



Why Should I Care About Technology in Higher Education?

Education is changing. A new generation of students has emerged, students who have grown up with the Internet and technology. These students have different ways of interacting and learning, as well as different expectations about the communication facilities an educational institution will provide.

At the same time, budget concerns are promoting network administrators to find innovative ways to provide services on the campus. Some of these services include:

- **Next-generation learning:** The traditional halls of learning have expanded. Education can now take place in the dorm room, the cafeteria, or anywhere else and on any device. The requirement is for widely available, yet secure, mobility services and a media-rich, engaging learning environment rooted in video and collaboration.
- **Safety and security:** Providing security, whether physical or technological, depends on quality communications and speedy response time. This is facilitated by a network that can provide important capabilities such as unified communications, integrated security, identity and location services, and wireless IP surveillance
- **Administrative efficiency:** Network administrators are always looking for methods to increase energy savings, lower operating expense, and provide more efficient building operations. The network must enable the benefits of a connected education solution, including simplified operations and energy management.

What Solutions Need to Be Deployed?

Cisco can help network administrators in providing these vital services, with solutions that include video, mobility, and collaboration, as well as integrated security, management, and connected education.

Underlying and enabling these sophisticated network services is the network infrastructure. Typically, this support is provided by Cisco® Catalyst® switches.

The Cisco Catalyst 6500, 4500, 3750-E, and 3560-E Series Switches are important components of Cisco solutions for higher education. Table 1 illustrates some of the capabilities of these switches that enable connected education solutions.

What Are the Benefits of a Cisco Catalyst Switching infrastructure in a Higher Education Network?

Higher education institutions should consider the deployment of a Cisco network because:

- Cisco Catalyst switches provide important infrastructure services that simplify the deployment and improve the experience of video, collaboration, and unified communication and mobility technologies for next-generation learning.
- Cisco Catalyst switches contain integrated security technologies that protect the education network itself, as well as providing capabilities that enable physical security across the campus.
- In addition to integrated troubleshooting and management, Cisco Catalyst switches support technologies such as Cisco EnergyWise, which can help lower energy costs.

Cisco and Education Networks

Cisco has been one of the leaders in the networking industry in providing customers with design and deployment guidance for higher education, including:

- Lab- and field-validated design guidance
- Scalable platform choices
- Integrated or appliances

Cisco and its partners can help customers deploy a robust, dependable solution by taking a lifecycle approach that addresses all aspects of deployment, operations, and optimization.

Additional Resources

Cisco Catalyst Switching:
<http://www.cisco.com/go/switching>

Cisco Solutions for Education:
<http://www.cisco.com/web/strategy/education/index.html>

Cisco Design Guides for Video:
http://www.cisco.com/en/US/netsol/ns819/networking_solutions_program_home.html



Cisco Catalyst Switching in Higher Education

The Infrastructure for the Connected Education Campus

Table 1: Relevance of Cisco Catalyst Switching to Connected Education

Connected Education Services	Cisco Solutions	Related Infrastructure Capabilities on Cisco Catalyst Switches
<p>Next-Generation Learning</p>	<ul style="list-style-type: none"> • Unified Communications: integrated voice, video, and data for both next-generation learning and security services. • Wireless Mobility: proven mobility solutions that keep the campus secure, enhance learning, facilitate collaboration, and deliver cost savings to educational institutions. • Digital Media Systems: centrally managed content for both administrative and security information on digital signage around campus. • Cisco TelePresence™: high-resolution video conferencing for guest lectures, interinstitution projects, and recruiting. • Cisco WebEx™ Connect: centralized workspace including shared calendars, contacts, and links to let study groups, online clubs, and other virtual communities store and access files. 	<p>Optimized Collaboration</p> <ul style="list-style-type: none"> • Industry-leading Cisco quality-of-service (QoS) capabilities help ensure deterministic behavior and prioritization of video and interactive traffic. • Comprehensive multicast capabilities that allow the secure and efficient distribution of video and other streams to multiple endpoints on campus. <p>High Availability for Video/Collaboration</p> <ul style="list-style-type: none"> • Cisco In-Service Software Upgrade and Cisco Nonstop Forwarding with Stateful Switchover on the Cisco modular switches can provide network recovery in the subsecond range to maintain the integrity of video and security systems. <p>Programmable Intelligent Services Accelerator (PISA – Cisco Catalyst 6500)</p> <ul style="list-style-type: none"> • Intelligent packet inspection and application recognition to help prioritize communications for campus systems. <p>Wireless Services Module (Cisco Catalyst 6500)</p> <ul style="list-style-type: none"> • Centralized security policies; intrusion prevention capabilities; and fast, secure user session transfer between access points as users move about the campus.
<p>Campus Safety and Security</p>	<ul style="list-style-type: none"> • Identity-Based Network Security: protected wired and wireless networks and endpoints, with Cisco Network Security embedded in all solutions. • Wireless IP Surveillance: integrated video surveillance, access control, and notification and response to protect people and assets. 	<p>Integrated Network Security</p> <ul style="list-style-type: none"> • Protection for your education network from common intrusion or denial-of-service attacks with the Cisco Catalyst Integrated Security Toolkit. • Port-level identity security, restricting access to the campus to authorized and authenticated users. <p>Firewall Services Module (Cisco Catalyst 6500)</p> <ul style="list-style-type: none"> • Integrated virtual firewall services to restrict access to the campus network and protect against common attacks. <p>Flexible Power Distribution</p> <ul style="list-style-type: none"> • Enhanced Power over Ethernet (ePoE) capabilities to provide inline Ethernet power to the newest class of IP video surveillance cameras (for higher resolution, plus pan/tilt/zoom capabilities) and wireless access points (for higher bandwidth and broader area coverage). Eliminates the need for costly rewiring and provides centralized power management.
<p>Administrative Efficiency</p>	<ul style="list-style-type: none"> • Integrated Management: simplified operations and troubleshooting to maintain network availability and lower operational costs. • Connected Education Solutions: converged, multiservice IP network to support building control, emergency systems, and communications across campus. 	<p>Device Management</p> <ul style="list-style-type: none"> • Integrated monitoring, management, and troubleshooting tools help minimize operation costs. • Embedded Event Manager to automate repetitive tasks and improve incident response time. <p>Energy Management</p> <ul style="list-style-type: none"> • Cisco EnergyWise permits policy-based control of PoE devices and will be extended to control building management systems such as elevators, lighting, and HVAC. Cisco EnergyWise can potentially provide significant energy cost savings in building operations.