

# NILREAD HUB AND SPOKE DEPLOYMENT MODEL

## Image enabling remote locations across the healthcare enterprise

Healthcare organizations with smaller offices or physicians working from home in locations that have exceptionally low network bandwidth or poor network reliability need a way to provide proper image viewing capabilities. NilRead offers that capability by using a hub and spoke deployment methodology, creating a distributed processing infrastructure through which clinicians can view the completed studies and radiologists can easily and securely read those same studies.

### HOW HUB AND SPOKE WORKS

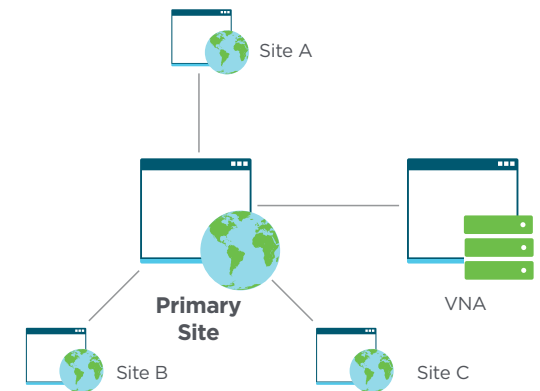
NilRead, a diagnostic quality viewer with FDA 510k clearance, is a highly scalable solution and integrates with your electronic medical record (EMR), picture archiving and communications system (PACS), vendor neutral

archive (VNA) and other diagnostic imaging systems. As a true zero-footprint, server-side rendered solution, user access and performance are not as impacted by bandwidth challenges as traditional viewing solutions including PACS workstations. NilRead can adapt to the available bandwidth. Generally, the minimum recommended bandwidth for diagnostic use is 5 Mbps, but NilRead can automatically adapt to lower bandwidth if required. The viewer will always display full quality, final images during the user interaction.

In the hub and spoke configuration, only the primary site (hub) is connected to and interacting with the vendor neutral archive (VNA). Facility cache servers (spokes) send notification to the primary site as soon as new data is acquired or imported. After the pre-configured hold-off period, data is uploaded to the primary site using available bandwidth.

The primary site is able to perform federated services against data cached both locally and remotely at the facilities. Depending on available bandwidth and remote site endpoint accessibility, remote data can be used for viewing. Facility cache servers maintain a local data dictionary, but are able to perform federated queries against the primary site dictionary and VNA (using the primary site as a VNA proxy) and view primary site objects. In a cooperating sites configuration, all servers can be connected to the same or different VNAs.

Local data is not exchanged between sites unless it's explicitly authorized and requested. While sites maintain a local cache data dictionary, they are able to perform federated queries and imaging, which can involve data both cached at sites and stored in the VNA.



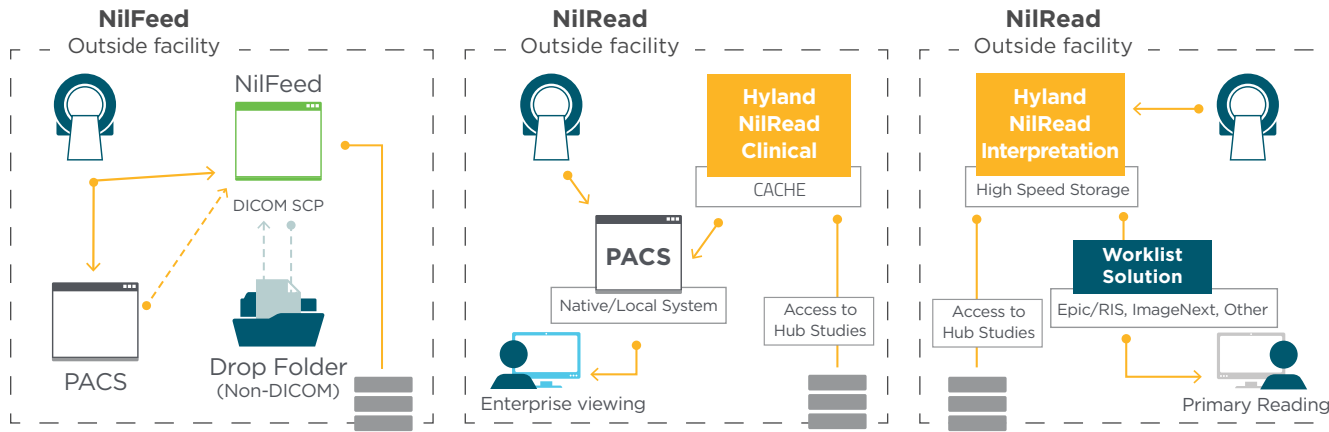
### SEAMLESS OBJECT EXCHANGE BETWEEN SITES

Hyland NilFeed can also be implemented to facilitate the exchange of DICOM and non-DICOM objects. NilFeed is a DICOM storage SCP “store-and-forward” proxy, which provides transfer of objects from remote sites to a central server using secure and reliable HTTPS-based transport.

NilFeed is installed on a remote site as a Windows service providing a DICOM storage SCP endpoint. Any objects automatically or manually routed to the SCP will be temporarily stored on the local hard drive to optimize performance. This includes the ability to perform reliable data transfer with auto restart and retry if the connection is interrupted. The routed data is then uploaded to a configured NilRead server using the NilRead server credentials and HTTPS protocol. Data is deleted from NilFeed once transmitted.

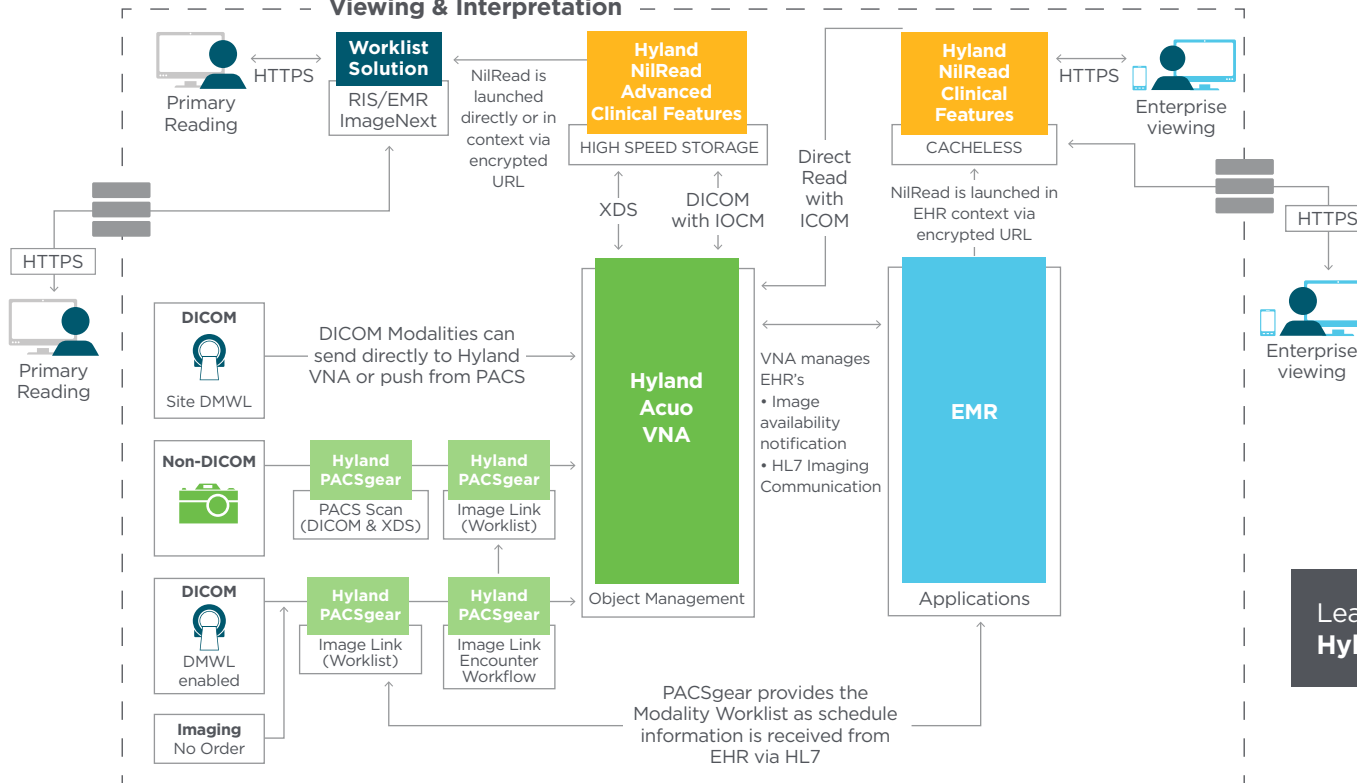


HUB



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SPOKES



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