



ADOA - ASET

Arizona Strategic Enterprise Technology

Project Investment Justification

Version 01.01

A Statewide Standard Document for Information Technology Projects

Project Title:

Network Attached Storage

| | |
|------------------------------|--------------------------------------|
| Agency Name: | Arizona Department Of Transportation |
| Date: | 3/24/2014 |
| Agency Contact Name: | Jesse MacDonough |
| Agency Contact Phone: | |
| Agency Contact Email: | |

I. Management Summary

ADOT has a Traffic Operations Center (TOC) with a standalone Data Center which contains systems to support statewide Intelligent Transportation Systems (ITS).

The TOC's current Network Attached Storage (NAS) system within the TOC's primary Data Center is unable to sustain present growth due to capacity and bandwidth limitations. The future growth of ITS is heavily dependent on the acquisition of a new NAS.

To maximize benefits, a Nimble Storage Array will be procured to strategically align both business and technical functions with existing Nimble Storage Arrays at ADOT's primary Data Center. This will also provide the ability for ADOT's TOC datacenter to utilize a Disaster Recovery Center located in Tucson.

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**

ADOT's TOC currently has a NetApp FAS2040 Network Attached Storage system (NAS). The current FAS2040 NAS will not scale to the needed input/output operations per second (IOPS) to support continued migration to a virtualized environment. The connection between the FAS2040 NAS and our datacenter is not upgradable, but has reached capacity and is currently a performance bottleneck affecting day to day operations. The FAS2040 NAS is at over 98% storage capacity but to simply add storage capacity would continue to degrade performance due to the 1 Gbps network limitation. This presents both cost and performance issues. The cost issue is related to the need to obtain additional hardware as servers age rather than move them into a virtualized environment. The performance issue is directly related to the limitations of the FAS2040 network bandwidth which cannot be remedied within the current system. The FAS2040 also is not compatible with ADOT's current Disaster Recovery (DR) model.

B. **Proposed Business Solution**

The proposed solution is to procure one Nimble CS260Gx2 NAS and implement it at the primary TOC data center in Phoenix. The Nimble NAS will provide the needed IOPS as

well as the bandwidth capabilities required to support current and future virtualization along with day to day datacenter operations. The ability to scale up to 40 Gbps provides the needed bandwidth for today's and tomorrow's bandwidth intensive datacenter operations. The Nimble NAS will also provide the needed storage space required to continue business operations and enhancements via virtualization without the hard cost of procuring additional hardware for server infrastructure. Additionally, the Nimble NAS will integrate with ADOT's main datacenter for replication as well as ADOT's disaster recovery location in Tucson.

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 checked="" type="checkbox"/> | Risk avoidance |

Explain:

- Service will be improved as the Nimble system provides a significant performance/capacity upgrade over our aging system.
- Cost will be reduced via continued migration into a virtualized environment. ADOT IT staff is already familiar with Nimble systems thus capitalizing on our existing knowledge base for migration and administration.
- Problems will be avoided by choosing to use the same Nimble storage system that ADOT's main datacenter uses.
- Risks will be avoided by replicating from our ADOT TOC ITS datacenter to the ADOT's main datacenter. With similar storage systems being deployed across datacenters risk is drastically reduced via standardized and unified architecture.

IV. Technology Approach

A. Proposed Technology Solution

We are proposing to refresh the aging storage system with ADOT's infrastructure standard in order to achieve two goals. The first goal is to replace the aging Netapp environment with updated storage. We will procure a Nimble CS260Gx2 for the TOC primary datacenter. The second goal will be to replicate that array and provide disaster recovery to the Nimble arrays at ADOT for data recovery in the event of a disaster.

B. Technology Environment

The current TOC ITS datacenter environment consists of a three-year old NetApp FAS2040 NAS with 1 Gbps interconnect to our network. The network equipment consists of Brocade top of rack switches and a Brocade core router that will scale between 20-40 Gbps of bandwidth capacity. We also employ a combination of physical servers that utilize Unix, Microsoft and Linux operating systems. VMWare is our virtualized environment via a VMWare hypervisor cluster. The TOC ITS datacenter also employs a variety of network appliances that provide firewalls, spam filters and load balancers.

C. Selection Process

The Arizona Department of Transportation completed an exhaustive process to select its standard from a storage perspective at ADOT’s main datacenter. At the time, ADOT was using Hitachi for storage and was encountering many issues that were affecting both revenue and disaster recovery. As a result, an assessment was performed where we examined Netapp, HP and Nimble storage systems. ADOT put together a comprehensive matrix of what we needed to ensure system uptime, connectivity to our applications and network, and ease of use for our staff, to limit the amount of hours currently spent on the storage as well as providing adequate disaster recovery. ADOT’s TOC ITS datacenter is leveraging this research and assessment to save cost in selecting a storage system for our datacenter.

V. Project Approach

A. Project Schedule

Project Start Date: 4/28/2014 Project End Date: 7/2/2014

B. Project Milestones

| Major Milestones | Start Date | Finish Date |
|--|------------|-------------|
| Place order | 4/28/14 | 5/9/14 |
| Receive order | 5/23/14 | 5/30/14 |
| Configure and Test | 6/1/14 | 6/4/14 |
| Migrate data from old array to new one | 6/5/14 | 6/16/14 |
| Replicate arrays | 6/17/14 | 6/23/14 |
| Go live | 6/25/14 | 7/2/14 |

VI. Roles and Responsibilities

A. Project Roles and Responsibilities

| Project Role | Name | Responsibilities |
|------------------------|-----------------|--|
| Project Manager | Darrell Bingham | Project oversight, management and reporting. |
| Network Infrastructure | Brian Quinn | Equipment testing and configuration |

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 | 70 |
| 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 | \$ |
| Total Development Cost | VII. PIJ Financials tab | \$181,335.62 |
| Total Project Cost | VII. PIJ Financials tab | \$181,335.62 |
| FTE Hours | VI. Roles and Responsibilities | 70 |

C. Agency Approvals

| Contact | Printed Name | Signature | Email and Phone |
|--------------------------------------|-----------------|-----------|-----------------|
| Project Manager: | Darrell Bingham | | |
| Agency Information Security Officer: | Thomas Branham | | |
| Agency CIO: | Doanh Bui | | |
| Project Sponsor: | Reza Karimvand | | |
| Agency Director: | | | |

IX. Optional Attachments

A. *Vendor Quotes*

X. Glossary

| TERM | DEFINITION |
|------|--------------------------|
| NAS | Network Attached Storage |
| Gbps | Gigabits per second |

XI. Additional Information

Links:

[ADOA-ASET Website](#)

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

Email Addresses:

[Strategic Oversight](#)

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