Dell EMC Healthcare Data Lake
for Today's and Tomorrow's Workloads

Simplify healthcare data management and provide better patient insights with a Dell EMC healthcare data lake.

Managing data is one of the most formidable challenges healthcare organizations face today. According to a recent report by IDC and EMC, healthcare data is growing at a staggering 48% per year.[1] Analysts not only expect this trend to continue, but predict it will accelerate as healthcare practices incorporate new data-generating technologies and medical record retention requirements stretch to decades.

As healthcare organizations add new digital diagnostic tools, they traditionally provide a dedicated storage infrastructure for each application. As a result, healthcare data ends up siloed. These storage systems must be individually managed, making processes and infrastructure even more complicated and expensive to operate and scale. In addition to storage challenges, healthcare organizations face frequent and complex storage migrations, rising operational costs, storage inefficiencies, limited scalability, increasing management complexity and storage tiering issues.

1 "Driving Data Growth in Healthcare," EMC/IDC, February 2014

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Another emerging challenge for healthcare IT is the growing demand to understand and utilize unstructured clinical data. To mine this data, organizations need a storage infrastructure that supports the in-place analytics required for better patient insights and the evolution of healthcare that enables precision medicine. However, today's silos make it difficult for providers to search data and analyze information, preventing them from gaining the insights they need for better patient care. If healthcare organizations are to remain successful in a highly regulated and increasingly competitive, consolidated and patient-centered market, they need a simplified, scalable data management strategy. The Dell EMC healthcare data lake allows healthcare organizations to overcome many of the obstacles they face by providing a centralized, scalable storage repository that can be leveraged by multiple clinical and non-clinical applications.

Healthcare data management:
Why it's more complicated than ever

Data growth is among the most significant technology challenges of the modern era. The increasing legal retention time of medical records—up to the lifetime of a patient in some cases—is a contributing factor. Another is the digitization of diagnostics and new workflows such as digital pathology, clinical next-generation sequencing, digital breast tomosynthesis, surgical documentation and sleep study videos. More digital images also means more picture archive and communication

system (PACS) or vendor neutral archive (VNA) deployments. Additionally, with today's large aging population, more people are having these types of digitized medical tests, resulting in a higher number of yearly studies with increased data sizes.

An emerging challenge for healthcare IT is enabling the ability to leverage the medical Internet of Things (IoT), which refers to Internet-connected clinical devices and implants that provide medically relevant data. Healthcare providers are also looking to tap potentially important medical data from Internet-connected behavioral devices or personal technologies such as wireless activity trackers.

Managing healthcare data growth:
The problem with traditional methods

To deal with this onslaught of new data, healthcare organizations traditionally deploy dedicated storage systems by diagnostic discipline. For example, to deal with the growing storage requirements of digitized X-rays, an organization will create a new storage system just for the radiology department. However, this results in isolated storage silos that inhibit shared usage among departments and workflows. It also increases management complexity and reduces storage utilization rates. And isolated siloes further undermine IT goals by increasing the cost of data management and compounding the complexity of performing analytics, which may require multiple copies of large amounts of data.

Even the process of creating these silos is involved and expensive because tech refreshes require migrating medical data to new storage. Each migration, typically performed every three to five years, is a labor-intensive and complicated project. And once you've finished a refresh, it's nearly time to begin another. These frequent migrations not only strain resources, but also take IT staff away from projects aimed at modernizing the organization, improving patient care and increasing revenue.

Migrations and siloes aren't the only challenges for healthcare IT. Both changing patient expectations that mirror other consumer markets and precision medicine require next-generation infrastructure that enables advanced analytics and new storage access methods.

Simplifying healthcare data management with scale-out storage

The key to modern healthcare data management is to employ a strategy that simplifies storage infrastructure and storage management and supports multiple current and future workflows simultaneously. A Dell EMC healthcare data lake leverages scale-out storage to house data for clinical and non-clinical workloads across departmental boundaries. Such healthcare data lakes reduce the number of storage silos a hospital uses and eliminate the need for data migrations. This type of storage scales on the fly without downtime, addressing IT scalability and performance issues and providing native file and next-generation access methods.

Healthcare data lake storage can also eliminate storage inefficiencies and reduce costs by automatically moving data that can be archived to denser, more cost-effective storage tiers. A Dell EMC healthcare data lake allows healthcare IT to expand into private, hybrid or public clouds. This strategy enables IT to leverage cloud economies by creating storage pools for object storage, and provides policy-based, automated and seamless data tiering into a private cloud. It also offers long-term data retention without the security risks of the public cloud, and the same cloud expansion can be utilized for next-generation use cases such as healthcare IoT. In addition, healthcare data lakes enable precision medicine and better patient insights by fostering advanced analytics across all unstructured data, such as digitized pathology, radiology, cardiology and genomics data.

Conclusion

The ability to effectively leverage and manage data is one of the greatest technical challenges for today's healthcare organizations. The solution is to employ a healthcare data management strategy that replaces siloed storage, or storage islands, with a Dell EMC healthcare data lake. Dell EMC Elastic Cloud Storage (ECS) is a single cloud-scale storage platform that speeds up storage natively for long-term archiving as well as new web, cloud and IoT applications. Dell EMC Isilon is a scale-out network-attached storage (NAS) platform that scales to nearly 70 PB in a single cluster. Intended for large

content repositories, streaming and analytical workloads, this platform benefits from the economies of scale. The Dell EMC Isilon OneFS operating system drives the clustered NAS and provides enterprise data services. For further flexibility, Dell EMC Isilon CloudPools provide the capability to integrate a public, hybrid or private cloud tier into the Dell EMC healthcare data lake.

The Dell EMC healthcare data lake supports your current and future clinical and non-clinical use cases with native support for multiple access methods, including file protocols, HDFS, SWIFT, REST, Amazon S3 and OpenStack. It enables in-place advanced analytics for turning data into patient insights and provides the right storage tier for any retention period. The Dell EMC healthcare data lake also reduces data management costs and complexities through automation, and scales capacity and performance on demand without downtime. In addition, it eliminates storage migration projects and gives healthcare providers the option to extend into a private cloud by keeping data sovereignty under their control.

About Dell EMC

Dell EMC, a part of Dell Technologies, enables organizations to modernize, automate and transform their data centers using industry-leading converged infrastructure, servers, storage and data protection technologies. This provides a trusted foundation for businesses to transform IT, through the creation of a hybrid cloud, and transform their business through the creation of cloud-native applications and big data solutions. Dell EMC services customers across 180 countries—including 98% of the Fortune 500—with the industry's most comprehensive and innovative portfolio from edge to core to cloud.

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