Healthcare industry challenges and opportunities

The pressures are mounting on healthcare organizations around the world. Many are expected to institute real-time collaborative medicine and electronic medical records, ensure compliance, and support increased patient volume due to a rise in chronic conditions. At the same time, they must merge infrastructure to lower costs, implement cloud computing, and reduce energy consumption.

Healthcare organizations of all sizes are challenged to expand the amount and types of services they offer without driving up their budgets or jeopardizing data protection. Many new applications can improve patient care and provide doctors with instant access to data so they can make split-second, potentially life-saving decisions. There is no leeway for poor handling of massive files, shoddy application performance, infrastructure deployment delays, traffic bottlenecks, or equipment outages.

Therefore, healthcare organizations can no longer rely on legacy network infrastructure, which cannot by its very nature support the tandem objectives of innovation, compliance, security, and cost containment. The complexity and expense that the traditional data center heaps on resource-limited healthcare ecosystems is far too burdensome. Proprietary and ad hoc networks make it difficult to ensure the performance, availability, reliability, and security of exciting new services and applications such as remote diagnostics, mobile healthcare clinics, electronic medical records, and enhanced real-time imaging programs.

Instead, healthcare organizations that want to make advancements in this new era of improved patient care through telemedicine, digitized records, and other efforts should consider an open, standards-based data center network architecture. This architecture needs to be flexible, secure, automated, affordable, and purpose built to support mission-critical, real-time, resource-intensive applications.

The HP solution

HP’s extensive data center product portfolio does just that by driving simplicity through streamlined network designs and centralized management; enhancing agility with high performance, security, and accelerated provisioning; and saving money with energy efficiency and low total cost of ownership.

With HP networking solutions as a cornerstone, the HP Converged Infrastructure delivers an architectural blueprint that integrates servers, storage, and networking; this eliminates technology silos in the data center and frees up resources to focus more on business innovation. The HP Converged Infrastructure focuses on three key areas of success: infrastructure, security, and management.

HP’s open, standards-based solutions speed the rollout of network services and new applications without jeopardizing compliance, performance, and data protection. Networking components are designed to ease management, eliminate bottlenecks, and interoperate with third-party solutions. By streamlining network designs and centralizing wired and wireless management, healthcare organizations lower total cost of ownership while improving their operational agility with secure, high-performance connectivity, cost-saving scalability, resource-stretching provisioning, and decreased energy consumption.
In addition, an open, standards-based architecture helps to avoid vendor lock-in. HP’s network solutions enable IT to expand its environment as necessary and economically foster innovation. HP solutions integrate with existing infrastructure to make the most of current investments. Organizations can deploy HP products in an intelligent and cost-aware manner that lays the foundation for future build-outs.

Mission-critical availability

The modern application- and service-ready HP FlexFabric networking architecture—a primary element of the HP Converged Infrastructure that connects data center server and storage resources—quickly adapts to changing business requirements, dynamically scaling capacity and provisioning connections to meet application demands “on the fly.” Mission-critical applications always have the resources they need and are not impacted by the deployment of new applications. For example, IT can ensure that a new laboratory application will not impact the performance of a digital imaging application used during surgery.

HP networking solutions are purpose built to minimize downtime, keeping members of the healthcare ecosystem, including patients, providers, and payers, connected to mission-critical applications and each other. These solutions are ideal for organizations that must reliably and consistently support existing applications as well as deploy innovative new ones.

Ease of deployment and infrastructure management are two key criteria for healthcare organizations. HP Intelligent Resilient Framework (IRF) technology simplifies deployments by enabling flatter network designs and easier-to-manage infrastructure to ensure that mission-critical applications, like those used for surgery and remote diagnostics, are not negatively impacted. IRF is a virtual switching fabric that delivers geographic independence, distributed high availability, resiliency, and millisecond reconvergence across Layer 2 and 3 protocols. With IRF-based solutions, IT teams can pool switching resources to create a lower-cost, stable, fault-tolerant environment that is easier to provision and maintain. Within this comprehensive network, the HP Virtual Connect family of technologies, which work at the server edge, transforms a single port into four connections to enable the use of copper or fiber connections. IT teams can use Fibre Channel over Ethernet-capable switches to allow native Fibre Channel—a staple of the high-performance data center storage network—and standard network traffic to run alongside each other over a 10 Gigabit Ethernet infrastructure.

Virtualization and orchestration capabilities within the HP FlexFabric architecture consolidate multiple protocols into a single fabric, dramatically reducing network complexity to enhance performance and increase the productivity and responsiveness of IT staff. In addition, these capabilities support the deployment of new applications on the fly without disrupting access to critical applications at peak times.

As technology continues to drive information sharing and data storage, there also will be continued demand for business continuity and disaster recovery.
IRF, enabling automatic failover between switches that is transparent to users, can play a key role in protecting hospitals and other healthcare entities during disasters. No downtime means no interruption in critical care services to patients.

**Visibility and control = better security**

As many in healthcare 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 have serious repercussions such as disclosure of patient data, delays in supplying doctors with critical information, and billing errors.

HP offers unified features and integrated networking components in its FlexFabric and other products that enable IT to consolidate and centralize network management of wired and wireless networks as well as virtual and physical switching environments. For instance, HP network switches can automatically be recognized, configured, deployed, and added to a virtual resource pool using centralized management tools such as the Intelligent Management Center (IMC). HP provides single-pane visibility of the environment and better end-to-end control.

With this clear view, the IT team can easily see fixed and mobile devices running on the network and make sure they are up to date with proper patches and security. They can also use HP management tools to ensure that only authorized users access network data and resources. In addition, IT can set and enforce global policies for both network and security devices, apply authentication, encrypt system management access, define quarantine enforcement, and carry out other security measures at the network, device, and user levels. These tools can also be used to assign priority to applications in the healthcare environment to ensure they get the high priority and low latency they require.

To combat security threats and breaches—including increasingly sophisticated hackers that 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 Digital Vaccine Labs (DVLabs). An Infonetics survey found that 76% of customers deploy HP TippingPoint solutions in less than two hours and report blocking 2.3x more threats as compared to the nearest competitive solutions. This unprecedented level of network-wide protection provides IT with critical visibility and control, helping address increased compliance requirements such as those within the Payment Card Industry’s Data Security Standard.

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1 Based on Infonetics survey, September 2008.
Future-proof, affordable, energy-efficient networking

Built on industry-leading technologies and platforms, HP networking solutions enable healthcare organizations to meet future enterprise challenges. HP switches, security, and management are all designed to prepare the enterprise for exciting new technologies and protocols—including support for Fibre Channel over Ethernet; cloud computing; and 10, 40, and 100 Gigabit Ethernet. With the HP portfolio, healthcare organizations will be able to take advantage of these and other advances including server virtualization, I/O virtualization, and desktop virtualization without having to rip and replace hardware as they migrate to evolving technologies.

HP networking solutions have no hidden fees for proprietary upgrades so healthcare organizations can count on lower acquisition costs. In fact, HP’s customers report up to a 66% lower total cost of ownership. In addition, the use of service blades, a modular architecture, and common components further lower costs by decreasing the number of required spares, distinct networking products, and maintenance overlays.

There is no doubt that in upcoming years there will be even greater pressure on organizations to be more energy efficient. HP’s technologies are geared toward reducing power consumption through I/O consolidation and energy-efficiency engineering. Energy-wise performance and fewer boxes needing power help companies save on power and cooling, rack space, cabling, and overall real estate requirements. In fact, the reduced power consumption that comes from using fewer NICs and switches can provide relief to data centers that are reaching the limits of their power and capabilities. With a typical rack of 20 servers and a typical Fibre Channel HBA consuming roughly 12.5 watts, the savings can be as much as 500 watts per rack by eliminating two interface cards per server. If the energy needed to cool the rack is also computed, savings can be doubled to 1,000 watts per rack.

Healthcare organizations need an infrastructure that will promote agility and boost productivity without sacrificing performance, raising costs, or impacting security. They cannot depend on their legacy networks nor rely on maintaining a status quo approach to service delivery to handle these requirements. IT teams that want to consolidate, while at the same time take advantage of exciting technologies such as server and desktop virtualization and cloud computing, have to rethink how they build their networks.

HP’s Converged Infrastructure with FlexFabric networking architecture drives simplicity through streamlined network designs and centralized management; enhances agility with high performance, security, and accelerated provisioning; and saves money with energy efficiency and low total cost of ownership. HP has the knowledge, experience, and product portfolio to help healthcare organizations gain control of their networking infrastructure now and into the future and provide improved care for their patients.

2 "ROI of a Complete Networking Portfolio," IDC white paper, September 2010. Savings included reduced downtime and the cost of user productivity lost from security incursions. In addition, HP delivered power and space savings—lower costs for power and heating, ventilating, and air conditioning (HVAC), as well as more efficient use of leased commercial data center space. Lower total infrastructure costs included the cost of purchasing and maintaining networking hardware and software, and IT staff savings focused on those who directly support networking hardware and end users.