Mobility and Cloud Keys to Fulfilling Promise of Electronic Medical Records

Virtualization enables anywhere, anytime access for patient-centered care

The promise of electronic medical records (EMRs) is an assurance that patients will receive consistently high-quality care across locations and specializations by giving providers anytime, anywhere access to comprehensive patient information. To make good on this promise, however, healthcare organizations need to integrate the EMR system smoothly and securely with imaging, pharmaceutical, financial, research and other systems. For that, they need to incorporate mobile and cloud-based technologies into a scalable, high-performance and secure infrastructure.

This white paper provides a brief, high-level overview of the key role mobility and cloud computing play in addressing the challenges healthcare organizations face today. The paper provides IT leaders with guidance on solutions that virtualize EMR systems across a wide variety of desktop and mobile devices. These solutions enable more rapid deployment, easier scalability and shorter time to value—without compromising the security of patient information.
Healthcare in the Internet Age

Moving data to the cloud and making it readily accessible on mobile devices has simplified and accelerated the process of doing almost anything—from paying bills to making appointments and ordering prescriptions—from almost anywhere, at almost any time. As healthcare focuses on patient care and preventive medicine, this profound change offers new opportunities to transform the industry.

An integrated healthcare infrastructure that leverages cloud services and mobility presents the best opportunity to date for addressing some of the industry’s most important goals: improving patient outcomes, streamlining processes for payers and improving clinical efficiency. The Health Information Technology for Economic and Clinical Health (HITECH) Act, part of the American Recovery and Reinvestment Act of 2009 (ARRA) stimulus package, allocates funding for per-hospital and per-physician incentives for those who demonstrate “meaningful use” of EMRs on a specific timeline. The financial motivation of meeting these deadlines may be speeding adoption of EMRs, but healthcare organizations had already begun to recognize the potential of making patient data comprehensive, centralized and easily accessible.

Using mobile technology, healthcare providers and managers can access patient information where and when it’s needed most. They can check a patient’s health history on the desktop PC in an exam room and pull up medical imaging files on a tablet in the operating room. They can submit a request for payment to an insurance company from a home laptop and requisition lab tests on a smartphone during the morning commute. In addition to streamlining workflow, this ready access to data shaves precious minutes off the time needed to make a diagnosis or administer a treatment—a boost in efficiency that in some cases can be a matter of life or death.

Placing patient data and clinical applications in the cloud, meanwhile, further improves organizational effectiveness. Centralized control and delivery enables healthcare organizations to share the same consistent, complete, current information and services with all providers, managers, administrators, partners and vendors. In addition, cloud services simplify management and maintenance, allowing healthcare organizations to shift IT spending to more strategic purposes. To realize the combined potential of cloud and mobile technology for implementing EMRs, the healthcare industry needs to address two significant challenges:

1. **Provide consistent, reliable access** to the EMR system to all end users, regardless of which device and operating system they use.

2. **Protect patient data** in the cloud and on users’ devices, as required by the many stringent laws and regulations governing patient privacy and healthcare information security.

Fortunately, a solution exists to address both of these challenges simultaneously. In short, healthcare organizations can virtualize their critical clinical applications, including their EMRs, and provide clinicians with secure access to those applications from any device, from thin clients to tablets to home computers. This gives end users direct access to the centralized application and/or to a clinical or staff desktop where the application is running, while the application and its data remain on a secure central server. In addition to protecting confidential data, both in transmission and in use, this centralized solution ensures applications are simple to maintain and always deliver the most current, up-to-date records.

**Enabling the New Healthcare Paradigm**

To address the challenges and requirements of healthcare providers, Citrix and IBM worked together to develop a joint desktop and application virtualization solution built on infrastructure designed for optimal performance and security. Powered by Citrix virtualization software and supported by
servers, storage, networking technology and consulting expertise from IBM, the solution gives clinicians and staff simple, real-time access on any device to EMR systems as well as other critical Windows, mobile, Web and SaaS applications. Whether they’re carrying laptops, tablets or smartphones, healthcare providers can connect securely and seamlessly to the EMR system as they roam across locations and networks, enabling improved care and greater operational efficiency without sacrificing patient privacy or regulatory compliance. All data remains within the data center, protected through encryption, secure remote access, event logging and multifactor authentication. In addition, the solution simplifies operations and lowers costs by allowing healthcare organizations to manage, patch and update desktop images and apps in a single central location. To scale with growth, the organization need only install the Citrix client on additional devices.

The joint solution combines Citrix XenDesktop and Citrix XenApp for desktop and application virtualization with a cloud networking platform with Citrix NetScaler, designed to ensure more efficient and scalable application performance. It has been proven and optimized through IT relationships with leading EMR and other healthcare IT vendors, including Epic, Cerner, McKesson, Meditech, Siemens and many more.

The solution is supported by the IBM PureFlex system, a combination of leading IBM servers, storage and networking pre-tuned for optimal performance and security, to streamline the process of loading, installing, configuring and updating applications. This stronger, more scalable infrastructure provides the performance healthcare organizations demand to deliver a higher standard of care.

PureFlex supports a wide range of operating environments and storage types, and manages both physical and virtual resources from a single vantage point, for greater flexibility and faster time to value. In addition, the solution includes IBM consulting services to help healthcare organizations assess, design and deploy a sustainable, personalized, patient-centric infrastructure.

In an era when Gartner predicts 40 percent of companies will offer employees the option of using their own mobile devices in the workplace by 2016, this solution relieves healthcare organizations of worrying about which devices to support and how to accommodate a seemingly endless combination of devices, operating systems and applications. Instead, they can follow the example of a mid-sized healthcare organization in the heart of California’s Central Valley. The organization recognized the need to give doctors anytime, anywhere access to complete patient data and clinical applications, but because its doctors are contractors rather than employees, the group could not require them to standardize on any individual device. Instead, it needed to provide remote access to its EMR system on any mobile device and platform its clinicians chose to use.

Leveraging technology from Citrix and IBM, the group developed a complete virtual desktop that can be delivered to any device, from desktops and laptops to smartphones and tablets. Instead of waiting for an available desktop computer, doctors can now log in to the virtual desktop to access all the hospital’s clinical and EMR systems in real time—not just from operating rooms and emergency rooms, but in hallways, at home and even from a supermarket parking lot if necessary. In addition, the organization is using the solution to push out a standardized Windows desktop to nonclinical settings, further reducing the IT costs of managing and maintaining hundreds of workstations. Extending the system is as simple as downloading the virtual desktop onto a new employee’s tablet or phone, making it infinitely scalable on extremely short notice. And because the virtualized solution runs in the data center, patient information is not stored on end users’ devices, ensuring HIPAA-compliant, secure connectivity throughout the healthcare system.

**Conclusion**

Mobility and cloud solutions allow healthcare organizations to deliver critical patient data to clinicians and staff whenever and wherever it’s needed, for more effective care and more efficient administration at every point, from diagnosis to payment. Citrix and IBM, experts in virtualization technology and networking, bring together the best of both mobility and cloud technology in a joint solution tailored to the specific needs of the healthcare industry.

Offering ease of deployment, ease of scalability and high security, the joint solution helps your healthcare organization achieve rapid time-to-value by enabling you to launch or extend your EMR system with seamless integration with any mobile device your employees care to use. The resulting infrastructure—integrated, mobile and cloud-enhanced—positions your hospital, medical practice or other healthcare institution for cost-effective, patient-centered future growth.