



# Why Migrate from Fixed Switches to Cisco Catalyst 4500 E-Series Switches

## Why Migrate?

At inception, the Layer 2 fixed-configuration Cisco® Catalyst® 1900, 2900 XL, and 3500 XL Series Switches were designed for low-density LAN access networks. But much has changed since their deployment in the mid to late 1990s. With all three at end of sale, it is time to consider a resilient multilayer platform that supports today's security, quality-of-service (QoS), and Power over Ethernet (PoE) requirements with Gigabit Ethernet and 10 Gigabit Ethernet uplinks. The Cisco Catalyst 4500 E-Series Switch is ideally suited for voice, video, and data networks.

## Entry-Level Cisco Catalyst 4500 E-Series

For sites that require 60 to 116 ports, the Cisco Catalyst 4503-E Switch with Cisco Catalyst 4500 Series Supervisor Engine II-Plus-TS provides a compact and resilient solution. This powerful platform can provide L2/3/4 switching with L3 QoS and security.

Figure 1. Catalyst 4503-E Switch



## Cisco Catalyst 4500 E-Series Advantages

- **High performance:** Predictable high performance (IPv4/IPv6) with concurrently enabled services (QoS, Security, Multicast).

- **Increased control and flexibility:** Optimize performance of voice, video, and data application over a unified network.
- **High availability and security:** Minimize planned and unplanned downtime delivering business-critical applications securely and uninterrupted.
- **Scalable services capacity:** Ample resources to enable new services today and in the future.
- **IPv4 to IPv6 migration:** Optimized to enable IPv4 and IPv6 simultaneously, providing for a smooth migration.
- **Superior investment protection:** Maximum backward and forward compatibility. Mix and match new and classic line cards without performance degradation.

## Investment Protection

Critical components of the Cisco Catalyst 4500 E-Series Switch are upgradable and field replaceable, including line cards, supervisor engines, power supplies, and fans. In addition, line cards shipped in 1999 as Layer 2 only are fully compatible with the Cisco Catalyst 4500 E-Series today and are fully upgradable to Layer 3 switching and IPv6. Future generation supervisor engines will also be backward compatible with classic and E-Series line cards, providing superior investment protection and a lower cost of ownership versus stackable switches.

## Cisco Catalyst 4500 E-Series Supervisor Engine 6-E

This supervisor engine features the new CenterFlex technology and 320 Gigabits per second aggregate performance. It includes larger Ternary Content Addressable Memory (TCAM) resources for high feature capacity as well as support for IPv6 in hardware and enhanced QoS.

Figure 2. Supervisor Engine 6-E



## High Availability

The most complex components of the Cisco Catalyst 4500 E-Series support redundancy. This includes 1+1 supervisor engines, power supplies, and fans. HA is also supported in software, including supervisor Non-Stop Forwarding (NSF) with Stateful Switch-Over (SSO), which lets the switch pass traffic during a failover, helping ensure that phone calls do not drop. In-Service Software Upgrade (ISSU) allows upgrade or downgrade of complete Cisco IOS® Software images with minimal impact.

## Network Security

The Cisco Catalyst 4500 E-Series provides advanced detection and mitigation from Layer 2 and Layer 3 network attacks with no degradation in switching performance.

- **Independent security resources:** The Cisco Catalyst 4500 offers scalable independent TCAM resources to process security features, separate from L2/L3 forwarding decisions, which protects against denial-of-service attacks.
- **802.1x:** Used to identify, authenticate, and authorize appropriate network access. The Cisco Catalyst 4500 Series also supports extensions for dynamic VLAN assignment.



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- **Port Security, Dynamic ARP Inspection, DHCP Snooping, and IP Source Guard:** These features help prevent denial-of-service and other insidious unauthorized network use such as man-in-the-middle attacks, which are used to steal business and employee data without detection.
- **Network Access Control (NAC):** Used to detect the security posture of an attached device before access is granted to the network.
- **PAACL, RAACL, VAACL:** Used for access control on L2/L3 ports and VLANs.

## Convergence

A converged voice, video, and data network plays a critical part in helping an organization gain a competitive advantage through increased productivity, organizational flexibility, and reduced operational costs.

- QoS (shaping, sharing, Layer 2–4 classification per port, ingress/egress policing, guaranteed bandwidth, dynamic buffer limiting [DBL], 8-TX queues per port, strict priority queue on every port): These combined QoS features help ensure critical traffic can flow during times of congestion.
- 15.4W per port on every port for Power over Ethernet.

## Manageability

The Cisco Catalyst 4500 E-Series makes provisioning and monitoring simple through a variety of tools.

- **Smartports:** Provide prepackaged configurations in a single command.
- **Auto QoS:** Automatically applies appropriate port settings when IP phones are attached.
- **NetFlow (for classic supervisor engines):** Can examine traffic patterns for use in network planning and anomaly detection.

## No More Forklift Upgrades

Supervisor upgrades provide immediate enhancements to all ports in the system. Linecards receive all their feature capabilities directly from the supervisor engine. Linecard upgrades are done in service, so there is no downtime to add new ports or change linecard types.