

# EMC Healthcare Solutions for VMware

## Reduce complexity and cost while delivering high availability for your clinical and business applications

Healthcare organizations continue to make information infrastructure investments to streamline workflows for accelerated patient care diagnosis and treatment, and time-to-payment. As additional clinical and business applications are deployed, healthcare organizations are also looking for IT efficiencies to reduce cost and complexity while managing the expanded scale and scope of IT operations.

### What is virtualization?

Virtualization is a proven software technology that is rapidly transforming the healthcare IT landscape and fundamentally changing the way that people compute. Virtualization essentially lets one computer do the job of multiple computers by sharing the resources of a single computer across multiple environments. Virtual servers and virtual desktops let you host multiple operating systems and multiple applications locally and in remote locations, freeing you from physical and geographical limitations. In addition to energy savings and lower capital expenses due to more efficient use hardware resources, the creation of a virtual infrastructure for healthcare also delivers high availability of resources, better desktop management, increased security, and improved disaster recovery processes.

Today's healthcare IT staffs face significant challenges in managing their growing IT infrastructure as they balance increasing organizational, physician, patient, health plans, and regulatory demands for access to and protection of this information.

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

- Uncontrolled growth of servers and storage with underutilized IT assets
- Increased complexity and risk associated with maintenance of widely dispersed desktop environments
- Inflexible infrastructures and excessive downtime
- Skyrocketing costs associated with managing asset acquisition and regulatory compliance
- Unreliable service levels that can negatively impact patient care delivery
- Insufficient power and space availability

Healthcare providers and payers are deploying virtualization strategies to simplify the management of disparate applications and associated infrastructure and substantially reduce their overall total cost of ownership. Virtualization also enables healthcare organizations to provide better service levels for the high availability required for clinical and business applications and for provisioning metrics.

### Virtualization – transformational change in IT



## Reasons healthcare organizations are deploying virtual IT infrastructures

1. **Server Consolidation and Infrastructure Optimization:** Virtualization makes it possible to achieve significantly higher resource utilization by pooling common infrastructure resources and breaking the legacy “one application to one server” model.
2. **Physical Infrastructure Cost Reduction:** With virtualization, you can reduce the number of servers and related IT hardware in the data center. This leads to reductions in real estate, power, and cooling requirements, resulting in significantly lower IT costs.
3. **Improved Operational Flexibility and Responsiveness:** Virtualization offers a new way of managing IT infrastructure and can help IT administrators spend less time on repetitive tasks such as provisioning, configuration, monitoring, and maintenance.
4. **Increased Application Availability and Improved Business Continuity:** Eliminate planned downtime and recover quickly from unplanned outages with the ability to securely back up and migrate entire virtual environments with no interruption in service.
5. **Improved Desktop Manageability and Security:** Deploy, manage, and monitor secure desktop environments that clinical providers can access in the clinical care unit or remotely, with or without a network connection, on almost any standard desktop, laptop, or tablet PC.

## Creating a virtual infrastructure for healthcare

The deployment of virtualization technology for healthcare IT environments drives capital and operational efficiencies beyond the simple benefit of safe partitioning. Healthcare organizations harness the power of virtualization to better manage IT capacity, to provide better service levels, and to streamline IT processes.

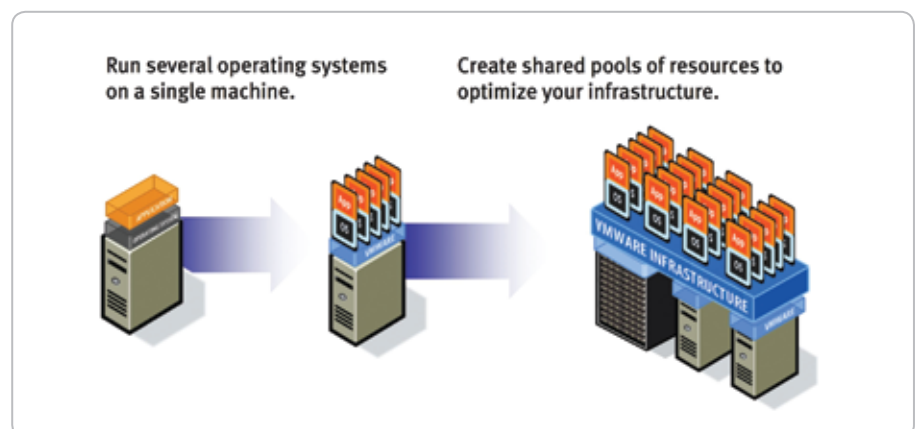
Using VMware virtualization technology to reduce and consolidate their IT environment, EMC has been able to virtualize 1,357 of its servers onto just 231 physical machines, resulting in infrastructure (space, power, and cooling) savings of more than \$4.6 million (a savings of 67 percent) and eliminating nearly 3,159,726 pounds of carbon dioxide emissions over a three-year period.

2008 Technology CEO Conference  
“A Smarter Shade of Green”

In essence, a virtual infrastructure is a dynamic mapping of physical resources to a healthcare enterprise’s needs. While a virtual machine represents the physical resources of a single computer, a virtual infrastructure represents the physical resources of the entire healthcare IT environment, aggregating x86 computers and their attached network and storage into a unified pool of IT resources.

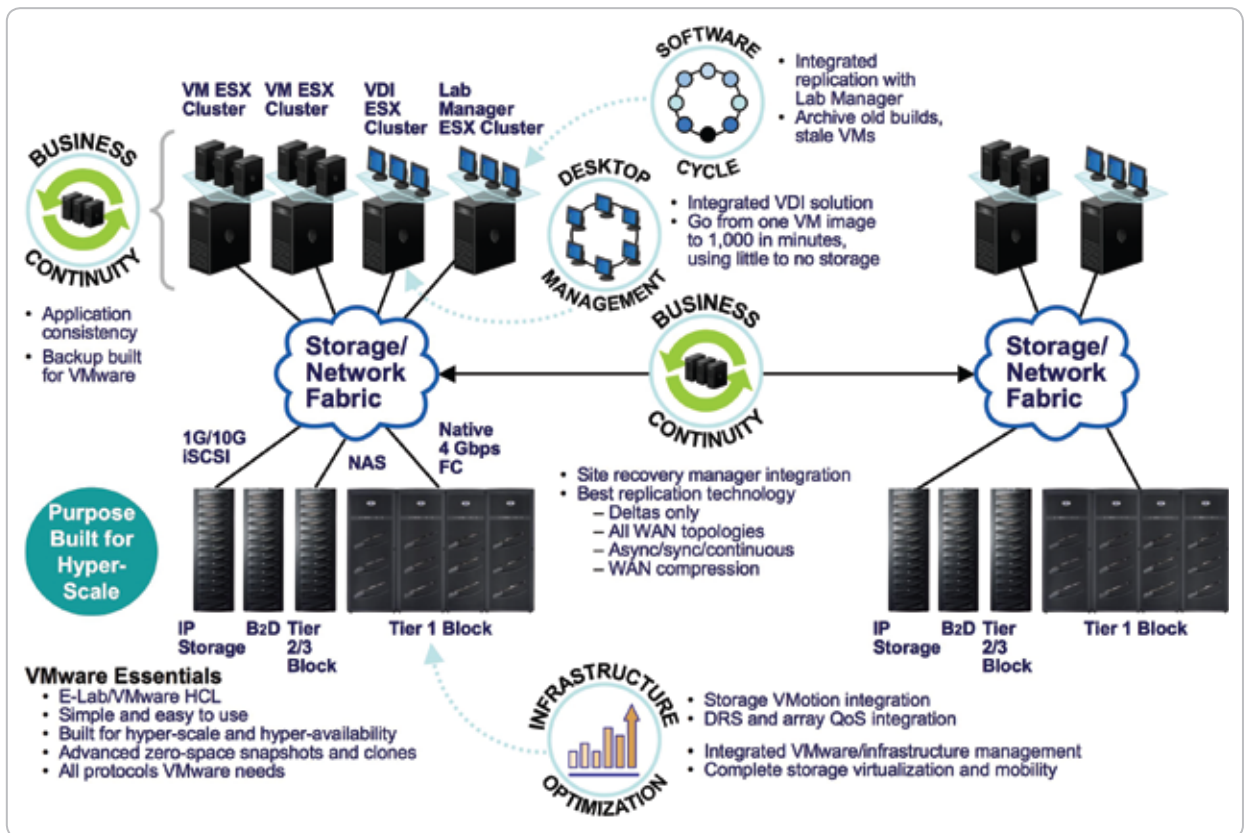
By decoupling the entire software environment from its underlying hardware infrastructure, virtualization enables the aggregation of multiple servers, storage infrastructure, and networks into shared pools of resources that can be delivered dynamically, securely, and reliably to applications as needed. This approach enables organizations to build a computing infrastructure with high levels of utilization, availability, automation, and flexibility using building blocks of inexpensive industry-standard servers. VMware® virtual infrastructure solutions are ideal for production environments in part because they run on industry-standard servers and desktops and support a wide range of operating system and application environments, as well as networking and storage infrastructure. These solutions are designed to function independently of the hardware and operating system to provide customers with a broad platform choice.

## Virtualization – fundamentally better



## Reduce complexity and gain efficiencies across your information infrastructure

Healthcare organizations are leveraging VMware to help transform and manage infrastructure more efficiently and respond to changing needs. VMware is integrated with EMC® information management tools to automate and reduce the complexity of IT tasks including managing backup processes, discovering assets, and identifying network problems.



**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. Choose from a wide range of EMC storage platforms and networks (FC, iSCSI, and NAS) based on your 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 (VM) infrastructure and automatically generate alerts when a VM is not within the hospital’s compliance policy guidelines. VMware Update Manager can safely and automatically patch the virtual machines which are either online or offline.

**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 system migrations 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 to \$600 in energy costs annually per server. Hospitals in urban centers or major metropolitan locations also save on the cost of a data center. Some power companies are providing rebates for virtualization projects, offsetting the costs of these programs.

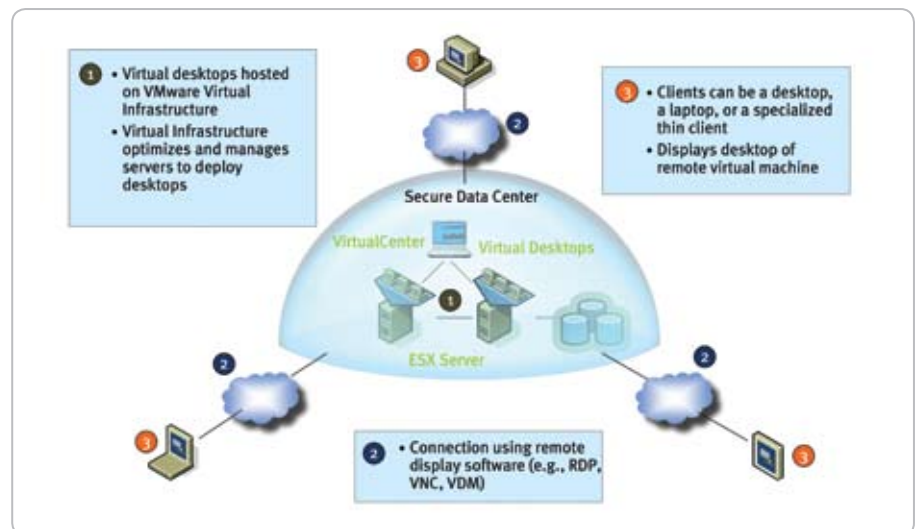
**Control your desktops from the data center.** The proliferation of desktop devices within a healthcare environment presents unique challenges to healthcare CIOs—cost of assets, revision management and control, backups and regulatory compliance—to name a few. With VMware Virtual Desktop Infrastructure (VDI), healthcare organizations can host individual desktops inside virtual machines that are running in their 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.

“The overall capacity, performance, ease of management, and flexibility provided by EMC’s proven technology and VMware virtualization solutions give us many options for effectively managing our growth and further improving the quality of care.”

**Corey Gaarde, Manager of Clinical Systems  
Northwestern Memorial Hospital**

### Virtual Desktop infrastructure



**Eliminate redundant data and reduce backup windows.** EMC software and technologies provide advanced capabilities for minimizing redundant data optimizing performance, and resolving bandwidth challenges. The latest version of EMC Avamar® data de-duplication 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 in VMware environments 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 optimize your healthcare organization’s heterogeneous file system environment, including NAS, CAS, and file servers and, if applicable, increase the flexibility of your multi-tiered, heterogeneous SAN.

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

**Automate and optimize your 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 virtualization services

Creating and maintaining a virtualized healthcare infrastructure requires a different approach than a traditional IT environment—and should be carefully planned every step of the way. EMC takes a holistic approach to infrastructure virtualization that considers servers, storage, scale, security, backup, business continuity, networking, and management and IT best practices to help healthcare organizations address their individual challenges.

EMC Assessment Service for Infrastructure Virtualization examines your current infrastructure and business objectives to provide a business value impact evaluation, discovery analysis, and design recommendations of the proposed consolidation and/or virtualization initiative. From this, you can decide how and where to invest to maximize your return on consolidation and virtualization technology and EMC best practices.

## Solution value

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

## Benefits of EMC Healthcare Solutions for VMware

- **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. Plus, multiply the benefits by consolidating servers and storage at the same time.
- **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, development, and demo copies of databases in an instant.
- **Push VMware to the limit.** Address storage, backup and recovery, and business continuity challenges with standard VMware capabilities.

“Eighty-one percent of customers use server virtualization in production environment, not just test/development.”

Enterprise Storage Group, 2007  
“The Impact of Server Virtualization on Storage.”



EMC Corporation  
Hopkinton  
Massachusetts  
01748-9103  
1-508-435-1000  
In North America 1-866-464-7381  
www.EMC.com

### Learn more about the power of virtualization

Today, virtualization is on the “must have” list of nearly every healthcare IT shops. Put the power of VMware virtualization to work for your healthcare organization today by contacting your local EMC account manager or visiting [www.EMC.com/healthcare](http://www.EMC.com/healthcare).