EBOOK

A Shift in Archiving
Cloud VNA For Disaster Recovery & More

Introduction

In a rapidly changing imaging industry, the functionality desired to manage images is outpacing the functionality those of a standard PACS. The closed loop design of a PACS makes it difficult for systems to communicate with each other and as a result, they tend to hold images hostage inside. Increase in image volumes and the cost of image management exacerbates these problems.

Enter the VNA. Unlike the PACS, which is typically designed to serve one department, the VNA from the get-go was designed to be a long-term archive used to house images from a variety of systems. In a sense, you can think of it as a central repository for images. However, traditional methods used for image sharing often require the mapping of VPNs or an investment in expensive infrastructure. Cloud-based platforms eliminate the need for VPNs. A vendor neutral archive in the cloud (or Cloud VNA) can offer benefits far greater than any traditional disaster recovery solution. From image accessibility and exchange, to image management and distribution, cloud-based VNA seeks to solve challenges from a holistic standpoint.

A new trend is emerging where all facilities, not just large hospital systems, are stepping away from PACS and shifting their archiving to cloud-based vendor-neutral archives. There are a few key factors in this shift, like the increasing amount of healthcare data, data that is being used for new research and AI projects, patients demanding increased accessibility, and disaster recovery becoming a new priority. The ability to reliably retrieve a backup copy of information that might be otherwise lost due to hardware/software or network failures is no longer just good practice, but a federally mandated requirement for facilities of all sizes. Smaller providers are also finding incredible value in their data as they feel new pressures from patients and other physicians alike to offer innovative services around the clock.

Weill Cornell Medicine

"*Our physicians want to see the compendium of multimedia on a patient in one unified environment. We're going to be investing a lot in our VNA to help combine radiological imaging data with, perhaps, dermatological, or endoscopic data, and their EKG's. It's all the things that typically don't fit in an HL7 electronic medical record, and yet still need to be organized in a timeline of events that have happened to a patient.*"

- DR. KEITH HENTEL
Executive Vice Chairman Radiology, Weill Cornell

Increasing Amounts of Healthcare Data

Stanford Medicine predicted that by 2020 the volume of new data from healthcare information systems and imaging modalities would grow to more than 2,315 exabytes (one exabyte = one million terabytes). Medical imaging technologies have made enormous breakthroughs leading to greater utilization and an ever-increasing amount of associated data types.

Additionally, many facilities are seeking new ways to turn data into insights by easily de-identifying patient medical imaging data for use in research studies. Once imaging is freed from silos, its potential for research, AI initiatives, and machine learning expands indefinitely. A Cloud VNA can provide a centralized location for internal and external data types to meet and be cataloged and pulled at a moment's notice.

Patients Demanding Accessibility

The **patient of today** has an increased set of demands and expectations around their healthcare trajectory. Patients, particularly millennials, are looking for facilities that provide patient portals and easy access to prior and current imaging. While the unification of patient health records can greatly reduce stress for managing one's health, it can also provide invaluable health benefits. For example, mammograms are best reviewed in terms of comparisons to priors. Being able to easily access all patient imaging from one unified data set greatly increases the availability of priors.

Disaster Recovery is a Priority

Recent natural disasters have cost healthcare facilities in the United States **over 200 billion dollars**, a number that doesn't appear to be slowing down. The effects of such disasters can be long-lasting and many facilities have begun taking a much more active role in seeking disaster recovery and business continuity plans. The cloud VNA is a popular approach so that even if physical hardware is damaged, the data remains secure.

CASE STUDY: MOVING TO THE CLOUD

ENVISION
RADIOLOGY

Envision Radiology

Envision Imaging, part of Envision Radiology, provides diagnostic imaging services across 38 locations in the Midwest, offering MRI's, CT scans, ultrasounds, and other imaging services to their patients.

SOLUTION

Envision chose to implement Ambra Health's cloud image management platform to route imaging across their organization and to outside reading groups.

CHALLENGES

Envision was facing significant administrative and productivity overhead from having too many different one-off solutions based on unique technologies across their locations. With such a disparate imaging stack, it was a challenge to manage costs effectively and created growing frustration around stability and risk.

BENEFITS

- ✓ Reduced risk by using SOC 2 managed storage for secondary image store/disaster recovery.
- ✓ Provided a CD and courier free workflow.
- ✓ Improved turnaround time by reducing the need to physically ship studies.
- ✓ Simplified security footprint of the organization through managed sharing.

How Does it Work?

WHAT IS A VNA?

Unlike PACS (picture archiving communications systems), which are typically designed to serve one department, a VNA is designed to be a long-term archive, a central repository for housing images from a variety of systems. The vendor-neutral in vendor-neutral archive implies that VNAs aren't based on one strict vendor architecture or strategy. Traditional on-premise VNA solutions require maintenance, as well as management of VPNs (virtual private networks) connections to link offsite locations across a network.

WHAT IS A CLOUD VNA?

A Cloud VNA takes the capabilities of a traditional vendor-neutral archive further by providing a flexible framework over the Internet in which images can be transferred, viewed, and patient imaging and data can be joined together, enabling a holistic patient health record by unifying reporting and imaging.

Because Cloud VNAs are designed for the Internet, they provide important additional benefits like ease of image transfer, portals to share imaging with referring physicians or patients, and medical image viewers that can be accessed anywhere at any time. With cloud delivery, these classes of VNA solution also often deliver significant cost and maintenance benefits for providers.

Integrated Workflow Using Cloud VNA

Imaging performed at facility. → Priors pre-fetched from cloud VNA. → Patient imaging sent to radiologist workstation to complete report. → Auto-routed to referring physician via branded portal. → Image available to patient via link or CD.

Infrastructure Benefits

ANYTIME, ANYWHERE ACCESS

The cloud eliminates burdensome VPNs by consolidating disparate imaging systems into one scalable cloud repository. Cloud storage provides instant access to secondary versions of medical images and priors if primary data becomes unavailable due to an IT or natural disaster. A VNA cloud platform, like that of Ambra Health, also includes a zero-footprint, **HTML5 DICOM Web viewer** that can be accessed through the web at any time or integrated into any PACS.

DESIGNED FOR INTEROPERABILITY ACROSS MANY IMAGE & FILE TYPES

Non-DICOM imaging can be stored side-by-side with DICOM imaging for a holistic view of all patient imaging. Ambra provides flexibility to archive and retrieves all DICOM modalities including MR, CT, PET, CR, US, and MG, as well as many multimedia formats including JPEG, TIFF, PDF, DOC, DOCX, and TXT.

SCALABILITY AND LIFE CYCLE MANAGEMENT

The fear of migrating thousands if not millions of imaging studies prevents many facilities from making an active change in their disaster recovery strategy. Consider that a cloud vendor can provide a complete range of consultative migration approaches, from moving an entire library, to a phased migration where they will be up and running in days. With elastic cloud architecture, the VNA accommodates ever increasing image volumes, systems, users, and organizations without the need to worry about provisioning more infrastructure and resources.

Implementing image retention policies is often a manual process, with the risk of images slipping through the cracks. Ambra's image lifecycle management (ILM) capabilities make it simple to manage image deletion and retention using rules-based automation. It's easy to automate the removal of images from the system based on any set of specified set of user-configurable criteria.

Electronic Health Record (EHR)

Without integrating imaging with the patient record, EHR users are required to open a the new browser, log into a separate system and search to find a patient's image exam. Consolidating imaging within the EMR eliminates the need to login to separate systems and toggle between browsers. For example, with a cloud-based system, a seamless login authenticates users and launches a feature rich, zero-footprint medical image viewer.
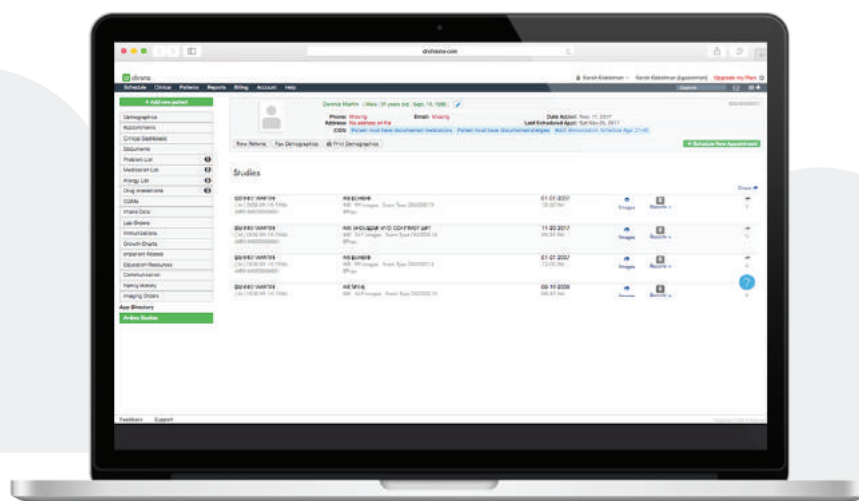
CASE STUDY: A GROWING PRACTICE

CT Ortho

Connecticut
Orthopaedic
Specialists

Connecticut Orthopaedic Specialists, CT Ortho, are Connecticut's premier team of Orthopaedic surgeons and healthcare professionals with **over 21 locations** throughout the state. Over the years, the group has grown in size across its locations and found image sharing internally and externally with referring physicians to be a complex and time-consuming task.

By 2020, CT Ortho predicts having **a million studies** greater than 10 terabytes of data. With this enormous study volume in mind, CT Ortho sought to engage with a business partner that could take over responsibility for safety, security, and 24/7 access to studies.

Partnering with Ambra allows CT Ortho to access images from anywhere, anytime and provides an opportunity for network expansion across local hospitals.

SECURE ARCHIVING OF LARGE DATA SETS

Currently, Ambra acts as the secondary repository for MRI studies and the primary archive across study types. With Ambra, consolidating multiple imaging systems with one flexible, customizable, and low maintenance cloud platform becomes a reality. The easy-to-use Modality Worklist and flexible routing rules drive better productivity for staff and physicians alike.

30 SECONDS
to retrieve images from the cloud

1 MILLION
studies greater than 10 terabytes by 2020

Security Benefits

Data security and the cloud has historically been a major concern across industries and the healthcare industry is no exception. How can you trust your vendor to securely manage data in an off-premise cloud and keep image information safe? One of the most secure methods of storing patient data in the cloud is split-merge technology. This technology anonymizes image studies by removing protected health information from the imaging data. The protected health information is then separately encrypted and stored, creating an Internet-safe image study.

CLOUD DATA HOSTING

Facilities should carefully determine a vendor's qualifications. Data should be stored in a center that has multiple layers of access control, including a defensible perimeter, digital video surveillance, biometric screening, and 24 x 7 x 365 onsite staff, and provide physical protection from unauthorized entry into the center.

DISASTER RECOVERY

Redundancy is always a positive in healthcare. For example, Ambra Health keeps a second off-site copy of all studies in AWS Glacier. In the event of a disaster, Ambra has an automated process to restore affected data from AWS Glacier and in the event of a total system loss such as a full data center outage, Ambra has the capability to spin up an interim copy of Ambra Suite on Amazon VPC for business continuity purposes. Following the restoration of service at the data center, studies acquired during the outage period are migrated to the production system.

CASE STUDY: IMAGING CENTER MOVES TO CLOUD VNA

Jefferson Radiology

Jefferson Radiology is one of the largest private practices in the state of Connecticut, providing sub-specialty services, diagnostic, and interventional radiology. Jefferson Radiology operates ten outpatient offices and performs reads for seven hospitals in Connecticut and western Massachusetts. Their **annual volume is around 1 million studies and growing.**
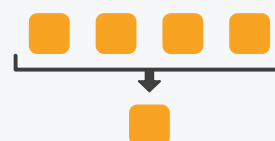
CLOUD VNA

Jefferson Radiology chose to move a portion of their stack to Ambra's cloud VNA, unlocking significant benefits, including eliminating VPNs between providers, consolidating four systems to one (VNA, exchange, disaster recovery, and CD management), saving time with automated routing, and realizing thirty percent in cost savings related to image management. Interoperability and supporting regulatory requirements were an important factor in making the shift.

Moving to the cloud has played a key role in enabling Jefferson Radiology's imaging stack innovation. "When I look at the amount of volume that we do from an imaging perspective and I look at the amount of storage we need, moving to the cloud has been important, especially from a cost-effective perspective," said Michael Quinn, Chief Technology Officer, adding that, "as we are in an environment of declining reimbursements, we want to be sure that we're providing the most efficient patient care we can for our patients, and cloud helps enable that."

Redundancy was a key draw in selecting Ambra, "What I liked about the structure within Ambra is the fact that they have multiple data centers. The data is replicated there." Ensuring the right user experience from the get-go is also key. Quinn recommends engaging users, so asking "What viewer would work for a clinician or radiologist? Who would want to have access?" when getting started.

Reduction from 4 systems to 1

Imaging Stack Requirements

CASE STUDY: IMAGING CENTER MOVES TO CLOUD VNA

Jefferson Radiology

JEFFERSON
RADIOLOGY

- Deconstructed PACS
- Cloud VNA
- Zero footprint mobile viewer
- Integrate reporting and imaging data
- Match patient data and priors across many organizations

- Imaging exchange over Internet and to/from HIEs
- Automatically prune and eliminate images following regulatory guidelines
- Store DICOM and non-DICOM data

The message is clear—the days of building out onsite storage infrastructure a thing of the past. Cloud capabilities are changing the way providers large and small interact with patients and protect and utilize their data. No area of healthcare is more dynamic right now than the shift in archiving to Cloud vendor-neutral archives.

About Ambra Health

Ambra Health is a healthcare cloud company dedicated to making digital medical image management accessible to all, from anywhere. Our powerful cloud-based suite streamlines the medical image exchange process and connects patients, care providers, and facilities worldwide. We work with some of the largest hospitals and health systems such as Stanford Children's Health, Weill Cornell Medicine, and Memorial Hermann as well as private practices, imaging centers, clinical research organizations, and health information exchanges. Discover what the power of the cloud can do for your healthcare enterprise at **www.ambrahealth.com**.