

Cisco IOS Software Release 15.1(2)SY for Cisco Catalyst 6500 Series Switches

PB729554

Cisco IOS Software Release 15.1(2)SY supports Cisco Catalyst 6500 Series Supervisor Engine 2T and Cisco Catalyst 6500 Series Supervisor Engine 720 (Sup 720-3B and Sup 720-3C) continuing on the promise of one converged software image.

Release 15.1(2)SY introduces a new exciting solution called Catalyst Instant Access along with other features.

Some of the Highlights:

- **Cisco Catalyst Instant Access** feature drastically reduces network operational cost by providing single point of management, configuration and troubleshooting for your campus aggregation and access network with Catalyst 6500 series switches.
- **Medianet Support on Supervisor 720** allows customers to deploy end-to-end video solution as part of Cisco Borderless solution with Supervisor 720. Customers can now use advanced features like performance-monitoring, mediatrace across their network using Catalyst 6500 Series Supervisors.
- **Routing and Switching** enhancement includes OSPFv3 Non-Stop Routing, EIGRPv6 Graceful Restart, Multicast only Fast Re-Route (MoFRR), IPv6 Multicast VRF-Lite, and IPv6 Multicast Virtual Private Network (MVPNv6).
- **Cisco Service Discovery Gateway** allows customer to effectively utilize local Layer 2 services such as Apple Bonjour services by allowing network devices (printers, monitors) to be accessed over Layer 3 boundaries.

For detailed information about the features and hardware supported in Release 15.1(2)SY, refer to the 15.1(2)SY Release Notes and customer documentation at:

http://www.cisco.com/en/US/docs/switches/lan/catalyst6500/ios/15.1SY/release_notes.html.

Supervisor 2T Hardware Support in Release 15.1(2)SY

Cisco IOS Software Release 15.1(2)SY adds support for the following hardware:

- Cisco Instant Access POE+ switch (C6800IA-48FPD)
- Cisco Instant Access switch (C6800IA-48TD)
- DWDM-SFP10G on WS-X6904-40G-2T hardware module

Hardware features NOT supported:

- 15.1(2)SY will not support SUP720-3A Supervisor
- 15.1(2)SY on SUP720-3B or SUP720-10GE will not support WAN modules and SIP SPAs

For more details on unsupported cards in 15.1(2)SY, please see release notes.

Software Feature Highlights of Release 15.1(2)SY

Instant Access

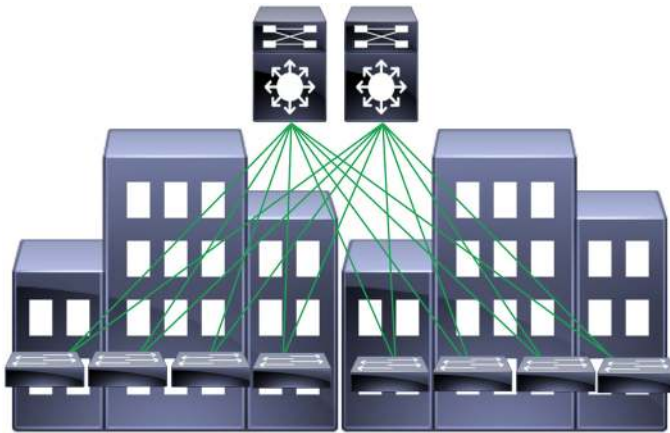
Cisco® Catalyst® Instant Access is a solution that allows customers to dramatically simplify campus network operations. It simplifies operation through a single point of operation and management for campus access and backbone. The solution is composed of Cisco Catalyst 6500 or Catalyst 6800 (available in future) Series backbone switches and Cisco Catalyst 6800IA Series Switches (Instant Access).

The Cisco Catalyst 6800IA Series Switches operate like remote line cards and are physically connected by 10GE uplinks to the Cisco Catalyst 6500 or 6800 (available in future) Series. This allows Catalyst 6500/6800 features to be extended to the network access-layer e.g. BGP and MPLS/EVN.

This solution is optimized for wired devices with centralized wireless. The entire configuration works as a single extended switch with a single management domain.

In a traditional architecture, each device is managed separately. (Figure 1)

Figure 1. Traditional Access - 23 Switches to Manage



In the new Instant Access architecture, all the devices are managed as one device. (Figure 2)

Figure 2. Instant Access - Only 1 Switch to Manage



15.1(2)SY release introduces support for Cisco Catalyst 6800IA Series Switches as remote line card for Catalyst 6500 Supervisor Engine 2T. The 6800IA Series has the following 2 SKU's:

- **C6800IA-48FPD** provides 48 10/100/1000M downlink ports, and 2x 10G uplink ports with 740W of available inline power.
- **C6800IA-48TD** provides 48 10/100/1000M downlink ports, with 2x 10G uplinks.

Figure 3. Cisco Catalyst 6800 Instant Access Series Switch



For additional information about Cisco Catalyst Instant Access, please visit:

http://www.cisco.com/en/US/prod/collateral/switches/ps10902/ps715/ps13198/at_a_glance_c45-728214.pdf

http://www.cisco.com/en/US/prod/collateral/switches/ps10902/ps715/ps13198/white_paper_c11-728265.pdf

http://www.cisco.com/en/US/prod/collateral/switches/ps10902/ps715/ps13198/data_sheet_c78-728230.html.

Application Performance

- **Cisco Service Discovery Gateway**

Campus network designs typically call for small broadcast and Layer 2 domains. It's common to separate wired and wireless access technologies onto different network segments. Zeroconf network services, such as Apple Bonjour, are designed to work within a single Layer 2 domain and do not work over Layer 3 boundaries. And today's workers expect to have equivalent service visibility and connectivity both at home and in the office.

The Cisco Service Discovery Gateway based on multicast Domain Name Service (mDNS) provides a network-wide solution to overcome this challenge. The gateway allows Zeroconf service information to propagate over Layer 3 boundaries. This permits devices in one Layer 2 domain to discover services in a different Layer 2 domain. Users or administrators can easily manage which services are to be advertised or withdrawn on a particular segment by applying filters.

The Cisco Service Discovery Gateway helps to easily integrate devices on the network that provide or consume services - even if they are not connected to the same broadcast domain (and would not be able to see each other otherwise). The gateway allows efficient caching of services and can filter services based on criteria such as service type, instance name, or message type. It supports both IPv4 and IPv6 address spaces.

- **Performance Monitor**

Performance Monitor is a Cisco Medianet IOS Software feature that measures the performance of Real Time Protocol (RTP), TCP, and IP constant bit rate (CBR) traffic on network devices. Performance Monitor analyzes RTP based audio and video flows and reports on service affecting metrics like packet loss and network jitter. For TCP flows, Performance Monitor reports on round trip time and packet loss occurrences.

Hop-by-hop knowledge of these L4+ performance metrics along the network path leads to granular fault isolation and easier troubleshooting of user traffic flows.

Performance Monitor is already supported on Supervisor 2T and IOS Release 15.1(2)SY adds support for Performance Monitor on Supervisor 720.

For more information, please visit:

http://www.cisco.com/en/US/solutions/collateral/ns340/ns856/ns156/ns1094/whitepaper_c11-653899.html.

- **Mediatrace**

With Mediatrace, a network node or endpoint discovers the network path that a particular existing flow is taking or the path that a new flow would take at this moment. As Mediatrace discovers the nodes it also collects real-time L4+ statistics from each of them.

Three possible levels of data collection are available:

- **Hops:** Mediatrace requests will collect only the network hops and the interfaces along that path.
- **System:** Adds collection of system health information for each of the network nodes, in addition to Hops information.
- **Perf-Mon:** The highest level. Adds collection of hop-by-hop flow specific information, collected by the performance-monitoring feature discussed earlier (loss, jitter and latency).

After the information is collected, the data is composed into a single report at the requesting node.

Mediatrace is already supported on Supervisor 2T and IOS Release 15.1(2)SY adds support for Mediatrace on Supervisor 720.

For more information, please visit:

http://www.cisco.com/en/US/solutions/collateral/ns340/ns856/ns156/ns1094/whitepaper_c11-653899.html.

- **Medianet Metadata**

Metadata conveys explicit L4+ information about client application needs to the network. Metadata tags identify unique flows with the application and provision network resources for Metadata-based classification.

This makes a QoS policy “flow-aware” and allows users to apply different QoS policy actions to a specific flow or a group of flows. It allows users to easily classify flows via intuitive user-friendly metadata attributes, instead of traditional flow identifiers, such as IP or MAC address.

Metadata is already supported on Supervisor 2T and IOS Release 15.1(2)SY adds support for Metadata on Supervisor 720.

IP Routing

- **OSPFv3 Non-Stop Routing**

The OSPFv3 NSR feature allows a router with redundant Route Processors (RPs) to maintain its Open Shortest Path First (OSPF) version 3 state and adjacencies across planned and unplanned RP switchovers.

It does this by check-pointing state information from OSPFv3 on the active RP to the standby RP. Later, following an RP switchover to the standby RP, OSPFv3 can use this check-pointed information to continue operation without interruption.

For more information, please visit:

http://www.cisco.com/en/US/docs/ios-xml/ios/iproute_ospf/configuration/xr-3s/asr1000/iro-ospfv3-nsr.html.

- **EIGRP IPv6 Graceful Restart**

The EIGRP IPv6 NSF/GR feature allows a Nonstop Forwarding (NSF)-aware device that is running Enhanced Interior Gateway Routing Protocol (EIGRP) to forward IPv6 packets along routes that are known to a device that is performing a switchover operation. EIGRP peers retain adjacencies and routes learned from a restarting peer (the device that is undergoing a switchover), and the EIGRP peers continue to forward IPv6 packets to the restarting peer. The high-availability systems on the device retain the forwarding table and continue to forward IPv6 packets until the control plane (EIGRP) has converged on the restarting device.

NSF allows forwarding of IPv6 packets while the device restarts after a failure. Graceful Restart (GR) allows topology databases to resynchronize while maintaining neighbor relationships and forwarding paths.

For more information, please visit: http://www.cisco.com/en/US/docs/ios-xml/ios/iproute_eigrp/configuration/xr-3s/eigrp-ip6-nsf.html.

- **Multicast Only Fast Re-Route**

Multicast only Fast Re-Route (MoFRR) is an IP solution that minimizes packet loss in a network when there is a link or node failure. It works by making simple enhancements to multicast routing protocols like Protocol Independent Multicast (PIM).

MoFRR transmits a multicast join message from a receiver toward a source on a primary path, while also transmitting a secondary multicast join message from the receiver toward the source on a backup path.

Data packets are thus received from both the primary path and the secondary paths. The redundant packets are discarded at topology merge points due to Reverse Path Forwarding (RPF) checks.

When a failure is detected on the primary path, the repair is made simply by changing the interface on which packets are accepted to the secondary interface. Because the repair is local, it is fast (~200ms), greatly improving convergence times in the event of node or link failures on the primary path.

For more information, please visit: http://www.cisco.com/en/US/docs/ios-xml/ios/ipmulti_serv/configuration/xr-3s/imc_mofrr.html.

- **IPv6 Multicast Virtual Private Network (MVPNv6)**

To provide IP multicast VPN services to customers with multiple distributed sites, service providers require a secure and scalable mechanism to transmit multicast traffic across the service provider network.

Traditionally, IPv4 Multicast VPN (MVPN) provided such services, for IPv4 multicast traffic over a shared service provider backbone.

IPv6 Multicast Virtual Private Network (MVPNv6) provides the same services for IPv6 traffic, enabling service providers to provide multicast-enabled private IPv6 networks to their customers using their existing IPv4 backbone and the IPv4 and IPv6 VPN traffic are carried over the same tunnels simultaneously.

For more information, please visit: http://www.cisco.com/en/US/docs/ios-xml/ios/ipmulti_mvpn/configuration/15-rt/imc_mvpnv6.html.

- **IPv6 Multicast VRF Lite (MVRv6 Lite)**

The IPv6 Multicast VRF Lite feature provides IPv6 multicast support for multiple virtual routing/forwarding contexts (VRFs). The scope of these VRFs is limited to the router in which the VRFs are defined.

This feature provides separation between routing and forwarding, providing an additional level of security because no communication between devices belonging to different VRFs is allowed unless it is explicitly configured.

The IPv6 Multicast VRF Lite feature simplifies the management and troubleshooting of traffic belonging to a specific VRF.

For more information, please visit: <http://www.cisco.com/en/US/docs/ios/ipv6/configuration/guide/ip6-multicast.html#wp1117731>.

Other Enhancements

Table-1 below lists additional features shipping in release 15.1(2)SY release.

Table 1. Other Features in Release 15.1(2)SY

Feature Name
L3VPN Dynamic Route Leaking
Granular enablement of CTS SGACL at interface level
IS-IS Routing protocol is now available in IP Services Package
Grep, sort, uniq, sed awk support for CMP

Manageability Enhancements

Table 2 lists MIB enhancements. For details, visit <ftp://ftp-sj.cisco.com/pub/mibs/supportlists/wsc6000/wsc6000-supportlist-ios.changes/>.

Table 2. Cisco IOS Software Release 15.1(2)SY MIB Enhancements

MIB
Cisco-BGP-MIBv2
CISCO-CAT6K-CROSSBAR-MIB Enhancement for Ibus drop statistics
CISCO-POWER-ETHERNET-EXT-MIB enhancement for legacy TLV
CISCO-SWITCH-FABRIC-MIB support
CISCO-SWITCH-STATS-MIB Enhancements
CISCO-VTP-MIB enhancement for CLI vtp file, vtp interface, and local shutdown
OSPFv3 MIB Support

Ordering Information

To place an order, visit the Cisco Ordering homepage. To download software, visit the Cisco Software Center. Tables below lists ordering information for Cisco IOS Software Release 15.1(2)SY.

Table 3. Cisco IOS Software Release 15.1(2)SY Ordering Information - Supervisor 2T Software Product ID's

PID	Description
S2TAEK9-15102SY	Cisco CAT6000-VS-S2T IOS ADV ENT SERV FULL ENCRYPT
S2TAEK9-15102SY=	Cisco CAT6000-VS-S2T IOS ADV ENT SERV FULL ENCRYPT
S2TAEK9N-15102SY	Cisco CAT6000-VS-S2T IOS ADVANCED ENTERPRISE SERVICES NPE
S2TAEK9N-15102SY=	Cisco CAT6000-VS-S2T IOS ADVANCED ENTERPRISE SERVICES NPE
S2TAIK9-15102SY	Cisco CAT6000-VS-S2T IOS ADVANCED IP SERVICES FULL ENCRYPT
S2TAIK9-15102SY=	Cisco CAT6000-VS-S2T IOS ADVANCED IP SERVICES FULL ENCRYPT
S2TAIK9N-15102SY	Cisco CAT6000-VS-S2T IOS ADVANCED IP SERVICES NPE
S2TAIK9N-15102SY=	Cisco CAT6000-VS-S2T IOS ADVANCED IP SERVICES NPE
S2TIBK9-15102SY	Cisco CAT6000-VS-S2T IOS IP BASE FULL ENCRYPT
S2TIBK9-15102SY=	Cisco CAT6000-VS-S2T IOS IP BASE FULL ENCRYPT

PID	Description
S2TIBK9N-15102SY	Cisco CAT6000-VS-S2T IOS IP BASE NPE
S2TIBK9N-15102SY=	Cisco CAT6000-VS-S2T IOS IP BASE NPE
S2TISK9-15102SY	Cisco CAT6000-VS-S2T IOS IP SERV FULL ENCRYPT
S2TISK9-15102SY=	Cisco CAT6000-VS-S2T IOS IP SERV FULL ENCRYPT
S2TISK9N-15102SY	Cisco CAT6000-VS-S2T IOS IP SERV NPE
S2TISK9N-15102SY=	Cisco CAT6000-VS-S2T IOS IP SERV NPE

Table 4. Cisco IOS Software Release 15.1(2)SY Ordering Information - Supervisor 720 Software Product ID's

PID	Description
S733AE-15102SY	Cisco CAT6000-SUP720 IOS ADV ENT SERV
S733AE-15102SY=	Cisco CAT6000-SUP720 IOS ADV ENT SERV
S733AEK9-15102SY	Cisco CAT6000-SUP720 IOS ADV ENT SERV SSH
S733AEK9-15102SY=	Cisco CAT6000-SUP720 IOS ADV ENT SERV SSH
S733AIK9-15102SY	Cisco CAT6000-SUP720 IOS ADVANCED IP SERVICES SSH
S733AIK9-15102SY=	Cisco CAT6000-SUP720 IOS ADVANCED IP SERVICES SSH
S733IS-15102SY	Cisco CAT6000-SUP720 IOS IP SERVICES
S733IS-15102SY=	Cisco CAT6000-SUP720 IOS IP SERVICES
S733ISK9-15102SY	Cisco CAT6000-SUP720 IOS IP SERV FULL ENCRYPT
S733ISK9-15102SY=	Cisco CAT6000-SUP720 IOS IP SERV FULL ENCRYPT
SV33AE-15102SY	Cisco CAT6000-VSS720 IOS ADV ENT SERV
SV33AE-15102SY=	Cisco CAT6000-VSS720 IOS ADV ENT SERV
SV33AEK9-15102SY	Cisco CAT6000-VSS720 IOS ADV ENT SERV SSH
SV33AEK9-15102SY=	Cisco CAT6000-VSS720 IOS ADV ENT SERV SSH
SV33AIK9-15102SY	Cisco CAT6000-VSS720 IOS ADVANCED IP SERVICES SSH
SV33AIK9-15102SY=	Cisco CAT6000-VSS720 IOS ADVANCED IP SERVICES SSH
SV33IB-15102SY	Cisco CAT6000-VSS720 IOS IP BASE
SV33IBK9-15102SY	Cisco CAT6000-VSS720 IOS IP BASE SSH
SV33IBK9-15102SY=	Cisco CAT6000-VSS720 IOS IP BASE SSH
SV33ISK9-15102SY	Cisco CAT6000-VSS720 IOS IP SERV FULL ENCRYPT
SV33ISK9-15102SY=	Cisco CAT6000-VSS720 IOS IP SERV FULL ENCRYPT

Table 5. Cisco IOS Software Release 15.1(2)SY Ordering Information - Software Upgrade Product ID's

PID	Description
S2TAAE9N-15102SY	Cisco CAT6000-VS-S2T IOS UPD IOS ADV IP 2 ADV ENT NPE
S2TAAE9N-15102SY=	Cisco CAT6000-VS-S2T IOS UPD IOS ADV IP 2 ADV ENT NPE
S2TAIAE9-15102SY	Cisco CAT6000-VS-S2T IOS UPD IOS ADV IP 2 ADV ENT ENCRYPT
S2TAIAE9-15102SY=	Cisco CAT6000-VS-S2T IOS UPD IOS ADV IP 2 ADV ENT ENCRYPT
S2TIAE9-15102SY	Cisco CAT6000-VS-S2T IOS UPD IOS IP SRV 2 ADV ENT ENCRYPT
S2TIAE9-15102SY=	Cisco CAT6000-VS-S2T IOS UPD IOS IP SRV 2 ADV ENT ENCRYPT
S2TIAE9N-15102SY	Cisco CAT6000-VS-S2T IOS UPD IOS IP SRV 2 ADV ENT NPE
S2TIAE9N-15102SY=	Cisco CAT6000-VS-S2T IOS UPD IOS IP SRV 2 ADV ENT NPE
S2TIAI9-15102SY	Cisco CAT6000-VS-S2T IOS UPD IP SRV 2 ADV IP ENCRYPT
S2TIAI9-15102SY=	Cisco CAT6000-VS-S2T IOS UPD IP SRV 2 ADV IP ENCRYPT
S2TIAI9N-15102SY	Cisco CAT6000-VS-S2T IOS UPD IP SRV 2 ADV IP NPE

PID	Description
S2TIA9N-15102SY=	Cisco CAT6000-VS-S2T IOS UPD IP SRV 2 ADV IP NPE
SV33AIAE9-15102SY	Cisco CAT6000-VSS720 IOS UPD IOS ADV IP 2 ADV ENT ENCRYPT
SV33AIAE9-15102SY=	Cisco CAT6000-VSS720 IOS UPD IOS ADV IP 2 ADV ENT ENCRYPT

Table 6. Cisco Hardware Ordering Information

PID	Description
C6800IA-48FPD	Catalyst 6800 Instant Access POE+ Switch
C6800IA-48TD	Catalyst 6800 Instant Access Data Switch

Feature Compatibility Matrix

Table 7. Feature Compatibility Matrix

Feature Name	Sup2T Support	Sup720 Support
Cisco-BGP-MIB-v2	Yes	Yes
CISCO-CAT6K-CROSSBAR-MIB	Yes	Yes
CISCO-POWER-ETHERNET-EXT-MIB enhancement for legacy TLV	Yes	Yes
CISCO-SWITCH-FABRIC-MIB	Yes	Yes
CISCO-SWITCH-STATS-MIB Enhancement	Yes	Yes
CISCO-VTP-MIB enhancement for CLI vtp file, vtp interface and local shutdown	Yes	Yes
EIGRP IPv6 Graceful Restart (GR)	Yes	Yes
IS-IS Support in IP Services package	Yes	Yes
Medianet Feature	Yes	Yes
OSPFv3 MIB	Yes	Yes
OSPFv3 NSR	Yes	Yes
Service Discovery Gateway	Yes	No
L3VPN dynamic route leaking	Yes	No
Instant Access	Yes	No
DWDM SFP10G Support on WS-X6904-40G-2T	Yes	No
Granular enablement of CTS SGACL at interface level	Yes	No
grep, sort, uniq, sed, awk, cut, wc support in CMP	Yes	No
IPv6 Multicast VRF Lite	Yes	No
Multicast Only Fast Re-route	Yes	No
IPv6 Multicast Virtual Private Network (mVPN6)	Yes	No

Product Management Contact

6500 Marketing Team (cco-6500-external@cisco.com)

Cisco IOS Software Center

Download Cisco IOS Software releases and access software upgrade planners at <http://www.cisco.com/cisco/web/download/index.html>.

Support

Cisco IOS Software Release 15.1(2)SY follows the standard Cisco support policy. For more information, visit http://www.cisco.com/en/US/products/products_end-of-life_policy.html.

Cisco Services

Cisco Services integrate closely with CMO teams as an essential element of any technology solution. If you have not already received targeted services content blocks for integration, contact your Cisco Services marcom manager. If you are not sure of the appropriate contact, send an email to ca-marcom@cisco.com.

Cisco Services make networks, applications, and the people who use them work better together.

Today, the network is a strategic platform in a world that demands better integration between people, information, and ideas. The network works better when services, together with products, create solutions aligned with business needs and opportunities.

The unique Cisco Lifecycle approach to services defines the requisite activities at each phase of the network lifecycle to help ensure service excellence. With a collaborative delivery methodology that joins the forces of Cisco, our skilled network of partners, and our customers, we achieve the best results.

For More Information

For more information about the Cisco Catalyst 6500 Series, visit the product homepage at <http://www.cisco.com/go/6500>, <http://www.cisco.com/go/6800> or contact your local account representative.

Not all features may be supported on all platforms. Use the Cisco Feature Navigator to find information about Platform support and Software image support: <http://tools.cisco.com/ITDIT/CFN/jsp/index.jsp>.

You must have an account on Cisco.com to access the Cisco Feature Navigator.



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