EMC SOLUTIONS TO OPTIMIZE EMR INFRASTRUCTURE FOR CERNER

ESSENTIALS
- Mitigate project risk with the proven leader, many of largest EHR sites run on EMC storage
- Reduce overall storage costs with automated tiering and volume provisioning
- Improve read performance dramatically with SSDs
- Encrypt data at rest with no performance penalty
- Backup and restore Cerner and all other critical apps with a unified, automated process
- Move applications, virtual machines, and data in and between data centers without impacting users
- Reduce backup storage requirements with greater than 95% deduplication rates

TRANSFORM YOUR CERNER EMR ENVIRONMENT
Cerner Millennium electronic medical record (EMR) is at the heart of major healthcare systems around the world. It is essential for complying with requirements of the Affordable Care Act and HIPAA, as well as demonstrating meaningful use according to provisions if the HITECH act.

Because the Cerner EMR plays a key role in ensuring efficient, quality patient care, its underlying Oracle database and Millennium applications require the highest levels of performance and availability. In addition, clinicians today are constantly on the move, requiring anywhere/anytime access to the EMR.

Most legacy IT infrastructures are not optimized to handle the demands of large EMR environments like Cerner Millennium. Planning and configuring the storage infrastructure requires close attention to the unique requirements of Oracle databases. Specialized solutions are often also required to ensure continuous availability of Cerner Millennium in an around-the-clock hospital environment. In addition, IT infrastructures must be designed to manage the rapid proliferation of virtualized desktops among clinicians seeking greater mobility.

EMC® works closely with Cerner to deliver solutions that speed performance, simplify management, enhance data protection and increase productivity. EMC understands the IT needs of the healthcare enterprise. EMC has a strong relationship with Cerner, and years of experience designing and implementing Oracle-based infrastructures to support the Millennium EMR.

HIGHEST PERFORMING STORAGE PLATFORMS
EMC industry-leading storage platforms deliver both the high performance and the reliability required to support the intensive I/O workloads characteristic of a Cerner environment.

EMC Symmetrix VMAX storage systems leverage a comprehensive range of powerful, trusted and smart storage solutions. VMAX comes with built-in support for external servers using RSA® Data Protection Manager for the Symmetrix VMAX D@RE (data-at-rest encryption). This includes key management for maximum flexibility in securing data at the drive-level, both capabilities helpful in addressing HIPAA and HITECH regulations.

VMAX delivers both the highest levels of performance the foundation for six 9s of high availability and resiliency that Cerner Millennium environments demand. Dynamic cache partitioning for VMAX allows Cerner users to prioritize I/O’s so the production database delivers a consistent performance.
“FAST VP alone reduced Cerner EMR response times from fifteen milliseconds to about 5 milliseconds. When we implemented FAST Cache, response times dropped again to just two milliseconds. The performance is just out of this world.”

Roger Lyon, Enterprise Storage Administrator at University of Illinois Hospital and Health Sciences System

**EMC VNX Unified Storage** — Combines powerful and flexible hardware with advanced efficiency, 5-9’s of availability, plus management and protection software to meet the needs of even the most demanding EMR and medical imaging environments. The VNX series has been expressly designed to take advantage of the latest innovations in Flash drive technology to deliver sub-millisecond reads. VNX storage platforms enable your healthcare organization to grow, share, and cost-effectively manage multi-protocol file systems and multi-protocol block storage access.

**Vblock™ Systems from VCE** provide enterprise-class IT infrastructure to support your Cerner EMR environment or for VDI Always On Point of Care™ solution rollouts. With tight integration with VMware operating system and your Cerner Millennium application, this solution provides the response times, security, availability, and agility you need to manage your desktop environment. With a Vblock™ Specialized System for Extreme Applications leveraging EMC XtremIO, an entirely new storage array engineered from the ground-up to unlock flash SSD technology’s full performance potential. This Vblock System leverages flash SSDs exclusively providing the extremely high performance and massive scalability demanded by the largest Cerner Millennium sites and those planning to grow rapidly through acquisitions.

With EMC Solutions for Cerner EHR, you get non-stop access to clinical desktops and Cerner EMR, constant monitoring, load balancing and data replication to optimize performance and uptime.
ORACLE CUSTOMER BACKUP EXAMPLE

- Up to 99% less bandwidth consumption for your backups and replication
- Simplify Oracle protection and reduce disk storage footprint by up to 30X with backup and recovery solutions integrated with Oracle Recovery Manager (RMAN)
- Avoid disasters – rather than recover from them – with active-active data centers (zero RTO and RPO)

SUPERCHARGE YOUR CERNER PERFORMANCE

Fully Automated Storage Tiering for Virtual Pools (FAST VP) moves active data to high-performance storage tiers and inactive data to low-cost, high-capacity storage tiers, automatically optimizing performance in a tiered storage environment for Cerner Millennium. Reducing costs, footprint and management effort, FAST VP delivers automation and efficiency to your virtual data center to put the right data in the right place at the right time. It also maximizes utilization of Flash Drive capacity for high IOPS workloads and delivers single and sub-millisecond response times for “reads.” VFCache extends FAST into the server, adding another tier of intelligence and performance to the I/O stack and eliminating the “I/O gap” where your application server has capacity to process more I/O than your disk drives can deliver. When coupled with FAST, VFCache creates the most efficient and intelligent I/O path from your Cerner application to the data store. With both FAST and VFCache technologies, EMC provides an end-to-end tiering solution to optimize Cerner capacity and performance from the server to the storage.

SIMPLIFY AND ENHANCE ORACLE BACKUP AND RECOVERY FOR CERNER

Simplify your Oracle backup and recovery for Cerner with EMC® Data Domain® deduplication storage systems. These systems are optimized for backup and archive data, making them a cost-effective alternative to tape. Because they store data on disk, recovery from backup becomes fast and reliable while their deduplication technology enables you to keep more copies of data for longer periods. In addition, Data Domain integrates with Oracle Recovery Manager (RMAN), which lets you back up your Cerner Oracle environment directly to disk using RMAN and a network-attached storage Data Domain as a target. Data Domain systems can reduce the amount of storage required by as much as 30 times through inline deduplication, which lets you store weeks or months of full backups.

You can further enhance Cerner backup efficiency with the Data Domain Boost plug-in for RMAN, which improves backup performance by distributing parts of the deduplication processing from the Data Domain system to the Oracle server. This integration can decrease CPU utilization on the Oracle server and reduce LAN bandwidth required by 80 to 99 percent because only unique data is sent to the Data Domain system. Integration of Oracle RMAN and Data Domain Boost gives DBAs needed visibility into and control over backup and disaster recovery processes without
involving the backup administrator. EMC Data Domain deduplication storage systems can simplify complex Oracle backup processes while also controlling costs and meeting retention requirements.

**IMPROVE REPORTING EFFICIENCIES**

Copies of administrative or clinical reports from the Oracle Database, including copies created for multi-site health networks or reports required to be created with great frequency, have until now been created by through a cloning process. This process creates a full copy of a report, requiring additional storage space on arrays and having a direct financial impact on IT costs.

With XtremIO or a stand-alone array, Xtrem Xbrick, creating copies of reports from the Cerner database can now be created as “snap copies,” noting updates/changes only, and with “pointers” back to the source document/report. These copies require significantly less "real estate" on the Xtrem arrays, and can be quickly created in almost unlimited quantities at a major financial savings to Cerner Millennium healthcare organizations.

**PROTECT YOUR PATIENT INFORMATION**

EMC offers Cerner users a number of replication choices that help protect your critical patient information by maintaining smooth, continuous operations and the ability to restart quickly in the event of an unplanned outage.

By deploying EMC Avamar® and EMC Data Domain®, backup and deduplication systems and Data Domain Boost® software you can securely backup and recover across your entire healthcare enterprise, reaching beyond your Cerner and address support for the entire enterprise including support for virtualized environments, remote physician offices, and data center LANs.

**Full backups made easy** – EMC Avamar utilizes “change block tracking” to know exactly what has changed since the last backup and to update only those blocks of data. Cerner users deploying Avamar and Data Domain generally experience greater than 95 percent deduplication rates and 75% reduction in the time required to backup the Cerner environment all with data integrity. These performance improvements rates also reduce the overall backup storage capacity and the bandwidth required for backups, lowering the TCO of your Cerner backup environment.

**Restore your Cerner environment fast** – Backups are important, but fast recovery from an outage is essential. With EMC’s Backup and Recovery Solutions for Cerner, full backups can be recovered in just one step, no need to deal with restoring a full backup and then dealing with subsequent incremental backups.

**DISASTER AVOIDANCE AND ACTIVE-ACTIVE DATA CENTER INNOVATION**

The life and death realities of health delivery organizations demand always-on application and information availability, particularly from EHR applications. You must have aggressive RTOs and RPOs for Cerner Millennium, and to meet these objectives, you must eliminate single points of failure and maximize the number of available points-in-time for disaster recovery—all while reducing infrastructure costs and increasing resource utilization.

One way that organizations manage these challenges is with Oracle RAC, which enables a single database to run across a cluster of servers with access to shared storage, providing fault tolerance and 24/7 availability. RAC can span between data centers, but geographic distance is limited. EMC VPLEX helps you overcome the distance limitation. VPLEX lets you extend Oracle RAC across remote sites for a true active-active solution that helps you avoid disasters—not merely recover from them.
EMC VPLEX is an enterprise-class storage federation technology that aggregates and manages pools of FC-attached storage within and across data centers. VPLEX Metro provides data access and mobility between two VPLEX clusters within synchronous distances.

EMC VPLEX resides between your Cerner application servers and heterogeneous storage assets, making your IT infrastructure more resilient, while complimenting Cerner best practices for disaster recovery.

Figure 2. Combine EMC® VPLEX® Metro storage virtualization technology with Oracle RAC on extended distance clusters to remove the data center as a single point of failure.

VIRTUALIZING YOUR CERNER ENVIRONMENT

EMC, as a leading information infrastructure provider for VMware solutions, provides Cerner users running VMware software with the availability, protection, and security needed to virtualize and gain competitive advantage. With more than 70 tested and proven point of integration, EMC and VMware make it easier for you to adopt cloud computing and virtualization technologies to run VMware software in next-generation cloud infrastructures and next generation backups with increasing levels of automation.

For example, there’s a lot of talk about VMware backup and recovery, but no one is delivering what EMC is delivering today VMware backup and recovery through:

- Avamar and Data Domain integration for INSTANT virtual system recovery
- Avamar Integration with vSphere Data Protection (VDP) and Change Block Tracking (CBT) reduces virtual network impact during backups, sending only daily unique changes to the virtual appliance.
- Changed Block Tracking restore - Unlike other solutions, VDP also uses CBT during restores for dramatic reductions in data recovery times.
- Administrators and authorized end-users can recover their own data, restore it to the original location, restore to different VM, or create a new VM and restore data there

And your backup and recovery process can be managed via VMware vCenter or vCOPS.
MITIGATED RISK AND PREDICTABLE RESULTS

Many large EMR environments trust EMC experience, superior storage technology, management tools, and innovative solutions to mitigate their risk and deliver the kind of predictable results their clinicians demand. An EMC IT Infrastructure delivers fast access to the information your clinicians need to make accurate diagnoses and care decisions. We have built a foundation of experience from these implementations, and have created standardized processes and services that deliver repeatable results. Working with EMC you can simplify the management of your Cerner environment across a large and increasingly integrated set of applications in a virtualized computing environment to:

- Deliver highly resilient, reliable, high performance infrastructure
- Shrink efficiency and I storage costs with automated tiering and volume provisioning
- Improve performance dramatically with SSDs
- Move applications, virtual machines, and data in and between data centers without impacting users with active-active datacenters
- Reduce the amount of data moved by up to 95% through variable length deduplication
- Leveraging more than 70 VMware integration points for your virtualized Cerner environment and your enterprise-wide cloud computing environment

CONTACT US

To learn more about how EMC products, services, and solutions can help solve your business and IT challenges, contact your local representative or authorized reseller—or visit us at www.EMC.com.