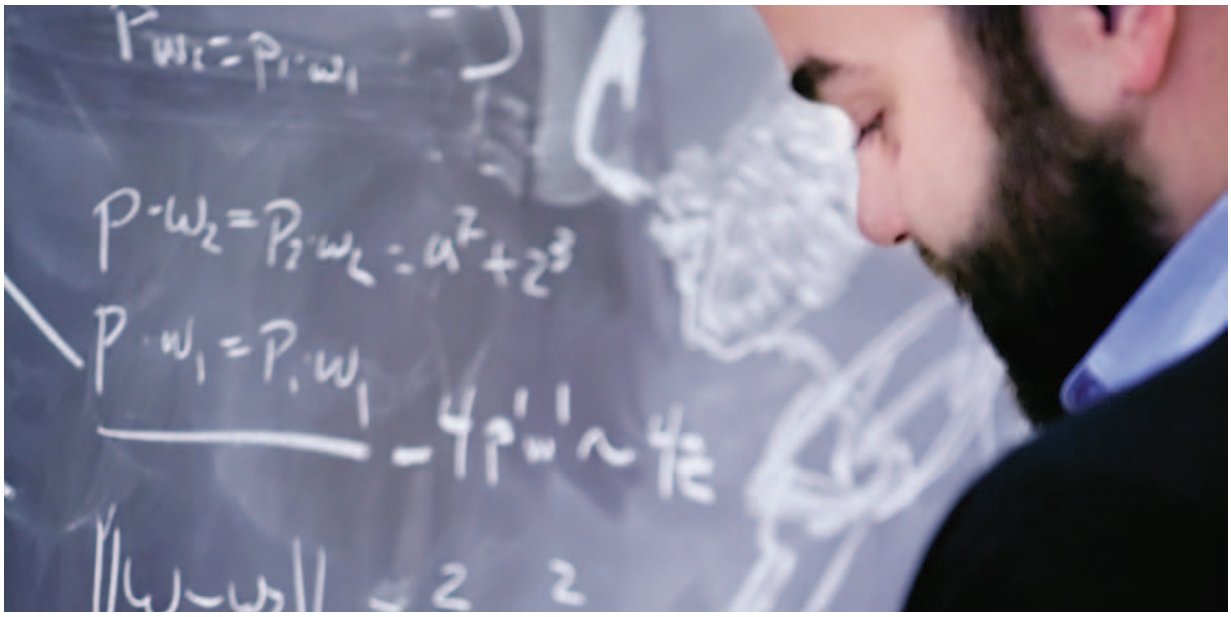
SECURE, AFFORDABLE, AND EASY-TO-ADMINISTER HIGHER EDUCATION NETWORKS

Solution brief



Opportunities and challenges for innovative higher education technology

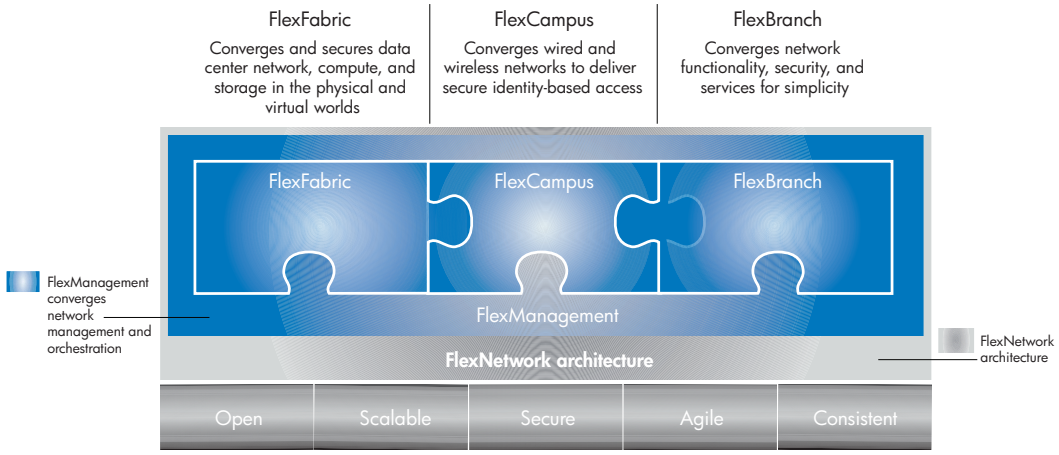
Academic institutions must achieve a difficult balance between offering open, accessible networks that can support real-time, resource-intensive, and collaborative applications and jeopardizing student safety. The task is especially difficult because most colleges and universities have a combination of legacy and new applications running on disparate proprietary networks, which creates problems for interoperability, visibility, and security.

Such chaos can make it difficult for IT teams to support exciting new opportunities such as interactive courses, distance learning, media-rich virtual learning environments, and global student bodies. The disjointed nature of legacy enterprise networks also inhibits cost-saving measures such as automating financial aid and admissions processes.

Yet, as higher education institutions around the world push toward the everyday use of sophisticated technologies that will help them attract top-notch students, faculty, and funding, they are rethinking their legacy—and, in many cases, proprietary—infrastructure approaches. They are moving toward open, standards-based architectures that enhance agility, security, performance, reliability, and affordability—without sacrificing interoperability. They are seeking a secure, end-to-end enterprise architecture that can speed application deployment by eliminating technology silos, manual processes, and disparate management systems.

This new network architecture must support unified wired and wireless communications; real-time collaboration; automated self-service; and on-demand Internet access to student coursework, faculty grading systems, financial aid applications, and research projects. At the same time, it must reduce infrastructure complexity and cost, from the network core to the edge; integrate network and systems management; and automate data privacy and security across individual departments and multiple campuses.

The HP FlexNetwork architecture



"We cost-effectively built a high-speed network that addresses today's requirements and will enable us to address future demands for increased bandwidth, and we developed a scalable network that will support the long-term growth of the university."
Charlie Ulezelski, Director of IT Operations, Jacksonville University

The HP solution

To be able to rapidly provision and manage infrastructure and new applications in a highly secure and affordable manner may seem like a pipe dream, but it's not.

While some vendors lock higher education institutions into costly and complex proprietary networks, HP provides a modular strategy, the FlexNetwork architecture, which enables IT managers to expand their networking environment as needed and economically foster innovation.

With the HP FlexNetwork architecture, educational institutions can segment their networks into three interrelated modular building blocks: HP FlexFabric, HP FlexCampus, and HP FlexBranch. FlexFabric converges and secures the data center network with compute and storage; FlexCampus converges wired and wireless networks to deliver media-enhanced, secure, and identity-based access; and FlexBranch converges network functionality and services, delivering an enhanced network learning experience for distance learning and satellite campuses.

With the HP FlexNetwork architecture, colleges and universities can roll out new learning and collaboration applications and network services without jeopardizing compliance, performance, and security. Networking components are designed to ease management, eliminate bottlenecks, and interoperate with third-party solutions. By streamlining network designs and centralizing management, colleges and universities can lower their total cost of ownership for IT while improving operational agility with secure and high-performance connectivity, smooth scalability, resource-stretching provisioning, and reduced energy consumption.

The HP FlexNetwork architecture enables higher education institutions to design and build best-in-class networks that align with their academic and administrative objectives—even as priorities change. The HP FlexNetwork architecture is designed to scale on three dimensions—functionality, connectivity, and capacity—so that institutions can adapt their network services easily as their academic and administrative needs change. FlexNetwork is also secure, providing a consistent approach to securing networks across the data center, campus, and branch office.

The FlexNetwork architecture also delivers agility. Institutions can simplify their data center and campus networks from three-tier legacy architectures to enhanced, one- and two-tier architectures, which increases performance, scale, and functionality while reducing latency and cost. The FlexNetwork architecture also delivers a consistent operating experience, so IT departments can put an end to swivel-chair management.

With the HP FlexNetwork architecture as a cornerstone, the HP Converged Infrastructure delivers an architectural blueprint that integrates servers, storage, and networking, eliminating technology silos and freeing up resources to focus more on business innovation. Built on open, standards-based technologies, HP solutions integrate with existing infrastructure to make the most of current investments. Higher education institutions can deploy HP products in a "pay-as-you-grow," intelligent, and cost-aware manner that helps enable future investments.

Converged network and compute infrastructure

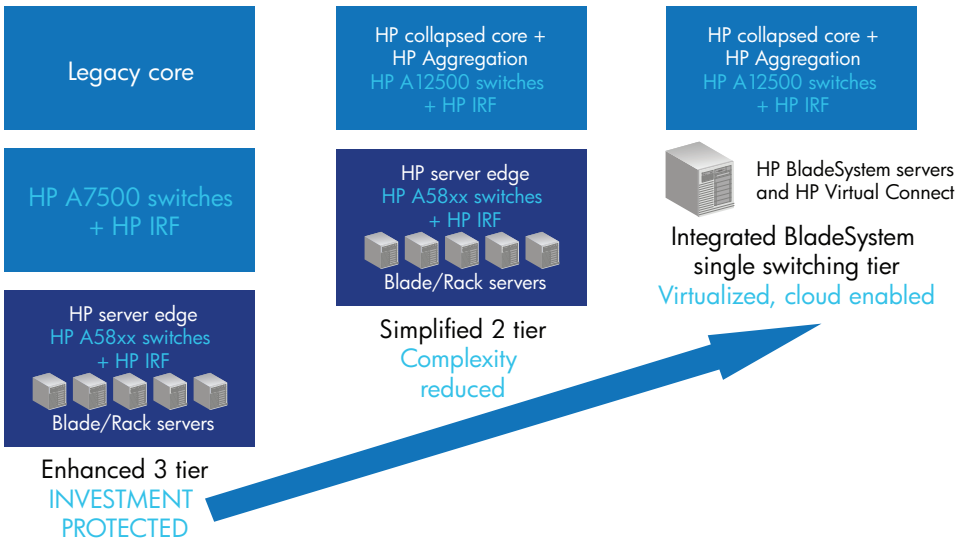
HP FlexFabric, a building block of the FlexNetwork architecture, allows educational institutions to converge and secure their data center network with compute and storage, and enables the HP Converged Infrastructure with shared pools of interoperable resources.

FlexFabric's advanced architecture delivers enhanced one- and two-tier networks—as well as integration with legacy three-tier networks—for superior investment protection. This results in simplified and scalable switching, network security, and network services. With HP mission-critical networks, applications such as YouTube and media-rich collaboration tools have the resources they need, and deploying new applications won't negatively impact existing applications such as emergency notification systems. Should a new program be brought online, it won't disrupt a real-time learning tool used during lectures. Further, a flexible network creates a path forward to public and private cloud services.

HP Intelligent Resilient Framework (IRF) technology enables flatter network designs and easier-to-manage infrastructure. It helps larger higher education institutions create a virtual switching fabric that delivers geographic independence, distributed high availability, resiliency, and millisecond reconvergence across Layer 2 and Layer 3 protocols. With IRF-based solutions, IT teams can pool switching resources to create a lower-cost, stable, and fault-tolerant environment that is simpler to provision and maintain. Within this network environment, HP Virtual Connect Flex-10 technology at the server edge can transform a single port into four connections that can easily and flexibly connect more systems to the network, accommodating the needs of densely populated data centers.

HP networking solutions are designed to avoid downtime, keeping members of the academic ecosystem—including faculty, students, researchers, and administrators—connected to mission-critical applications and each other. HP solutions are ideal for higher education institutions that must reliably and consistently support existing applications, as well as deploy innovative new ones, including mobile applications.

FlexFabric switching architecture



Flexible, secure networking

Higher education as a whole is under tremendous pressure to expand the amount and types of services it offers, and institutions must simultaneously increase data protection and decrease costs. HP offers colleges and universities a means of achieving these goals by providing an alternative to low-performance, multi-tier network designs that are built on legacy platforms and hampered by high cost and complexity.

With the HP FlexNetwork architecture, educational institutions can create campus and branch networks as functional building blocks that will meet the specific requirements of their applications and services while integrating seamlessly with the overall network. This allows educational institutions to create best-in-class solutions for each network segment, rather than being locked into a one-size-fits-all solution.

Educational institutions can flatten their networks from a legacy three-tier architecture to an enhanced single-tier network using the FlexNetwork architecture. By eliminating the need for an aggregation or distribution layer, institutions can free up stranded capital and reduce network elements by up to 85 percent. In addition to saving on capital expenses and improving performance, a flatter network means that there are fewer devices to power, cool, and manage.

With HP FlexCampus, educational institutions can converge and secure wired and wireless LANs to deliver consistent, identity-based network access. HP FlexCampus is based on an advanced, two-tier architecture that improves the network and eliminates latency, which impairs media-rich collaboration activities.

HP FlexBranch offers similar simplicity and functionality advantages for academics and administrators working from remote campuses. Educational institutions can converge and secure their wired and wireless LAN services in remote offices and labs, and FlexBranch will provide all of the necessary services to connect remote campuses to the main campus, giving a headquarters-like experience while simplifying management of the remote sites.

HP FlexManagement Intelligent Management Center

Orchestrated management

As many higher education institutions consider how best to consolidate their infrastructure, they are challenged by the need to manage and secure disparate systems. Addressing these issues is critical because lapses in management can lead to security breaches and network outages that can have serious repercussions such as public disclosure of student financial information, unauthorized access to critical research, interruptions to classroom learning, or failure of an emergency notification system.

HP's unified features and integrated networking components enable IT departments to consolidate and centralize network management while maintaining a clear view and control of the network environment. Instead of juggling myriad different tools, IT staff can use a single pane-of-glass management tool across heterogeneous networks, and can easily monitor the network devices that are running and verify that they are up to date with proper patches and security. Orchestrated management tools also improve network performance so that real-time applications such as in-class collaboration and admissions programs are able to receive the high network priority and low latency they require.

In addition, HP management tools allow only authorized users to access network data and resources. These tools can be used to set and enforce global policies for both network and security devices; apply authentication and encrypted system management access; enforce network access quarantine; and apply other security techniques at the network, device, and user levels.

To combat security threats and breaches, including increasingly sophisticated hackers who use bots, zombies, and popular peer-to-peer applications to bypass peripheral security devices, HP solutions deliver comprehensive security featuring industry-leading HP TippingPoint vulnerability detection capabilities and intrusion prevention solutions backed by global HP Digital Vaccine Labs (DVLabs).

HP networking security solutions effectively secure wired and wireless networks as well as physical, virtual, and cloud environments. HP's Network Access Control (NAC) functionality in the Intelligent Management Center platform can quarantine endpoints that don't meet a user-defined security profile.

This unprecedented level of network-wide protection provides IT departments with critical visibility and control, and helps address increased compliance requirements, including Payment Card Industry Data Security Standard or government mandates such as the Health Insurance Portability and Accountability Act (HIPAA) and the Family Educational Rights and Privacy Act (FERPA).

Future-proofed networking to meet tomorrow's needs

Built on industry-leading technologies and platforms, HP FlexNetwork networking solutions enable higher education institutions to meet today's and tomorrow's challenges. HP switches, security, and management are all designed to prepare colleges and universities for innovative new technologies, including support for Fibre Channel over Ethernet; cloud computing; and 10, 40, and 100 Gigabit Ethernet. Server virtualization, I/O virtualization, and desktop virtualization present other opportunities for colleges and universities to prepare students with new levels of administrative agility and efficiency. With the HP portfolio, they can take advantage of these advances while preserving their investments in legacy technologies.

Additionally, HP networking solutions are designed to easily scale so that educational institutions can consolidate network, server, and storage architectures. HP network switches can automatically be recognized, configured, deployed, and added to a virtual resource pool by using centralized management tools with single-pane infrastructure visibility.

There is increasing pressure on higher education institutions to be more energy efficient. HP's technologies are geared toward reducing power consumption through I/O consolidation and energy-efficient engineering. Energy-wise performance and fewer network devices reduce power and cooling, rack space, cabling, and overall real estate requirements.

As technology continues to drive information sharing and data storage, there will be continued demand for business continuity and disaster recovery. IRF technology, which enables automatic failover between switches that is transparent to users, can play a key role in protecting higher education institutions during disasters.

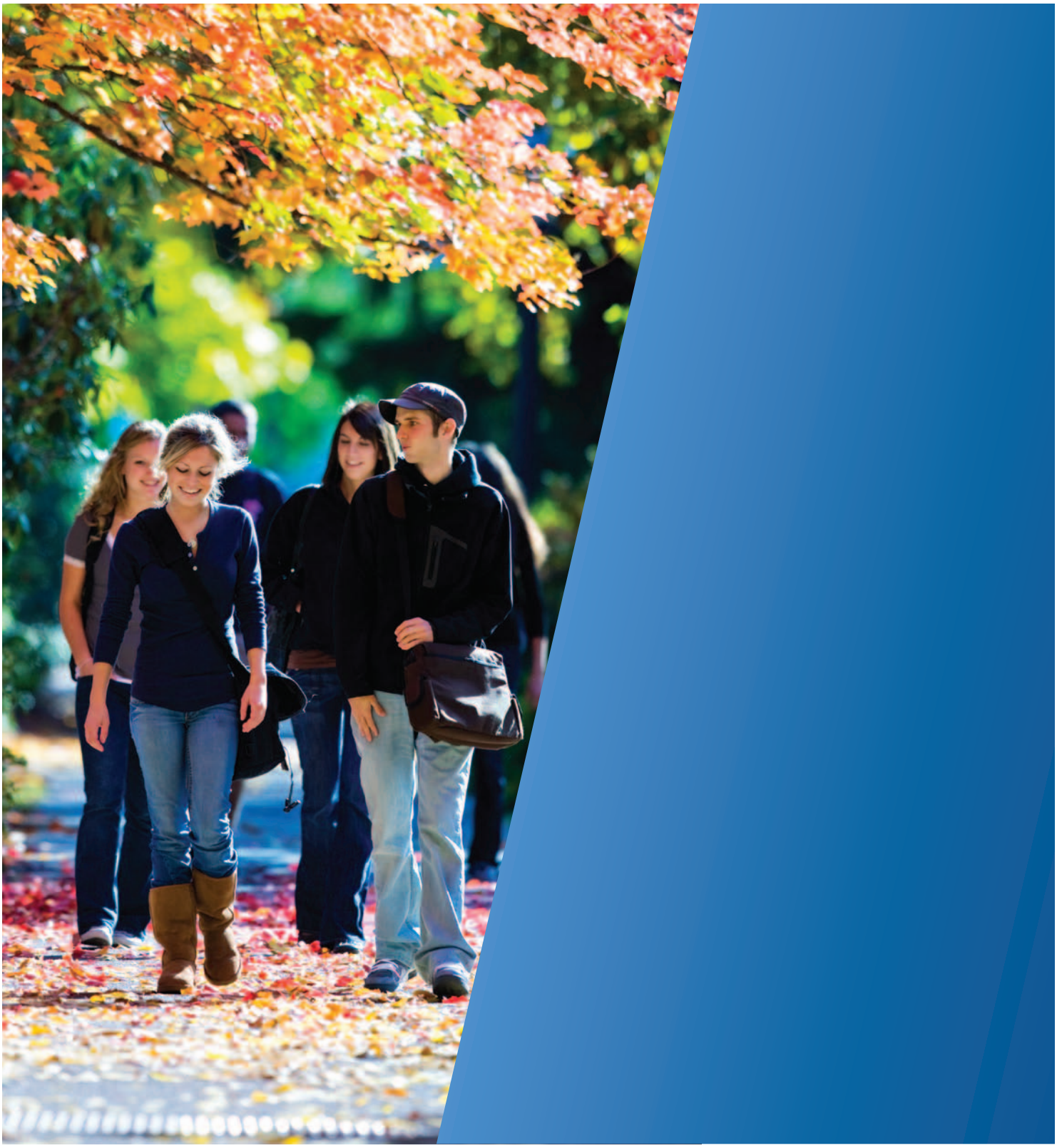
Why HP?

Colleges and universities need an infrastructure that will promote agility and boost productivity without sacrificing performance, raising costs, or impacting security. They can neither depend on their legacy networks nor rely on maintaining a status quo approach to service delivery to meet these requirements.

IT teams that want to consolidate while also taking advantage of exciting technologies such as server and desktop virtualization and cloud computing need to rethink how they build their networks.

The HP FlexNetwork architecture drives simplicity by segmenting network designs into functional building blocks and streamlined management; enhances agility with high performance, security, and accelerated provisioning; and saves money by delivering energy efficiency and low total cost of ownership.

Every day HP demonstrates its exceptional commitment to innovation, savvy product development, expert implementation, and responsive service—all of which are essential elements to running mission-critical networks. High-quality global sales, delivery, and support services are backed by a 30-year record of successful networking experience, as well as the talent and expertise of certified professionals and networking partners around the world. Additionally, HP's R&D and engineering teams are available to work side by side with customers, establishing a level of intimacy unmatched in the networking industry. For more information about how HP delivers secure, affordable, and easy-to-administer networking solutions, visit **www.hp.com/networking**.



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