ADOA-ASET

Project Investment Justification

Version 01.01

A Statewide Standard Document for Information Technology Projects

---

Project Title:

SDC Disk Storage and Recovery Solution

Agency Name:	**ADOA-ASET**
Date:	**October 17, 2014**
Agency Contact Name:	**Patrick Cravens**
Agency Contact Phone:	
Agency Contact Email:	

Hover for Instructions

I. Management Summary*

The Phoenix State Data Center (SDC) managed by the Arizona Strategic Enterprise Technology (ASET) office, within the Arizona Department of Administration (ADOA), currently utilizes aging twin IBM DS8100 Disk Storage Subsystems to store mainframe data belonging to State agency customers. Data is replicated in real time to an off-site location at the Arizona Department of Economic Security (DES) creating a synchronous data copy.

Based on results of multiple capacity studies performed over the last several months by vendor partners, including IBM, HP, and EMC, the demand for additional disk storage capacity is rising due to increased business demand by SDC customers. The federal Affordable Care Act (ACA) is now requiring State agencies, such as the Arizona Health Care Cost Containment System (AHCCCS), to retain large quantities of information. To continue to ensure the SDC is able to provide adequate storage capability, additional investment in critical infrastructure is required. These new subsystems will allow for continued storage of mainframe data.

II. Project Investment Justification (PIJ) Type*

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

III. Business Case

A. Business Problem*

The current DS8100 Disk Storage Subsystem was purchased in 2009. The increasing capacity requirement on this subsystem is accelerating at a growth rate exceeding the planned replacement schedule. Analysis performed in 2012 anticipated replacement of these subsystems in 2017. Adding storage, as this system approaches end-of-life, becomes increasingly cost prohibitive, due to the current configuration of the existing system and high maintenance costs. In addition, due to increased demand for data retention by key customers including the AHCCCS and the Arizona Department of Transportation (ADOT), replacement is now needed. As customers migrate between application platforms on the mainframe, disk storage capacity concerns will increase.

Business continuity testing has identified an additional risk. When testing is performed, mirrored disk replication of production data is interrupted. This activity places production data at risk due to the lack of a backup copy. In the event of a disk storage subsystem failure during testing, the single copy of production data could become corrupted and unusable. Data restoration from that point could rely on recovery from tape, thereby extending the recovery window from hours to days. This risk remains

during the entire re-mirroring process, which may take between 15 to 20 hours. Recovery from tape may take several days, including an additional 15 to 20 hours to re-establish full data recovery and mirroring.

B.   *Proposed Business Solution**

To resolve the issues of aging equipment, lack of capacity, and increased cost, the SDC proposes to replace the current DS8100 Disk Storage Subsystems with two (2) new IBM DS8870 Disk Storage Subsystems from a vendor partner on State contract utilizing a Fair Market Lease procurement mechanism. The new system would be capable of providing the ability to establish a third replication of production data that could be utilized during business continuity testing, without placing production data at risk. This solution would also provide encryption and faster processing speeds through the new Hyper Parallel Access Volumes (Hyper-PAV) technology.

This solution aligns with Arizona Revised Statute ARS § 41-3507, Section C.5, which states that government IT agencies should "develop other strategies as necessary to protect this state's information technology infrastructure and the data that is stored on or transmitted by such infrastructure."

C.   *Quantified Benefits**

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

Explain:

Two new IBM DS8870 Disk Storage Subsystems will optimize and enhance current disk data storage capacity. They will also provide enhanced recovery / business continuity capabilities for disk storage data, providing more security for ADOA SDC mainframe customers.

Additionally, SDC mainframe customers will benefit from increased mainframe performance in the following three ways:
- Increased data retrieval by means of technology improvements in the disks themselves, along with larger cache.
- Increased performance by means of enabled parallel retrieval and writing of data input-output (I/O) that comes with the new Hyper-PAV feature.
- Increased availability by means of decreased disk data processing times through data tiering, keeping the most highly used data on the top of the data stack.

IV.   Technology Approach

A.   *Proposed Technology Solution**

As previously mentioned, acquisition of two new disk storage subsystems are needed in order to enhance SDC disk data storage capacity. The IBM DS8870 has been identified as an appropriate appliance. A five (5) year warranty package from the selected vendor would also be acquired.

The ADOA-SDC production subsystem capacity would be allocated as follows:
- A maximum of 68 TB physical storage capacity (49 TB usable space)
- 32 TB for z/OS (the mainframe operating system)
- 7 TB for flash copy
- 16 Ficon Channels
- Encrypted Disk Drives
- Hyper-PAV (Parallel Access Volumes)
- Metro Mirror Synchronous Mirroring (replication) Capability
- Additional memory, processors, and data tiering

The Disaster Recovery (DR) replicated subsystem located at the off-site location (DES) would be allocated as follows:
- A maximum of 122 TB physical capacity (84 TB usable space)
- 32 TB for z/OS replication
- 16 Ficon Channels
- Encrypted Disk Drives
- Metro Mirror Synchronous Mirroring (replication) Capability

This solution will include the purchase of storage subsystem management software and migration services. Additional professional services will be acquired to assist in the planning and execution of the migration of disk data from the existing IBM DS8100 to the new IBM DS8870 Disk Storage Subsystems. For a more specific breakdown of equipment, see Appendix A under "Additional Attachments".

B.   *Technology Environment*

The increased disk data storage capacity and enhanced feature functionality offered by the new appliances would accommodate both the current and future anticipated storage needs of SDC customers. The danger of exceeding the current storage capacity thresholds of the existing IBM DS8100 is a risk. The increased disk data capacity requirements of just AHCCCS, ADOT and the Arizona Department of Corrections (DOC) alone will ultimately exceed current capabilities. Leasing two new, enhanced disk storage subsystems would mitigate and resolve this risk.

C.   *Selection Process*

Technical solutions were evaluated from three vendors, including IBM, EMC and HP. Comparisons of the products were presented and reviewed. From these reviews, conclusions were reached based on various scenarios discussed.

Installing additional storage space on both the current local ADOA-SDC and remote DES IBM DS8100 Disk Storage Subsystems was considered. Due to technology and exorbitant maintenance costs, it was determined that this option was not feasible. Two of the proposed vendors were not able to provide a trade-in discount for the DS8100s, but one vendor was able to provide such a discount. This vendor, however, still had a higher overall cost. The solution proposed in this PIJ represents a solution that meets all of the requirements of the project at the most economical price point.

V. Project Approach

A. *Project Schedule**

Project Start Date: 12/1/2014   **Project End Date**: 3/30/2015

B. *Project Milestones*

Major Milestones	Start Date	Finish Date
Secure Project Funding via JLBC Approval	11/25/2014	11/25/2014
Meeting w/Finance to Review IGF Lease Documents	12/3/2014	12/3/2014
Technical Planning	12/3/2014	12/5/2014
Hardware / Software Ordered	12/5/2014	12/5/2014
Vendor Systems Assurance Meeting Held	12/8/2014	12/8/2014
Hardware / Software Delivered	12/19/2014	12/19/2014
Hardware / Software Installed	12/20/2014	12/22/2014
Test Solution	12/22/2014	1/16/2015
Migrate Disk Data from DS8100 to New Subsystem	1/17/2015	1/26/2015
Vendor / ADOA Review – Go / No-Go Decision Reached	2/6/2015	2/6/2015
Cut-Over to Production	2/9/2014	2/9/2015
Monitor Solution for Performance	2/9/2015	3/9/2015
Project Acceptance and Sign-Off	3/16/2015	3/16/2015
Creation of Lessons Learned / Final Project Report	3/17/2015	3/30/2015

VI. Roles and Responsibilities

A. *Project Roles and Responsibilities*

Agency Director: Kathy Peckardt, ADOA Interim Director
Agency CIO: Aaron V. Sandeen, ADOA Deputy Director, State CIO
Project Sponsor: Donald Hennington, COO, Assistant Director, ADOA-ASET
Project Manager: Ken Roundtree, Project Manager, ADOA-ASET
Technical Project Manager: Patrick H. Cravens, Manager, MSA, ADOA-ASET
System Administrators: Linda Kepner, Howard Banks – MSA Support
Business Area Expert: Peter Falco, Levi, Ray & Shoup, Inc.

B. *Project Manager Certification*

x	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	750
Total Full-Time Employee Cost	$

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	$0
Total Development Cost	VII. PIJ Financials tab	$384,482
Total Project Cost	VII. PIJ Financials tab	$1,040,930
FTE Hours	VI. Roles and Responsibilities	750

C.   Agency Approvals*

Contact	Printed Name	Signature	Email and Phone
Project Manager:	Ken Roundtree		
Agency Information Security Officer:	Mike Lettman		
Agency CIO:	Aaron V. Sandeen		
Project Sponsor:	Don Hennington		
Interim Agency Director:	Kathy Peckardt		

IX. Optional Attachments

A. Vendor Quotes, Detailed Costs (Appendix), and Connectivity Diagram

X. Glossary

XI. Additional Information

PII will be handled through controls that have been put in place through ADOA's Security, Privacy and Risk (SPR) Team, based on the ADOA Security Policy Manual. These controls are based on NIST (National Institute of Standards and Technology) guidelines.

Links:

ADOA-ASET Website

ADOA-ASET Project Investment Justification Information Templates and Contacts

Email Addresses:

Strategic Oversight

ADOA-ASET_Webmaster@azdoa.gov