

Cisco NX-OS Software Release 7.2(0)N1(1)

PB735319

Cisco[®] NX-OS Software Release 7.2(0)N1(1) delivers new programmability and automation features for the Cisco Nexus[®] 5500, Nexus 5600 and Cisco Nexus 6000 Series Switches. This release enhances the Programmable Fabric offering for the Cisco Nexus fixed data center switches.

New Features in This Release

This release offers a number of new software features in the following areas

- Programmable Fabric
- Programmability
- Management and Monitoring
- Security
- Routing and Switching

Programmable Fabric

- Autoconfiguration, with support for routable loopback address: This feature allows the Virtual Routing and Forwarding (VRF) profile to be updated on the leaf node, with the result that the loopback routable IP address is autoconfigured under that VRF and advertised to all leaf nodes using Multiprotocol Border Gateway Protocol (MP-BGP).
- Autoconfiguration, with logging of profile instantiation for compliance and accounting: An enhanced syslog are generated when profile apply, profile unapply, and profile refresh operations are performed. The syslog contains details about the host that triggers the profile events.
- Border-leaf conversational learning: You can enable conversational learning on all leaf nodes by using the fabric forwarding conversational-learning all command. For this command to work, the subnet needs to be instantiated on the leaf. But in the case of a border leaf, this is not true because the border leaf may not have any hosts connected to it.
- Extended Dynamic Host Configuration Protocol (DHCP) server support: This feature enables you to have common DHCP servers (for example, Microsoft Windows) for IP address assignments with Cisco Dynamic Fabric Automation (DFA).

Programmability

- Cisco NX-API support: On Cisco Nexus devices, command-line interfaces (CLIs) are run only on the device. NX-API improves the accessibility of these CLIs by making them available outside the switch by using HTTP/HTTPS. You can use this extension to the existing Cisco Nexus CLI system on the Cisco Nexus 5000 and 6000 Series devices. NX-API supports **show** commands and configurations. NX-API supports JavaScript Object Notation (JSON) remote procedure call (RPC).

Management and Monitoring

- Link Layer Discovery Protocol (LLDP) support for Cisco NX-OS VM Tracker
- Power On Auto Provisioning (POAP) diagnostics enhancement enables POAP failure to be detected with a locator LED. When the POAP process starts, the locator LED flashes the pattern 21 (two flashes, brief pause, one flash, and then long pause) to indicate that POAP is in progress.
- QoS drop-counter history has been added to allow correlation between observed QoS drops and buffer usage. The QoS drop history for unicast and multicast traffic is recorded for each interface. These new commands provide a brief view over drops in the last hour in a concise table format, as well as a detailed historical report of the QoS drops by time interval since boot up.
- Fabric extender (FEX) host interface (HIF) as Cisco Switched Port Analyzer (SPAN) destination enables HIF and virtual Ethernet (vEth) ports as SPAN destinations.
- QoS ACL statistics per entry supports QoS ACL statistics per entry to verify per-QoS class-map classification. Counters are shown per Cisco Application Control Engine (ACE) for QoS ACL, and the statistics per QoS ACL entry can be viewed.
- Network Time Protocol (NTP) over IPv6 supports time-synchronization of a network of machines. IPv6 support is added for NTP in the Cisco Nexus 5000 and 6000 Series Switches allowing IPv6 NTP servers and peers to be configured for time synchronization.

Security

- Dynamic VLAN based on MAC-based authentication (MAB) is supported on Cisco Nexus 5000 and 6000 Series Switches. After IEEE 802.1x authentication or MAB is completed and before bringing up the port, the authorization policy may want to allow the peer and host to be placed into a particular VLAN based as a result of the authentication. The RADIUS server typically indicates the desired VLAN by including tunnel attributes in the Access-Accept message. This procedure of getting the VLAN and binding it to a port constitutes dynamic VLAN assignment.
- Secure-login enhancements: The secure login enhancements include capabilities to:
 - Configure login parameters (secure-login feature)
 - Restrict sessions per user (per user per login)
 - Use algorithm (hash or symmetric key) for password for secure writing (SHA-256 password hashing)
 - Configure password length (minimum and maximum)
 - Enable password prompt for user name
 - Configure shared key value for using RADIUS and TACACS

Routing and Switching

- Access control list (ACL)-based quality-of-service (QoS) classification offload is supported on the Cisco Nexus 2348UPQ 10GE Fabric Extender. The 2348UPQ has six 40-Gbps Quad Small Form-Factor Pluggable (QSFP) and forty-eight 10-Gbps Enhanced SFP (SFP+) interfaces.
- Shared-buffer QoS command: The **queue-limit queue-size bytes** command is extended to set the queue limit size for 40-Gbps interfaces.
- Virtual IP address Hot-Standby Router Protocol (HSRP) enhancement supports the following:
 - HSRP virtual IP address configuration in a different subnet than the interface subnet

- Enhanced Address Resolution Protocol (ARP) to source with virtual IP address from the supervisor for hosts when hosts are in the virtual IP subnet or referenced by a static route for the VLAN configuration
- Periodic ARP synchronization with the virtual PortChannel (vPC) peer
- Use of the virtual IP address as the Layer 3 source address and gateway address for all communication with the DHCP server
- VXLAN Trunk Protocol Version 3 (VTPv3) and VTP pruning: VTPv3 has the following features:
 - Provides interoperability with switches configured with VTPv1 or v2
 - Allows only the primary server to make VTP configuration changes
 - Supports 4000 VLANs
 - Permits feature-specific primary servers; a switch can be a primary server for a specific feature database such as Multiple Spanning Tree (MST) or for the entire VLAN database
 - Provides enhanced security with hidden and secret passwords
 - Provides interoperability with private VLANs (PVLAN); PVLANS and VTPs are no longer mutually exclusive
- Queue-limit change on the Cisco Nexus 2348UPQ whereby forty-eight 10-Gbps SFP+ interfaces and six 40-Gbps QSFP interfaces are supported.
- Four-port vPC on Nexus 5600 and 6000 Series Switches supports the 4-port vPC provides the capability to associate the virtual Fibre Channel (vFC) interface with an individual member of a PortChannel that has multiple port members. This feature is supported only for Cisco Nexus 2300 platform fabric extenders that are connected to Cisco Nexus 5600 platform and 6000 Series Switches.
- Egress multicast buffering is supported on Nexus 5600 platform and 6000 Series Switches which is a process that provides additional cells to multicast traffic at egress. When there is heavy multicast traffic at egress, buffer space (cells) is borrowed from the unicast pool. The pool provides a specific number of cells to enhance the traffic processing and reduce traffic drops at the egress side.
- Router MAC RMAC learning on Cisco Nexus 5600 and 6000 series switches allows the default MAC address (RMAC) of a VLAN interface to be dynamically learned on another VLAN interface over a bridged interface.

Licensing Information

Release NX-OS 7.2.0N1(1) also supports new licenses for the Cisco Intelligent Traffic Director (ITD) and Remote Integrated Service Engine (RISE) features (Table 1).

Table 1. Licensing Information

License Part Number	Description
N6K-SERVICES1K9	Cisco Nexus 6000 Series network services (includes ITD and RISE)
N56-SERVICES1K9	Cisco Nexus 5600 network services (includes ITD and RISE)
N55-SERVICES1K9	Cisco Nexus 5500 network services (includes ITD and RISE)

Download Information

For more information and software downloads, please see the following links:

- Cisco.com Download page: <http://software.cisco.com/download/navigator.html?i=ly>
- Release notes:
 - http://www.cisco.com/c/en/us/td/docs/switches/datacenter/nexus5500/sw/release/notes/7x/Nexus5500_Release_Notes_7x.html
 - http://www.cisco.com/c/en/us/td/docs/switches/datacenter/nexus5600/sw/release/notes/7x/Nexus5600_Release_Notes_7x.html
 - http://www.cisco.com/c/en/us/td/docs/switches/datacenter/nexus6000/sw/release/notes/7x/Nexus6000_Release_Notes_7x.html
- Upgrade and downgrade guides:
 - http://www.cisco.com/c/en/us/td/docs/switches/datacenter/nexus5500/sw/upgrade/720_N1_1/n5500_upgrade_downgrade_720.html
 - http://www.cisco.com/c/en/us/td/docs/switches/datacenter/nexus5600/sw/upgrade/720_N1_1/n5600_upgrade_downgrade_720.html
 - http://www.cisco.com/c/en/us/td/docs/switches/datacenter/nexus6000/sw/upgrade/720_N1_1/n6k_upgrade_downgrade_720.html
- Cisco Nexus 5000 Series external product page: <http://www.cisco.com/c/en/us/products/switches/nexus-5000-series-switches/index.html>
- Cisco Nexus 2000 Series external product page: <http://www.cisco.com/c/en/us/products/switches/nexus-2000-series-fabric-extenders/index.html>

Software Support

For more detailed information about features and Cisco In Service Software Upgrade (ISSU), refer to the Cisco NX-OS 7.2(0)N1(1) release notes listed here.

Cisco Services and Support

Cisco offers a wide range of services to help accelerate your success in deploying and optimizing Cisco Nexus 5000 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 operation efficiency and improve your data center network. Cisco Advanced Services use an architecture-led approach to help you align your data center infrastructure with your business goals and achieve long-term value.

Cisco SMARTnet™ Service helps you resolve mission-critical problems with direct access at any time to Cisco network experts and award-winning resources. With this service, you can take advantage of the Cisco Smart Call Home service capability, which offers proactive diagnostics and real-time alerts on your Cisco Nexus 5000 Series Switches. Spanning the entire network lifecycle, Cisco Services offerings help 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 Nexus switches, please visit <http://www.cisco.com/go/nexus5000> and <http://www.cisco.com/go/nexus2000>.



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