Archive This: Benefits of Vendor Neutrality in Healthcare Settings

Tom Smith, *Industry Journalist*

Medical providers and facilities maintain diverse imaging systems that make management, storage and retrieval quite challenging. Vendor-neutral archives can address the challenges with central storage facilities, a common interface and simplified access.

- Attack of the PACS
- Benefits of Neutrality
- Where to Host a VNA—Cloud or Premises
- Conclusion

A huge focus in today's healthcare organizations is on transitioning to electronic images and communications for the delivery of information to the point of care. While this is expected to result

in improved operational efficiency and patient outcomes, many organizations face significant challenges in attempting to integrate or provide any level of connectivity among the numerous systems responsible for generating clinical data—especially medical images.

A case in point is a picture archiving and communication system (PACS). A PACS was traditionally deployed to serve a single department for the management of medical images. Departmental use of diverse PACS technologies means working with numerous vendors, resulting in challenges managing data because of the systems' incompatible methods of storing and accessing images. This disjointed storage environment impedes specialists' ability to collaborate on patient care, as multiple systems are costly to maintain and require dependence on each PACS vendor.

Modern healthcare organizations need greater simplicity and centralization. They are looking to:

- Limit the number of interfaces into their PACSs and related systems;
- Simplify storage and provide one point of access to all images, even if a PACS is down;
- Reduce dependence on any one PACS provider; and
- Put in place user interfaces that maximize focus on patient care, not data retrieval.

The way to meet these requirements, increasingly, is vendor-neutral archiving (VNA). Think of this technology as an overlay applied

to various PACSs, creating one central place to store images and one interface to access them. VNA provides greater access to and availability of data, as well as lower costs and fewer risks.

These benefits explain why the greatest percentage growth in medical image archiving during the next five years is expected to occur in the VNA market. In 2011, only 5.4% of worldwide medical images were stored in VNAs; that figure is expected to grow to more than 30% in 2016, according to an InMedica report.[1]

Attack of the PACS

The case for VNA systems very much relates to current limitations with PACS, so a baseline understanding of those systems—how they operate and their limitations —is instructive.

A PACS includes a workflow engine and database, a storage system and a viewing system. All components are typically supplied by one vendor, and vendors frequently support standards on a limited basis, with at least part of their goal being to lock healthcare suppliers into their systems for the long haul.

The costs of maintaining incompatible PACSs, and therefore not being able to share images freely, is steep. It's generally agreed that about one-third of image CDs sent from one institution to another are unreadable because the originating and receiving PACS systems use incompatible formats.[2] That has big implications for patient care and financial results. Sending one image CD incurs a cost of about $15,[3] and that doesn't begin to address the use of staff and physician time. Some hospitals spend close to $100,000 on courier costs annually for moving CD-based images around.[4]

Hospital administrators also note that disparate PACSs prevent physicians from realizing their goal of faster image reads for their patients.[5] They can't operate quickly enough when they have to go to multiple applications to retrieve images. The goal, which a patchwork of PACS can't support, is to give referring physicians easy access to images and exam results from anywhere at any time.[*]

A closely related issue with current limitations: Healthcare reform requires greater sharing among institutions to coordinate care, and the complexity of multiple PACSs is compounded when multiple facilities are in the mix.

Benefits of Neutrality

A VNA has the following components:

- A storage subsystem;
- An interface to the PACSs, which allows for the storage and retrieval of images and associated documents; and
- A database that manages and remembers where, what, when, how and who stored data.

A VNA must interface with other clinical systems and disparate PACSs. These interfaces are needed for communication of reports and results, as well as compliance with industry-standard workflows. The VNA needs to be flexible enough to ingest any type of electronic document through the use of an application programming interface and categorize that information within the archive.

It must store all objects in a non-proprietary format such as DICOM, an older type of archive. The VNA must then add context management—the ability to manipulate DICOM tags to convert the DICOM implementation of one PACS vendor (or imaging application) to the DICOM expectations of another PACS vendor without affecting operations and data access for the healthcare supplier.

A VNA must support a wide variety of storage infrastructure platforms to facilitate storage hardware upgrades with minimal impact on the clinical enterprise. It has to work with a separate, commercially available database product that supports SQL, to allow for integration into an IT department's operation.

By virtue of supporting these functions, VNAs deliver the following benefits:

- Flexibility to switch PACS systems without requiring a complex image/data migration.
- Ability to leverage the latest, feature-rich storage hardware without requiring a complex image/data migration.
- Additional lifespan for PACS systems. VNAs are designed to work with various PACS systems, rather than requiring replacement, increasing the ROI of previous tech investments.

That's a rich set of functionality that delivers real flexibility in the modern healthcare organization. Once a decision has been made to deploy a VNA, the next major decision is in how to deploy it.

Where to Host a VNA—Cloud or Non-Premises

As with virtually every IT application or service in use today, VNAs can be delivered on-premises or in the cloud. That's an important consideration because healthcare providers face a big data problem similar to most businesses: They're grappling with explosive growth in the size and volume of medical images and fast-moving regulatory requirements that define security practices, as well as lengthy retention requirements and ever-present budget challenges.

In a VNA context, the cloud yields a series of benefits that address these healthcare-specific considerations:

- Unlimited scalability to support image demands, with pay-as-you-grow pricing.
- Vendor-neutral storage that provides maximum flexibility and independence, allowing for consolidation of storage.
- Simplified and low-cost backups, data migrations and archiving/preservation.

Housing and protecting medical images off-site results in lower risks while data is securely protected.[6]

Cloud-based VNA services can be deployed in at least two ways:

Mirrored cloud: Delivers affordable archiving and disaster recovery by storing two copies of medical images off-site in secure, geographically separate facilities.

Hybrid cloud: Provides cost-effective on-site image archiving, with a second copy mirrored off-site in a separate facility. This solution is ideal for customers that require local access from their archive for large data sets, such as mammography images.

Cloud-enabled VNAs provide access to images and records using a wide variety of devices. That makes collaborating with a medical professional in another location far simpler. While only a limited range of electronic medical records are currently image-enabled, when that does happen, images stored in a VNA will be available to create more comprehensive patient records.

Conclusion

VNAs logically consolidate business and clinical information in a single, non-proprietary repository that provides a single-access storage and retention strategy. They are expected to eliminate the vendor lock-in challenges that diverse PACS introduce. They can also improve delivery of care by physicians and other specialists who no longer need to wrestle with disparate, incompatible images. That should lead to better collaboration for better patient outcomes, while simultaneously advancing IT simplification and management.

GE Healthcare provides transformational medical technologies and services that are shaping a new age of patient care. Our broad expertise in medical imaging and information technologies, medical diagnostics, patient monitoring systems, drug discovery, biopharmaceutical manufacturing technologies, performance improvement and performance solutions services helps our customers to deliver better care to more people around the world at a lower cost. In addition, we partner with healthcare leaders, striving to leverage the global policy change necessary to implement a successful shift to sustainable healthcare systems.

Our "healthymagination" vision for the future invites the world to join us on our journey as we continuously develop innovations focused on reducing costs, increasing access, and improving quality around the world. Headquartered in the United Kingdom, GE Healthcare is a unit of General Electric Company (NYSE: GE). Worldwide, GE Healthcare employees are committed to serving healthcare professionals and their patients in more than 100 countries. For more information about GE Healthcare, visit our website at www.gehealthcare.com.

GE Healthcare IT
500 W. Monroe St
Chicago, IL, 60661

Imagination at work