

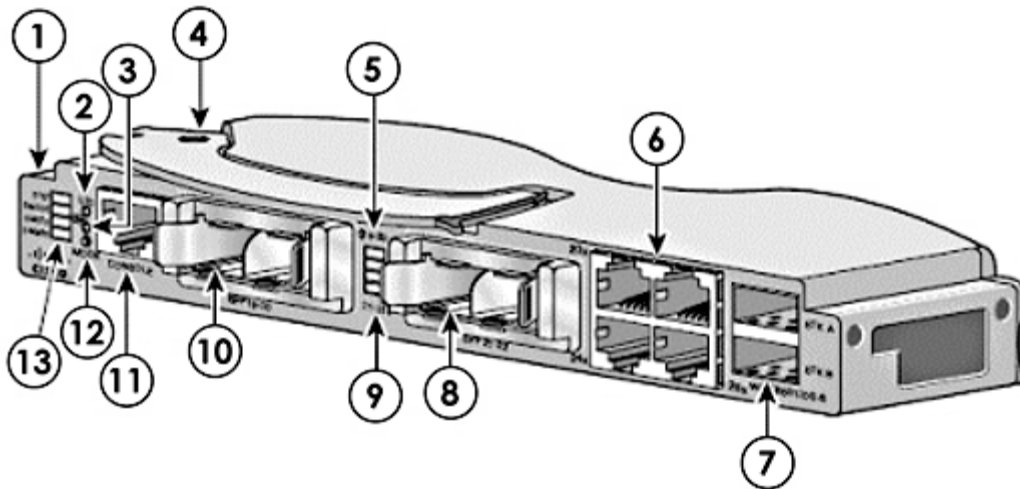
### Overview

#### Cisco Catalyst Blade Switch 3120G for HPE

#### Cisco Catalyst Blade Switch 3120X for HPE

The next generation in switching technology. The Cisco Catalyst Blade Switch 3120 Series Switches are specifically designed to meet the rigors of the blade server based application infrastructure and provides HPE BladeSystem customers with the ability to stack up to nine switches into a single virtual Switch. By emulating a redundant top-of-rack switch, HPE BladeSystem c-Class users now have an integrated switching solution from Cisco Systems that optimizes uplinks per rack, reduces the number of switches managed and decreases network complexity. Both switches also provide Cisco resiliency, advanced security and enhanced manageability to the server edge while dramatically reducing cabling requirements. The Cisco Catalyst Blade Switch 3120 comes in two versions. The 3120G is a 1Gb switch with the flexibility to provide both copper and fiber uplinks. The 3120X has sixteen 1Gb downlinks and both 1Gb and 10Gb uplinks that can be used to aggregate bandwidth from multiple enclosures, or be used as a stand-alone switch in high bandwidth applications. The Cisco CBS3120 offers operational consistency with the rest of the industry leading Cisco Catalyst series of switches, using the familiar IOS Command Line Interface (CLI), consistent MIBs, and management tools like CiscoWorks. Furthermore, this consistency with the rest of the Cisco Catalyst series ensures end-to-end network service like QoS are consistently implemented across the network.

Both switches can be upgraded with additional firmware add-ons available at time of purchase or through web downloads.



**Cisco Catalyst Blade Switch 3120 Series**

- |                                        |                                                                 |
|----------------------------------------|-----------------------------------------------------------------|
| 1. Switch Module                       | 8. Slot for Cisco Twin Gigabit Module or X2 Transceiver module. |
| 2. UID LED                             | 9. LEDs for ports 21 -22                                        |
| 3. Health LED                          | 10. Slot for Cisco Twin Gigabit Module or X2 Transceiver module |
| 4. Release latch                       | 11. Console Port                                                |
| 5. LEDs for ports 19 -20               | 12. Mode Button                                                 |
| 6. Gigabit Ethernet RJ-45 Ports 23 -26 | 13. Switch System LED Panel                                     |
| 7. StackWise Ports                     |                                                                 |

### What's New

- Support for new HPE ProLiant G7 server blades

## Models and Options

### Options

Cisco Ethernet RJ-45 C-SFP Module 378928-B21

Cisco Ethernet SX Fiber SFP Module 378929-B21

**NOTE:** The modules listed below support Cisco Catalyst Blade Switch 3120X for HPE (p/n 451439-B21) only

Cisco 10Gb Ethernet Base CX4 X2 Module 459005-B21

Cisco 10Gb Ethernet Base SR X2 Module 459006-B21

Cisco 10Gb Ethernet Base LRM X2 Module 459007-B21

**NOTE:** The software upgrade listed below support the Cisco Catalyst Blade Switch 3120X and 3120G Switches.

**NOTE:** The cable options listed below support the Cisco Catalyst Blade Switch 3120X and 3120G Switches.

## Standard Features

### Standard Features

#### Performance

- Wire speed switching on sixteen internal 1Gb ports
- Wire Speed switching on four external 10/100/1000BASE-T ports. (Two of these ports can be used as cross-connects to provide failover protection)
- Wire speed switching on four external 10/100/1000 SFP based ports that can be configured in addition to the four 10/100/1000BASE-T ports to support Fiber SX/LX SFP modules from Cisco Systems
- Two external 10Gb X2 based ports that support SR, LR, LRM and CX4 modules (Cisco Catalyst Blade Switch 3120X only)
- Two 64Gb stacking ports
- One external console port

#### Management

- CiscoWorks Software that includes multilayer feature configurations such as routing protocols, ACLs, and QoS parameters
- Compatible with Cisco Network Assistant
- Supports both Embedded Events Manager (EEM) and Generic On-line Diagnostics (GOLD)
- IOS CLI support providing a common user interface and command set with all Cisco routers and Cisco Catalyst desktop switches
- The Catalyst Blade Switch 3120 series supports an embedded Remote Monitoring (RMON) software agent for enhanced traffic management, monitoring and analysis

#### Security

- VLAN - Virtual Local Area Network is a logical network topology configured on top of a physical network topology which conserves bandwidth and improves security by limiting traffic to specific groups of devices
- Supports Cisco's Identity-Based Networking Services (IBNS) which prevents unauthorized network access and insures that users get only their designated privileges
- Compatible with Cisco Secure Access Control Server (ACS) so that user security profiles and authentication follow the user regardless of where they connect on the network
- Access Control Lists (ACL's) are maintained in hardware for maximum performance and can be used to guard against denial-of-service and other attacks
- 802.1x Port Security recognizes the MAC address of the device connecting to it and will set rights or limitations based on predefined security thresholds

#### Stacking

- Up to nine 3120 switches can be combined into a single virtual stack.
- Switches can be managed as a single virtual switch with a single IP address and single routing domain.
- 64 Gb stacking fabric provides flexible and redundant ring architecture eliminating any single point of failure.

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## Compatibility

#### HPE ProLiant Servers

HPE ProLiant BL2x220c G7  
HPE ProLiant BL2x220c G5  
HPE ProLiant BL260c G5  
HPE ProLiant BL280c G6  
HPE ProLiant BL420c Gen8  
HPE ProLiant BL460c Gen9  
HPE ProLiant BL460c Gen8  
HPE ProLiant BL460c G7  
HPE ProLiant BL460c G6  
HPE ProLiant BL460c G5  
HPE ProLiant BL460c

## Standard Features

HPE ProLiant BL465c Gen8  
 HPE ProLiant BL465c G7  
 HPE ProLiant BL465 G6  
 HPE ProLiant BL465 G5  
 HPE ProLiant BL465c  
 HPE ProLiant BL480c  
 HPE ProLiant BL490c G7  
 HPE ProLiant BL490c G6  
 HPE ProLiant BL495c G6  
 HPE ProLiant BL495c G5  
 HPE ProLiant BL620c G7  
 HPE ProLiant BL660c Gen8  
 HPE ProLiant BL680c G5  
 HPE ProLiant BL680c G7  
 HPE ProLiant BL685c G7  
 HPE ProLiant BL685 G6  
 HPE ProLiant BL685 G5  
 HPE ProLiant BL685c

**NOTE:** Some servers listed above may be discontinued.

### HPE Integrity Server Blade

HPE Integrity BL860c Server Blade  
 HPE Integrity BL860c i2 Server Blade  
 HPE Integrity BL860c i4 Server Blade  
 HPE Integrity BL870c Server Blade  
 HPE Integrity BL870c i2 Server Blade  
 HPE Integrity BL860c i4 Server Blade  
 HPE Integrity BL890c i2 Server Blade  
 HPE Integrity BL860c i4 Server Blade

**NOTE:** Some servers listed above may be discontinued.

### HPE ProLiant c-Class Server Blade Enclosures

HPE BladeSystem c3000 Enclosure  
 HPE BladeSystem c7000 Enclosure

### Required Network Cabling

10Base-T	Categories 3, 4 or 5 UTP (100 meters) EIA/TIA-568 100-ohm STP (100 meters)
100Base-TX	Category 5 UTP (100 meters) EIA/TIA-568 100-ohm STP (100 meters)
1000Base-T	Category 5 UTP (100 meters) EIA/TIA-568 100-ohm STP (100 meters)
1000Base-SX	50/125 $\mu$ m Multimode Fiber, 400 MHz/Km (500 meters) 50/125 $\mu$ m Multimode Fiber, 500 MHz/Km (550 meters) 62.5/125 $\mu$ m Multimode Fiber, 160 MHz/Km (220 meters) 62.5/125 $\mu$ m Multimode Fiber, 200 MHz/Km (275 meters)
1000Base LX	Operates on standard single-mode fiber-optic link spans of up to 10 km and up to 550 m on any multimode fibers.
10Gb	Multimode fiber cable; 62.5/125 or 50/125 microns Singlemode fiber cable: 9/125 micron The following CX4 cable lengths have been qualified and can be purchased directly from HPE. HPE BLadeSystem c-Class..5m 10-GbE CX4 Cable HPE BLadeSystem c-Class 1m 10-GbE CX4 Cable HPE BLadeSystem c-Class 15m 10-GbE CX4 Cable

## Service and Support

### Service and Support

#### **HPE Technology Services for BladeSystem**

Capitalizing on HPE BladeSystem capabilities requires a service partner who understands your increasingly complex business technology environment. That's why it makes sense to team up with the people who know Hewlett Packard Enterprise infrastructure hardware and software best - the experienced professionals at HPE Services.

#### **Protect your business beyond warranty with HPE Care Pack Services**

HPE Care Pack services offer complete care and support expertise with committed response choices designed to meet your IT and business needs.

HPE Foundation Care services offer scalable reactive support-packages for Hewlett Packard Enterprise servers and software. You can choose the type and level of service that is most suitable for your IT and business needs. HPE Proactive Care delivers high levels of system availability through proactive service management and advanced technical response. HPE Datacenter Care provides highly flexible environmental support to address unique customer business needs.

- Choose a recommended service appropriate to your product or contact your Hewlett Packard Enterprise sales representative or authorized HPE ServiceOne partner for additional HPE Care Pack services information.

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## Recommended HPE Care Pack Services for optimal satisfaction with your HPE product

### Optimized Care

#### **3-Year HPE 6 hour Call to Repair Response, Proactive Care**

Combined reactive and proactive support for hardware and software helping optimize your systems and delivering high levels of availability through proactive service management and advanced technical response. Hardware problem resolution to return the hardware in operating condition within 6 hours of the initial service request. A Technical Account Manager, as your single point of contact, will own your call or issue end to end until resolved.

<https://www.hpe.com/h20195/v2/getpdf.aspx/4aa3-8855eee.pdf>

#### **HPE Installation and Startup Service for HPE BladeSystem c-Class Infrastructure for c7000 enclosure**

Provides for hardware installation (c-Class ProLiant and Integrity server blades, storage blades, Ethernet Interconnects and Virtual Connect) and software installation and startup of a BladeSystem c7000 Infrastructure in a single enclosure including deployment of OS (two servers), HPE Insight Control and Server Deployment (formerly RDP).

<https://www.hpe.com/h20195/v2/getpdf.aspx/4aa0-5964enw.pdf>

#### **HPE Installation and Startup Service for HPE BladeSystem c-Class Enhanced Network**

Hewlett Packard Enterprise provides for the configuration and testing of BladeSystem Ethernet interconnect switches and Virtual Connect to facilitate proper implementation of network protocols and access to advanced features.

<https://www.hpe.com/h20195/v2/getpdf.aspx/4aa0-5969enw.pdf>

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### Standard Care

#### **3-Year HPE 24x7 4 hour response, Proactive Care Service**

This service gives you combined reactive and proactive support including rapid access to our Advanced Solution Center to manage and prevent problems and a Technical Support Specialist with a broad level of technical knowledge that will engage with additional technical expertise as needed from HPE's vast global resources.

<https://www.hpe.com/h20195/v2/getpdf.aspx/4aa3-8855eee.pdf>

#### **HPE Installation and Startup Service for HPE BladeSystem c-Class Infrastructure for c7000**

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## Service and Support

### enclosure

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<https://www.hpe.com/h20195/v2/getpdf.aspx/4aa0-5964enw.pdf>

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<https://www.hpe.com/h20195/v2/getpdf.aspx/4aa0-5969enw.pdf>

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### Related Services

#### HPE Proactive Care Personalized Support - Environmental Option

The Personalized Support option provides an assigned Account Support Manager who can bring best practices from across the industry plus extra technical skills to your IT team. This option is only available as an add-on to HPE Proactive Care Support.

#### HPE Proactive Select Service

Provides a flexible way to purchase HPE best-in-class consultancy and technical services. You can buy Proactive Select Service Credits when you purchase your hardware and then use the credits over the next 12 months. <http://h20195.www2.hp.com/V2/GetPDF.aspx/4AA2-3842ENN.pdf>

Additional HPE Care Pack services can be found at: <http://www.hp.com/go/cpc>

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### Insight Online/Insight Remote Support

HPE Insight Remote Support provides 24 X 7 remote monitoring, proactive notifications, and problem resolution. This comes at no additional cost with your HPE solution. Learn more about Insight Remote Support <http://www.hp.com/go/insightremotesupport> and Insight Online <http://www.hp.com/go/insightonline>

**NOTE:** Insight Remote Support is a prerequisite for Proactive Care. All blades within a single HPE BladeSystem enclosure must be at the same service level.

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### HPE Services Awards

HPE Technology Services continues to be recognized for service and support excellence by customers, partners, industry organizations and publications around the world. Recent honors and award reflect our services team's dedications, technical expertise, professionalism and uncompromising commitment to customer satisfaction.

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### Additional Services Information

To learn more on HPE BladeSystem services, please contact your Hewlett Packard Enterprise sales representative or Hewlett Packard Enterprise Authorized Channel Partner. Or visit: <http://www.hp.com/services/bladeSystem>

## Related Options

### Service and Support

**Offerings** (HPE Care Pack Services)

**NOTE:** H P Care Pack services for the c7000 enclosure provide HPE coverage of the Cisco Catalyst Blade Switch 3120X for HPE (451439-B21) and the Cisco Catalyst Blade Switch 3120G for HPE (451438-B21).

**NOTE:** SAN/Fabric switches for the HPE c-Class BladeSystem are not covered under the c7000 enclosure Care Packs, SAN/Fabric switches carry separate Care Packs. SAN/Fabric Switch Care Pack service level support should always be uplifted to match existing storage or server service level.

#### c7000 HPE Care Pack Services

##### Proactive Care Services

HPE 3 year Proactive Care 24x7 c7000 Enclosure Service	U3C33E
HPE 3 year Proactive Care Call to Repair c7000 Enclosure Service	U3C36E
HPE 3 year Proactive Care 24x7 c7000 Enclosure with Insight Control Service	U3P10E
HPE 3 year Proactive Care Call to Repair c7000 Enclosure with Insight Control Service	U3P13E

##### HPE Proactive Care Personalized Support - Environmental Option

##### Installation & Start-up Services

HPE BladeSystem c7000 Infrastructure Startup Service	UE602E
HPE BladSys c7000 Encd Network Startup Service	UE603E

Additional HPE Care Pack services can be found at: <http://www.hp.com/go/cpc>

## Technical Specifications

<b>Shipping Dimensions</b>	<b>Length</b>	13.88 in (352.55mm)
	<b>Width</b>	10.63 in (270.00mm)
	<b>Height</b>	4.75 in (120.65mm)
<b>Shipping Weight</b>		2.0kg (4.4lbs)
<b>Product Specifications Hardware</b>	<b>Performance</b>	128 Gbps switching fabric (Catalyst 3120X)
		64 Gbps stacking fabric
		Forwarding rate based on 64-byte packets; up to 59.2 Mpps
		256 MB DDR SDRAM and 64 MB Flash memory
		Configurable maximum transmission unit (MTU) of up to 9018 bytes (jumbo frames)
		MAC, routing, security, and QoS scalability numbers depend on the type of template used in the switch:

	<b>Default Template</b>	<b>Access Template</b>	<b>VLAN Template</b>	<b>Routing Template</b>
<b>MAC address</b>	6K	4K	12K	3K
<b>IGMP groups and multicast routes</b>	1K	1K	1K	1K
<b>Total unicast routes</b>	8K	6K	0K	11K
<b>Directly connected hosts</b>	6K	4K	0K	3K
<b>Indirect routes</b>	2K	2K	0K	8K
<b>Security ACEs</b>	1K	2K	1K	1K
<b>QoS ACEs</b>	0.5K	0.5K	0.5K	0.5K
<b>PBR ACEs</b>	0	0.5K	0	0.5K

### **Connectors and Cabling 3120G Gigabit Ethernet uplink ports** (Up to 8 external)

- 4 external 10/100/1000BASE-T RJ-45 ports. Two of these ports can be configured to provide an internal crossover connection to an associated additional Cisco Catalyst Blade Switch 3120
- The two supplied Twin-Gig Converter Modules will provide 4 additional external 10/100/1000 SFP combo ports that support Gigabit Ethernet Fiber SX or LX SFP modules from Cisco Systems.

### **3120X 1Gb/10Gb Ethernet uplink ports** (up to eight external)

- 4 external 10/100/1000BASE-T RJ-45 ports. Two of these ports can be configured to provide an internal crossover connection to an associated additional Cisco Catalyst Blade Switch 3120 when not in stacking mode.
- 2 external 10Gb X2 ports. These ports support CX4, LRM, LX or SX modules. These external ports also support the new Cisco OneX 10G X2 to SFP+ converter.



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- The 2 X2 ports can optionally be used to provide up to 4 10/100/1000 SFP combo ports using the two supplied Twin-Gig Converter Modules

### Management console port:

- RJ-45-to-DB9 cable for PC connections

### Stacking Connector

- 1 meter Cisco proprietary StackWise connector cable supplied.
- Additional 1 meter, 0.5 meter and 3 meter Cisco proprietary StackWise connector cable available through HPE.

### Indicators

Total of 18 LEDs on the face place

- 12 LEDs for uplink port status
- 4 Switch status LEDs
- 2 HPE specific LEDs to indicate Health and UID status

### System Unit

#### Dimensions (L x W x D)

10.5in x 7.5 in x 1.1 in  
267.7mm x 92.79mm x 27.94mm

#### Weight

1.27kg (2.8 lbs)

#### Environmental Ranges

#### Temperature Range

Operating Temperature 0 to 43 C (32 to 109 F)  
Storage Temperature -20 to 70 C (-4 to 158F)

**Operating Relative Humidity** 10 to 85%  
(non-condensing)

**Storage Relative Humidity** 5 to 95%  
(non-condensing)

#### Power Specifications

12V @ 5A (60 W)

**NOTE:** Effective April 19th, 2009 Cisco has discontinued the Advanced IP Services upgrade. IPv6 support has been rolled into the IP Services software upgrade (P/N 455046-B21) listed in the Models and Options section below. Many of the IP Services features have been moved to the base IOS effective with IOS 12.2(50)SE. Please see the below chart for details.

Feature	IPv6 Feature Packaging before EOL	Location of IPv6 Features after EOL
EIGRPv6, OSPFv3	Advanced IP Services	IP Services
ACL	Advanced IP Services	IP Base
HSRPv6	Advanced IP Services	IP Base
DHCP, Server/Client/Relay	Advanced IP Services	IP Base
RIPng	Advanced IP Services	IP Base
Static Routes	Advanced IP Services	IP Base

### Product Specifications Software Security Features

The Catalyst Blade Switch 3120 supports a comprehensive set of security features for connectivity and access control, including ACLs, authentication, port-level security, and identity-based network services with 802.1x and extensions. This set of comprehensive features not only helps prevent

## Technical Specifications

external attacks, but defends the network against “man-in-the-middle” attacks, a primary concern in today’s business environment. The switch also supports the Network Admission Control (NAC) security framework.

Security features include:

Dynamic ARP Inspection (DAI) helps ensure user integrity by preventing malicious users from exploiting the insecure nature of the ARP protocol.

DHCP Snooping prevents malicious users from spoofing a DHCP server and sending out bogus addresses. This feature is used by other primary security features to prevent a number of other attacks such as ARP poisoning.

IP source guard prevents a malicious user from spoofing or taking over another user’s

IP address by creating a binding table between the client’s IP and MAC address, port, and VLAN.

Unicast RPF feature helps mitigate problems caused by the introduction of malformed or forged (spoofed) IP source addresses into a network by discarding IP packets that lack a verifiable IP source address.

IEEE 802.1x allows dynamic, port-based security, providing user authentication.

IEEE 802.1x with VLAN assignment allows a dynamic VLAN assignment for a specific user regardless of where the user is connected.

IEEE 802.1x and port security are provided to authenticate the port and manage network access for all MAC addresses, including that of the client.

IEEE 802.1x with an ACL assignment allows for specific identity-based security policies regardless of where the user is connected.

IEEE 802.1x with guest VLAN allows guests without 802.1x clients to have limited network access on the guest VLAN.

Web authentication for non-802.1x clients allows non-802.1x clients to use an SSL-based browser for authentication.

Cisco security VLAN ACLs on all VLANs prevents unauthorized data flows from being bridged within VLANs.

Cisco standard and extended IP security router ACLs define security policies on routed interfaces for control-plane and data-plane traffic. IPv6 ACLs can be applied to filter IPv6 traffic.

Port-based ACLs for Layer 2 interfaces allow security policies to be applied on individual switch ports.

Secure Shell (SSH) Protocol, Kerberos, and Simple Network Management Protocol Version 3 (SNMPv3) provide network security by encrypting

## Technical Specifications

administrator traffic during Telnet and SNMP sessions. SSH Protocol, Kerberos, and the cryptographic version of SNMPv3 require a special cryptographic software image because of U.S. export restrictions.

Bidirectional data support on the Switched Port Analyzer (SPAN) port allows Cisco Intrusion Detection System (IDS) to take action when an intruder is detected.

TACACS+ and RADIUS authentication facilitates centralized control of the switch and restricts unauthorized users from altering the configuration.

MAC Address Notification allows administrators to be notified of users added to or removed from the network.

Port Security secures the access to an access or trunk port based on MAC address.

Multilevel security on console access prevents unauthorized users from altering the switch configuration.

Bridge protocol data unit (BPDU) Guard shuts down Spanning Tree PortFast-enabled interfaces when BPDUs are received to avoid accidental topology loops.

Spanning Tree Root Guard (STRG) prevents edge devices not in the network administrator's control from becoming Spanning Tree Protocol root nodes.

IGMP filtering provides multicast authentication by filtering out nonsubscribers and limits the number of concurrent multicast streams available per port.

### Spanning Tree Features

IEEE 802.1D Spanning-Tree Protocol support for redundant backbone connections and loop-free networks simplifies network configuration and improves fault tolerance.

Per-VLAN Rapid Spanning-Tree (PVRST+) allows rapid spanning-tree convergence on a per-VLAN spanning-tree basis, without requiring the implementation of spanning-tree instances.

IEEE 802.1s Multiple Spanning-Tree Protocol (MSTP) allows a spanning-tree instance per VLAN and enables each VLAN to use a different uplink allowing better utilization of uplinks.

IEEE 802.1w Rapid Spanning-Tree Protocol (RSTP) provides rapid spanning-tree convergence independent of spanning-tree timers.

Unidirectional Link Detection (UDLD) and Aggressive UDLD allow unidirectional links to be detected and disabled to avoid problems such as spanning-tree loops.

### Trunking Features

Cisco UplinkFast and BackboneFast technologies help to ensure quick failover recovery, enhancing overall network stability and reliability.

PVST+ allows for Layer 2 load sharing on redundant links to efficiently use the extra capacity inherent in a redundant design.

Dynamic Trunking Protocol (DTP) enables dynamic trunk configuration across all switch ports.

Port Aggregation Protocol (PAgP) automates the creation of Cisco Fast EtherChannel® groups or Gigabit EtherChannel® groups to link to the upstream switch/router, or server blades

Link Aggregation Control Protocol (LACP) allows the creation of Ethernet channeling with upstream switches that conform to IEEE 802.3ad. This

## Technical Specifications

<b>VLAN Features</b>	<p>feature is similar to Cisco EtherChannel technology and PAgP.</p> <p>Private VLANs restrict traffic between hosts in a common segment by segregating traffic at Layer 2, turning a broadcast segment into a nonbroadcast multi-access-like segment.</p> <p>Private VLAN Edge provides security and isolation between switch ports, which helps ensure that users cannot snoop on other users' traffic.</p>
<b>Quality of Service Features</b>	<p>Dynamic VLAN assignment is supported through implementation of VLAN Membership Policy Server client capability to provide flexibility in assigning ports to VLANs. Dynamic VLAN facilitates the fast assignment of IP addresses.</p> <p>Wire-rate performance for highly granular QoS functions (for example, granular rate limiting).</p> <p>Cross-switch QoS allows QoS to be configured across the entire VBS.</p> <p>802.1p class of service (CoS) and differentiated services code point (DSCP) field classification is provided, using marking and reclassification on a per-packet basis by source and destination IP address, MAC address, or Layer 4 TCP/UDP port number.</p> <p>Cisco control-plane and data-plane QoS ACLs on all ports help ensure proper marking on a per-packet basis.</p> <p>Four egress queues per port help enable differentiated management of up to four traffic types.</p> <p>Shaped Round Robin (SRR) scheduling helps ensure differential prioritization of packet flows by intelligently servicing the ingress queues and egress queues.</p> <p>Weighted Tail Drop (WTD) provides congestion avoidance at the ingress and egress queues before a disruption occurs.</p> <p>Strict priority queuing helps ensure that the highest-priority packets are serviced ahead of all other traffic.</p> <p>The Cisco committed information rate (CIR) function provides bandwidth in increments as low as 8 Kbps.</p> <p>Rate limiting is provided based on source and destination IP address, source and destination MAC address, Layer 4 TCP/UDP information, or any combination of these fields, using QoS ACLs (IP ACLs or MAC ACLs), class maps, and policy maps.</p>
<b>Management Features</b>	<p>Up to 64 aggregate or individual policers are available.</p> <p>Cisco IOS Software CLI support provides common user interface and command set with all Cisco routers and Cisco Catalyst desktop switches.</p> <p>Switching Database Manager Templates for access, routing, and VLAN deployment allow the administrator to easily maximize memory allocation</p>

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to the desired features based on deployment-specific requirements.

Generic On-Line Diagnostic (GOLD) checks the health of hardware components and verifies proper operation of the system data and control plane at run time and boot time.

Embedded Event Manager (EEM) allows customers to set up trigger points based on certain events to automatically take actions, thus automating network management

VPN routing/forwarding (VRF)-Lite enables a service provider to support two or more VPNs, with overlapping IP addresses.

Local Proxy Address Resolution Protocol (ARP) works in conjunction with Private VLAN Edge to minimize broadcasts and maximize available bandwidth.

VLAN1 minimization allows VLAN1 to be disabled on any individual VLAN trunk.

Smart Multicast, with Cisco Virtual Blade Switch technology, allows the Cisco Catalyst Blade Switch 3120 to offer greater efficiency and support for more multicast data streams such as video by putting each data packet onto the backplane only once.

Internet Group Management Protocol (IGMP) Snooping for IPv4 and IPv6 MLD v1 and v2 Snooping provide fast client joins and leaves of multicast streams and limit bandwidth-intensive video traffic to only the requestors.

Multicast VLAN Registration (MVR) continuously sends multicast streams in a multicast VLAN while isolating the streams from subscriber VLANs for bandwidth and security reasons.

Per-port broadcast, multicast, and unicast storm control prevents faulty end stations from degrading overall systems performance.

Cisco VLAN Trunking Protocol (VTP) supports dynamic VLANs and dynamic trunk configuration across all switches.

Remote Switch Port Analyzer (RSPAN) allows administrators to remotely monitor ports in a Layer 2 switch network from any other switch in the same network.

For enhanced traffic management, monitoring, and analysis, the Embedded Remote Monitoring (RMON) software agent supports four RMON groups (history, statistics, alarms, and events).

Layer 2 traceroute eases troubleshooting by identifying the physical path that a packet takes from source to destination.

Trivial File Transfer Protocol (TFTP) reduces the cost of administering software upgrades by downloading from a centralized location.

Network Timing Protocol (NTP) provides an accurate and consistent

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timestamp to all intranet switches.

Multifunction LEDs per port for port status;

Jumbo frames (9216 bytes) are available for advanced data and video applications requiring very large frames.

SNMP v1, v2c, and v3 and Telnet interface support deliver comprehensive in-band management, and a CLI-based management console provides detailed out-of-band management.

Cisco Discovery Protocol versions 1 and 2 enable a network-management station for automatic switch discovery.

### CiscoWorks Features

CiscoWorks network-management software provides management capabilities on a per-port and per-switch basis, providing a common management interface for Cisco routers, switches, and hubs. SNMP v1, v2c, and v3 and Telnet interface support deliver comprehensive in-band management, and a CLI-based management console provides detailed out-of-band management. Cisco Discovery Protocol versions 1 and 2 enable a CiscoWorks network-management station for automatic switch discovery.

### Management and Standards Support

#### Management Information Base (MIB) Support

The MIBs listed in this section are supported in each of IPBase, IPServices, and Advanced IPServices feature sets for both switches.

- BRIDGE-MIB
- CISCO-AAA-SESSION-MIB
- CISCO-ACCESS-ENVMON-MIB
- CISCO-BRIDGE-EXT-MIB
- CISCO-BULK-FILE-MIB
- CISCO-CAR-MIB
- CISCO-CDP-MIB
- CISCO-CIRCUIT-INTERFACE-MIB
- CISCO-CLUSTER-MIB
- CISCO-CONFIG-COPY-MIB
- CISCO-CONFIG-MAN-MIB
- CISCO-DHCP-SNOOPING-MIB
- CISCO-ENTITY-FRU-CONTROL-MIB
- CISCO-ENTITY-VENDORTYPE-OID-MIB
- CISCO-ENVMON-MIB
- CISCO-FLASH-MIB
- CISCO-FTP-CLIENT-MIB
- CISCO-HSRP-EXT-MIB
- CISCO-HSRP-MIB
- CISCO-IF-EXTENSION-MIB
- CISCO-IGMP-FILTER-MIB
- CISCO-IMAGE-MIB
- CISCO-IP-STAT-MIB
- CISCO-IPMROUTE-MIB
- CISCO-L2-TUNNEL-CONFIG-MIB
- CISCO-L2L3-INTERFACE-CONFIG-MIB
- CISCO-LAG-MIB
- CISCO-MAC-NOTIFICATION-MIB
- CISCO-MEMORY-POOL-MIB

## Technical Specifications

- CISCO-NTP-MIB
- CISCO-PAE-MIB
- CISCO-PAGP-MIB
- CISCO-PIM-MIB
- CISCO-PING-MIB
- CISCO-PORT-QOS-MIB
- CISCO-PORT-SECURITY-MIB
- CISCO-PORT-STORM-CONTROL-MIB
- CISCO-PRIVATE-VLAN-MIB
- CISCO-PROCESS-MIB
- CISCO-PRODUCTS-MIB
- CISCO-RTTMON-MIB
- CISCO-SMI
- CISCO-STACK-MIB
- CISCO-STACKMAKER-MIB
- CISCO-STACKWISE-MIB
- CISCO-STP-EXTENSIONS-MIB
- CISCO-SYSLOG-MIB
- CISCO-TC
- CISCO-TCP-MIB
- CISCO-UDLD-MIB
- CISCO-VLAN-IFTABLE-RELATIONSHIP-MIB
- CISCO-VLAN-MEMBERSHIP-MIB
- CISCO-VTP-MIB
- DOT3-MAU-MIB
- ENTITY-MIB
- ETHERLIKE-MIB
- HC-RMON-MIB
- IEEE8021-PAE-MIB
- IEEE8023-LAG-MIB
- IF-MIB
- IGMP-MIB
- IPMROUTE-STD-MIB
- OLD-CISCO-CHASSIS-MIB
- OLD-CISCO-CPU-MIB
- OLD-CISCO-FLASH-MIB
- OLD-CISCO-INTERFACES-MIB
- OLD-CISCO-IP-MIB
- OLD-CISCO-MEMORY-MIB
- OLD-CISCO-SYSTEM-MIB
- OLD-CISCO-TCP-MIB
- OLD-CISCO-TS-MIB
- PIM-MIB
- RFC1213-MIB
- RMON-MIB
- RMON2-MIB
- SMON-MIB
- SNMP-FRAMEWORK-MIB
- SNMP-NOTIFICATION-MIB
- SNMP-PROXY-MIB
- SNMP-TARGET-MIB
- SNMP-USM-MIB
- SNMP-VACM-MIB
- SNMPv2-MIB
- TCP-MIB

## Technical Specifications

- UDP-MIB

### Additional MIBs Supported by IPServices

- ATM-MIB
- BGP4-MIB
- CISCO-AAL5-MIB
- CISCO-ATM-EXT-MIB
- CISCO-ATM-PVC-MIB
- CISCO-ATM-PVCTRAP-EXTN-MIB
- CISCO-ATM-QOS-MIB
- CISCO-BGP4-MIB
- CISCO-CLASS-BASED-QOS-MIB
- CISCO-FRAME-RELAY-MIB
- CISCO-IETF-ATM2-PVCTRAP-MIB
- CISCO-IETF-IP-MIB
- CISCO-IETF-ISIS-MIB
- CISCO-OSPF-MIB
- CISCO-OSPF-TRAP-MIB
- CISCO-RF-MIB
- MSDP-MIB
- OSPF-MIB
- OSPF-TRAP-MIB
- RFC1315-MIB

### Additional MIBs Supported by Advanced IPServices

- CISCO-BGP-POLICY-ACCOUNTING-MIB
- CISCO-IETF-IP-FORWARD-MIB
- CISCO-IPSEC-FLOW-MONITOR-MIB
- CISCO-IPSEC-MIB
- CISCO-SLB-EXT-MIB
- CISCO-SLB-MIB
- MPLS-LDP-MIB
- MPLS-LSR-MIB
- MPLS-TE-MIB
- RFC2006-MIB

### Standards

IEEE 802.1s  
 IEEE 802.1w  
 IEEE 802.1x  
 IEEE 802.3ad  
 IEEE 802.3x full duplex on 10BASE-T, 100BASE-TX, and 1000BASE-T ports  
 IEEE 802.1D Spanning-Tree Protocol  
 IEEE 802.1p CoS Prioritization  
 IEEE 802.1Q VLAN  
 IEEE 802.3 10BASE-T specification  
 IEEE 802.3u 100BASE-TX specification  
 IEEE 802.3ab 1000BASE-T specification  
 IEEE 802.3z 1000BASE-X specification  
 1000BASE-SX  
 RMON I and II standards



## Technical Specifications

<b>Safety and Compliance</b>	<b>Safety Certifications</b>	UL/CUL Recognition to UL/CSA 60950-1 TUV to EN 60950-1 CB report and certificate to IEC 60950-1 with all country deviations CE Marking
<b>Electromagnetic Emissions Certifications FCC Part 15 Class A</b>	FCC Part 15 Class A EN 55022 Class A (CISPR22 Class A) VCCI Class A AS/NZS 3548 Class A or AS/NZS CISPR22 Class A MIC Class A CE Marking	
<b>Telecommunications</b>	CLEI Code	
<b>Environment-friendly Products and Approach</b>	<b>End-of-life Management and Recycling</b>	<p>Hewlett Packard Enterprise offers end-of-life Hewlett Packard Enterprise product return, trade-in, and recycling programs in many geographic areas. For trade-in information, please go to <a href="http://www.hp.com/go/green">http://www.hp.com/go/green</a>. To recycle your product, please go to: <a href="http://www.hp.com/go/green">http://www.hp.com/go/green</a> or contact your nearest Hewlett Packard Enterprise sales office. Products returned to Hewlett Packard Enterprise will be recycled, recovered or disposed of in a responsible manner.</p> <p>The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard Enterprise web site at: <a href="http://www.hp.com/go/green">http://www.hp.com/go/green</a>. These instructions may be used by recyclers and other WEEE treatment facilities as well as Hewlett Packard Enterprise OEM customers who integrate and re-sell Hewlett Packard Enterprise equipment.</p>

## Summary of Changes

Date	Version History	Action	Description of Change
21-Oct-2016	From Version 15 to 16	Changed	Rebranding edition.
15-Nov-2014	From Version 14 to 15	Changed	Changes made under Standard Features Section - Compatibility
01-May-2014	From Version 13 to 14	Changed	Updated Models and Options.
20-Dec-2013	From Version 12 to 13	Changed	Changes made under Service and Support section.
16-Aug-2013	From Version 11 to 12	Changed	Changes made under Standard Features Section - Compatibility
12-Oct-2012	From Version 10 to 11	Changed	Change made to URL in the Service and Support section.
17-Aug-2012	From Version 9 to 10	Changed	Changes made to the Compatibility section.
20-Jun-2011	From Version 8 to 9	Removed	Mentions of StorageWorks were removed.
16-Nov-2010	From Version 7 to 8	Changed	HPE 3 year Support plus 24 Insight Control Linux Edition BladeSystem c7000 Service product description was revised and HPE ProLiant BL620c G7 and BL680c G7 were added to HPE ProLiant Servers Compatibility.
05-Oct-2010	From Version 6 to 7	Changed	Standard Features and Compatibility were combined and Service and Support was added.
17-Aug-2010	From Version 5 to 6	Changed	Only PDF formatting changes were made.
25-Jun-2010	From Version 4 to 5	Changed	HPE ProLiant Servers were completely revised and HPE Integrity BL860c i2, BL870c i2 and BL890c i2 Server Blades were added to Compatibility These external ports also support the new Cisco OneX10G X2 to SFP+ converter was added to Connectors and Cabling in Technical Specifications
01-May-2009	From Version 3 to 4	Added	LR Modules to Performance in the Standard Features section HPE ProLiant BL280c G6, BL480c G5 and G6, BL465c G5 and G6, BL490c G6, BL495c G5 and BL685c G5 and G6 Servers to the Compatibility section IPv6 chart to the Technical Specifications section
		Changed	Updated NOTEs throughout the Models section.
		Removed	HPE Catalyst Blade Switch 3120 Advanced IP Service Software Upgrade from the Models section.
15-Sep-2008	From Version 2 to 3	Added	To the Models section Cisco Ethernet RJ-45 SFP Module NOTE for HPE Catalyst Blade Switch 3120 IP Service Software Upgrade and HPE Catalyst Blade Switch 3120 Advanced IP Service Software Upgrade Stocking Cables for Cisco 3120, 3.0 Meter, 1.0 Meter and 0.5 Meter To the Compatibility section HPE ProLiant BL260c G5 Server Blade and BL2x220c G5 Server Blade to the HPE ProLiant Servers section HPE Integrity BL870c Server Blade to the HPE Integrity Server Blade section To the Technical Specifications section Two supplied Twin-Gig Converter Modules to the Connectors and Cabling section Additional 1 meter, 0.5 meter and 3 meter Cisco Proprietary StockWise Connector cable to the Connectors and Cabling section
04-Apr-2008	From Version 1 to 2	Added	Cisco 10GBase-SR X2 Module, Part #459006-B21, and Cisco 10GBase-LRM X2 Module, Part #459007-B21, were added to the Models and Options section.

## Summary of Changes

	Changed	Changes were made in the Technical Specifications section.
	Removed	Cisco Modules were removed from the Related Options section.



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