

U.K. healthcare network improves IT fitness and patient care with adaptive HP solutions

Blackpool, Fylde and Wyre Hospitals NHS Trust



"System resilience is essential for our environment. Our Intel Xeon-based ProLiant servers and clusters meet that need flawlessly."

– Head of Information Management and Technology Philip Graham,
Blackpool, Fylde and Wyre Hospitals NHS Trust

In Lancashire County, along the Irish Sea, lies a fertile expanse of flatland known as the Fylde (meaning "field"). This picturesque land, bordered by the Ribble and Wyre rivers, is famous for its mix of quaint villages, long coastline, and world-class resorts. England's National Health Service (NHS) manages the large healthcare network – Blackpool, Fylde and Wyre Hospitals NHS Trust – that serves this tourism-dependent area.

Collectively, the Blackpool, Fylde and Wyre Hospitals NHS Trust employs more than 4,400 staff and provides nearly 1,200 beds. The Trust handles more than 85,000 day-cases and in-patients, 300,000 out-patients, and 80,000 accident and emergency patients annually.

IT infrastructure was one of the critical areas in need of early attention following the formation of the Trust in 2002. The existing infrastructure consisted of disparate server islands and a multitude of desktop brands at each of the Trust's nine hospitals. Critical applications were inconsistent and storage resources were far too distributed, which resulted in inconsistent housekeeping practices.

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Not only was there a pressing local need to migrate to a consistent and reliable IT architecture, but all NHS Trusts across England also were under pressure to apply IT to improve and expand patient services. In addition, a streamlined IT operation was essential in moving toward the NHS-wide goal of a universally available electronic patient record. As with most healthcare organizations, budget constraints meant that the Trust needed to implement a new IT infrastructure gradually and with an awareness of future growth needs.

Trusting its IT future to HP

HP recommended a solution to consolidate and optimize the management and storage infrastructure. This included clustered HP ProLiant servers powered by Intel® Xeon™ processors, an HP StorageWorks storage area network (SAN), along with HP desktops, printers, and software as the core IT infrastructure. The Trust already had experience with HP ProLiant servers, and knew the technology to be reliable and well supported.

"Resilience and continuous uptime are key goals for any healthcare IT environment," notes the Trust's Head of Information Management and Technology Philip Graham. "We liked the ease with which we can cluster HP ProLiant servers for failover protection and load balancing. With our expanded operations, we needed a solid IT platform for increasingly critical applications such as e-mail, Active Directory, intranet, Internet, and clinical applications."

The Trust uses 14 Intel® Xeon™ processor-based HP ProLiant servers in its main data center. Key clinical, communications, and management applications run on





clustered ProLiant ML350 and ML370 G2 systems, powered by Intel® Pentium® III Xeon processors. The two-node ProLiant clusters run under the Microsoft Windows 2000 Advanced Server operating system and Microsoft Windows Cluster Services. Should hardware or software fail in either cluster node, the applications automatically fail over to the surviving node – without loss of data.

According to the Trust's IT Development Manager Shaun Bucknill, the organization has gradually introduced dual-node clusters for key applications such as Microsoft Exchange Server 2000, Microsoft SQL Server, and Active Directory services. "With the help of HP Services and our HP reseller, BMS, we brought in new HP ProLiant clustered servers in stages to support our critical applications," Mr. Bucknill says. "It's been kind of a domino effect; as budget and time allow, we move applications from older servers to the new ProLiant clustered servers."

The Trust also uses Intel® Xeon™ processor MP-based ProLiant DL580 G2 servers for critical applications. These quad-processor ProLiant servers provide the high availability, agility, and power required to support essential healthcare information access. An additional 26 Intel® Xeon™ processor-powered ProLiant systems reside at other Trust hospitals and clinics.

Mr. Graham's staff manages the Trust's ProLiant servers using Insight Manager 7 and the Remote Insight Lights-Out Edition (RILOE) option. Insight Manager 7 allows the Trust to monitor and optimize server and network performance actively. RILOE is a combined hardware and

software solution. It saves time and improves availability by enabling IT staff to manage disparate servers from a secure browser, including power on/off control, remote configuration capabilities, remote booting, and backup control.

HP SAN brings renewed health

Another critical decision for the Trust IT group was its investment in an HP StorageWorks SAN to provide centralized storage control, plus improve housekeeping practices. "The HP StorageWorks 4300 enclosure was the most cost-effective choice for our SAN," Mr. Graham notes. "We were running out of disk space on our servers and didn't want to invest in that direction. The beauty of the HP SAN is we can add StorageWorks enclosures as we need them. The SAN improved our storage-management practices immeasurably. We standardized our backup and restore practices, improved our overall system availability, and reduced the time we spend managing storage. This allowed us to redeploy some of our staff to other activities."

The Trust's SAN capacity is approximately 2 TB of storage across six StorageWorks 4314 enclosures linked by 16-port Fibre Channel switches. HP StorageWorks Secure Path software manages multiple paths between the SAN and attached servers, ensuring high availability. An HP StorageWorks MSL5026 tape library and Veritas NetBackup software enable automated backups.

According to Mr. Bucknill, the StorageWorks SAN streamlined backup management: "We used to manage

about 30 different backup regimes across multiple sites. Now, we have a central location for managing this process, which reduced our storage-management time dramatically. This is an operational benefit, as well as a financial gain."

HP Services and HP reseller BMS Ltd. designed, configured, and implemented the SAN. "Our relationship with BMS is very important," Mr. Bucknill notes. "They understand our organizational needs and influences. We didn't just purchase products; we purchased an entire solution that included installation service and implementation. That really helped us tremendously. The adaptive enterprise we now have enables us to move quickly when changes or additions are required."

Small form factor fits perfectly

On the desktop, the organization uses more than 1,000 Intel Celeron® processor and Pentium 4 processor-based Compaq Evo small form factor desktops, plus a combination of 19-inch monitors and 17-inch flat-panel displays. The Trust employs the desktops for access to clinical and administrative applications, as well as for displaying images from the organization's image-archiving system (PACS).

Several dozen Compaq Evo desktops operate as "cyber café" stations for nurses and other healthcare providers.

can deliver the reliability and performance required for critical clinical and administrative applications. We are pulled and stretched from every direction – including locally and by national policy. Our HP infrastructure gives us the ability to adapt and adjust quickly to ever-changing demands. For our patients, that translates directly into improved care, better service, and lower costs."



"The centralized management of our HP ProLiant and HP StorageWorks infrastructure allows us to expand IT services significantly – without significant increases in resources."

Company profile:

England's Blackpool, Fylde and Wyre Hospitals NHS Trust (www.bfwhospitals.nhs.uk) was formed in early 2002 with the reconfiguration of Blackpool Victoria Hospital NHS Trust and Blackpool, Wyre and Fylde Community Health Services NHS Trust. The Trust's nine hospitals serve 330,000 area residents, as well as nearly 16 million annual visitors.

The Trust deployed another group of HP desktops on carts, including battery power and wireless network links, which clinicians use on rounds. The Trust is also pilot testing Compaq T1000 tablet PCs to give additional mobility to clinical staff.

"The centralized management our HP ProLiant and StorageWorks infrastructure provides allows us to expand IT services significantly – without significant increases in resources," Mr. Graham notes. "More importantly, we

Challenge

- Provide improved and cost-effective IT services for large healthcare network without adding staff
- Centralize and consolidate key hospital support applications on a highly available and adaptable IT infrastructure
- Provide a reliable, flexible storage-management infrastructure to support current applications and future growth, without adding additional staff
- Improve backup and restore practices network-wide

Solution

Hardware

- 40 Intel® Xeon™ processor-based HP ProLiant servers, including models DL360, DL380, DL580 G2, ML330, ML350, ML370, ML370 G2, and ML530
- 4 dual-node HP ProLiant Clusters using models ML350 and ML370 systems equipped with Intel® Xeon™ processors and running Microsoft Windows Cluster Services under Microsoft Windows 2000 Advanced Server
- HP Remote Insight Lights-Out Edition (RiLOE) remote-management cards for ProLiant servers
- 1,000+ Intel® Celeron® processor and Pentium® 4 processor-based Compaq Evo small form factor desktop computers
- 500+ HP inkjet and laser printers
- 6 HP StorageWorks 4314 enclosures rack-mounted and configured as a SAN with HSG80 Fibre Channel SAN switches
- HP StorageWorks MSL5026 rack-mounted tape library

Software

- Insight Manager 7 server-monitoring and management software
- HP ProLiant Essentials Rapid Deployment Pack
- HP StorageWorks Secure Path
- Microsoft Windows Cluster Services, Windows 2000 Advanced Server, Exchange Server 2000, SQL Server 2000
- Veritas NetBackup

HP Services

- Microsoft Exchange and Cluster consulting and implementation on SAN
- Strategic development
- Ongoing support
- Education services

Results

- Provided consistent, adaptable IT infrastructure
- Consolidated and centralized server and storage management, thereby improving availability, reliability, and responsiveness for mission-critical applications
- Expanded IT services to meet hospital needs – as well as government-mandated requirements – without an increase in IT staff
- Reduced travel and management time with remote server-management capabilities

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