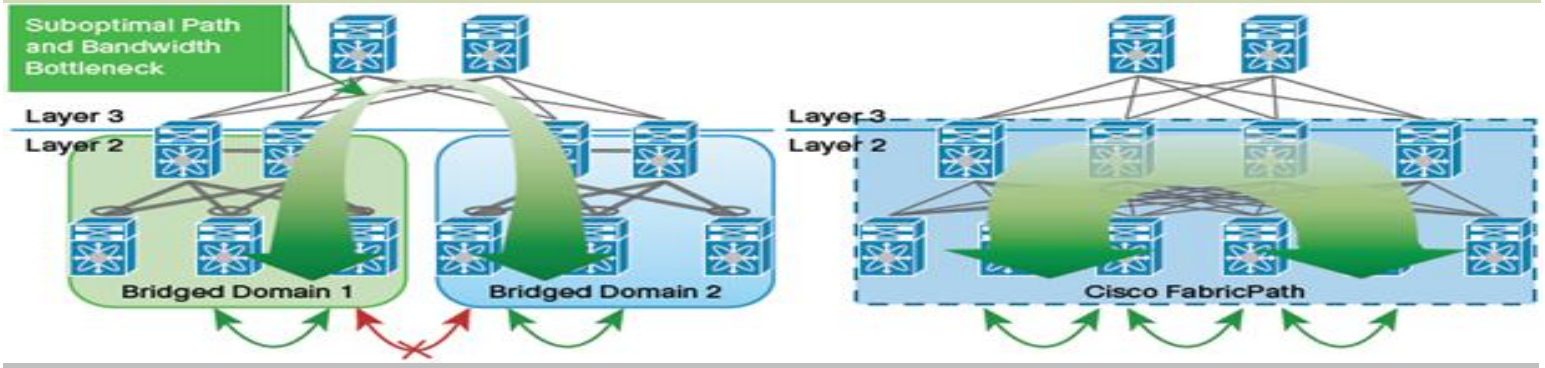
FabricPath Switching

Cisco Nexus 7000 Series NX-OS FabricPath Configuration

Comparison Between Traditional Data Center Design and a Cisco FabricPath Design Using the Same Networking Equipment



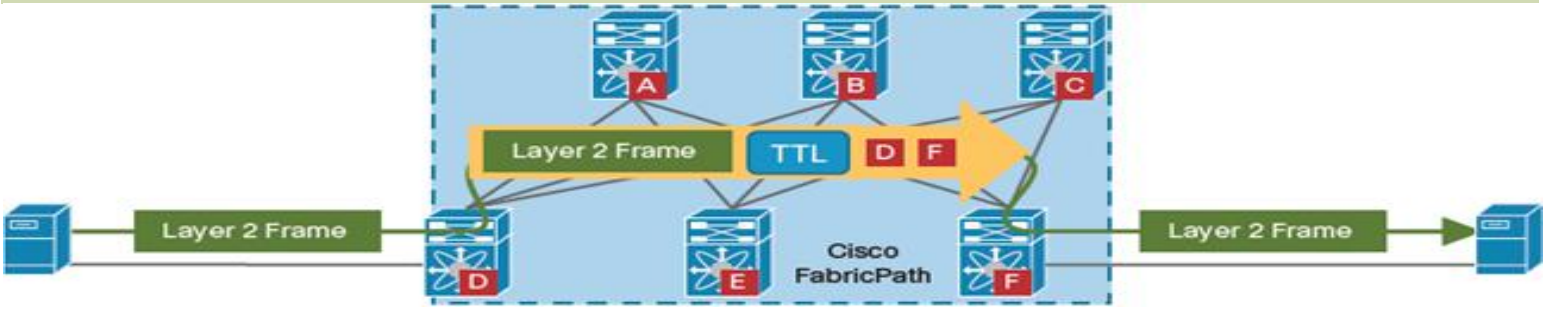
Typical Layer 2 and 3 Data Center Design

Virtual Machine Mobility Restricted to Small Domains. East-West Bandwidth Is Limited and Goes Through Suboptimal Paths.

Data Center Design Based on Cisco FabricPath

With Cisco FabricPath, Virtual Machine Mobility Is Possible Networkwide and Unlimited Bandwidth Is Available for East-West Traffic.

Frame Transported Across a Data Center Network Using Cisco FabricPath



The Layer 2 data plane is encapsulating the frames entering the fabric with a header that consists of routable source and destination addresses. These addresses are the address of the switch on which the frame was received and the address of the destination switch to which the frame is heading. From there, the frame is routed until it is reaches the remote switch, where it is deencapsulated and delivered in its original Ethernet format.

Configuring FabricPath Switching

Enabling the FabricPath Feature Set on the VDC

Switch(config)# **feature-set fabricpath**
Switch# **show feature-set**

Configuring MAC Learning Mode for CE VLANs (OPTIONAL)

Switch(config)# **mac address-table learning-mode conversational vlan** *vlan-id*
Switch# **show mac address-table learning-mode {vlan** *vlan-id}*

Configuring the Switch ID (OPTIONAL)

Switch(config)# **fabricpath switch-id** *value*
Switch# **show fabricpath switch-id**

Configuring the FabricPath Timers (OPTIONAL)

Switch(config)# **fabricpath timers** {**allocate-delay** *seconds* | **linkup-delay** *seconds* | **transition-delay** *seconds*}
Switch# **show fabricpath timers**

Disabling FabricPath Graceful Merges (OPTIONAL)

Switch(config)# **[no] fabricpath graceful-merge disable**

Forcing the Links to Come Up (OPTIONAL)

Switch# **fabricpath force link-bringup**

Displaying and Clearing FabricPath Switching Statistics

- **clear counters** [*interface*]
- **load- interval** {**interval** *seconds* {**1** | **2** | **3**}}
- **show interface counters** [**module** *module*]
- **show interface counters detailed** [**all**]
- **show interface counters errors** [**module** *module*]

Configuring FabricPath Interfaces

Configuring Interfaces to be FabricPath Interfaces

Switch(config)# **interface [ethernet** ***slot/port*** **| port-channel** ***channel-no*****]**
Switch(config)# **[no] switchport mode fabricpath**
Switch(config)# **system default switchport fabricpath** (OPTIONAL)

Configuring a cPC+ Switch ID

Switch(config)# **vpc domain** *domain-id*
Switch(config)# **fabricpath switch-id** *switch-id*

Default Settings

Parameter	Default
FabricPath	Disabled
MAC Address Learning Mode	• FP VLANs – Only Conversational Learning • CE VLANs – Traditional Learning Non-conversational learning can be configured for conversational learning on F series modules.
Allocate-delay timer	10 seconds
Linkup-delay timer	10 seconds
Transition-delay timer	10 seconds
Graceful merge	Enabled

Configuring FabricPath Forwarding

Setting the VLAN Mode to FP or CE

Switch(config)# **vlan** *vlan-id*
Switch(config)# **mode** [**ce** | **fabricpath**]
Switch# **show fabricpath topology vlans** [**active**]

Unicast Load Balancing (OPTIONAL)

Switch(config)# **fabricpath load-balance unicast** {[{**source** | **source-destination** | **xor** | **destination** | **symmetric**}] [{**layer3** | **layer4** | **mixed**}] [**rotate-amount** *rot_amt*] [**include-vlan**]}

Multicast Load Balancing (OPTIONAL)

Switch(config)# **fabricpath load-balance multicast** {[{**source** | **source-destination** | **xor** | **destination** | **symmetric**}] [{**layer3** | **layer4** | **mixed**}] [**rotate-amount** *rot_amt*] [**include-vlan**]}

Increased Multicast Scalability (OPTIONAL)

Switch(config)# **fabricpath multicast aggregate-routes** [**exclude** *ftag-id*]
Switch# **show l2 multicast ftag** *ftag-id*

Configuration Limits for FabricPath

Feature	Verified Limit (Cisco NX-OS 6.0)	Verified Limit (Cisco NX-OS 5.2)
Number of VLANs per switch	2000	2000
Number of core ports per switch	256	256
Number of edge ports per switch	256	256
Number of trees per switch	2	2
Number of topologies per switch	1	1
Number of multicast groups per switch	10,000	10,000
Number of Layer 2 IS-IS adjacencies per switch	256	256
Number of switch IDs	128	64

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CE = Classical Ethernet

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