

## Cisco Unified Fabric with Automation: Acronyms and Abbreviations

Table 1 defines acronyms and abbreviations often used in discussions of Cisco<sup>®</sup> Unified Fabric innovations. Short descriptions provide additional useful information. This list doesn't claim to be complete, but includes only the most important features, technologies, and applications.

Acronym or Abbreviation	Expansion and Description
<b>AMQP</b>	<p><b>Advanced Message Queuing Protocol</b></p> <p>AMQP is a message bus architecture protocol for communication with external components. Cisco Prime™ Data Center Network Manager (DCNM) includes a built-in AMQP server and uses this protocol to send and receive northbound AMQP notifications to the orchestration layer to create, update, delete, etc. workload-automation profiles. All organization, partition, network create/delete/update etc. events received by the DCNM via REST APIs are published to a queue on the AMQP server. In this way, external entities can subscribe to these events and consume selected ones on a need basis. An example includes the Cisco Prime Network Services Controller (NSC) for seamless services integration with the Cisco Unified Fabric.</p>
<b>Anchor leaf</b>	<p><b>Specific functionality of a Physical Switch in an Optimized Network Fabric; Coexists with or uses Migration mode with Cisco FabricPath</b></p> <p>An anchor leaf node provides the Layer 3 first-hop gateway for Layer 2-only Cisco FabricPath server leaf switches. Optionally, a border leaf switch can function as an anchor leaf.</p>
<b>ARP</b>	<p><b>Address Resolution Protocol</b></p> <p>ARP is a protocol mainly used on end-host devices to learn the MAC address for a given IP address. Depending of the configuration of distributed gateway feature integrated into the Cisco Unified Fabric on the leaf, the leaf switch responds to the ARP request locally, or the ARP request is flooded across the Cisco Unified Fabric. ARP packets can be used to detect and track IPv4 end-hosts in conjunction with the Host Mobility Manager (HMM) and trigger end-host profile instantiation.</p>
<b>BFD</b>	<p><b>Bidirectional Forwarding Detection</b></p> <p>BFD is a lightweight protocol designed to quickly detect failures in the path between two adjacent nodes. In the data center fabric, BFD is used with Cisco FabricPath Intermediate System-to-Intermediate System (IS-IS) protocol. Configuration of BFD on Cisco FabricPath IS-IS links with back-to-back dark fibers can provide an additional safeguard to detect failures not signaled over Layer 1, such as upper protocol software failures or unidirectional link failures.</p>
<b>BiDi</b>	<p><b>Bidirectional; refers to Cisco QSFP 40-Gbps Bidirectional Transceiver</b></p> <p>The 40-Gbps BiDi optical module supports 40 Gigabit Ethernet over one pair of multimode fiber (MMF) cables with LC connectors while allowing 40 Gigabit Ethernet to be deployed using the same infrastructure as 10 Gigabit Ethernet (10GBASE-SR). This innovative Cisco 40-Gbps QSFP BiDi technology offers customers no-cost fiber migration from 10 Gbps to 40 Gbps.</p>
<b>Border leaf</b>	<p><b>Specific Role of a Physical Switch in an Optimized Network Fabric</b></p> <p>A border leaf node typically is a node with connections outside the Cisco Unified Fabric: for example, the attachments of the data center interconnect (DCI) or connectivity to the enterprise network or WAN.</p>
<b>CPOM</b>	<p><b>Central Point of Management</b></p> <p>Please see the information provided for DCNM.</p>
<b>DCI</b>	<p><b>Data Center Interconnect</b></p> <p>DCI refers to a connection between two or more data centers. It typically provides Layer 2 connectivity. Overlay Transport Virtualization (OTV) and Virtual Private LAN Services (VPLS) typically are considered to be Layer 2 DCI technologies. The attachment point of the DCI is the border leaf. In addition, workload mobility is provided through the enhanced forwarding capabilities of the distributed gateway over a Layer 3 DCI connection between the border leaf switches.</p>
<b>DCNM</b>	<p><b>Data Center Network Manager; refers to Cisco Prime Data Center Network Manager</b></p> <p>Cisco Prime DCNM is designed to help network administrators efficiently implement, visualize, and manage Cisco Unified Fabric. It includes a comprehensive feature set and a customizable dashboard that provides enhanced visibility. It provides a ready-to-use day-1 switch deployment solution through Power-On Auto-Provisioning (POAP) and automated workload fabric provisioning for end-hosts with autoconfiguration templates. It also provides enhanced fabric management capabilities for both LAN and SAN services while also bundling a DHCP server, tftp server, XMPP server, and a LDAP server. Cisco Prime DCNM often is described as a common point of management (CPOM).</p>

Acronym or Abbreviation	Expansion and Description
DFA	<p><b>Dynamic Fabric Automation; refers to Cisco Dynamic Fabric Automation</b></p> <p>Cisco DFA is an innovative evolution of Cisco Unified Fabric involving Cisco FabricPath and Virtual Extensible LAN (VXLAN) technology. It provides a framework of four flexible building blocks: fabric management, workload-automation, optimized networking, and virtual fabric.</p>
DHCP	<p><b>Dynamic Host Configuration Protocol</b></p> <p>DHCP is a standardized networking protocol used on IP networks to dynamically distribute network configuration parameters such as IP addresses for interfaces and services. Cisco Prime DCNM has a built-in DHCP server, which typically is used to allocate IP addresses to the management interface (mgmt0) during the POAP network device deployment process. This built-in DHCP server can also be used to allocate IP addresses from nonoverlapping IP ranges to the end-host during the workload-automation instantiation process. Cisco Prime DCNM supports interoperability with any other external DHCP server such as the Cisco Prime Network Registrar to provide fully integrated multitenancy DHCP service for workload-automation with overlapping IP ranges.</p>
HMM	<p><b>Host Mobility Manager</b></p> <p>HMM is a component of Cisco NX-OS Software and a fundamental innovation of Cisco Unified Fabric. To support both virtual and physical machines anywhere in a data center, the Cisco Unified Fabric needs the capability to track and detect end-hosts. Tracking end-host movement mainly involves discovering the end-host and propagating the end-host reachability information to the other switches (leaf switches) in the fabric. End-host detection can happen either through ARP or neighbor discovery (ND) or Virtual Station Interface (VSI) Discovery and Configuration Protocol (VDP). When a connected end-host starts and sends an ARP or ND packet, the leaf switch supervisor intercepts these packets and builds a local end-host entry point in the Adjacency Manager (AM) and updates the HMM software process, subsequently populating the HMM database (only when the switch virtual interface [SVI] on which the host is learned is configured in fabric forwarding mode). HMM provides the main enhancement for optimized networking through the distributed gateways on the leaf switches. HMM along with the fabric feature set is enabled through the <b>feature fabric forwarding</b> command.</p>
IS-IS	<p><b>Intermediate System to Intermediate System</b></p> <p>IS-IS is an interior gateway routing protocol designed to move information efficiently within a computer network: a group of physically connected computers, switches, or routers. IS-IS is a link-state routing protocol like Open Shortest Path First (OSPF) and works with IP and non-IP networks. In the flavor of the Unified Fabric that uses the FabricPath overlay, IS-IS is the underlying routing protocol of choice for exchanging Layer 2 reachability information. It is typically called Cisco FabricPath IS-IS.</p>
LDAP	<p><b>Lightweight Directory Access Protocol</b></p> <p>LDAP is an open, vendor-neutral, industry-standard application protocol for accessing and maintaining distributed directory information services over an IP network. For Cisco Prime DCNM and its CPOM function, the network and services workload-automation information is stored in an LDAP directory. Cisco Prime DCNM uses LDAP to present the relevant network workload-automation parameters (tenants, organizations, partitions, segments, etc.) to the Cisco Unified Fabric leaf switch and allows download of tenant profiles with the appropriate parameters when a workload (virtual or physical) is connected.</p>
Leaf	<p><b>Specific Role of a Physical Switch in a Clos topology</b></p> <p>A leaf node is a switch with end-host connectivity. The term also refers to all other leaf subcategories. Each leaf provides the functions of a distributed or pervasive gateway. A pervasive gateway is a distributed Layer 3 router function and is shared by all leaf nodes to reduce the failure domain. Depending on the requirements, the distributed gateway can be configured in either enhanced forwarding mode (as a proxy gateway) or traditional forwarding mode (as an anycast gateway). With common gateway MAC and IP addresses across the leaf, transparent host and IP address mobility can be achieved.</p>
LLDP	<p><b>Link Layer Discovery Protocol</b></p> <p>LLDP is an IEEE-based vendor-neutral protocol and is used by network devices to advertise their identity, capabilities, and neighbors on a LAN. LLDP with additional type-length-value (TLV) extensions is used for the cable-management feature, to provide notification of cabling failures. Cisco Prime DCNM uses LLDP for node discovery to provide network visibility.</p>
MP-BGP	<p><b>Multiprotocol Border Gateway Protocol</b></p> <p>BGP is a standardized exterior gateway protocol designed to reliably exchange routing and reachability information between autonomous systems. Within the fabric, internal BGP (iBGP) is used to distribute the /32 or /128 host entries and prefixes redistributed and learned through the HMM process on the leaf. These host prefixes are learned on the leaf, with every leaf acting as a first-hop gateway. Optimized networking uses the Multiprotocol BGP extension to exchange reachability information for the following address families: IPv4, IPv6, VPNv4, VPNv6, IPv4 MVPN, and IPv6 MVPN.</p>
ND	<p><b>Neighbor Discovery; refers to IPv6 Neighbor Discovery</b></p> <p>ND is a protocol used with IP Version 6 (IPv6). It operates in the Internet model and is responsible for autoconfiguring nodes with IPv6 addresses, discovering other nodes on the link, determining the link-layer addresses of other nodes, detecting duplicate addresses, finding available routers and Domain Name System (DNS) servers, discovering address prefixes, and maintaining reachability information about the paths to other active neighbor nodes. ND packets can be used to detect and track IPv6 end-hosts in conjunction with HMM software component and subsequently trigger end-host profile instantiation.</p>

Acronym or Abbreviation	Expansion and Description
<b>NSC</b>	<b>Network Services Controller; refers to Cisco Prime Network Services Controller</b> Cisco Prime NSC is a services orchestrator in a Cisco Unified Fabric automation solution. It provides orchestration and automation of network services in a multitenant cloud deployment. It can be integrated with virtual computing and storage managers such as VMware vCenter and OpenStack controllers and can manage the Cisco Virtual Security Gateway (VSG), Cisco Adaptive Security Appliance (ASA) for Nexus® 1000V Series Switch, Cisco Cloud Services Router (CSR), and other 3 <sup>rd</sup> party products such as the Citrix Netscaler VPX.
<b>OVA</b>	<b>Open Virtual Appliance</b> OVA is an open standard for packaging and distributing virtual appliances, which are deployed as virtual machines. A virtual appliance is a prebuilt software solution maintained, updated, and managed as a single piece of software. Cisco Prime DCNM Release 7.0 or later is available in OVA format for VMware.
<b>POAP</b>	<b>Power-On Auto-Provisioning</b> POAP allows a device to be automatically bootstrapped with the desired configuration and images to reduce the deployment time for Cisco Unified Fabric. It requires a DHCP, Trivial FTP (TFTP), and Secure Copy (SCP) server along with a configuration repository.
<b>REST API</b>	<b>Representational State Transfer Application Programming Interface</b> This standard programming interface is used to exchange information mainly through HTTP calls. Fabric management uses the REST API to support information exchange between Cisco Prime DCNM and NSC, orchestrators, and other northbound systems.
<b>RR</b>	<b>Route Reflector; for BGP</b> Route reflectors are used to reduce the number of BGP sessions and to overcome the requirement to provide full-meshed iBGP connectivity. Route reflectors reduce configuration efforts when the number of BGP-speaking nodes changes or grows. Route reflectors typically are placed at the spine switches and distribute end-host reachability information for all address families from leaf switches to other leaf switches.
<b>SCP</b>	<b>Secure Copy Protocol</b> SCP is a protocol for securely transferring files between two nodes and is based on the Secure Shell (SSH) protocol. Cisco Prime DCNM uses SCP to upload Cisco NX-OS images and configurations from the local image repository to the Cisco Unified Fabric switches during the POAP process.
<b>Spine</b>	<b>Specific Role of a Physical Switch in a Clos topology</b> A spine is a transit node in the Clos architecture for connecting leaf switches. Spines do not provide end-host connectivity; a spine is a forwarding node only and therefore is an intermediate node on the path between two leaf switches.
<b>TFTP</b>	<b>Trivial File Transfer Protocol</b> TFTP is a simple protocol for transferring files between two nodes. Cisco Prime DCNM uses TFTP to present the Python POAP boot script from the local image repository to the Cisco Nexus switches during the POAP process.
<b>TLV</b>	<b>Type-Length-Value</b> Various protocols support TLV encoding. TLV-capable protocols provide a flexible and simple way to extend capabilities or functions without the need to rewrite the whole protocol code. For example, LLDP (cable management) and Cisco FabricPath IS-IS (multiple extensions) use TLV to improve or extend the protocol capabilities.
<b>VDP</b>	<b>Virtual Station Interface (VSI) Discovery and Configuration Protocol (VDP)</b> To provide a network overlay, leaf nodes must be aware of virtual machine network information. VDP is an IEEE protocol and communicates network information about a virtual machine from the virtual switch to the leaf switch; the leaf switch subsequently interprets this information and instantiates the appropriate resources, such as Virtual Routing and Forwarding (VRF) instances, SVIs, and VLANs, on the leaf switch. In the context of workload-automation, VDP often refers to control-plane instantiation. The Cisco Nexus 1000V Switch and Open vSwitch (OVS) with DFA extensions support VDP today.
<b>vPC</b>	<b>Virtual PortChannel</b> vPC allows links that are physically connected to two different physical Cisco switches to appear to a third downstream device to be coming from a single device and as part of a single PortChannel. The third device can be a switch, end-host, fabric extender, or any other networking device that supports IEEE 802.3ad PortChannels.
<b>vPC+</b>	<b>Enhanced Virtual PortChannel</b> vPC+ is based on vPC and supports redundant end-host connectivity in a Cisco FabricPath environment, in which a host, a fabric extender, or a Classic Ethernet switch is connected to two physical Cisco FabricPath switches that provide northbound Cisco FabricPath uplinks. A pair of Cisco FabricPath switches builds a virtual switch, which are connected through a vPC+ peer link, which is a Cisco FabricPath link, too. Cisco Unified Fabric with automation uses southbound vPC+ connectivity to end-hosts, fabric extenders, and switches in the same flexible manner as with Cisco FabricPath.
<b>XMPP</b>	<b>Extensible Messaging and Presence Protocol</b> XMPP is a message-oriented middleware based on XML. The protocol was originally named Jabber and was developed by the Jabber open-source community. Cisco Prime DCNM has a built-in XMPP server. XMPP provides an easy-to-use human-to-machine interface through which users can push configurations to or pull output from all devices in a predefined group.

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## For More Information

For more information about Cisco Dynamic Fabric Automation, please visit <http://www.cisco.com/go/dfa>.



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