

## Case study

# HP future-proofs data centers with best-in-class equipment



## Tech giant demonstrates reliability of own networking products

### Industry

Information technology

### Objective

Build a feature-rich data center infrastructure that is energy- and cost-efficient, delivers high-performance throughput, and offers unparalleled security

### Approach

Review proposals from top networking vendors and conduct proof-of-concept tests to determine the best supplier. Assemble a cross-departmental installation and implementation team, implement staff training, and develop a meticulous transition plan to avoid downtime during upgrades

### IT matters

- Transitioned over 280 servers with live applications to the infrastructure with no application service interruption
- Increased support for 10 Gb/s attached servers to allow for higher levels of network traffic
- Reduced time to deploy new applications by 50 percent on average, saving IT staff time
- Removed proprietary protocols in favor of open standards, to avoid vendor lock-in
- Gained scalability of network capacity and security, a key enabler for growth

### Business matters

- Supports more than 120 Gb/s of Internet traffic, which offers faster internal communications and a better user experience for shopping at [hp.com](http://hp.com)
- Significantly reduces infrastructure investment, maintenance, support, and overall total cost of ownership
- Improves security and boosts PCI compliance by adding intrusion prevention

**“Every dollar of HP’s multi-billion dollar revenue stream and all core applications supporting over 300,000 employees run through HP Networking equipment. Our experience shows that HP Networking meets best-in-class performance, scalability, and reliability requirements of the largest enterprises.”**

– John Lino, distinguished technologist and HP IT Chief Network Architect

### New technologies drive change

It’s no surprise when a high-tech company uses its own products. However, the story of how HP migrated its network from Cisco to HP Networking equipment has unique aspects that make it relevant to all enterprises in any industry or market segment. In 2010, HP found that its network infrastructure wasn’t poised to take advantage of recent data center advances—such as virtualization, green technology, additional layers of security, and higher density server connectivity. It was time for the company to embrace open standards and evolve along with network technology.

With revenues in excess of \$100 billion USD and five major business lines, HP has a portfolio that spans servers, storage, networking, personal computing, imaging & printing, software, services, and solutions. Employing more than 300,000 people in 170 countries, HP is also one of the largest providers of information technology infrastructure, software, services, and solutions in the world.

### **Driven by innovation**

Given that scale, it stands to reason that HP places a high level of importance on its infrastructure, and the company tries to ensure that the infrastructure is kept up to date through an evergreen strategy of regular upgrades and continuous improvement. To that end, the company consolidated more than 85 of its data centers and hundreds of small server sites into six new global facilities located in the United States. The HP Global IT department built out the network, using products from HP and other vendors.

From the time the data center consolidation was completed, much had changed as advances in virtualization and the demand for higher density of 10-Gigabit server connectivity drove requirements for higher network throughput. Green technology had matured, offering potential cost savings; and the increase of targeted attacks dictated a need for additional layers of security. In order to meet these new challenges, Global IT launched a network transformation initiative.

Every aspect of HP drives innovation; and HP IT is no exception to that rule. Taking a portfolio of technologies focused around HP networking assets, HP IT's Network Architecture and Engineering team developed a purpose-built and industry-leading architecture and technology strategy that enabled seamless transformation to new, efficient, and feature-rich infrastructure and services—without compromising production uptime in the next-generation IT data centers.

### **Finding the best supplier**

HP-owned Cisco-based legacy infrastructure couldn't offer the flexibility or scalability the design team was looking for. The first key step in the transformation was selecting a new vendor for routers, switches, and other network components. To best meet

the goals of the transformation, the team chose products that relied on open standards and increased flexibility—and could easily be replaced as technology evolves and could support an increasingly converged infrastructure with no vendor lock-in. Other factors taken into consideration included energy efficiency and intrusion detection and prevention.

**“The existing Cisco-based network couldn't meet our requirements without a massive re-architecture, major rip-and-replace operation, and further digression into proprietary platforms and protocols.”**

— John Lino, distinguished technologist and HP IT Chief Network Architect

Company leadership made it clear that the HP IT had the flexibility to choose the best vendor to fit the business needs.

“There were many factors that influenced our decision,” says John Lino, distinguished technologist and Chief Network Architect, HP IT. “But open standards ranked near the top, because it allowed us to build solutions based on the products and services that best met our requirements, instead of being locked into a proprietary technology.”

HP IT considered proposals from top networking companies such as Juniper, Foundry, and Brocade, as well as HP Networking. The team researched specifications, ran extensive proof-of-concept tests, and met with other IT professionals before selecting HP Networking.

HP Networking is committed to open standards and builds products that are simple to adopt into existing architectures, while also providing benefits within those architectures. The group also offers a streamlined and consistent portfolio of technologies which, combined with a single source for maintenance and support, helped to bring efficiencies to network operations.

### **No margin for error**

The next stage of the network transformation focused on implementation, with one major caveat: no downtime. Any network interruption would hurt the HP business and reputation; so the transition had to occur while the network was fully operational. “Swapping out core components in a production network of a Fortune 10 company is like changing the engine of an airplane in flight,” says Lino. “Thorough planning and close coordination were essential; we had to ensure that HP maintained its always-on infrastructure and continued to run over the entire period.”

HP IT assembled an implementation team led by architects and engineers in collaboration with subject matter experts from HP Networking and HP Technology Services, who provided central build and configuration staging, as well as resident engineering support services.

The migration approach was to install new HP routers and switches beside the existing components, running in a mirrored configuration, and then switch traffic completely over to the new equipment—all in a carefully choreographed sequence. However, the most challenging aspect of the plan was the time frame. “Under normal circumstances, migrating the core of our network takes many months of planning, risk assessment, and execution. We executed this migration in just two months. To compound this challenge, we were tasked with upgrading all of our backbone circuits to enable four times the capacity in the core,” says Lino.

This combined capacity and circuit refresh, in addition to a technology transformation, required precise planning, orchestration of many teams, and change coordination for implementation.

When the time came to implement the plan, everything worked as expected. The team completed the switchover in less than 48 hours per data center—without affecting the network.

Lino credits great teamwork for the success of the switchover: “Everybody came together. Support engineers from HP Networking and HP Technology Services support technicians collaborated with us during every change. This close coordination between IT and the support organizations enabled a more efficient migration and a better level of support through the entire migration period.”

Once the core and WAN of the network was complete, the transformation of the server Point of Distribution (POD) within the data centers was initiated. The HP IT team developed an innovative transformation architecture that allowed for the interim convergence of the legacy Cisco networking equipment and new HP Networking technology at the server level.

The result: a successful implementation of a new infrastructure with HP Networking switches and routers, transitioned over 280 servers with live applications to the infrastructure—with no application service interruption.

**“The training, which was very effective, enabled our engineers to successfully transition from Cisco to HP Networking and meet aggressive timelines.”**

— John Lino, distinguished technologist and HP IT Chief Network Architect

Clearly, HP IT had entered a new paradigm of always-on network infrastructure on a scale not seen within the industry before.

### **Four times the capacity, better security**

Today, the internal IT core and WAN run entirely on HP technology; and—unlike the previous Cisco-based network—uses open standards everywhere. The data center distribution layer is composed of HP 9505 switches, and HP 12508 switches are deployed at the data center core. The WAN backbone consists of HP 8812 routers, while HP 6604 routers are used for MPLS access.

These changes have paid off significantly in terms of performance and throughput. The Internet and WAN—both vital to internal communications as well as online transactions—support more than 120 Gb/s of Internet capacity. And introducing new services is much faster, thanks to end-to-end virtualization in the data center.

Security in the new network is also greatly improved, thanks to the addition of HP TippingPoint Intrusion Prevention Systems (IPS). “The new core architecture facilitated a more security-aware implementation.”

## Customer at a glance

### Hardware

- HP 8800 Router Series
- HP 6600 Router Series
- HP 12500 Switch Series
- HP 9500 Switch Series

### HP services

- HP IT Infrastructure Consulting

Due to the separation of functions, we were able to place IPS between the layers of our infrastructure with ease, which has helped us achieve much more security awareness,” notes Lino. The added security enables HP to comply with PCI standards for protecting credit card information and boosts network security in general.

### HP Networking—proven, top-tier supplier

Without question, the HP network is massive, as it constitutes the platform for business activities such as sales, customer support, call center, internal communications—and even online shopping at [hp.com](http://hp.com).

Every dollar of the HP multi-billion dollar revenue stream passes through a core and WAN infrastructure that now runs exclusively on equipment from HP Networking. The experience shows that HP Networking’s performance and reliability are above any in the networking industry—including Cisco’s.

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