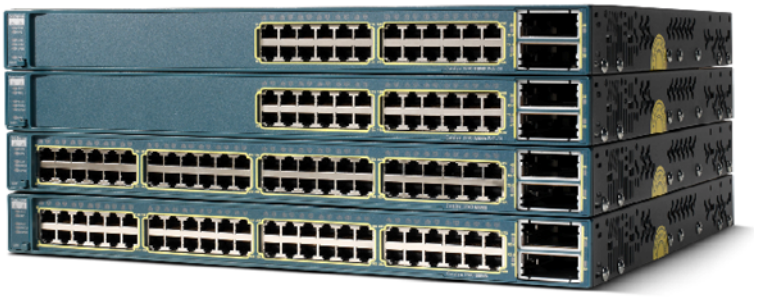
Cisco Catalyst 3560-E Series Switches

Cisco® Catalyst® 3560-E Series Switches (Figure 1) are an enterprise-class line of standalone wiring closet switches that facilitates the deployment of secure converged applications while maximizing investment protection for evolving network and application requirements. Combining 10/100/1000 and Power over Ethernet (PoE) configurations with 10 Gigabit Ethernet uplinks, the Cisco Catalyst 3560-E enhances worker productivity by enabling applications such as IP telephony, wireless, and video.

Cisco Catalyst 3560-E Series Primary Features

- Cisco TwinGig converter module for migrating uplinks from 1 Gigabit Ethernet to 10 Gigabit Ethernet
- PoE configurations with 15.4W of PoE on all 48 ports
- Modular power supply with externally available backup
- Multicast routing, IPv6 routing, and access control list in hardware
- Out-of-band Ethernet management port along with RS-232 console port

Figure 1. Cisco Catalyst 3560-E Series Switches



Switch Configurations

Table 1 shows the Cisco Catalyst 3560-E Series configurations:

Table 1. Switch Configurations.

Feature	Description
Cisco Catalyst 3560E-24TD	24 Ethernet 10/100/1000 ports and 2 X2 10 Gigabit Ethernet uplinks
Cisco Catalyst 3560E-24PD	24 Ethernet 10/100/1000 ports with PoE and 2 X2 10 Gigabit Ethernet uplinks
Cisco Catalyst 3560E-48TD	48 Ethernet 10/100/1000 ports and 2 X2 10 Gigabit Ethernet uplinks
Cisco Catalyst 3560E-48PD	48 Ethernet 10/100/1000 ports with PoE and 2 X2 10 Gigabit Ethernet uplinks
Cisco Catalyst 3560E-48PD-F	48 Ethernet 10/100/1000 ports with 15.4W PoE on all 48 ports and 2 X2 10 Gigabit Ethernet uplinks

All contents are Copyright © 1992–2007 Cisco Systems, Inc. All rights reserved. This document is Cisco Public Information.

Cisco Catalyst 3560-E Software

The Cisco Catalyst 3560-E Series is available with either the IP Base or the IP Services feature set. The IP Base feature set includes advanced quality of service (QoS), rate-limiting, access control lists (ACLs), and basic static and Routing Information Protocol (RIP) routing capability. The IP Services feature set provides a richer set of enterprise-class features, including advanced hardware-based IP unicast and multicast routing (Enhanced Interior Gateway Routing Protocol [EIGRP], Open Shortest Path First [OSPF], Border Gateway Protocol [BGP], Protocol Independent Multicast [PIM], and so on). An additional Advanced IP Services feature set is also available which is required for IPv6 routing.

Customers can transparently upgrade the software feature set in the Cisco Catalyst 3560-E Series Switches through Cisco IOS® Software Activation. Software activation authorizes and enables the Cisco IOS Software feature sets. A special file contained in the switch, called a license file, is examined by Cisco IOS Software when the switch is powered on. Based on the license's type, Cisco IOS Software activates the appropriate feature set. License types can be changed, or upgraded, to activate a different feature set.

10 Gigabit Ethernet Uplinks and the Cisco TwinGig SFP Converter

The Cisco Catalyst 3560-E features wire-speed 10 Gigabit Ethernet uplink ports for high-bandwidth applications relieving congestion and helping ensure smooth delivery of data. The TwinGig converter (see Figure 2) converts a 10 Gigabit Ethernet X2 interface into two Gigabit Ethernet Small Form-Factor Pluggable (SFP) ports. This way, customers can initially use the switch with Gigabit Ethernet uplinks and later implement 10 Gigabit Ethernet uplinks as business demands change, without having to upgrade the access layer.

Figure 2. Cisco TwinGig Adapter Converting 10 Gigabit Ethernet X2 Interface into Two Gigabit Ethernet SFP Interfaces

Modular Power Supplies

The Cisco Catalyst 3560-E Series Switches have one power supply slot and support the following power supplies. PoE switches require a PoE power supply. Data-only switches can operate with any of the power supplies.

- C3K-PWR-1150WAC: 1150WAC power supply with 740W PoE
- C3K-PWR-750WAC: 750WAC power supply for 24-port switch with 370W PoE
- C3K-PWR-265WAC: 265WAC power supply for 48- or 24-port switch without PoE
- C3K-PWR-265WDC: 265WDC power supply for 48- or 24-port switch without PoE

All contents are Copyright © 1992–2007 Cisco Systems, Inc. All rights reserved. This document is Cisco Public Information.

Maximum power availability for converged voice and data networks is attainable when a Cisco Catalyst 3560-E Series Switch is combined with the Cisco RPS 2300 Redundant Power System for transparent protection against internal power supply failures and an uninterruptible power supply (UPS) system to safeguard against power outages. Using the RPS 2300 to provide backup power, the Cisco Catalyst 3560-E Series Switch power supplies become hot swappable. Table 3 shows the power supply compatibility matrix.

Power over Ethernet

The Cisco Catalyst 3560-E Series can provide a lower total cost of ownership for deployments that incorporate Cisco IP phones, Cisco Aironet® wireless LAN (WLAN) access points, or any IEEE 802.3af-compliant end device. PoE removes the need for wall power to each PoE-enabled device and eliminates the cost for additional electrical cabling and circuits that would otherwise be necessary in IP phone and WLAN deployments. The Cisco Catalyst 3560-E 24-port PoE configurations can support 24 simultaneous full-powered PoE ports at 15.4W for maximum powered-device support. The Cisco Catalyst 3560-E 48-port PoE configurations can support 48 simultaneous full-powered PoE ports at 15.4W when using the optional 1150W power supply. Alternatively, for deployments that do not need maximum power, a smaller power supply makes use of Cisco Catalyst Intelligent Power Management, to support 24 ports at 15.4W, 48 ports at 7.7W, or any combination in between.

Redundant Power System

The Cisco Catalyst 3560-E Series Switches support the new generation of Redundant Power Supply (RPS) 2300. The Redundant Power System 2300 (RPS 2300) increases availability in a converged data, voice, and video network by providing transparent power backup to two of six attached Cisco Catalyst 3560-E Series Switches at the same time. The failed power supply can be swapped out while the switch is being powered up by the RPS 2300.

Primary Features and Benefits

Ease of Use: Deployment

The Cisco Catalyst 3560-E offers ease of use features such as Cisco Smartports, which enable fast and easy configuration of advanced Cisco Catalyst intelligent capabilities, encapsulating years of Cisco networking expertise. Cisco Smartport macros offer a set of verified feature templates per connection type that are easy to apply, enabling users to consistently and reliably configure essential security, IP telephony, availability, QoS, and manageability features with minimal effort and expertise.

Other ease of use features include:

- Dynamic Host Configuration Protocol (DHCP) autoconfiguration of multiple switches through a boot server eases switch deployment.
- Automatic QoS (AutoQoS) simplifies QoS configuration in voice over IP (VoIP) networks by issuing interface and global switch commands to detect Cisco IP phones, classify traffic, and help enable egress queue configuration.
- Autonegotiation on all ports automatically selects half- or full-duplex transmission mode to optimize bandwidth.

All contents are Copyright © 1992–2007 Cisco Systems, Inc. All rights reserved. This document is Cisco Public Information.

- Dynamic Trunking Protocol (DTP) facilitates 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 another switch, router, or server.
- Link Aggregation Control Protocol (LACP) allows the creation of Ethernet channeling with devices that conform to IEEE 802.3ad. This feature is similar to Cisco EtherChannel technology and PAgP.
- Automatic media-dependent interface crossover (MDIX) automatically adjusts transmit and receive pairs if an incorrect cable type (crossover or straight-through) is installed.

Availability and Scalability

The Cisco Catalyst 3560-E Series is equipped with a robust set of features that allow for network scalability and higher availability through IP routing as well as a complete suite of Spanning Tree Protocol enhancements aimed to maximize availability in a Layer 2 network. Enhancements to the standard Spanning Tree Protocol, such as Per-VLAN Spanning Tree Plus (PVST+), Uplink Fast, and Port Fast, as well as innovations such as Flexlink, maximize network uptime.

- Flexlink provides link redundancy with convergence time less than 100ms.
- IEEE 802.1s/w Rapid Spanning Tree Protocol (RSTP) and Multiple Spanning Tree Protocol (MSTP) provide rapid spanning-tree convergence independent of spanning-tree timers and also offer the benefit of Layer 2 load balancing and distributed processing.
- Per-VLAN Rapid Spanning Tree (PVRST+) allows rapid spanning-tree reconvergence on a per-VLAN spanning-tree basis, without requiring the implementation of spanning-tree instances.
- Cisco Hot Standby Router Protocol (HSRP) is supported to create redundant, failsafe routing topologies.
- Unidirectional Link Detection Protocol (UDLD) and Aggressive UDLD allow unidirectional links caused by incorrect fiber-optic wiring or port faults to be detected and disabled on fiber-optic interfaces.
- Switch-port Autorecovery (Errdisable) automatically attempts to reactivate a link that is disabled because of a network error.

High-Performance IP Routing

Cisco Express Forwarding hardware routing architecture delivers extremely high-performance IP routing in the Cisco Catalyst 3560-E Series Switches.

- Basic IP unicast routing protocols (Static, Routing Information Protocol Version 1 [RIPv1], and RIPv2) are supported for small-network routing applications.
- Advanced IP unicast routing protocols (OSPF, EIGRP, and BGPv4) are supported for load balancing and constructing scalable LANs. The IP Services feature set is required.
- IPv6 routing (RIPng, OSPFv3) is supported in hardware for maximum performance. Advanced IP Services feature set is required for IPv6 routing.
- Equal-cost routing facilitates Layer 3 load balancing and redundancy.
- Policy-based routing (PBR) allows superior control by facilitating flow redirection regardless of the routing protocol configured. The IP Services feature set is required.

All contents are Copyright © 1992–2007 Cisco Systems, Inc. All rights reserved. This document is Cisco Public Information.

- HSRP provides dynamic load balancing and failover for routed links, up to 32 HSRP links supported per unit.
- Protocol Independent Multicast (PIM) for IP multicast routing is supported, including PIM sparse mode (PIM-SM), PIM dense mode (PIM-DM), and PIM sparse-dense mode. The IP Services feature set is required.
- Distance Vector Multicast Routing Protocol (DVMRP) tunneling interconnects two multicast-enabled networks across nonmulticast networks. The IP Services feature set is required.
- Fallback bridging forwards non-IP traffic between two or more VLANs. The IP Services feature set is required.

Superior Quality of Service

The Cisco Catalyst 3560-E Series offers Gigabit Ethernet speed with intelligent services that keep everything flowing smoothly, even at 10 times the normal network speed. Industry-leading mechanisms for marking, classification, and scheduling deliver superior performance for data, voice, and video traffic, all at wire speed.

Following are some of the QoS features supported in the Cisco Catalyst 3560-E Series Switches:

- 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.
- Cisco control-plane and data-plane QoS ACLs on all ports help ensure proper marking on a per-packet basis.
- Four egress queues per port help enable differentiated management of up to four traffic types across the switch.
- Shaped Round Robin (SRR) scheduling helps ensure differential prioritization of packet flows by intelligently servicing the ingress queues and egress queues.
- Weighted Tail Drop (WTD) provides congestion avoidance at the ingress and egress queues before a disruption occurs.
- Strict priority queuing helps ensure that the highest-priority packets are serviced ahead of all other traffic.
- The Cisco committed information rate (CIR) function provides bandwidth in increments as low as 8 Kbps.
- 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.
- Up to 64 aggregate or individual policers are available per Fast Ethernet or Gigabit Ethernet port.

All contents are Copyright © 1992–2007 Cisco Systems, Inc. All rights reserved. This document is Cisco Public Information.

Advanced Security

The Cisco Catalyst 3560-E Series 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 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.

- 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.
- 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.
- Private VLAN Edge provides security and isolation between switch ports, which helps ensure that users cannot snoop on other users’ traffic.
- 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 with voice VLAN permits an IP phone to access the voice VLAN irrespective of the authorized or unauthorized state of the port.
- 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.
- Multi-Domain Authentication allows an IP phone and a PC to authenticate on the same switch port while placing them on appropriate Voice and Data VLAN.
- MAC Auth Bypass (MAB) for voice allows third-party IP phones without an 802.1x supplicant to get authenticated using their MAC address.
- Cisco security VLAN ACLs on all VLANs prevent unauthorized data flows from being bridged within VLANs.

All contents are Copyright © 1992–2007 Cisco Systems, Inc. All rights reserved. This document is Cisco Public Information.

- 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 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.
- 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.

Intelligent Power over Ethernet (PoE) Management

The Cisco Catalyst 3560-E PoE models support Cisco IP phones and Cisco Aironet wireless LAN (WLAN) access points, as well as any IEEE 802.3af-compliant end device. The Cisco Catalyst 3560-E-48PD can support 48 simultaneous full-powered PoE ports at 15.4W with the 1150W power supply.

- Cisco Discovery Protocol version 2 (CDPv2) allows the Cisco Catalyst 3560-E Series Switch to negotiate a more granular power setting when connecting to a Cisco powered device, such as IP phones or access points, than what is provided by IEEE classification.
- Per Port power consumption command allows customer to specify maximum power setting on an individual port.
- Per Port PoE Power Sensing measures actual power being drawn, enabling more intelligent control of powered devices.
- The PoE MIB provides proactive visibility into power usage and allows customers to set different power level thresholds

All contents are Copyright © 1992–2007 Cisco Systems, Inc. All rights reserved. This document is Cisco Public Information.

Management and Control Features

The Cisco Catalyst 3560-E Series Switches come with a rich set of management and control features that include:

- Cisco IOS Software CLI support provides common user interface and command set with all Cisco routers and Cisco Catalyst desktop switches.
- Switching Database Manager Templates for access, routing, and VLAN deployment allow the administrator to easily maximize memory allocation 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.
- 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.
- 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 limits 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.
- Voice VLAN simplifies telephony installations by keeping voice traffic on a separate VLAN for easier administration and troubleshooting.
- 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 timestamp to all intranet switches.
- Multifunction LEDs per port for port status; half-duplex and full-duplex mode; and 10BASE-T, 100BASE-TX, and 1000BASE-T indication as well as switch-level status LEDs for system, redundant-power supply, and bandwidth utilization provide a comprehensive and convenient visual management system.

All contents are Copyright © 1992–2007 Cisco Systems, Inc. All rights reserved. This document is Cisco Public Information.

- Jumbo frames (9216 bytes) are available on the 10/100/1000 configurations for advanced data and video applications requiring very large frames.

Network Management Tools

The Cisco Catalyst 3560-E Series offers both a superior command-line interface (CLI) for detailed configuration and Cisco Network Assistant Software, a PC-based tool for quick configuration based on preset templates. In addition, CiscoWorks LAN Management Solution (LMS) supports the Cisco Catalyst 3560-E Series for networkwide management.

Cisco Network Assistant

A PC-based network management application designed for small and medium-sized business (SMB) networks with up to 250 users, Cisco Network Assistant offers centralized network management and configuration capabilities. Cisco Network Assistant uses Cisco Smartports technology to simplify both initial deployment and ongoing maintenance. This application also features an intuitive GUI where users can easily apply common services across Cisco switches, routers, and access points, such as:

- Configuration management
- Troubleshooting advice
- Inventory reports
- Event notification
- Network security settings
- Password synchronization
- Drag-and-drop Cisco IOS Software upgrades
- Secure wireless

For detailed information about Cisco Network Assistant, go to http://www.cisco.com/go/cna.

CiscoWorks LAN Management Solution (LMS)

CiscoWorks LMS is a suite of powerful management tools that simplify the configuration, administration, monitoring and troubleshooting of Cisco networks. It integrates these capabilities into a world-class solution for improving the accuracy and efficiency of your operations staff, while increasing the overall availability of your network. LMS supports over 400 different device types including the 3560-E series switches and it provides:

- Network discovery, topology views, end-station tracking and VLAN management
- Real-time network fault analysis with easy-to-deploy device specific best-practice templates
- Hardware and software inventory management, centralized configuration tools, and Syslog monitoring
- Network response time and availability monitoring and tracking
- Real-time device, link, and port traffic management, analysis, and reporting

For detailed information about CiscoWorks LMS, go to
http://www.cisco.com/en/US/products/sw/cscowork/ps2425/index.html

Product Specifications

Table 2 lists product specifications for the Cisco Catalyst 3560-E Series.

All contents are Copyright © 1992–2007 Cisco Systems, Inc. All rights reserved. This document is Cisco Public Information.

Table 2. Descriptions and Specifications

Description	Specification
Performance	• 128-Gbps switching fabric • Forwarding rate: ◦ 3560E-24TD—65.5 Mpps ◦ 3560E-24PD—65.5 Mpps ◦ 3560E-48TD—101.2 Mpps ◦ 3560E-48PD—101.2 Mpps ◦ 3560E-48PD-F—101.2 Mpps • Memory: ◦ 128 MB DRAM and 64 MB FLASH • Feature resources: ◦ 1005 VLANs ◦ 4K VLAN IDs ◦ 1000 switched virtual interfaces (SVIs) ◦ 9216 byte jumbo frames **MAC, routing, security, and QoS scalability numbers depend on the type template used in the switch:** • MAC address ◦ Default Template: 6K ◦ Access Template: 4K ◦ VLAN Template: 12K ◦ Routing Template: 3K • IGMP groups and multicast routes ◦ Default Template: 1K ◦ Access Template: 1K ◦ VLAN Template: 1K ◦ Routing Template: 1K • Total unicast routes ◦ Default Template: 8K ◦ Access Template: 6K ◦ VLAN Template: 0 ◦ Routing Template: 11K • Directly connected hosts ◦ Default Template: 6K ◦ Access Template: 4K ◦ VLAN Template: 0 ◦ Routing Template: 11K • Indirect routes ◦ Default Template: 2K ◦ Access Template: 2K ◦ VLAN Template: 0 ◦ Routing Template: 8K • Security ACEs ◦ Default Template: 1K ◦ Access Template: 2K ◦ VLAN Template: 1K ◦ Routing Template: 1K • QoS ACEs ◦ Default Template: 0.5K ◦ Access Template: 0.5K ◦ VLAN Template: 0.5K ◦ Routing Template: 0.5K • PBR ACEs ◦ Default Template: 0 ◦ Access Template: 0.5K ◦ VLAN Template: 0 ◦ Routing Template: 0.5K
Connectors and Cabling	• 1000BASE-T ports: RJ-45 connectors, 2-pair Cat-5 UTP cabling

All contents are Copyright © 1992–2007 Cisco Systems, Inc. All rights reserved. This document is Cisco Public Information.

Description	Specification
	• 1000BASE-T SFP-based ports: RJ-45 connectors, 2-pair Cat-5 UTP cabling • 100BASE-FX, 1000BASE-SX, -LX/LH, -ZX, -BX10 and CWDM SFP-based ports: LC fiber connectors (single-mode, or multimode fiber) • 10GBASE-SR, LR, ER, X2-based ports: SC fiber connectors (single-mode, or multimode fiber) • Ethernet management port: RJ-45 connectors, 2-pair Cat-5 UTP cabling • Management console port: RJ-45-to-DB9 cable for PC connections
Power Connectors	• Customers can provide power to a switch by using either the internal power supply or the Cisco RPS 2300. The connectors are located at the back of the switch. • Internal power supply connector: The internal power supply is an autoranging unit. The internal power supply supports input voltages between 100 and 240VAC. Use the supplied AC power cord to connect the AC power connector to an AC power outlet. • Cisco RPS connector: The connector offers connection for an optional Cisco RPS 2300 that uses AC input and supplies DC output to the switch. • Only the Cisco RPS 2300 (model PWR2300-AC-RPS-N1=) should be attached to the redundant-power-supply receptacle.
Indicators	• Per-port status LEDs: link integrity, disabled, activity, speed, and full-duplex indications • System-status LEDs: system, RPS, and bandwidth-utilization indications
Dimensions (H x W x D)	• 3560E-24TD ◦ Inches: 1.75 x 17.5 x 18.1 ◦ Centimeters: 4.45 x 44.5 x 46.0 • 3560E-24PD ◦ Inches: 1.75 x 17.5 x 18.1 ◦ Centimeters: 4.45 x 44.5 x 46.0 • 3560E-48TD ◦ Inches: 1.75 x 17.5 x 18.1 ◦ Centimeters: 4.45 x 44.5 x 46.0 • 3560E-48PD ◦ Inches: 1.75 x 17.5 x 18.1 ◦ Centimeters: 4.45 x 44.5 x 46.0 • 3560E-48PD-F ◦ Inches: 1.75 x 17.5 x 21.7 ◦ Centimeters: 4.45 x 44.5 x 55.2
Weight	• 3560E-24TD ◦ Pounds: 17.9 ◦ Kilograms: 8.1 • 3560E-24PD ◦ Pounds: 18.3 ◦ Kilograms: 8.3 • 3560E-48TD ◦ Pounds: 18.8 ◦ Kilograms: 8.6 • 3560E-48PD ◦ Pounds: 19.2 ◦ Kilograms: 8.75 • 3560E-48PD-F ◦ Pounds: 20.9 ◦ Kilograms: 9.5
Environmental Ranges	• Operating temperature: 32 to 113ºF (0 to 45ºC) • Storage temperature: –13 to 158ºF (–25 to 70ºC) • Relative humidity operating: 0 to 95% (noncondensing) • Relative humidity nonoperating: 10 to 85% (noncondensing) • Operating altitude: up to 10,000 ft (3049 m) • Storage altitude: up to 15,000 ft (4573 m)
Acoustic Noise	• International Organization for Standardization (ISO) 7779: bystander position operating to an ambient temperature of 30ºC • 3560E-24TD—45 dB • 3560E-48TD—45 dB • 3560E-24PD—45 dB

All contents are Copyright © 1992–2007 Cisco Systems, Inc. All rights reserved. This document is Cisco Public Information.

Description	Specification
	• 3560E-48PD—45 dB • 3560E-48PD-F—48 dB
Mean Time Between Failure (MTBF)	• 3560E-24TD—181,086 hours • 3560E-24PD—168,753 hours • 3560E-48TD—166,907 hours • 3560E-48PD—151,196 hours • 3560E-48PD-F—151,196 hours

Table 3 lists the management and standards support for the Cisco Catalyst 3560-E Series.

Table 3. Management and Standards Support for Cisco Catalyst 3560-E Series Switches

Description	Specification	
Management	• BRIDGE-MIB • CISCO-CDP-MIB • CISCO-CLUSTER-MIB • CISCO-CONFIG-MAN-MIB • CISCO-ENTITY-FRU-CONTROL-MIB • CISCO-ENVMON-MIB • CISCO-FLASH-MIB • CISCO-FTP-CLIENT-MIB • CISCO-HSRP-MIB • CISCO-HSRP-EXT-MIB • CISCO-IGMP-FILTER-MIB • CISCO-IMAGE-MIB • CISCO-IP-STAT-MIB • CISCO-L2L3-INTERFACE-CONFIG-MIB • CISCO-POE-EXTENSIONS-MIB • CISCO-MAC-NOTIFICATION-MIB • CISCO-MEMORY-POOL-MIB • CISCO-PAGP-MIB • CISCO-PING-MIB • CISCO-PROCESS-MIB • CISCO-RTTMON-MIB • CISCO-STP-EXTENSIONS-MIB • CISCO-SYSLOG-MIB • CISCO-TCP-MIB • CISCO-VLAN-IFTABLE-RELATIONSHIP-MIB • CISCO-VLAN-MEMBERSHIP-MIB	• CISCO-VTP-MIB • ENTITY-MIB • ETHERLIKE-MIB • IF-MIB • IGMP-MIB • IPMROUTE-MIB • OLD-CISCO-CHASSIS-MIB • OLD-CISCO-FLASH-MIB • OLD-CISCO-INTERFACES-MIB • OLD-CISCO-IP-MIB • OLD-CISCO-SYS-MIB • OLD-CISCO-TCP-MIB • OLD-CISCO-TS-MIB • OSPF-MIB (RFC 1253) • PIM-MIB • RFC1213-MIB • RFC1253-MIB • RMON-MIB • RMON2-MIB • SNMP-FRAMEWORK-MIB • SNMP-MPD-MIB • SNMP-NOTIFICATION-MIB • SNMP-TARGET-MIB • SNMPv2-MIB • TCP-MIB • UDP-MIB
Standards	• IEEE 802.1s • IEEE 802.1w • IEEE 802.1x • IEEE 802.3ad • IEEE 802.3af • 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 • 100BASE-FX • 1000BASE-T • 1000BASE-SX • 1000BASE-LX/LH	• 1000BASE-BX10-U • 1000BASE-BX10-D • 1000BASE-ZX • 1000BASE-CWDM SFP 1470 nm • 1000BASE-CWDM SFP 1490 nm • 1000BASE-CWDM SFP 1510 nm • 1000BASE-CWDM SFP 1530 nm • 1000BASE-CWDM SFP 1550 nm • 1000BASE-CWDM SFP 1570 nm • 1000BASE-CWDM SFP 1590 nm • 1000BASE-CWDM SFP 1610 nm • 10GBASE-SR • 10GBASE-LR • 10GBASE-ER • RMON I and II standards • SNMPv1, SNMPv2c, and SNMPv3

All contents are Copyright © 1992–2007 Cisco Systems, Inc. All rights reserved. This document is Cisco Public Information.

Table 4 lists the power supply compatibility matrix for all different models of Cisco Catalyst 3560-E Series Switches.

Table 4. Power Supply Compatibility Matrix

Cisco Catalyst 3560-E Series Switch Type	Power Supply			
	C3K-PWR-1150WAC	C3K-PWR-750WAC	C3K-PWR-265WAC	C3K-PWR-265WDC
48-Port PoE Switch	X	X		
24-Port PoE Switch	X	X		
48-Port Switch	X	X	X	X
24-Port Switch	X	X	X	X
RPS 2300	X	X		

Table 5 lists the power specifications for the Cisco Catalyst 3560-E Series based on the kind of power supply used.

Table 5. Power Specifications

Description	Specification			
	C3K-PWR-1150WAC	C3K-PWR-750WAC	C3K-PWR-265WAC	C3K-PWR-265WDC
Max Output Power	1150W	750W	265W	265W
Input-Voltage Range and Frequency	115–240VAC, 50–60 Hz	100–240VAC, 50–60 Hz	100–240VAC, 50–60 Hz	-36VDC to -72VDC
Input Current	12–6A	10–5A	5–2.5A	<5A@-72VDC <10A@-36VDC
Output Ratings	12V@25A –52V@16.4A	12V@25A –52V@8.75A	12V@22A	12V@22A
Output Holdup Time	20 ms minimum	20 ms minimum	20 ms minimum	> 2ms@-48VDC
Power-Supply Input Receptacles	IEC 320-C13 (IEC60320-C19)	IEC 320-C13 (IEC60320-C13)	IEC 320-C13 (IEC60320-C13)	
Power Cord Rating	15A	15A	15A	12A@-100VDC

Table 6 lists the specifications of all the power supplies supported in Cisco Catalyst 3560-E Series Switches.

Table 6. Power Supply Specifications

Product Specifications	Power Supply			
	C3K-PWR-1150WAC	C3K-PWR-750WAC	C3K-PWR-265WAC	C3K-PWR-265WDC
Physical Specifications	(H x W x D): 1.65 X 6.0 X 14.90 in Weight: 5.6 lb (2.6 kg)	(H x W x D): 1.65 X 6.0 X 11.4 in Weight: 3.9 lb (1.8 kg)	(H x W x D): 1.65 X 6.0 X 11.4 in Weight: 3.3 lb (1.5 kg)	(H x W x D): 1.65 X 6.0 X 11.4 in Weight: 3.5 lb (1.6 kg)
Total Input BTU (Note: 1000 BTU/hr = 290W)	3924 BTU/hr, 1150W	4225 BTU/hr, 765W	920 BTU/hr, 265W	920 BTU/hr, 265W
Operating Temperature	23 to 113°F (–5 to 45°C)			
Storage Temperature	–40 to 158°F (–40 to 70°C)			
Relative Humidity	0 to 85% noncondensing			

All contents are Copyright © 1992–2007 Cisco Systems, Inc. All rights reserved. This document is Cisco Public Information.

Product Specifications	Power Supply			
	C3K-PWR-1150WAC	C3K-PWR-750WAC	C3K-PWR-265WAC	C3K-PWR-265WDC
Operating, Noncondensing				
Relative Humidity Nonoperating, Noncondensing	0 to 95% noncondensing			
Altitude	10000 ft. (3000 meters), up to 45°C			
MTBF	Calculated MTBF must be greater than 300,000 using Telcordia SR-332, Method 1, Case 3. Demonstrated MTBF is 500,000 hr (with 90% confidence level).			
EMI and EMC Compliance	• FCC Part 15 (CFR 47) Class A • ICES-003 Class A • EN 55022 Class A • CISPR 22 Class A • AS/NZS 3548 Class A • VCCI Class A • EN 55024 • EN300 386 • EN 50082-1 • EN 61000-3-2 • EN 61000-3-3 • EN 61000-6-1			
Safety Compliance	• UL 60950-1 1st Edition • CAN/CSA-C22.2 No. 60950-1 1st Edition • EN 60950-1 1st Edition • IEC 60950-1 1st Edition			
LED Indicators	• “AC OK”: Input power to the power supply is OK. • “PS OK”: Output power from the power supply is OK.			

Table 7 lists the safety and compliance information for the Cisco Catalyst 3560-E Series.

Table 7. Safety and Compliance

Description	Specification
Safety Certifications	• UL60950-1 • C-UL to CAN/CSA 22.2 No.60950-1 • TUV/GS to EN 60950-1 • CB to IEC 60950-1 with all country deviations • AS/NZS 60950-1 • CE Marking • CCC for PS FRU • NOM (through partners and distributors) • GOST (Russia Safety Mark)
Electromagnetic Emissions Certifications	• FCC Part 15 Class A • EN 55022B Class A (CISPR22 Class A) • VCCI Class A • AS/NZS 3548 Class A or AS/NZS CISPR22 Class A • MIC • CE Marking • GOST (Russian mark—Post FCS thru partners) • CCC for PS FRU
Environmental	Reduction of Hazardous Substances (ROHS) 5
Noise Specifications	Office Product Spec: 48dBA at 30°C (refer to ISO 7779)
Telco	CLEI code
Warranty	Standard 90 Day Limited Hardware and Software Warranty

All contents are Copyright © 1992–2007 Cisco Systems, Inc. All rights reserved. This document is Cisco Public Information.

Hardware Warranty

Cisco Catalyst 3560-E Series Switches come with the Standard Cisco 90-day Limited Warranty for hardware and software, as described at: http://www.cisco.com/en/US/products/prod_warranties_item09186a00805f005b.html

Service and Support

Cisco Systems® and its partners can help you deploy a robust, dependable Cisco Desktop Switching solution by taking a lifecycle approach that addresses all aspects of deploying, operating, and optimizing a complex solution, including people, processes, and technology.

Whether you are migrating your existing Cisco Desktop Switching solution or deploying a new solution, this approach helps align business and technical goals throughout the solution lifecycle. Upgrading from one IOS feature set (IP Base or IP Services) to another (IP Services or Advanced IP Services) involves the software activation process described in this document. Customers must purchase a feature set-specific SMARTnet contract to ensure service coverage for newly activated Cisco IOS feature sets.

Cisco® and its partners are specialists in Cisco Desktop Switching products and technologies, business analysis, and project management. Cisco services are available through various service programs designed to help accelerate customer success throughout the network lifecycle. For more information about Cisco services for Cisco Desktop Switching, visit: http://www.cisco.com/en/US/products/svcs/ps3034/ps2827/serv_category_home.html or contact your local account representative.

Table 8. Cisco Services and Support Programs

Service and Support	Features	Benefits
• Cisco Total Implementation Solutions (TIS), available direct from Cisco • Cisco Packaged TIS, available through resellers • Cisco SMARTnet® and SMARTnet Onsite support, available direct from Cisco • Cisco Packaged SMARTnet support program, available through resellers • Cisco SMB Support Assistant	• Project management • Site survey, configuration, and deployment • Installation, text, and cutover • Training • Major moves, adds, and changes • Design review and product staging • Access to software updates 24 hours a day • Web access to technical repositories • Telephone support through the Cisco Technical Assistance Center (TAC) • Advance replacement of hardware parts	• Supplements existing staff • Helps ensure that functions meet needs • Mitigates risk • Helps enable proactive or expedited issue resolution • Lowers total cost of ownership by using Cisco expertise and knowledge • Helps minimize network downtime

All contents are Copyright © 1992–2007 Cisco Systems, Inc. All rights reserved. This document is Cisco Public Information.

Ordering Information

Table 9 lists ordering information for the Cisco Catalyst 3560-E Series. To place an order, visit the Cisco Ordering homepage at http://www.cisco.com/en/US/ordering/or13/or8/order_customer_help_how_to_order_listing.html

Table 9. Cisco Catalyst 3560-E Series Ordering Info

Catalyst 3560-E Series	
Product Number	**Product Description**
WS-C3560E-24TD-S	• 24 10/100/1000 ports + 2 X2-based 10 Gigabit Ethernet ports • 68-Gbps, wire rate backplane • Field-replaceable 265WAC power supply and fan tray • 1 rack unit (RU) fixed configuration multilayer switch • IPv6 • IP Base software feature set (IPB)
WS-C3560E-24TD-E	• 24 10/100/1000 ports + 2 X2-based 10 Gigabit Ethernet ports • 68-Gbps, wire rate backplane • Field-replaceable 265WAC power supply and fan tray • 1 rack unit (RU) fixed configuration multilayer switch • IPv6 • IP Services software feature set (IPS) • Provides full IPv4 dynamic routing
WS-C3560E-48TD-S	• 48 10/100/1000 ports + 2 X2-based 10 Gigabit Ethernet ports • 68-Gbps, wire rate backplane • Field-replaceable 265WAC power supply and fan tray • 1 rack unit (RU) fixed configuration multilayer switch • IPv6 • IP Base software feature set (IPB)
WS-C3560E-48TD-E	• 48 10/100/1000 ports + 2 X2-based 10 Gigabit Ethernet ports • 68-Gbps, wire rate backplane • Field-replaceable 265WAC power supply and fan tray • 1 rack unit (RU) fixed configuration multilayer switch • IPv6 • IP Services software feature set (IPS) • Provides full IPv4 dynamic routing
WS-C3560E-24PD-S	• 24 10/100/1000 PoE ports + 2 X2-based 10 Gigabit Ethernet ports • 68-Gbps, wire rate backplane • Field-replaceable 750WAC power supply and fan tray • 370W available for PoE, allowing full 15.4W to all ports • 1 rack unit (RU) fixed configuration multilayer switch • IPv6 • IP Base software feature set (IPB)
WS-C3560E-24PD-E	• 24 10/100/1000 PoE ports + 2 X2-based 10 Gigabit Ethernet ports • 68-Gbps, wire rate backplane • Field-replaceable 750WAC power supply and fan tray • 370W available for PoE, allowing full 15.4W to all ports • 1 rack unit (RU) fixed configuration multilayer switch • IPv6 • IP Services software feature set (IPS) • Provides full IPv4 dynamic routing

All contents are Copyright © 1992–2007 Cisco Systems, Inc. All rights reserved. This document is Cisco Public Information.

Catalyst 3560-E Series	
Product Number	**Product Description**
WS-C3560E-48PD-S	• 48 10/100/1000 PoE ports + 2 X2-based 10 Gigabit Ethernet ports • 68-Gbps, wire rate backplane • Field-replaceable 750WAC power supply and fan tray • 370W available for PoE allowing full 15.4W for up to 24 ports • 1 rack unit (RU) fixed configuration multilayer switch • IPv6 • IP Base software feature set (IPB)
WS-C3560E-48PD-E	• 48 10/100/1000 PoE ports + 2 X2-based 10 Gigabit Ethernet ports • 68-Gbps, wire rate backplane • Field-replaceable 750WAC power supply and fan tray • 370W available for PoE allowing full 15.4W for up to 24 ports • 1 rack unit (RU) fixed configuration multilayer switch • IPv6 • IP Services software feature set (IPS) • Provides full IPv4 dynamic routing
WS-C3560E-48PD-SF	• 48 10/100/1000 PoE ports + 2 X2-based 10 Gigabit Ethernet ports • 68-Gbps, wire rate backplane • Field-replaceable 1150WAC power supply and fan tray • 740W available for PoE, allowing full 15.4W to all 48 ports • 1 rack unit (RU) fixed configuration multilayer switch • IPv6 • IP Base software feature set (IPB)
WS-C3560E-48PD-EF	• 48 10/100/1000 PoE ports + 2 X2-based 10 Gigabit Ethernet ports • 68-Gbps, wire rate backplane • Field-replaceable 1150WAC power supply and fan tray • 740W available for PoE, allowing full 15.4W to all 48 ports • 1 rack unit (RU) fixed configuration multilayer switch • IPv6 • IP Base software feature set (IPB)
Catalyst 3560-E Series Product Activation Keys	
3560E-IPS-LIC-B=	IP Services for 3560-E, upgrade from IP Base Feature Set
3560E-AISK9-LIC-B=	Advanced IP Services for 3560-E, upgrade from IP Base
3560E-AISK9-LIC-S=	Advanced IP Services for 3560-E, upgrade from IP Services
Power Supplies and Fan Module for the Catalyst 3560-E Series	
C3K-PWR-265WAC=	Catalyst 3750-E/3560-E 265WAC power supply
C3K-PWR-265WDC=	Catalyst 3750-E/3560-E 265WDC power supply
C3K-PWR-750WAC=	Catalyst 3750-E/3560-E/RPS 2300 750WAC power supply
C3K-PWR-1150WAC=	Catalyst 3750-E/3560-E/RPS 2300 1150WAC power supply
C3K-BLWR-60CFM=	Fan Module for the Catalyst 3750-E/3560-E
Redundant Power System for the Catalyst 3560-E Series	
PWR-RPS2300	RPS 2300
ACC-RPS2300=	Spare Accessory Kit
BLNK-RPS2300=	Spare Bay Insert
CAB-RPS2300=	Spare Legacy RPS 2300 cable
CAB-RPS2300-E=	Spare RPS Cable for Cisco Redundant Power System 2300
PWR-RPS2300=	Spare RPS Cable RPS 2300 Cat 3750E/3560E Switches
BLWR-RPS2300=	Spare RPS 2300 Blower
C3K-PWR-750WAC=	Catalyst 3750-E/3560-E/RPS 2300 750WAC power supply
C3K-PWR-1150WAC=	Catalyst 3750-E/3560-E/RPS 2300 1150WAC power supply

All contents are Copyright © 1992–2007 Cisco Systems, Inc. All rights reserved. This document is Cisco Public Information.

Catalyst 3560-E Series	
Product Number	**Product Description**
TwinGig Converter Module for the Catalyst 3560-E Series	
CVR-X2-SFP	TwinGig Converter Module
CVR-X2-SFP=	TwinGig Converter Module
SFPs for the Catalyst 3560-E Series	
GLC-GE-100FX=	100FX SFP on GE SFP ports for DSBU switches
GLC-LH-SM=	GE SFP, LC connector LX/LH transceiver
GLC-SX-MM=	GE SFP, LC connector SX transceiver
GLC-T=	1000BASE-T SFP
GLC-ZX-SM=	1000BASE-ZX SFP
GLC-BX-D=	1000BASE-BX SFP, 1490NM
GLC-BX-U=	1000BASE-BX SFP, 1310NM
CWDM-SFP-1470=	CWDM 1470 NM SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1490=	CWDM 1490 NM SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1510=	CWDM 1510 NM SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1530=	CWDM 1530 NM SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1550=	CWDM 1550 NM SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1570=	CWDM 1570 NM SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1590=	CWDM 1590 NM SFP Gigabit Ethernet and 1G/2G FC
CWDM-SFP-1610=	CWDM 1610 NM SFP Gigabit Ethernet and 1G/2G FC
X2 for Catalyst 3560-E Series	
X2-10GB-ER=	10GBASE-ER X2 Module
X2-10GB-LR=	10GBASE-LR X2 Module
X2-10GB-SR=	10GBASE-SR X2 Module
LC to SC Cables for the Catalyst 3560-E Series	
CSS5-CABLX-LCSC=	CSS11500 10-Meter Fiber Single Mode LX LC-to-SC Connectors
CSS5-CABSX-LC=	CSS11500 10-Meter Fiber Multimode SX LC Connectors
CSS5-CABSX-LCSC=	CSS11500 10-Meter Fiber Multimode SX LC-to-SC Connectors
Power Cords for the Catalyst 3560-E Series	
CAB-AC	Power Cord, 110V
CAB-AC=	Power Cord, 110V
CAB-16AWG-AC	AC Power cord, 16AWG
CAB-16AWG-AC=	AC Power cord, 16AWG
CAB-ACA	Plug, Power Cord, Australian, 10A
CAB-ACA=	Plug, Power Cord, Australian, 10A
CAB-ACE	Power Cord Europe
CAB-ACE=	Power Cord Europe
CAB-ACI	Power Cord-Italian
CAB-ACI=	Power Cord-Italian
CAB-ACR	Power Cord Argentina
CAB-ACR=	Power Cord Argentina
CAB-ACS	Power Cord for Switzerland
CAB-ACS=	Power Cord for Switzerland
CAB-ACU	Power Cord UK
CAB-ACU=	Power Cord UK

All contents are Copyright © 1992–2007 Cisco Systems, Inc. All rights reserved. This document is Cisco Public Information.

Catalyst 3560-E Series	
Product Number	**Product Description**
CAB-JPN	Power Cord-Japan
CAB-JPN=	Power Cord-Japan
CAB-IND	Power Cord India
CAB-IND=	Power Cord India
CAB-SFP-50CM	Catalyst 3560-E SFP Interconnect Cable, 50cm
Spare Rack Mount Kits for the 3560-E Series	
RCKMNT-E-1RU=	Rack Mount Kit (1RU) for Catalyst 3750-E and 3560-E
Catalyst 3560-E Relicensing for Used Equipment	
LL-3560E-IPB=	IP Base SW Feature set license for Catalyst 3560-E Series
LL-3560E-IPS=	IP Services SW Feature set license for Catalyst 3560-E Series
LL-3560E-AIS=	Advanced IP Services SW Feature set license for Catalyst 3560-E
Software Application Support Plus Upgrades Technical Services Contract	
Product Part Number	**Service Contract Number**
Catalyst 3560-E AIS Upgrade from IP Base	3560E-AISK9-LIC-B
Catalyst 3560-E AIS Upgrade from IP Svcs	3560E-AISK9-LIC-S
Catalyst 3560-E IPS Upgrade from IP Base	3560E-IPS-LIC-B

For More Information

For more information about the Cisco Catalyst 3560-E Series Switches, visit http://www.cisco.com/en/US/products/hw/switches/index.html or contact your local account representative.

Americas Headquarters
Cisco Systems, Inc.
170 West Tasman Drive
San Jose, CA 95134-1706
USA
www.cisco.com
Tel: 408 526-4000
800 553-NETS (6387)
Fax: 408 527-0883

Asia Pacific Headquarters
Cisco Systems, Inc.
168 Robinson Road
#28-01 Capital Tower
Singapore 068912
www.cisco.com
Tel: +65 6317 7777
Fax: +65 6317 7799

Europe Headquarters
Cisco Systems International BV
Haarlerbergpark
Haarlerbergweg 13-19
1101 CH Amsterdam
The Netherlands
www-europe.cisco.com
Tel: +31 0 800 020 0791
Fax: +31 0 20 357 1100

Cisco has more than 200 offices worldwide. Addresses, phone numbers, and fax numbers are listed on the Cisco Website at www.cisco.com/go/offices.

©2007 Cisco Systems, Inc. All rights reserved. CCVP, the Cisco logo, and the Cisco Square Bridge logo are trademarks of Cisco Systems, Inc.; Changing the Way We Work, Live, Play, and Learn is a service mark of Cisco Systems, Inc.; and Access Registrar, Aironet, BPX, Catalyst, CCDA, CCDP, CCIE, CCIP, CCNA, CCNP, CCSP, Cisco, the Cisco Certified Internetwork Expert logo, Cisco IOS, Cisco Press, Cisco Systems, Cisco Systems Capital, the Cisco Systems logo, Cisco Unity, Enterprise/Solver, EtherChannel, EtherFast, EtherSwitch, Fast Step, Follow Me Browsing, FormShare, GigaDrive, GigaStack, HomeLink, Internet Quotient, IOS, iPhone, IP/TV, iQ Expertise, the iQ logo, iQ Net Readiness Scorecard, iQuick Study, LightStream, Linksys, MeetingPlace, MGX, Networking Academy, Network Registrar, Packet, PIX, ProConnect, RateMUX, ScriptShare, SlideCast, SMARTnet, StackWise, The Fastest Way to Increase Your Internet Quotient, and TransPath are registered trademarks of Cisco Systems, Inc. and/or its affiliates in the United States and certain other countries.

All other trademarks mentioned in this document or Website are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (0612R)

Printed in USA

C78-377226-01 2/07