

Carestream

Image Sharing

October, 2014

Image Sharing Challenges

Size and location of images

Duplication of images, multiple versions of a study

Data integrity between trusts

Controlled access to images

...

Options Available Today...

Traditional Approaches

- Image Exchange Portal
- Direct QR
- CD
- COMSOL

Advanced Approaches

- Vue Connect
- XDS
- *Vue Motion/My Vue*

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Vue Connect

Intelligent Image Sharing



Vue Connect

A patient-centric workflow solution so clinicians can access comprehensive patient information regardless of location seamlessly connecting multi-vendor, multi-site RIS & PACS systems.

Vue Connect: What is it?

Carestream *Vue Connect* addresses the barriers of:-

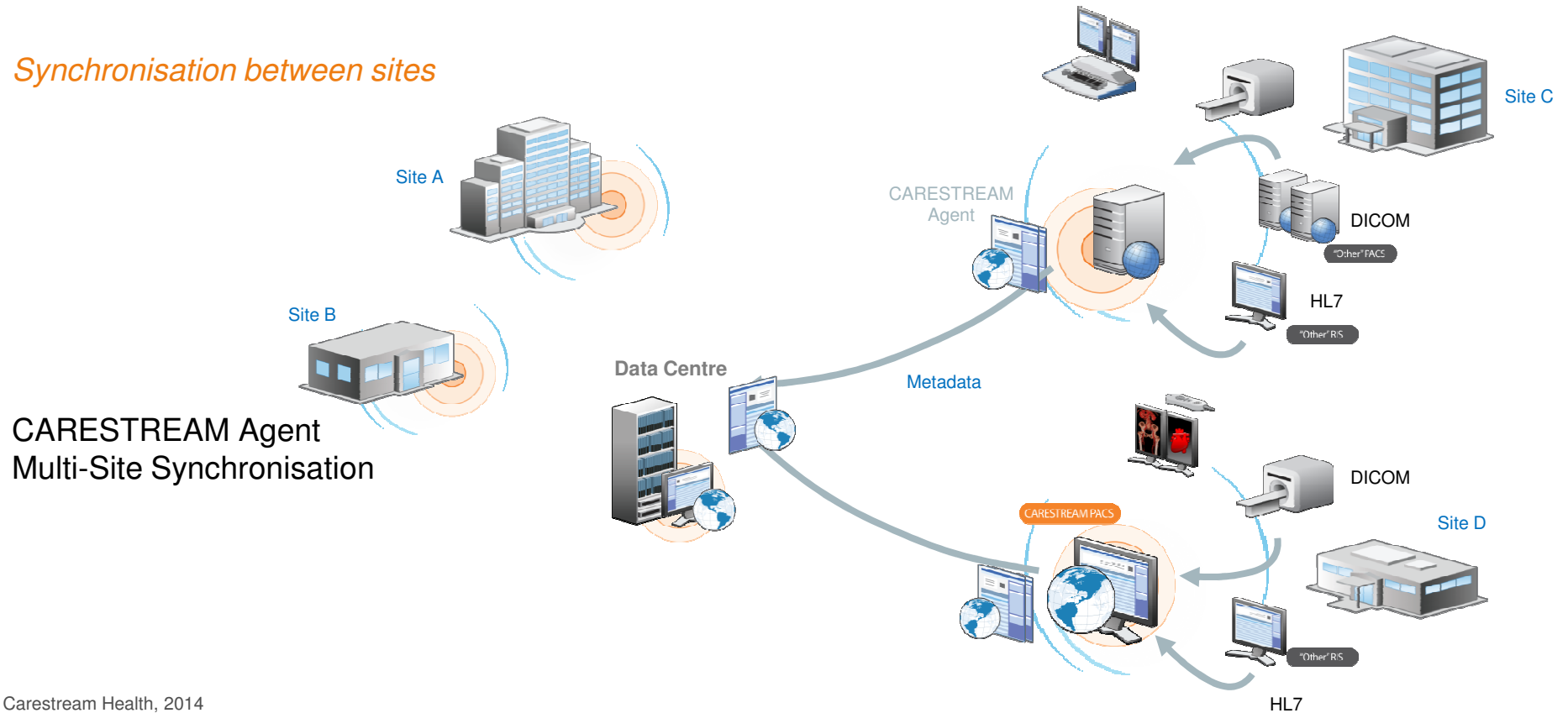
- Physical location of images
- Physical location of the user
- Network speed and reliability
- Different PACS/RIS/Reporting vendors on sites
- Data integrity between sites

Vue Connect: What is it?

- ✓ Designed for **diagnostic workflow** in radiology
- ✓ Report *anywhere* concept
- ✓ **Image oriented**
- ✓ Use of **optimized protocols & standards** (CONN, TNL, RICE compression, Tunneling, Streaming)
- ✓ Allows the **integration of 3rd party** systems **via Standard Protocols**
- ✓ Data access from **Carestream Client or Vue Motion or WADO ...**
- ✓ Multiple patient ID support (**PIX**) to allow extra-enterprise integration by keeping local id and adding a global id (Internal PIX management or hosted externally)
- ✓ Clear identification of the source of exams by the means of **Site ID**
- ✓ **No physical data movement** (tunnelling)

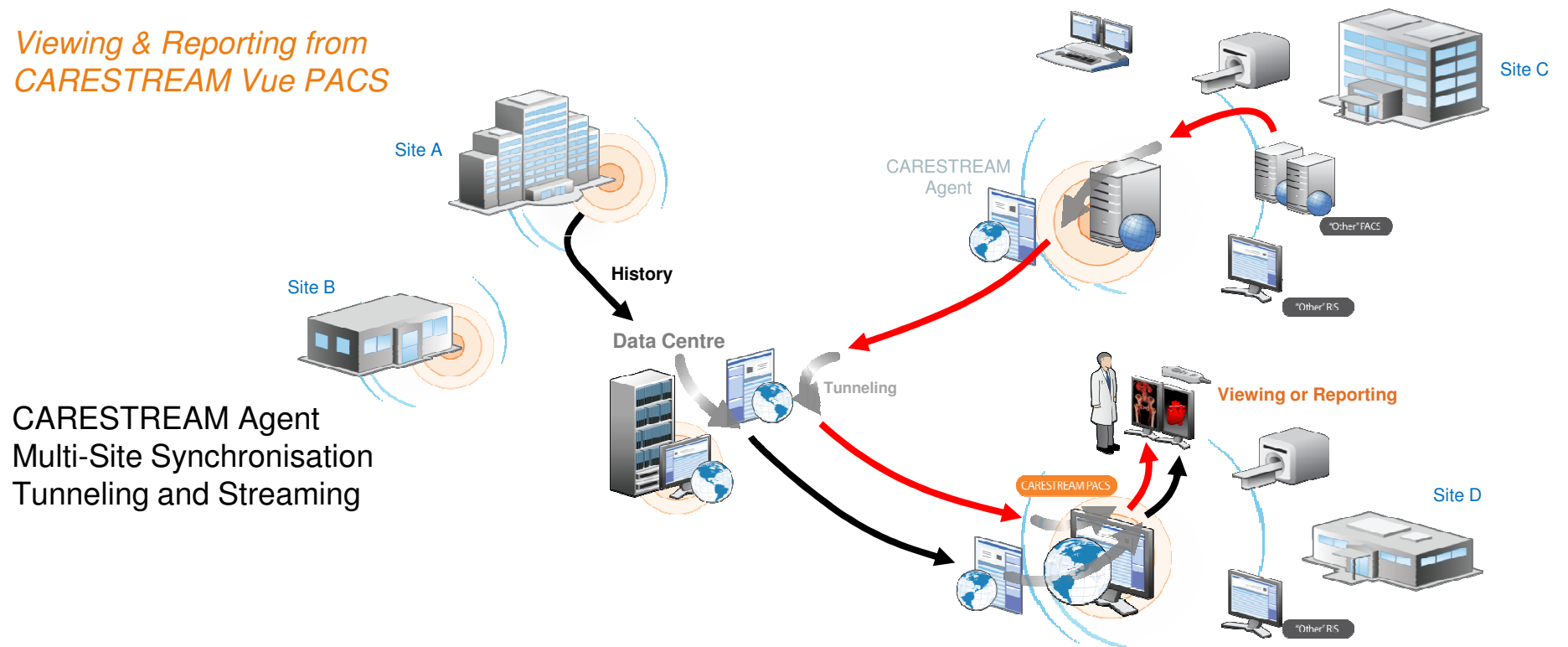
Vue Connect Architecture: Synchronisation

Synchronisation between sites



Vue Connect Architecture: *Flow scenario*

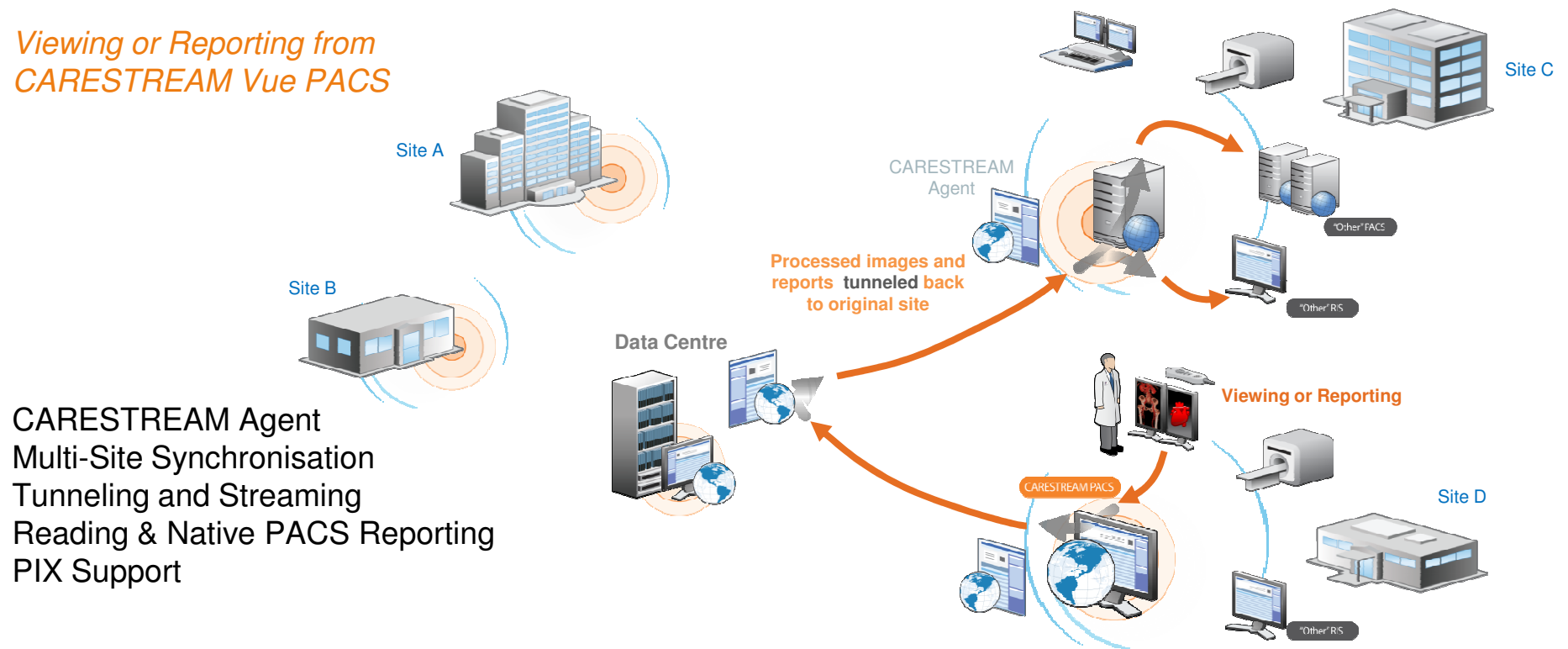
Viewing & Reporting from CARESTREAM Vue PACS



CARESTREAM Agent
Multi-Site Synchronisation
Tunneling and Streaming

Vue Connect Architecture: *Flow scenario*

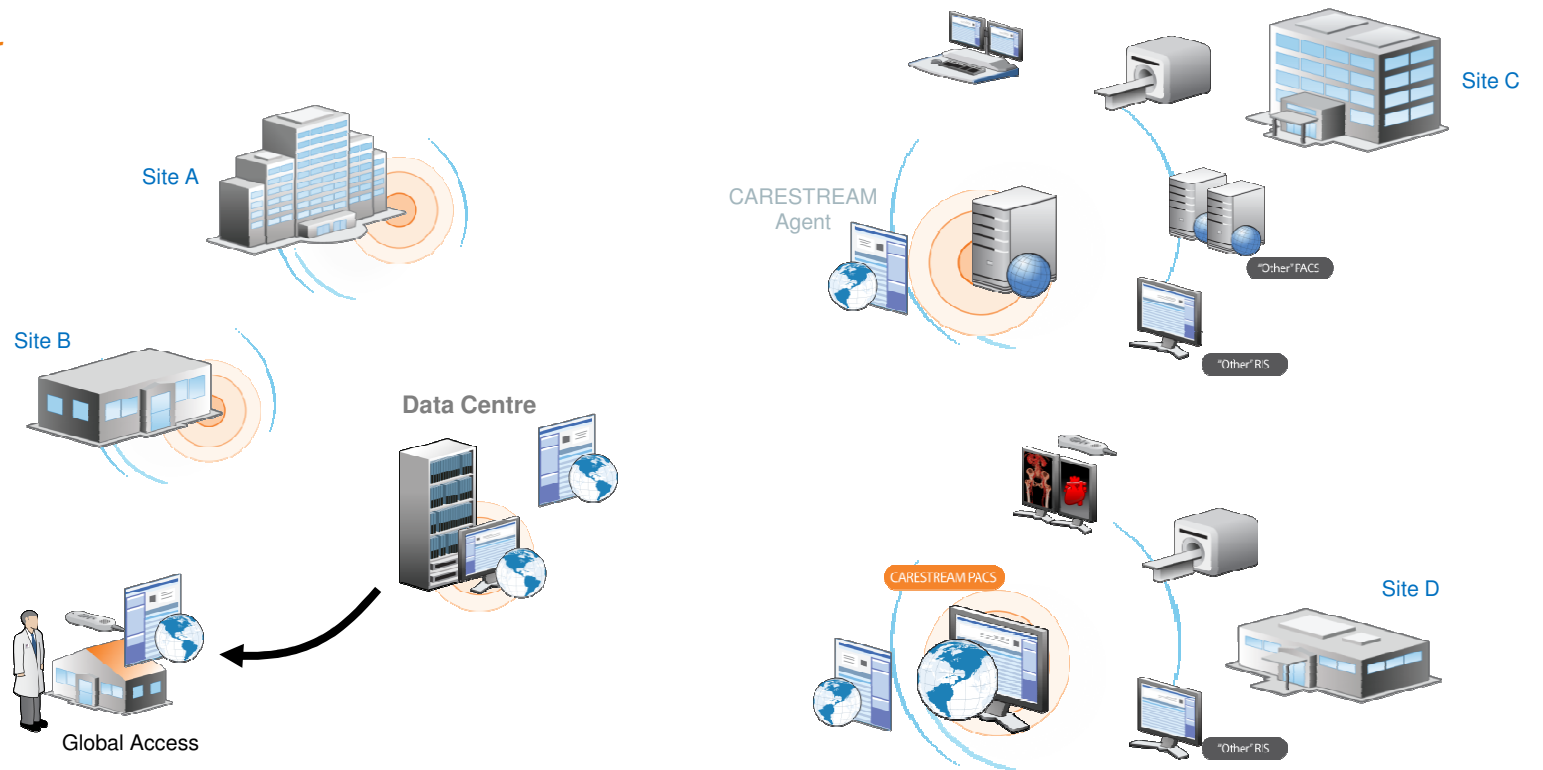
*Viewing or Reporting from
CARESTREAM Vue PACS*



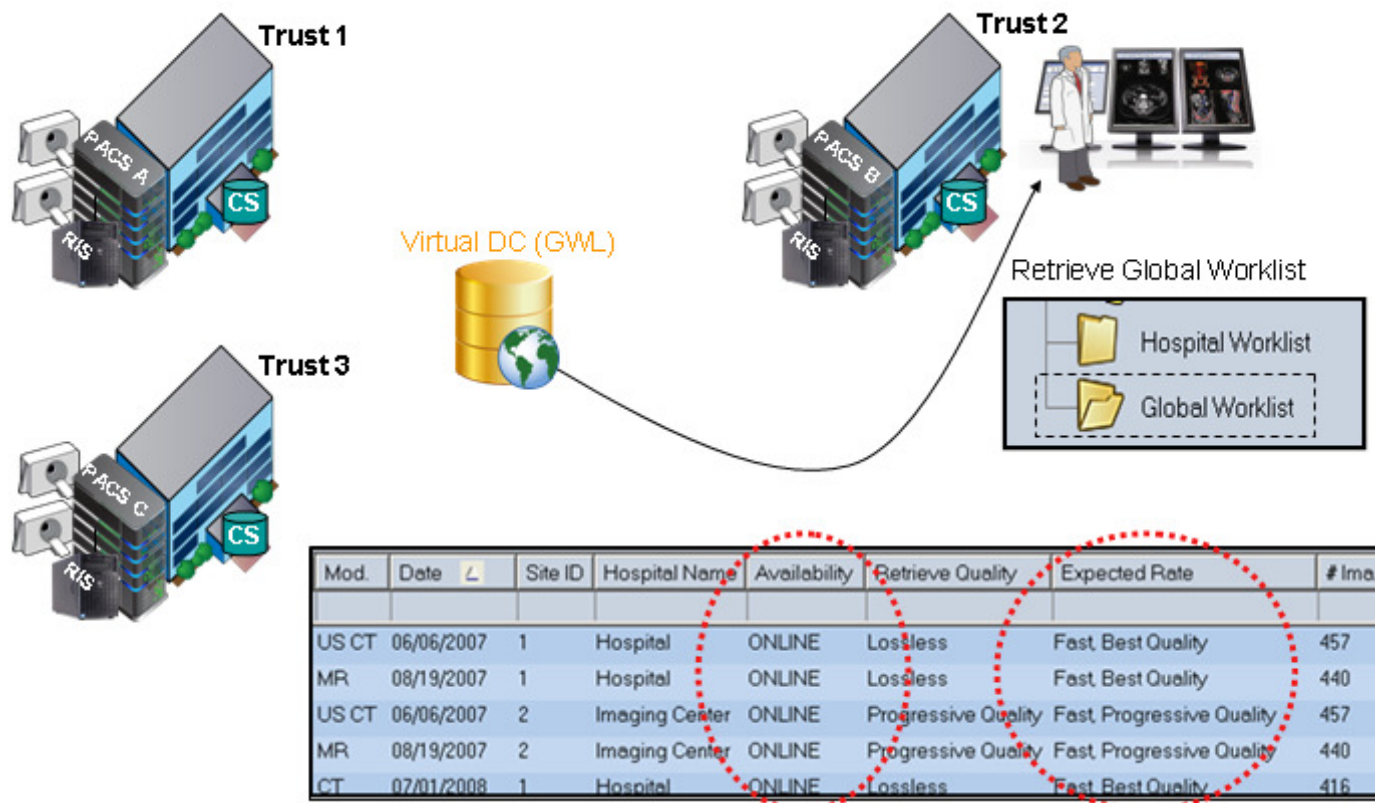
CARESTREAM Agent
Multi-Site Synchronisation
Tunneling and Streaming
Reading & Native PACS Reporting
PIX Support

Vue Connect Architecture: *Remote Viewing*

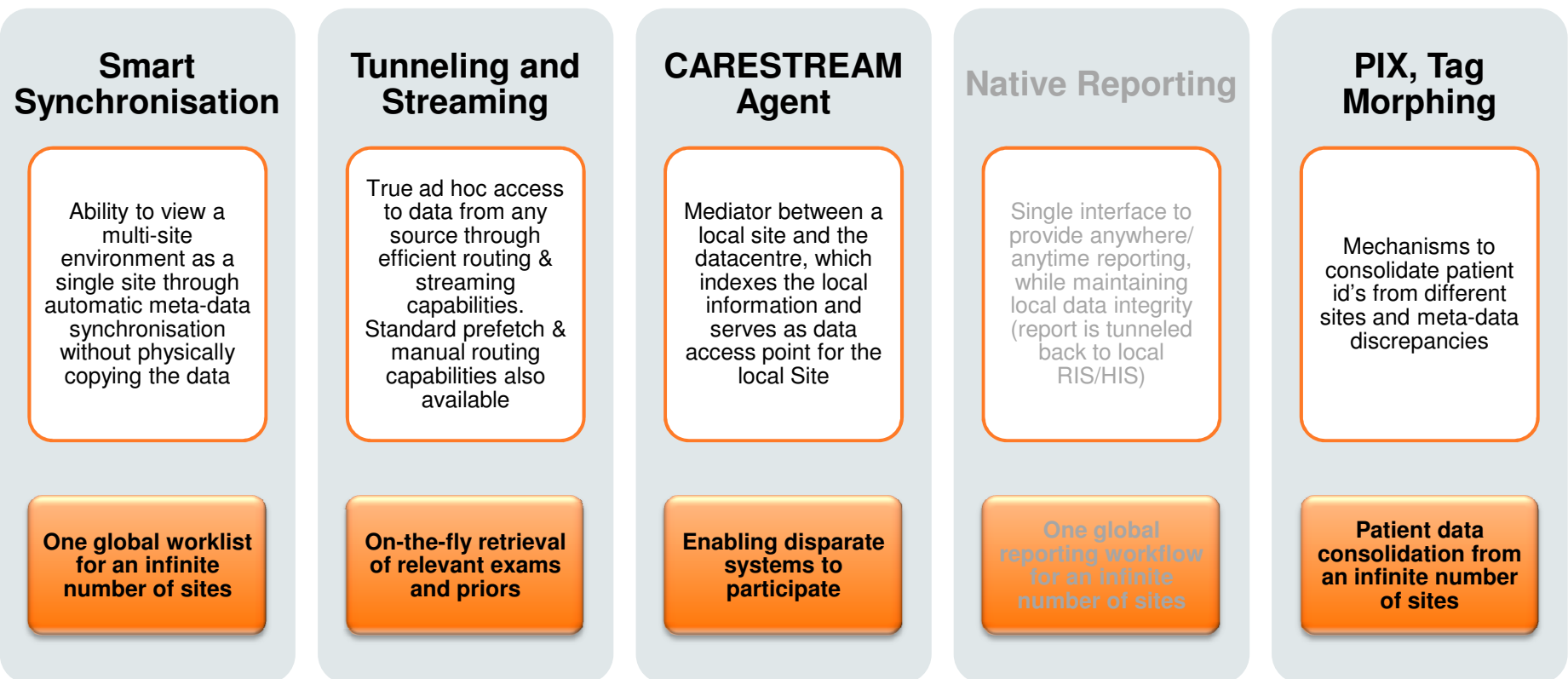
Remote Viewing or Reporting



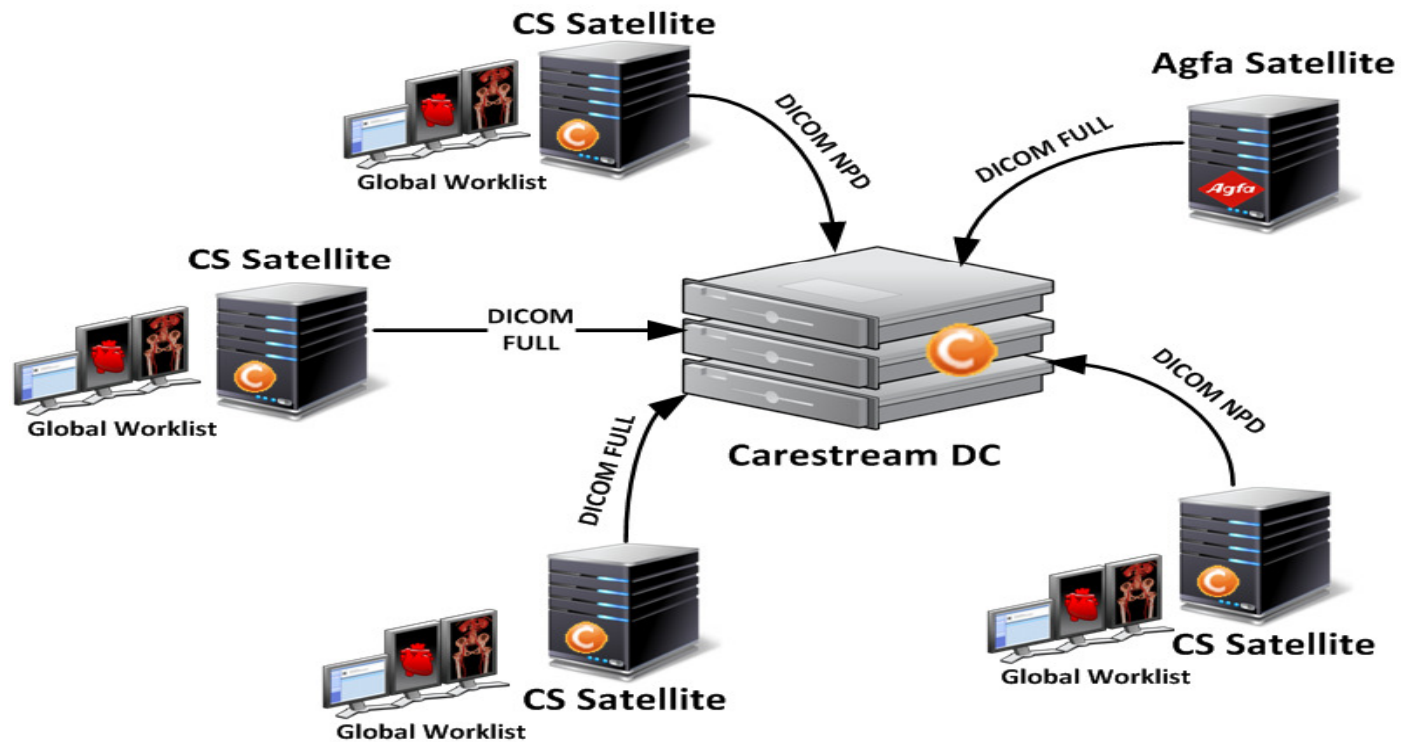
Vue Connect: What does it look like?



Vue Connect: How Do We Do It?



Vue Connect: Example Architecture



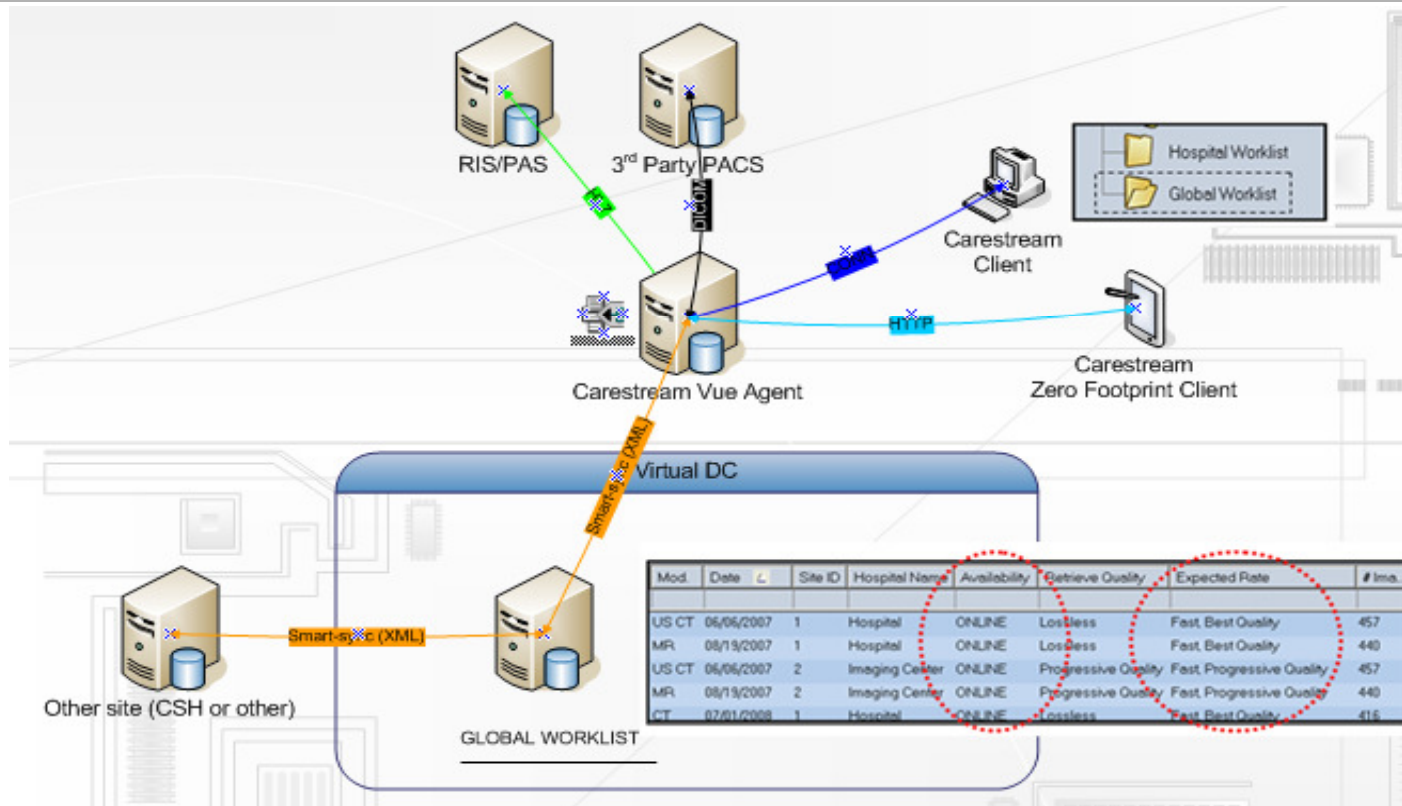
Vue Agent

There is no need to replace all non-Carestream PACS in a multi-site environment in order to read them through the global study list.

The main goals of the CS agent are:-

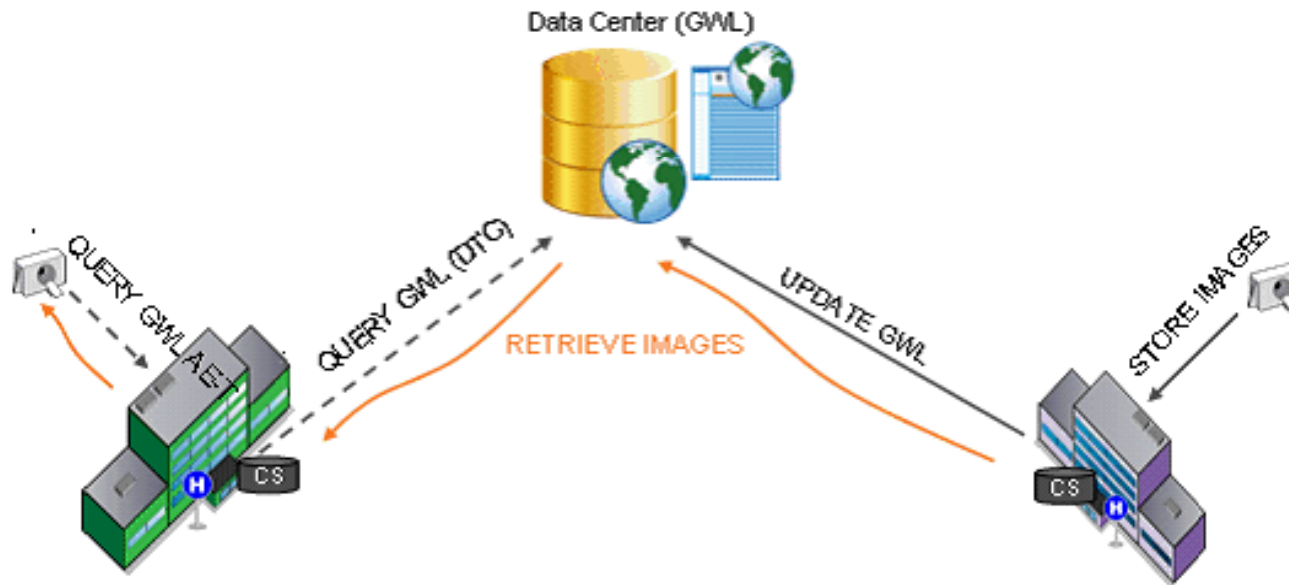
- Allowing users on that site to remotely read other sites
- Synchronizing all required foreign PACS data to the global study list, and enabling other sites to access/read it

Vue Agent: Simply Integrated



Accessing 'Global' Data

DICOM peers (including workstations can query the Global Study List)



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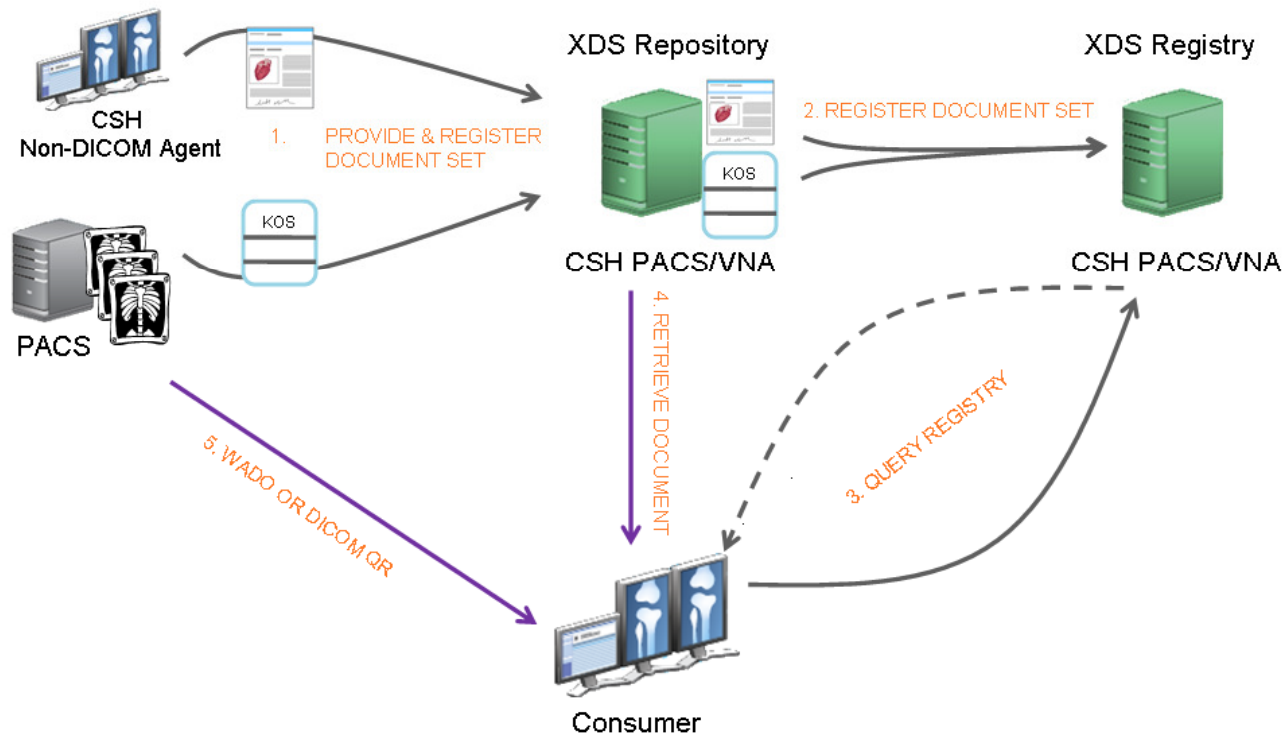
XDS

Cross-Enterprise Document Sharing

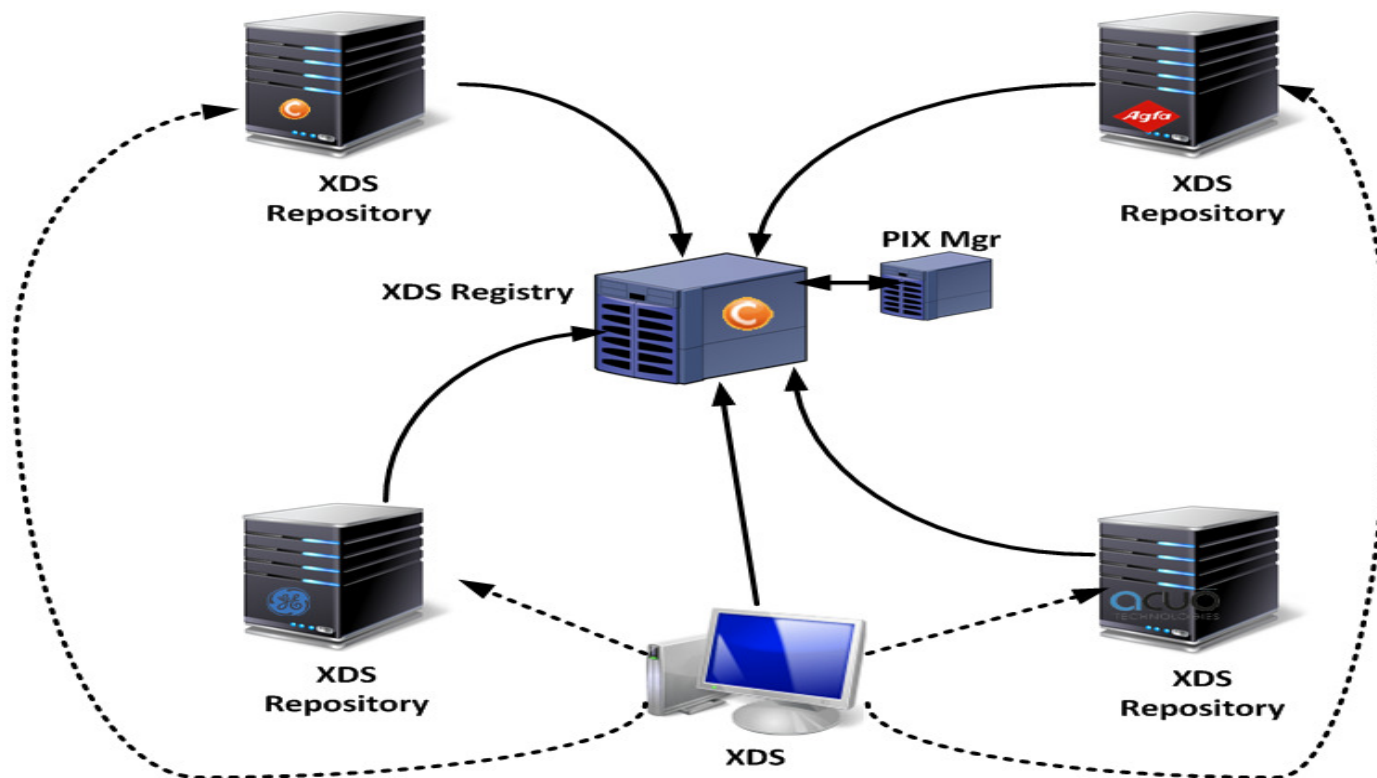
XDS: What it is?

- ✓ Designed for cross enterprise **medical data sharing**
- ✓ Enterprise wide, patient centric
- ✓ **Any kind of medical data**, imaging included
- ✓ **Standard interfaces**, based on web services
- ✓ Allows communication between **many different vendors**
- ✓ Data input from **any XDS compliant source**
- ✓ Data access from **any XDS compliant consumer**
- ✓ Multiple patient ID support (**PIX**) to allow extra-enterprise integration by keeping local id and adding a global id (requires external PIX manager)

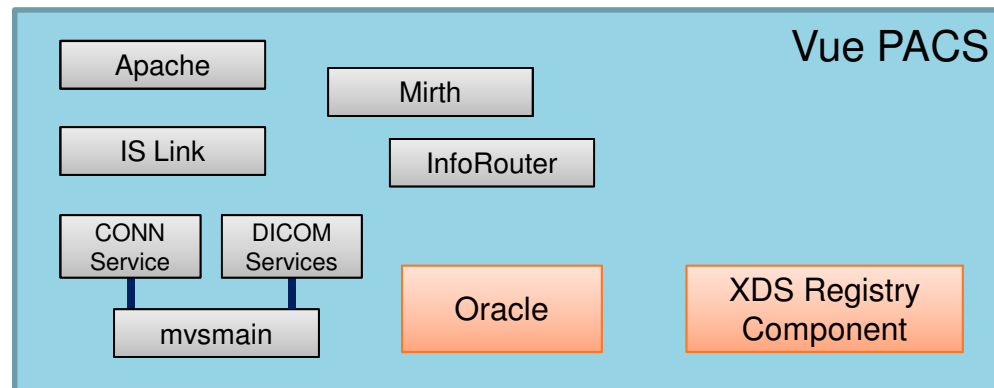
XDS: What is it?



XDS: Example Architecture

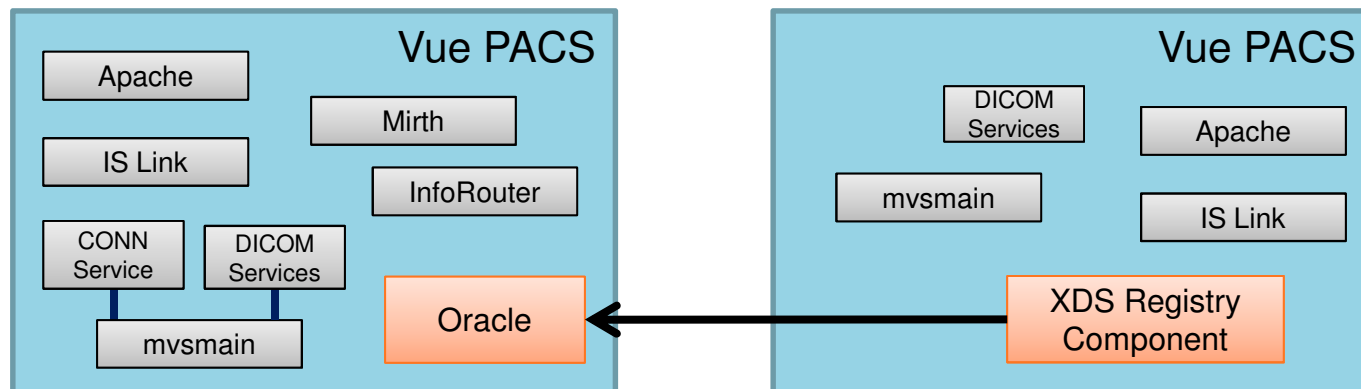


Integral to Vue PACS Server

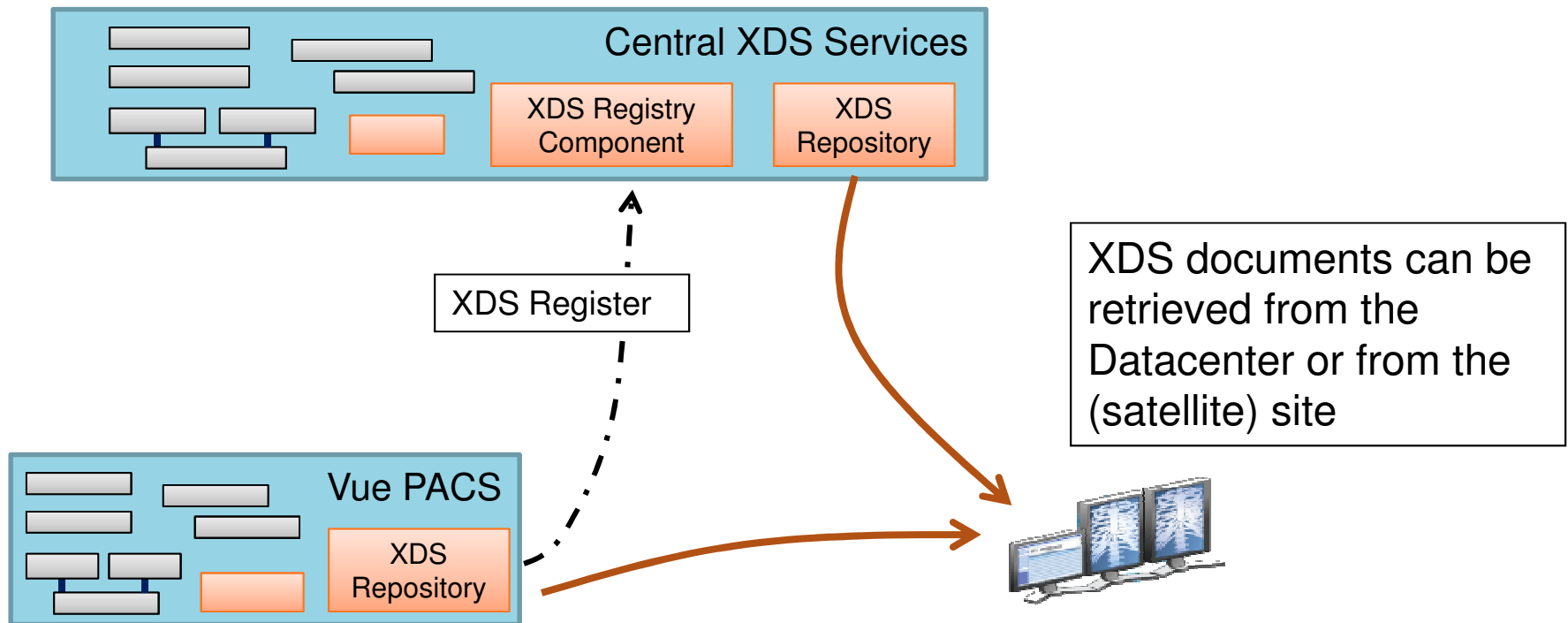


The XDS registry & repository is already installed in the standard package

Or as a dedicated XDS Server



Vue PACS, Vue Connect and XDS



Comparison Table

	Vue Connect	XDS
Primary Target	Diagnostic workflow Data Distribution (Vue Motion, My Vue)	Data Distribution (Vendor Agnostic)
Performance	Optimized (CONN, Streaming, Compression)	Best Effort, but improving (WADO-RS, JPIP)
Standard Format	Yes/partial, proprietary implementation for performance with ability to access via standard protocols	Yes, IHE
Non-DICOM support	Yes, with either Vue Connect exchange format (CONN) OR via standard exchange format using XDS	Yes, with standard XDS exchange format
3rd party vendor integration	Yes (DICOM, HL7, Tag morphing)	Yes (parsing/morphing?)
Multi Patient ID (PIX)	Internal PIX support or via external PIX manager	Yes, BUT requires external PIX manager
Need of physically move data	No	No
Security	ACL (simple, more flexible), Blocking service	BPPC – not always enough?

XDS or Vue Connect, today...

- ✓ Diagnostic, multi site workflow
Vue Connect
- ✓ Distribution DICOM and NON-DICOM data via web viewer (including Video Streaming)
Vue Connect (with MyVue)
- ✓ Receive NON-DICOM data from 3rd parties
Vue Connect or XDS, having the 3rd party acting as XDS source
- ✓ Distribution of DICOM and NON-DICOM, when 3rd party repositories are involved, and data cannot be moved
Vue Connect or XDS, using consumer
- ✓ Allow 3rd party systems to distribute via their viewers data located on our system
Vue Connect or XDS, by allowing access to our repository, registry and/or updating and external registry
- ✓ Performances has priority over *standardization*
Vue Connect (although WADO-RS, JPIP challenging this)
- ✓ Standardization has priority, or is a mandatory requirement
XDS although Vue Connect does offer standard access via DICOM, HL7, XDS etc.

Summary

Vue Connect is a Carestream solution which allows both cross enterprise diagnosis in radiology department and cross enterprise, cross department image distribution – with fast, efficient protocols to facilitate delivery of images.

XDS is a standard for cross enterprise data distribution, which facilitates the integration between different vendors. Today, XDS is more typically used to create a global study list (via a Registry) and not for the delivery method – which is key to performance.

The two solutions may overlap regarding the data distribution part.

The usage of XDS or **Vue Connect** depends on the existing environment and customer requirements.

The two solutions can be also combined.

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Tackling important issues...

Intelligent Image Sharing

Top 5 Requirements...

Real-time Image Sharing

Vue Connect (Smart-sync with Tunnelling & Streaming), My Vue and/or XDS (WADO-RS, JPIP)
longer term

Multi-vendor Support

Vue Connect (Vue Agent) and/or XDS (can use XDS-DICOM adapters)

Single Copy of Imaging

Vue Connect, My Vue and/or XDS Repository (KOS)

Future Proof

Vue Connect (including Tele-radiology), Vue Motion/MyVue (ECG, Streaming Video etc.) - all with
XDS capabilities built-in

Cross Boundaries

Vue Connect (with propagated query), My Vue and/or XCA

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Vue Motion & MyVue Portal

Intelligent Image Sharing

Viewing Exam Data



You are about to view sensitive medical information. Please take the necessary precautions to protect the privacy of this medical data.

Carestream

MyVUE

Email/User Name:

Password:

[Change password](#) [Forgot password](#)

Introducing MyVue

An image display system based on Vue Motion wrapped with patient setup and sharing capabilities & procedures backed up by advanced security and privacy measures

Patient Access Rights

Disable patient access

Enable patient access

First Name: Email/User Name:

Last Name: ID No.:

Your Last Exam Results

US
12/7/2007 9:07 AM

12/7/2007
Abdominal Imaging (US) - Abdomen
INDICATION: Abdominal pain.
TECHNIQUE: Transverse and longitudinal images were acquired with a curved array transducer.
FINDINGS: The liver measures up to 18 cm in length. There are marked patchy regions of increased echogenicity with size varying of the echotexture, consistent with at least a moderate degree of fatty infiltration. There is a focal region of relative hypoechogenicity within the right lobe of the liver, measuring up to 1.3 cm in diameter. The splenic is unremarkable. The gallbladder is unremarkable. There is a gallstone within the gallbladder neck, measuring approximately 7 mm. No pancreatic duct dilatation or gallbladder wall thickening is seen. No significant cholelithiasis. The common bile duct measures approximately 6.2 mm, considered within normal limits. The spleen is unremarkable. The kidneys are normal in size and position. The right kidney measures approximately 11.8 cm in length on the right and 12.2 cm in length on the left. The distribution of renal medullary echos is seen. The visualized portions of the pancreas (all but distal body and tail) are normal. No significant dilatation of the biliary tree is noted, though there is no pancreatic duct dilatation. The visualized portions of the IVC are unremarkable. 1.5-2.0 cm echogenic liver with diffuse patchy regions of fatty infiltration. There is a 1.3 x 1.9 cm...



Caresstream Search for patient (1)

Free Search | Last Viewed

Search for patient: 881153

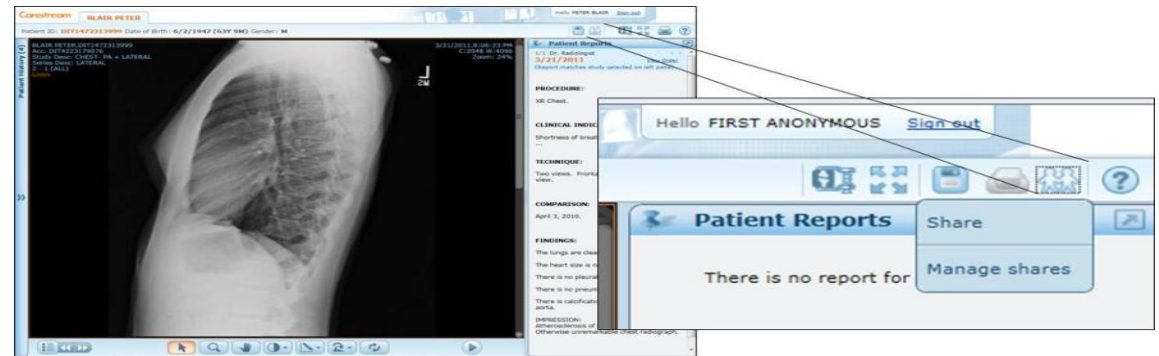
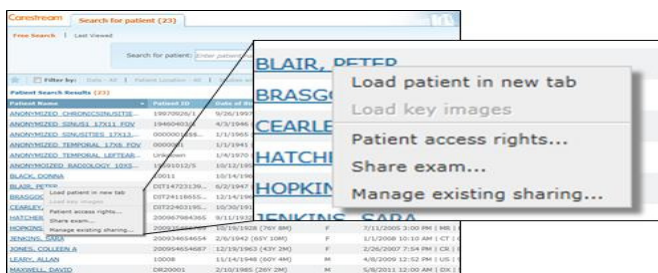
Filter by: Date - All | Patient Location - All | Studies with - All | Status - All | Modality - All | Ref. Physician

of Birth	Gender	Patient's Most Recent Exam	Report	Note	Key
/1920...	F	10/18/2007 10:23 AM US 114737			

Sharing Exam Data - Health Facility User

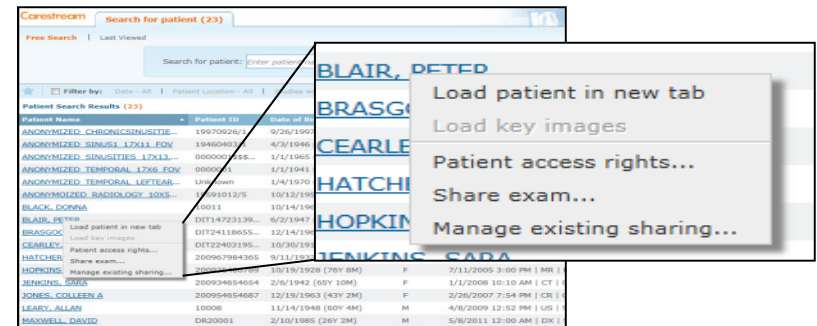
A radiologist or other medical users inside the facility may be provided with permission to share any patients data with other users. Sharing in this sense is similar to the previous flow where patients have the ability to share their own data.

- This sharing is available from inside the Vue Motion viewer or from the AE list.
- Managing all shares is also available



Enabling Patient Access – Admin Staff

- Administrative staff selects patient for sharing
 - Patient data automatically entered
- Administrative staff enters patients e-mail address



The screenshot shows the 'Patient Access Rights' dialog box. It has two radio buttons: 'Disable patient access' (unselected) and 'Enable patient access' (selected). Below the radio buttons, there are four input fields:

- First Name: EK881153
- Last Name: RIMA
- Email/User Name: gabis@algotec.co.il
- ID No.: 881153

At the bottom of the dialog box, there are 'OK' and 'Cancel' buttons.

Sharing Exam Data – Guest

Having received an invitation email to view exam information, the physician (or non-physician) with whom the exam data is shared can log in to the MyVue system and access the exam images and report. This user is a guest user with whom the exam data is shared, subject to the sharing options set by the sharing user (see Viewing Exam Data – Patient section).



Carestream
My VUE
Registration

Please fill in the following details:

Email: *

First Name: *

Last Name: *

Title:

Password: *
You must enter a minimum of 8 characters

Confirm Password: *

Address:

Telephone Number:

Fax:

Security Question: *
Please choose a value...

Security Answer: *

By using this software you agree to the terms of the [disclaimer and privacy notice](#)
© Carestream Health, Inc. 2020. Carestream is a trademark of Carestream Health.

Note: This application is not intended for diagnostic purposes

Sharing Exam Data - Guest

- Guest clicks on link from the e-mail and is directed to MyVue login
- First time access requires registration



Carestream
MyVue
Registration

Please fill in the following details:

Email: *
gila@algotec.co.il

First Name: *
gila

Last Name: *
tzipori

Title:
Boss

Password: *
You must enter a minimum of 8 characters
••••••••
Normal

Confirm Password: *
••••••••

Address:
address

Telephone Number:
9876789

Fax:
098767890

Security Question: *
Please choose a value... ▼

Security Answer: *
what

Register

Sharing Exam Data - Guest

- Guest is directed to MyVue login
- First time access requires registration
- Registration completed message appears



Carestream

MyVue

Registration

Registration completed successfully.

A link to activate the user has been sent to your email address.

Sharing Exam Data - Patient

A patient may be interested in sharing their exam information with another person (physician or non-physician). The person with whom the exam data is shared has access to all the tools available in MyVue for manipulating images

The screenshot displays the MyVue patient portal interface. The main window shows a chest X-ray image of a patient named Peter Blair. To the right of the image is a 'Patient Reports' section with the following details:

- Patient Reports:** 1/1 Dr. Radiologist, 3/21/2011. (Report matches study selected on left pane.)
- PROCEDURE:** XR Chest.
- CLINICAL INDICATION:** Shortness of breath, ...
- TECHNIQUE:** Two views. Frontal and lateralSing view.
- COMPARISON:** April 3, 2010.
- FINDINGS:** The lungs are clear. The heart size is normal. There is no pleural effusion. There is no pneumothorax. There is calcification in the wall of t aorta.
- IMPRESSION:** Atherosclerosis of the aorta. Otherwise unremarkable chest radiograph.

A callout box highlights the 'Share' button in the 'Patient Reports' section. The callout box also shows a 'Manage shares' button. The top of the interface includes a 'Hello FIRST ANONYMOUS Sign out' banner and a navigation bar with icons for home, search, and help.

Sharing Exam Data - Patient

- Patient enters sharing options
 - Sharing period
 - Single study or entire portfolio
 - Allow additional sharing levels
 - Hide patients details
 - send automatic e-mail
 - Optional message
- Patient checks consent
- Patient grants shared access

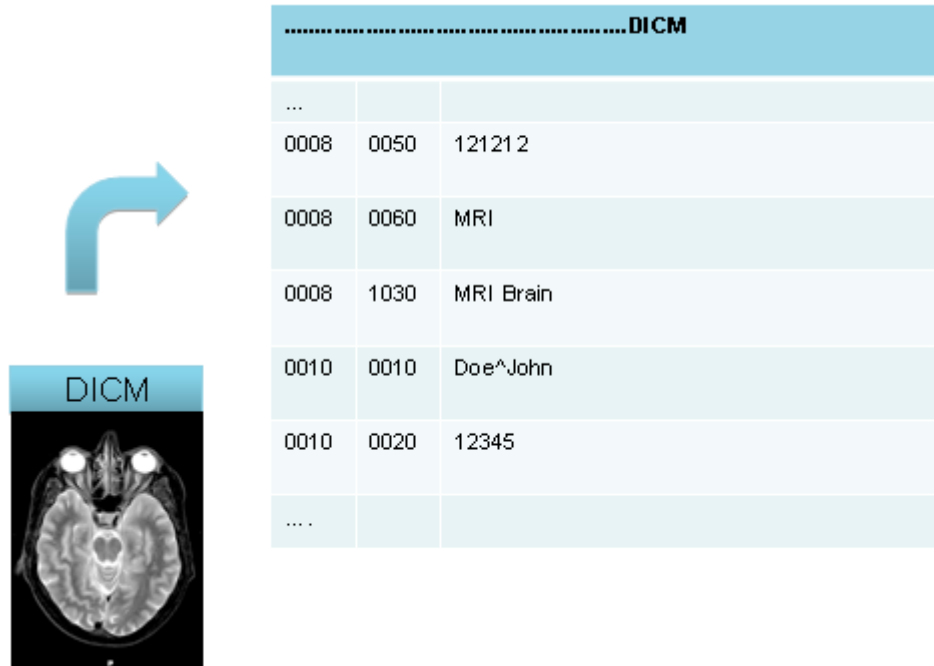
The screenshot shows a 'Share Exam' dialog box with the following elements:

- Share Exam** (title bar with a close button)
- Text: "Email address of the guest with whom you wish to share the exam:" followed by an empty text input field.
- Sharing Options** (section header with a chevron icon):
 - Allow access to the exam for the next days ?
 - Share entire patient portfolio ?
 - Allow guest to share exam with additional guests ?
 - Hide patient details ?
 - Send an automatic invitation email to the guest ?
- Text: "Personal message to the guest:" followed by a large text area with a vertical scrollbar.
- I fully understand my responsibility as to the security and integrity of information obtained and shared through the medical imaging application
- Buttons: "Share" and "Cancel"
- Footnote: "Please note: The owner of the provided email will have access to the shared exam. Please verify the provided email indeed belongs to the person with whom you wish to share the exam."

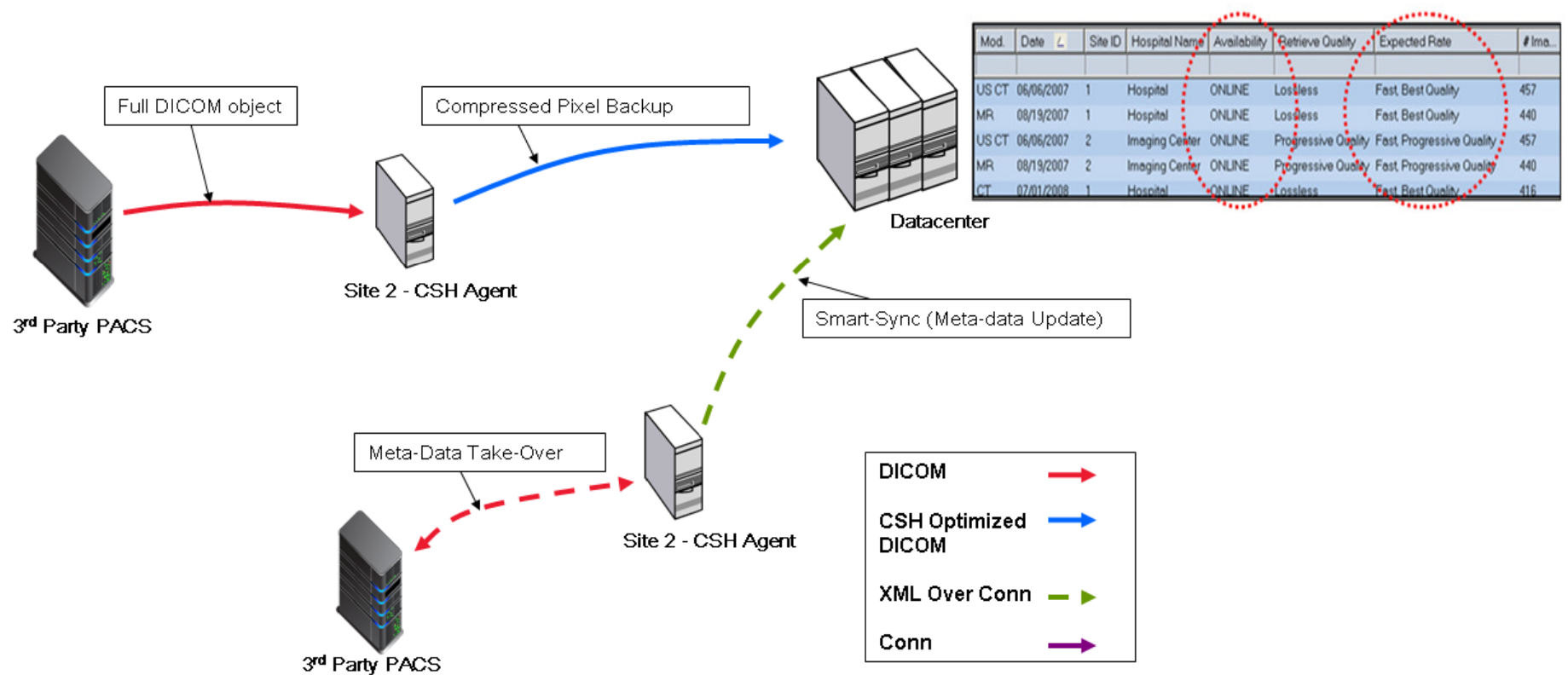
Carestream



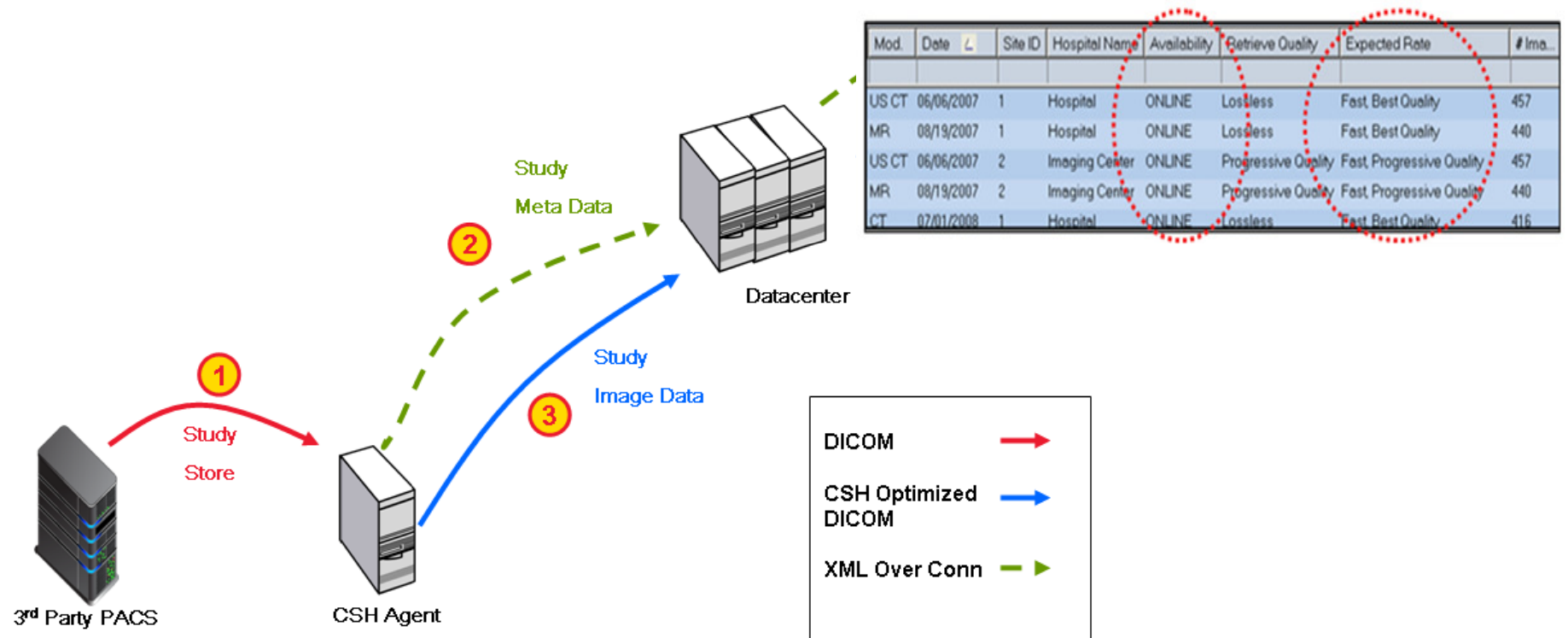
DICOM – meta data



Vue Agent



Vue Agent: Storing a new study



Vue Connect Summary

Healthcare entities working in a multi-site environment seeking to achieve a productive enterprise solution providing efficient cross site reading capabilities

- Local Viewing & Reporting with Global priors
- Image sharing across collaborating sites
- Cross site reporting capabilities

Sites owned & managed by separate entities; business relationship between sites, each owns its own data, may have multiple PACS, RIS, and reporting vendors

