Deploying Cisco DFA

This section describes how to deploy Cisco Dynamic Fabric Automation (DFA).

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Platform Requirements

Table 1: Cisco Dynamic Fabric Automation Platform Support

Product	Function					Software Release (and later releases)
	Spine	Leaf	Border-Leaf	RR[3]	Other	
Cisco Nexus 6001 Series switch	Yes	Yes	Yes	Yes		Cisco NX-OS Release 7.0(0)N1(1)
Cisco Nexus 6004 Series switch	Yes	Yes	Yes	Yes		Cisco NX-OS Release 7.0(0)N1(1)
Cisco Nexus 7000 Series switch	--	--	Yes[1]	--		Cisco NX-OS Release 6.2(2)
Cisco Nexus 7700 Series switch	--	--	Yes[1]	--		Cisco NX-OS Release 6.2(2)

Product	Function					Software Release (and later releases)
	Spine	Leaf	Border-Leaf	RR[3]	Other	
Cisco Nexus 1000V switch for VMware vSphere 5.1 and 5.5	--	--	--	--	Virtual switch with VDP signaling	Cisco NX-OS Release 4.2(1)SV2(2.2)
Cisco Prime Data Center Network Manager (DCNM)	--	--	--	--	Fabric management	Cisco Prime Data Center Network Manager Release 7.0
Cisco Prime Network Services Controller (NSC)	--	--	--	--	Services support	Release 3.2
OpenStack for Cisco DFA	--	--	--	--	Openstack Controller	OpenStack for Cisco DFA 1.0

Note

1 With Cisco Nexus 7000 F2, F2E, and F3 Series modules.

2 With Cisco Nexus 7000 F3 Series module.

3 Cisco DFA requires a minimum of one multiprotocol BGP route-reflector (RR). As an integrated function of Cisco DFA, Nexus 6000 Series devices with Cisco NX-OS Release 7.0(0)N1(1) and later releases can support this function.

Licensing Requirements for Cisco DFA

Review the other hardware and software components of your existing fabric with respect to the Cisco Dynamic Fabric Automation (DFA) release requirements and compatibility constraints. Because Cisco DFA implements an architectural solution with a switch topology different from what you have previously used, devices may be required to perform different roles when used in a Cisco DFA implementation, and may be subject to new licensing requirements. For information, see the "Platform Requirements" section of this guide.

Product	License Requirement
Cisco Nexus 6000 Series switch	• Cisco DFA requires the FabricPath Services package (ENHANCED_LAYER2_PKG) license. • For Cisco Nexus 6000 Series as a Cisco DFA spine node, the Enterprise Services Package (LAN_ENTERPRISE_SERVICES_PKG) is required. • For Cisco Nexus 7000 Series as a Cisco DFA leaf node, the Layer 3 Base Services Package (LAN_BASE_SERVICES_PKG) is required. For a complete explanation of the Cisco NX-OS licensing scheme and how to obtain and apply licenses, see the *Cisco NX-OS Licensing Guide*.
Cisco Nexus 7000 Series switch	• Cisco DFA requires the FabricPath Services package (ENHANCED_LAYER2_PKG) license. • For Cisco Nexus 7000 Series as a Cisco DFA spine node, the Enterprise Services Package (LAN_ENTERPRISE_SERVICES_PKG) is required. For a complete explanation of the Cisco NX-OS licensing scheme and how to obtain and apply licenses, see the *Cisco NX-OS Licensing Guide*.
Cisco Prime Data Center Network Manager (DCNM)	**Note** The switch feature licenses must be installed before you install the Cisco Prime DCNM license. Cisco DFA features and capabilities are covered by the Cisco DCNM Base license. The basic unlicensed version of Cisco DCNM-SAN Server is included in the software download. To get licensed features, such as Performance Manager, remote client support, and continuously monitored fabrics, you must buy and install the Cisco DCNM-SAN Server package. For information, see the *Cisco DCNM Installation and Licensing Guide, Release 7.x*.

Guidelines and Limitations for Cisco DFA

Cisco Dynamic Fabric Automation (DFA) has the following guidelines and limitations:

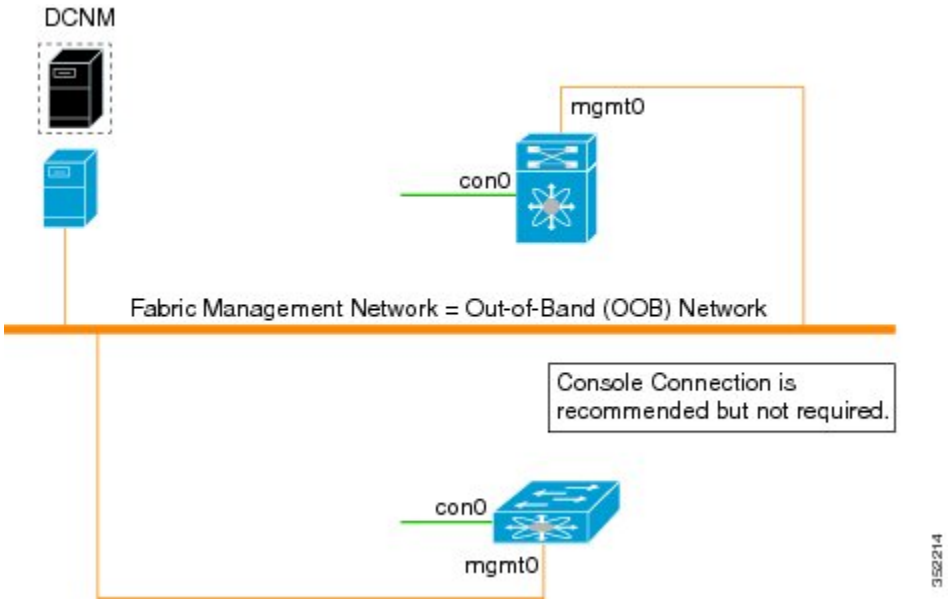
- The fabric management network can support only one Dynamic Host Configuration Protocol (DHCP) server. You can use either the DHCP server in Cisco Prime Data Center Network Manager (DCNM) or another designated DHCP server, but not both.
- To ensure that Cisco DFA device auto configuration does not interfere with other DHCP servers on your network, we recommended that you use a dedicated VLAN and subnet for the fabric management network. Cisco Prime DCNM and the Ethernet out-of-band ports of the Cisco DFA switches (mgmt0) reside in the fabric management network. You have the option to interconnect the fabric management network with your existing out-of-band management network.
- The management connectivity for Cisco DFA must come through the Cisco NX-OS device management interface (mgmt0).
- The management port on any Cisco DFA switch must be connected to the same management subnet that includes the Cisco Prime DCNM user interface.
- Every Cisco DFA switch to be managed by fabric management must be connected to the fabric management network via the Ethernet out-of-band network.
- A console connection for fabric management is recommended but not required for Cisco DFA.
- If Cisco Prime DCNM is your repository server, you must upload the Cisco NX-OS kickstart and system-image images to Cisco Prime DCNM using the Serial Copy Protocol (SCP) or Secure File Transfer Protocol (SFTP).

How to Cable the Network Fabric and Servers for Cisco DFA

Fabric Management Network and Console

Every Cisco DFA switch that is to be managed by Cisco Dynamic Fabric Automation (DFA) fabric management must connect to the fabric management network through the Ethernet out-of-band port (mgmt0).

Figure 1: Cabling the Fabric Management Network

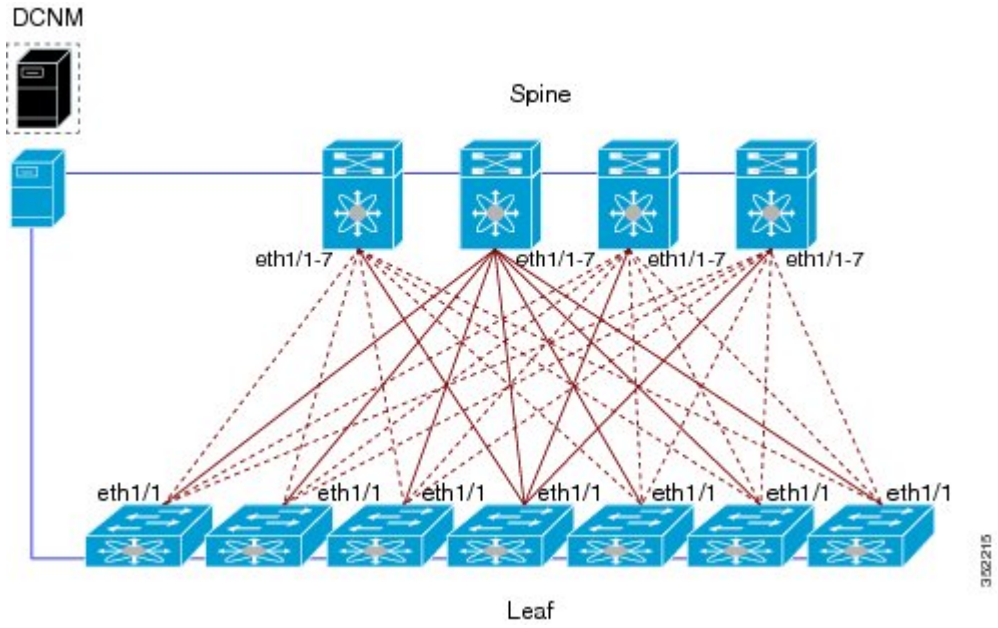


Fabric Connectivity

The fabric interfaces of the Cisco Dynamic fabric Automation (DFA) fabric connect the Cisco DFA switches to one another. Fabric interfaces are configured with Cisco FabricPath Frame Encapsulation (FE) for efficient

forwarding based on a Shortest Path First (SPF) algorithm. You do not configure VLAN trunking or pruning for the transported VLANs on Cisco DFA fabric interfaces .

Figure 2: Cabling the Cisco DFA Network Fabric and Servers

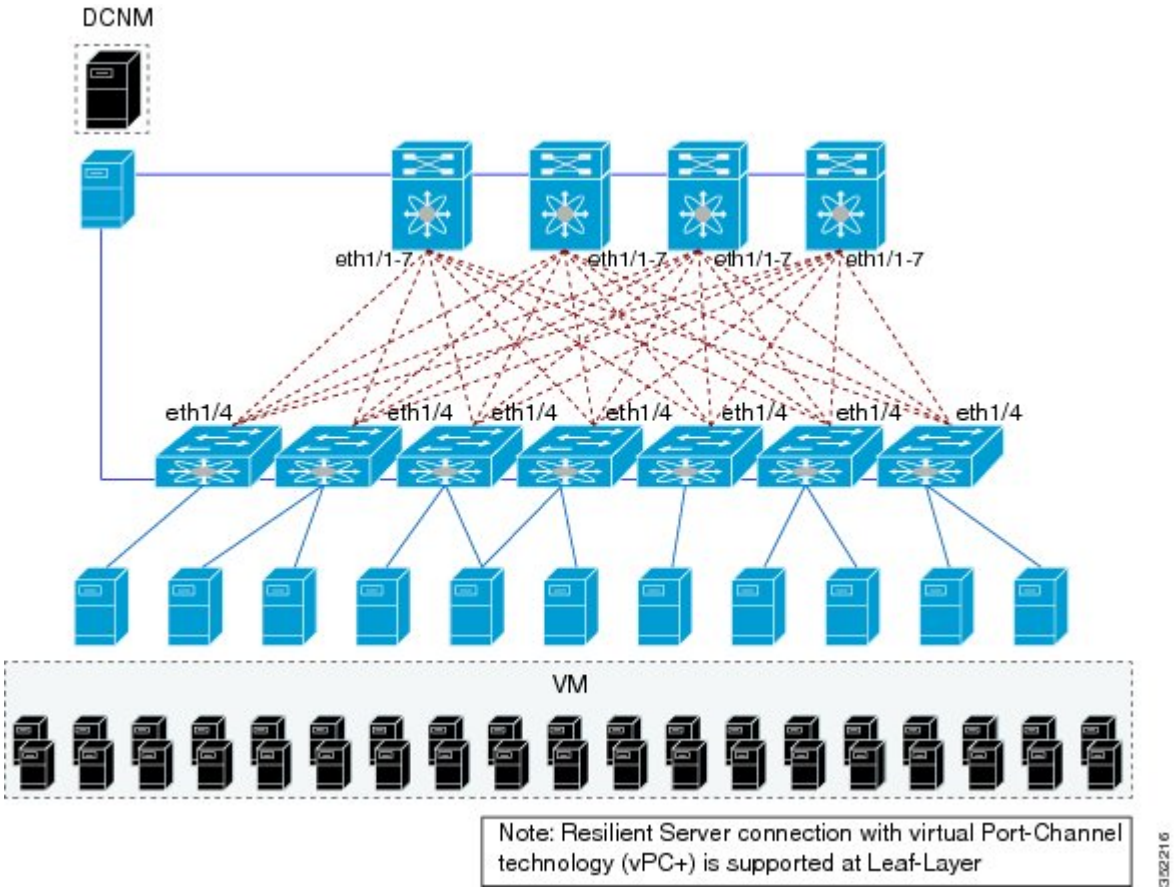


Server Connectivity

To transport data traffic across the Cisco Dynamic Fabric Automation (DFA) Fabric, the leaf switch must receive the traffic for connected VLANs that are to be extended across the fabric. The leaf-to-server interfaces are called host interfaces.

Note Always connect servers to Cisco DFA leaf or border leaf switches. You must not connect servers to Cisco DFA spine switches.

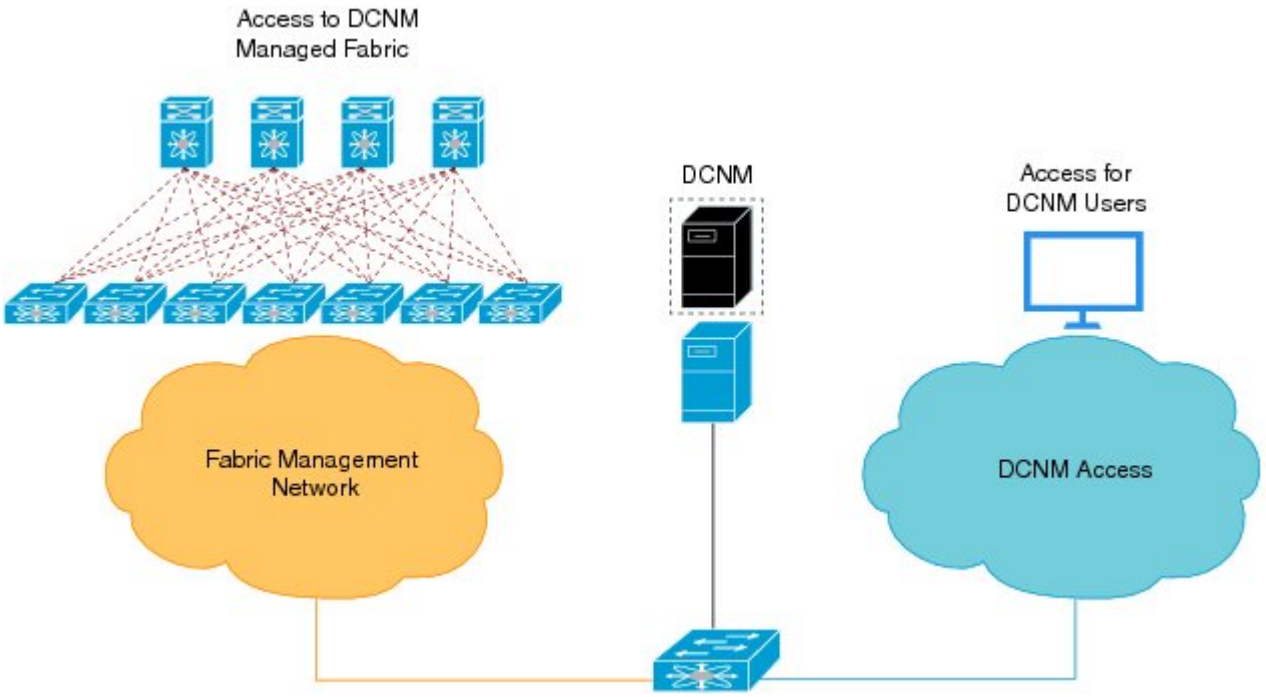
Figure 3: How to Cable Server Connectivity



Fabric Management

The Cisco Prime Data Center Network Manager (DCNM) is the central point of management for Cisco DFA.

Figure 4: Preparing to Deploy Cisco Prime DCNM



Deploying Cisco DFA

Note If this is not a new Cisco DFA deployment, see the *Cisco Dynamic Fabric Automation Migration Guide* for migrating your existing fabric to a Cisco DFA deployment.

1. Ensure that you have the appropriate Cisco Nexus devices with the minimum required Cisco NX-OS software releases to support Cisco Dynamic Fabric Automation DFA). See the "Platform requirements" section of this guide.
2. Install the Data Center devices. For information, see the appropriate install guides for your Cisco Nexus devices.
3. Install and configure the Cisco Nexus 1000V switch for VMware vSphere for Cisco DFA. For information, see the *Cisco Nexus 1000V Installation and Upgrade Guide* and the*Cisco Nexus 1000V DFA Configuration Guide*.

Note To deploy Cisco Prime DCNM, two port groups or port profiles are required on the virtual switch.

4 Create a cabling plan and cable your Cisco Nexus devices for Cisco DFA. For information, see the "How to Cable the Network Fabric and Servers for Cisco DFA" section.

5 Install the Cisco Prime Data Center Network Manager (DCNM) Open Virtual Appliance (OVA) to manage all the applications for the central point of management. For information, see the *Cisco DCNM 7.0 OVA Installation Guide*.

6 Start the Prime NSM adapter in the Cisco Prime DCNM OVA and configure Services support for Cisco DFA. For information, see the "Network Services" section of the *Cisco DCNM 7.0 OVA Installation Guide*.

7 (Optional) Use one of the following options to install OpenStack for Cisco DFA:

   a Install the Cisco OpenStack Installer to install the OpenStack for Cisco DFA orchestrator. For information, see the *OpenStack for Cisco DFA Install Guide Using Cisco OpenStack Installer*.

Note

- Before installing the Cisco OpenStack installer, the Cisco DFA fabric, switches, and Cisco Prime DCNM OVA must be already installed.
- To support OpenStack for Cisco DFA, Cisco Prime DCNM must be accessible via the OpenStack controller and the Cisco DFA fabric.

   b Use the pre-built OpenStack for Cisco DFA images to install the OpenStack for Cisco DFA orchestrator. For information, see the following guides:

      - *OpenStack for Cisco DFA Install Guide for Using Pre-built OpenStack for Cisco DFA Images*
      - *Quick Guide to Clonezilla*

Deploying Cisco DFA