

Sustainability: Role of the Network

In today's world, each organization is challenged to succeed equally on two main fronts: business results and environmental responsibility. As a resource that touches everything, the network plays a vital role in sustaining both the business and the environment. And the greater the role you assign the network, the greater the returns on both fronts.

Cisco Catalyst 4500E and Sustainability

The Cisco® Catalyst® 4500E Supervisor Engines and line cards are designed to last. What's more, Classic Series line cards introduced as early as 1999 can be mixed and matched in the same chassis with new E-Series line cards without any performance penalty. The Catalyst 4500E also provides platform extensibility pay-as-you-grow benefits. Being able to reuse modular components and add new supervisor engines, line cards, or even optical interfaces without a costly chassis upgrade helps manage maintenance costs. Figure 1 captures the extended lifecycle strengths of the Cisco Catalyst 4500E platform.

Figure 1. Extended Lifecycle of the Cisco Catalyst 4500E Platform

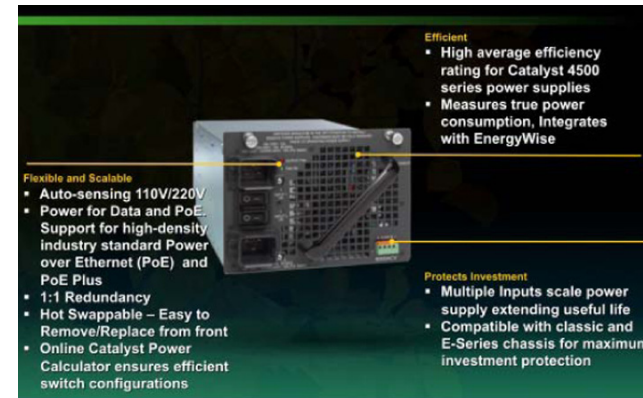


Energy Savings and the Cisco Catalyst 4500E

Component upgrades deliver significant power and performance gains. Supervisor engines show power improvements. For example, when comparing the legacy Supervisor II+ with the Supervisor 6-E, power consumption shows a 70 percent decline per Gbps in performance.

The 6000W power supply for the Cisco Catalyst 4500E demonstrates the flexibility and scalability of the new hardware being introduced today. It is capable of autosensing 110V or 220V, hot swappable, and easy to remove and replace. It has a high energy efficiency rating, and can also measure the true power consumption of the systems. Multiple power inputs scale the power capacity, and extend the lifetime of the power supply. The 6000W power supply is supported in all modular chassis for maximum investment protection.

Figure 2. Cisco Catalyst 4500E Series 6000 Watt PoE Power Supply Capabilities



Intelligent Power over Ethernet Delivery and Control

Power over Ethernet (PoE) monitoring on the Cisco Catalyst 4500E allows the user to display the true power consumption of inline powered devices attached to the switch.

PoE policing protects a switch from a faulty inline powered device that might draw more power than it was designed for. Cisco Discovery Protocol and Link Layer Discovery Protocol (LLDP) can be used to negotiate power per port.

Idle Slot Power Optimization on the Cisco Catalyst 4500E

Application-specific integrated circuits (ASICs) are one of the biggest power consumers on the Cisco Catalyst 4500E chassis. In Cisco IOS® Software Release 12.2(50)SG onward, there is an automatic optimization that enables a Cisco Catalyst 4500E switches to turn off power to unused slots. It is not triggered by the command line interface or visible as a user feature. It has no effect on switching behavior.

Cisco EnergyWise and the Cisco Catalyst 4500E

EnergyWise is an energy management solution supported on Cisco Catalyst 4500E switches. EnergyWise monitors and controls PoE devices (IP phones, WLAN access points), offering solid incremental reductions in network energy use. Further expansion of EnergyWise extends control to network-connected devices (PCs, peripherals), devices that account for 50 percent of IT-related energy demands, according to The Climate Group's 2008 SMART 2020 Report.

EnergyWise accomplishes three primary functions:

- **Measurement:** The switch receives power utilization measurements from PoE and Cisco devices through CDP and LLDP. For other devices, the switch leverages third party and middleware solutions.
- **Reporting:** Reports and analyzes the power information, correlating it to cost savings.
- **Regulate:** Using Cisco EnergyWise, the switch can correlate power utilization with utilization policies, and automatically enable, disable, or reduce allocated power to certain devices (for example, moving branch office phones to sleep mode during off-hours).

Figure 3. Primary Functions of Cisco EnergyWise: Measure, Report, and Regulate



For complete details on EnergyWise, visit <http://www.cisco.com/go/energywise>.

Direction for the Future

The direction for the future includes more intelligence in switches to adjust power levels based on actual usage. In the long term, Cisco envisions a sleep mode for the switch similar to such modes on laptops. For connected devices, including PoE devices, areas of investment are smart power policies based on device usage and a central “power manager” to pervasively manage power on the campus.

Other Efforts to Reduce Carbon Footprint

The commitment to sustainability extends to other phases of the product. Materials and packaging are selected to minimize environmental effect. Cisco helps customers maximize the installed life of products and offers trade-in programs to encourage customers to responsibly manage the end of life of products.

For More Information

For more information about Cisco Catalyst 4500E Series Switches, visit <http://www.cisco.com/en/US/products/hw/switches/ps4324>.