

# Cisco NX-OS Software Release 4.2 for Cisco Nexus 7000 Series Switches

PB552032

This product bulletin introduces Cisco® NX-OS Software Release 4.2 for Cisco Nexus™ 7000 Series Switches and summarizes the new features it offers.

## New Features

Cisco NX-OS 4.2 delivers on the design objectives of the Cisco Nexus 7000 Series, providing a rich and comprehensive feature set to address the high demands of mission-critical data centers. It is also used by the Cisco MDS 9000 Series Multilayer Switches, focusing on data center features and protocols, availability, and operational considerations.

Cisco NX-OS 4.2 supports all hardware and software supported in Release 4.1. In addition, Cisco NX-OS 4.2 for the Cisco Nexus 7000 Series now supports several new software features and new and enhanced Gigabit Ethernet optics. The following list summarizes the main software and hardware features new in this release:

- Port profiles
- Layer 2 NetFlow
- Web Cache Communication Protocol (WCCP)
- Virtual device context (VDC) restart
- Green power and cooling enhancements
- Virtual PortChannel (vPC) enhancements
- Dynamic forwarding information base (FIB) ternary content-addressable memory (TCAM) allocation
- Gigabit Ethernet copper pluggable interfaces
- Gigabit Ethernet coarse wavelength-division multiplexing (CWDM) and dense wavelength-division multiplexing (DWDM) optics

## Hardware Support

Cisco NX-OS 4.2 supports all the hardware for the Cisco Nexus 7000 Series previously supported up through Release 4.1. Release 4.2 adds no new hardware support.

Cisco NX-OS 4.2 adds support for Gigabit Ethernet and optics modules, in the M148GS-11 modules for the Cisco Nexus 7000 Series.

Table 1 lists the additional optics supported in Cisco NX-OS 4.2.

**Table 1.** New Optics Supported in Cisco NX-OS 4.2

Description For Gigabit Ethernet Module (N7K-M148GS-11)	Part Number
Cisco 1000BASE-T SFP	GLC-T
Cisco 1000BASE-T SFP (NEBS 3 ESD)	SFP-GE-T
Cisco CWDM SFP, where xxxx is the number (8 colors)	CWDM-SFP-xxxx
1000BASE-DWDM SFP (100-GHz ITU grid); 15xx.yy nm (40 colors)	DWDM-SFP-xxxx

## Software Support

Cisco NX-OS 4.2 supports all the software features previously supported up through Release 4.1 on the Cisco Nexus 7000 Series. In addition, Release 4.2 supports the new software features described in Table 2. For more detailed information, refer to the Cisco NX-OS 4.2 release notes (see the “For More Information” section).

**Table 2.** New Software Features in Cisco NX-OS 4.2

Software Feature	Description
<b>Port profiles</b>	A port profile is a container used to define a common set of configuration commands for multiple interfaces.
<b>Layer 2 NetFlow</b>	Layer 2 NetFlow provides the capability to collect traffic statistics based on the packet's Layer 2 header and thus enables source (SRC) and destination (DST) MAC address accounting.
<b>IPv6 enhancements</b>	<ul style="list-style-type: none"> <li>IPv6 infrastructure: Enables IPv6 policy-based routing (PBR)</li> <li>IPv6 management: Supports IPv6 for application access control lists (ACLs), syslog server, Simple Network Management Protocol (SNMP), Secure Shell (SSH) Protocol, RADIUS, Telnet, and authentication, authorization, and accounting (AAA)</li> <li>IPv6 Routing Protocol support: BGPv6 and multiprotocol extensions for IPv6 (RFC 2545)</li> </ul>
<b>WCCP</b>	<p>WCCP support is introduced in a Layer 2 redirect mode only. The main features are:</p> <ul style="list-style-type: none"> <li>WCCPv2 Layer 2 redirect only</li> <li>Support for open and closed services</li> <li>Support for dynamic services</li> <li>Service group priority</li> <li>Assignment methods: mask based only</li> <li>Input redirection</li> <li>Output redirection with input exclude</li> <li>ACL list redirection</li> <li>VRF awareness at control plane</li> <li>High availability</li> <li>Process restartability</li> <li>MD5 security</li> <li>VDC support</li> <li>Support on Gigabit Ethernet, switched virtual interface (SVI), and PortChannel interfaces</li> </ul>
<b>Static router MAC addresses</b>	Per-SVI static MAC addresses are supported, enabling proper functioning of transparent firewall and load-balancer solutions.
<b>Port security on PortChannels</b>	Port security enables control of incoming traffic from Layer 2 interfaces (based on source MAC addresses).
<b>VDC restart</b>	Individual VDCs can be restarted while the system is running.
<b>Green enhancements</b>	<ul style="list-style-type: none"> <li>Power display: Displays the actual total power used</li> <li>Fan-tray power improvements: Requires less fan power to cool the system; reduces power consumption reduction by up to 500W for the Cisco Nexus 7010 Switch</li> <li>Power supply single-input mode: Reduces the overprovisioning that occurs when dual feeds are used for redundancy</li> <li>Module power-down: Holds spare modules in a no-power state</li> </ul>
<b>Cisco Generic Online Diagnostics (GOLD) enhancements</b>	<ul style="list-style-type: none"> <li>Line-Card Boot-Time loopback test</li> <li>Enable Port loopback test during line-card bootstrap; ports that fail the loopback test will be put in the error disabled state</li> <li>Standby Fabric loopback test</li> </ul>
<b>vPC enhancements</b>	<p>Feature improvements</p> <ul style="list-style-type: none"> <li>Single 10 Gigabit Ethernet line-card support through embedded multi-instance object tracking</li> <li>Support for RFC noncompliant Layer 3 devices (load balancers, firewalls, and network-attached storage [NAS])</li> </ul> <p>Scalability improvements:</p> <ul style="list-style-type: none"> <li>200 VLANs per vPC (LACP enabled)</li> <li>Reconvergence latency target of less than 1 second in most failure scenarios</li> </ul>
<b>Command-line interface (CLI) enhancements</b>	<ul style="list-style-type: none"> <li>Support for better performance polling of load intervals</li> <li>Scripting support enhancements</li> <li>Additional show commands</li> </ul>
<b>Full high-availability support for rollback</b>	This enhancement brings high-availability awareness to the configuration rollback feature.

<b>Generic routing encapsulation (GRE) tunnel with virtual routing and forwarding (VRF) and VDC</b>	This enhancement allows creation of tunnels in VDCs and VRF instances other than the default VDC.
<b>Dynamic FIB TCAM allocation</b>	Cisco NX-OS 4.1 restricts allocation to 56,000 IPv4, 2000 IPv6, and 32,000 multicast routes. This new feature removes the static allocation of TCAM space for IPv4, IPv6, and multicast routes and allows support for increased IPv4, IPv6, and multicast routes on the existing I/O modules.
<b>Multicast control plane enhancements</b>	<ul style="list-style-type: none"> <li>• Scalability</li> <li>• Multicast Routing Information Base (MRIB) Multicast FIB Distribution (MFDM) download optimization</li> <li>• Txlist in Multicast Source Discovery Protocol (MSDP) for scalability</li> <li>• Txlist in IP for scalability</li> <li>• IGMP cache on non-designated router for fast convergence</li> <li>• Policies for multicast configuration (ip pim rp-addr and ip igmp join-group and static-group)</li> <li>• IGMP group-specific (GS) queries to router ports only</li> <li>• Debug filters for IGMP snooping</li> </ul>
<b>Virtual Router Redundancy Protocol (VRRP) object tracking</b>	Object tracking is supported in VRRP.
<b>Load interval</b>	Implemented on per-interface basis, the load-interval command provides a mechanism to the user for configuring the sample interval for statistics collection. This command allows the user to configure a load interval of from 30 to 300 seconds for physical ports, and 60 to 300 seconds for Layer 3 and SVI ports.
<b>Per-command authorization with TACACS</b>	Command-level granularity is supported for user rights. Roles are not supported in this release.
<b>Border Gateway Protocol (BGP) enhancements</b>	<ul style="list-style-type: none"> <li>• Advertisement map</li> <li>• Scalability enhancements</li> <li>• Support for 4-byte autonomous system number (ASN) plain-number format</li> <li>• Support for 4-byte ASN communities</li> <li>• Next-hop tracking enhancements</li> <li>• Graceful low-memory handling</li> </ul>
<b>Open Shortest Path First (OSPF) enhancements</b>	<ul style="list-style-type: none"> <li>• Capability to limit maximum redistributed routes using a CLI command</li> <li>• Support for link-state advertisement (LSA) generation pacing for external LSAs</li> <li>• Multi-area adjacency</li> </ul>
<b>Enhanced Interior Gateway Routing Protocol (EIGRP) enhancements</b>	<ul style="list-style-type: none"> <li>• Redistribution route limits</li> <li>• Graceful shutdown for router and interface modes</li> </ul>
<b>Intermediate System-to-Intermediate System (IS-IS) Protocol enhancements</b>	<ul style="list-style-type: none"> <li>• Redistribution route limits</li> <li>• Graceful shutdown for router interface modes</li> </ul>
<b>MIB enhancements</b>	<p>Adds support for the following MIBs:</p> <ul style="list-style-type: none"> <li>• CISCO-SYSTEM-EXT-MIB</li> <li>• CISCO-HSRP-MIB</li> <li>• CISCO-SYSTEM-EXT-MIB</li> <li>• CISCO-PROCESS-MIB</li> <li>• CISCO-SNMP-TARGET-EXT-MIB</li> <li>• ipRouteTable (MIB-II)</li> <li>• ipAddrTable (MIB-II)</li> <li>• NetToMediaTable</li> </ul>

## Ordering Information

Cisco NX-OS is available in three license levels. A rich feature set is provided with the Base license, which is bundled with the hardware at no extra cost. The Enterprise license enables incremental functions that are applicable to many enterprise deployments. The Advanced LAN Enterprise license enables next-generation functions such as VDCs and Cisco TrustSec. Table 3 summarizes the three packages.

**Table 3.** License Packages

Package	Content
<b>Base package</b>	Provides a rich feature set appropriate for most data center requirements
<b>Enterprise package</b>	Provides incremental functions available only with the Enterprise license: <ul style="list-style-type: none"> <li>• IP routing               <ul style="list-style-type: none"> <li>◦ OSPFv2 and v3 (IPv4 and v6)</li> <li>◦ IS-IS Protocol (IPv4)</li> <li>◦ BGP (IPv4 and v6)</li> <li>◦ EIGRP (IPv4 and v6)</li> </ul> </li> <li>• IP Multicast               <ul style="list-style-type: none"> <li>◦ PIM: Sparse, Bidir, Any-Source Multicast (ASM), and Source-Specific Multicast (SSM) modes (IPv4 and v6)</li> <li>◦ Multicast Source Discovery Protocol (MSDP) (IPv4)</li> </ul> </li> <li>• PBR (IPv4 and v6)</li> <li>• GRE tunnels</li> </ul>
<b>Advanced LAN package</b>	Enables use of the following functions in Cisco NX-OS <ul style="list-style-type: none"> <li>• VDCs</li> <li>• Cisco TrustSec</li> </ul>

For the most up-to-date license-to-feature mapping, please visit the Cisco NX-OS Licensing Guide at [http://www.cisco.com/en/US/docs/switches/datacenter/sw/4\\_0/nx-os/licensing/configuration/guide/nx-os\\_licensing.html](http://www.cisco.com/en/US/docs/switches/datacenter/sw/4_0/nx-os/licensing/configuration/guide/nx-os_licensing.html).

To place an order, visit the Cisco Ordering homepage. To download software, visit the Cisco Software Center. Table 4 provides ordering information.

**Table 4.** Ordering Information

Description	Product Number
<b>Cisco NX-OS Enterprise LAN License</b>	N7K-LAN1K9
<b>Cisco NX-OS Advanced LAN License</b>	N7K-ADV1K9
<b>Cisco NX-OS 4.2 Software for the Cisco Nexus 7000 Supervisor 1</b>	N7KS1K9-42

## Cisco Services and Support

Cisco offers a wide range of services to help accelerate your success in deploying and optimizing Cisco Nexus 7000 Series Switches in your data center. Cisco's innovative services are delivered through a unique combination of people, processes, tools, and partners, and are focused on helping you increase operational efficiency and improve your data center network. Cisco Advanced Services uses an architecture-led approach to help you align your data center infrastructure with your business goals and achieve long-term value. Cisco SMARTnet<sup>®</sup> Service helps you resolve mission-critical problems with direct access any time to Cisco network experts and award-winning resources. With this service, you can take advantage of the Smart Call Home service capability, which offers proactive diagnostics and real-time alerts on your Cisco Nexus 7000 Series Switches. Spanning the entire network lifecycle, Cisco Services helps protect your investment, optimize network operations, support migration, and strengthen your IT expertise. For more information about Cisco Data Center Services, visit <http://www.cisco.com/go/dcservices>.

## For More Information

For more information about Cisco NX-OS, visit the product homepage at <http://www.cisco.com/go/nxos> or contact your local account representative.



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