Cisco Catalyst 3850 Series Switches

The Cisco® Catalyst® 3850 Series is the next generation of enterprise-class stackable access-layer switches that provide full convergence between wired and wireless on a single platform. Cisco's new Unified Access Data Plane (UADP) application-specific integrated circuit (ASIC) powers the switch and enables uniform wired plus wireless policy enforcement, application visibility, and application optimization. This convergence is built on the resilience of the new and improved Cisco StackWise-480. The Cisco Catalyst 3850 Series Switches support full IEEE 802.3at Power over Ethernet Plus (PoE+), Cisco Universal Power over Ethernet (UPOE), modular and field-replaceable network modules, redundant fans, and power supplies.

Product Overview

- Integrated wireless controller capability with:
    - Up to 40G of wireless capacity per switch (48 port models)
    - Up to 50 access points (APs) and 2000 wireless clients support on each switching entity (switch or stack)
- 24 and 48 10/100/1000 data and Power over Ethernet Plus (PoE+) models with Energy Efficient Ethernet (EEE)
    - Cisco StackWise®-480 technology provides scalability and resiliency with 480 Gbps of stack throughput
    - Cisco StackPower™ technology provides power stacking among stack members for power redundancy
    - Three optional uplink modules with 4 x Gigabit Ethernet, 2 x 10 Gigabit Ethernet or 4 x 10 Gigabit Ethernet ports
    - Dual redundant, modular power supplies and three modular fans providing redundancy
    - Full IEEE 802.3at (PoE+) with 30W power on all ports in 1 rack unit (RU) form factor
    - Cisco Universal Power over Ethernet (UPOE) which delivers up to 60W per port over standard cabling infrastructure
- Software support for IPv4 and IPv6 routing, Multicast routing, modular quality of service (QoS), Flexible NetFlow (FnF) Version 9, and enhanced security features
- Single Universal IOS image across all license levels, providing an easy upgrade path for software features
- Enhanced limited lifetime warranty (E-LLW) with next business day (NBD) advance hardware replacement and 90-day access to Cisco Technical Assistance Center (TAC) support

The switch is also capable of automatically allocating equal bandwidth among the connected users within a given SSID. This makes sure that all users within a given SSID get a fair share of the available bandwidth while being connected to the network. The UADP ASIC enables the hierarchical bandwidth management and fair sharing of bandwidth, thereby providing hardware-based QoS for optimized performance at line-rate traffic.

In addition to these capabilities, the switch is able to do class of service (CoS) or differentiated services code point (DSCP) based queuing, policing, shaping, and marking of wired plus wireless traffic. This enables users to create common policies that can be used across wired plus wireless traffic. The 3850 also supports downloadable policy names from the Cisco Identity Services Engine (ISE) when a user successfully authenticates to the network using the ISE.

Security

The Cisco Catalyst 3850 provides a rich set of security features for wired plus wireless users. Features such as IEEE 802.1x, Dynamic Host Configuration Protocol (DHCP) snooping, IP Source Guard and control plane protection, wireless intrusion prevention systems (WIPSs), and so on enable protection against unauthorized users and attackers. With a variety of wired plus wireless users connecting to the network, the switch supports session-aware networking, in which each device connected to the network is identified as one session, and unique access control lists (ACLs) and/or QoS policies can be defined and applied using the ISE for each of these sessions, providing better control on the devices connecting to the network.

Resiliency

Cisco StackWise-480 Technology

Cisco StackWise-480 technology is built on the highly successful industry-leading StackWise® technology, which is a premium stacking architecture. StackWise-480 has a stack bandwidth of 480 Gbps. StackWise-480 uses Cisco IOS Software SSO for providing resiliency within the stack. The stack behaves as a single switching unit that is managed by an "active" switch elected by the member switches. The active switch automatically elects a standby switch within the stack. The active switch creates and updates all the switching/routing/wireless information and constantly synchronizes that information with the standby switch. If the active switch fails, the standby switch assumes the role of the active switch and continues to the keep the stack operational. Access points continue to remain connected during an active-to-standby switchover. A working stack can accept new members or delete old ones without service interruption. StackWise-480 creates a highly resilient single unified system of up to four switches, providing simplified management using a single IP address, single Telnet session, single CLI, auto-version checking, auto-upgrading, auto-configuration, and more. StackWise-480 also enables local switching in Cisco Catalyst 3850 Series Switches.

Cisco StackPower Technology

The Cisco Catalyst 3850 Series uses the Cisco StackPower technology present on the Cisco Catalyst 3850 Series. StackPower is an innovative power interconnect system that allows the power supplies in a stack to be shared as a common resource among all the switches. Cisco StackPower unifies the individual power supplies installed in the switches and creates a pool of power, directing that power where it is needed. Up to four switches can be configured in a StackPower stack with the special connector at the back of the switch using the StackPower cable, which is different than the StackWise-480 cables. (See Figure 4.)

Figure 2.   StackWise-480 and StackPower Connectors

StackPower can be deployed in either power-sharing mode or redundancy mode. In power-sharing mode, the power of all the power supplies in the stack is aggregated and distributed among the switches in the stack. In redundant mode, when the total power budget of the stack is calculated, the wattage of the largest power supply is not included. That power is held in reserve and used to maintain power to switches and attached devices when one power supply fails, enabling the network to operate without interruption. Following the failure of one power supply, the StackPower mode becomes power sharing.

StackPower allows customers to simply add one extra power supply in any switch of the stack and either provide power redundancy for any of the stack members or simply add more power to the shared pool. StackPower eliminates the need for an external redundant power system or installation of dual power supplies in all the stack members. StackPower is available in LAN Base license level (or higher). For LAN Base, cables need to be purchased separately.

Foundation for Open Network Environment

The heart of the Cisco Catalyst 3850 is the UADP ASIC with programmability for future features and intelligence with investment protection. The new ASIC provides the foundation for converged APIs across wired and wireless, Cisco Open Network Environment, software-defined networking (SDN) readiness and OnePK SDK through software updates over the product lifetime.

Product Number	Product Description
Cisco Catalyst 3850 Bundles	
WS-C3850-24PW-S	Cisco Catalyst 3850 24-Port PoE IP Base with 5 AP license
WS-C3850-48PW-S	Cisco Catalyst 3850 48-Port PoE IP Base with 5 AP license
Network Modules for the Cisco Catalyst 3850 Series	
C3850-NM-4-1G=	4 x 1GE Network Module spare
C3850-NM-2-10G=	4 x 1GE/2 x 10GE Network Module spare
C3850-NM-BLANK=	Network module blank spare
C3850-NM-4-10G=	4 x 1GE/4 x 10GE Network Module spare
Software Licenses	
C3850-24-L-S	Cisco Catalyst 3850 24 port Switch LAN Base to IP Base Paper License
C3850-48-L-S	Cisco Catalyst 3850 48 port Switch LAN Base to IP Base Paper License
C3850-24-L-E	Cisco Catalyst 3850 24 port LAN Base to IP Services Paper License
C3850-48-L-E	Cisco Catalyst 3850 48 port LAN Base to IP Services Paper License
C3850-24-S-E	Cisco Catalyst 3850 24 port IP Base to IP Services Paper License
C3850-48-S-E	Cisco Catalyst 3850 48 port IP Base to IP Services Paper License
L-C3850-24-L-S	Cisco Catalyst 3850 24 port LAN Base to IP Base E-License
L-C3850-48-L-S	Cisco Catalyst 3850 48 port LAN Base to IP Base E-License
L-C3850-24-L-E	Cisco Catalyst 3850 24 port LAN Base to IP Services E-License
L-C3850-48-L-E	Cisco Catalyst 3850 48 port LAN Base to IP Services E-License
L-C3850-24-S-E	Cisco Catalyst 3850 24 port IP Base to IP Services E-License
L-C3850-48-S-E	Cisco Catalyst 3850 48 port IP Base to IP Services E-License
AP Licenses	
L-LIC-CT3850-UPG	Primary upgrade license SKU for Cisco 3850 Wireless Controller (e-delivery)
L-LIC-CTIOS-1A	1 AP Adder License for the IOS based Wireless Controller (e-delivery)
LIC-CT3850-UPG	Primary upgrade license SKU for Cisco 3850 Wireless Controller (paper license)
LIC-CTIOS-1A	1 AP Adder License for the IOS based Wireless Controller (paper license)
Power Supplies and Fan for the Cisco Catalyst 3850 Series	
PWR-C1-350WAC=	350W AC power supply spare
PWR-C1-715WAC=	715W AC power supply spare
PWR-C1-1100WAC=	1100W AC power supply spare
PWR-C1-440WDC=	440W DC power supply spare
PWR-C1-BLANK=	Power supply blank spare
C3850-FAN-T1=	Fan module spare
Stackwise-480 and StackPower Cables for the Cisco Catalyst 3850 Series	
STACK-T1-50CM=	Cisco Stackwise-480 50 cm stacking cable spare
STACK-T1-1M=	Cisco Stackwise-480 1 m stacking cable spare
STACK-T1-3M=	Cisco Stackwise-480 3 m stacking cable spare
CAB-SPWR-30CM=	Cisco Catalyst 3850 StackPower cable 30 cm spare
CAB-SPWR-150CM=	Cisco Catalyst 3850 StackPower cable 150 cm spare
Spare Power Cords for the Cisco Catalyst 3850 Series	
CAB-TA-NA=	AC Power Cord for Cisco Catalyst 3850 (North America)
CAB-TA-AP=	AC Power Cord for Cisco Catalyst 3850 (Australia)
CAB-TA-AR=	AC Power Cord for Cisco Catalyst 3850 (Argentina)
CAB-TA-SW=	AC Power Cord for Cisco Catalyst 3850 (Switzerland)