



**ADOA - ASET**

Arizona Strategic Enterprise Technology

**Project Investment Justification**

**Version 01.01**

**A Statewide Standard Document for Information Technology Projects**

**Project Title:**

**ADHS Storage area network (SAN) Refresh**

<b>Agency Name:</b>	<b>Arizona Department of Health</b>
<b>Date:</b>	<b>5/14/2014</b>
<b>Agency Contact Name:</b>	<b>Raghu Ramaswamy</b>
<b>Agency Contact Phone:</b>	
<b>Agency Contact Email:</b>	

**I. Management Summary\***

Since February 2002, the Arizona Department of Health Services has designed, developed and implemented an infrastructure called SIREN (Secure Integrated Response and Electronic Notification), which has rapidly evolved to become the centerpiece of Arizona’s Public Health Information Network (PHIN) servicing the needs of State, Local, and Regional public health. Current users of the SIREN infrastructure include State and Local Public Health, Emergency Management, Homeland Security, Indian Health Services, Tribal Nations, Border Health (U.S. and Mexico Users), and Law Enforcement.

SIREN is an infrastructure that was developed by the Arizona Department of Health Services to support public health needs in the areas of disease surveillance, Bio surveillance, and public health preparedness and response. The infrastructure currently supports a number of services including a secure messaging system, gateway for healthcare providers to access public health systems, and a collaboration portal.

This proposal reflects the need to replace end of life hardware within the infrastructure and to utilize the new hardware. The hardware that is being replaced will consist of swapping the current storage infrastructure, which include services to move the data to avoid any downtime.

**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.	\$0
Based on research done to date, provide a high-level estimate or range of development costs anticipated for the full PIJ.	\$250,920.5

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\***

Over the past six years, the Arizona Department of Health Services has leveraged the EMC CX4-240 storage system as a business critical backend storage system. Ninety nine percent of SIREN’s hardware and data relies on the storage infrastructure, which has been a reliable solution allowing the SIREN environment to achieve an uptime of 99.9%. Unfortunately, the hardware has

reached end of life. The type of disks and Raid solutions do not deliver the highest industry-leading innovations or enterprise capabilities. We need to meet the needs for today's larger and faster operating systems, more complex applications, and larger databases. The existing equipment has been in use for over 6 years. While currently under maintenance, the risk of failure is high. In addition, the maintenance costs are rising.

**B. Proposed Business Solution\***

The SAN solution being considered is EMC's VNX 5600. The EMC VNX 5600 is scalable up to 500 Terabytes, which is sufficient to hold the agencies 170 Terabytes of data. The existing EMC CX240 is end-of-life, must be replaced to avoid rising maintenance costs (currently \$32,000), and increased hard drive failures (Four in the past six months). The anticipated life cycle of the EMC VNX 5600 is between 5 to 8 years.

**C. Quantified Benefits\***

<input checked="" type="checkbox"/>	Service enhancement
<input type="checkbox"/>	Increased revenue
<input checked="" type="checkbox"/>	Cost reduction
<input checked="" type="checkbox"/>	Problem avoidance
<input type="checkbox"/>	Risk avoidance

Explain:

**Service Enhancement:**

- Reduces capacity requirements with block-based deduplication and compression
- Uses EMC Unisphere Management Suite for system management and monitoring
- Upgradeable to unified block and file storage

**Cost Reduction:**

- VNX Flash Optimized Starter Bundles let you scale up to 500 drives depending on the VNX storage array selected.

**Problem Avoidance:**

- The VNX 5600 has fast performance, protection, compliance, and ease of management. The centralized management platform provides easy administration.

## IV. Technology Approach

### A. *Proposed Technology Solution\**

The technology will solve the business problem by delivering a scalable solution capable of holding 170 terabytes of agency data, improved performance, and decreased failure rates. There is also a lower annual maintenance cost. The EMC VNX 5600 is a high-performing unified storage solution optimized for virtual applications. The EMC SAN has transactional performance with increased bandwidth and low latency for efficient data storage. The existing EMC SAN performs well in the highly virtualized enterprise environment. The EMC VNX series performs optimally with SQL server and Oracle databases.

#### **Key features:**

- Up to 2.0 Petabyte capacity
- Up to 2.0 Terabytes FAST Cache
- Protocol – FC, FCoE, NFS, CIFS, iSCSI
- CPU/Memory per Array - 2 x Intel Xeon E5-2600 4-Core 2.4 GHz/48 GB
- Includes VNX FAST Suite software with FAST Cache
- Provides industry-leading integration with VMware and Microsoft Hyper-V

### B. *Technology Environment*

The ADHS SIREN infrastructure is a secure enterprise extranet environment built on internet standards including online collaboration, information exchange, and document sharing. These capabilities connect public health agencies, including emergency management, healthcare and medical services, and public safety at the local, state, and federal levels. The infrastructure has shared services for data exchange, surveys, disease surveillance, and directory/security. SIREN's backend storage infrastructure (CX4-240) is a very critical component to the business. With EMC End of Service Life (EOSL - End 2014) approaching, planning for extending the life of your CX4-240 array is essential to protect the organization's data. The EMC CX4-240 array comes standard with Fibre Channel (FC) and either iSCSI or Fibre Channel over Ethernet (FCoE) connectivity. It can be upgraded with additional FC, iSCSI, or FCoE ports.

### C. *Selection Process*

ADHS evaluated three storage arrays for 60 days: The HP 3PAR 7400, the EMC VNX series, and the Hitachi HUS 130. ADHS evaluated the arrays using the following criteria:

1. Performance in random IO tests
2. Performance in playback of production workloads
3. Cost per IOP, Cost per Gb
4. Quality of support

5. Software quality
6. Features

Based upon the results of the evaluation, the agency selected the EMC VNX series. Although the EMC VNX system did not produce the best overall results, the exceptional management software, SSD Replay Performance, and price point were within range of the agency's budget. **See attached performance evaluation, which describes the criteria used to make the selection.**

## V. Project Approach

### A. *Project Schedule\**

**Project Start Date:** 5/14/2014      **Project End Date:** 6/30/2014

### B. *Project Milestones*

Major Milestones	Start Date	Finish Date
Procure hardware	5/20/14	5/25/2014
Configure hardware	5/26/2014	5/30/2014
Data migration	5/30/2014	6/12/2014
Test and verify copied data	6/12/2014	6/27/2014
Decommission old SAN hardware, trade in hardware	6/27/2014	6/30/2014
Go Live	6/30/2014	6/30/2014

## VI. Roles and Responsibilities

### A. *Project Roles and Responsibilities*

**Project Executive Sponsor – Teresa Ehnert, Bureau Chief, Public Health Emergency Preparedness (PHEP) - This position will provide project oversight and 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.*

**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*

**Information Technology Project Manager – David Gilbert, Technical Services Manager - This position will provide leadership and overall project management and efforts described in this document and for the future technology needs of the Department. 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 the Executive Management and ASET as required.

**System Engineer/SAN Administrator - This position will provide technical analysis, infrastructure configuration, testing and deployment support. Specific responsibilities will include (but not be limited to):**

- Confirm SAN installation and configuration performed by professional services

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

**Vendor Resources - This position will ensure that the appropriate vendor resources are allocated and made available for the proposed duration of the project, technical staff, and trainers. Provides installation, issue escalation, and resolution. Also assists with change management and scope control.**

**B. Project Manager Certification**

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

**C. Full-Time Employee (FTE) Project Hours**

<b>Total Full-Time Employee Hours</b>	8
<b>Total Full-Time Employee Cost</b>	\$302.88

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

**VIII. Project Approvals**

**A. Agency CIO Review\***

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

**B. Project Values\***

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

<b>Description</b>	<b>Section</b>	<b>Number or Cost</b>
<b>Assessment Cost (if applicable for Pre-PIJ)</b>	II. PIJ Type - Pre-PIJ Assessment Cost	<b>\$</b>
<b>Total Development Cost</b>	VII. PIJ Financials tab	<b>\$250,920.50</b>
<b>Total Project Cost</b>	VII. PIJ Financials tab	<b>\$401,862.50</b>
<b>FTE Hours</b>	VI. Roles and Responsibilities	<b>8</b>

**C. Agency Approvals\***

<b>Contact</b>	<b>Printed Name</b>	<b>Signature</b>	<b>Email and Phone</b>
<b>Project Manager:</b>	Dave Gilbert		
<b>Applications Services Manager</b>	Raghu Ramaswamy		
<b>Agency CIO:</b>	Paula Mattingly		
<b>Project Executive Sponsor:</b>	Teresa Ehnert		
<b>Deputy Director for Planning &amp; Operations:</b>	Janet Mullen		
<b>Chief Financial Officer</b>	James Humble		
<b>Agency Director</b>	Will Humble		

**IX. Optional Attachments**

- A. *Vendor Quotes*
- B. *ADHS SAN Performance Evaluation*
- C. *ITS-004*


**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. Of which, ITS-004 was created to enforce the rules and guidelines for the purpose of providing the confidentiality, integrity, and availability of all ADHS electronic data. All ADHS employees and contractors are bound by ITS-004. The data created and stored in the 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. ADHS domain accounts require 2-factor authentication consisting of a username and password, which are required in order to access agency resources. 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 and no more.



# EMC VNX Series Models



The image shows a row of seven EMC VNX storage arrays of increasing size from left to right: VNX5200\*, VNX5400, VNX5600, VNX5800, VNX7600, and VNX8000. Each array is a tall, dark server rack with a blue stripe near the top.

VNX		VNX5200*	VNX5400	VNX5600	VNX5800	VNX7600	VNX8000
Max FAST Cache		600 GB	1 TB	2 TB	3 TB	4.2 TB	4.2 TB
Max drives		125	250	500	750	1000	1500**
Drive types		Flash, SAS, NL-SAS					
File System modules	X-Blades	1 or 2	1 or 2	1 or 2	2 or 3	2 to 4	2 to 8
	I/O slots per X-blade	3	3	3	4	4	5
	Memory per X-blade	6 GB	6 GB	12 GB	12 GB	24 GB	24 GB
	Protocols	CIFS, NFS, pNFS					
Storage Pool modules	Storage Processors	2	2	2	2	2	2
	I/O ports per SP	2	2	2	2	2	2
	I/O slots per SP	3	4	5	5	5	11
	Memory per SP	16 GB	16 GB	24 GB	32 GB	64 GB	128 GB
	Cores per SP	4	4	4	6	8	16
Protocols		Fibre Channel, Fibre Channel over Ethernet, iSCSI					

\* Available Q4 2013 \*\* Initial support is for 1000 drives

Links:

[ADOA-ASET Website](#)

[ADOA-ASET Project Investment Justification Information Templates and Contacts](#)

Email Addresses:

[Strategic Oversight](#)

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