C H A P T E R 1

Overview

This chapter provides an overview of the FabricPath and conversational MAC address learning features that are supported by the Cisco NX-OS software for the Cisco Nexus 7000 Series devices.

This chapter includes the following sections:

Information About FabricPath

> **Note** You must have an F Series module installed in your Nexus 7000 Series chassis in order to run FabricPath and conversational learning.

Beginning with the Cisco NX-OS Release 5.1 and when you use an F Series module, you can use the FabricPath feature. This new feature provides the following:

- Allows Layer 2 multipathing in the FabricPath network.
- Provides built-in loop prevention and mitigation with no need to use the Spanning Tree Protocol (STP).
- Provides a single control plane for unknown unicast, unicast, broadcast, and multicast traffic.
- Enhances mobility and virtualization in the FabricPath network.

The system randomly assigns a unique switch ID to each device that is enabled with FabricPath.

When a frame enters the FabricPath network from a Classical Ethernet (CE) network, the ingressing interfaces encapsulate the frame with a FabricPath header. The system builds paths, called trees, through the FabricPath network and assigns a forwarding tag (FTag) by flow to all the traffic in the FabricPath network. When the frame leaves the FabricPath network to go to a CE network, the egressing interface decapsulates the frame and leaves the regular CE header.

> **Note** Classical Ethernet is referred to as CE in this document.

The FabricPath network uses the Layer 2 Intermediate System-to-Intermediate System (IS-IS) protocol to forward traffic in the network using the FabricPath headers. Layer 2 IS-IS is different than Layer 3 IS-IS; the two protocols work independently. Layer 2 IS-IS requires no configuration and becomes operational when you enable FabricPath on the device. The frames carry the same FTag that is assigned at ingress throughout the FabricPath network, and Layer 2 IS-IS allows all devices to have the same view of all the trees build by the system. Known unicast traffic uses the Equal Cost Multipath Protocol (ECMP) to forward traffic throughout the network. Finally, using ECMP and the trees, the system automatically load balances traffic throughout the FabricPath network.

FabricPath provides configuration simplicity, scalability, flexibility, and resiliency within a Layer 2 domain.

Information About Conversational MAC Address Learning

Beginning the Cisco NX-OS Release 5.1 and when you use an F Series module, you can use conversational MAC address learning. You configure the type of MAC address learning—conversational or traditional—by VLAN.

Conversational MAC address learning means that each interface learns only those MAC addresses for interested hosts, rather than all MAC addresses in the domain. Each interface learns only those MAC addresses that are actively speaking with the interface. In this way, conversational MAC learning consists of a three-way handshake.

This selective learning, or conversational MAC address learning, allows you to scale the network beyond the limits of individual switch MAC address tables.

All FabricPath VLANs use conversational MAC address learning.

CE VLANs use traditional MAC address learning by default, but you can configure the CE VLANs to use conversational MAC learning.

Virtualization for FabricPath

You can create multiple virtual device contexts (VDCs). Each VDC is an independent logical device to which you can allocate interfaces. Once an interface is allocated to a VDC, you can only configure that interface if you are in the correct VDC. For more information on VDCs, see the *Virtual Device Context Configuration Guide, Cisco DCNM for LAN, Release 5.x*.

High Availability for FabricPath

FabricPath retains the configurations across ISSU.

See the *Cisco Nexus 7000 Series NX-OS High Availability and Redundancy Guide, Release 5.x* for more information on high availability.

Licensing Requirements for FabricPath

FabricPath requires the Enhanced Layer 2 license. You must install this license on every system that enables FabricPath networks.

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