Citrix Application Delivery for Healthcare

Boston Medical Center advances reputation for technical excellence with Citrix

Boston Medical Center is a private, not for profit, 575-licensed-bed academic medical center located in Boston’s historic South End. The hospital is the primary teaching affiliate for Boston University School of Medicine. Emphasizing community-based care, Boston Medical Center, with its mission to provide consistently accessible health services to all, is the largest safety net hospital in New England.

Boston Medical Center provides a full spectrum of pediatric and adult care services from primary to family medicine advanced specialty care. It also has the largest 24-hour Level 1 trauma center in New England.

The Challenge: Enhancing secure application delivery to clinicians

When Boston Medical Center decided to implement a computerized physician order entry (CPOE) system from Eclipsys to improve accuracy and patient safety, the IT team realized the solution would require frequent client software updates. Lacking a mechanism to deploy the Eclipsys clients and subsequent updates to all desktops in the enterprise, Boston Medical Center turned to Citrix Presentation Server™. In 2001, the organization set up a small Citrix server farm to deliver the Eclipsys Sunrise Clinical Manager (SCM) application to clinicians on campus via Program Neighborhood®, as well as provide remote access via a Web-based portal called MyBMC.org for physicians working off site.

Over time, this server farm grew as the IT team delivered other applications via Presentation Server. However, Brad Blake, director of infrastructure and engineering, wanted to do even more. “One of the main drivers was also server consolidation.

To achieve this I knew that we would have to enable a greater number of concurrent users per server. The issue was that several of our applications cannot cohabitate on the same server because of application conflicts.”

“I knew I needed a mechanism that would allow me to silo applications in their own space to ensure compatibility with other applications running on the same Citrix server. The plan was to move to a pure Web-based application delivery environment in order to create a similar experience for end users, whether internal or external.”

Finally, for regulatory reasons, Blake wanted to be able to centrally control which remote users were connecting to specific applications, limit what they could do in those applications based on their location, and verify that their devices were secure before granting access to the environment.

Key benefits
- Provided a seamless, consistent user experience
- Enhanced security and control to support HIPAA compliance
- Improved application availability with server load balancing
- Simplified IT administration with centralized management

Citrix is helping us enhance our technology leadership by delivering applications to roaming clinicians with speed, simplicity and security.

Brad Blake
Director of Infrastructure and Engineering,
Boston Medical Center
Upgrading and expanding the Citrix environment

When Boston Medical Center initially selected Citrix Presentation Server in collaboration with CBE Technologies, a Platinum Citrix® Solution Advisor, the organization was looking for the “best of breed” solution for application delivery. Blake said, “It was clear that Citrix was the leader in this area. We wanted to partner with a stable company that had a robust product offering as well as a clear roadmap of future products and enhancements.”

Therefore, Blake and his team welcomed the opportunity to upgrade to the latest version of Presentation Server, particularly because it addressed key challenges in application isolation, printer management and higher user density per server. The medical center is currently rolling out the new Citrix solution, which will ultimately deliver more than 50 applications to about 1,500 concurrent users — who range from administrators to clinicians of all types — using laptops, PCs and wireless carts.

In addition to Eclipsys SCM, Boston Medical delivers several GE applications such as GE Centricity for outpatient management and inpatient pharmacy, as well as Microdea for Medical Records and other applications that provide functionality for physician credentialing, payer management and admitting.

However, the team did not stop there. Based on their satisfaction with Presentation Server, they also implemented two Citrix Access Gateway™ appliances to provide secure application delivery over the Web with Citrix® SmartAccess, and a pair of Citrix® NetScaler® appliances for server load balancing.

Improving the user experience while tightening security

Blake’s main goal with the expanded Citrix environment is to “provide clinicians with access to the data they need when they need it, no matter where they are or what device they are working on.” To achieve this, he plans to move to a Web-based delivery system leveraging Access Gateway that will allow physicians and other staff to securely access applications from their private offices or homes, as well as on campus — with an identical experience each time. “Citrix enabled us to create a clear and consistent end user experience for the staff regardless of where they are on campus. Additionally, our users enjoy the same experience when accessing their applications whether they’re at the hospital or external to the facility.”

While delivering seamless access, Blake must also ensure a high level of security and oversight for HIPAA compliance. He is relying on Citrix Access Gateway to give IT centralized control over which users can access certain applications, and what actions each can take — such as printing or downloading. “With Citrix SmartAccess, we have the ability to publish an application only to the users who need it. Not everyone sees every application. Also, we can interrogate a remote device to find out exactly what is running on it. If it doesn’t have certain patches or antivirus software, we can direct the user to install that protection before we grant access to the application.”

In addition, the Citrix solution supports the use of RSA SecurID tokens for two-factor authentication, which further strengthens HIPAA compliance.

Providing higher application availability with NetScaler

Blake implemented Citrix NetScaler to manage server load more effectively, particularly because he expects the number of users to increase significantly with the upgraded environment. “With load balancing, we can ensure that users will be able to connect seamlessly without any issues. Even if there is a server failure, we can still deliver high-availability access to our applications.”

Networking environment

- Citrix Presentation Server™ running on 120 Dell 2850 servers
- Citrix Access Gateway™
- Citrix® NetScaler®
- Microsoft® Windows Server® 2003
- WAN, wireless connectivity
- Dell PCs, laptops, wireless carts

Boston Medical Center
He added, “We’ve used other approaches in the past, but NetScaler is a more robust technology. And I prefer it because it is appliance-based, which is much simpler to administer and more cost-effective than having to maintain separate servers and operating systems.”

Increasing IT efficiency with centralized management

The original reason for installing Citrix Presentation Server was to centralize application administration and delivery. As the number of applications and users has grown, this capability has become even more valuable. Further, the addition of Access Gateway and NetScaler has added new management tools to the environment.

“If we didn’t have Citrix in place, we would without a doubt need a significantly larger field service staff,” Blake said. “I imagine local desktop issues would increase, whether related to incompatibilities or accidental deletion of a file needed for that application. In other environments that I have worked in where Citrix wasn’t present, a significant amount of time and effort was spent managing local application and desktop issues. In comparison, the Citrix solution allows us to minimize the amount of field support needed, enabling a few server engineers to manage the entire application environment.”

Future plans

The medical center is evaluating Citrix Password Manager™ for single sign-on access to applications to increase information security.

Blake concluded, “We consider Boston Medical Center to be leading-edge and aspire to be one of the most technically advanced hospitals in the country. Citrix is helping us enhance our technology leadership by delivering applications to roaming clinicians with speed, simplicity and security. We’re very excited about our updated environment and expect great results.”

About the Citrix Solution

Citrix Presentation Server™ is the de facto standard for delivering Windows applications at the lowest cost—to any user, anywhere. It offers both application virtualization and application streaming delivery methods to enable the best access experience for any user, with any device, working over any network. Citrix Password Manager™ is the most secure, efficient, and easy-to-deploy enterprise single sign-on solution for accessing password-protected Windows®, Web, and host-based applications. Citrix Access Gateway™ is the only SSL VPN to securely deliver any application with policy-based Citrix® SmartAccess control. Users will have easy-to-use secure access to all of the enterprise applications and data they need to be productive and IT can cost effectively extend access to applications while maintaining security through SmartAccess application-level policies. With Access Gateway organizations are empowered to cost effectively meet the anywhere access demands of all workers—enabling flexible work options, easier outsourcing and non-employee access, and business continuity readiness—while ensuring the highest-level of information security.

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