # **mode fabricpath**
3. switch (config-vlan) # **vn-segment** *vni*
4. switch (config-vlan) # **interface** *type-number*
5. switch (config-vlan-if) # **vrf member** *name*
6. switch (config-vlan-if-vrf) # **ip address** *ip-address-mask*
7. switch (config-vlan-if-vrf) # [**ip pim sparse-mode**]
8. Device (config-vlan-if-vrf) # **fabric forwarding anycast-gateway-mac** *mac-address*
9. switch (config-vlan-if-vrf) # **no shutdown**

DETAILED STEPS

	Command or Action	Purpose
Step 1	switch (config) # **vlan** *vland-ids*	Specifies the VLAN IDs of the allowed FabrichPath VLANs in the anycast bundle
Step 2	switch (config--vlan) # **mode fabricpath**	Enables the VLAN as a FabricPath VLAN.
Step 3	switch (config-vlan) # **vn-segment** *vni*	Configures the virtual network (VN) segment id of the VLAN.
Step 4	switch (config-vlan) # **interface** *type-number*	Specifies an interface type and number
Step 5	switch (config-vlan-if) # **vrf member** *name*	Creates a VPN routing and forwarding instance (VRF) or enters the VRF configuration mode to configure submode commands for the Intermediate System-to-Intermediate System Intradomain Routing Protocol (IS-IS)
Step 6	switch (config-vlan-if-vrf) # **ip address** *ip-address-mask*	Specifies a primary IP address for an interface
Step 7	switch (config-vlan-if-vrf) # [**ip pim sparse-mode**]	
Step 8	Device (config-vlan-if-vrf) # **fabric forwarding anycast-gateway-mac** *mac-address*	Specifies the MAC address of the server-facing ports across all leaf nodes. The anycast gateway MAC address is used per interface, so it is replicated across all the switch virtual interfaces (SVI) that are supporting proxy gateway or anycast gateway.
Step 9	switch (config-vlan-if-vrf) # **no shutdown**	Disables the shutdown function on an instance of the BGP

The following adds a host-facing tenant interface (Vlan).

```
switch (config-)# vlan 1001-1010
 switch (config-vlan)# mode fabricpath
```

```
switch (config-vlan)# vn-segment
switch (config-vlan) # interface Vlan1
switch (config-vlan-if) # vrf VRF2
 switch (config-vlan-if-vrf) # ip address 1.1.1.4/24
 switch (config-vlan-if-vrf) # [ip pim sparse-model]
switch (config-vlan-if-vrf) # fabric forwarding anycast-gateway-mac DEAD.0000.DEAF
switch (config-vlan-if-vrf) # no shutdown
```

Removing HSRP Configuration on all Border Leaves

During the migration, some hosts will start learning the Anycast Gateway IP/MAC and will start using it. HSRP is required until the last leaf pair is upgraded to DFA configuration.

Note HSRP/VRRP is required as long as there is a Nexus 5000 leaf in the network topology.

In this procedure, you will remove the HSRP configuration on border leaves after you migrated all of the switches.

SUMMARY STEPS

1. switch (config-if-hsrp) # **show running-config interface** *type-number*
2. switch (config-if-hsrp) # **no hsrp** *group-number*
3. switch (config) # **show interface** *type-number*

DETAILED STEPS

	Command or Action	Purpose
Step 1	switch (config-if-hsrp) # **show running-config interface** *type-number*	Shows interface for the VLAN.
Step 2	switch (config-if-hsrp) # **no hsrp** *group-number*	Disables HRSP.
Step 3	switch (config) # **show interface** *type-number*	Shows an interface type and number.

The following example shows how to remove the HSRP configuration on a border leaf.

```
switch (config-if-hsrp) # show running-config interface vlan80

!Command: show running-config interface Vlan80
!Time: Thu Jan 30 05:00:58 2014

version 7.0(0)N1(1)
interface Vlan80
ip address 80.0.0.31/8
hsrp version 2
hsrp 10
 mac-address 2020.0000.00AA
 preempt
 priority 101
 ip 80.0.0.1
hsrp 180
 preempt
```

```
 priority 101
 ip 80.1.1.1
switch (config-if-hsrp) # interface vlan 80
switch (config-if-hsrp) # no hsrp 10
switch (configif-hsrp) # show running interface vlan 80

!Command: show running-config interface Vlan80
!Time: Thu Jan 30 05:01:26 2014

version 7.0(0)N1(1)

interface Vlan80
  no shutdown
  ip address 80.0.0.31/8
  hsrp version 2
  hsrp 180
    preempt
    priority 101
    ip 80.1.1.1

switch (config-if-hsrp) # interface vlan 80
switch (config-if-hsrp) # no hsrp 180
switch (configif-hsrp) # show running interface vlan 80

!Command: show running-config interface Vlan80
!Time: Thu Jan 30 05:01:35 2014

version 7.0(0)N1(1)

interface Vlan80
  no shutdown
  ip address 80.0.0.31/8
  hsrp version 2

switch (config-if-hsrp) # interface vlan 80
switch (config-if-hsrp) # no hsrp version 2
```