

## Maintaining Access to Clinical Applications for Advocate Health Care

Based in Oak Brook, Illinois, Advocate Health Care is the largest fully integrated not-for-profit health care delivery system in metropolitan Chicago, and is recognized as one of the top ten systems in the country. Advocate is the second largest private employer in the state with more than 24,500 physicians and healthcare professionals serving the health needs of individuals, families and communities in the metropolitan and suburban surrounding areas.

Advocate Health Care operates eight acute care facilities with each seeing approximately 2,000 patients per day. In addition to the acute care centers, Advocate also runs two children's hospitals, several state-of-the-art medical facilities, a home health company and a physician's network at over 200 sites statewide.

Advocate has been honored seven years in a row as one of the nations, '100 Most Wired Hospitals and Health Systems.' This award showcases healthcare organizations that make extensive use of technology to drive operational efficiencies and help clinicians deliver the highest quality care.

In 2001, Advocate began implementing Cerner's Millennium healthcare information technology computing platform. Millennium provides Advocate with a broad suite of medical applications that cover all service centers including; radiology, pharmacy, surgical services, CPOE and orders & documentation. It also provides them with a better management solution to maintain the hundreds of thousands of patient records from across the many locations Advocate clinicians provide care.

### CHALLENGES

In order to further enhance the efficiencies of hospital staff, Advocate's IT Group deployed a wireless network to give clinicians access to applications and medical data at the point of care. The completed infrastructure included HP and IBM Lenovo laptops and tablet PCs that connected through Cisco access points to Citrix servers. Once the clinician had signed-on via biometric scan and password, and authentication was completed, clinicians could access any of the Millennium applications from within their Citrix session.

Currently, Advocate has 100 Citrix production servers with 58 running Metaframe XPE and the remaining 42 running Metaframe XPE in a VMWare 2.5.3 environment. On average 20 clinicians are connected to each of these servers at any given time. As the deployment evolved, the IT Group used LANDesk's remote software distribution tool to publish software updates and upgrades to the remote client devices.

A key challenge that Advocate's IT Group faced dealt with wireless connectivity issues. As Advocate's doctors and nurses moved through their facilities, they noticed that wireless access was sometimes intermittent. Lost connectivity would occur in certain hallways, near some types of medical equipment, or due to uncertain causes. "You can equate it to cell phone coverage," explains Dan Lutter, Director of Field Technology Services, "sometimes your signal drops for no apparent reason and you lose a call. This is exactly what was happening in our facilities on our wireless LAN. Clinicians would lose coverage during their rounds and it would disconnect their Citrix session. We'd have doctors or nurses that were working on documents for 45 minutes, suddenly lose their network connection and get kicked out of the application – with all their work lost. This created a lot of frustration among our clinicians and made for very dissatisfied users."

### Organization

Advocate Health Care

### Industry

Healthcare

### Challenges

- Network and Cerner application sessions crashed when devices lost network connectivity
- Needed management tools to better monitor and control wireless deployment

### Solution

- Mobility XE software
- Citrix Metaframe XPE
- Cerner Millennium
- Cisco wireless infrastructure

### Results

- Application sessions were kept alive through lost connectivity
- 30% fewer support incident calls regarding wireless network
- Increased productivity and efficiency of mobile clinicians.

Advocates' clinicians also had disconnects occur when handoffs between wireless subnets wasn't smooth. For example, as a nurse updating patient data during her rounds, passed into a different wireless subnet, sometimes the handoff to the new IP address was not succinct and caused a brief disconnection from the network. This momentary loss of coverage caused the Citrix server to assume that the user had logged off and thus terminated their session. Again causing the user's data to be lost and requiring re-logging in to the network, restarting applications, and redoing previously completed work.

"These sporadic ripples in the wireless network caused a lot of problems for us. We were not seeing the efficiencies that we had expected from our mobile deployment. It was also impacting the IT support function. Of the service requests that came in from our mobile clinicians, roughly 60% were related to wireless connectivity issues, with the remaining 40% split evenly between device battery or application issues. Needless to say we needed a solution to resolve the connectivity problems. It was preventing us from seeing the productivity benefits that wireless data access should provide."

## SOLUTION

"There were two solutions that we considered," furthers Lutter, "one was network-based and the other was client-server software from NetMotion Wireless. After trialing each, we determined that Mobility XE from NetMotion Wireless was the right option for our environment."

Mobility XE is a software-only solution that provides secure, continuous remote access to network resources and applications from mobile devices over any wired or wireless IP-based network. It insulates applications from lost connectivity whether momentary or for extended periods allowing those application sessions to remain active. Once network connectivity has been re-established, Mobility XE seamlessly reconnects the remote device to the applications it was accessing – without user intervention. For Advocate, it made their connectivity disruptions disappear. If a clinician lost their network connection or roamed to a different subnet, Mobility XE masked these disruptions or IP address changes from the Citrix server. In doing so, it kept the Citrix session alive, which in turn meant that the Cerner Millennium applications continued to function.

"For Advocate Health, Mobility XE met our two key criteria," adds Lutter, "first, it worked exactly as promised and secondly, it was easy to support. Management and ongoing support is important to consider and Mobility XE was much more conducive to what we were looking for. We have about 1,600 mobile devices and we needed a way to manage those devices. We found that this was much easier using Mobility XE."

Installing Mobility XE involves deploying client software to remote devices and also server software within the IT infrastructure. "We planned to deploy Mobility XE to our mobile devices over a weekend using LANDesk's remote distribution tool. In the end it only took one day to deploy with about a 95% success rate. The remaining 5% was due to devices that were powered down or off the network."

Once deployed, clinicians saw no change to their sign-on procedure. Mobility XE uses existing authentication methods, so from the users' perspective the only change they experienced was continuous connectivity to applications and no disruptions to their Citrix sessions.

"There was an unexpected benefit that we derived from Mobility XE," adds Lutter, "we can now keep our devices' Network Interface Card (NIC) drivers current without disrupting clinicians. Before, we could push updates to machines, but this would require resetting the NIC card which dropped the user's connection. But with Mobility XE, their connection still functions keeping the session alive. This is a huge benefit."

*"Mobility XE has provided us with a seamless, stable environment for our clinicians to work in."*

*Dan Lutter,  
Director,  
Field Technology Services  
Advocate Health Care*

Following installation of Mobility XE, Lutter has seen a reduction in support requests from clinicians. "We've seen about a 30% reduction," Lutter adds, "issues related to wireless connectivity have been reduced dramatically. Support requests these days are mostly related to battery charging problems or questions regarding applications."

Mobility XE also features a rich set of management tools and reports to support network managers' control over their wireless deployments. For example, using Mobility XE's reporting capabilities, network managers can monitor the current battery life on each device. "This is extremely useful," explains Lutter, "it provides us with a continuous view of each device and lets us know when we need to alert a clinician."

As Lutter concludes, "access to patient records and test results at the point of care can increase staff efficiency and ultimately help improve clinical outcomes. And, Mobility XE has provided us with a seamless, stable environment for our clinicians to work in."

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Advocate Health Care*

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