ADOA-ASET

Project Investment Justification

Version 01.01

A Statewide Standard Document for Information Technology Projects

Project Title:

Arizona State Hospital Virtual Desktop Infrastructure (VDI)

Agency Name:	**Arizona Department of Health Services**
Date:	**2/5/2015**
Agency Contact Name:	**Raghu Ramaswamy**
Agency Contact Phone:	
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Hover for Instructions

I. Management Summary*

The Arizona Department of Health Services (ADHS) evaluated a Virtual Desktop Infrastructure (VDI) solution to replace Windows XP computers at the Arizona State Hospital (ASH). ADHS completed the ASET approved VDI Pre PIJ assessment (HS15005) and would like to move forward with a full-scale VDI solution to deliver the latest version of the electronic medical record software installed on high-speed redundant infrastructure to the ASH user community.

Over 500 computers are end-of-life and require frequent maintenance to keep them running. The proposed Virtual Desktop Infrastructure (VDI) and thin client hardware solution will simplify desktop administration, control cost, and significantly improve the desktop security posture.

The state hospital employs over 600 staff members and provides long-term behavioral health services to the most seriously mentally ill Arizonans. The majority of the hospital employees use an Electronic Medical Records (EMR) system to capture individual patient records including demographics, medical history, medication and allergies, laboratory test results, radiology images, vital signs, personal statistics like age and weight, and billing information. Information Technology Services (ITS) plans to implement VDI technology solutions to enhance the operability of existing and new desktop applications and remote services. ITS conducted a multi-user VDI pilot. Pending approval, ADHS plans to move forward with a full-scale VDI solution deployment of desktops and desktop application environment as a dynamic service offering as a server-hosted virtual desktop computing platform that centralizes endpoint images as virtual machines.

II. Project Investment Justification (PIJ) Type*

☐ **Yes** ☒ **No** Is this document being provided for a Pre-PIJ / Assessment phase?

If Yes,

Identify any cost to be incurred during the Assessment phase.	$
Based on research done to date, provide a high-level estimate or range of development costs anticipated for the full PIJ.	

Explain:
Click here to enter text.

☐ **Yes** ☒ **No** Will a Request for Proposal (RFP) be issued as part of the Pre-PIJ or PIJ?

III. Business Case

*A. Business Problem**

Microsoft ended support for Windows XP OS and security patches April 2014 leaving any system running Windows XP vulnerable to malware and security breaches. Below are some of the issues creating the need for more reliable desktop computing infrastructure at the state hospital.

- Over 500 desktop computers are at least 6 years old
- Desktop computers have Windows XP installed and no longer receive security updates
- Desktops have faulty power supplies, and failing hard drives

- Desktops are less reliable, slower, and more expensive to maintain
- Older operating systems expose the agency to higher support costs and security risks
- New medical record software utilizes more computing power causing performance issues
- New medical record software is not supported on the XP platform

*B. Proposed Business Solution**

Move forward with a full-scale VDI solution to deliver the latest version of the electronic medical record software installed on high-speed redundant infrastructure to the ASH user community. The existing desktop computers used to access the EMR have multiple issues including the use of end of support Windows XP Operating System (OS), no support for security updates, failing power supplies, slow performance, and faulty hard drives. None of the issues above are covered under the manufacturer's warranty. The security issues stem from the ongoing use of the Windows XP OS, which is the only OS the current EMR is compatible with. The performance issues are related to the outdated hardware, which cannot be upgraded to efficiently run the latest OS. Additionally, the pending state hospital EMR system upgrade is not compatible to operate on a Windows XP platform. The proposed solution will eliminate the existing performance issues by provisioning reliable infrastructure.

*C. Quantified Benefits**

X	Service enhancement
	Increased revenue
	Cost reduction
X	Problem avoidance
X	Risk avoidance

Explain:

After April 2014, any computer running Windows XP is potentially vulnerable to new computer viruses, malware, and hacking. Using a VDI solution running on thin client hardware will help to reduce that threat by removing Windows XP computers still in use at the state hospital. Below are some of the benefits.

- Improved user experience and desktop performance
  - High-speed infrastructure
  - Reliable computing power
  - Desktop redundancy

- Enhanced desktop support administration
  - Improved speed to deploy and rollback security updates
  - Simplified desktop customization in mass
  - Single common desktop image versus many desktop images
  - Improved service delivery while increasing security posture
  - Reduced service degradation and break\fix
  - Built-in failover architecture

IV. Technology Approach

*A. Proposed Technology Solution**

1. EMC XtremIO - All-Flash Array
2. HP BL460C Blade Servers - The proposed blade servers have VMware virtualization technology installed to deliver VDI
3. HP t310 All-in-One Zero Client - Thin clients will be used by Doctors, Medical Records staff, Mental Health Program Specialists, Nurses, Residential Program Specialists, and Security Officers
4. Microsoft Windows Virtual Desktop Access
5. VMware vSphere 5 Enterprise
6. VMware Horizon View 6
7. Network Switch - Two Cisco Nexus 3172TQ switches for a high availability pair. The existing computer room does not have sufficient switch equipment available See section IX for the network diagram.
8. Wall mounts for 15 monitors

B. Technology Environment

Currently, there is not any infrastructure dedicated for VDI in the agency. The existing desktop environment consists of over 500 Windows XP machines, which no longer receive security updates. The proposed solution will ultimately provide 285 thin clients for 425 users across three shifts at the state hospital. The following equipment and software was procured after the ASET approved VDI Pre PIJ assessment (HS15005) and will be leveraged to implement the full solution:

- Three HP blade servers
- Five HP t310 All-in-One Zero Clients
- VMware vSphere 5 Enterprise license
- VMware Horizon View 6
- Microsoft Windows Virtual Desktop Access

C. Selection Process

The IT department worked with vendors to design and build a technology solution that would meet the needs of the agency. The Pre-PIJ assessment provided the agency with quantified benefits and measureable performance results to make a full purchasing decision.

Hardware Success Criteria Completed:

- Successfully Integrated hardware into existing infrastructure
- Successfully delivered disk into the blade chassis and ESXi host
- Successfully launched a VMware virtual machine running Windows 7
- Successfully proved simplified administration using virtual desktops
- Successfully deployed a virtual machine via VDI to a thin client

End User Success Criteria from Power On Completed:

- Success: User login to a thin client \ VM within 1 minute 23 seconds [three-minute target]
- Success: User accessed the myAVATAR SANDBOX delivered over the internet within 23 seconds
- Success: User launched office applications within 4.3 seconds [20-second target]
- Success: User launched Internet Explorer within 5 seconds [30-second target]

V. Project Approach

*A. Project Schedule**

Project Start Date: 2/9/2015 **Project End Date**: 4/10/2015

B. Project Milestones

Major Milestones	Start Date	Finish Date
1. Procure SAN, 285 thin clients, 285 VDA licenses, 290 Horizon licenses, 2 network switches, and 15 wall mounts for monitors.	2/9/2015	2/13/2015
2. Receiving & tagging	3/13/2015	3/20/2015
3. Install, configure, deploy hardware and software	3/20/2015	4/10/2015
4. Go Live	4/10/2015	4/10/2015

VI. Roles and Responsibilities

A. Project Roles and Responsibilities

Janet Mullen, Deputy Director, Division for Planning & Operations
This position will be accountable to ensure resource availability at the Agency level and to meet the goals within the budget and timeline.

- Monitoring business value

Donna Noriega, CEO, DBHS/ASH
This position will provide approval for project scope. Specific responsibilities will include (but not be limited to):

- Project champion, provides direction and support to the team
- Approves project scope and funding
- Assigns appropriate end user resources to provide management decision making, end user testing, training and requirements.

Information Technology Executive – Paula Mattingly, Assistant Director / Chief Information Officer
This position will be accountable to assign the necessary Information Technology resources to meet the goals within the budget and timeline. Specific responsibilities will include (but not be limited to):

- Project champion, provides direction and support to ITS team
- Implement necessary Infrastructure and meet the immediate business needs
- Monitoring business value
- Management of IT staff or other resources

Chief Financial Officer – James Humble
This position will be accountable to ensure resource availability at the Agency level to meet the goals within the budget and timeline.

Information Technology Project Manager – Janet Slawinski

This position will provide leadership and overall project management and efforts described in this document and for the future technology needs of the State Hospital. Specific responsibilities will include (but not be limited to):

- Coordinating resources assigned to the project
- Allocating resources to ensure project completion on schedule, within scope, and within budget
- Providing status reports to Executive Management and ASET as required
- Coordinating operational needs
- Oversight of Implementation
- Change control processes, issue tracking

Agency Information Security Officer – John Stark
This position will review and evaluate the PIJs impact to ADHS's organizational risk and advise compliance with any Statewide and ADHS policy requirements. Provide guidance on PIJs impact to the Information Security Program (ISP) and electronic security plan (ESP).

Information Technology Technical Services Manager - David Gilbert
This position will provide leadership and oversight for providing the technology needs to support the Project. Coordinate the delivery, installation, and configuration of computer hardware, and software, implementation, System Administration, Desktop Support, Network Administration, Software/Hardware Quotes, Printer Administration, and Help Desk oversight.

Architect – This position will provide technical analysis, software configuration, and support.

System Administrator – This position works with professional services to configure systems

Desktop Support – This position will assist with deployment activities

Receiving – This position will receive and tag the equipment prior to installation and configuration.

B. Project Manager Certification

	Project Management Professional (PMP) Certified
X	State of Arizona Certified
	Project Management Certification not required

C. Full-Time Employee (FTE) Project Hours

Total Full-Time Employee Hours	120
Total Full-Time Employee Cost	$3,600

VII. Risk Matrix, Areas of Impact, Itemized List, PIJ Financials

VIII. Project Approvals

*A. Agency CIO Review**

Key Management Information	Yes	No
1. Is this project for a mission-critical application system?	**X**	
2. Is this project referenced in your agency's Strategic IT Plan?	**X**	
3. Is this project in compliance with all agency and State standards and policies for network, security, platform, software/application, and/or data/information as defined in http://aset.azdoa.gov/security/policies-standards-and-procedures, and applicable to this project? If **NO**, explain in detail in the "XI. Additional Information" section below.	**X**	
4. Will this project transmit, store, or process sensitive, confidential or Personally Identifiable Information (PII) data? If **YES,** in the "XI. Additional Information" section below, describe what security controls are being put in place to protect the data.	**X**	
5. Is this project in compliance with the Arizona Revised Statutes (A.R.S.) and GRRC rules?	**X**	
6. Is this project in compliance with the statewide policy regarding the accessibility to equipment and information technology for citizens with disabilities?	**X**	

*B. Project Values**

The following table should be populated with summary information from other sections of the PIJ.

Description	Section	Number or Cost
Assessment Cost (if applicable for Pre-PIJ)	II. PIJ Type - Pre-PIJ Assessment Cost	**$**
Total Development Cost	VII. PIJ Financials tab	**$450,235.55**
Total Project Cost	VII. PIJ Financials tab	**$781,461.79**
FTE Hours	VI. Roles and Responsibilities	**120**

*C. Agency Approvals**

Contact	Printed Name	Signature	Email and Phone
Project Manager:	Janet Slawinski		
Technical Services Manager:	Dave Gilbert		
Agency Information Security Officer:	John Stark		
Agency CFO:	Jim Humble		
Agency CIO:	Paula Mattingly		
Deputy Director:	Janet Mullen, PhD		
Chief Executive Officer, ASH:	Donna Noriega		

IX. Optional Attachments

A. Vendor Quotes

B. *Network Diagram*

X. Glossary

XI. Additional Information

ADHS leverages administrative controls, technical controls, and physical controls to protect PII. To ensure the protection of all sensitive and confidential Arizona Department of Health Services electronic data from unauthorized use, modification, destruction, or disclosure, ADHS implemented multiple security policies. ADHS Information Security Policy framework was created to enforce the rules and guidelines for the purpose of providing the confidentiality, integrity, and availability of all ADHS electronic information. All ADHS employees and contractors are bound by that Information Security framework which includes ITS-005 Acceptable Use Policy and sign a confidentiality agreement. Training is provided for new work force members (employee's and contractors) and annually on Information Security and Privacy, which includes the Information Security policies for ADHS and State of Arizona.

The data created and stored in the Storage Area Network (SAN) is only accessible via Access Control Lists (ACLs) or Role-Based Access Control. ACLs are used to provide more granularity to users

and groups file permissions. ADHS uses a three-tier architecture comprising of front-end servers, middleware, and back-end databases.

Multiple firewalls are also used to provide a line of defense from the outside. The first tier only accepts specified requests and will only authorize approved users to access the data. Access to the ADHS domain is controlled by the use of domain accounts. Database roles are also used in order to limit access to preapproved users. Users are placed in groups that have implicit permissions necessary to perform their duties.

Links:

ADOA-ASET Website

ADOA-ASET Project Investment Justification Information Templates and Contacts

Email Addresses:

Strategic Oversight

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