

# EMC Infrastructure Solutions for VMware Healthcare Environments

## The Big Picture

EMC has the expertise with VMware vSphere, VMware's first cloud operating system, to help maximize the value of your IT assets while reducing operational, support, and capital costs:

- Maximize the value of IT assets, while reducing costs, with a virtualized, consolidated environment
- Decrease deployment time, risks, and costs
- Increase energy efficiencies
- Enhance backup and business continuity features

Today's healthcare IT staffs face significant challenges in managing their growing IT infrastructures as they balance increasing organizational, physician, patient, and regulatory demands for access to and protection of patient information. Traditional hospital data centers, built around decentralized, functional stovepipes of patient information and supported by a multitude of dedicated servers and storage devices, will be challenged to support today's dynamic systems like EHR applications or Health Information Exchanges. And with a keen focus on achieving "EHR meaningful use," healthcare CIOs must first rationalize existing infrastructures before implementing or significantly expanding their EHR environments.

A decentralized approach to managing infrastructure can contribute to increased risk and complexity and is characterized by:

- An unsustainable architecture—in some hospitals there is a 1:1 bed-to-server ratio
- Buying twice the amount of servers for high availability and disaster recovery which is both expensive and actually introduces more risk instead of reducing overall risk
- Uncontrolled growth of servers and storage with underutilized IT assets
- Increased complexity and risk to maintain widely dispersed desktop environments
- Inflexible infrastructures and excessive downtime
- Unacceptable service levels that can negatively affect patient care delivery
- Insufficient power and space to support a "bloated infrastructure"

Healthcare organizations are deploying virtualization strategies to simplify the management of disparate applications and associated infrastructure to improve business continuity and to consolidate and substantially reduce their overall total cost of ownership. Virtualization also enables healthcare organizations to provide better service levels for high availability, improve desktop management and clinical workflows, and deliver more operational flexibility and responsiveness.

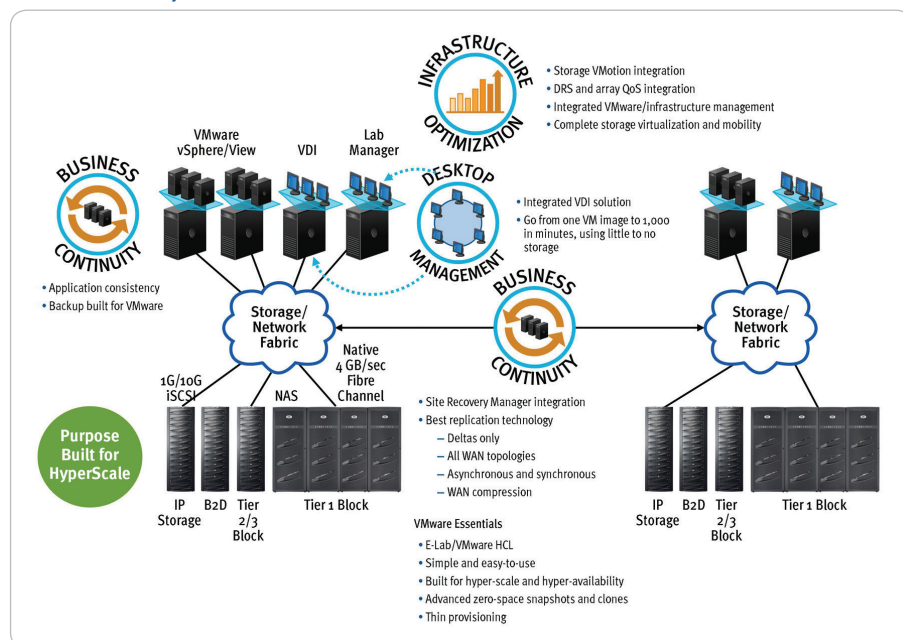
## Creating a virtual infrastructure for healthcare

Healthcare organizations are using VMware to help transform and manage infrastructure more efficiently and respond to changing needs. EMC and VMware have worked together to integrate VMware with EMC information management tools to automate and reduce the complexity of IT tasks including managing backup processes, discovering assets, and identifying network problems. And EMC and VMware are working with leading clinical application providers to transform how clinical applications are delivered and consumed.

**Consolidate servers and storage.** Leverage VMware to transform your server infrastructure, enabling applications and databases to be supported and maintained independent of the server platform. Healthcare organizations can choose from a wide range of EMC® storage platforms and networks based on current and anticipated future service-level needs to reduce “server sprawl” and optimize those servers that remain active.

**Zero downtime maintenance.** Maintain IT infrastructure compliance while performing software maintenance, updates, and upgrades. Run baseline audits for patch compliance using VMware Update Manager against your virtual machine infrastructure, and automatically generate alerts when a VM is not within compliance policy guidelines. VMware Update Manager can safely and automatically patch the virtual machines which are either online or offline.

## Infrastructure Optimization with VMware



**Migrate a virtual machine non-disruptively from one physical server to another.** Perform non-disruptive storage migrations. Using VMware Storage VMotion® enables the live migration of running virtual machines from one physical server to another with zero downtime, continuous service availability, and complete transaction integrity. Complex and risky tasks like conducting maintenance, managing upgrades, end-of-lease migrations, adding server capacity, and migrating systems from “test” to “production” mode can be performed without shutting down the VM, which means unnoticeable downtime to the end-users.

**Reduce energy costs and your IT footprint.** VMware is a founding member of the Green Grid Initiative. Virtualization immediately saves an average of \$500–\$600 in energy costs annually per server. Hospitals in urban centers or major metropolitan locations also save on the cost of the data center. Some power companies are providing rebates for virtualization projects, offsetting the costs of these programs.

**Control your desktops from the data center.** The proliferation of desktop devices within a healthcare environment presents unique challenges to healthcare CIOs, including cost of assets, revision management and control, backups, and regulatory compliance to name a few. With VMware View, healthcare organizations can virtualize desktops and applications and run isolated virtual machines (VMs) on servers in the data center with users accessing their desktops remotely from a PC or a thin client. Since the Desktop VM is running on the same robust virtualized healthcare infrastructure as its server and storage counterparts, it gains all the high availability and disaster recovery attributes.

Now, installations, upgrades, patches, and backups can be done with more confidence and without massive intervention and disruption. Your IT department can manage complex, secured desktop environments from your data center, also preserving the security level of your corporate network at offsite facilities. Remote users access healthcare applications that reside in the corporate data center, where you can more easily adhere to compliance requirements, as well as secure data that is now locked down in the data center.

**Desktops Follow the Clinician...**

- Flexible and familiar end-user experience with true mobility and security
- Full application compatibility and follow-me/workflow advantage



The image contains three distinct icons, each featuring a silhouette of a person's head with a red cross symbol below it, set against a colored square background. The first icon is yellow and labeled 'Nurses' Station Desktop', showing a desktop computer with a monitor and keyboard. The second icon is purple and labeled 'Wireless COW Thin Client', showing a thin client device on a mobile cart with a monitor and keyboard. The third icon is orange and labeled 'Laptop Remote Physicians Office', showing a laptop computer.

**Eliminate redundant data and reduce backup window.** EMC software and technologies provide advanced capabilities for minimizing redundant data, optimizing performance, and resolving bandwidth challenges. EMC Avamar® data deduplication software is integrated with VMware Consolidated Backup (VCB) software, reducing backup times of virtual machines by up to 90 percent by eliminating backups of multiple copies of the same data or file. When combined with consolidated storage, low-cost disks, and storing effectively based on the value of information, the speed of backups is enhanced and costs reduced.

**Accelerate recoveries and ease IT replication administration.** EMC local and remote replication products are fully proven with VMware vSphere supporting host-, array-, and network-based replication, and they improve business continuity and accelerate disaster recovery mandated by HIPAA and Joint Commission regulations. They also ensure full integration between virtualized and non-virtualized environments.

**Extend the benefits of virtualization to files and storage for more effective management.** VMware can help healthcare organizations optimize their heterogeneous file system environments, including NAS, CAS, and file servers, and, if applicable, increase the flexibility of multi-tiered, heterogeneous SANs.

**Identify network problems quickly.** EMC Ionix™ (formerly EMC Smarts®) network monitoring solutions pinpoint the root cause of infrastructure problems that affect hospital IT operations and availability, regardless of whether the source of the problem is a “physical” or a “virtual” asset.

**Automate and optimize a virtual healthcare infrastructure.** Automatically manage the dynamic distribution of resources, assigning compute power to applications only when needed and to the extent needed, or as specified by your policies. This means less time and people devoted to mundane tasks resulting in dramatic cost savings and increased operational efficiency, flexibility, and IT service levels.

## EMC Global Services

EMC Global Services offers a full range of virtualization strategy, design, implementation, and residency services to help customers accelerate their enterprise virtualization initiatives. As a grid-level VMware Authorized Consultant (VAC), EMC leverages its deep knowledge of enterprise infrastructure expertise in key application environments and VMware-integrated solutions to speed customer virtualization deployments in data center and remote office infrastructures and integrate VMware vSphere into the enterprise information infrastructure.

## Solution value

EMC offers a comprehensive set of solutions, skills, and best practices to help you virtualize your healthcare information infrastructure. And EMC's virtualization and infrastructure optimization services can help you attain your goals faster and with less effort.

- Do more with your existing IT assets: Achieve higher levels of performance, availability, and flexibility that let you respond to your healthcare digital transformation, regardless of your server platforms.
- Reduce operational, capital, and support costs by consolidating servers and storage and by standardizing your healthcare infrastructure.
- Gain more value from your IT staff. A well-designed virtual environment is easier to manage and maintain and frees your staff to drive more value back into hospital operations, including the ability to create, test, develop, and demo copies of databases in an instant.
- Maximize the value of your virtualized healthcare infrastructure. After deploying VMware for consolidation, gain additional benefits to your processes for backup, disaster recovery, business continuity, and desktop management challenges.



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### Take the next step

Today, virtualization strategies are on the shortlist of nearly every healthcare IT shop's "must have" list. Put the power of VMware vSphere to work for your healthcare organization now by contacting your local EMC account manager or visiting [www.EMC.com/healthcare](http://www.EMC.com/healthcare).