

HIGH  
EXPECTATIONS

BE  
PREPARED

Metaphors and Similes  
saying one thing is another  
or as  
Snow

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

HP networking portfolio for K-12 schools

Solution brief



## Increased education technology opportunities and challenges

The rapid adoption of social networking, online learning, mobile technologies, and distance learning have not only changed the classroom experience but impacted the way students learn and teachers teach. Students are required to master additional skills that enable them to use technology to connect to and collaborate with the digital world. Globalization and the growing global middle class are fueling an increasing demand for quality education.

Pressure on schools to prepare students for the real world has reached unprecedented levels. However, K-12 schools face many challenges in their adoption of technology and must strike a difficult balance—they must offer open, accessible networks that can support real-time, resource-intensive, and collaborative applications without jeopardizing student safety. This problem is especially difficult to solve because most school districts have a combination of legacy and new applications running on disparate proprietary networks, which creates interoperability, visibility, and security problems.

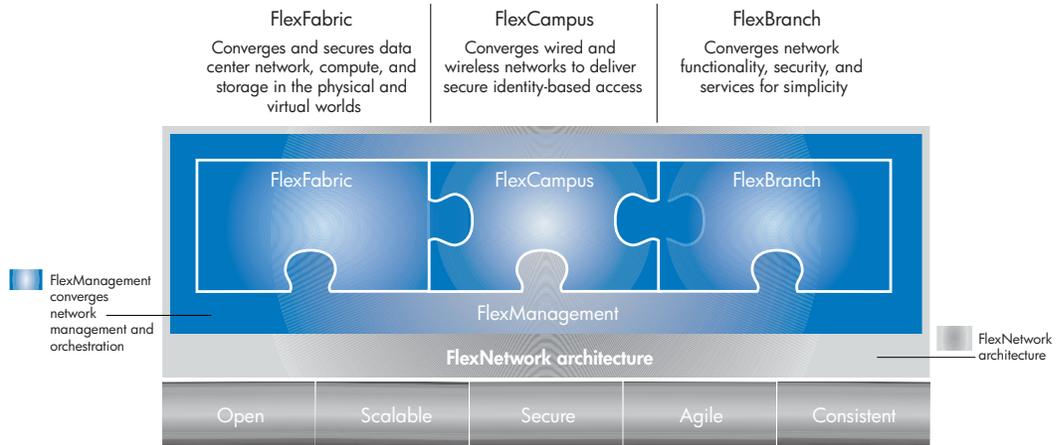
Such chaos can make it difficult for IT teams to support contemporary learning environments such as media-rich interactive courses, distance learning, and one-to-one computing, as well as essential services such as emergency notification systems and administrative

services. A high-performance network is critical to enabling media-rich collaboration and real-time assessments that help improve student achievement. The disjointed nature of legacy networks also inhibits cost-saving measures such as automating student lifecycle management and physical asset management.

Yet, as schools around the world push toward the everyday use of sophisticated technologies that can help them compete for faculty and funding, while increasing graduation rates, accelerating literacy, and improving test scores, they are rethinking their legacy—and, in many cases, proprietary—infrastructure approaches. They are moving toward open, standards-based architectures that enhance interoperability, security, performance, reliability, and affordability. They are seeking a secure, end-to-end education network architecture that can speed application deployment by removing 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, and other administrative applications. At the same time, it must reduce the complexity and cost burden on IT with integrated network and systems management—from the network core to the edge—and automate data privacy and security across an entire school system with distinct requirements within schools and administrative buildings.

## The HP FlexNetwork architecture



**“In school systems, it’s about saving money. The cost for HP switches blew the other companies out of the water. And performance-wise, HP is at least 50% better than our old switches.”**

**Derrick Hoffman,**  
Senior Systems  
Engineer, Thompson  
School District

## The HP solution

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

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

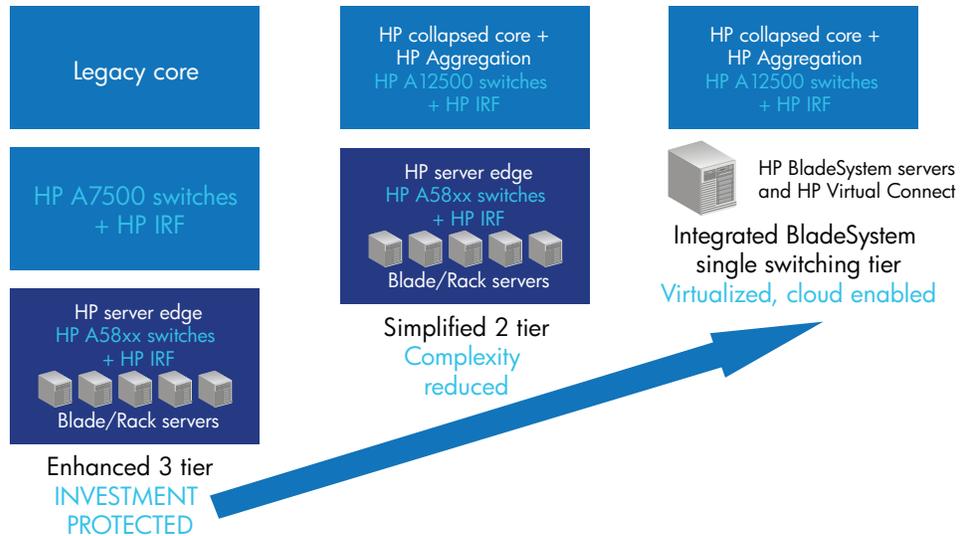
With the HP FlexNetwork architecture, schools can segment their networks into three interrelated modular building blocks: HP FlexFabric, HP FlexCampus, and HP FlexBranch. FlexFabric converges and secures the data center network with compute and storage; FlexCampus converges wired and wireless networks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

With the HP FlexNetwork architecture, K-12 schools can roll out new learning and collaboration applications and network services without jeopardizing compliance, performance, or security. HP networking components are designed to ease management, eliminate bottlenecks, and interoperate with third-party solutions. By streamlining network designs and centralizing management, schools can lower their total cost of ownership (TCO) for IT while improving operational agility.

The HP FlexNetwork architecture also delivers agility. School districts 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 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 educational innovation.

## FlexFabric switching architecture



## Converged network and compute infrastructure

FlexFabric, a building block of the FlexNetwork architecture, allows schools 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 applications have the resources they need, and deploying new applications won't negatively impact them. Should a new school administration program be brought online, it won't disrupt the emergency notification system.

HP Intelligent Resilient Framework (IRF) technology enables flatter network designs and easier-to-manage infrastructure. This helps large school districts create a virtual switching fabric that delivers geographic independence, distributed high availability, and resiliency. 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. Plus, HP Virtual Connect Flex-10 technology can easily and flexibly connect more servers to the network.

HP FlexNetwork solutions are designed to avoid downtime, keeping members of the education ecosystem, including teachers, administrators, and students, connected to their essential applications and to each other. HP solutions are ideal for schools that must reliably and consistently support existing applications, as well as deploy innovative new ones, including mobile applications.

## Flexible, secure networking

K-12 education as a whole is under tremendous pressure to improve educational quality by expanding the amount and types of services it offers, and schools must simultaneously decrease costs and increase data protection. HP offers schools a means of achieving these seemingly conflicting 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, schools 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 district-wide network. This allows schools to create best-in-class solutions for each network segment, rather than being locked into a one-size-fits-all solution.

Schools 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, schools can free up stranded capital and reduce network elements by 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, schools can converge and secure wired and wireless LANs to deliver consistent, identity-based network access. Utilizing 1- and 2-tier network designs, HP FlexCampus is based on advanced architecture that reduces latency and improves performance, which, in turn, enables collaboration and distance learning.

HP FlexBranch offers similar simplicity and functionality advantages for teachers and administrators working from remote campuses. School districts can converge and secure their wired and wireless LAN services across multiple school sites, and FlexBranch will provide all of the necessary services to connect these locations 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 schools 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 student health records, interruptions to classroom learning, or failure of an emergency notification system.

HP offers unified features and integrated networking components that enable IT departments to consolidate and centralize network management while maintaining a clear view and control of the environment. Instead of juggling myriad different management 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 tools and student information systems can 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 Children's Internet Protection Act (CIPA) or the Health Insurance Portability and Accountability Act (HIPAA).

## Future-proofed networking to meet tomorrow's needs

Built on industry-leading technologies and platforms, HP FlexNetwork networking solutions enable schools to meet today's and tomorrow's challenges. HP switches, security, and management are all designed to prepare schools for innovative new technologies and protocols, 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 school districts to experience new levels of 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 schools 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.

Going forward, there will be even greater pressure on school districts 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 schools during disasters.



## Why HP?

Schools need an infrastructure that can 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 the existing infrastructure 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 with 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](http://www.hp.com/networking).



## Get connected

[www.hp.com/go/getconnected](http://www.hp.com/go/getconnected)

Get the insider view on tech trends, alerts, and HP solutions for better business outcomes



Share with colleagues

© Copyright 2011 Hewlett-Packard Development Company, L.P. The information contained herein is subject to change without notice. The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

4AA3-6266ENW, Created August 2011

