



CASE STUDY: UNIVERSITY CLINIC OF MAINZ

Medical Center Improves Patient Care with Faster Network and Centralized Data



SUMMARY

The medical clinic associated with the Johannes Gutenberg University in Mainz, Germany, took a multi-phase approach to upgrading its network. The clinic has invested more than \$1.5 million (1.2 million euros) in the network and today has a high-speed Gigabit Ethernet backbone that supports current doctor, staff, and patient use, as well as future network growth.

OBJECTIVE

The clinic staff realized in the 1990s that its network would not support the ever-increasing traffic load, and restructuring in Germany's health sector would soon cripple the network. Additional computer links, more bandwidth, and clinic-wide access to stored digital data were necessary to continue to serve the clinic's population. The medical clinic needed a highly optimized, high-performance network to accommodate that growth.

In 1995, Dr. Hanns Peter Fritsch, the clinic's network group leader, and his team began installing a new communications infrastructure with FDDI and ATM links. Fritsch planned to migrate the network to a Gigabit Ethernet backbone with virtual LAN support after 1999, when the technology was more established.

SOLUTION

In 2000, Fritsch was ready to move forward with the network upgrade. The migration to Gigabit Ethernet would allow the clinic to take advantage of the more cost-effective Ethernet equipment, as well as introduce easier network management.

Fritsch wanted seven powerful, modular backbone systems with redundant management modules and 96 edge switches. In September 2000, Fritsch selected Connect Kommunikationssysteme, a local Mainz VAR, to build the Gigabit Ethernet backbone and the first of 120 planned virtual LANs using equipment from Foundry Networks.

Today the clinic network is comprised of seven BigIron® 4000 systems; six are interconnected in a star shape using multimode fiber optics. The seventh BigIron chassis is used for testing purposes and as a spare device. All system links feature a redundant configuration; OSPF manages dynamic routing, load balancing across all available trunks, and seamless failover in the event of a fault. Each BigIron chassis currently uses only half the available interfaces, providing the clinic with sufficient capacity for future expansion.

In 2003, Fritsch began the second phase of network improvement—additional equipment to support more virtual LANs. Again, he selected Connect Kommunikationssysteme and Foundry Networks equipment, based on the Foundry devices' superior cost, performance, and rich features.

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INDUSTRY

Medical

COMPANY DESCRIPTION

The medical clinic associated with the Johannes Gutenberg University in Mainz, Germany, has invested more than \$1.5 million (1.2 million euros) to build a high-speed Gigabit Ethernet backbone that supports current doctor, staff, and patient use and future network growth.

OBJECTIVES

- Improve network efficiency
- Support an increase in patient data
- Increase bandwidth and number of network connections
- Provide centralized access to shared patient data

SOLUTIONS

- In 2000, the clinic created a new backbone with seven BigIron 4000 chassis—six in a star configuration and a seventh for testing and to use as a spare device—and 96 edge devices
- In 2003, deployed 48 FastIron 12GCF and 100 FastIron 4802 edge switches and established 120 virtual LANs
- In 2006, planned upgrade to 10 Gigabit Ethernet using five BigIron RX-8 switches and 23 FastIron GS648P devices

RESULTS

- Introduced more cost-effective Gigabit Ethernet network
- Provided shared access to centralized patient data
- Enabled digital image transfer to internal and external users
- Allowed for easy adoption and use of new applications
- Increased the number of connection points, thus encouraging user adoption
- Improved overall network efficiency and supports future growth

Fritsch and Connect Kommunikationssysteme installed 48 FastIron® 12GCF edge switches and 100 FastIron 4802 edge switches. According to Fritsch, a key factor in his decision to use Foundry Networks' systems is their support for sFlow in wire speed: out of the box, the Foundry equipment can deliver all the raw data needed by the clinic's critical applications, such as accounting, billing, intrusion detection, capacity planning, and security analysis.

Recently, the clinic decided to upgrade the backbone to 10 Gigabit Ethernet, and the IT team has again selected Connect Kommunikationssysteme and Foundry equipment. Fritsch ordered 23 FastIron GS648P systems and five BigIron RX-8 switches that will make up the new 10 Gigabit Ethernet backbone.

RESULTS

Each rollout that Connect Kommunikationssysteme and Foundry have participated in has gone extremely well. The Gigabit Ethernet network spans the entire university campus, and users can connect at myriad places on campus. With an abundance of places to connect to the network, it has been easy to install and operate video monitoring, access verification, and fire detection systems over the network. The high-performance network also will accommodate future plans to support voice over IP in the clinic.

Users have adapted to the enhanced network with voracity. "The network has been so warmly welcomed by our users that they're registering new applications almost every day," Fritsch says. In fact, the upcoming migration to 10 Gigabit Ethernet is becoming urgent.

Bandwidth demand has continued to increase for several reasons. Clinic staff, administrators, and the medical systems depend on the network more extensively. In addition, the frequency and size of the digital images that are being transferred within the clinic and to external clinics and doctors also has increased.

Because the network is in such demand, Fritsch and his team are considering additional capabilities, such as server load balancing and application switching.

The network upgrade has been extremely successful, according to Fritsch. More users are accessing the network, using more and different applications with improved network performance. Doctors and staff increasingly rely on the network and have gained efficiencies in many aspects of their work—internally and externally.

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— Dr. Hanns Peter Fritsch
Network Group Leader
Johannes Gutenberg University
Medical Clinic

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