

**National Oceanic and Atmospheric Administration
 NOS
 IT Infrastructure
 006-48-02-00-01-0511-00
 Operational Analysis
 2007**

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Executive Summary

This report focuses on the operational state of the program as of September 30, 2007, and is based on guidance developed by the Department of Commerce. The NOS IT Infrastructure program directly facilitates NOS’ mission: to provide products, services, and information that promote safe navigation, support coastal communities, sustain marine ecosystems, and mitigate coastal hazards. In performing this mission, NOS supports all four of NOAA’s Strategic Goals.

This operational analysis (OA) is an annual, in-depth review of the program’s performance based on the following:

- Customer Results
- Strategic and Business Results
- Financial Performance
- Innovation

The NOS IT Infrastructure is managed by the NOS Chief Information Officer's office for enterprise-wide systems and by the individual NOS program offices for local infrastructure. The NOS mission and user base are diverse and offer unique challenges to IT management. Over the last several years NOS has worked toward lowering costs by consolidating IT management where feasible, one prime example being migrating all NOS users to a single Microsoft Active Directory (AD) domain. The AD domain has provided the foundation to move forward with other consolidation efforts.

The NOS IT Infrastructure supported over 2200 users in Silver Spring and in numerous field locations. Services included network authentication, file storage, printing, office automation, help desk, back office services and network support. Because of the operational support of the IT Infrastructure, NOS users were able to successfully perform their duties in FY07.

1.0 Customer Results

The NOS Infrastructure is the foundation for all information technology in NOS. It encompasses all layers of IT, from network cabling to enterprise-wide applications. It is the primary delivery mechanism for office automation services, back office services, help desk and user support services, IT security services, and local and wide area networking services. It also provides the backbone IT for NOS' programmatic information technology systems.

Services	Description	Customers
Office Automation	Office suites, email, calendar	All NOS users
Network Operating System services	Network authentication, file storage, printing, data back-up	All NOS users
Back Office services	Email servers, database servers, web servers	Email administrators, DBAs, application developers, web masters
Help Desk services	User support services	All NOS users
LAN	Campus backbones, switches and routers	System owners, system administrators
WAN	FTS2001 procurement and management	Field office users
IT Security Services	Patching, monitoring, testing, certification and accreditation	System Owners, system administrators, help desk, users, Authorizing Officials

1.1 Customer Requirements and Costs

The principal stakeholders of the NOS IT Infrastructure are all NOS employees. There are various levels of interest, however, every NOS employee is somehow affected by the infrastructure.

Stakeholder	Infrastructure Interest
All NOS employees	Provides tools for performing duties
NOS CIO	Managed and cost effective
NOS CFO	Cost effective
Project Managers	Meets foundational needs for programmatic IT
System Owners	Risk is managed, stable platform that meets

	requirements
Authorizing Officials	Functional and secure

NOS has been migrating all desktops and laptops to a single Microsoft Active Directory network domain over the last 3 years. The single domain allows NOS to manage customer requirements centrally, improving the ability to fulfill customer requirements. More offices were migrated in FY07 leaving only a few National Marine Sanctuaries field offices to be complete.

Several NOS offices used System Management Services to manage software distribution and security centrally. Participating offices can respond to cyber-threats quickly by deploying patches from a single location. Customer software installations can be accomplished remotely by the help desk as soon as approved.

1.2 Performance Measures

The NOS IT Infrastructure does not have any formal performance measures. Because it is supportive of the entire NOS mission, one might argue that all NOS performance measures apply. However, with the need for strategic planning identified, the NOS infrastructure will be implementing performance measures in FY08.

2.0 Strategic and Business Results

NOS has formed an Information Resources Management Board (IRMB) comprised of senior IT managers from all program offices. The IRMB's main function is strategic planning and governance over the IT infrastructure in NOS. The IRMB meets biweekly, or more often if necessary, to identify requirements, plan expenditures, develop policy, review trends, identify duplicative efforts and areas of opportunity for cost savings.

In the past, IT Infrastructure management has been largely reactive. However, the need for proactive planning including setting goals and objectives has been identified. The IRMB will develop a strategic plan and identify goals to be achieved in NOS.

2.1 NOS IT Infrastructure Helps to Achieve Strategic Goals

The NOS IT Infrastructure program directly facilitates NOS' mission: to provide products, services, and information that promote safe navigation, support coastal communities, sustain marine ecosystems, and mitigate coastal hazards. In performing this mission, NOS supports all four of NOAA's Strategic Goals.

2.2 Business Results

2.2.1 Program Management and Controls

NOS IT Infrastructure is managed dually by the NOS Chief Information Officer for enterprise-wide systems and by the program office deputy directors for local infrastructure. The NOS IT Review Board (ITRB) monitors new projects and provides financial governance. The NOS CIO chairs the ITRB.

2.2.2 Monitoring Cost, Schedule and Performance

As a part of the Deloitte study of IT management (see section 2.3 below), NOS instituted the Transformation Management Office (TMO). The TMO follows the Project Management Institute Book of Knowledge processes and procedures to manage the IT study tasks. NOS has recognized the need for applying project management techniques to IT projects, large and small, and in FY08 will use the TMO to manage NOS enterprise-wide projects.

IT Infrastructure costs are generally based on number of employees. However, NOS has taken advantage of economies of scale where opportunities have been identified.

In FY07, NOS recognized that with the pending introduction of Windows Vista and Office 2007, the cost could be prohibitive. NOS had partially participated in the Department of Commerce Microsoft Enterprise License Agreement (MSELA) and recognized that using this vehicle could save over \$1 million. The table below shows the projected costs for upgrades using the MSELA and if bought on the open market and the total savings. This purchase also set the groundwork for a sound software license practice in NOS.

Vista Upgrade	On ELA	\$263,694.06
	Open Market	\$731,451.44
Core CAL	On ELA	\$282,169.30
	Open Market	\$826,927.64
Office 2007	On ELA	\$349,584.48
	Open Market	\$709,613.00
Server	On ELA	\$113,701.06
	Open Market	\$124,598.22
Totals	On ELA	\$1,009,148.90
	Open Market	\$2,392,590.30
Savings		\$1,383,441.40

2.3 Reviews

In FY07, NOS contracted Deloitte Consulting to review IT management in NOS. The review was still in work at the end of FY07, but preliminary results have shown room for improvement. The current state assessment will be presented in FY08 along with recommendations for improvements and development of a transition plan to achieve results.

2.4 Security

The NOS IT Infrastructure is comprised of 10 systems. All have been accredited under requirements spelled out in NOA 212-13 (08/06/90) and DOC Information Technology Security Policy, June, 2005

that are based on OMB and NIST guidance. System Security Plans, Risk Assessments, and Contingency Plans were certified and approved, see the table below for dates.. Management, operational, and technical security controls are adequate to ensure the confidentiality, integrity and availability of information.

System	ST&E	Certified	Accredited
NOAA6001	4/2/2007	4/27/2007	4/27/2007
NOAA6101	8/28/2007	9/18/2007	9/19/2007
NOAA6201	6/22/2007	7/18/2007	7/19/2007
NOAA6301	8/28/2007	9/14/2007	9/14/2007
NOAA6401	8/28/2007	9/18/2007	9/18/2007
NOAA6501	7/13/2006	7/14/2006	7/14/2006
NOAA6601	8/28/2007	9/20/2007	9/20/2007
NOAA6602	8/28/2007	9/7/2007	9/7/2007
NOAA6701	8/28/2007	9/12/2007	9/12/2007
NOAA6702	3/12/2007	4/26/2007	4/27/2007

2.5 Performance Measures

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3.0 Financial Performance

3.1 Current Performance vs. Baseline

NOS IT Infrastructure expenses in FY07 are in the table below.

Desktop (Seat Management)	Hardware	1701.46
	Software	1477.67
	Contract Services	790.93
	IT Security	1214.26
	Facilities	63.22
	Other	236.63
IT Help Desk	Hardware	50.00
	Software	45.00
	Contract Services	2753.74
	IT Security	120.00
	Facilities	0.00
	Other	213.00
Telecom (Voice Networks)	Hardware	446.93

	Software	20.00
	Contract Services	849.39
	IT Security	73.77
	Facilities	0.00
	Other	50.00
Telecom (Data)	Hardware	1761.58
	Software	36.00
	Contract Services	624.73
	IT Security	136.70
	Facilities	0.00
	Other	20.00
Back Office	Hardware	1760.75
	Software	266.80
	Contract Services	1524.95
	IT Security	698.00
	Facilities	194.29
	Other	150.59
Government, FTE Costs		6450.43

Additional funding was provided to purchase hardware for the Silver Spring Metro Campus Backbone upgrade and the Enterprise Storage Pilot project.

3.2 Performance Measures

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3.3 Cost Benefit Analysis

In FY07, NOS contracted Deloitte Consulting to review IT management in NOS. The review was still in work at the end of FY07, but preliminary results have shown room for improvement. The current state assessment will be presented in FY08 along with recommendations for improvements and development of a transition plan to achieve results. See section 4 for a description of the project.

3.4 Financial Performance Review

Financial performance is typically subjected to a periodic review for reasonableness and cost efficiency. Monthly budget reviews are held with the program manager, CORs and contract managers to ensure contracts are within cost and on schedule. Monthly reports from contractors are required to ensure the Government has the information it needs to evaluate cost performance. A

detailed review of work and priorities is undertaken if cost is significantly above base lined values. Also, any necessary corrective actions are also identified and implemented.

4.0 Innovation to Meet Future Customer Needs

The following projects have been implemented in FY07, or are being implemented in FY08 to address future challenges, better meet customer needs, make better use of technology, and lower operating costs.

4.1 Number and Types of Users

NOS IT Infrastructure user base includes all NOS employees, about 2200 people, and is very diverse. A representative, but not complete list of areas covered by NOS programs includes: nautical charting, spatial referencing and GPS information for surveyors, coastal science, marine sanctuaries, hazardous materials response, coastal and ocean management and tide predictions. The NOS personnel to perform these missions includes, but is not limited to: cartographers, geodesists, oceanographers, marine biologists, geographers, physicists, educators, outreach specialists, program analysts, and the administrative support personnel.

4.2 Enterprise-wide Projects

Project to Address Challenge: Completion of Active Directory (AD) Implementation

The single NOS Active Directory domain is the foundation for many improvements in IT management. Eight field offices of the National Marine Sanctuaries Program (NMSP) present the final challenge to completing this project. These offices are located far from Silver Spring and are used to being autonomous and tending to their own IT needs with varying levels of success. Bringing them into the AD is both a financial and a cultural challenge, however with about 50% of the other NMSP offices already migrated, the collaborative benefits are becoming apparent.

The following projects are being managed by the NOS Transformation Management Office following Project Management Institute guidelines. Charters for these projects are available.

Project to Address Challenge: Improving IT Management

NOS has embarked on a major renovation of how IT is managed across the enterprise (see Section 2.3 above). NOS has recognized that IT can be managed more efficiently by unifying common services. Unifying services in such a diverse organization will require careful planning and a phased approach so as not to harm the mission. As mentioned in Section 2.3, NOS has contracted Deloitte Consulting to study NOS IT management. The current state assessment will be presented in November, 2007. Recommendations and a Roadmap to improve IT management will be presented in the second quarter of FY08. Funding and cultural challenges will be difficult. Success with any unification in IT management will require a comprehensive strategic plan along with a strong governance model.

Project to Address Challenge: Configuration Management Initiative

NOS IT Infrastructure systems underwent Certification and Accreditation (C&A) in FY07. The C&A identified the need for configuration management across all systems. NOS is addressing this challenge by analyzing business processes, developing a detailed governance process and implementing Microsoft System Center Configuration Manager as a tool to centrally manage configuration of all desktops.

System Center Configuration Manager (SCCM)

SCCM is the upgrade to Microsoft's System Management Server. Because of NOS' consolidated, single Active Directory domain and by taking advantage of the DOC Microsoft ELA in FY07, NOS is positioned to implement SCCM across all NOS offices. SCCM will allow NOS to manage all desktops and laptops ensuring consistency and security. This tool will enhance the NOS capability to meet customer needs by enabling software distribution quickly and efficiently.

Project to Address Challenge: Backbone Network Upgrade (BNU)

The NOS Silver Spring Campus backbone has reached end of life and is not robust enough to transmit the large quantity of data that is required by NOS mission applications such as geographic information systems and scientific processing. To address this challenge the network backbone will be upgraded and modernized. The BNU will replace existing switches with those that can handle a higher quantity of data. Furthermore, the network will be redesigned for easier management, troubleshooting and efficiency. The new equipment will be capable of transmitting IPv6 traffic, a requirement of OMB. BNU will also enhance security by building in redundancy and better monitoring capabilities.

Project to Address Challenge: Enterprise Storage Pilot (ESP)

Two NOS offices recognized the need for enhanced storage capabilities, not just in additional space but in data management and back-up capabilities. NOS management backed a pilot project between these two offices to determine the feasibility of sharing storage across the NOS enterprise. Processes are being developed and implemented to ensure data is managed efficiently while meeting user and operational requirements.

4.4 Funding Levels

Recent trends in government spending indicate that agencies should not expect significant increases in their budgets. This, coupled with the requirement to accommodate more users and incorporate evolving technology, will force the program to find efficiencies and to do more with the same amount of resources.

The NOS Chief Financial Officer is fully behind IT innovation for cost-cutting and enhanced performance. However, the CFO is also aware that costs often rise before they can fall while new processes are implemented and need to run in parallel while old processes are phased out.

Project to Address Challenge: IT Human Resources Study

The constant changing IT environment, additional requirements and unfunded mandates put a constant strain on NOS IT human resources. NOS will undergo a study to determine the right strategy for IT staffing to meet these shifting needs. The study will review current staffing and future requirements to develop a plan for training and hiring to provide an IT staff that can support the NOS mission.

Annex A

[Use appendices to provide more detailed data than necessary in the overview provided in the main body of the OA. For example, you might include appendices on the following aspects:]

[1. Is the project bound by Memoranda of Understanding (MOU), international treaties, Service Level Agreements (SLA), or other agreements? If yes, please and describe below.]

[2. Name the management control processes. For example: Operational Monitoring, Daily Status Briefing, Weekly Status Meetings, Monthly Staff Meetings, Monthly Configuration Control Board, Monthly Budget Reviews, Working Groups, Program Steering Group, etc.]