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Jennifer Tucker
Imaging Systems Specialist
Vanderbilt University Medical Center

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Vanderbilt University Medical Center

NilRead enterprise viewer helps improve care through streamlined image sharing and collaboration.

THE CHALLENGE

PACS traffic, clinical workflow, image sharing prove troublesome

The Vanderbilt University Medical Center (VUMC) Imaging Informatics team manages implementation, maintenance, training and help-desk support for all systems supporting cardiology and radiology, including PACS, RIS, dictation and medical image viewing solutions. Prior to working with Hyland Healthcare, VUMC identified a number of medical image viewing-related challenges and opportunities:

- VUMC’s main radiology PACS experiences heavy traffic from pre-fetching, prior relevancies and other non-diagnostic viewing requests. They needed to reduce

this burden on the system by moving users to a viewer that was easier to use and easier for IT to manage.

- VUMC annually receives approximately 40,000 CDs from more than 250 outside facilities containing patient imaging studies that must be ingested. Currently, physicians have to wait for patient CDs to be imported and consolidated with patient demographics before images can be reviewed. VUMC needed a way to electronically transfer a portion of these images directly into their imaging system environment.
- VUMC needed a solution that would allow medical researchers to upload, access and share imaging studies and other data. VUMC did not want research data to be managed alongside active patient

content unless appropriately indexed. Additionally, researchers were often using freeware applications not built for image sharing. These tools were mostly client-server applications that tied a researcher to a specific CPU, thus not allowing image access from other locations or devices.

- Finally, VUMC leaders saw telemedicine as an important capability for delivering care more effectively to patients in outlying areas while improving collaboration with referring providers and optimizing bed usage. They needed a viewer to support their telemedicine initiative.

VANDERBILT  UNIVERSITY
MEDICAL CENTER

SIZE
1,105 beds
19,600 employees

LOCATION
Nashville, Tennessee

PRODUCTS IN USE
NilRead
NilFeed

FOCUS
Medical care and image management

One of the most innovative uses of NilRead by VUMC is as part of a service that provides remote neurology consults. Since the teleneurology program began, patients around the region have received faster access to specialists for stroke diagnosis.

THE SOLUTION

Zero-footprint enterprise viewing provides common platform

VUMC IT leaders determined these challenges could be addressed by an enterprise medical image viewer — a software application used by healthcare providers to visualize patient images and reports on virtually any computer or mobile device rather than dedicated image viewing stations.

The VUMC Imaging Informatics team evaluated eleven different enterprise viewing solutions, including NilRead from Hyland Healthcare. NilRead provides a universal, vendor-independent platform for accessing DICOM and non-DICOM image data wherever it resides, integrating with electronic health records (EHRs), vendor neutral archives (VNAs) and other applications.

VUMC rated vendors on more than three dozen technical and application aspects. “Hyland Healthcare was ahead of other vendors in virtually every category,” says Jennifer Tucker, VUMC imaging system specialist. “One of the most important factors was NilRead’s ability to leverage Active Directory and LDAP. VUMC is a large facility with more than 8,000 potential viewer users, including clinicians and healthcare staff. Creating a user database manually would have taken time away from valuable staff resources.”

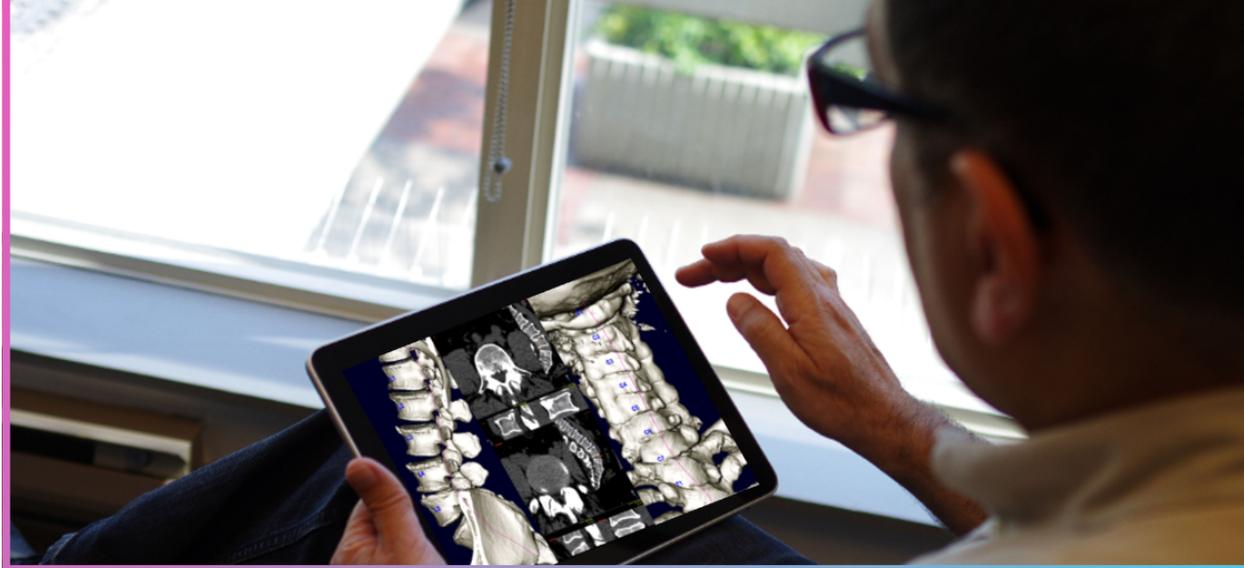
VUMC also wanted a zero-footprint application that does not require any downloads or plug-ins. “A true zero-footprint viewer should work like a YouTube video,” says Tucker. “You click to open it, you watch it and when you close it, it’s gone and there is no trace left behind. The whole point is to be able to log in anywhere, at any time and get the same type of response. Most viewer vendors we looked at were in their

infancy when it came to zero-footprint, requiring additional third-party programs to work on the physician desktop. NilRead, on the other hand, is based on true, zero-footprint technology that runs on any browser and no additional software or plug-ins are required.”

To further test NilRead’s capabilities, VUMC implemented a pilot project where it ran the enterprise viewer on a single server with active connections to PACS. The health system wanted to look at different types of studies coming from different modalities to see how NilRead would handle them. “In medical imaging, occasionally there are transfer syntax issues, especially when you connect an older modality to a newer viewing system. This was not an issue with NilRead,” says Tucker.

VUMC also ensured physicians were actively involved in the viewer evaluation for input into the final decision. The health system initially provided access to 50 telemedicine physicians, radiologists and other clinical pilot users.

“We allowed physicians to use the system for 90 days, and then we turned it off,” says Tucker. “I immediately began to get phone calls. Physicians in the pilot project had come to appreciate the convenience of accessing images on portable devices from virtually anywhere. When they had to temporarily go back to the legacy access method, which included establishing a remote login to the physician desktop via VPN and then launching the PACS viewer, they clamored for VUMC to finalize the system purchase and reinstate NilRead access.”



Enterprise viewing streamlines image access and sharing, enables teleneurology

Once NilRead was officially implemented at VUMC, the IT team decided to validate a hunch that end-user adoption would be simple and fast. “During end user training, I simply sent out a URL to the system and told users to login using their VUMC user ID and password and to let me know if they had any questions,” says Tucker. “I wanted to see if I could give a limited amount of information to a user and have them be able to use the system.” This test was successful, validating the intuitive nature of NilRead that reduces the need for extensive end user education.

The early success of NilRead resulted in the application deployment at VUMC to address a variety of challenges and opportunities, including:

House viewing

NilRead is aligned to be the designated “house viewer” for all VUMC facilities, including clinics and satellite offices. NilRead works alongside VUMC RIS and PACS applications to make images available to enterprise clinical users, including those that have historically accessed PACS for this information. Once NilRead is fully rolled out, users across all service lines will be able to access patient images from wherever they are currently working, without having to find a specific workstation and log into a separate image viewer on the PACS.

NilRead provides federated search capabilities, looking across gateways and long-term archives to locate stored images. End users can initiate pre-fetching and on-the-fly query and retrieve. Integration to the house dictation system enables NilRead to be the system through which dictation can be performed by radiologists in case PACS goes down for any reason. Physicians can use NilRead to route studies and collaborate online with referring physicians in preparing for procedures while the patient is in transit.

Reduction of CD imports

VUMC focused NilRead image sharing capabilities on the institutions that generated the largest volume of CDs each year. NilFeed is an image sharing extension for all NilRead viewers. NilFeed allows a secure connection utilizing SSL and https:// without the need of a VPN. Using this functionality, VUMC is now able to directly transfer patient images from referring institutions. This approach has not completely eliminated CD ingestion from all locations, but the workload from high-volume CD senders has been significantly reduced.

Research

Using NilFeed, clinical researchers are also able to more easily send data to VUMC from outside hospitals. The IT department is now better able to keep research data separated from live patient data. NilRead not only gives researchers a robust, diagnostic-quality viewer, but it also gives them the flexibility to access images from remote locations and portable devices.

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Telemedicine

One of the most innovative uses of NilRead by VUMC is as part of a service that provides remote neurology consults. In the past, when patients presented with stroke symptoms at affiliate healthcare facilities, on-site neurologist availability was limited, resulting in a nearly 100 percent transport rate to VUMC. A high percentage of these patients, however, had not experienced a stroke. This situation resulted in unnecessary bed usage at VUMC while taking patients away from family members and local providers.

RESULTS

Enterprise imaging optimizes efficiencies, care and outcomes

Using NilRead, VUMC has begun reducing the non-diagnostic image viewing traffic workload on the main PACS, which will be primarily used for diagnostic reads within radiology. This load-sharing provides greater efficiencies, while giving all physicians the flexibility to use a web-based viewer with simultaneous imaging viewing and collaboration tools that are accessible from any location.

By gradually eliminating the need for CD importing, VUMC has reduced the amount of work in user queues while speeding the turnaround time. Physicians can access images much faster than in the past because they no longer have to wait for manual import of images and matching to VUMC demographic data.

Since the Teleneurology program began, patients around the region have received faster access to specialists for stroke diagnosis, and stroke patient transfers to VUMC have been reduced to 12 percent. The referring facility is now able to treat patients locally, keeping them close to family and familiar caregivers and, in turn, enabling VUMC to preserve beds for patients with more severe cases.

With the success of the Teleneurology program, VUMC plans to extend telemedicine capabilities to other service lines through enhanced image sharing. Plans are to integrate NilRead with the organization’s Epic EHR, enabling VUMC users to conveniently access patient images from within the EHR interface. “We’ve had an excellent experience so far with NilRead and our Hyland Healthcare partnership,” says Tucker. “The NilRead enterprise viewer is a valuable solution that has many applications for supporting a growing imaging volume and improving the way we access and share patient content.”

Learn more at [HylandHealthcare.com](https://www.hylandhealthcare.com)

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