



UNIVERSITY OF KENTUCKY

Purchasing Division

Written Questions and Answers

Radiology Picture Archive and Communication System (PACS)

Replacement UK-2342-23

Closing Date: May 5, 2023

Today's Date: April 20, 2023

No.	Question	Answer
1	Total number of studies in your archive and the number of TB?	See pages 9-11.
2	What is the connectivity between your two DC?	Dedicated Fiber Circuit 80GBS throughput
3	What is your connectivity to the cloud?	We use Microsoft Azure and AWS. WAN & 1GB ExpressRoute with Azure and WAN only for AWS.
4	What is the latency between DC?	Around 5ms
5	What are the various imaging applications used in Radiology today? For example Volpar, Cadstream, TraumaCad, TeraRecon, Syngo etc.	Brain Lab DaTQUANT Lifelimage Viewpoint Powerscribe mPower Prism QPATH TeraRecon Syngo Via Heart Flow CVI42 Dynacad Hermes Mirada Trauma Cad Workflow Intelligence Vertex TIMS Hologic (Application + App Sync) VIZ.AI Powershare mach7 - enterprise viewer ACR Dose Registry-Triad Bunker Hill

		Clarix Acuo NilRead PACSGear NucTrac
6	You mentioned a need for orthopedic templating. How many ortho docs are on staff?	30 attendings, 6 fellows, 25 residents, 6 PAs, & 6 APRNs
7	How many mammo studies are you performing per year?	Roughly 20,000
8	During peak hours, how many radiologists are reading at the same time?	Roughly 70
9	How many physical PACS systems will we be migrating from?	Depends on capabilities of offered solution. We will migrate from current Change Healthcare Radiology PACS. We will consider the potential benefits of also migrating other PACS. (i.e. Hologic Breast)
10	Do all studies reside on spinning disc, if not, how many tapes need migrating?	All on flash / spinning disc - no tape archive
11	Confirm if you would like all reports migrated?	Yes
12	How many local reading workstations are there?	100 local reading workstations Another 75 home reading workstations We are open to solutions/recommendations that provide different options.
13	How many remote reading radiologists are there?	All radiologists are given home reading stations and could be off site on a given day. Current estimate of roughly 70 concurrent readers during a typical day of which up to 20% could be off site at a given time.
14	How do remote radiologists connect to the system?	Fat client on UK-provided workstation at home, consumer internet connected to UK via GlobalProtect VPN
15	Are there any separate reading groups? (Radiologists)	We have multiple clinical departments and divisions that utilize PACS for interpretations including radiology (9 clinical divisions), vascular surgery, neurosurgery, and neurology
16	POCUS (Point Of Care US) how is it handled?	Mix - Hyland PACSGear for some, Epic orders for some
17	Common coding methodologies? exams, staff, locations, rooms etc.	Question is unclear. We do have standard schemas for naming of physical locations and the modalities although moderation variation persists
18	What AI exists / planned?	Yes. We use BunkerHill and VizAI. We also have an external partnership for Ovarian Cancer Screenings that are deidentified and

		uploaded to a portal manually. This is a field we will expand in the future and would be very interested in any PACS capabilities in regard to this. We want our replacement PACS to have the flexibility to connect to/use a variety of AI enabled tools/platforms.
19	Please list non-Epic integrations across the enterprise. (For example, TeraRecon):	TeraRecon Mirada PowerShare PowerScribe TraumaCad UltraGateway mach7 (viewer) Workflow Intelligence
20	Is there a desire for Sectra to enforce SIUID uniqueness across the enterprise?	Yes
21	How many test systems are in use today? Are there any other environments required such as development, training, or research?	Our standard is to have a test environment for each prod system. (I.e. the current CHC PACS has a test environment). Some of our systems have additional environments for training, staging, etc.
22	How is Active Directory structured in the system?	LDAP integration today with CHC PACS. We desire LDAPS with new PACS.
23	What kind of training structure do you have in place to train your end users. Does it differ by resource type? i.e., Radiologist, technician, clinical staff	Yes, it differs by resource type. We are moving to offering Web-based training. Currently most training is in person or remote via teams.
24	Do you have an LMS (learning management system)? If so, what kind?	Yes, we utilize SuccessFactors which is an integrated part of the SAP suite.
25	Do you have a training team that covers a specific application, division, enterprise?	Yes, the training team is still growing.
26	Can we have a network diagram of the enterprise and the connectivity/speed/links between sites and data centers? If Azure was to be used to host PACS and since UK already has a contract with Microsoft, are ExpressRoutes already in place?	Diagram is not available at this time. Yes, we have 1 GB express route.
27	How many total studies does UK have archived? What is the total size of that data set in TB or PB? What is the average study size overall?	Radiology studies aren't archived because we use CHC's flat storage architecture. See question 29 for current storage.
28	If Acuo is to be the VNA, is 2 years the desired short term cache?	Yes. We want 2 years as a minimum in short term cache but are open to vendor specific recommendations which will depend on archive retrieval times. We saw a significant performance improvement when we

		migrated all radiology archives to flat storage in our current CHC PACS so we would want to consider the design carefully with our usage and desired performance.
29	Over the last year, 700k Rad and 80k telerad was ingested into the system. How much space was consumed to ingest that data?	Current space utilized is about 640TB, in the last year it grew by about 60TB.
30	Are Tomo images in BTO Format?	They are SCO. Would be interested in BTO conversion.
31	Are Teaching Files to be migrated?	Yes, if possible – CHC study share
32	Are Orders and Reports to be migrated?	Yes
33	Are reports stored in PACS as DICOM SR?	Yes
34	Are accession numbers unique across the enterprise? Is there any overlap across the enterprise? How will this be handled if this is encountered? Can the current VNA handle overlapping acc#? Will each be prefixed?	Not yet, coming soon. Not initially, overlapping acc numbers from outside organization imports. Manually fixed by PACS admin. Not currently using automation but open to solution options.
35	Do patients have a single MRN? If not, please list all HIS/RIS systems generating MRNs:	Not yet for all, some cleanup needed, One RIS – workflow issues
36	Is there an eMPI?	Yes - some cleanup needed in PACS for dup MRNs.
37	What is going to be the source of truth for the migration? The VNA? What if there are images that haven't yet been archived to the VNA? Will the RIS be the source of truth? What if the RIS extract doesn't match the VNA?	TBD – depends on the selected solution.
38	Who will own handling ensuring the quality of the data and the source of truth of data to be migrated for each site / enterprise wide?	Shared Vendor/IT Team/Clinical Team
39	You indicated what it's unknown how many radiologists read concurrently? Can you provide an estimate?	Current max approximately 70 radiologists. However, many more end-users accessing PACS simultaneously including clinicians and techs with full client access
40	Please estimate how many Clinical, QA, and Tech users will use the system concurrently.	Varies significantly on day/time
41	Please estimate how many people use an enterprise viewer concurrently.	This is hard to estimate. We can look at the total number of viewers being used at any given time on the server, but a total will be hard. What we can say is that it is available to all clinical users of Epic as well as to all patients who have access to mychart. We

		have roughly 8-10k concurrent Epic users at any one time.
42	Current Enterprise architecture being used? (ie Active/Passive)	Yes. Active/Passive app server architecture with a load balancer across multiple (6) application servers.
43	Expected year over year growth of PACS imaging? (4% is average)	Expect 5% but watching. Most recent year's data is a little higher.
44	Average study size and yearly volume of 3D Mammo, Cardio, and general radiology exams?	All screenings and diagnostics are performed with 3D. Cardiology is not currently in scope. Roughly 50K 3D studies for general exams
45	If we can help you consolidate your cardiology PACS into our System, would you want to look at how we could do that? If yes, what is the Cardiology Volume in addition to the 700,000 annual exams and 80,000 telerad exams?	Not in current scope but are interested in learning about potential benefit. See question 46.
46	How many exams exist in your Cardiology PACS, and how much storage does it consume?	Adult: Approx 52,000 exams. 50-200 MB per study. Total 20TB of storage used. Peds: Approx 109,000 exams. 1.7GB per study, 5TB storage used.
47	Average Size of Cardiology exams.	See question 46.
48	Current Cardiology System and Reporting System?	Adult: Intellispace with reporting in Epic Cupid Peds: Syngo Dynamics
49	Number of Cardiologists?	Adult: 29 Peds: 10
50	How is Epic Community Connect being used?	We currently do not have any community connect sites live within our Epic environment. We continue to explore this and the complexities of both ambulatory clinic and hospital sites. Should we ever have a community connect site, having flexibility to use our PACS for both sites would be ideal. We believe PACS/VNA will be a necessary part of our community connect design.
51	Any other Epic products being used that we will interface to?	We do not currently interface SR (via DICOM) to Epic but would be interested in this.
52	Do all PACS users currently use the DUO MFA system to authenticate?	Yes, for Global Protect VPN/remote access, no for current PACS applications
53	Is it a requirement that each server will be required to have the Splunk agent installed?	Yes
54	Can we have UKY's annual modality mix per location?	Ambulatory: Xray – 73,349 MRI – 10,081

		<p>Mammo – 17,246 NM – 1,740 US – 6,337 Chandler Hospital: Xray – 180,911 CT – 114,508 MRI – 18,102 NM – 3,738 US – 23,680 PET/CT - 3,600 Good Samaritan Hospital: Xray – 27,458 CT – 21,069 MRI – 6,060 Ultrasound – 8,537 NM - 318</p>
55	What are the study volume growth expectations?	See answer #43.
56	What is the LDAP/SSO solution currently in place?	No SSO with Radiology, yes LDAP with PACS/PowerShare
57	What's the networking information between facilities and home users?	We use Palo Alto Global Connect for VPN and Citrix Virtual Apps & Desktops via Citrix Gateway for internal network access, Citrix NetScaler for public facing applications.
58	Is a network map available?	Not at this time.
59	How many priors are radiologists expecting?	All priors should be immediately available upon request regardless of study age
60	You mention research and clinical trials in the RFP posting, should we explore research solutions in our proposal?	Yes, including lesion tracking and research reporting (RECIST, Lugano, etc.)
61	What worklist solution do your radiologists currently utilize? Is it part of the PACS? Any pain points with current worklist?	<p>Workflow Intelligence Launches from PACS Rules and logic to meet the needs of the radiologists. Logic for worklists is complex based on combinations of patient demographics, physical location, exam types, and patient classes</p>
62	4.6.16 - Proof of Concept: We'd like more clarification on what UKY expects out of a POC in terms of success. Do you want to only test the viewer and image manipulations or more than that? (ex: Epic integrations)	Primary goal is to provide end users with a hands on evaluation of UK cases acquired using our modality protocols with your viewer and PACS UI and toolset
63	Can we please get an idea of how many of these hour-long videos there might be in a year? Also, what would the store requirements be for one such video?	We aren't sure what "hour long" videos are rereferring to... We do have requests from our providers to be able to record videos for use with teaching/etc.

64	How much data (in study volume or TBs) are you planning on migrating into PACS? If unsure, is there an estimate that can be given for financial purposes?	Current total 640TB. Depending on proposed solution and implementation timeline, the answer will be somewhere between 250TB and 700TB (all of it at the time of implementation).
65	Are there any Epic integrations that are managed by your current PACS today and need to be replaced or ideal new integrations that you're interested in having? (ie. Image-enabling Hyperspace, MyChart Patient Portal)	<p>Epic integrations include: Standard Order/Result interface between Epic and PACS (Bi- Directional)</p> <p>Mach7 viewer (that retrieves from PACS) used for image viewing in Hyperspace, the Patient MyChart and Epic Mobile Apps (Haik, Canto, Rover).</p> <p>PACS to Epic image link/report sharing interface. This includes external images that come into PACS via PowerShare.</p> <p>We would be interested in hearing about any available integrations with Epic that are available with the PACS system. In particular, SR and RDSR integration is something we have interest in.</p>
66	Please consider extending the due date until May 19th - as we feel this will allow all vendors the additional time to better align strategies and solutions to one of the 2025 Strategic Plan's key indicators of success: Optimized use of your facilities and technology.	We will extend it by one week to May 12, 2023, at 3 PM Lexington, KY time. See Addendum #1 for additional details.
67	On prem only? On prem and cloud DC2 (Hybrid) configuration.	Hybrid preferred over on prem only or cloud only.
68	Is there a preferred infrastructure vendor (storage and compute and LB)?	No
69	Where does the Acuo VNA reside (where are the DCs)	On Prem – in both local Data Centers which are about 2 miles apart (connectivity info in other questions)
70	Do all radiology reports reside in EPIC and how are they accessible?	Both. Originate in PowerScribe/PACS but are integrated into Epic via HI7.
71	Is study Replication and Recovery provided by VNA?	Not yet – Rad studies not in VNA currently.
72	What is the current deployment of the Acuo VNA (active passive?)	App server – Active/Passive DB server – Active/Active
73	We assume UK has a common SQL Server Datafarm we can deploy inside of this data farm?	Yes.

74	Please estimate the Number of physicians and clinical staff concurrently accessing the PACS.	See answers #6 and #8.
75	Please provide the total number of modalities throughout the UK Medical footprint, including Kings Daughter Hospital.	UK has approximately 300 modalities. Kings Daughters is not in scope for this implementation, but could potentially be added later via a modification of the contract(s).
76	Are modality worklist services required or is the VNA doing this?	Yes, worklist services are required.
77	Automatic image/ study measurement calibration- The PACS system relies on the DICOM attributes that store the calibration data. If existing in the source DICOM file, the study is automatically calibrated. Please elaborate on the requirement for automatic calibration.	This is not something we leverage today but are interested in learning about the possibilities.
78	Describe how your system handles scripting language applications like Auto Hot Key. Please elaborate.	Advanced users may use small script programs such as found on multi-button mice or some keyboards to map PACS tools to combinations of mouse or keyboard clicks to minimize repetitive clicking. Please describe your support or lack thereof for such programs.
79	Post process quantitative data from nuclear medicine studies. Please elaborate	Vendors should list all specific capabilities to post process nuclear medicine and molecular imaging studies. Examples include lung quantification and renal function. Vendors should also list abilities to fuse images from different modalities at different timepoints such as PET, CT, MR, and SPECT.
80	If this is PACS driven are the Dicom Systems routers sitting in front and do they do compression on behalf of all downstream receivers?	DICOM.Sys Router is used primarily for inbound/outbound traffic from/to outside entities. We do not currently use for compression of these studies.
81	Where do the current radiology studies reside? Inside a PACS or the VNA? There will be a need to preposition at least 1 years' worth of study volume and relative patient priors.	All in PACS. Radiology studies are not in the VNA yet.
82	Is it appropriate to provide a quote for both PACS and VNA for cardiology and radiology?	Open to quotes but need to be separate. Any quotes should be included with the financial portion of the response.
83	Please list all of the known legacy PACS solutions by vendor name and version.	Change Healthcare PACS 14.0 Hologic 4.0.6

84	Who is the preferred reseller vendor you buy from for infrastructure? Compute and Storage?	Not relevant
85	<p>Could you please expand on the below portion of the RFP? What exactly does this mean and what is expected?</p> <p>Additional Financial Commitment</p> <p>In addition to the financial offers, please propose a financial commitment to assist the University.</p> <p>Options may include a signing bonus, scholarships, internships, commitment to hire University Graduates.</p>	This not a requirement, but more of a what else can you provide to UK as an added value to the campus/student body beyond just selling us a product or service.
86	Would it be a problem to submit RFP packets on April 28th as opposed to the May 5th deadline?	RFP responses can be submitted any time prior to the deadline stated in the RFP.
87	Are submissions required to be submitting on USB drives? To our knowledge, UK Healthcare cannot access files from USB drives as it is a security concern.	The responses are being turned into UK Purchasing, who does accept USB drives.
88	Please list the physical location(s) of your data center(s).	Both are located in Lexington KY. About 2 miles apart.

Modality	Total Studies	Total Size (GB)	Max Size (MB)	Avg Size (MB)
BI	13	0.1	6.5	4.1
BMD	3	0	7.8	7.4
CR	4017894	36270.2	10669.1	9
CT	2052015	369477.2	6768.6	164.8
DD	4	0	1.1	0.7
DF	1	0	3.4	3.4
DOC	17	0	4.8	2.8
DR	109195	649.8	1004.6	6.1
DS	4	0	4.4	3.2
DX	660026	9708.1	8246.1	14.9

Modality	Total Studies	Total Size (GB)	Max Size (MB)	Avg Size (MB)
ECG	39	0.3	39.1	7.3
ES	88	8.5	1076.5	98.3
HC	10	1.9	1790	199.3
HD	3	1.5	1095.8	523.8
IO	2	0	5.4	4.4
IVUS	5	0.8	221.8	157.9
KO	85	3.7	620.9	45.2
MA	6	0	6.2	4.2
MG	345775	101006.6	15066.5	212.2
MR	585932	62621.9	4555.3	103.4
NM	171028	5435	1989.9	31.5
OP	4	0	14.4	7.7
OPV	1	0	5.8	5.8
OT	73647	420.9	4076.5	5.8
PR	14484	557.8	1801.1	38.9
PT	35920	8738.6	1666.3	211.4
PX	3900	25.1	180.5	6.5
RF	137832	8452.6	5870.6	58.1
RG	20446	1390.1	10969.2	68.3
RT	3	0.1	83.3	50.9
RTIMAGE	1	0.1	74.7	74.7
SC	64	0.9	191.5	13.8

Modality	Total Studies	Total Size (GB)	Max Size (MB)	Avg Size (MB)
SR	1581	51.8	1049	31.3
US	819265	61731.3	16748.9	73.5
VL	42	9.1	7191.7	183.6
XA	98749	15360.7	10159.5	136.5
XC	4	0.1	101.1	29.9
XR	17	0.4	73.1	22