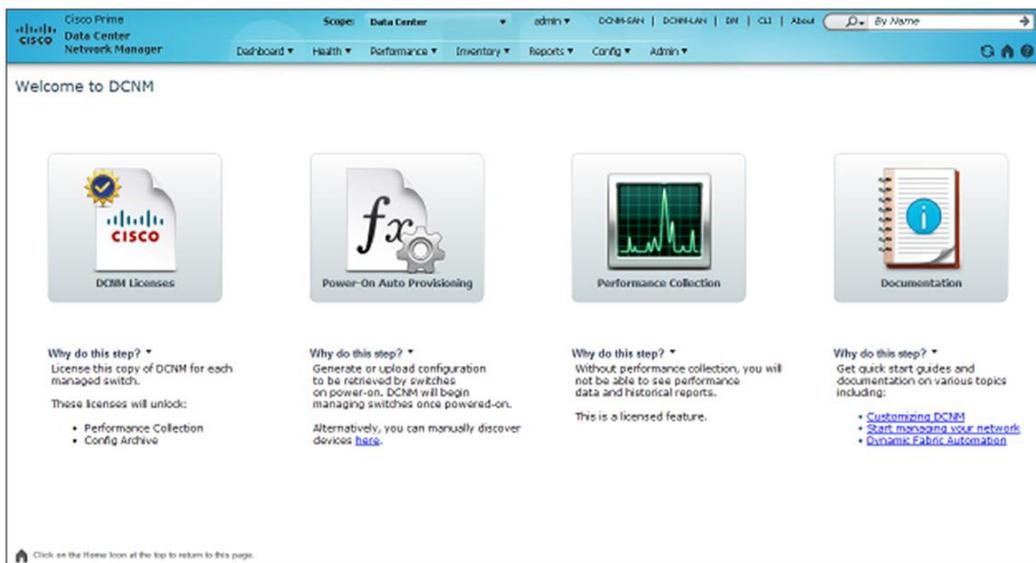


Cisco Prime Data Center Network Manager Release 7.0: Fabric Management for Cisco Dynamic Fabric Automation



Product Overview

Cisco Prime™ Data Center Network Manager (DCNM) software is a foundation component of Cisco® Dynamic Fabric Automation (DFA). Cisco Prime DCNM Release 7.0 provides ready-to-use, large-scale, standards-based, extensible management capabilities for Cisco DFA unified fabrics in a data center powered by Cisco Nexus® Family switches. Cisco Prime DCNM 7.0 provides a central point of management that includes the infrastructure necessary to install, maintain, and expand a Cisco DFA network fabric. Cisco Prime DCNM 7.0 works synchronously with Cisco Nexus switches to enable and simplify deployment of new fabrics using policy-based implementation to help reduce labor and operating expenses (OpEx). Cisco Prime DCNM 7.0 facilitates multitenant cloud deployments by integrating with popular hypervisor solutions such as VMware vCloud Director and OpenStack.

Features and Benefits

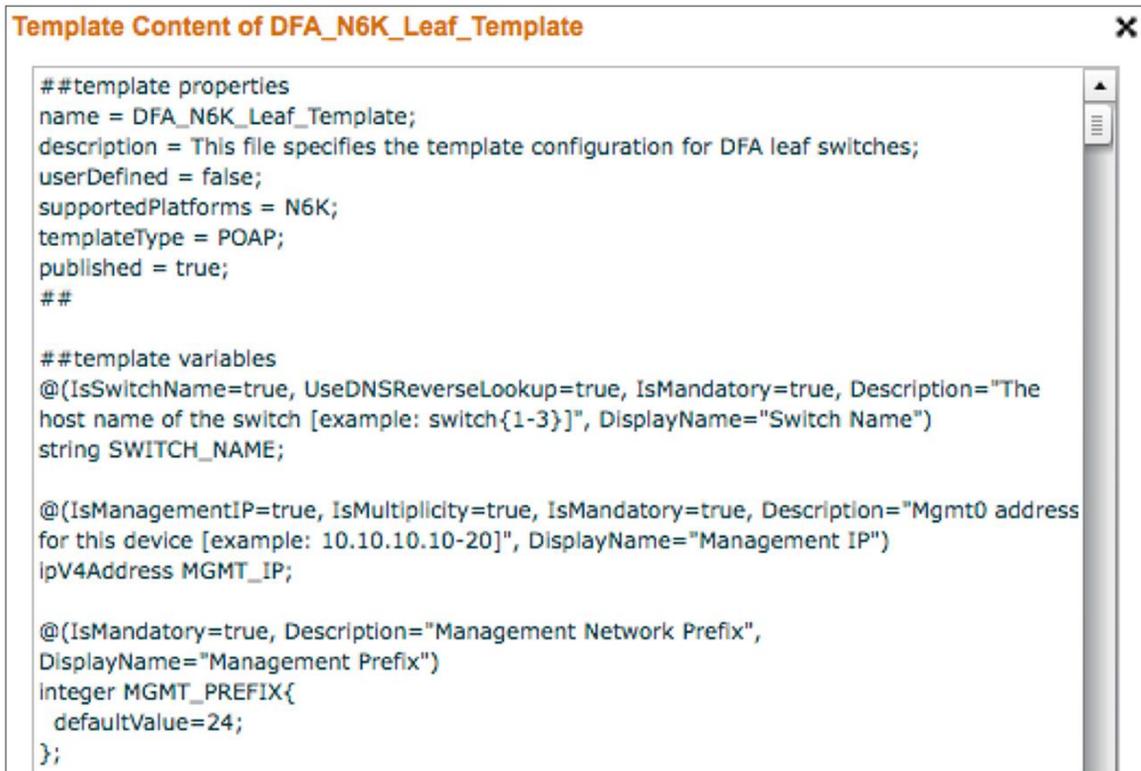
Power-On Auto Provisioning for Zero-Touch Deployment

Power-On Auto Provisioning (POAP) allows new switches added to a Cisco DFA fabric to be automatically provisioned simply by attaching a new, unconfigured device to the fabric. Cisco Prime DCNM manages this POAP workflow so that a user simply assigns a device to a preconfigured template: for example, a Leaf template or a Spine template. When the device launches, it obtains the correct software release and configuration. Configurations are generated by role-based POAP templates. Cable-plan functions help manage physical device connections and ensure that devices are installed correctly, as the operator intended.

Smart Templates for POAP

Cisco Prime DCNM 7.0 provides smart POAP templates for rapid deployment of new Cisco DFA fabrics (Figure 1). Thus, you can import a list of devices and parameter ranges into the template instance, avoiding repetitive data entry for each device. Decision logic, pop-up comments, and the capability to save parameters for reuse drastically reduce the effort of installing new devices and extending the fabric.

Figure 1. Cisco Prime DCNM Smart Template



```
##template properties
name = DFA_N6K_Leaf_Template;
description = This file specifies the template configuration for DFA leaf switches;
userDefined = false;
supportedPlatforms = N6K;
templateType = POAP;
published = true;
##

##template variables
@(IsSwitchName=true, UseDNSReverseLookup=true, IsMandatory=true, Description="The
host name of the switch [example: switch{1-3}]", DisplayName="Switch Name")
string SWITCH_NAME;

@(IsManagementIP=true, IsMultiplicity=true, IsMandatory=true, Description="Mgmt0 address
for this device [example: 10.10.10.10-20]", DisplayName="Management IP")
ipV4Address MGMT_IP;

@(IsMandatory=true, Description="Management Network Prefix",
DisplayName="Management Prefix")
integer MGMT_PREFIX{
  defaultValue=24;
};
```

Cable Plan Management

Cisco Prime DCNM 7.0 includes cable-plan management functions. Cable plans help the user effectively manage the network by indicating the intent of the device cabling and the way that each device in a leaf or spine or other arrangement is supposed to be connected. The user can import an existing cable plan for a predesigned configuration or automatically create a new cable plan from the POAP configuration or an existing, discovered fabric.

Device Autoconfiguration and Tenant Awareness

Device Autoconfiguration in the Cisco DFA fabric enables automatic network configuration of an organization's or tenant's workload on the switch port (Figure 2). Cisco Prime DCNM manages these configurations and exposes a northbound API that interfaces with the orchestrator. Thus, when the hypervisor manager deploys a new workload such as a virtual machine or a physical device, the system can automatically detect the action and provision the Cisco DFA fabric accordingly. When a workload such as a virtual machine moves from one host on the network to another on a different fabric switch, the system automatically provisions the workload on the new switch.

Figure 2. Cisco Prime DCNM Autoconfiguration Navigator

The screenshot shows the Cisco Prime Data Center Network Manager interface. The top navigation bar includes 'Dashboard', 'Health', 'Performance', 'Inventory', 'Reports', 'Config', and 'Admin'. The main content area is divided into two sections: 'Organizations' and 'Networks'.

Organizations Table:

Organization/Partition Name	Description	Partition ID	Orchestration Engine	Service Node IP Address
acme-inc				
acme-eng		50000		
acme-acct		50001		
acme-it		50002		
acme-outbound		50003		
morefuntoys				
boat division		50004		
snack food		50006		
bicycles		50005		
widgeteering		50007		

Networks Table:

	Network Name	Partition Name	Segment ID	Mobility Domain		Profile Name	Subnet
				VLAN ID	Mobility Domain ID		
<input type="checkbox"/>	acme-nw-eng	acme-eng	60000	0	None	defaultNetworkIpv4EProfile	
<input type="checkbox"/>	acme-nw-eng	acme-eng	60001	0	None	defaultNetworkIpv4EProfile	
<input type="checkbox"/>	acme-acct-nw	acme-eng	60002	0	None	defaultNetworkIpv4EProfile	
<input type="checkbox"/>	web-app	acme-eng	20000	0	None	defaultNetworkIpv4EProfile	192.168.1

Ready-to-Use Extensible Open Virtual Appliance

Cisco Prime DCNM helps you rapidly deploy a new fabric by providing a preintegrated open virtual appliance (OVA). You can deploy Cisco Prime DCNM and have a complete Cisco DFA fabric management solution in less than 15 minutes.¹ The OVA includes all fabric management infrastructure necessary for a fully functioning Cisco DFA network. The components include:

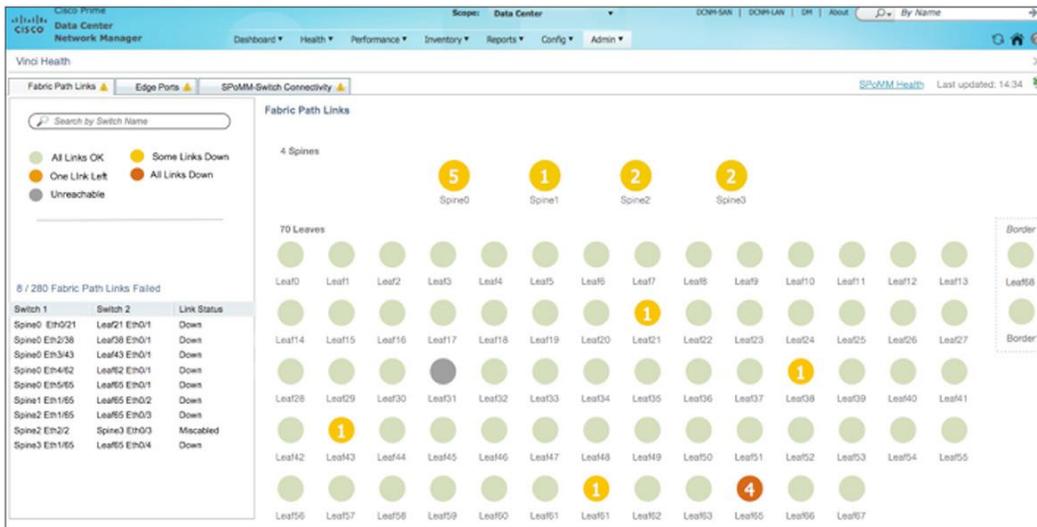
- Domain Name System (DNS) and Dynamic Host Configuration Protocol (DHCP) server: Used for POAP
- Secure file server: For hosting POAP files, switch images, command-line interface (CLI) templates, and cable plans
- Cisco Jabber[®] Extensible Communications Platform (XCP) server: Extensible Messaging and Presence Protocol (XMPP)-based publish and subscribe mechanism providing access to the entire fabric from any node
- Lightweight Directory Access Protocol (LDAP) server: For multitenant autoconfiguration data
- Advanced Message Queuing Protocol (AMQP) message broker: Used for hypervisor manager synchronization and Representational State Transfer (REST) API event messaging

¹ Based on internal tests; additional information available on request

Enhanced Fabric Display Visualization

Cisco Prime DCNM 7.0 includes an innovative fabric health display to provide a view of very large fabrics (Figure 3). This highly scalable display shows link-related anomalies, including misconfiguration.

Figure 3. Cisco Prime DCNM Enhanced Fabric Display

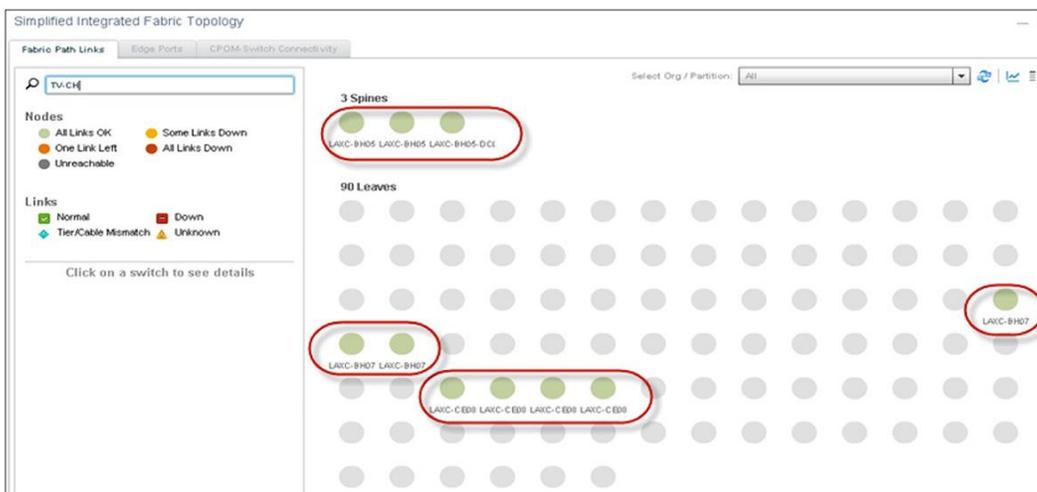


Pop-up notifications show the intended connectivity measured against the fabric's cable plan for rapid troubleshooting on a large fabric. The display shows the number of links that are down on a given device and indicates which connectivity is affected and whether any devices are unreachable.

Search for Organization and Tenant Networking on the Fabric

In addition to showing the link status, the fabric health display includes a unique search feature with which the user can search for networks that match a given organization or tenant (Figure 4).

Figure 4. Cisco Prime DCNM Organization or Tenant Search



The display shows which switches carry the tenant's workload: either virtual machine or physical device traffic for that network.

REST API for Third-Party Cloud Integration and Event Bus

Cisco Prime DCNM 7.0 includes a REST API for integration with hypervisor and cloud management systems such as OpenStack and VMware vCloud Director or third-party network management systems (NMS), operations support systems (OSS) and automation systems. REST APIs use Java Standard Object Notation (JSON) format to make integration simple and straightforward. The AMQP event bus facilitates automation and synchronization with external agents.

Targeted Users

Cisco DFA fabric users should deploy the Cisco Prime DCNM 7.0 OVA. Cisco Prime DCNM 7.0 is intended for Cisco DFA customers and includes new infrastructure to support this scenario. Existing customers who want to deploy fabrics that support Cisco DFA using existing Cisco Nexus switches should deploy Cisco Prime DCNM 7.0 as part of any new Cisco DFA fabric deployment.

Users not using Cisco DFA should continue to use the Cisco Prime DCNM 6.0 release train until the next minor release of Cisco Prime DCNM 7.0, targeted for 2HCY14.

Customers deploying Cisco Prime DCNM 7.0 should follow the instructions provided in the installation guide for the Cisco Prime DCNM 7.0 virtual appliance with respect to VMware virtual machine requirements.

Hypervisor Requirements

Cisco Prime DCNM 7.0 release requires VMware vSphere 5.1 hypervisor hosts.

Ordering Information

Cisco Prime DCNM 7.0 software is offered for order at no charge. You can download software [here](#) with a valid Cisco login. Baseline Cisco DFA support is included without additional per-device licensing.

Cisco Prime DCNM 7.0 is available only as an OVA appliance for VMware vSphere deployments.

Product Specifications

Table 1 lists the specifications for Cisco Prime DCNM 7.0.

Table 1. Product Specifications

Item	Specification
Supported hypervisor for OVA host	VMware vSphere 5.1 (with VMware ESXi)
OVA host memory minimum requirements (small or large selected model²)	<ul style="list-style-type: none">• Small: 8 GB• Large: 12 GB
OVA number of CPU cores minimum requirements on host (small or large model)	<ul style="list-style-type: none">• Small: 2• Large: 4
OVA disk space minimum requirements (small or large model)	<ul style="list-style-type: none">• Small: 100 GB• Large: 160 GB
External database support	Oracle 11 RAC and Oracle 11 SE
External DHCP server support	Cisco Prime Network Registrar
Secure client support	HTTPS and SSH
Secure file access	SCP and SFTP
Protocols used by the OVA	HTTP, HTTPS, XMPP, AMQP, SCP, TFTP, DHCP, and LDAPv3

² The OVA installation install process for DCNM 7.0 requires the user to select either a “small” or “large” installation size.

Item	Specification
Web browser Support	See product release notes for Cisco Prime DCNM 7.0(1)
Number of supported devices	See the Cisco DFA scalability document
API support	REST API using JSON
Troubleshooting and visualization display	Link-down status, miscabling status, virtual machine search, and organization and partition search
API for cloud and service integration	REST and JSON through API support
Switch devices supported	See Cisco DCNM device compatibility information here

For More Information

For more information about Cisco Prime DCNM, visit <http://www.cisco.com/go/DCNM> or contact your local account representative.

For more information about Cisco DFA, visit <http://www.cisco.com/go/DFA> or contact your local account representative.



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