



CASE STUDY

Citrix Access Information for HEALTHCARE

Hackensack University Medical Center Going Wireless for Wellness

Hackensack University Medical Center (HUMC), the largest provider of inpatient and outpatient services in New Jersey, has been named one of the nation's "Most Wired" hospitals for six years in a row by *Hospitals & Health Networks*. A teaching and research hospital, HUMC is 683-bed, not-for-profit, tertiary-care facility with a staff of 7,000 employees, including more than 1,400 physicians.

THE CHALLENGE: WIRELESS CAMPUS, WIRELESS PHYSICIANS, WIRELESS EVERYTHING

HUMC is relentless in its efforts to provide higher quality care through technological innovation. Its latest initiative involved implementing a Clinical Information System (CIS) with computerized physician order entry (CPOE) that largely removes the inefficient and potentially inaccurate workflow of 'paper' as doctors input patient orders directly into the system.

"We wanted to move to a campus-wide wireless network that would allow physicians and nurses full mobility to access our CIS from wireless tablets all the time, everywhere," said Benjamin Bordonaro, HUMC Director of Applications Development and Support. The goal? On-demand access to patient diagnostic and treatment information to reduce errors and delays, increase physician responsiveness, and ultimately shorten hospital stays — thereby cutting costs for both the medical center and its patients.

IMPLEMENTING A CITRIX SOLUTION FOR WORKFORCE MOBILITY

A longtime user of Citrix® access infrastructure software, HUMC upgraded to Citrix MetaFrame® Presentation Server running on Microsoft® Windows® 2000 Servers. The IT team then deployed a campus-wide Ethernet wireless LAN to improve point-of-care access to applications and information. Roughly 200 Fujitsu Lifebooks and Stylistic wireless tablets — running Microsoft Tablet software — are being rolled out to physicians and installed on nurses' rolling medication carts.

In addition, 1,000 thin-client terminals, plus legacy PCs throughout the hospital, access applications through the Citrix access infrastructure. Doctors, nurses and administrative staff use more than 40 clinical and administrative applications running on Citrix software, including Cerner PathNet Laboratory Information

"With the Citrix solution, HUMC has saved \$1.3 million over five years. Most of the savings are derived from 'soft costs' like maintenance, upgrades, and help desk calls—resulting in 35 percent in overall savings."

BENJAMIN BORDONARO

Director of Applications Development and Support, Hackensack University Medical Center

Key Benefits

- Wireless access improves bedside reporting and quality of care
- \$1.3 million savings in overall IT costs over five years
- Centralized IT administration supports HIPAA compliance
- Streamlined operations increase business continuity



System, IDX LastWord, and the SoftMed Solution Suite.

As a result, HUMC now provides its healthcare professionals with mobile access to key applications and information from the bedside, nursing stations and departments throughout the medical center. Access also extends beyond the boundaries of the campus: HUMC acts as an Internet service provider, giving remote access to its clinical systems and e-mail to nearly 1,000 physicians from specialty centers, their offices and their homes.

WIRELESS MAKES FOR BETTER CARE

The Citrix access solution improves patients' quality of care and shortens hospital stays. "Before we deployed wireless, doctors were hand writing orders out on paper," said Gerard Burns, M.D., Director of Medical Informatics. With the new solution, the medical center now uses the CPOE system to allow physicians to input medication, lab, radiology, and other patient orders directly, providing secure point-of-care access and reducing errors.

"Having medical records instantly available at bedside improves quality of care," noted Dr. Burns. "When nurses administer medications, they are able to document in real-time, at the point-of-care. During rounds, physicians can see the latest patient results and respond immediately. If a CAT scan or lab test has been completed and resulted since morning rounds, the image or report is available immediately. The physician can see those results from anywhere on site, or even offsite through remote access, and plan the next phase of that patient's care. The patient benefits, the doctor benefits, and the medical center benefits."

The Citrix solution also supports Health Insurance Portability and Accountability Act (HIPAA) compliance with complete, centralized

control and accounting of disclosures across the organization. "Information is protected from theft or tampering because nothing is stored directly on our wireless tablets," observed Bordonaro. "And doctors can edit and sign off on transcriptions using our electronic signature application, making patient information complete, accurate, safe and secure."

\$1.3 MILLION IN IT COST-SAVINGS OVER FIVE YEARS

"With the Citrix solution, HUMC has saved \$1.3 million over five years," estimated Bordonaro. "Most of the savings are derived from 'soft costs' like maintenance, upgrades, and help desk calls — resulting in 35 percent in overall savings." Bordonaro's calculations are based on historical data from 2000 to 2004 and compare an unmanaged PC deployment with the managed thin client and wireless environment used by the medical center. "Help desk calls alone have dropped by 50 percent—and that's a conservative number," Bordonaro remarked.

100 PERCENT CITRIX ON WIRELESS IMPROVES PERFORMANCE AND MAINTENANCE

For both performance and maintenance reasons, HUMC went 100 percent with Citrix for its wireless tablets. "We avoid the intense bandwidth requirements that would result if applications were loaded directly on the tablets," said Bordonaro. "And maintenance is dramatically easier because we don't have to recall tablets to upgrade or add applications." HUMC has also installed inexpensive thin-client terminals at nursing stations throughout the medical center. "We haven't revisited the thin clients since we first installed them five years ago," Bordonaro reported. "Because we haven't upgraded or replaced any client hardware, we used the savings to enhance our back-end systems."

Networking Environment

- Citrix® MetaFrame® Presentation Server running on 30 HP Proliant servers
- Microsoft® Windows® 2000 Servers
- Cisco ATM/Ethernet LAN; Cisco Ethernet Wireless LAN
- 200 Fujitsu Lifebooks and Stylistic wireless tablets running Microsoft Tablet software; 1,000 thin client terminals and legacy PCs

Applications Deployed

Over 40 applications, including:

- IDX LastWord
- Cerner PathNet Laboratory Information System
- PeopleSoft Human Resources and Financial Modules
- Siemens INVISION
- SoftMed Suite
- Tempus Software TempusOne
- Microsoft Office Suite, Outlook, and Internet Explorer

Maintenance and bandwidth improvements extend to the medical center's remote sites as well. "From both a support and operational cost perspective, it really pays to use Citrix infrastructure," observed Bordonaro. "Remote sites access applications over dial-up lines, and because bandwidth is low, performance is improved, and we avoid dedicated lines." The Citrix implementation also supports continuous operations, which are essential to a health care facility. The advanced load management features of MetaFrame Presentation Server are used to configure 30 HP Proliant servers across two fully redundant data centers, which protect critical patient information even in the event of a disaster.

About Citrix MetaFrame Access Suite: Extending the world's most widely deployed presentation server, the Citrix MetaFrame Access Suite is access infrastructure for the on-demand enterprise. The suite centralizes access to applications and information and enables IT staffs to deliver, manage, monitor and measure enterprise resources on demand.