IDC Health Insights

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Enterprise Imaging and Storage: Enabling Value-Based Imaging for Healthcare Providers

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Defensive medicine largely drives imaging, making it overutilized, resource intensive, and siloed in the healthcare provider ecosystem. To realize a reformative shift away from unnecessary imaging and toward appropriate use, clinicians must have rapid and real-time access to imaging studies. Imaging data presents a challenge in that it quickly constrains and inundates existing IT infrastructure by rapidly and continually expanding in volume, velocity, and variety. Longer-term studies driven by newer acquisition techniques and more detailed scans add to the challenge. Enterprise imaging offers a way to circumvent the data challenge by leveraging technologies such as vendor-neutral archives (VNAs), clinical data hubs, all-flash array (AFA) storage, and electronic health records (EHRs) to manage all the imaging data in a healthcare system. Storage has a vital role to play by amassing all imaging data in a universally accessible location and supporting imaging workflows as needs shift and new challenges arise over time.

The following questions were posed by Pure Storage to Mutaz Shegewi, research director of the Provider IT Transformation Strategies service for IDC Health Insights, on behalf of its customers.

Q. What are the benefits of enterprise imaging for healthcare providers?

A. Imaging studies form a critical piece of the clinical picture but cost healthcare providers billions of dollars every year. In general, enterprise imaging holds multiple benefits for healthcare providers by enabling better accessibility to and interoperability and management of all images in a health system. The technology stack supports improved methods of coordination and utilization of imaging studies across service lines through a universal viewer, universally accessible storage, and clinical workflow and collaboration tools.

Clinical benefits of enterprise imaging include:

- **Improved productivity.** Clinicians often collaborate with other colleagues, teams, units, departments, and organizations on imaging procedures. To make decisions effectively, clinicians must have access to relevant information when and where they need it.. An integrated enterprise imaging platform delivering optimal response times, a seamless flow of data, and sufficient processing power can minimize procedure times and lead to clinical decisions being made in a more timely, relevant, and satisfactory manner.

- **Better outcomes.** Improving patient outcomes requires a 360-degree view with shared decision-making pathways. Enterprise imaging enables seamless sharing of imaging data across disparate systems, rendering a more longitudinal health record. The result is more insights, fewer questions, and less time spent waiting for answers. Fewer repeated and unnecessary tests reduce patient exposure to radiological agents and equipment. Consequent reductions in costs and improved experiences present an opportunity for providers to focus on other needs, revenue sources, and challenges.

Business benefits of enterprise imaging include:

- **Cost reduction.** Imaging is capital intensive and needs continual investment. Deploying a robust enterprise imaging solution not only helps an organization better understand spend across the life cycle of imaging systems but also supports short- and long-term financial and operational improvements, namely better rollouts, cost containment, and performance improvements. Enterprise imaging also paves the way for new value creation by enabling healthcare systems and staff to become more agile to support new service lines.

- **Strategic differentiation.** According to IDC Health Insights, 60% of healthcare providers will make optimizing the digital patient experience a top 3 strategic imperative by 2020. Enterprise imaging plays a vital role in enhancing the digital patient experience because patients now not only demand shorter waiting and procedure times but also want more information and sympathy from staff. Enterprise imaging equips providers in real time with the data needed to deliver a more satisfactory imaging experience for patients, which in turn can influence brand perception, retention and acquisition, and even loyalty.

Q. What is the impact of infrastructure, such as all-flash array storage, on enterprise imaging adoption?

A. Infrastructure, namely storage, tremendously impacts enterprise imaging adoption. Imaging storage needs can easily cross into the petabyte range. Infrastructure and storage not only manage imaging data but also enable other capabilities, such as analytics and collaboration tools. Legacy and hybrid storage arrays and buying models become increasingly challenged to meet the performance demands and ease the capacity burdens of enterprise imaging. In integrated and value-based workflows such as value-based care or value-based reimbursement, storage must demonstrate high performance, scalability, and the ability to support collaboration, advanced visualization, analytics, and ongoing growth.

AFA storage offers compelling advantages for providers to consider in enterprise imaging. In fact, IDC Health Insights data reveals that 80% of U.S. healthcare providers are already running or evaluating AFA and 10.5% have plans to deploy, test, or evaluate AFA in the future. AFA addresses emerging data needs through innovative design efficiencies that eliminate the choice between price and performance. AFA also offers a storage architecture flexible enough to manage the rapidly expanding volume, velocity, and variety of imaging data with performance needed for rapid access, which would be helpful for tomography studies and advanced visualization such as in server-side rendering. Buying models for AFA storage offer long-term, flat price maintenance contracts and nondisruptive upgrades. Finally, the combination of falling prices and benefits such as a smaller footprint and fewer servers to license means AFA can be used as primary storage beyond mission-critical applications. Primary performance and cost benefits alongside secondary benefits, such as using fewer devices, less energy, and less floor space, make AFA a highly compelling storage option for providers looking to adopt enterprise imaging.

Q. How can health systems move to enterprise imaging? What are some important considerations and best practices? What about for storage?

A. According to IDC Health Insights research, 60.4% of U.S. healthcare providers expect enterprise imaging to be a top 3 area for imaging spend in 2019. Health systems should not move to enterprise imaging to simply follow industry trends. Instead, the move should be part of a strategy that involves end users early on and addresses the imaging needs of users and organizations for the short and long terms.

Look for vendors with field successes in deploying enterprise imaging components at provider organizations with no disruptions or added costs. Value propositions should show high performance consistency, reduced complexity, and lower total cost of ownership (TCO) for deploying the technology. Some considerations and best practices should be expected. Clinicians want to make more informed decisions, access studies quickly, and collaborate without issues. Line of business wants to reduce costs, retain and acquire patients, build the brand, and compete. IT wants to store, manage, and protect imaging data effectively. Patients want to have better experiences, be more informed, and feel cared for.

Enterprise imaging can be confusing. It is difficult to classify solutions and separate platform from image archiving capabilities in many supplier offerings. Organizations need to consider platform agility and scalability to meet future demands because the cost of migrating to a new platform will be significant. All-flash-enabled single-tier architectures make the decision easier by eliminating performance hurdles and improving the TCO. Data-centric single-tier architectures can also be leveraged to create a clinical data hub that serves enterprise imaging initiatives as well as artificial intelligence (AI) and other data-driven applications and analytics within the organizations. Recommended best practices include establishing key performance indicators (KPIs) and testing for performance and usability, leveraging cloud services to scale up, and connecting VNAs and application-independent clinical archives (AICAs) to a clinical data hub and other applications and analytics.

Q. What are challenges hospitals face today when adding new departments and types of content to enterprise content repositories?

A. Most hospitals implementing new VNAs and clinical data hubs experience strong adoption in departments that initially drive implementations of the platform and then see growing interest from other departments as the products expand. IT departments should seek scale-out platforms that offer tools that allow end users some component of self-service, and they should look to develop reusable tools that make the most of available data. To ensure that hospitals capture value from the new platforms, IT should plan the transition and set goals for delivery, performance, and usability of follow-on capabilities. Image archives do not deliver value on their own but do so over time as a by-product of their utilization by stakeholders in the care process. VNAs and clinical data hubs should augment PACS, RIS, and EHR as well as other technologies, such as mobile apps, that leverage content in real time.

As hospitals begin to enjoy the capabilities of a VNA or, better yet, a clinical data hub, more use cases and data are uncovered and added to the platform. Most image archiving implementations begin with radiology but realize added value from unexpected areas, such as home care, where image sharing helps reduce readmissions and lower costs of care while increasing patient satisfaction. Hospitals and health systems should organize around resources, whether they are in individual departments or centralized, to enable effective utilization of VNAs and clinical data hub platforms.

Q. What does the future of enterprise imaging look like?

Many challenges exist in imaging today. Imaging will continue to experience increased growth volume against burdens of regulatory compliance and clinician burnout. Smart applications, advanced analytics, machine learning, and artificial intelligence are still emerging, but they offer new and promising prospects for the future. Examples include AI that can aid interpretation and utilization of images, drive better workflow automation and optimization, and help patients embark on better imaging journeys and realize more satisfactory experiences. Healthcare providers will need to find new ways to invest in and deploy the right mix of technologies and infrastructure to meet their growing imaging needs, not only to manage imaging data but also to augment intelligence in imaging applications, workflows, and systems.

A B O U T T H I S A N A L Y S T

Mutaz Shegewi is a research director at IDC Health Insights leading the Provider IT Transformation Strategies service. Mutaz is passionate about strengthening healthcare systems through the interrelations between technology, patients, and providers by combining his industry, professional, academic, technical, and global expertise in healthcare, policy, business, management, research, consulting, and medicine. His research coverage areas include, but are not limited to: healthcare digital transformation, next-generation clinical documentation and revenue cycle, patient engagement and patient experience, health information exchange and interoperability, cloud and cloud-based platforms, mobility, virtual care, IoT, AI and cognitive computing, augmented and virtual reality, blockchain, robotics, and security in healthcare.

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