



ADOA - ASET

Arizona Strategic Enterprise Technology

Project Investment Justification

Version 01.01

A Statewide Standard Document for Information Technology Projects

Project Title: ASRS Technology Refresh FY14, FY15

Agency Name:	Arizona State Retirement System
Date:	6/6/2014
Agency Contact Name:	Molly Mahai
Agency Contact Phone:	
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I. Management Summary*

The architectural direction at the Arizona State Retirement System is to have a largely virtual environment. Over the past year, we have had 5 virtual hosts fail, which has depleted our virtual resources. In order to support the business, we need to purchase a new enclosure with servers. We are planning to do this incrementally, buying the enclosure with 7 servers and adding 9 more servers the following year which will utilize the full capacity of the enclosure. This approach aligns with our budget as well as our refresh schedule for servers.

Our refresh schedule for PCs is 3-5 years and we are currently experiencing an increase in PC issues for our users. We would like to purchase 22 PCs and 40 monitors to meet the business needs. This will allow us to replace faulty PCs and build up our cache. We are currently reviewing our long-term strategy for end-user workstations so we are buying cautiously since our approach may change.

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***

At the Arizona State Retirement System, our environment consists of physical and virtual servers. Our architectural direction is to continue to expand our virtual presence. We have a refresh cycle set at 5-8 years for servers. Over the last year, we have had 5 servers in our virtualized cluster fail. These are servers that we have purchased incrementally between 2007-2009. Additionally, we are running low on resources for the virtualized environment making it difficult to meet the business needs. Our second problem involves the PCs for the end users. We are seeing an increase in problems with PCs deployed to our employees and we need to purchase PCs in order to replace them.

B. **Proposed Business Solution***

We would like to purchase a new server enclosure with 16 new servers. Our immediate need is for the enclosure and 7 new servers. This will allow us to replace servers that have failed and properly organize the most critical systems in the virtual cluster. Approval for all 16 servers will allow us to replace servers according to the refresh schedule and position us well for future growth. These purchases will be completed in the current and next fiscal year.

We would like to purchase 22 PCs and 40 monitors to immediately replace faulty systems and leave a cache for future problems.

C. Quantified Benefits*

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

Explain:

The service enhancements will align with our strategic goal to provide members and business users with technology that is high-performing, secure, and able to support evolving business needs. Additionally, we avoid problems when we replace our equipment according to our schedules to prevent issues that may affect the business.

IV. Technology Approach

A. Proposed Technology Solution*

Server Enclosure and Servers

Server Enclosure

This is a Dell Server enclosure with 10GB connections to the server network and network storage with redundant power supplies. It holds up to 16 servers. This is technology we have used before and will add to our existing infrastructure.

Chassis Size	10u high rack mount
Blades per Chassis	16 half height, 8 full height
Total Blades in a 42u rack	64 half height, 32 full height
Total I/O Module Bays	6 (3 redundant or dual fabrics)
Total Power Supplies	6 (3 + 3 redundant)
Total Fan Modules	9 (8+1 redundant)
Management Modules and Interfaces	2 CMCs (1+1 redundant), 1iKVM, Front Control Panel, Graphical LCD Control Panel
AC Redundancy	3+3 2+2 1+1 Each requires power supplies in slots 1,2, and 3 to be connected to a different grid as compared to those in 4,5, and 6.
DC Redundancy	1+1 2+1 3+1 4+1 5+1 Each with one extra power supply that comes online if one of the existing power supplies

	fails.
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Servers

The servers are Dell PowerEdge M620 Servers with 16 cores per server and 256GB.

CPU Loading:	100%
Workload:	Transactional
PowerEdge M620	PowerEdge M620 Blade Server, Intel Xenon E-2640 Processors
Chassis Configuration	Serial-attach SCSI Backbone
Cooling	Standard Cooling
Processor	Intel Xeon E5-2640, V2 2.00GHZ, 20M Cache, 7.2GT/s QPI, Turbo, HT, 8C, 95W, Max Mem 1600MHz
Additional Processor	Intel Xeon E5-2640 V2 2.00GHZ, 20M Cache, 7.2GT/s QPI, Turbo, HT, 8c, 95W
Memory DIMM Type and Speed	1333MHz RDIMMs
Memory Configuration Type	Performance Optimized
RAID Configuration	RAID 1 for H710p/H710/He10 (2HDDs, SAS/SATA/SATA SSD)
RAID Controller	H710 Controller
Hard Drives	SD Option Optimized for ESX
Embedded Systems Management	IDRAC7 Enterprise for Blades
Network Daughter Card for Fabric A	Broadcom 57810-kdual port 10Gb KR Blade Network Daughter Card
Hardware Support Services	ProSupport Plus: 5 Year Mission Critical 4 hr Onsite Service
Remote Consulting Service	Deployment Consulting 1 yr 1 Case Remote Consulting Service

Software licensing – We will incur licensing costs for the VMWare Operating System but we have sufficient licensing in our Microsoft Enterprising Agreement for the Operating System installations.

PCs and Monitors

20 PC - PRO 3500 MT I5-3470 3.20G 8GB

2 PC - Z230 SFF 240W 3.5G 16GB 128GB DVDRW with an additional 500GB SATA 6GB 7200 RPM HDD

40 Monitors - HP Promo EliteDisplay E221 21.5-inch LED

20 PC's are a standard user configuration. 2 PC's are specialized for 2 employees in charge of media development for the agency. The work they do is graphic and video intensive and requires a more robust and specialized configuration. They already have monitors.

B. Technology Environment

Enclosure and Servers

This enclosure will integrate into our existing infrastructure adding to our virtual cluster. Servers purchased in 2007 are now starting to fail. Over the past year, we have had 5

servers fail and moved those systems onto other hosts. We have reached a point in our resource pool where a failure will impact the business.

With the new enclosure and servers, we can review our current setup and move things around accordingly, putting more critical systems on the newer hosts. The data center currently has space and power. The cooling is more than adequate to handle the additional components

PCs and Monitors

We are adding to our existing environment, replacing systems that are having issues. The old PCs will be transferred to state surplus according to established procedures.

C. Selection Process

Enclosure and Servers

We had three options in this endeavor. We could do nothing and continue to shift resources frequently to accommodate need, purchase new servers from Dell, or purchase new servers from HP.

In this case, doing nothing was not really an option since our current resource pool would not be sufficient to support the business in the event of another server failure.

We obtained quotes from Dell and HP for this solution. Both vendors provided solutions that were Intel based, so either solution would integrate well in our current virtualized environment. Both vendors were about equal in terms of quality and support, but Dell was slightly less costly than the HP. Additionally, we have a storage solution from Dell already in production and Dell servers would integrate well with that.

For integration and cost reasons, we chose to purchase this enclosure and new servers from Dell.

PCs and Monitors

We are using our existing process to purchase the PCs from HP.

V. Project Approach

A. Project Schedule*

Project Start Date: 6/13/2014 **Project End Date:** 5/31/2015

B. Project Milestones

Major Milestones	Start Date	Finish Date
Procure Enclosure with 7 servers, PC and monitors	6/13/2014	6/13/2014
Receive equipment	6/27/2014	6/27/2014
Install Enclosure and Migrate/Configure Servers	6/30/2014	7/31/2014
Install PCs and Monitors	6/27/2014	7/31/2014

Procure 9 servers	4/1/2015	4/1/2015
Receive Servers	4/30/2015	4/30/2015
Install Migrate/Configure Servers	5/2/2015	5/31/2015

VI. Roles and Responsibilities

A. **Project Roles and Responsibilities**

Project Manager – Molly Mahai (NIS Manager) –Overseeing the project

Project Lead -Sean Stevens (Networking Manager) –Procure equipment and ensure installation

Technical Lead – John Davis (Network Admin II) – Install and configure Enclosure and servers

Technical Lead – Thom Neith (Network Admin II) – Deploy PCs and Monitors

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**

Total Full-Time Employee Hours	150
Total Full-Time Employee Cost	\$11250

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	\$303004.32
Total Project Cost	VII. PIJ Financials tab	\$383077.51
FTE Hours	VI. Roles and Responsibilities	150

C. Agency Approvals*

Contact	Printed Name	Signature	Email and Phone
Project Manager:	Molly Mahai		
Agency Information Security Officer:	Gary Hummel		
Agency CIO:	Kent Smith		
Project Sponsor:	Kent Smith		
Agency Director:	Paul Matson		

IX. Optional Attachments

A. Vendor Quotes

Dell Enclosure and Servers

HP PCs and Monitors

VMWare Licensing via SHI

X. Glossary

XI. Additional Information

At the ASRS, we utilize industry best practices (e.g. firewall, anti-virus, log review.) In addition, we are in the process of implementing security controls based on the state-recommended NIST standards. We also participate in external security assessments on a bi-annual basis.

Links:

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Email Addresses:

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