New Features in Cisco IOS Software Release 12.2(33)SXI1

PB530187

This product bulletin introduces Cisco IOS® Software Release 12.2(33)SXI1, including new features it offers.

Introduction

Cisco IOS® Software Release 12.2SX provides new features and hardware support for the Cisco® Catalyst® 6500 Series Switch. Cisco IOS Software Release 12.2(33)SXI, the latest 12.2SX release, delivers new Cisco Catalyst 6500 Series hardware and software innovations that span multiple technology areas, including high availability, Multiprotocol Label Switching (MPLS) and VPNs, IPv6 support, advanced IP routing and multicast, integrated security, and embedded management. Cisco IOS Software Release 12.2(33)SXI1 is the first rebuild release of Cisco IOS Software Release 12.2(33)SXI.

The broad range of hardware-enabled services (IPv6, MPLS, Network Address Translation/Port Address Translation [NAT/PAT], generic routing encapsulation [GRE], and Bidirectional Protocol Independent Multicast [PIM]) and Cisco IOS Release 12.2SX software features (Nonstop Forwarding with Stateful Switchover [NSF/SSO] and software modularity) makes the Cisco Catalyst 6500 Series one of the most comprehensive switching platforms available today.

For detailed information about the features and hardware supported in Cisco IOS Software Release 12.2SX and 12.2(33)SXI, refer to the Cisco IOS Software Release 12.2SX release notes and customer documentation at:

http://www.cisco.com/en/US/products/ps6017/tsd_products_support_series_home.html

Not all features are supported on all platforms. Use the Cisco Feature Navigator to find information about platform support and Cisco IOS Software image support at http://tools.cisco.com/ITDIT/CFN/jsp/index.jsp. (You must have a Cisco.com account.)

Cisco IOS Release 12.2SX is developed for and intended to run only on Cisco Catalyst 6500 Series Switches.

Feature Highlights of Cisco IOS Software Release 12.2(33)SXI1

The following sections discuss the software feature highlights of Cisco IOS Software Release 12.2(33)SXI1, including:

- Border Gateway Protocol (BGP) 4-byte autonomous system
- Cisco IOS Ipv6 Provider Edge Router (6PE) Multipath
- 802.1x VLAN user distribution
- Trusted Boundary with Cisco Device Verification
- Cisco IOS Software Modularity Usability Enhancement

- Cisco Catalyst 6500 Virtual Switching System (VSS) support in IP Base Feature Set
- Dynamic Host Configuration Protocol (DHCP) Helper MIB

Software

BGP 4-Byte Autonomous System

The BGP IETF standard is the most scalable of all routing protocols. It is the routing protocol of the global Internet, as well as for service provider private networks. This protocol has expanded from its original purpose of carrying Internet reachability information, and can now carry routes for IP Multicast, IPv6, VPNs, and a variety of other data. Cisco supports all IETF BGP standards, as well as most or all Internet Drafts for BGP. In addition, Cisco is an active participant in the Inter-Domain Routing (IDR) working groups at the IETF and a frequent contributor of new BGP extensions.

Cisco IOS Software now supports BGP 4-Byte Autonomous System Numbers (ASNs). During the early BGP development and standardization phase, it was assumed that availability of a 16-bit binary number to identify the autonomous system within BGP would be more than sufficient. The 16-bit ASN, also known as the 2-byte ASN, provides a pool of 65,536 unique ASNs. The Internet Assigned Numbers Authority (IANA) manages the available BGP ASN pool, with the assignments being carried out by the Regional Registries.

The current consumption rate of the publicly available ASNs suggests that the entire public 2-byte ASN pool will be fully depleted by early to mid-2011. A solution to this depletion is the expansion of the existing 2-byte ASN to a 4-byte ASN, which provides a theoretical 4,294,967,296 unique ASNs. The American Registry for Internet Numbers (ARIN) has made the following policy changes in conjunction with the adoption of the solution:

As of January 1, 2009, all new ASNs issued will be 4 bytes by default, unless otherwise requested. *"Following a globally coordinated policy, ARIN and all the Regional Internet Registries began allocating four-byte ASNs by request in January 2007; January 2009 marks the transition to allocating four-byte ASNs by default"* (https://www.arin.net/announcements/2008/07242008.html).

Benefits

The Cisco IOS BGP "4-byte ASN" feature allows BGP to carry an ASN encoded as a 4-byte entity. The addition of this feature allows you to use an expanded 4-byte ASN granted by the IANA.

Additional Information

Additional information is available at the following websites:

- http://www.cisco.com/en/US/prod/collateral/iosswrel/ps6537/ps6554/ps6599/data_sheet_C78-521821.html
- http://www.cisco.com/en/US/prod/collateral/iosswrel/ps8802/ps6968/ps6441/product_bulletin_c25-409474.html#wp9001708
- http://www.cisco.com/en/US/prod/collateral/iosswrel/ps6537/ps6554/ps6599/white_paper_c11_516829.html

Product Management Contact

For more information about this feature, send an email message to Kevin Delgadillo at delgadil@cisco.com.

6PE Multipath

Internal and external BGP multipath for IPv6 allows the IPv6 router to load balance between several paths (for example, the same neighboring autonomous system or sub-autonomous system, or the same metric) to reach its destination. The 6PE Multipath feature uses multiprotocol internal BGP (MP-iBGP) to distribute IPv6 routes over the MPLS IPv4 core network and to attach an MPLS label to each route.

When MP-iBGP multipath is enabled on the 6PE router, all labeled paths are installed in the forwarding table with MPLS information (label stack) when it is available. This function enables 6PE to perform load balancing.

Benefits

Internal and external BGP multipath for IPv6 allows the IPv6 router to load balance between several paths.

Additional Information

Additional information is available at:

http://www.cisco.com/en/US/docs/ios/ipv6/configuration/guide/ip6-mptcl_bgp.html#wp1073092

Product Management Contact

For more information about this feature, send an email message to Ted Qian at tqian@cisco.com.

802.1x VLAN User Distribution

In a large-scale campus network design, a group of VLANs in campus access switches form a logical group. Standard 802.1x user distribution allows the RADIUS server to assign a VLAN group name to the access switch that will map to the corresponding local VLAN.

Benefits

This feature allows for highly scalable 802.1x-based VLAN assignment in a large-scale campus LAN deployment.

Product Management Contact

For more information about this feature, send an email message to Qiang Huang at qhuang@cisco.com.

Trusted Boundary with Cisco Device Verification

Traditionally PCs connect to IP phones and the IP phones connect to the switches. The switch interfaces are configured to extend the boundary of trust to the IP phone device. With newer PCs that can tag packets, this setup introduces a security hole. The PC could tag its packets preferentially and thereby undermine the priority provided to the audio traffic originating from the IP phone.

Trusted boundary with Cisco device verification now verifies that the device requesting preferential treatment is indeed a Cisco device and closes this security vulnerability.

Product Management Contact

For more information about this feature, send an email message to Qiang Huang at qhuang@cisco.com.

Modular Cisco IOS Software Usability Enhancements

Several Modular Cisco IOS Software commands have been enhanced to make common tasks easier.

The Second destination option to the **install file** command-line interface (CLI) command saves time when installing images or maintenance packs on redundant systems:

Old CLI: *install file <src> <dest> [interactive]*

New CLI*: install file <src> <dest> [dest2] [interactive]*

Currently, with the Modular Cisco IOS Software install process, the **install** command must be run separately to install an image or a maintenance pack on both the local and slave supervisor engines on a system with redundant supervisor engines. This enhancement allows you to accomplish this install with a single command line. For example:

> install file ftp://x.x.x.x/filename disk0:/sys slavedisk0:/sys

In the previous CLI, the installation of the image or maintenance pack is to the first location (disk0:/sys as it does currently). On completion, the process automatically repeats for second location (slavedisk0:/sys). This process can help reduce the time to install images or maintenance packs on redundant systems.

The Prepend option to the **install bind** command allows you to boot from the boot statement from the **install bind** command.

Currently the **install bind** command in Modular Cisco IOS Software adds a boot statement after other boot statements in the queue. That additional statement causes a problem when you want to boot from the boot statement from the **install bind** command because boot commands are executed in the order they appear in the queue. Using the optional keyword “prepend” moves the binding to the top of the queue.

Example:

Old CLI*: install bind <search-root> [<location-specifier>]*

New CLI: *install bind <search-root> [<location-specifier>] [prepend]*

Note: If the binding is already present in the queue, then its position in the queue remains unchanged.

The Optional overwrite destination **search-root** in Modular IOS install command eliminates the need for a two-step process to delete the old or unused search root before adding a new one.

During installation of the image, if the destination search root exists, this enhancement allows you to overwrite the existing search root.

There is no CLI change.

Example:

>install file tftp://171.69.1.129/muck/xyz/s72033adventerprisek9_wan-vz disk0:/newsys

If an image is already installed in disk0:/newsys, you will be asked whether to delete the existing image in disk0:/newsys. If you say yes, then the existing image is deleted and the new image is installed. If you say no, the installation exits.

A **pending** option has been added to the **show install** command to provide more information about the contents of Modular Cisco IOS Software cache data. It displays the contents of the Modular Cisco IOS Software cache data related to the running image or the image installed on the search root, which is heavily used during In Service Software Upgrade (ISSU) patching process.

Old CLI: *show install <run|<SR>> [detail]*

New CLI: *show install <run|<SR>> [detail | pending]*

Product Management Contact

For more information about this feature, send an email message to Tom Cramer at tcramer@cisco.com.

Packaging

Cisco IOS Software Packaging for Virtual Switching System 1440 Expanded

Starting with Cisco IOS Software Release 12.2(33)SXI1 Cisco is making VSS Capabilities available with IOS IP Base images. Prior to 12.2(33)SXI1, customers who purchased the VS bundles had to upgrade to IP Services in order to enable the VSS 1440 mode. Given the tremendous success that VSS has experienced in the marketplace since its introduction in early 2008, Cisco will now offer this innovative technology pervasively on all Cisco IOS Software packages including IP Base, supported with the Cisco Catalyst 6500 Series Virtual Switching Supervisor Engine 720 with 10GE uplinks.

Benefits

With this release of Cisco IOS Software, you can:

- Simplify the virtual switching ordering process
- Migrate to virtual switching at an attractive price point
- Operate virtual switching in Layer 2 environments

Product Management Contact

For more information about this feature, send an email message to Sudeep Goswami sugoswam@cisco.com.

Manageability

DHCP IP Helper MIB

The OLD-CISCO-IP-MIB has a limitation that allows accessibility to only one helper address through the Simple Network Management Protocol (SNMP). To address this limitation, a new table ciiHelperAddressTable is introduced to the CISCO-IP-IF-MIB to allow multiple IP helper addresses to be read. The set function is not supported.

Product Management Contact

For more information about this feature, send an email message to Benoit Lourdelet at blourdel@cisco.com.

Additional Information

Cisco IOS Software Information

http://www.cisco.com/en/US/products/sw/iosswrel/products_ios_cisco_ios_software_category_home.html

Cisco IOS Software Release 12.2SX Information

http://www.cisco.com/en/US/products/ps6017/tsd_products_support_series_home.html

http://www.cisco.com/en/US/products/hw/switches/ps708/prod_bulletin0900aecd804f0694.html

Cisco IOS Software Release 12.2 SXI Information

http://www.cisco.com/en/US/prod/collateral/iosswrel/ps8802/ps6970/ps6017/ps9673/product_bulletin_c25-503086.html

Release Notes for Cisco IOS Release 12.2(33)SXH and Later Releases

http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/ios/12.2SX/release/notes/ol_14271.html

Cisco IOS Software Product Lifecycle Dates and Milestones

http://www.cisco.com/en/US/products/sw/iosswrel/ps5187/prod_bulletin0900aecd801eda8a.html

Cisco IOS Software Center

Download Cisco IOS Software releases and access software upgrade planners.

http://www.cisco.com/public/sw-center/

Cisco Software Advisor (requires Cisco.com account)

Determine the minimum supported software for platforms.

http://tools.cisco.com/Support/Fusion/FusionHome.do

Cisco Feature Navigator (requires Cisco.com account)

This web-based application allows you to quickly match Cisco IOS Software releases, features, and hardware.

http://tools.cisco.com/ITDIT/CFN/jsp/index.jsp

Cisco IOS Software Planner (requires Cisco.com account)

View all major releases, all platforms, and all software features from a single interface.

http://www.cisco.com/pcgi-bin/Software/Iosplanner/Planner-tool/iosplanner.cgi

Cisco MIB Locator

MIB Locator finds MIBs in Cisco IOS Software releases.

http://tools.cisco.com/ITDIT/MIBS/servlet/index

Cisco Bug Toolkit (requires Cisco.com account)

Search for known bugs based on software version, feature set, and keywords.

http://www.cisco.com/pcgi-bin/Support/Bugtool/launch_bugtool.pl

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