

**DNR Information Technology Infrastructure Upgrades  
Phase 1**

**FY2008 Request: \$276,000  
Reference No: 45270**

**AP/AL:** Appropriation **Project Type:** Information Systems  
**Category:** Natural Resources  
**Location:** Statewide **Contact:** Leta Simons  
**House District:** Statewide (HD 1-40) **Contact Phone:** (907)465-2400  
**Estimated Project Dates:** 05/01/2008 - 06/30/2010

**Brief Summary and Statement of Need:**

Upgrading DNR's basic IT infrastructure is vital to DNR's mission to effectively and efficiently administer its charter under the Alaska Constitution and the State's natural resource management laws. Increasing the electronic storage capabilities of DNR for publicly accessible data is critical in the current Internet global business community. Adequate storage of employees' data is also vital to support the public and private industry. Data needs to be backed up and restored in the event of accidental deletion, man made or natural disaster. Wireless connections for computers are the norm in the private and public sectors. This service needs to be provided to DNR employees at its major offices.

| <b>Funding:</b> | FY2008    | FY2009 | FY2010    | FY2011 | FY2012 | FY2013 | Total     |
|-----------------|-----------|--------|-----------|--------|--------|--------|-----------|
| Gen Fund        | \$276,000 |        | \$209,000 |        |        |        | \$485,000 |
| <b>Total:</b>   | \$276,000 | \$0    | \$209,000 | \$0    | \$0    | \$0    | \$485,000 |

|   |   |  |   |                                   |
|---|---|--|---|-----------------------------------|
| <input type="checkbox"/> State Match Required | <input type="checkbox"/> One-Time Project | <input checked="" type="checkbox"/> Phased - new | <input type="checkbox"/> Phased - underway  | <input type="checkbox"/> On-Going |
| 0% = Minimum State Match % Required           |   | <input type="checkbox"/> Amendment               | <input type="checkbox"/> Mental Health Bill |                                   |

**Operating & Maintenance Costs:**

|                      | <u>Amount</u> | <u>Staff</u> |
|----------------------|---------------|--------------|
| Project Development: | 0             | 0            |
| Ongoing Operating:   | 0             | 0            |
| One-Time Startup:    | 0             |              |
| <b>Totals:</b>       | <b>0</b>      | <b>0</b>     |

**Additional Information / Prior Funding History:**

New Project - No Prior Funding History

**Project Description/Justification:**

There are four parts to this project.

**Part I - Computer Information Center (CIC) Data Center Backup: Estimated Total of \$86,000 (FY 2008)**

The DNR data center located in the Atwood Building requires more disk storage space (a shelf of 14 hard drives) for the expansion of the existing centralized storage device, the Network Appliance FAS3020 filer; and a software license for SnapMirror which runs on the NetApp. The extra shelf and SnapMirror software will also allow DNR to replicate data between the Network Appliance devices located in Anchorage, Juneau (see Part III) and Fairbanks (see Part IV). This provides quick and efficient disaster recovery capabilities for DNR's major file servers at our three key locations, and will increase productivity in Juneau and Fairbanks by reducing the delay in accessing data that is presently only stored in Anchorage (business data, mapping, documents, etc.). The extra shelf will also provide more disk storage for DNR's web based data, imagery and employees' data.

In May 2006, an HP MSL6030 tape library and an HP MSL6060 tape library, both with two tape drives each, were purchased and installed in the data center. These replaced a failed HP SureStore tape library, and a failing Overland Neo2000 tape library. The MSL6030 is used to backup DNR's Oracle database, with the rest of DNR's data and servers being backed up by the MSL6060. The ever-increasing demands on the previous back-up system caused by the

increasing growth of data and the Oracle database required that these two systems be separated. The MSL6060 can support four tape drives which will allow faster backups and restorations, better fault tolerance and the ability to clone tapes for offsite storage. Two additional tape drives are required for the MSL6060 in order to provide the full capabilities of faster backups, restorations, fault tolerance and cloning.

**Part II - Server and Storage for Fairbanks: Estimated Total of \$190,000**

A new server, network data storage and backup systems is required for DNR's 3700 Airport Way office in Fairbanks. The Division of Forestry constantly has high demands for network storage. In the past they have configured multiple servers and disk arrays to house all their data. Now the Division of Mining, Land and Water would like to move their mining data off of various computers to network storage. It is recommended that a Network Appliance FAS2050 with two extra disk shelves and a SnapMirror License be purchased for storage. The Network Appliance is one the industry's leading Network Attached Storage (NAS) devices and has a good track record. The CIC Data Center has been using Network Appliances NAS's with excellent reliability for the past 8 years. This plan will provide up to eight terabyte of storage immediately with the ability to expand up to 69 terabytes. The SnapMirror license will allow replication of data to other Network Appliance devices for disaster recovery. A new backup system will be installed, such as the HP MSL6060 LTO3 tape library and backup software purchased. Required battery backup and cooling systems for this data center are expensed as part of the Fairbanks building upgrade CIP from FY08. A new server is required for the office as the existing server is over seven years old and needs to be replaced with a newer, faster and more efficient server.

**Part III - Storage for Juneau: Estimate Total of \$124,000 (FY 2010)**

Network data storage needs is growing in all offices, with the Juneau office being no exception. For example, the local Division of Forestry staff have a need to store imagery on a central location and the current network storage is limiting their ability to share this data. An expanded and reliable network storage and backup system is needed in the Juneau office. It is recommended that a Network Appliance FAS2020 with an extra shelf and a SnapMirror license be purchased. The Network Appliance is one the industry's leading Network Attached Storage (NAS) devices and has a good track record. The CIC Data Center has been using Network Appliances NAS's with excellent reliability for the past eight years. This plan will provide up to four terabyte of storage immediately with the ability to expand. A new backup system will have to be installed, such as the HP MSL6030 LTO3 tape library and backup software purchased. The SnapMirror license will allow replication of data to other Network Appliance devices for disaster recovery. Training has also been identified for the Juneau Technician for the backup software. A UPS system as a battery backup for the data storage is also required.

**Part IV - DNR Wireless Plan: Estimated Total of \$85,000 (FY 2010)**

Secure wireless connections for laptops is the accepted norm for the public and private sectors. While traveling, DNR employees can connect to privately provided (hotels, motels, airports, etc.) or other public agency wireless networks. These employees have the same expectations for wireless connections while in DNR offices, unfortunately DNR has no wireless network other than one wireless access point in the Juneau office and one on the 7<sup>th</sup> floor of the Atwood Building. About 20% of DNR employees use laptops and desire a wireless connection thus freeing them from their cubicle to work almost anywhere. Having wireless available in conference rooms, allows the immediate taking of electronic notes without the additional task of transcribing hand-written notes at a later time. Internet research and ad hoc network or Internet based presentations are more readily available with wireless. Having a wireless network available at DNR's major offices will allow traveling employees instant access to the network without waiting for IT staff to provide cabling or wondering if a data jack port is active or not. Employee productivity is raised by increased mobility of staff while they retain network connectivity. Four DNR offices have been identified for a DNR enterprise wireless installation:

- ? The Atwood Building in Anchorage, all floors with the exception of 8 and 11 (Division of Oil and Gas). Estimated cost is \$45,000. The necessary State standard wireless equipment will be purchased and additional cabling installed at the optimum locations to provide the best wireless coverage for each floor. Typically for this size of this configuration, a server will be needed for authentication to the network, but with the virtual server environment in the data center, a virtual server can be utilized at no additional cost. Training for four IT staff have been identified for support and administration of the server and wireless equipment for this and the other major DNR offices.
- ? The Willoughby Building in Juneau, all floors with the priority being floors 5 and 4. The 3<sup>rd</sup> floor has only the Recorder's Office, which may be able to use the 4<sup>th</sup> floor wireless. Estimated cost is \$10,000. The necessary State standard wireless equipment will be purchased and additional cabling installed at the optimum locations to provide the best wireless coverage for each floor. A server will be purchased to provide the authentication to the

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network local, more efficient than authenticating to the server located in Anchorage via the wide area network. Training for the local Juneau technician is not included as the server will be administered by Anchorage staff and assistance for support of the wireless equipment can be also be provided by the Anchorage staff.

- ? The 3700 Airport Way compound in Fairbanks. This includes the main building, Forestry's warehouse, Forestry's Area Office and Technician Building. Estimated cost is \$15,000. The necessary State standard wireless equipment will be purchased and additional cabling installed at the optimum locations to provide the best wireless coverage for each building. A server will be purchased to provide the authentication to the network local, more efficient than authenticating to the server located in Anchorage via the wide area network. Training for the local Fairbanks technician is not included as the server will be administered by Anchorage staff and assistance for support of the wireless equipment can be also be provided by the Anchorage staff.
- ? The Division of Forestry Palmer offices. This is the main building for Forestry's wildland fire suppression operations. Estimated cost is \$15,000. The necessary State standard wireless equipment will be purchased and additional cabling installed at the optimum locations to provide the best wireless coverage for each building. A server will be purchased to provide the authentication to the network local, more efficient than authenticating to the server located in Anchorage via the wide area network. The server and wireless equipment will be supported and administered by Anchorage staff with their availability to travel to Palmer in case of emergencies that cannot be resolved remotely or over the phone with local staff.

**Why is this Project Needed Now?:**

Maintaining a current IT infrastructure is vital to provide services and information to the public sector, other agencies and internally to DNR employees. Storage in the Juneau and Fairbanks office have not been upgraded in seven years and have essentially reached their useful capacity. Without adequate centralized network file storage, employees are forced to store critical, valuable data either locally on their computer or on locally attached external drives. This creates problems in the event of hard drive failures on the local computer or external drives. Sharing files becomes more complicated as data may be duplicated on several computers throughout an office or sneakernet is prevalent using CDs or DVDs.

The ability to back up the data and restore it, is directly linked to the amount of network storage available. The explosion in web-based applications and the ever increasing requirements of "going digital" in all aspects of DNR's work environment has pushed the current network storage and backup systems to their limit. New backup systems are required to keep up with these ever increasing demands. Without these new systems, critical data may not be able to be backed up as regularly as needed; backup schedules are bastardized in an attempt to accommodate the more efficient use of the overtaxed equipment and the ever shrinking time frames available for backing up data.

Wireless connections are the normal expectations for employees with laptops and DNR is severely lacking in the deployment of this technology. Wireless connections increase employee efficiency, productivity and saves valuable time for both the employee and IT support staff. During meetings the inability to connect wirelessly forces staff to take hand-written notes and then later transcribe them electronically. Internet or networked based presentations have to be coordinated with IT staff to ensure network connectivity in a conference room. Employees with laptops traveling to the four major offices have to wait for IT staff for network connections. Web meetings requiring several employees at one location have to be held at an individual employee cubicle instead of a conference room

Failure to maintain IT infrastructure at a pace to keep up with the working demands of DNR employees, the public and other agencies will severely limit the ability to maintain the ever increasing demands on data and services. Eventually without these upgrades, DNR will fail in its mission of effectively and efficiently administering its charter under the Alaska constitution and the State's natural resource management laws.

**Specific Spending Detail for two-year project:**

| <u>LINE ITEM</u> | <u>DOLLAR AMOUNT</u> | <u>DESCRIPTION (text)</u>   |
|------------------|----------------------|---|
| Services         | \$ 20,000            | Training  |
| Commodities      | \$ 28,000            | Data storage tapes  |
| Capital Outlay   | \$ 437,000           | Wireless equipment, disk storage, servers, tape drives, tape libraries, software, cabling |

