MAKE THE MOVE TO VMWARE

8 Reasons Healthcare Organizations Are Switching from Citrix
Virtualization: Just the Beginning

Historically, most healthcare IT organizations have chosen remoting as their method to deliver the EMR. Since VMware Horizon® was included in Target Platform in 2013 for delivering Epic Hyperspace® as an installed application directly in the virtual desktop, there has been a shift away from virtualizing just the application. Installing within the gold image for clinical desktops brings efficiencies in terms of hardware, licensing, support, and maintenance, helping to free up IT resources and budget. But there are absolutely still use cases where delivering just the application, and not the full desktop may be the better solution. This includes Community Connect use cases, remote coders, and potentially remote access for providers.

VMware RDS hosted applications can now be used to deliver Hyperspace. Healthcare IT organizations can use VMware technology to support virtually limitless types of desktops and applications and deliver their entire Epic platform using a single VMware Digital Clinical Workspace™ solution with benefits from the data center to the point of care. Centralized management, anywhere access, faster deployment, improved data security, reduced TCO, and the ability to leverage existing technology expertise provide a solid foundation for healthcare organizations working with VMware to transform the cost, quality, and delivery of patient care.

The following 8 reasons outline why so many healthcare IT leaders are moving to VMware solutions:

1. One and Done: VMware Provides a Complete Platform for Delivering Epic
2. Support for any Kind of Desktop and Application Delivery
3. Simplified Management with Infrastructure and Workflow Monitoring
4. Transformational Clinical Mobility
5. Enhanced Security
6. Simplified Storage
7. Dedicated Healthcare Focus
8. Healthcare Service Expertise

Now, it’s your turn.
1. One and Done: VMware Provides a Complete Platform for Delivering Epic

From the data center to the point of care, VMware provides a complete platform to deliver Epic. More than 85% of Epic customers virtualize their Epic infrastructure with VMware vSphere. From the Operational Database (ODB) to Hyperspace, VMware provides a single, proven and trusted software defined solution. The following VMware solutions are included in Target Platform:

- Horizon RDS hosted applications for Epic Hyperspace
- Horizon virtual desktop for Hyperspace, Epic Welcome® and Epic Monitor®
- vSphere for Epic Web and Service servers
- vSphere for Epic Cogito
- vSphere for Epic’s Operational Database
- No Linux on physical recommended

For more information on Target Platform applicability for your organization please contact Epic.

The proven portfolio of VMware solutions for Healthcare include the fundamental services (or building blocks) required to deliver tomorrow’s robust, always-on IT-care platform today. The solutions are intelligent, automated, secure, and mobile, enabling healthcare organizations to achieve a range of critical IT outcomes and move safely toward a real-time healthcare system. Built on VMware vSphere®, the industry’s most widely deployed virtualization platform, VMware provides an evolutionary approach to transformation for healthcare organizations interested in leveraging existing investments and skill sets. Because the software-defined approach extends vSphere virtualization beyond compute, all data center services become as easy and inexpensive to configure and manage as virtual machines.

“Our organization saves $1.6 million annually by using virtual clinical desktops to access EpicCare through VMware Horizon. Physician satisfaction has improved because they have anywhere/anytime access to information such as clinical images or patient information when outside the hospital. Our nurses can now move from workstation to workstation and use their ID badge to tap into virtual clinical desktops and have their session follow them from device to device—it is fast and extremely efficient.”

WILLIAM LEWKOWSKI
CIO
METRO HEALTH CORPORATION
2. Support for Every Kind of Desktop and Application Delivery

VMware simplifies clinical workflows by delivering the right kind of applications, to the right users, for the right tasks. Because no two hospitals or even two departments are alike, VMware offers the desktop and application delivery choices required to remove the usability challenges that typically plague healthcare IT. For example, VMware makes it possible for IT to enable some workstations with roaming desktops for fast access and put other workstations into kiosk mode to support Epic Secure use cases, while giving some providers a full desktop with Epic Hyperspace, others only the Hyperspace application, and still others simply a mobile device with Epic’s mobile-native applications.

VMware solutions remove cost, quality, and delivery headaches by supporting multiple types of desktops, applications, and delivery scenarios such as the following:

<table>
<thead>
<tr>
<th>HEALTHCARE IT REQUIREMENTS</th>
<th>VMWARE CAPABILITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Persistent Desktop</td>
<td>VMware solutions enable IT to customize experiences for caregivers and executives. With VMware Horizon persistent desktops, users get the same desktop every time they login, customized to meet their unique needs, while IT maintains the control it needs to install specialized applications.</td>
</tr>
<tr>
<td>Non-Persistent Desktop</td>
<td>For this most widely deployed model in healthcare, users receive a new desktop every day to keep performance fast and reduce IT helpdesk calls. VMware solutions can help IT reduce desktop operational expenses (OpEx) by greater than 50%.1</td>
</tr>
<tr>
<td>Hosted Application</td>
<td>IT can configure VMware technology to give users access to just a single application. This ensures specific users and communities of users—such as remote coders or Community Connect scenarios—have just what they need, when they need it.</td>
</tr>
</tbody>
</table>

1 VMware, “Virtualization Journey: The Top 5 Virtualization Myths - Debunked.”
### HEALTHCARE IT REQUIREMENTS

<table>
<thead>
<tr>
<th>VMWARE CAPABILITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>User Environment Management</strong></td>
</tr>
<tr>
<td>VMware User Environment Manager™ enables personalization and dynamic policy configuration across any virtual, physical, and cloud-based environment. Policy enforcement can be contextually driven through User Environment Manager to meet compliance and regulatory requirements such as HIPAA. User Environment Manager simplifies end-user profile management by providing healthcare organizations with a single, scalable solution that leverages existing infrastructure.</td>
</tr>
<tr>
<td><strong>Physical Desktop</strong></td>
</tr>
<tr>
<td>Healthcare IT ensures faster physical desktop image management with VMware Mirage™, simplifying back up, recovery, and Windows migration.</td>
</tr>
<tr>
<td><strong>Monitoring</strong></td>
</tr>
<tr>
<td>Desktop-to-data center monitoring with VMware vRealize® Operations for Horizon helps IT easily troubleshoot Horizon and Citrix XenApp and XenDesktop environments to improve system performance and reduce downtime. By integrating published application data into broader operations monitoring, IT can proactively identify and remediate issues across the infrastructure before they affect patient care.</td>
</tr>
<tr>
<td><strong>Identity-Based Application Access</strong></td>
</tr>
<tr>
<td>With VMware Identity Manager™, IT simplifies application provisioning through a self-service catalog, conditional access controls, and for SaaS, web, cloud, and applications.</td>
</tr>
</tbody>
</table>

For information on compatibility with other desktop and applications delivery methods, please contact VMware and Epic representatives.

“VMware’s position reflects the company’s market position and commitment to providing resources to expand its EUC (end-user computing) product portfolio and infrastructure.”

- IDC
3. Simplified Management with Infrastructure and Workflow Monitoring

It’s a fact. Data-driven companies outperform competitors financially. Healthcare organizations that rapidly collect and analyze data from their electronic health records (EHR) platform can also make better business decisions—and making the transition doesn’t have to be hard.

A majority of healthcare IT teams already use VMware technology in their data centers and have already adopted VMware industry-leading tools for data center automation, optimization, monitoring, and compliance. VMware Horizon desktop and RDS hosted applications builds on top of those same proven infrastructure solutions to provide a unified management view across all aspects of healthcare IT infrastructure—even Citrix servers.

To further enhance monitoring capabilities, healthcare IT teams such as Children’s Medical Center Dallas rely on VMware Care Systems Analytics for Epic. The solution extends monitoring visibility into infrastructure and provider workflows. By consuming data from Epic System Pulse and integrating it into VMware vRealize Operations Manager, Care Systems Analytics for Epic provides complete visibility into performance across all aspects of the EHR platform, workflows, and supporting infrastructure.

Care Systems Analytics Key Capabilities

---

VMware Care Systems Analytics for Epic has default dashboards that provide the following capabilities:

**Anomaly detection** – The solution provides an overall view of the health of Epic resources to detect anomalies from the normal behavior previously assessed by the analytics engine.

**Correlations detection** – Drilldown view for quickly browsing several hundred Epic application-specific metrics, ranging from global references to average work times and work exception counts, to support correlations between components.

**Printer queue detection** – Printing dashboard to quickly view and analyze jobs in queue, jobs processed per second, jobs failed, jobs processed, and related server metrics.

**Faster troubleshooting** – A troubleshooting dashboard template creates side-by-side views of Epic resources and underlying infrastructure to reduce time to investigate and resolve issues.
Healthcare patients, caregivers, and staff are increasingly mobile. Through mobile-native applications such as Epic Haiku®, Epic Canto® and Epic Rover®, providers today are creating workflows where mobile form factors deliver patient information faster, in better formats, or with reduced equipment. This is often referred to as "the right device, for the right task, at the right time."

VMware’s Digital Clinical Workspace, which includes VMware AirWatch® enterprise mobility solutions, provides healthcare IT with a single platform to manage all devices through a variety of ownership models. Bring-your-own (BYO), hospital-owned, check-in/check-out, and single application modes provide flexibility in how devices can be managed and used.

Apple iOS, Android, Windows 10, and even rugged devices such as the Zebra MC40 and Honeywell CT50 provide choice to best suit user needs while maintaining and meeting individual workflow requirements. Leading healthcare organizations are also using AirWatch as a platform for innovation, providing mobile devices to patients with Epic MyChart Bedside and entertainment and educational apps to target patient engagement and patient satisfaction initiatives.
5. Enhanced Security

Cybercriminals are inventive. Although no organization can ever be 100 percent protected, VMware helps healthcare IT take a comprehensive and layered approach to security. VMware together with its wide partner ecosystem delivers solutions that reduce opportunities for data theft, malware, and ransomware, while improving overall security policies, processes, and technologies.

Healthcare IT teams are taking advantage of three key defense-in-depth technologies:

- **VMware NSX**, the leading network virtualization platform, delivers the operational model of a virtual machine (VM) for the network. NSX uses micro-segmentation to firewall and control security for East-West traffic inside the data center, minimizing the risk and impact of data breaches. NSX also reduces manual provisioning and cycle time management effort, accelerating IT service delivery and time-to-market for new applications. The benefits of NSX are many, including greater than 50 percent CapEx and OpEx savings.

- **VMware NSX for Horizon** brings the security benefits of micro-segmentation for traffic to the desktop, with policies that dynamically follow virtual desktops. Healthcare IT can set access that dynamically adapts to the end-user’s computing environment, with network security services that map to the user based on role, logical grouping, desktop operating system, and more—indeed, independent of the underlying network infrastructure.

- **VMware TrustPoint™** empowers healthcare security and IT teams with 15-second visibility and control to secure and manage every endpoint across their networks. Combining VMware’s time-tested management capabilities and Tanium’s leading-edge security platform, VMware TrustPoint provides complete endpoint visibility and control with next-generation threat prevention.

NSX templates for Epic leverage the benefits of micro-segmentation to help secure data center and desktop components, contributing to increased security and reduced risk of breach.
6. Simplified Storage for Virtual Desktops

The saying that a picture is worth a thousand words may be truer in healthcare than any other industry. That’s why VMware also provides innovative storage technologies.

VMware vSAN™ is a software-defined storage solution that brings the client model of virtualization to storage. It pools server-side hard-disk drives and SSDs to create an optimized highly resilient, shared datastore for virtual environments. It automates with policy-based provisioning, leaving no idle or wasted resources, and scales, delivering enterprise-grade performance. Proven to lower TCO, vSAN is radically simple, high-performance, and elastic.6

<table>
<thead>
<tr>
<th>Benchmark</th>
<th>Before</th>
<th>After</th>
</tr>
</thead>
<tbody>
<tr>
<td>DATABASE LATENCY</td>
<td>200 msec</td>
<td>&lt;1 msec</td>
</tr>
<tr>
<td>REPORTING TIME</td>
<td>30 min (avg)</td>
<td>5 min (avg)</td>
</tr>
<tr>
<td>APPLICATION LAUNCH TIME</td>
<td>30 sec</td>
<td>5 sec</td>
</tr>
<tr>
<td>IOPS</td>
<td>900 IOPS</td>
<td>53,000 IOPS</td>
</tr>
<tr>
<td>VIRTUAL DESKTOP/ SERVER SESSIONS</td>
<td>40 sessions</td>
<td>60+ sessions</td>
</tr>
</tbody>
</table>

vSAN enables healthcare IT teams using Horizon to convert local storage into high-performance (SSD). This means better performance for much less cost. Given storage is about 40 percent of the cost of any VDI deployment—this is a big deal. vSAN simplifies how storage can be managed—making it easy for a Horizon administrator to configure, allocate, and manage storage—instead of having to rely on a storage administrator to do so. VMware works with leading server vendors to deliver vSAN enabled appliances, that ensure IT teams jumpstart projects.

No other VDI provider currently has an offering equivalent to vSAN in its portfolio. Customers, therefore, need to buy it directly from VMware or else settle for other, more expensive, storage alternatives.

---

6 VMware. "Why Enterprises are Embracing Hyper-Converged Infrastructure (HCI)," 2016.
7. Dedicated Healthcare Focus

VMware first formed Healthcare team in 2008. Recognizing that virtualization could play a role in improving how hospitals delivered clinical applications, VMware established first independent software vendor (ISV) testing lab. The lab was used to prove that healthcare software developers could virtualize their server-side software and deliver the benefits of decreased hardware costs, improved disaster recovery (DR), and streamline testing and the move to production.

With the enactment of the American Recovery and Reinvestment Act of 2009, the incentives and urgency of moving to electronic medical records increased and VMware dedicated technical and sales resources to help guide organizations through the compliance minefield. In 2011, VMware introduced VMware AlwaysOn Point of Care™, the first healthcare-specific validated reference architecture to meet the availability and accessibility needs of care providers, incorporating partners such as F5 and Imprivata and providing a blueprint for successful healthcare information technology delivery.

As healthcare organizations dealt with Meaningful Use and Windows XP migrations, VMware continued to innovate to simplify care provider access to patient information. Virtual desktops became a key technology in streamlining workflows, saving up to 10 minutes every hour for providers through badge tap and desktop roaming.7 And in 2013, VMware became the first vendor to be included in Target Platform for VDI.

VMware continues to invest heavily in healthcare vision. Today the healthcare team includes former healthcare CIOs, CISOs, architects, and desktop and applications experts. More than 85 percent of healthcare organizations today use VMware technology to run and protect their healthcare infrastructure. VMware has won accolades from KLAS, as well as awards from Healthcare Informatics, Peer 60, and many others. VMware is a HIMSS Diamond Member and CHIME foundation member.

---

VMware experts know from experience that different departments and hospitals are unique. VMware experts also understand VMware technology better than anyone. That combination enables VMware Professional Services to deliver in-depth knowledge and personalized guidance to healthcare IT teams interested in maximizing their investment in VMware technology.

The following VMware services are available worldwide:

- **Strategy: Assessment and Planning Services** - VMware experts evaluate healthcare operations from end to end, providing benchmarks, executable roadmaps, and transformation strategies that define a path to greater IT success.

- **Implementation: Design, Deploy and Extend Services** - VMware delivers the design and deployment help an organization needs when the time is right to create, grow, or optimize a Software-Defined Data Center, end-user computing environment, and DevOps approach.

- **Execution: Perform** - By combining a deep understanding of requirements, insights from thousands of successful implementations, and access to extensive expertise, VMware can help accelerate business breakthroughs.

The Choice Is Yours: One VMware Platform Achieves Many Healthcare Goals

Healthcare IT professionals rely on VMware’s Digital Clinical Workspace—powered by VMware Workspace ONE™—and Software-Defined Data Center technologies to simplify and secure their operations. They know that only the VMware platform enables them to unify endpoint management, support real-time application delivery across any mode, empower users with a secure, identity-defined workspace, and leverage comprehensive cloud services—all with defense-in-depth protection that keeps data safe. Organizations currently using an alternative solution should consider transitioning to VMware to achieve:

- **Streamlined desktop management and lower OpEx** around managing desktops and apps by greater than 50 percent

- **Improved security and compliance**

- **Improved productivity** with reduced log on times, access across devices and locations, and contextual access

For further information on VMware solutions for Epic, please contact your VMware representative.

Further information on specific Epic Target Platform testing of VMware solutions can be found in [Epic User Web](#).

Make the switch to VMware today by calling (877) 486-9273.

8. Industry-Specific Services Expertise