Three EHR Modernization Opportunities for Your Healthcare Organization

Embracing cloud and mobility for secure Epic EHR delivery
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New Opportunities

Healthcare organizations are at a tipping point in modernizing the deployment of electronic healthcare records (EHR). While many healthcare organizations use an on-premises data center to build and run their EHR infrastructure, things are changing. Cloud platforms are now supported, more clinical mobile apps are being deployed, and healthcare organizations are increasingly provisioning mobile devices for hospitalized patients and home monitoring.

Yet the additional complexity of today’s anywhere care and work-from-home realities are creating new issues.

- **Operational** – Moving to a cloud service introduces operational unknowns and toolsets. Siloed systems require specialist IT positions, which increases costs.

- **Employee experience** – An organization’s flexibility and overall digital employee experience influence decisions to accept or retain a position. But deploying mobile devices that can potentially be lost or stolen brings the additional management risk of data breaches and exposure to fines and bad press.

- **Security** – Ransomware attacks and other security breaches are on the rise. In 2020, 92 individual ransomware attacks affected 18 million patient records.

However, as organizations reconsider application virtualization as the predominant user interface distribution method, they have an opportunity to modernize the desktop and mobile management lifecycle and security process.

So how can organizations take a fresh look at the complete EHR deployment from database to device?

This ebook addresses three EHR modernization opportunities from database to device, and how partnering with VMware (the leading healthcare infrastructure software provider, according to Definitive Healthcare) can help deliver a complete end-to-end solution.
1. **Flexibility of Hybrid Cloud**

Healthcare organizations can take advantage of both on-premises and off-site resources by adopting a hybrid cloud strategy. Hybrid cloud allows for a flexible mix of computing infrastructure and services to meet clinician and business needs.

For over 90 percent of surveyed healthcare executives, the primary goals are to migrate and modernize legacy applications and to be able to scale up and down to meet changing business needs. It is recognized that expanding the use of subscription- and service-based technology provides that flexibility. With VMware, healthcare organizations have the freedom to choose any cloud and the ability to move workloads using a secure, resilient digital foundation, enabling organizations to adapt quickly, accelerate IT initiatives and achieve business goals.

94% of HC executives agree

“Our major application initiative this year is to migrate and modernize our legacy applications.”

93% of HC executives agree

“The need to scale up or down to meet changing business needs is more important than ever; we’re expanding our use of subscription-based and as-a-service technology for increased flexibility.”

SOURCE: VMware FY22 Q1 Executive Pulse, January 2021
VMware Hybrid Cloud Use Cases

**Migrate to Cloud**
Migrate and modernize applications on your terms

**Scale on Demand**
Extend capacity with cloud-scale resources

**Build Modern Apps**
Build, run and manage developer-ready Kubernetes everywhere

**Modernize for Cloud**
Simplify infrastructure and bring cloud capabilities to your data center

**Extend Hybrid Operations**
Extend and manage consistent IT operations wherever you have workloads

**Use familiar proven solutions**
According to data provided by Definitive Healthcare, 74 percent of all Epic customers use VMware software-defined data center (SDDC) solutions to host their Epic infrastructure, and rising to 94 percent for hospitals with more than 1,000 beds.

With VMware Cloud™, healthcare organizations can use the same proven VMware infrastructure and operations stack to move their critical infrastructure applications and data across private cloud, public cloud and edge environments within a consistent cloud operating model. This approach simplifies and speeds cloud migration and the building of modern apps while scaling on demand.

The result is increased business agility and reduced costs because teams leverage existing skills, tools and policies to manage applications and infrastructure across the hybrid environment. New services can be added quickly, such as delivering telehealth, securely connecting providers in any location and on any device with patients, and extending patient information to new partners, affiliates or merger and acquisition locations.

**Gain flexibility and choice**
VMware Cloud couples operational consistency with a complete set of software-defined services for compute, storage, networking, security and cloud management that enable healthcare organizations to run enterprise applications—traditional or containerized—in private or public cloud environments.

VMware provides the ultimate flexibility for teams exploring cloud options for their Epic infrastructure by enabling the use of VMware Cloud on AWS or Azure. VMware Cloud is also available as hyperconverged infrastructure or can be preinstalled with a hardware purchase.
2. Transformational Anywhere Care

The COVID pandemic has had a profound impact on how healthcare organizations operate. Almost overnight, providers had to find new ways to deliver care while keeping all employees and patients safe. Healthcare organizations put patient information in the hands of providers at new “pop-up” triage and treatment sites and enabled other staff to work from home. Many organizations adapted by adding new healthcare delivery methods, such as telehealth services.

Globally, healthcare organizations now recognize the importance of being able to quickly establish care locations wherever and whenever needed. They now need flexibility when it comes to delivering patient information securely and reliably to sometimes unconventional locations, and to enable administrative and technical staff to continue driving the business of healthcare from outside of the hospital.

Healthcare organizations have had choice in how they present patient information—using Windows, web, and mobile-native applications in virtual and mobile deployments. Yet the additional complexity of today’s anywhere care and work-from-home realities are creating new issues.

- **Operational**
  Siloed systems require specialist IT positions, which increases costs.

- **Employee experience**
  An organization’s flexibility and overall digital employee experience influence decisions to accept or retain a position.

- **Security**
  Ransomware attacks and other security breaches are on the rise. In 2020, 92 individual ransomware attacks affected 18 million patient records.
Address distributed work challenges
Across industries, the ability to deliver flexibility for employees is becoming a competitive advantage. Healthcare organizations, too, are having to compete to attract the best talent for care providers as well as administrative and technical roles.

To help providers navigate immediate distributed work challenges and be prepared for future ones, VMware introduced the VMware Anywhere Care Workspace. It puts patient information in the hands of providers on the right device, for the right task. The Anywhere Care Workspace addresses the challenges of distributed healthcare by enabling the delivery of any application to any device while securing the edge and automating the workspace.

Rethink application virtualization
Changes expected in 2021 provide an opportunity for customers to reevaluate the use of application virtualization, enabling a fresh look at how patient information is delivered to providers across desktop and mobile devices in any location.

The “tap turn treat” benefits of VMware’s virtual desktop infrastructure (VDI) are unrivaled in healthcare. With VDI, providers can log in at different locations, often more than 40 times in a single shift. This efficiency makes it a recommended delivery method alongside native Windows installs.

Deliver any application to any device
In data provided by Definitive Healthcare, VMware ranks as the number-one provider of modern mobile device management and desktop virtualization to healthcare organizations.

Here’s why. VMware solutions modernize endpoint management by providing a single solution across Windows, macOS and mobile devices and the ability to deliver clinical applications to both hospital-owned and bring-your-own devices. Through this digital workspace platform, healthcare organizations can enable a broad set of care scenarios, including:

• Shared clinical workstations using “tap turn treat” workflows with virtual desktop infrastructure, allowing users to log in from different locations
• Mobile clinical workflows on handheld devices with mobile clinical apps for phlebotomists and rounding
• Pop-up care sites using tablets for emergency or event-driven locations
• In-home monitoring using managed mobile devices

Available as a cloud-managed service, the Anywhere Care Workspace frees up valuable IT resources from the mundane tasks of installing, updating and managing infrastructure.

“By centrally managing all of our workloads—including Epic RDSH (remote desktop session host) on VMware vSAN™—we’ve been able to significantly decrease costs, provide a consistent user experience, and keep downtime to a minimum.”
Matthew Douglas
Chief Enterprise Architect
Sentara Healthcare
3. Securing Protected Health Information

Healthcare ranks high among security threat actors’ most targeted industries. VMware Carbon Black reported a staggering 9,851 percent increase in attempted attacks on healthcare endpoints in 2020. Yet many organizations are still applying siloed, bolt-on, point-product thinking that is focused on a narrow set of use cases. This approach reenforces siloed working, despite leadership encouragement to collaborate. As a result, organizations can have a hard time understanding the true scope of vulnerabilities and where to prioritize defenses.

Modern healthcare demands a connected approach to IT security by joining the critical control points of users, devices, workloads and networks in a Zero Trust model.

The Zero Trust approach enables information to be presented in context with data automatically curated from all sources, including threat intelligence. It also gives healthcare an intrinsic understanding of modern and legacy applications to recognize the full implication of an attack and the fastest way to remediate security events.

VMware provides, manages and coordinates the infrastructure solutions defined by the four Zero Trust pillars: users, devices, workloads and networks.

The benefits:

• Shared visibility and analytics, establishing a security context that breaks down traditional silos
• Orchestration and automation for uniform enforcement of security policies across infrastructure
• Security controls that communicate, working as one to establish an end-to-end security posture that supports faster detection and a coordinated response to defend healthcare’s most critical assets

Align security and IT architecture

As part of EHR infrastructure deployments, VMware solutions place security capabilities in line with healthcare architecture, enabling providers to gain distributed security services without the cost and complexity of administering add-on security agents, controls and policies. As a result, protecting a distributed healthcare environment is not only possible but also practical.

For example, the integration of VMware Carbon Black technologies into both VMware vSphere® and the VMware NSX® service-defined firewall provides agentless visibility into workloads and network traffic segmentation. These capabilities detect and prevent malicious traffic as well as provide agentless monitoring of virtual desktop workloads. VMware vRealize® Network Insight can analyze the traffic flows and dependencies between different parts of the Epic infrastructure and automatically deliver detailed firewall rules to segment and secure traffic.
Why VMware?
Definitive Healthcare data reports that 94 percent of Epic customers with more than 1,000 hospital beds and 74 percent of all Epic customers run their infrastructure on VMware.

Instead of protecting individual endpoints, workloads or network elements, VMware solutions empower healthcare teams to protect functioning systems. Threat intelligence is delivered with a holistic view into all system elements through unique machine learning capabilities, enabling automated identification, detection, response and remediation of known and previously unknown threats.

Safeguard experience
While comprehensive, VMware’s intrinsic security approach is people friendly. VMware solutions feature risk-based, conditional access control models that authenticate users with built-in, multi-factor authentication (MFA) and single sign-on (SSO) capabilities. This approach ensures the best user experience as people access the EHR and other types of applications from a wide variety of devices.

The integration of endpoint management and endpoint protection in VMware solutions ensures that user and device context are both considered, reducing the risk of successful password-based attacks—a must-have in today’s highly distributed healthcare environment where employees, partners, affiliates and patients are accessing the network.

One Platform Achieves Many Healthcare Goals
Healthcare IT professionals worldwide rely on the VMware Anywhere Care Workspace and SDDC technologies to simplify, speed and secure their operations. They know that the VMware platform enables them to boost multi-cloud agility, unify endpoint management, support real-time application delivery across any mode, empower people with a secure, identity-defined workspace, and leverage comprehensive cloud services—all with defense-in-depth protection that keeps data safe.

If you are using an alternative solution, consider transitioning to VMware to achieve:

- Hybrid and multi-cloud agility
- Streamlined desktop management and lowering OpEx around managing desktops and apps by greater than 50 percent
- Improved security and compliance
- Increased productivity with reduced log-in times, access across devices and locations, and contextual access
Dedicated healthcare focus

The VMware Healthcare team debuted in 2008 and quickly created an independent software vendor testing lab in response to the success of virtualization in improving how hospitals deliver clinical applications. The lab proved that healthcare software developers could virtualize their server-side software and deliver important business benefits, from decreasing hardware costs to improving disaster recovery to streamlining testing and the move to production.

With the enactment of the American Recovery and Reinvestment Act of 2009, the incentives and urgency within hospitals to move to electronic medical records increased. VMware dedicated technical resources to 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. The effort incorporated partners, such as F5 and Imprivata, to provide 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. In 2013, the VMware Horizon® VDI was included in the Epic Target Platform, followed by Horizon application virtualization in 2015. In 2017, VMware created VMware Care Systems Security, which established a least-privilege, micro-segmentation strategy based on VMware NSX.

Continued investment

VMware continues to invest heavily in healthcare. Today, the VMware Healthcare team includes former healthcare CIOs, CISOs and architects as well as desktop and applications experts. According to Definitive Healthcare data, VMware is the number-one vendor for:

- IS infrastructure software
- Mobile device management
- Virtual desktop infrastructure

VMware has also earned accolades from KLAS, Healthcare Informatics, Peer 60 and others. VMware is a HIMSS Diamond Member and CHIME foundation member.
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Additional Resources
- VMware on Healthcare
- Preparation Pays Off: Sentara Scales IT To Meet Pandemic Demands
- MD Anderson: Keeping Critical Patients Safe and Treated Using SD-WAN
- Forrester Consulting Study Reveals Cyber Risk of Healthcare’s Distributed Workforce
- MIT Executive Study Uncovers Top Healthcare Trends Shaping IT Resilience
- VMware Healthcare customer stories

Getting Started With VMware
VMware experts know from experience that different departments and hospitals are unique. They 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.

These VMware services are available worldwide to support your EHR modernization initiatives:

- **Strategy: Assessment and Planning Services** – VMware experts evaluate your 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 your 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 your healthcare organization accelerate business breakthroughs.

For further information about VMware solutions for Epic, please contact your VMware representative. Further information about specific Epic Target Platform testing of VMware solutions can be found in Epic User Web.

Learn more at [vmware.com/solutions/industry/healthcare-it-solutions](http://vmware.com/solutions/industry/healthcare-it-solutions).