National Oceanic and Atmospheric Administration

FY 2005 Operational Information Technology Plan

Office of the Chief Information Officer

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NOAA FY 2005 Operational Information Technology Plan

Introduction and Background

NOAA's Mission

NOAA's mission is to understand and predict changes in Earth's environment and conserve and manage coastal and marine resources to meet our Nation's economic, social, and environmental needs.

NOAA's Goals

NOAA has adopted a structure of four Mission Goals and a Mission Support Goal around which all of our work is planned and organized, based on stakeholder input and internal assessments of our mandates and mission. NOAA's Line and Staff Offices execute activities required to achieve these goals through NOAA programs. These programs may involve the activities of more than one Line or Staff Office.

- Protect, Restore, and Manage the Use of Coastal and Ocean Resources Through an Ecosystem Approach to Management
- Understand Climate Variability and Change to Enhance Society's Ability to Plan and Respond
- Serve Society's Needs for Weather and Water Information
- Support the Nation's Commerce with Information for Safe, Efficient, and Environmentally Sound Transportation
- Provide Critical Support for NOAA's Mission.

NOAA Operational Information Technology (IT) Plan

NOAA's annual Strategic and Operating Plans are based on the planning and management process established by the Government Performance and Results Act. The NOAA Strategic Plan is provides the link between budget and performance. It is a critical tool to help steer NOAA in the best direction for the future and to help NOAA design and create programs, allocate resources, and perform with better accountability for results. It is through this plan that NOAA can move forward to achieve its goals and serve society in the best possible way.

The NOAA Annual Operating Plan forms the basis for managing and evaluating performance, program performance, and LO/SO performance. These plans outline what the organization's senior leadership intends to accomplish in the fiscal year to meet the Strategic Plan objectives and program performance measures.

The NOAA Operational Information Technology (IT) Plan is a critical part of that planning and management process in that it provides the link between the information technology and programs that support NOAA's mission goals and objectives. The Operational IT Plan is a living document which incorporates the specifics of capital planning, investment control, enterprise architecture, and security for a given fiscal year. NOAA's Operational IT Plan is intended to be a plan used by the NOAA CIOs to manage their efforts to improve the delivery of services through the cost effective and secure use of IT.

The FY 2005 NOAA Operational IT Plan integrates the Operational IT Plans of the following NOAA Offices:

- National Environmental Satellite, Data, and Information Service (NESDIS)
- National Marine Fisheries Service (NMFS)
- NOAA Ocean Service (NOS)
- National Weather Service (NWS)
- Office of Oceanic and Atmospheric Research (OAR)
- Office of Marine and Aviation Operations (NMAO)
- Office of Chief Information Officer (OCIO)
- Office of NOAA Finance and Administration (NFA).

Responding to the guidance on information to be included, this plan provides the requested information in an initial section containing information that applies to NOAA as a whole and in the separately presented organization-oriented sections.

National Environmental Satellite, Data, and Information Service (NESDIS)

The mission of the National Environmental Satellite, Data, and Information Service (NESDIS) is "To deliver accurate, timely, and reliable satellite observations and integrated products and to provide long term stewardship for global environmental data in support of the NOAA mission." Key components which enable NESDIS to achieve its commitment to meet the five mission goals and five cross-cutting priorities of NOAA are, the NESDIS Office of the Chief Information Officer (OCIO), its Offices, and Data Centers. The NESDIS OCIO is charged with maintaining the efficient and reliable application of information technology (IT) resources to ensure the successful mission accomplishment of NESDIS to the Nation. The NESDIS OCIO, in conjunction with Offices and Data Centers, is responsible for the planning, resource allocation, application, integration and utilization of a wide realm of IT capabilities and components. The OCIO, located in the NESDIS Headquarters facility, supports Offices and Data Centers throughout NESDIS, as well as providing the NESDIS Headquarters facility their operational IT support capability.

The purpose of the NESDIS component of the IT Operational Plan is to provide a comprehensive framework for an effective and coordinated application of NESDIS-wide IT resources in FY 2005. This document provides brief program descriptions, major FY 2004 accomplishments, FY 2005 planned activities, and a brief summary of any program cost and schedule deviations for each IT related program and office within NESDIS. This plan is integrated with the current *NESDIS Operational Plan FY 2005* as well as the overall *NESDIS Strategic Plan FY 2005-2010*. Planned activities for FY 2005 are aligned with the FY 2005 President's Budget. These plans may need to be adjusted once the final approved FY 2005 appropriation is released for distribution.

NESDIS is in compliance with the directives from the Department of Commerce (DOC) concerning IT restructuring, as well as the establishment of a Chief Information Officer (CIO). The CIO reports directly to the NESDIS Deputy Assistant Administrator (DAA) and the NOAA CIO. The DAA, in consultation with the NOAA CIO, annually evaluates the NESDIS CIO for

performance and compliance in accordance with their Annual Management Contract (AMC). The NESDIS CIO coordinates all pertinent policy and guidelines and recommendations concerning IT related issues throughout NESDIS, and in conjunction with NOAA and DOC requirements. Additionally, the CIO has line authority and responsibility for centralized IT functions across NESDIS.

The CIO, in conjunction with the NESDIS Chief Financial Officer (CFO), work closely together to ensure cooperation and consistency in all related NESDIS IT plans, exhibits, and procurements.

National Marine Fisheries Service (NMFS)

NOAA Fisheries is responsible for the stewardship of the nation's living marine resources and their habitat. NOAA Fisheries is responsible for the management, conservation and protection of living marine resources within the United States' Exclusive Economic Zone (water three to 200 mile offshore). Using the tools provided by the Magnuson-Stevens Act, NOAA Fisheries assesses and predicts the status of fish stocks, ensures compliance with fisheries regulations and works to reduce wasteful fishing practices. Under the Marine Mammal Protection Act and the Endangered Species Act, NOAA Fisheries recovers protected marine species (i.e. whales, turtles) without unnecessarily impeding economic and recreational opportunities. With the help of the six regional offices and eight councils, NOAA Fisheries is able to work with communities on fishery management issues. NOAA Fisheries works to promote sustainable fisheries and to prevent lost economic potential associated with overfishing, declining species and degraded habitats. NOAA Fisheries strives to balance competing public needs and interest in the use and enjoyment of our oceans' resources.

Mission

The mission of NOAA Fisheries is the stewardship of living marine resources through science-based conservation and management and the promotion of healthy ecosystems

NOAA Fisheries is responsible for the management, conservation and protection of living marine resources within the United States Exclusive Economic Zone. NOAA Fisheries also plays a supportive and advisory role in the management of living marine resources in coastal areas under state jurisdiction, provides scientific and policy leadership in the international arena and implements international conservation and management measures as appropriate.

Under this mission, the goal is to optimize the benefits of living marine resources to the Nation through sound science and management. This requires a balancing of multiple public needs and interests in the sustainable benefits and use of living marine resources, without compromising the long-term biological integrity of coastal and marine ecosystems.

Many factors, both natural and human-related, affect the status of fish stocks, protected species and ecosystems. Although these factors cannot all be controlled, available

scientific and management tools enable the agency to have a strong influence on many of them. Maintaining and improving the health and productivity of these species is the heart of our stewardship mission. These activities will maintain and enhance current and future opportunities for the sustainable use of living marine resources as well as the health and biodiversity of their ecosystems.

NOAA Ocean Service (NOS)

NOS is a scientific and technical organization of more than 1,700 individuals whose mission is to preserve and enhance the nation's coastal resources and ecosystems along 95,000 miles of shoreline and 3.5 million square miles of coastal ocean. At the same time, it works to support economic growth for the long-term benefit of the nation. This theme is central to the sustainable development agenda of both NOAA and DOC.

NOS employees are located at 75 duty stations around the country. Most of them are at headquarters in Silver Spring, Md., and in regional offices in Seattle, Norfolk, Va., and Charleston, S.C. Smaller numbers are widely scattered throughout the U.S. This nationwide presence is complemented and enhanced by the numerous partnerships with states, local governments, academic institutions, and non-governmental organizations that receive NOS technical and financial assistance.

National Weather Service (NWS)

The National Weather Service is the primary source of weather data, forecasts and warnings for the United States. Television weathercasters and private meteorology companies prepare their forecasts using this information. The NWS is the sole United States official voice for issuing warnings during life-threatening weather situations. The weather service has about 4,800 employees and annual operating budget of approximately $743.8 million.

What NWS Achieves

The National Weather Service provides weather, hydrologic, and climate forecasts and warnings for the United States, its territories, adjacent waters and ocean areas, to protect life and property and enhance the national economy. The National Weather Service has a national infrastructure in place to gather and process data from the land, sea and air.

This includes data from familiar technologies such as weather radars and satellites and also less-familiar technologies such as data buoys for marine observations and surface observing systems for data that help the aviation industry. The National Weather Service's highly trained and skilled workforce uses sophisticated computer models, and high-speed communications systems to generate data, outlooks, forecasts and warnings.

Trained community volunteers enhance weather service operations. Cooperative observers collect weather data that becomes part of the nation's climate records. Storm spotters provide the National Weather Service with visual confirmation of severe weather events.

With the completion of the $4.5 billion modernization program, the agency is now a leaner, more efficient operation, with 121 field offices, 13 River Forecast Centers and nine national centers. The modernized, streamlined weather service is good government and supports NOAA's commitment to creating a government that works better and costs less.

Ongoing research and development efforts yield breakthroughs in all areas of weather, hydrologic and climate forecasting. Advances in climate forecast modeling, for example, allowed National Weather Service scientists to predict the onset of the 1997-98 El Niño event as early as late 1996.

The National Weather Service maintains the largest meteorological telecommunications switching center in the world, sending and receiving around 400,000 weather bulletins each day through a gateway in Silver Spring, Md. This data originates from weather offices around the country.

Weather warnings don't mean anything if they aren't received by those in harm's way. The National Weather Service broadcasts public life-saving information during severe weather events and other hazardous situations on the NOAA Weather Radio network. The newest models of NOAA Weather Radios can be programmed to sound an alert for individual counties. This feature has been known to wake people with warnings when they are asleep. In addition, the National Weather Service relies on its partners in emergency management and the media to help get out severe warnings and critical forecasts keeping communities safe.

The National Weather Service uses the Internet to reach a growing number of the online population. Information includes official forecasts and warnings as well as outlooks and summaries on climate topics such as El Niño. Most weather service Internet sites are linked to the National Weather Service home page at the following address: http://www.nws.noaa.gov

What Are the Benefits?

Weather services cost each American about $5 a year, the same price as a hamburger and fries. This investment of allows the National Weather Service to issue more than 734,000 forecasts (fire weather, public, aviation, marine) and 850,000 river and flood forecasts annually. Each year, the National Weather Service issues between 45,000 and 50,000 potentially life-saving severe weather warnings.

Every day, millions of weather-based economic decisions are made in agriculture, transportation, power, construction, and other sectors of the economy. Weather and flood conditions affect the entire economy in many direct and indirect ways. Better weather, hydrologic and climate forecasts and information bring new economic opportunities to almost every sector of the economy. The labor-intensive construction industry contributes more than $200 billion annually to the U.S. economy, and is directly dependent on

accurate short- and long-range weather forecasts. National Weather Service forecasts are also critical to the commercial and private transportation sector, including airline shipping and trucking industries, nationally and internationally. Airlines, for example, rely on short-term forecasts to best position their aircraft and adjust flight routes. Long-term climate forecasts help city managers better manage the purchase of resources such as salt and sand for roads and sidewalks. Hyrdrologic forecasts help communities protect their property by preparing for floods.

The National Weather Service is making great strides to improve weather forecasts and warnings, with its vision of becoming America's "no surprise" weather service. The weather service has doubled the warning lead-time for tornados to approximately 12 minutes over the last five years. This extra time saves lives. Today's three-to-four day forecast is as accurate as the two day forecast was 15 years ago. The National Weather Service is working to make the 6-10 day forecast as accurate as the forecast for tomorrow.

Products issued around the clock by the National Weather Service affect the lives of every American. Important advances in the science of meteorology and hydrology, coupled with major new technological capabilities for observing and analyzing the atmosphere, will allow the National Weather Service to continue providing unprecedented weather services to the Nation.

Office of Oceanic and Atmospheric Research (OAR)

NOAA Research is the primary research component of NOAA, and a leading environmental research organization in the sciences of atmosphere, oceans, and climate. The work of NOAA Research ranges from the surface of the sun to the depths of the ocean. NOAA Research scientists and their university partners across the country and elsewhere in the global community work to better understand the world in which we live.

NOAA Research is where much of the work is performed that results in better weather forecasts, longer warning lead times for natural disasters, new products from the sea, and a greater understanding of our climate, atmosphere, and oceans. Research is performed not only in what many would consider traditional laboratories, but also aboard ships, aloft in planes, and beneath the sea in the world's only undersea habitat. Information Technology tools can be as high-tech as supercomputers or as basic as rain gauges. Computing and information technology is at the very core of the organization’s research.

Some primary NOAA Research customers are internal NOAA service and operational Line Office programs. NOAA Research supports all of the NOAA line offices by providing a wide array of products from fisheries and aquaculture management tools and technologies for the National Marine Fisheries Service to forecasting tools for the National Weather Service. Working with NOAA customers and partners to inform the research agenda, and communicate crucial information on the physical and social systems that are most useful to decision-makers, is a key aspect of crafting good science policy.

Utilizing world-class technical capabilities, NOAA scientists and external partners support the advancement of knowledge regarding key issues through long-term monitoring, assessments, directed research, extension services, and stakeholder interaction. NOAA Research partners provide additional scientific and technical expertise necessary for NOAA to carry out its mission.

Office of Marine and Aviation Operations (NMAO)

The Office of Marine and Aviation Operations (NMAO) purpose is to serve NOAA and the nation by providing high quality and cost-effective scientific, engineering and technical services, ship and aircraft research platforms, and personnel in support of missions that lead to comprehensive understanding of the environment. NMAO continually strives to be NOAA's respected voice of expertise for sea and air operations and agency-wide technical integration, and to lead the agency's field efforts in gathering critical data for environmental assessment, prediction, and environmental stewardship. Our goal is to provide cost-effective, responsive, and safe operation of NOAA's ships and NOAA's aircraft that support NOAA program needs.

Office of Chief Information Officer (OCIO) and High Performance Computing and Communications (HPCC)

The Office of the Chief Information Officer and High Performance Computing and Communications collage showing computer keyboard(CIO/HPCC) implements the provisions of the Clinger-Cohen Act of 1996, the Paperwork Reduction Act, and other directives regarding the acquisition, management, and use of information technology (IT) resources.

The Office leads the improvement of NOAA operations and service delivery using IT systems, promoting NOAA's effective use of IT to accomplish its mission. The Office leads NOAA's principal IT research through the NOAA High Performance Computing and Communications (HPCC) program, provides advice to NOAA management on information resources and information systems management, promotes and shapes effective strategic and operational IT planning process for NOAA, coordinates the preparation of NOAA's IT budget and associated materials, overseas selected NOAA-wide operational IT systems and services, and is responsible for other assigned programs that are interagency and/or international in scope.

Office of NOAA Finance and Administration (NFA)

NOAA's Finance and Administration (NFA) is responsible for all of NOAA's financial and administrative functions. NFA strives to deliver quality services to NFA customers through effective communication and management of people, technology, business processes, and financial resources.

Section 1.0 Description of IT Organization and Management Processes

1.1 A description of your operating unit's IT management organization and how your operating unit is complying with the Departmental directive on IT restructuring.

1.1.1 National Environmental Satellite, Data, and Information Service (NESDIS)

Major NESDIS Programs are well managed and under continuous review for potential improvement and cost avoidance opportunities. Whether in Planning and Acquisition, utilizing an Earned Value Management System (EVMS), or in Steady State and using an Operational Analysis system; all NESDIS programs are tied into the overall NESDIS Operating Plan and reflected in each applicable NESDIS AMC as the baseline for its planning and budgeting methodology. This plan allows each of the senior managers to monitor their planned spending for variances against generated monthly reports created in Commerce Administrative Management System (CAMS). The system allows management to capture program and administrative operations costs in a consistent and repeatable fashion. As a minimum, during the first week of each month, reports are produced which list the actual expenditures by program and sub-element cost. The reports are compared to the planned budget in the AMC by the NESDIS Budget and Planning Office staff in coordination with the program managers and their staff. When necessary, cost adjustments or action plans are prepared to correct errors, modify schedule, or minimize residual effects of the variance, and they are reviewed and coordinated at the program office and forwarded to the NESDIS budget office.

These accumulated monthly reports are combined to produce a quarterly report by each Office and Center, which is briefed to the NESDIS Assistant Administrator and staff during their Quarterly Management Reviews. It is during these quarterly reviews that system variances would be addressed at the Line Office level. An explanation of variances outside the acceptable 10% is presented to the NESDIS Assistant Administrator and staff along with an action plan to correct the noted variance.

Additionally, as part of the overall Capital Planning and Investment Control (CPIC) process, NESDIS participates in both NOAA and DOC IT Review Boards to ensure proposed and on-going programs meet compliance requirements of higher headquarters strategic planning, security, budget, and architecture requirements.

1.1.2 National Marine Fisheries Service (NMFS)

1.1.2.1 NOAA Fisheries Mission, Goals and Objectives

NOAA Fisheries is principally responsible for implementing NOAA Mission Goal 1.Protect, Restore and Manage the Use of Coastal and Ocean Resources through Ecosystems Management. To fulfill this mission goal, NOAA Fisheries must meet the following strategic objectives:

1. Protect and Restore ocean, coastal, and Great Lakes resources

2. Recover Protected Species with objectives to implement conservation programs; and assess status and impacts; and
3. Rebuild and Maintain Sustainable Fisheries

Specific NOAA Fisheries functions and activities related to these Strategic Planning Goals are mandated by an extensive body of legislation, including the Magnuson-Stevens Fishery Conservation and Management Act; the Endangered Species Act; the Marine Mammal Protection Act; the Coastal Wetland Planning, Protection, and Restoration Act; the Comprehensive Environmental Response, Compensation, and Liability Act; the Oil Spill Act of 1990; the Sustainable Fisheries Act; the Fish and Wildlife Coordination Act; and the Atlantic Coastal Fisheries Cooperative Management Act.

1.1.2.2 NOAA Fisheries Organization

To accomplish its varied and complex mission, NOAA Fisheries is organized and managed in a highly decentralized manner (See Figure 1. NOAA Fisheries Organization.) Many of the mandated activities, including research, data collection, analysis, and monitoring, are conducted by field elements, at more than 100 locations nationwide, with oversight, review, and direction by Headquarters in Silver Spring, MD. The field structure consists of six regions, each with a Regional Office that focuses on fisheries management issues and a Science Center that conducts research and directs the work performed by other NOAA Fisheries laboratories and satellite/special purpose facilities in that region.

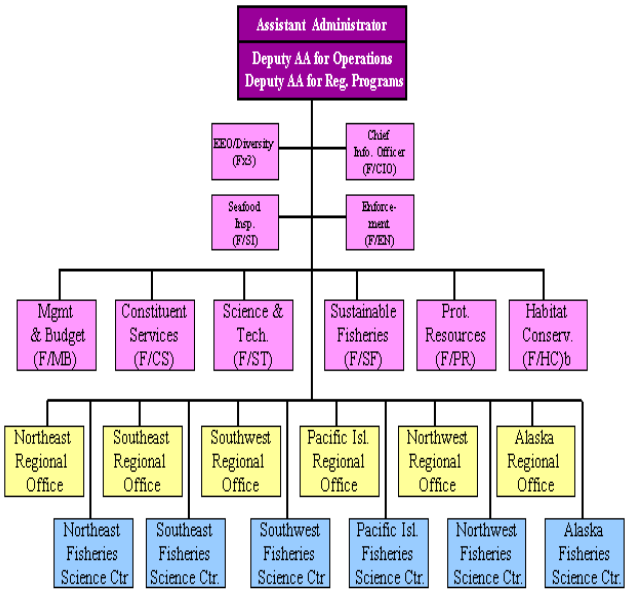


Figure 1 NOAA Fisheries Organization

NOAA Fisheries Regional Offices and Science Centers are respectively located at:

- Northeast - Gloucester, MA and Woods Hole, MA
- Southeast - St. Petersburg, FL and Miami, FL

- Southwest - Long Beach, CA and La Jolla, CA
- Pacific Islands – Honolulu, HI
- Northwest - Seattle, WA at Sand Point and Seattle, WA at Montlake
- Alaska - Juneau, AK and Seattle, WA at Sand Point

NOAA Fisheries Headquarters includes the following Offices of:

- Sustainable Fisheries
- Protected Resources
- Habitat Conservation
- Science and Technology
- Law Enforcement
- Management and Budget
- Constituent Services
- Seafood Inspection Program
- Chief Information Officer (CIO)

Operationally, Fisheries staff interact daily nationwide with a myriad of stakeholders and partners to collect, analyze, share, and disseminate information and data. Routine agency operations include exchange of data/information on vessel permits, vessel logs, landings, dealer reporting, recreational fishing, status of stocks, productivity of stocks, status of stock utilization and market value, geographic range of stocks, management of stocks over international borders, permits for taking marine mammals incidental to commercial fishery operations, status of protected species and associated recovery plans, human impacts on site-specific ecosystems, Native American fishing rights and marine mammal harvesting and utilization rights. Stakeholders and partners include intergovernmental organizations such as the Fisheries Commissions and the Regional Fishery Management Councils, state fish and wildlife agencies, other federal agencies, industry, academic institutions, international commissions and Native American Tribal Councils.

1.1.2.3 NOAA Fisheries IT Organization

Recognizing information as one of our most valuable resources and one that needs to be managed as such, NOAA Fisheries senior management established the National Information Management Board (NIMB) and the CIO position. The CIO, who serves as Director of the Office of the CIO (OCIO), coordinates enterprise-wide IT and provides operational IT services to the Headquarters office. Regional Information Technology Coordinators (RITCs) coordinate and/or directly provide IT services for each Regional Office and Science Center. (See Figure 2. NOAA Fisheries IT Organization)

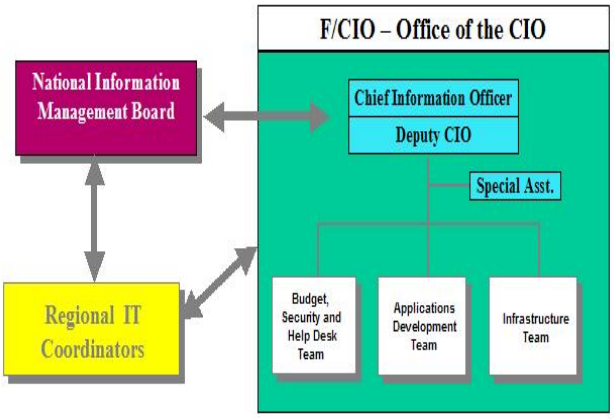


Figure 2 NOAA Fisheries IT Organization

Office of the CIO (OCIO)

The CIO carries out the provisions of the Clinger-Cohen Act and other Federal IT regulations, and DOC and NOAA policies and guidelines pertaining to information management. Other major responsibilities, carried out in association with such agency advisory bodies as the National Information Management Board (NIMB), Regional Information Technology Coordinators (RITCs), Headquarters Information Management Coordinating Committee (HIMCC), Office Information Technology Coordinators (OITCs) and other groups, include resolving IT problems, and developing and implementing agency-wide IT policies and procedures. The CIO also provides the efficient management of the agency's Wide Area Network (WAN) and headquarters Local Area Network (LAN); develops and maintains enterprise-wide and HQ databases and applications; ensures cost-effective long- and short-term planning and financial management of IT-related activities; administers the procurement, development or adaptation of new and emerging IT technologies, and assures the effective coordination of NOAA Fisheries IT/IM with those functions elsewhere in NOAA, DOC, and other Federal agencies and organizations.

The National Information Management Board (NIMB)

The National Information Management Board is the NOAA Fisheries' IT decision making body that establishes national information management policy, strategy and guidelines. The NIMB is made up of the Deputy Directors from each of the Regional Offices and Science Centers, the Deputy Director of HQ Office of Law Enforcement and a representative from the Office of Science and Technology. It is chaired by the CIO and has the responsibility to:

- Establish IT policy and strategy,
- Oversee enterprise-wide IT initiatives,
- Identify and assess regional, inter-regional, and national IT needs,
- Ensure equitable allocation of IT funds, and
- Establish strategy for new information technology

Regional Information Technology Coordinators (RITCs)

Each Regional Office and Science Center is responsible for managing its IT programs under the auspices of the CIO. RITCs serve as the focal points for IT and either coordinate or directly provide IT services to the regions. Services are provided in conjunction with the CIO's three Team Leaders for Budget, Security and Helpdesk; Systems Applications and Infrastructure; and with the NOAA Fisheries IT Security Officer. Each RITC reports directly or indirectly to his/her respective NIMB member. Duties include coordinating IT hardware and software purchases at their sites, assisting in the development of the enterprise architecture, promoting its implementation into daily operations, coordinating WAN/LAN operations, and disseminating and/or collecting IT-related information throughout the respective region.

Headquarters Information Management Coordinating Committee (HIMCC)

The HIMCC provides a forum for inter-office discussions and cooperation on information management issues at the NOAA Fisheries Headquarters (HQ) Offices. The HIMCC is chaired by the CIO and consists of representatives from each HQ office at the Deputy Director level. The Committee addresses HQ IT related issues and actions including hardware and software maintenance, software development, LAN, office automation standards, training and support, development of Headquarters IT policies and strategies, identification and commitment of resources to address HQ IT requirements; and provides input on information technology strategic planning and architecture requirements.

Headquarters Office Information Technology Coordinators (OITCs)

The OITCs identify and implement HQ Office technical IT requirements and serve as the liaison between the Office of the CIO and their respective offices for collecting and disseminating information regarding IT activities and operations.

Office of Science and Technology
The Office of Science and Technology advocates and ensures a sound scientific basis for NMFS' science programs and resource conservation and management decisions. It has oversight of NMFS' scientific research and technology development activities. The Office maintains the integrity of the NMFS' scientific enterprise and strives to maintain and improve the quality and credibility of NMFS' science. It is the primary interface between NMFS' scientific activity and NOAA, other agencies, and international organizations. The Office serves as the focal point within NMFS for the development and evaluation of domestic and international science and technology strategies. The Office of Science and Technology provides scientific computing platforms and user services for local and regional staff, including database, statistical analysis and web access to fisheries data from around the country and the world.

1.1.4 IT Restructuring Initiatives

The agency's IT organizational structure has been evolving in the spirit of the Clinger Cohen Act for several years and only required minor adjustments to comply with directives addressed in the Department of Commerce CIO's memorandum, "Restructuring the Department of Commerce

Information Technology Organization" of March 3, 2000. The position of CIO has oversight of the majority of the functions addressed in the memorandum and reports directly to the Deputy Assistant Administrator.

1.1.3 NOAA Ocean Service (NOS)

1.1.3.1 IT Organization

NOAA Ocean Service (NOS) consists of seven program offices and one staff office. Each program office has a separate mission that supports all NOAA strategic goals but primarily "to protect, restore, and manage the use of coastal and ocean resources through ecosystem-based management" and "to support the Nation's commerce with information for safe, efficient, and environmentally sound transportation." The staff office, the Management and Budget Office, performs administration functions, communications and special projects for NOS.

Center for Operational Oceanographic Products and Services (CO-OPS)

CO-OPS collects and distributes observations and predictions of water levels and currents to ensure safe, efficient and environmentally sound maritime commerce. The Center provides the set of water level and coastal current products required to support NOS's Strategic Plan mission requirements, and to assist in providing operational oceanographic data/products required by NOAA's other Strategic Plan themes. The Center manages the National Water Level Observation Network (NWLON) and a national network of Physical Oceanographic Real-Time Systems (PORTS®) in major U.S. harbors.

Coastal Services Center (CSC)

The NOAA Coastal Services Center, in Charleston, SC, works with various branches of NOAA and other federal agencies to bring information, services, and technology to the nation's coastal resource managers. The Center is a partner in over 100 ongoing projects geared to resolve site-specific coastal issues.

National Centers for Coastal Ocean Science (NCCOS)

NCCOS conducts and supports research, monitoring, assessment, and technical assistance to people managing coastal ecosystems and society's use of them. Formed within the NOAA Ocean Service in March 1999, it puts all NOAA's coastal research centers in one group. Each Center has specific capabilities and research expertise in important ocean and coastal issues.

The Center for Coastal Ocean Research (CSCOR) supports the conservation and management of living marine resources by improving ecological and oceanographic predictions for fisheries management.

The Center for Coastal Monitoring and Assessment (CCMA), in Silver Spring, MD, monitors, surveys, and assesses coastal environmental quality, habitats, and resource distribution.

The Center for Coastal Fisheries and Habitat Research (CCFHR), in Beaufort, NC, is jointly sponsored by the National Ocean Service and National Marine Fisheries Service. The Center conducts laboratory and field research on estuarine processes, near shore and ocean ecosystems biological productivity, the dynamics of coastal and reef fishery resources, and the effects of human influences on resource productivity.

Center for Coastal Environmental Health and Biomolecular Research (CCEHBR), with offices located in Charleston, SC and Oxford, MD, conducts interdisciplinary research to resolve issues related to coastal ecosystem health, environmental quality, and related public health impacts.

The Hollings Marine Lab (HML), also in Charleston, SC, named after Senator E. "Fritz" Hollings, this laboratory is a multi institutional, multi-disciplinary institution providing science and biotechnology applications to sustain, protect, and restore coastal ecosystems, emphasizing linkages between environmental and human health.

National Geodetic Survey (NGS)

The National Geodetic Survey (NGS) defines and manages the National Spatial Reference System (NSRS) - the framework for latitude, longitude, height, scale, gravity, orientation and shoreline throughout the United States. NSRS provides the foundation for transportation, communication, and defense systems, boundary and property surveys, land records systems, mapping and charting, and a multitude of scientific and engineering applications. NGS also conducts research to improve the collection, distribution, and use of spatial data.

Ocean and Coastal Resources Management (OCRM)

OCRM is responsible for administering the Coastal Zone Management Act and a leader on the Nation's coastal, estuarine and ocean management issues. OCRM also manages the National Estuarine Reserve System and the National Marine Sanctuary Program (NMSP). Estuarine Reserves and Sanctuaries have offices located across the United States and its territories. In FY03, legislation was passed to elevate the NMSP to the program office level. This change is expected to take place in FY04.

Office of the Coast Survey (OCS)

OCS manages the NOAA nautical charting and hydrographic data collection and information programs. Through its management of an integrated suite of programs in hydrography, cartography, innovative research and customer outreach, it operates interactively to help protect both life and property, support economic growth and development, and protect the environment in support of the overall mission to support the Nation's commerce with information for safe, efficient, and environmentally sound transportation.

Office of Response and Restoration (ORR)

ORR is the focal point in NOAA for preventing, planning for, and responding to oil spills, releases of hazardous substances, and hazardous waste sites in coastal environments and

restoring affected resources. OR&R protects and restores coastal resources through the application of science and technology.

Management and Budget Staff Office (MB)

MB performs policy analysis, planning, budget formulation, human resource management, facilities management, information technology management, communications and education and special projects in support of the NOS program offices. The NOS Chief Information Officer, Hugh Johnson, is the chief of the MB Information Management Division.

1.1.3.2 IT Management

NOS has consolidated help desk operations for some offices where possible, however, many program offices in NOS have their own staff for office automation and programmatic IT support. This situation exists because each program office has a distinctly different mission and IT requirements. Furthermore, NOS has four major campuses (Silver Spring, MD; Charleston, SC; Hampton Roads, VA; and Seattle, WA), plus 17 National Marine Sanctuary offices, research labs in Beaufort, NC and Oxford, MD, dozens of Estuarine Reserve offices and many other small offices that support the ORR, OCRM and NGS missions.

Where similar requirements exist, NOS has consolidated IT management under the MB/Information Management Division (IMD). Services provided by the IMD are:

- Messaging (email and newsgroups)
  - Provide reliable and secure mail service to approximately 1600 NOS users
  - Hardware system administration, purchase, and maintenance (i.e. adding storage capacity, performance)
  - Operating system administration, software purchase, and maintenance
  - Messaging software administration, purchase, and maintenance
  - Blackberry services and provisioning for senior management

- Active Directory
  - Provide guidance and direction by Microsoft certified professional contracted to IMD staff
  - Domain controller management across the directory, domain controller hardware and software for the SSMC campus
  - Active Directory administration, group policy deployment, configuration management

- Intranet/Extranet Server
  - Provide implementation and maintenance of secure NOS intranet server
  - Provide implementation and maintenance of secure NOS extranet server
  - Manage secure access by groups to specified web sites
  - Provide backup and restore services for the web server
  - Provide secure update method for program office webmasters

- Wide Area Network Support
  - Field office Wide Area Network (WAN) connection (T-1, frame relay) implementation and maintenance
  - FTS coordination, ordering, management and support

- NOS-wide security program, see Section 1.5.3 for details.

- Software Licensing
  - Purchase of Corel Office Suite annual licensing fee to NOAA
  - Purchase of ISI bibliographic software annual licensing fee to NOAA
  - Coordination of the DOC Microsoft Enterprise Licensing Agreement

- Remote Access
  - Provide local Washington area and 800 dial-in modem service
  - Remote access hardware implementation and maintenance
  - Remote access phone line (PRI) acquisition and management
  - Coordination with NOC for remote access accounts and Virtual Private Network (VPN) accounts
  - Distribution of VPN software

- Administrative Application Support, Planning, Communication (T&A, CAMS, FACTS, Annual Operating Plan, Memorandum of Agreement system)

- Trusted Campus Network (TCN) switch implementation, expansion, maintenance and support to SSMC and NCCOS/CCFHR, NCCOS/CCEHBR, NCCOS/CCEHBR-Oxford, and ONMS field office system administrators.

- Video conferencing hardware acquisition and support

- Central host for Heat help desk software for NOS program office system administrators

- SSMC4 NOS shared computer room management to give NOS program offices a secure location for their IT assets.

- Secure Public Information Network (SPIN) implementation and management. SPIN is a secure environment for delivering dynamic content to the public using a Cisco PIX firewall managed by the NOAA Network Operations Center (NOC) but owned by NOS.

Section 1.1.2: Department of Commerce IT Restructuring Plan

In September 2001, NOS initiated a plan to strengthen its IT management as part of the Department of Commerce IT Management Restructuring. Key elements of the implementation:

1. Establishment of the NOS Information Technology Review Board, chaired by the Chief Information Officer (CIO) which oversees all IT investments, policy, and organizational IT matters,

2. Raise the reporting level of the Chief Information Officer to report directly to the NOS Deputy Assistant Administrator and the Chief Administrative Officer

3. Employ personnel performance management to ensure that all IT managers and staff work together to improve IT management throughout NOS.

The goal of the Information Technology Review Board (ITRB) is to ensure IT resources are used wisely and efficiently across NOS and that Government IT policies are upheld. The ITRB is a chartered committee that meets as required. Voting membership of the ITRB is comprised of the program office Deputy Directors and the NOS CIO is the chair. Other advisory members of the board are program office senior technical staff and the NOS CIO staff.

The NOS ITRB improves NOS information technology management and is the deliberative group for:

- Improving IT investment management
- Strengthening IT policies and procedures
- Approving the NOS-wide IT architectures
- Providing a forum for discussion and resolution of IT issues at a senior level

Each member of the ITRB has an element in their performance plan regarding improving the use of IT in their organization. This element is evaluated by the NOS CIO.

In FY04, all program offices used an IT Review Board to oversee IT within their individual offices.

Section 1.1.3 IT Operational Plan and NOS's Strategic Goals

The NOS IT Operational Plan maps the data, application and infrastructure requirements for NOS to attain its strategic goals. NOS personnel require robust database management environments to store environmental and mapping data for analysis, chart production and tool development. NOS uses the Internet to disseminate data and products to its wide variety of customers. NOS also performs research on a variety of subjects ranging from endangered species management to vertical datum corrections.

The Plan guides NOS to ensure that secure IT resources are available for NOS personnel to perform their duties toward achieving these goals:

Goal 1: Protecting, Restoring and Managing Resources

NOS monitors and observes changes in coastal areas. NOS scientists assess conditions and attempt to predict the potential impacts of multiple stressors on these sensitive environments.

NOS scientists conduct research into the environmental stressors that affect marine mammals and other protected species and help to predict the types of risks that these

species face. NOS scientists develop tools and techniques that may help restore the populations of protected species to healthy levels, and work to manage protected species in the Great Lakes, oceans, estuaries, and national marine sanctuary waters.

NOS scientists monitor fisheries management techniques to determine their effectiveness and long-term viability, and support research on restoration techniques and tools.

Goal 2: Understanding Climate Change and Variability

NOS is responsible for providing information and tools to help measure and predict the impacts of climate change on the nation's oceans, coasts and Great Lakes.
NOS scientists also are concerned with changes in precipitation and freshwater flow and changes in ocean temperature and carbon dioxide levels, which have been shown to affect ecosystems.

Using this information helps NOS predict possible future changes that may adversely affect communities situated near the oceans, coasts and Great Lakes.

Goal 3: Fulfilling Weather and Water Information Needs

NOS collects and distributes many types of water-related information, including hydrographic survey data. It also collects tide and water level data through the Physical Oceanographic Real-Time System (PORTS) and the National Water Level Observation Network. Using these data, NOS endeavors to understand the relationships between weather, coastal communities and the ecosystems that support them. NOS scientists develop coastal, bay and harbor circulation models that demonstrate water level changes, subsidence, water currents, temperature and salinity. These models help them forecast the potential impacts of storm events. Thus, NOS provides federal, state and local decision makers with educational materials, tools and financial assistance so that they can plan and prepare for hazards.

Goal 4: Supporting Commerce and Transportation

NOS uses advanced technology to collect hydrographic and shoreline data, and to monitor tides and water levels to ensure safe and efficient marine transportation. Other products and services, including electronic navigational charts, PORTS information, and access to geographic positioning system data, improve the accuracy of vessel movement and precise positioning. NOS's products and services are critical to ensuring that the nation's marine transportation system, which is expected to grow exponentially over the next 20 years, will be able to handle additional commerce.
NOS also supports research and the development of new tools that will allow its constituents to make informed decisions about navigation, port security and coastal resource management. NOS products and services help guide dredging projects, construction of waterfront facilities, and conversion of portside brownfields into productive port facilities.

Cross-cutting Priorities

Integrated Global Environmental Observation and Data Management System: NOS will work to integrate its observation and data management systems into a single NOS Internet portal that will in turn be integrated into a common NOAA architecture. To promote national and international cooperation, NOS will continue to work with other agencies and its international counterparts to collect hydrographic, geodetic and water level information. NOS also will work with the interagency National Ocean Research Leadership Council and the Ocean.US office to foster regional collaborations for observing coastal conditions.

Environmental Literacy, Outreach and Education: NOS and NOAA will place additional emphasis on enhancing public understanding of the nation's oceans and coasts. NOS will develop and implement more effective educational programs and tools for coastal managers and local decision makers that aim to facilitate more environmentally sustainable management.

Sound, State-of-the-art Research: NOS will further NOAA's goal to produce excellent research by supporting short- and long-term research that aims to understand and predict the effects of natural and human-caused stresses on our coastal resources.
International Cooperation and Collaboration: NOS works with several international partners on cross-boundary, marine conservation policy issues that affect the world's marine and coastal environments and mapping and charting efforts.

Homeland Security: To support the nation's homeland security efforts, NOS provides hazardous material trajectory forecasts, chemical dispersion models and chemical threat analyses to emergency managers and first responders. NOS also plans to extend its PORTS program, allowing more harbors to provide near-real-time water level, tidal and current data. Finally, NOS will continue to create more electronic navigational charts and chart corrections that will help ensure safe maritime commerce operations, even during times of possible disruptions or security concerns.

Organizational Excellence: NOS remains committed to ensuring a skilled and able workforce, and it will continue to recruit and retain quality workers. In addition, NOS plans to implement improved Internet portals to NOS information, a user-friendly online grants application system, and a consistent method through which constituents can provide feedback. In support of NOAA's commitment to organizational excellence, NOS will strive to improve agency performance and accountability.

1.1.4 National Weather Service (NWS)

The NWS Corporate Board reviews all NWS initiatives. As a part of this process the NWS CIO ensures applicable criteria are applied to IT projects and expenditures for evaluation. The CIO's membership on the Corporate Board allows him/her to meet DOC and NOAA expectations and guidance on all aspects of IT request. The NWS CIO utilizes the existing reporting mechanisms of the annual Operating IT Plan and OMB A-11 Exhibits 53 and Exhibit 300 to manage, review

and meet expectations on IT planning and expenditures from base and project accounts (i.e. not new money).

The NWS CIO is also a member of the NWS Executive Committee, the Science & Technology Committee, the Operations Committee and the Financial Investment Review Committee. The Operations Committee of the Corporate Board addresses operations issues whereas the Science & Technology Committee of the Corporate Board addresses current trends of science and technology.

The NWS CIO "Posse" was chartered in 2001 by the Assistant Administrator, NWS, as a policy making body with regard to the management and operation of Information Technology Systems within the NWS. The NWS CIO is the Chairperson of the CIO-Posse comprised of designated senior managers from the regional offices and headquarters office. In this way the CIO oversees and coordinates the IT activities of NWS.

The NWS CIO meets with the Posse on a regular basis to address critical IT issues and/or concerns. The Posse, working with the NWS CIO, coordinates coherent national-scope technical policies and guidelines, develops IT policies, offers advice, make recommendations, and provides overall feedback from the field to the CIO regarding the management and operation of the IT systems and resources of NWS.

In the Alaska Region (AR), the Deputy Director and Chief of the Systems Operations Division serve as members on the NWS "CIO POSSE." The AR POSSE members communicate on a regular basis with the AR Director and have the authority to represent the interests of the region regarding development, coordination and application of IT policies. As such, they serve as advocates and implementers of adopted NWS IT policy within the region.

In the Eastern Region, the Deputy Director as the NWS "CIO POSSE" member and Deputy CIO, matrix manages the Eastern Region Headquarters (ERH) personnel, who adjudicate DOC/NOAA/NWS, IT policy, directives, and coordination of IT initiatives throughout the Region. In addition, regional headquarters personnel perform all WAN (ERNet), Web Farm (ERWeb), LAN, and AWIPS (ERH) Systems Administration, design, develop and implement administrative/support for all IT systems and networks that are not nationally program managed. They also perform IT & Physical Security systems management, Enterprise Architecture management of regional systems/assets and all procurement of IT systems and equipment, not nationally funded or procured (e.g. technology upgrades, replacement enhancement and life cycle support), in accordance with DOC/NOAA/NWS, IT Restructuring directives.

In the Southern Region, the Deputy Director as the NWS "CIO POSSE" member has established an advisory team called the Information Technology Leadership Team (ITLT). This group is made up of the chiefs from each division within the Southern Region, and is responsible for setting, directing and prioritizing the Regions IT agenda. The ITLT meets on a regular basis to discuss and make recommendations concerning IT issues and agenda items for and from the CIO Posse meetings. Also, the Deputy Director has established within the Southern Region Headquarters Administrative Support Division procedures to control and track all IT

procurement to make sure that proper approvals are documented from the local office to the NWS OCIO.

1.1.5 Office of Oceanic and Atmospheric Research (OAR)

The NOAA Research CIO Office, after the official approval by Congress of the Department Information Technology (IT) Restructuring Plan, developed its IT Restructuring Plan in August, 2001. The heart of the proposal was the establishment of a "virtual" CIO organization which includes a Senior IT Manager from each lab and the Office of Global Programs, and the implementation of an IT procurement review and approval process for proposed IT acquisition plans for products and services. NOAA Research completed the implementation of the CIO virtual organization during FY 2002.

NOAA Research CIO Office – The CIO Office is responsible for oversight and coordination of all aspects of information technology management within NOAA Research. This oversight and coordination includes IT planning, investment management, IT security, IT architecture, and policy development between Departmental, NOAA, and the NOAA Research Laboratories and Program Offices, and Headquarters.

At a top management level, the NOAA Research CIO is a member of the NOAA CIO Council and DOC CIO Council, and is the IT focal point for the NOAA Climate Strategic Goal Team in support of NOAA's FY2007 Program Planning, Budget, and Execution System.

The CIO staff participates in NOAA-wide meetings, working groups and committees such as the NOAA Enterprise IT Architecture Working Group, the NOAA IT Security Committee, the Messaging Operations Center and Network Operations Center, the NOAA PKI working group, the Message Configuration Board, and the Grants Online Steering Committee. The CIO staff office responds to OMB, Departmental and NOAA CIO data calls and information dissemination, draft policy, and works with NOAA's CIO Office on NOAA-wide IT priorities such as enterprise software procurements, NOAA-wide IT services, and IT training. The CIO is also responsible for the NOAA Research Headquarters' Information Management Division (IMD), which provides computer services to more than 150 NOAA Research staff members.

Because of the geographical distribution of NOAA Research's organizational units, the CIO manages her responsibilities through her Senior IT Managers by evaluating a performance element in their Annual Performance Plans. The following table illustrates those areas of responsibility.

Function	Senior IT Manager	Comments
IT Policy and Procedures	Nancy Huang, CIO	In collaboration with the IT Board
IT Security	CIO, Senior IT Managers, ITSOs, and ISSOs	In collaboration with the NOAA IT Security Office
IT Planning	Nancy Huang, CIO	In collaboration with the IT Board
IT Capital Management and Review	Nancy Huang, CIO	In collaboration with the IT Board
IT Architecture	CIO, Joan Brundage, AL Rich Beeler, ETL	These Senior IT Managers are the Chief IT Architects

IT Infrastructure Support (LAN, network operations, email, etc.)	CIO, Senior IT Managers	In collaboration with the NOAA Messaging Configuration Board (MCB)
Telecommunications Networks	CIO, Senior IT Managers	In collaboration with the NOAA IT Operations Office
Website Support	CIO, Senior IT Managers	In collaboration with the NOAA Research Web Advisory Working Group
IT Procurement	CIO, Senior IT Managers	In collaboration with the NOAA Acquisition and Grants Office

NOAA Research IT Board – The IT Board was established in October 2000 in order to maximize limited IT resources across the organization and to ensure compliance with Federal, Departmental, and NOAA regulations and guidelines. The Board serves as the capital planning and review board on IT investments. Additionally, the Board serves as an advisory body to the CIO on all IT related activities, including NOAA Research-wide information management direction, strategy, policy, guidelines and best practices. The Board is chaired by the CIO, and consists of three members selected by the Technical Committee on Computing Resources (TCCR) and four members appointed by the CIO to ensure that it reflects the diversity and complexity of NOAA Research as a Research organization.

Laboratory and Program Office Senior IT Managers – Each research lab and the Office of Global Programs have designated Senior IT Managers who report directly to their respective Directors and/or Deputy Directors. Each Senior IT Manager's performance plan includes a critical IT management element, which is evaluated jointly by the Senior IT Manager's supervisor and the CIO. The Senior IT Managers have oversight responsibility for centralized IT activities, including strategic planning, IT operations and IT security. Many of the Senior IT Managers have historically been very active participants in NOAA-wide IT programs, including High Performance Computing and Communications (HPCC).

Laboratory/Program Office	Location	Senior IT Manager
CIO's Office/IMD	Silver Spring, MD	Nancy Huang, CIO
Aeronomy Laboratory	Boulder, CO	Joan Brundage
Air Resources Laboratory	Silver Spring, MD	Richard Artz
Atlantic Oceanographic& Meteorological Laboratory	Miami, FL	Robert Kohler
Climate Diagnostics Center	Boulder, CO	Nick Wilde
Climate Monitoring & Diagnostics Lab	Boulder, CO	Kirk Thoning
Environmental Technology Laboratory	Boulder, CO	Rich Beeler
Forecast Systems Laboratory	Boulder, CO	Peter Mandics
Geophysical Fluid Dynamics Laboratory	Princeton, NJ	John Sheldon
Great Lakes Environmental Research Laboratory	Ann Arbor, MI	John Fenton
National Severe Storms Laboratory	Norman, OK	Kevin Kelleher
Pacific Marine Environmental Laboratory	Seattle, WA	Nancy Soreide
Office of Global Programs	Silver Spring, MD	Warren Keenan

The CIO also serves as the Director of NOAA Research Headquarters' Information Management Division/Computer Services responsible for all IT related activities for all NOAA Research Headquarters Program Offices.

NOAA Research Centers of Excellence – To fully utilize existing talent and expertise in the field, the CIO has identified "centers of excellence" in different Labs to leverage their unique strengths. For example, the Pacific Marine Environmental Lab was selected to develop NOAA Research's administrative systems because of its experience and skill in this area. Similarly, the National Severe Storms Laboratory was asked to design and support NOAA Research's Internet website, and the Geophysical Fluid Dynamics Laboratory and the Forecast Systems Laboratory are NOAA Research centers of excellence in high performance computing.

NOAA Research Technical Committee for Computing Resources (TCCR) – This group is highly technically oriented, and is composed of senior technical personnel from each Laboratory and the Office of Global Programs. The group works together to solve mutual problems, identify best practices, share new technology information, and assist with advice and ideas for individual Laboratory problems and issues. The Chair of the group is elected by the TCCR biannually and the position rotates across the Laboratories. The group meets every 9 months face-to-face. The TCCR:

- advises the Chief Information Officer and other NOAA Research upper Management representatives on issues of common and individual concern to NOAA Research laboratories and Program Offices in the areas of computing and network resources;
- exchanges technical information between the computer management staff of the different laboratories on problems, solutions and ideas of mutual interest;
- keeps the individual laboratory directors well informed on matters under consideration by the committee;
- assists in the development of an overall NOAA Research computing and network strategy;
- promotes cooperative computing efforts and initiatives within NOAA Research; and,
- enhances institutional memory of NOAA Research computing and network policies.

1.1.6 Office of Marine and Aviation Operations (NMAO)

At NMAO Headquarters, Silver Spring, MD, the NMAO CIO reports to the Deputy Director, NMAO. The NMAO CIO provides direction and guidance to each NMAO Center's MIS Coordinators across the nation. The NMAO CIO and the Centers' MIS Coordinators have collateral duties of IT Security Officer, IRM Plans/Reports/Studies, user help and system hardware and software support. In accordance with the NOAA IT Restructuring Plan, the NMAO CIO also reports to the NOAA CIO. The NMAO CIO is a member of the senior management team. The Deputy Director evaluates the CIO's performance in consultation with the NOAA CIO. The NMAO CIO officially represents the NMAO's IT activities and interests in interactions with NOAA and other organizations outside NMAO.

1.1.7 Office of Chief Information Officer (OCIO)

The NOAA OCIO Organization is comprised of the following offices:

- IT Policy, Planning, and Analysis Office
- IT Operations Office
- IT Security Office

- High Performance Computing and Communications.

The Policy, Planning and Analysis Office provides policy guidance for planning, developing, and implementing NOAA Information Technology (IT) resources. The Office oversees IT strategic and operational planning. The Office coordinates the development of IT architectures and the development and use of IT standards, including those relating to telecommunications and office automation. The Office provides assistance to NOAA Line and Staff Offices in business process re-engineering and in conducting cost benefit analyses associated with IT initiatives, and is responsible for NOAA IT accessibility and IT training support and for the development of NOAA-wide contractual arrangements that support acquisition of widely used computer and networking hardware, software, and services.

Electronic Commerce/IT Acquisitions - NOAA is committed to promoting electronic business practices. This site provides links to electronic acquisition programs like NITES (NOAA IT Electronic Store), to electronic forms that assist in improving the administrative work flow, and to government-wide efforts to provide better services to the public electronically.

The Government Paperwork Elimination Act (GPEA) requires when agencies require persons to submit information to the government, or maintain information, they must give those persons the option to submit or maintain that information electronically when practicable. It also seeks to make transactions within the government electronic. The linked page provides complete guidance on the Act, copies of plans submitted, and other related information.

Information Quality - In response to Section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001 (Public Law 106-554), and to guidelines issued by the Office of Management and Budget, NOAA has issued Information Quality Guidelines for ensuring and maximizing the quality, objectivity, utility, and integrity of information which it disseminates. The NOAA guidelines also establish an administrative mechanism allowing affected persons to seek and obtain correction of information that does not comply with applicable guidelines.

IT Accessibility - Agencies are required to provide access to and use of their electronic and information technology (EIT) by individuals with disabilities. The linked site provides guidance on these requirements. For information to assist you when you are ready to make a procurement of Electronic Information Technology (EIT) products and services, visit the NOAA Acquisition Management Division Section 508 accessibility web site.

Enterprise IT Architecture and Standards- Agencies are required to have an enterprise IT Architecture. The linked site provides information on NOAA's architecture activities and products, but the site is password-protected at this time.

IT Planning and Budget - NOAA has various mechanisms for planning for IT investments and makes a number of submissions of IT-related documents. The former

includes the CIO Council, the IT Architecture process, and telecommunications policies; and the latter includes Strategic and Operational IT Plans, and OMB Exhibits 53 and 300. The linked page deals with or links to these subject areas and an IT planning library.

Laws, Regulations, Policy, and Guidance

The Paperwork Reduction Act (PRA) of 1995 requires that agencies obtain Office of Management and Budget approval before requesting most types of information from the public. The linked page provides complete guidance on the Act, procedures and forms for requesting PRA clearance, status reports, and a range of other related information.

The IT Operations Office provides selected NOAA-wide operational services through the development and operation of NOAA network and electronic mail technical management centers and NOAA enterprise-wide Internet servers. The Office oversees the operation of NOAA Internet Web servers, including their configuration so as to provide the best possible support for users at minimum cost and the establishment and operation of mirror servers that help assure good performance and availability to users. This oversight is carried out through coordination with NOAA Line and Staff Offices, direct operation of servers, and through coordination of arrangements for use of non-NOAA servers to host NOAA Web sites. The Office manages selected NOAA-wide networks, telecommunications services, and network-enabled services, including electronic mail and directory services and NOAA-wide inter-regional network management, such as setup of routing protocols and parameters and operation of NOAA's Internet Domain Name Service. The Office manages NOAA-wide telecommunications services, such as the FTS2001 and WITS, telecommunications support for NOAA for the Washington Metropolitan Area, and coordination of telecommunications and networking operations across all of NOAA.

IT Security Program Office is responsible for managing NOAA's IT Security Program. NOAA has established and implemented an IT Security Program which provides reasonable and acceptable assurance that IT systems are performing as specified; that information is provided adequate protection; that data and software integrity is maintained; and, that unplanned disruptions of processing will not seriously impact mission accomplishment.

The NOAA IT Security Program implements policies, standards, and procedures which are consistent with government-wide laws and regulations, to assure an adequate level of protection for IT systems whether maintained in-house or commercially. The "Computer Security Act of 1987," Public Law 100-235 and Office of Management and Budget (OMB) Circular A-130 require all federal agencies to plan for the security of all IT systems throughout their life cycle. OMB Circular A-130 also establishes a minimum set of controls to be included in Federal IT security programs. The circular directs agencies to assure:

- That IT systems operate effectively and accurately;
- That there are appropriate technical, personnel, administrative, physical, environmental, and telecommunications safeguards in IT systems;
- That the continuity of the operations of IT systems that support critical agency functions is preserved.

The Government Information Security Reform Act (GISRA), Title X, subtitle G, of P.L. 106-398, addresses the program management and evaluation aspects of IT security.

NOAA IT Security Program policies represent management's commitment to assuring confidentiality, integrity, availability and control of NOAA's IT resources.

NOAA established a formal incident response capability named the NOAA Computer Incident Response Team (N-CIRT) in 1999. The N-CIRT operational duties include incident response, sharing of common vulnerabilities to the NOAA community, training on proper configurations for security, etc. The N-CIRT coordinates incident responses and is responsible for acting as a source of expertise and information regarding vulnerabilities and responses as pertains to the NOAA environment.

The High Performance Computing and Communications (HPCC) Office provides NOAA-level management, coordination, and integration of NOAA's Information Technology Research and Development and the High Performance Computing and Communications Program. HPCC funded projects include the following:

- High-end Computing - Expediting improved weather and climate models.
- Internet and Web Support - Using advanced networking technologies to enhance NOAA data collection and dissemination to the Public.
- Next Generation Internet (NGI) - Using advanced networking technologies to enhance NOAA data collection and dissemination.
- Disaster Planning, Response, Recovery and Mitigation - Exploring advanced wireless and information technologies to provide near-real time support for disaster planning, response, recovery and mitigation.
- Scientific Visualization - Using advanced visualization technologies to increase understanding of NOAA research.
- Collaboration & Intelligent Agents - Providing NOAA researchers with seamless technologies to collaborate with colleaques around NOAA, the university community and the world.
- Digital Libraries - Developing advanced methods of cataloging, searching, viewing and retrieving NOAA data distributed across the web.

1.1.8 Office of NOAA Finance and Administration (NFA)

NOAA’s Finance and Administration organization (NFA) provides the operational foundation that enables the fulfillment of NOAA’s strategic mission to describe and predict changes in the Earth’s environment and to conserve and wisely manage the Nation’s coastal and marine resources. Specifically, NFA provides the administrative, financial, and infrastructure business services that are essential to achieving the mission of all NOAA offices. NFA also provides support to non-NOAA entities, including many Department of Commerce facilities in the field. Both internal and external support is provided by headquarters offices in the Washington, D.C. area and in the four regional Administrative Support Centers (ASCs) in Seattle, Norfolk, Kansas City, and Boulder.

NFA provides a full range of diverse administrative services including procurement, grants, human resources, administrative payments, facilities maintenance/construction, and administrative and financial information technology systems. Information technology supports all of the services offered. The critical importance of these contributions to the NOAA mission are clearly recognized in NOAA's Strategic Plan in the Supporting and Enhancing NOAA's Mission Goal.

The NOAA Finance and Administration Information Technology (IT) management structure complies with the Secretary of Commerce directive on IT restructuring. The Information Systems Management Office, headed by the Chief Information Officer, implements the provisions of the Clinger-Cohen Act of 1996, the Paperwork Reduction Act and other laws and directives regarding the acquisition, management, and use of IT. The NFA CIO Office coordinates all IT activities of NFA internally and with both the NOAA CIO and the NOAA Line and Staff offices.

The CIO is responsible for improving the management of IT on an NFA-wide basis and enabling the comprehensive management of NFA's IT resources. This is accomplished through the following activities:

- Strategic Plan Commitment
- Operational IT Plan Development and Use
- Investment Management Process
- Enterprise IT Architecture Development
- Planned IT Improvements
- IT Security Program
- Milestone Tracking
- Performance Measure Tracking

1.2 A description of your operating unit's investment management process (selection, control, evaluation) and progress in meeting the objectives of the IT maturity models for IT planning and investment review, architecture, and security.

1.2.0 Introduction

A description of NOAA's investment management processes is described in the subsections below. IT maturity models for IT planning and investment review, architecture, and security were submitted to the Department of Commerce OCIO in August FY 2004. It is NOAA's intent to continuously improve our Maturity Scores as we gain more experience in each of these crucial IT areas. The FY 2004 NOAA Enterprise IT Architecture Capability Maturity Scorecard is included as Appendix A.

1.2.1 National Environmental Satellite, Data, and Information Service (NESDIS)

The CIO approves all IT resource plans within NESDIS and is involved in the organization's IT life-cycle planning effort. The life-cycle planning effort is coordinated with the CIO and CFO,

and is vetted through the Information Technology Architecture Team (ITAT) and the NESDIS Executive Board (NEB) during the formulation phase and prior to the execution year. The resulting five-year strategic planning document includes all elements/domains of the IT architecture. Significant capital asset investments are reviewed and approved by the CIO to ensure they are in accordance with applicable reference models and consistent with the overall strategy of the NESDIS planning effort.

The OCIO uses the ITAT as the forum for the exchange of ideas on cross-organizational programs and for the discussion of systems management policy and subsequent approval recommendations prior to implementation. The NEB acts as the NESDIS IT Review Board and also addresses matters relating to the NESDIS business processes, as well as ensuring coordination and consistency with DOC and NOAA policy and guidelines. The NEB Chair is the NESDIS DAA.

Investments below $2.5M may be reviewed and approved internally by the CIO. If the total cost of the investment exceeds the current approval threshold ($10M for NESDIS), it is required to be sent to the DOC CIO's office for review and approval.

NOAA National Data Center IT Management Process

The IT management process begins with the gathering and analysis of requirements. The analysis involves systems support personnel recommending software and/or hardware solutions. The recommended solutions are reviewed for compliance with governing directives such as Section 508, NESDIS Technical Reference Model (TRM), and the NESDIS IT Architecture Plan.

A program manager signature is required prior to funding IT purchases for major projects such as Climate Database Modernization Program (CDMP), High Performance Computing and Communications (HPCC) Program , Comprehensive Large Array-data Stewardship System (CLASS), National Virtual Data System (NVDS), and Environmental Services Data and Information Management (ESDIM). IT purchases, not associated with one of the identified major projects, follow the capital asset planning process, and are incorporated into the NOAA National Data Centers (NNDC) Exhibit 300 and updated yearly at a minimum.

NESDIS Offices and Centers participate in NOAA-wide site licensing for productivity software. In addition, NOAA-wide contracts, such as NITES, are queried for product availability. If products are not available on a NOAA-wide contract, other existing government contracts are reviewed for product availability. Sole source purchases are made only when no other option is available.

All NESDIS Offices and Centers support the Information Technology Advisory Team (ITAT) by attending meetings, participating in system reviews, and providing representation on all ITAT special teams. IT support comes from integrated teams consisting of federal and contractor employees. Additionally, IT planning and major IT procurements undergo an internal review to ensure that best business practices are factored into the decision process in each Office/Center prior to evaluation by the ITAT.

1.2.2 National Marine Fisheries Service (NMFS)

CIO and NIMB serve as the IT Review Board (ITRB) for enterprise-wide IT investments. The CIO and the HIMCC serve as the ITRB for Headquarters. Similar structures exist within the Regional Offices. These bodies select, control and evaluate IT projects at their respective levels in the organization. The CIO/NIMB, for instance, identifies general strategic objectives or themes at the enterprise level, and solicits projects that are rated, ranked, and selected by the Board. Throughout their lifecycles, these projects are monitored by the CIO and NIMB using a variety of metrics and governance tools, such as the IT architecture, NOAA Fisheries systems development and project management standards, IT policies as well as the timely delivery of the products. As projects go off track, they are realigned or cancelled as deemed appropriate by the Board.

In addition to NMFS review, all appropriate investments are presented to the NOAA ITRB.

1.2.3 NOAA Ocean Service (NOS)

NOS programs are primarily steady state and do little development therefore operational analysis is used. For those projects that do perform development, performance based measures are used to manage the systems and an earned value management analysis is done on a regular basis.

In an operational analysis, management takes the following steps in response to significant variances in the program: (1) An analysis of the budget and performance level variances are conducted by program manager(s) and budget control staff of CO-OPS. This analysis provides the stimulus for management action. Significant variances are defined here as those that would keep the project from returning to the plan if not addressed and mitigated. Thresholds of +-10% variance from the planned and reported budget and/or performance levels are used. Other project data are employed as well to support the analysis; (2) although all causes of the variances revealed in the analysis are addressed, technical issues may cause unfavorable cost or schedule conditions. There is a close relationship between technical achievement and its impact on cost and schedule. If technical deficiencies are found, alternatives for corrective action are considered including but not limited to redesign, scrap and remake, rework, etc. When considering these alternatives, the impact on cost and schedule would be weighed in addition to the technical considerations. After an alternative is selected, it may become necessary for the project schedule to be changed. In some cases the program office management in conjunction with the project manager may choose to provide additional money to the project. Ultimately, the cost/benefit and price /performance factors will weigh heavily in the decision making process to select the best response to any variance. The program is monitored regularly, any and all variances are analyzed, and the program office remains vigilant in refusing to address variances by simply increasing the budget, assigning more staff or extending the schedule.

The NOS IT Review Board (ITRB) is the vehicle for ensuring that IT purchasing and implementation follows good management practices, is done in accordance with Federal, DOC, NOAA and NOS policies, and follows the office, NOS, and NOAA IT Architectures.

The ITRB is specifically responsible for:

1. Review of the IT component of the planning year (current year +2) budget initiatives.
2. Review of the IT component of the budget year (current year +1) budget initiatives.
3. Review of the current year IT operational plans.
4. Review of the NOS IT Architecture annual submission.
5. Other topical IT issues as they arise.

Under the Information Management Restructuring Plan the NOS CIO must review and approve any IT purchases greater than $25,000. Each NOS program office may obtain the authority to purchase up to $100,000 without CIO approval if they establish IT planning and procurement management processes outlined below. The procurement policy supports the vision of the program office and long-term planning using IT Architecture and sound management practices.

Procurement policy directives

1. Each program office will create an IT Review Board (ITRB) lead by the Deputy Director and consisting of managers and IT professionals to oversee IT planning, procurement, implementation and evaluation.
2. The program office ITRB will develop and use an IT Architecture that charts the future of IT within the office.
3. The program office ITRB will establish an internal IT planning and procurement review process

Responsibilities:

The NOS CIO is responsible for coordinating the implementation of this policy.

The NOS CIO will review program office processes and grant delegations of procurement authority to offices that have properly established IT Architectures, planning, and procurement processes.

The members of the NOS IT Review Board are responsible for implementing this policy in their program offices. Supporting documentation for each section of the policy must be maintained on file and forwarded to the NOS CIO as requested:

1. ITRB administrative documents (charter, membership, meeting schedules and minutes)
   Project priority, implementation plans, milestones, evaluations

2. IT architecture baseline inventories of hardware, software, data and mission work flow
   Target architecture
   Gap analysis
   Migration Plan
   IT Operational Plan: target accomplishments and detailed expenditure plan for next FY

3. List of approving officials
   Software license tracking system

IT procurement log
"Buy list"

1.2.4 National Weather Service (NWS)

The NWS IT Enterprise Architecture Program addresses the relationships between the NWS strategic plan and the Business, Information, Application and Technical Architectures of the NWS. The plan provides the necessary flexibility for NWS programs to leverage rapid change in the IT industry and in business practices. It reflects all standards and policies that are used to govern the procedures and practices of the NWS.

This Program is vital in the role of IT Management. As part of the NWS initiatives approval process, all IT initiatives must be in compliance with the NWS IT Enterprise Architecture.

The NWS has established an NWS Enterprise Architecture Review Board (EARB). The EARB serves as the authority for approving and adopting policies and standards guiding the acquisition and deployment of IT solutions to meet the NWS mission needs.

The EARB provides the leadership and guidance for information technology (IT) decisions and strategic policy, and standards for leveraging information systems resources to achieve mission goals. The EARB also serves as the Configuration Control Board (CCB) for the Information Technology Enterprise Architecture.

The NWS Regions in compliance with the NWS CIO POSSE Delegation of Authority, align their IT investment management process accordingly to ensure that all IT planning, investment, architecture and security are thereby consistent with the NOAA/NWS policies and guidance.

1.2.5 Office of Oceanic and Atmospheric Research (OAR)

1.2.5.1 IT Maturity Model: IT Planning and Investment Review

The CIO is directly involved in all IT intensive initiatives, such as the high performance computing initiatives. In addition, the CIO works closely with the Office of Scientific Support, to ensure that investments are aligned with NOAA Research and NOAA strategic goals.

IT intensive initiatives are reviewed by the NOAA Research IT Board, then are shepherded through the NOAA IT Review Board and finally, to the Department IT Review Board, as required. IT procurement actions of more than $2.5M are reviewed by the IT Board. If appropriate, review by the Senior Research Council is initiated.

Recognizing the critical link between program authority and budgetary responsibility and the diverse programmatic goals of the Labs and Program Offices, the CIO delegated IT procurement authority up to $2.5M to the Lab/Program Director and his or her respective IT program managers. In return, the CIO requires that each lab establish an IT procurement review and approval process. FY2004 procurements greater than $25K were reviewed and analyzed with the following findings:

Equipment – Most of the IT equipment purchased by the labs does not exceed a $25K threshold. By consolidating procurement actions, resources in both the lab and the servicing procurement office are efficiently utilized. For example, an FSL procurement which demonstrates a high level of coordination for these types of purchases, both on the planning side, since it was initiated out of an HPCC Network Working Group funded proposal, and the procurement process, by consolidating the
order for networking equipment needed by other NOAA organizations using FSL as a "centralized" way of processing the procurement action.

Maintenance and Support Services Contracting – NOAA Research uses a variety of contracting vehicles, including the GSA schedule and the Department's COMMITS GWAC. NSSL's COMMITS contract demonstrates flexibility in that it is task order based. Since the initial award, a number of additional task orders have been issued, without the added burden of processing amendments to the existing contract or awarding additional small contracts. NOAA Research Headquarters used the GSA Federal Supply Service schedule to award two task order based contracts to meet requirements in the NOAA Research Grants Administration Offices, technical support for NOAA Research Headquarters and the NOAA CIO Office HPCC Program Office, and GFDL's consulting services. Based on the demonstrated success of these types of contracts, the NOAA Research CIO Office plans to use the Department's NEXGEN when it is awarded to establish a contract that can be used by all of NOAA Research's labs and Program Offices.

Software Licensing – NOAA Research has taken a proactive approach to ensuring that COTS software used throughout the labs and across NOAA (and even the Department) is purchased at a corporate level. In FY2004, two new contracts were negotiated, one with RedHat and the other with Microsoft, with NOAA Research taking the lead in the procurement action. Targeting long-term IT planning, cost savings, and vendor partnerships as objectives, these contracts provide NOAA streamlined ways of doing business.

Other COTS software contracts include IDL (Research Systems, Inc.) used by both NESDIS and NOAA Research, as well as other NITES Program BPAs and Contracts for Macromedia, Adobe, Winzip, McAfee, and Computas software products. Because the NITES BPAs and contracts allow for single purchases and license renewals that can be acquired using a Government purchase card, these procurement actions are well below the $25K threshold.

All IT investment and procurement actions are analyzed for compliance with the NOAA Research IT Architecture, and with Section 508 of the American Disabilities Act.

The labs have implemented IT Investment Management Processes, incorporating the characteristics of the Department's IT Planning and Investment Review Maturity Model at the organizational level. For example, NOAA Research High Performance Computing Systems, located at the Forecast Systems Laboratory and Geophysical Fluid Dynamics Laboratory, were each acquired using the CONOPS (Concept of Operations) process. This re-engineered process, developed by the Department of Commerce, streamlines and simplifies the procurement process of major systems, and was used successfully for the acquisition of three high performance computing systems in procurements that were carried out in NOAA by FSL, GFDL, and NCEP.

All parties have benefited from the experience gained by including key personnel from their organizations in these procurements.

1.2.5.2 IT Maturity Model IT Architecture

The OAR IT Architecture Capability Maturity Model Assessment was submitted in August 2004.

1.2.5.3 IT Maturity Model: IT Security

This submission is provided at the NOAA level by the NOAA IT Security Office.

1.2.6 Office of Marine and Aviation Operations (NMAO)

All NMAO IT investments are part of greater NMAO programs and projects. NMAO programs and projects follow routine program procedures for identification of requirements, identification and selection of alternatives, implementation management and evaluation. NMAO has the goals for FY05 of a Capability Maturity Model Level 3 for IT planning, investment review and security.

1.2.7 Office of Chief Information Officer (OCIO)

The NOAA CIO Council advances the management and utilization of information technology (IT) to achieve NOAA corporate goals and objectives. The CIO Council accomplishes this by establishing enterprise wide IT policies, procedures, standards, and practices. Best practices promulgated by DOC, OMB, and the Federal CIO Council are coordinated and integrated by the Council. In addition, the CIO Council oversees NOAA wide IT projects and operations which are funded via organizational cost distribution and other projects as tasked by the NOAA CIO, or NOAA management. The Council approves and prioritizes the NOAA OCIO budget including projects and services supported by NOAA corporate funds.

The NOAA CIO Council strives for consensus on every issue. The chair maintains 51% of the vote; therefore the final decision is made by the Chair when consensus is not achieved. Issues where consensus is not achieved can be elevated to the NOAA Executive Panel (NEP) through a NEP member. Requirements Drivers for the NOAA CIO Council are as follows:

- Capital Planning requirements of the Clinger-Cohen Act, OMB, and the Department.
- IT Architecture requirements of the Clinger-Cohen Act, OMB, and the Department.
- NOAA Strategic Plan direction to maintain and improve its technology infrastructure in order to enhance its scientific productivity through seamless sets of observational and forecast products, advanced high-bandwidth networks, super-computing capabilities, and support for increasingly flexible sources for the delivery of information.
- NOAA's Program Review recommendations on improvement of IT in NOAA.

The NOAA IT Review Board (NITRB) prescribes policy and responsibilities for NOAA's information technology (IT) capital planning and investment control process. The NITRB acts as

an advisory board for NOAA management on critical IT matters. The NITRB ensures that proposed investments contribute to NOAA's strategic vision and mission, employ sound IT investment methodologies, comply with NOAA systems architectures, and provide the highest return on the investment with acceptable project risk. Establishment of the NITRB supports IT management improvement goals of the Clinger-Cohen Act of 1996 (CCA), the Paperwork Reduction Act of 1995 (PRA), and related implementing regulations and guidance.

The NITRB provides for coordinated risk management, review, and advice to NOAA management regarding IT investments meeting the criteria identified in section C above. This includes recommendations for approval or disapproval of funding for new or base investments. It also includes recommendations for continuation or termination of projects under development at key milestones or when they fail to meet performance, cost, or schedule criteria. The NITRB will ensure that IT investments are aligned with strategic plans, support mission requirements, 2 comply with architecture goals, minimize project risk, and demonstrate a positive return on investment. Activities of the NITRB will satisfy risk management requirements of the Clinger-Cohen Act and consider guidance from the CIO Council, Chief Financial Officers (CFO) Council, General Accounting Office, Office of Management and Budget, or other government-wide advisory bodies that address capital planning and IT investment management.

The NITRB will use uniform decision-making criteria for comparing and ranking projects. It is expected that Line Office processes for the selection, control, and evaluation of major information technology investments will generate the principal documentation for NITRB consideration. Line Offices will forward only their internally approved initiatives to the Board for review. Office of Management and Budget Capital Asset Plan and Justification documentation will provide baseline information. Program staff may be called upon as necessary to provide additional supporting documentation. The NITRB will meet regularly on a schedule that complements the planning and budget formulation processes and aligns with specific project time lines.

The evaluation process in Board meetings will follow the outline below:

1. Presentation by the project sponsors, followed immediately by a group discussion among Board members.
2. Independent evaluation and scoring by Board members.
3. Compilation of comments and scores.
4. Independent re-evaluation by Board members, if needed.
5. Group meeting to discuss the second evaluation and consensus ranking, if needed.
6. Preparation and submission of the summary assessment and any specific recommendations to the Secretary and Deputy Secretary. Other interested parties, including the project sponsors and the CIO and head of the operating unit in question, will receive copies

1.2.8 Office of NOAA Finance and Administration (NFA)

The CIO utilizes an informal IT Review Board structure and process for NFA. The IT Review Board is comprised of Business Line managers including the NFA CIO, the Division Chiefs of

the Information Systems Management Office, and the Chiefs of the Systems Divisions in the Administrative Support Centers. The IT Review Board uses the Infrastructure Target Architecture developed by the Enterprise Architecture Board to evaluate IT initiatives. The target architecture clearly identifies the preferred technical environment for financial and administrative systems. The preferred technical environment consists of standards based technology for which NFA has expertise to effectively operate, maintain and enhance. Adhering to this standard framework has reduced both initial development costs and long-term maintenance and operations costs.

1.3 An overview of your operating unit's current and planned IT architecture.

1.3.0 Introduction

The NOAA Enterprise IT Architecture is a third and fourth-tier federated Architecture. It is comprised of the following Line Office and Cross-cutting Architectures:

- National Environmental Satellite, Data, and Information Service (NESDIS)
- National Marine Fisheries Service (NMFS)
- NOAA Ocean Service (NOS)
- National Weather Service (NWS)
- Office of Oceanic and Atmospheric Research (OAR)
- Office of Marine and Aviation Operations (NMAO)
- Office of Chief Information Officer (OCIO)
- Office of NOAA Finance and Administration (NFA)
- NOAA Enterprise Network
- IT Security
- High Performance Computing.

All of NOAA's Line Office Enterprise IT Architectures are modeled in Metis as well as the High Performance Computing Architecture. The NOAA Enterprise Network and the IT Security Architectures are in the process of being modeled in Metis.

1.3.1 National Environmental Satellite, Data, and Information Service (NESDIS)

NESDIS initially defined and documented its Information Technology Architecture (ITA) in August 2001. This ITA defined the standards and guidelines to be used in the technical design of the organization's IT infrastructure. In August 2003, NESDIS updated its ITA to comply with the developing Federal Enterprise Architecture (FEA) Structure, including initial textual descriptions of the baseline architecture, target architecture, and migration strategies. In March 2004, NESDIS developed a NESDIS Enterprise Architecture model (using the Metis architecture modeling tool) which placed project initiatives within the larger context of Department of Commerce and NOAA mission goals and strategies and which also depicted the relationships between the project initiatives and the FEA Business, Service, and Technical reference models. Most recently, in September 2004, NESDIS developed an approach for integrating its ITA into the decision-making process of senior managers, including a governance plan and

communication / feedback mechanisms. It also began initial review of the new FEA Security Profile.

The NESDIS approach to its IT Architecture is consistent with the Department of Commerce approach as defined in "Overview of the IT Architecture for Office of the Secretary" (DOC, March 31, 2004). The NESDIS vision is to link the strategic plan, mission and business process to the NESDIS Enterprise Architecture and to the Capital IT Investment and Planning and Decision Making. To support this vision the NESDIS ITA:

- Identifies guiding principles
- Identifies its relationship to the FEA
- Describes its baseline architecture, target architecture, and migration plan
- Maintains an internal Technical Reference Model
- Is developing a governance and communication / feedback plan

The FY 2005 status and plans of the NESDIS ITA with respect to the above categories are summarized below.

Guiding Principles:

NESDIS has defined and adheres to several principles in defining its architecture:

- Use guidelines consistent with the Federal Information Technology Architecture (FITA)
- Maintain a strategic ITA outlook to support NOAA's IT Strategic Plan
- Support a single enterprise-wide information technology architecture which includes all IT capital assets (hardware, software, licenses, interfaces, etc.) and services existing within the boundaries of NESDIS
- Unify planning, management and governance of the ITA; establish a common vision among the IT and business components across the enterprise
- Design, develop and implement IT projects using enterprise-wide methodologies and using standardized, enterprise-wide policies, methods, tools, techniques, etc.
- Adopt open systems standards that provide the best means of developing applications such that both the design and system implementation are independent of a specific vendor's hardware or software platforms
- Manage information and data as enterprise-wide assets
- Use commercial/government off-the-shelf products instead of custom-developed software giving preference to acquiring COTS or GOTS software products

FEA Compliance:

The NESDIS ITA currently maps to the FEA Business, Service, and Technical Reference Models. It does so for each NESDIS project initiative defined by an Office of Management and Budget Exhibit 300. This information is incorporated in the NESDIS ITA in two ways: as objects / relationships in the NESDIS Metis Enterprise model and as standalone tables in spreadsheet form. The NESDIS FEA mappings are reviewed at the CIO office level at the time

of Exhibit 300 submission. Per DOC direction, care is taken to address only NESDIS-specific lines of business.

Note that notional mappings to the FEA Performance Reference Model (PRM) have also been developed even though they are not required for the current NESDIS initiatives. Standalone tables, but not Metis model entries, have been created for these.

During FY 2005, NESDIS PRM mappings will be reviewed as will compliance with the newly-released FEA Security Profile. The FEA Security Profile will require that security and privacy are integrated into the NESDIS EA process at all levels of the model.

Baseline Architecture, Target Architecture, and Migration Plans:

The NESDIS CIO office maintains the overall NESDIS ITA document. However the individual line offices and centers throughout the organization are responsible for documenting and maintaining the details of their system architecture component, and provide NESDIS OCIO any changes for inclusion into the NESDIS ITA Plan. The NESDIS IT Architecture is comprised of ten segments:

- Office of The Associate Administrator (NESDIS Headquarters)
- Office of Satellite Data Processing and Distribution (OSDPD)
- Office of Research and Applications (ORA)
- Office of Satellite Operations (OSO)
- Office of Systems Development (OSD)
- National Climatic Data Center (NCDC)
- National Geophysical Data Center (NGDC)
- National Oceanographic Data Center (NODC)
- National Coastal Data Development Center (NCDDC)
- Integrated Program Office (IPO)

Within each segment, information is structured in terms of:

- Business Processes
- Data Sets and Information Flows
- Applications and Software
- Technology

The NESDIS-specific business processes are:

- Command and Control
- Product Generation
- Access / Dissemination
- Archive Management
- Research and Development

The elements of the NESDIS ITA have not yet been included in the NESDIS Metis model. During FY 2005, a "one-pager" template summarizing the IT architecture will be developed for each NESDIS project initiative. The contents of these templates will be integrated into the NESDIS Metis Enterprise model.

NESDIS Technical Reference Model (TRM):

The current NESDIS TRM summarizes the NESDIS hardware, software, and standards at almost the inventory level, but is difficult to keep up-to-date due to limited resources. During FY 2005, NESDIS plans to restructure its TRM and update it to include information at the lower but more maintainable level of detail recommended by the DOC. NESDIS will continue to comply with the DOC and NOAA TRM.

Governance and Communication/Feedback:

As of September 2004, NESDIS began implementing practices to assure the governance and effective communication and feedback of its ITA. In addition to posting its architecture information on the Web, NESDIS plans to take the following steps in FY 2005 to better include senior management in IT decision-making and capital planning. Instituting these steps will also serve to increase NESDIS' scores on the IT Architecture Capability Maturity Model.

- One-time briefing to upper management on NESDIS IT processes, including the role of the NESDIS Information Technology Architecture Team (ITAT)
- Use of the one-pager architecture templates to support CIO participation at NOAA Executive Board meetings
- Presentations of one-pager materials at ITAT Face-to-Face meetings for discussion
- Use of the one-pagers to guide the answering of business questions as they occur.

1.3.2 National Marine Fisheries Service (NMFS)

NOAA Fisheries has developed, and is now implementing, a principles-based Enterprise Fisheries Information Technology (FIT) Architecture. The Architecture serves as an integrated framework for evolving or maintaining existing information technology and acquiring new information technology to achieve strategic goals and information resource management goals. As such it provides a foundation for the investment selection, control and evaluation process.

Developing the Architecture involved staff from all levels: HQ, Science Centers, Regional Offices; and segments of the agency - scientific research, management, administration, and IT. The staff served on many Architecture teams: the Architecture Planning Team, the Architecture Working Group (AWG), the NIMB, and four Target Architecture Teams, each coordinated by a project leader from the CIO's staff.

The Architecture Framework provides policies and guidelines for Fisheries information management operations. It has four elements. The Policies include guidelines from Fisheries, NOAA, DOC and government-wide IT-related policies. The IT Principles are a 32-point IT

constitution established by the NIMB. The Standards Profile recommends products, services, and processes within major IT categories. The Systems Development Best Practices provides guidelines, methodologies and tools for developing high quality applications while minimizing the risk of time and cost overruns.

The Fisheries Architecture process consists of seven phases:

1. Initiation and framework,
2. Baseline characterization,
3. Target Architecture,
4. Opportunity identification,
5. Migration options
6. Implementation, and
7. Administration

Following this cycle on a regular basis ensures that the Architecture components are continually kept up to date.

In FY2005 NOAA Fisheries plans to increase the Architecture Capability Maturity Model (ACMM) level from 2.8 to 30.3. This will be accomplished by increasing senior management involvement from a level 3 to level 4 and increasing the IT security from level 3 to level 4.

In FY2004 the NIMB was aware of and supported the enterprise-wide architecture process and standards. In FY 2005, we plan to have the NIMB review the architecture and variances. In FY2004 IT security was fully developed and is integrated with the Bureau's Enterprise Architecture, Enterprise -wide tools deployed, and NOAA Fisheries worked closely with the NOAA Security team. The C&As were 95% complete. In FY2005, we plan to capture performance metrics for security compliance.

1.3.3 NOAA Ocean Service (NOS)

1.3.3.1: Baseline Architecture:

NOS office networks located in the Silver Spring Metro Center (SSMC) run on the NOAA campus gigabit Ethernet backbone. Nearly all offices are behind the Trusted Campus Network (TCN) for firewall protection. The NOS/MB/IMD owns Cisco 6509 switches and in coordination with the NOAA Network Operations Center (NOC) manages the network.

Several field offices, including all of the Marine Sanctuary offices, are also behind the TCN. They connect either through T-1 lines or, in the case of the Sanctuaries, through a frame relay network. Other offices have their own firewalls for protection, several of which connect to the TCN via VPN connections.

Over 1100 NOS users are using Active Directory (AD) and are members of the NOS domain. These users are primarily in Silver Spring, but field offices in Beaufort, NC, Oxford, MD, Charleston, SC and Seattle, WA have also joined the domain. Domain controllers are managed

by the NOS CIO's office, there are four domain controllers on the SSMC campus and two in each field office.

Of those offices that have not yet migrated to AD (expected in FY05), each office runs its own LANs with assistance from the IMD and the NOC. Each office runs at least one Windows NT domain for authentication and resource sharing. Due to the varied missions of the program offices, a wide variety of server platforms exist, including Windows NT and 2000; Sun Solaris 2.6 and 8; HP Unix, SGI Ultrix, and Macintosh.

Desktop systems are 85% Windows platforms. The majority of the remaining 15% are Macintosh, with a few Unix workstations for special data processing. A FY02 policy directive from the NOS Chief Administrative Officer directs program offices to replace any non-Windows platform with a Windows platform during their normal tech refresh cycle.

With the NOAA CIO directive to use .doc format as the word processing standard, NOS is migrating toward using only Microsoft Word. At this time, because of the transition and existing legacy documents, both Corel Office and Microsoft Office suites are used. The DOC Microsoft Enterprise Licensing Agreement put in place in June 2004 allowed NOS to acquire the number of Microsoft Office licenses required to do business.

A variety of database management systems are used. Oracle and Sybase are the workhorses for the large databases in NGS and CO-OPS. Microsoft SQL Server is used in MB and NCCOS and other offices for moderate-sized database applications. A number of small database management systems, most notably Filemaker Pro, are used for small database applications that need to be developed quickly.

NOS has consolidated messaging on three email servers, the largest being in Silver Spring with 1600 users. NOS follows NOAA Enterprise Messaging System protocols with Sun Iplanet messaging software and Netscape 4.7x clients.

NOS runs a Blackberry Enterprise server which uses a Consilient server as a connection to the messaging server. NOS has 20 Blackberry users, primarily senior managers.

NOS uses the NOAA Oracle enterprise calendar. More than 50% of NOS users have accounts.

NOS has a secure public access network comprised of a Cisco PIX firewall and switch. A number of different platforms for content delivery are supported and depend on the web and database architectures of the individual program offices.

1.3.3.2: Target Architecture (further details are under Section 1.4.4: NOS Improvements)

Collaboration is frequent in NOS and many offices share all manner of resources: data, infrastructure, applications, and expertise. Offices often host applications, distribute data, or develop systems for offices that don't have the means to do so. Collaboration is a driving force behind the target IT Architecture in NOS.

The remaining NT domains will be merged into the NOS AD domain. In preparation for the migration to AD, the remaining NOS offices will be moved behind firewalls, either through the SSMC TCN via T-1 and VPN or individual firewalls. The IT Security Program will be proactive to scan all NOS networks to ensure the tightest security possible while not affecting the mission.

NOS' IT Architecture will evolve with the NOAA upgrades to the NEMS directory and the messaging software in FY05. Once the upgrades are complete, NOS will migrate to a new mail client.

The SSMC NOS network security will include intrusion detection and protection systems and a remediation VLAN to quarantine unpatched systems until they can be brought up-to-date and join the TCN.

1.3.4 National Weather Service (NWS)

1.3.4.1 Information Architecture

The Information Architecture establishes a framework for maintenance, access, and use of the data of the enterprise. The representation of the data in the Information Architecture directly supports the enterprise mission processes in the Business View. The approach taken in establishing the Information Architecture of the ITA is to define and relate the top-level macro entities called major subject areas.

Conventional systems planning focuses on designing interfaces able to pass data from one program or application to another while enterprise architecture planning focuses on integration so that data is shared. Data are defined before the applications and technology that support them.

The major subject areas identified to the NWS ITA are:

- Administrative Information
- Application
- Customer
- Dissemination System
- Guidance Product
- Person
- Mission Service Unit
- Observation
- Official User Product
- Environmental Phenomenon
- Platform
- Reference Data
- Science
- Sensor

1.3.4.2 Application Architecture

The Application Architecture establishes a framework for meeting the specific information requirements of the applications required to support the NWS mission. Components of the application architecture acquire and process data and produce and distribute information. The target application architecture reflects the applications that NWS maintains or implements to support the goals of the strategic plan. The target application architecture includes some new and some modified applications.

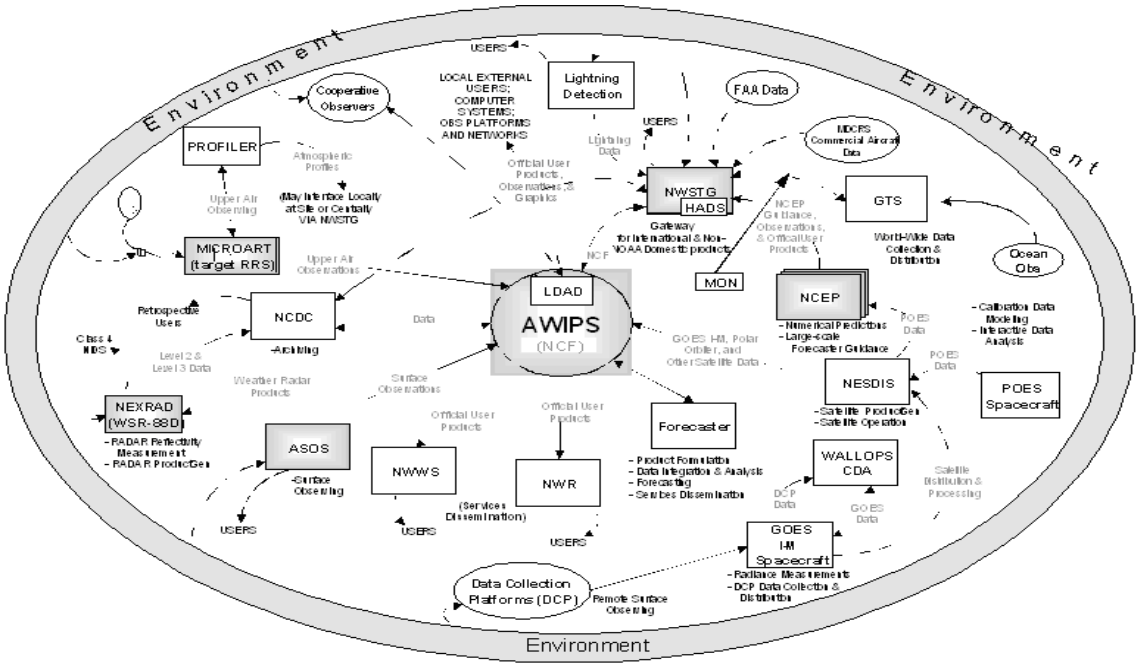
Applications targeted to support the management process of the NWS are:

- Executive Information System
- Maintenance Action Tracking and Reporting System
- Document and Records Management System
- Service Verification and Reporting System
- System Configuration Status and Reporting System
- Supply Status and Reporting
- Management Objective Status and Reporting System

1.3.4.3 Technical Infrastructure Architecture

The Technical Infrastructure Architecture is the technical implementation required to implement the applications, information, and business views. This view identifies the hardware, operating systems, telecommunications, and data base management systems, and utility software required to support the other views. The technical infrastructure consists of the major systems contributing to the NWS mission and their relationships.

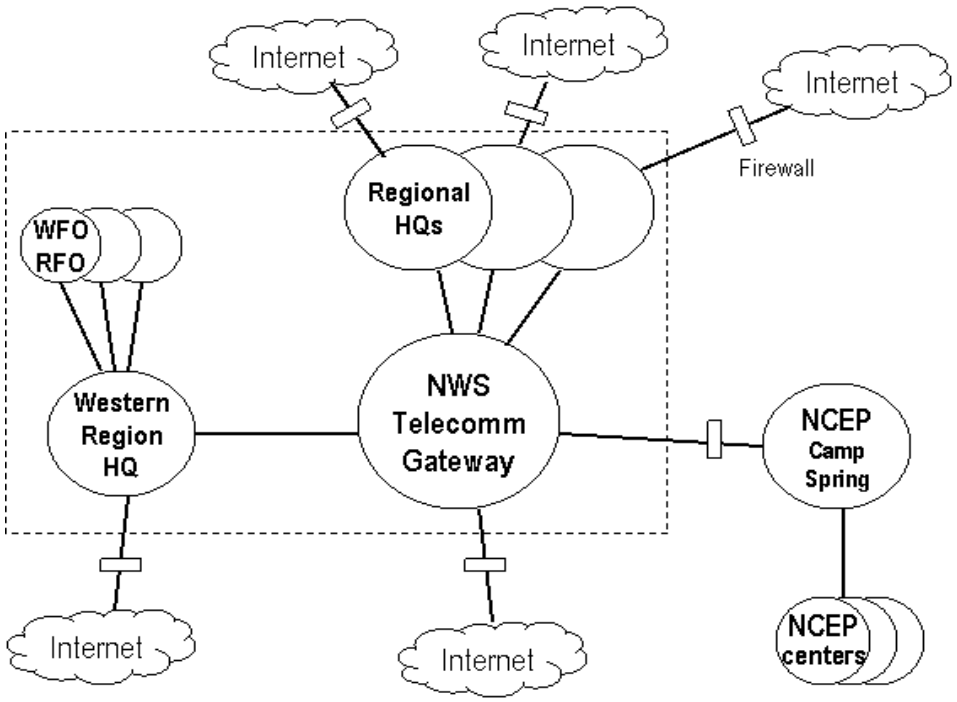
Shaded boxes indicate systems with major planned enhancements.



The target technical infrastructure recognizes the desirability of portable, easily maintained, and well-documented systems, and these goals are addressed in the Technical Reference Model. There are common services that all applications require, including data management services, presentation services, and communications and networking services. For example, it is inefficient and wasteful to the organization as a whole to have each application validate, store, and manage the same data even if it is done in the name of increased performance. Figure 3 demonstrates that applications should request system services through a standard Application Program Interface (API) rather than create unique software to access those services. The NWS will adopt standards, including common data definitions, to implement this model.

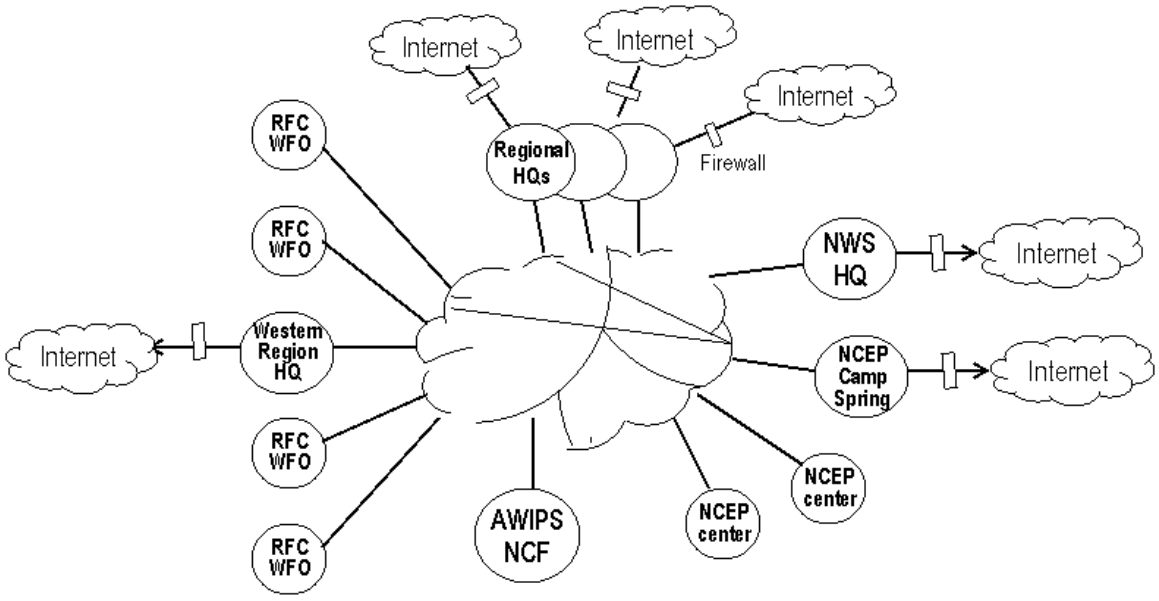
1.3.4.4 Enterprise Network Architecture

NWSNet is the NWS enterprise network (see figure below) that currently connects all locations within the six NWS regions and NWS HQ. NWSNet uses private, point-to-point, frame relay circuits which are very secure. But the network is based on a “hub and spoke” topology and has many single points of failure.



Each Regional Office or field office (Weather Forecast Office or River Forecast Center) has its own LAN and each Regional Office is connected to its field offices by a WAN. NWS HQ has a mixture of LANs and the AWIPS program has one protected network. Desktop computers at NWS offices have both Windows and Linux operating systems at various versions. Most of the servers in NWS offices have the Linux operating systems while there are still some HP legacy systems.

NWS is currently upgrading the NWSNet backbone network to Multi Protocol Label Switched (MPLS) Virtual Private Network (VPN) with plans to eventually upgrade all NWSNet circuits to this service. Connections to AWIPS, all NCEP centers, the NDBC, the National Reconditioning Center, the ROC, and the National Training Center are in the NWSNet long range plans (see figure below).



MPLS VPN has a number of features that provide high security and availability for data transmission. These include:

- The service will be on a Sprint Communications Peerless IP Network, which maintains no connections to the Internet.
- MPLS VPN service provides any-to-any location connectivity, eliminating many single points of failure in the network.
- NWSNet will establish separate VPN for applications that need to be isolated from other services, so AWIPS and NCEP data, for example, can be completely isolated from other network traffic.
- The NWSNet service permits the assignment of classes of service for critical applications and for applications which require low latency across the network.

The following additional steps will be implemented to ensure security in NWSNet.

- Situate applications and services that need no outside access behind the NWSNet firewalls
- Design NWSNet DMZ to host services and applications for external customers
- Ensure separation between the NWSNet and the Internet and through the use of VPNs
- Develop an NWSNet configuration management system to track changes to the network
- Implement tools to monitor NWSNet utilization and availability

NWS is taking advantage of the NOAA enterprise agreements in Microsoft products and Red Hat Linux and moving towards standardizing server operating systems using latest Red Hat Linux operating system.

1.3.5 Office of Oceanic and Atmospheric Research (OAR)

The NOAA Research Information Technology (IT) Architecture Plan (https://secure.cio.noaa.gov/hpcc/noaaita/oar.htm) is a strategic planning document which defines the IT environment and capabilities needed to support NOAA Research's core business activities and strategic functions over the next 3-5 years. The organization's IT Architecture is intended to provide a unifying IT vision across the Laboratories and Program Offices and dovetail with the NOAA IT Architecture, while at the same time ensuring the flexibility essential to scientific research.

The IT Architecture Plan includes the baseline status and target architecture requirements for four scientific computing domains: Hardware (performance, data storage, user desktops, modeling, energy savings, and accessibility); Software (office productivity, www documentation and publication management, document exchange standards, open source software, system/network administration tools, operating systems, visualization, and accessibility); Management (IT management structure, security, total cost of ownership, system management funding, and training); and, Networking (server capability, desktop capability, security, wireless, external WANS), and teleworking.

NOAA Research has a fully documented IT Architecture Plan and Standards Profile in place, which includes a baseline, gap analysis study, and the migration and implementation plans required to achieve the target.

Appendix B provides NOAA Research FY2004 baselines and FY2005 targets. Plans include the following information: Mission Goal, Goal Outcomes, Performance Objectives, Performance Measures, FY2004 baseline, FY2005 target, Capability, Input Capacity, Output Capacity, and Milestones (quarterly schedule). Each Performance Objective is based on one of the twenty-five IT target architecture domains: hardware, software, Management, and networking.

The actual implementation of all plans is contingent upon FY2005 congressional budget funding. All input capacity estimates are based on an analysis of the resources that would be required to meet the target if they become available.

1.3.6 Office of Marine and Aviation Operations (NMAO)

NMAO's IT Architecture is required by the Clinger-Cohen act, however not only to meet this legislative mandate, the IT Architecture for NMAO is a plan of action to improve IT support of NMAO's mission. Improvements will be manifested and measured by efficient operations, satisfied customers, reduction in duplication of effort, increased security, increased reliability and increased efficiency of IT Operations. The IT Architecture will place NMAO clearly the winner in any cost comparison for services to NOAA programs and projects.

NMAO has the goal for FY04 of a Capability Maturity Model Level 2 for the NMAO IT Architecture.

1.3.7 Office of Chief Information Officer (OCIO)

The OCIO is responsible for the development of the NOAA Network Architecture, the IT Security Architecture and the High Performance Computing Architecture. The Architecture files will be posted to the Department of Commerce Enterprise IT Architecture Home Page, **https://secure.cio.noaa.gov/hpcc/docita/architecture/index.html** .

The OCIO is currently conducting a Pilot program evaluating the integration of Smarts® InCharge™ with Metis. One of the deliverables that will result from this pilot project is a current NOAA Network Architecture Baseline for the Silver Spring campus. This pilot will conclude in the fall 2004.

SMARTS takes a service-centric approach to IT management. The software solutions can manage the entire IT environment across infrastructure, applications, and business services, giving business insight into how technology supports services and customers. InCharge™ solutions share a common platform architecture that provides the following capabilities:

- Abstraction to provide a logical way to understand and map your complex environment.
- Analysis totally automated, leveraging Codebook Correlation Technology™ to pinpoint root cause problems in real time and calculate their impacts.
- Automation to build high-cost, labor-intensive tasks into the software, making IT management faster, more accurate, and more cost-effective to support business objectives.

If the pilot program proves successful then this approach will be applied to the NOAA enterprise network. The NOAA Network Architecture will be presented to the Department of Commerce Enterprise IT Architecture Advisory Group after completion of the pilot project.

The NOAA IT Security Architecture is currently a Word Perfect document and is in the process of being modeled in Metis. The NOAA IT Security Architecture will be presented to the Department of Commerce Enterprise IT Architecture Advisory Group in November, 2004.

The High Performance IT Architecture was built using Metis using the IT Management and Capital Asset Planning Business Case Metamodels. This Architecture approaches Enterprise Architecture by addressing specific business questions that need to be addressed and answered. It links the Enterprise Architecture to NOAA's and the Department's Strategic Plan, Missions and Goals to the eCPIC process. The High Performance IT Architecture will be presented to the Department of Commerce Enterprise IT Architecture Advisory Group in November, 2004.

1.3.8 Office of NOAA Finance and Administration (NFA)

NFA operates a variety of systems across a diverse customer base. The OFA Baseline Architecture provides a description of the complete technical environment. It is update continually and reviewed annually. Target Architecture guidelines were published by NFA in September 2003. The Target Architecture is designed to ensure that future systems in NOAA are manageable, interoperable, compatible, scalable, high performing, and secure. It will reduce the

complexity of today's existing environment, and thereby reduce future costs of both developing and managing NOAA's and NFA's large number of administrative systems. NFA's Architectural Guidelines specifically address key components, namely the application development environment, application platform, database standard, and user access protocols.

NFA is advancing the Enterprise Architecture effort by:

1. Participating in the Metis Architecture Modeling effort, with a goal of incorporating administrative and financial data as it is developed; and

2. Using a technical Enterprise Architecture Board to document the current operational architecture of the financial and administrative systems and plan for the evolution of these systems to a target architecture.

Staff have been trained in the METIS modeling tool and completed an initial Enterprise IT Architecture model for NFA in METIS in the Spring of 2004. NFA is a member of the NOAA Enterprise IT Architecture Committee

1.4 A description of how your organization is improving IT. What systems are being replaced or improved? What processes are being improved?

1.4.0 Introduction

The following paragraphs describe how NOAA is improving its IT capability in FY 2005.

1.4.1 National Environmental Satellite, Data, and Information Service (NESDIS)

1.4.1.1 NESDIS Headquarters

The NESDIS Headquarters Local Area Network (LAN) equipment is nearly filled to capacity. The plan for FY 2005 is to install parallel switches to balance the traffic requirements and provide for backup in the event of equipment failure. NESDIS Headquarters also plans to replace a number of personal computers as part of the three year technical refresh cycle.

NESDIS Headquarters is participating in the NOAA-wide enterprise messaging upgrade.

In the IT security area, NESDIS Headquarters IT support staff and the NESDIS Headquarters IT Security Team are supporting the deployment and implementation of the product PatchLink to provide for automated patch installation for all operating systems and commercial applications running on the LAN, as well as improving the logging and reporting of patch and vulnerability management. Further, the IT security package for the LAN is being moved to the updated NOAA-supplied Total Security Management System (TSMS) tool.

1.4.1.2 Office of Satellite Data Processing and Distribution (OSDPD)

In FY 2005, the Environmental Satellite Processing Center (ESPC) will combine two existing NESDIS operations: Central Environmental Satellite Computer System (CEMSCS) and Satellite Environmental Processing Systems (SATEPS). Currently operated by the NESDIS Office of Satellite Data Processing and Distribution (OSDPD), CEMSCS and SATEPS ingest environmental data from NOAA's polar and geostationary spacecraft and produce environmental products and imagery. Operated on a 24 hours per day/7 days per week bases, CEMSCS and SATEPS processing provide critical weather satellite data and information to the NWS, the Department of Defense, other agencies and the private sector required for protecting life and property as well as providing for the economic well being of the Nation. Currently, CEMSCS and SATEPS are operated separately. While both systems process geostationary and polar orbiting data, CEMSCS focuses primarily on Polar data and SATEPS focuses on Geostationary data. Details of current processing capabilities for each system are provided below.

The NESDIS goal is to ensure the availability of a global Earth-observing system that provides critical data and information essential to protecting the Nation and its economic infrastructure from the threats and often devastating effects of severe weather, extreme events, and unusual climate anomalies.

Porting Project

CEMSCS is composed of a variety of computer systems, of various architectures, running a variety of operating systems. A large percentage of CEMSCS production applications and services run on an Amdahl GS745 mainframe, using the z/OS operating system. Other CEMSCS applications run on a mixture of Unix, Linux, and Windows based systems.

OSDPD proposes to migrate the processes and services that currently run on the Amdahl mainframe to an IBM RISC based architecture running an AIX operating system, a version of UNIX.

The AIX computer systems already exist in the Office of Satellite Data Processing and Distribution (OSDPD) environment. The CEMSCS p655 with 4 nodes / 32 cpus / 800 GB storage, already running AIX version 5.1, will serve as the target platform to begin this project. The first top priority applications will begin porting to this platform.

While the porting of the first applications is beginning, two other AIX systems in OSDPD will be changed to match the desired processing environment. A Scalable Processor (SP) within CEMSCS with 11 nodes / 30 cpus / 220 GB storage and an SP in the Satellite Services Division (SSD) with 2 nodes / 4 cpus / 500 GB storage will be reconfigured and upgraded to AIX version 5.1. Programmers from both Information Processing Division (IPD) and SSD will have access to them as target systems, depending on where each application is assigned migration work space. The p655, mentioned above, and CEMSCS SP will get upgrades to storage capacities, network connectivity and additional FORTRAN compilers. When the CEMSCS SP and the SSD SP become available as the test and development systems, the p655 will transition into the production platform in FB#4.

A new p690 is recommended for purchase through CIP funds during November 2004. The initial configuration should be 32 cpus due to floor load issues in FB#4. It will be installed in FB#4 by February 2005 and it will mirror the production platform, p655, for operations. During the NOAA Satellite Operations Facility (NSOF) early occupancy, the p690 will move to NSOF, be upgraded to 64 cpus and, during September 2005, begin failover testing with the p655 prior to becoming the production platform in NSOF.

The new NSOF computer center will be known as the Environmental Satellite Processing Center (ESPC) and will include the p690 and the CEMSCS SP. The SSD SP will return to serving data in the Satellite Environmental Processing System (SATEPS) center. The p655 will be available for use by CIP.

SSD will continue to provide operational products and services through SATEPS to its customers and stakeholders for the foreseeable future. SATEPS is integral to meeting the continued NWS/AWIPS requirement of real-time NOAA geostationary operational satellite (GOES) data in GOES Ingest/NOAAPORT Interface (GINI) format. The capability of creating GINI from remapped GOES Variable (GVAR) does not exist anywhere else. NWS is the primary customer of SSD AWIPS data, and a large number of customers receive these satellite products via the NWS's NOAAPORT distribution system.

Within the next five years, ESPC plans to include the following new applications and enhancements:

- Growth in Hazard Support in response to the Integrated Hazards Information Strategy (IHIS)
- Improved Fire and Smoke (and Snow and Ice) products using new NASA satellite (MODIS) data
- Improved Coast Watch product suite using new NASA satellite (MODIS) ocean color data and sea surface temperature (SST)
- New coral reef products
- Promotion of experimental products to standard products

As new satellite systems, data sets, and products come online, ESPC requires continual, technologically-sound upgrades. New GOES satellites present imager, navigation, and calibration changes, as well as creation of new products. ESPC requires ingestor modifications to access the new satellite data from MTSAT (new Japanese satellite), MSG-1 LRIT, and MSG-2 HRIT and LRIT (new European satellite). Additional new data sets anticipated also include INSAT (new data stream from Indian satellite), EOS-AMI (MODIS data sets), EOS (AIRS data sets), DMSP, and MSG-3. ESPC will also require modifications to critical NWS Family of Services (FOS) ancillary data sources from the NOAAPort Satellite Broadcast Network (SBN) telecommunications distribution upgrades to Digital Video Broadcast Satellite (DVBS) technology. FOS model, forecast, ship, pilot report, buoy data, etc. are required for creation of virtually all ESPC-derived products.

<u>Systems and processes improved and replaced:</u>

<u>Exhibit 300 related:</u>

SATEPS Server: The SATEPS IBM RS/6000 SP server was upgraded with an additional terabyte of disk storage. The SP server is currently in the process of being upgraded to AIX 5.2 to ensure continued vendor patch availability. Two of the nodes are being made available for the IPD porting effort if they are required.

SATEPS Distributed Processors: A local RedHat Linux RPM server was installed on the private network to reduce the number of systems accessing the NCIRT RPM server and ensure that all SATEPS Linux servers received security updates and fixes in a timely manner.

This patch management system deployment was successful, and ensured a strong IT security posture for Linux-based systems using first the Red Hat 9 patch management system, and later changing to the Progeny patch management system. Manual updates are still required for kernels and similar boot-level packages, but the majority of package upgrades occur through this automated process which resulted in considerable labor savings for the system administration staff during a time when patch release frequency has greatly increased over past years.

SATEPS Desktop: There have been desk top personal computers purchased to replace aging equipment. The incremental replacement of the desk tops allows for a refresh of technology each year and allows SSD to take advantage of improvements in PC technology and software. The Shavlik program was installed to enable SATEPS to remotely deploy security updates and patches to all 100 Windows PCs on the domain in less than one hour. This is an improvement over previous processes which took in excess of 20 hours.

The incremental replacement of client Windows systems continues, although the most recent implementation involved considerable more effort in testing and deployment due to an increased IT security posture. Considerable effort was expended in FY 2004 to reach best-practice levels of IT security and patch management on desktop systems in response to NOAA mandates.

Owing to the Windows NT commercial sunset mandate, the two SATEPS Windows NT 4.0 servers for the office automation system must be decommissioned by December 31, 2004, as vendor security patch support ends. Two new Windows 2003 server systems will be deployed to ensure maintainability and improve the shared drive storage capabilities. All SATEPS mission users must be successfully migrated prior to year end of 2004 to the new SATEPS Windows NT 4.0 servers.

Telecommunications: A fiber link was established in FY 2004 creating a private optical network (PON) between SATEPS and CEMSCS. The PON is currently being used to allow the ingestors to be migrated to FB4 and serve imagery and data to the servers over TCP/IP located at CEMSCS. The DS3 microwave T3 link upgrade to a TCP/IP network begun in FY 2004 is expected to be completed during FY 2005. The data MUX will be replaced with CISCO routers and switches. Both the PON and DS3 using TCP/IP protocols provide redundant paths with error correction that was not available with the raw data stream between the buildings.

SSD has installed a CISCO VPN concentrator to provide secure remote access to telecommuters and on-call personnel.

A private network has been implemented during FY 2004 and is being used for backups and some critical imagery ingest traffic. MODIS traffic is not yet flowing across this network due to conflicting priorities of the various involved entities. Owing to the NWS/NCEP assumption of full (secured) control of the NSC network, as well as to the need for SATEPS network transitions to NSOF (and later to College Park), as well as for planned (MODIS and AIRS) data acquisition increases which do not load the NCEP backbone, SATEPS is proceeding to procure an independent SATEPS network which expands upon and enhances the PON established in 2004. As yet SATEPS FY 2004 implementation of GB switches, NIC cards, and Fiber connects are only available to the NSC 4th, 5th, and 6th floors. It is anticipated that Government entities interested in MODIS acquisition on any of the other 8 floors of NSC will provide such connectivity to the SATEPS private GB MODIS ring. The establishment of an independent SATEPS network and the implementation for MODIS is expected to be completed in FY 2005. AIRS acquisition (mentioned below) is deferred to FY 2006.

GIS: SATEPS has implemented a primary and backup ArcIMS servers to serve data in GIS format through a web interface. Multiple SSD products have been converted to be available for GIS including Fire, snow, OSEI, FOS, RADAR, GOES EAST and WEST, GOES SST, and others with associated metadata.

The GIS projects continued during FY 2004 and can be exhibited best through the completed Fire GIS page (www.firedetect.noaa.gov), although NSOF-related priorities appear to have halted further development, and will likely result in the termination or "moth-balling" of this project due to lack of contracted support labor.

Web Services: In preparation for increased hurricane related web traffic SSD installed a gigabit WebMux loadleveler to increase throughput to the web farm. SSD also prepared two additional web servers that could be placed online if traffic required it. SATEPS exceeded all prior records in enabling SDDS Hurricane Imagery support through a larger than average number of hurricanes to make landfall in August 2004: Charley, Frances, Ivan, and Jeanne.

The SSD web consistently served up a higher percentage of all hurricane imagery than all other NOAA entities combined. In the first 8 days of September (just prior to Ivan), the site received over 200 million hits, equivalent to 1/3 of all traffic the previous year including hurricane Isabel. Just prior to Ivan, September 2004's hit surpassed the entire 2003 hurricane season. On September 15th as Ivan was making its approach on the Gulf Coast, the SSD/GOES web sites set a new single day record for data pushed of 2.52 Terabytes. In megabits per second, this is a push of 244.67 mbps continuously for the entire day in order to do 2.52 terabytes. As a comparison of the August-September 2004 hurricane Web capability improvements to Isabel in 2003, while Akamai'd (under Isabel), SATEPS peaked for all Aakmai'd sites at 240 mbps, this included the NWS Hurricane Center. For Ivan we averaged for an entire day right at 245 mbps. Akamai analysis demonstrated that the majority of Web hits for hurricane imagery comes from those in the predict path of landfall associated with the hurricane event.

Help Desk: The SATEPS Help Desk staff is in the process of training IPD COB personnel to be able to monitor SATEPS systems. Two sets of remote help desk monitors have been configured

to allow remote monitoring of SATEPS systems. One set will be located in CEMSCS COB to allow remote monitoring of SATEPS systems over the PON. SATEPS is in the process of transitioning NOAA Science Center (NSC) facilities monitoring and response capabilities (building power, diesel generator, and AC) over to NWS/NCEP. Power panel monitoring is being moved during FY 2005 from the 5th floor down to the 4th floor SDM location. The final builds of the SATEPS remote monitoring systems for the NSC and FB4 deployments are expected to be completed in FY 2005 well prior to NSOF early access.

Non-Exhibit 300 Related*:*

Operational Significant Event Imagery (OSEI) Transition to COTS: SSD OSEI analysts evaluated COTS applications and determined that ENVI and ARCGIS running on an INTEL based Linux system were a viable replacement for iAXE to perform the OSEI image processing. IAXE would only run on antiquated equipment and had become a single point of failure for OSEI processing. OSEI analysts developed procedures and methods for generating OSEI quality geo-referenced imagery through the use the Environment for Visualizing Images (ENVI) image processing application.

1.4.1.3 Office of Research and Applications (ORA)

Re-structure of ORA's network in WWB

Due to a lack of adequate manpower, experience, funding, and need, ORA's IT in the World Weather Building (WWB) in Camp Springs, MD, has always been integrated into the building's network which is managed by the NWS/NCEP and NESDIS/OSDPD/SSD. We do not have, or manage, our own network infrastructure. This arrangement has been adequate over the years due to NCEP's and SSD's good support of our needs.

Now, however, due to growing IT security certification and accreditation accountability responsibilities, and the different missions of NCEP, SSD, and ORA, we must re-structure our WWB networking to separate, consolidate, and secure our IT onto an ORA-only network, behind a firewall chokepoint, and including a DMZ for our public DNS, web, email, SSH/SCP, and VPN servers.

Challenges to this re-structure remain in the form of manpower, experience, and funding deficiencies. We are working to overcome these challenges.

Shifting from UNIX to Linux

Through attrition and replacement, ORA is reducing our inventory of UNIX (SGI, HP, Sun) computers while increasing our inventory of Linux (Red Hat) computers. Our UNIX inventory has been reduced to 16 computers today, vs. 22 a year ago. While our Linux inventory has increased to 117 computers today, vs. 75 a year ago.

Some advantages of Linux over UNIX are:

- lower purchase cost

- lower hardware maintenance cost
- better 3rd party support
- better security, with automatic patching schemes

These advantages allow us to save money on hardware, software, and support costs, while maintaining a more secure IT environment.

Many of our scientific programs were written for, and thrive in, a UNIX environment, and the scientists involved are comfortable there. Since Linux looks and acts like UNIX, our scientists are comfortable with it and can port most of their UNIX applications to Linux with relative ease. We maintain some of the other UNIX machines to be compatible with collaborative outside entities, or when a more powerful machine, such as a 32-CPU SGI is necessary to number crunch in a timely manner.

Replacement of our NIS domain with LDAP

We are investigating the replacement of our Network Information Service (NIS), which provides centralized account management for our UNIX/Linux domain, with a system based on the Lightweight Directory Access Protocol (LDAP). This should provide a more secure account management environment which we may be able to extend to include our Windows domain, since the Active Directory Windows management scheme is centered around LDAP. This may lead to a single sign-on system for all of our UNIX/Linux and Windows resources.

Use of NESDIS IDL Site License

ORA is currently using about 175 (up from 104 last year) licenses for Research Systems, Inc.'s Interactive Data Language (IDL) scientific visualization package via the NESDIS IDL site license with RSI. IDL is used heavily in the office. Since these licenses cost from $2400 to $4000 each, ORA has arguably been spared at least $420K in this endeavor!

1.4.1.4 Office of Satellite Operations (OSO)

A new process to track OSO IT assets including configuration management, patch management, procurement, preventive/corrective maintenance tracking and logistics control is being developed and is scheduled for a late FY 2005 release.

The Office of Satellite Operations has implemented a Policy Control Board to review and approve policies that effect the IT environment. All current NOAA and DOC IT policies have been reviewed and individual procedures have been developed to support the policies. Current policies in effect that have been developed within the last six months include: IT Program management, IT security policies addressing external network connections, securing operational computers and patch management. A new IT Security configuration control board consisting of representatives from all OSO programs has been created and meets on a regular basis to address IT security issues.

For the POES, GOES and DMSP programs the new consolidated workstation project is continuing with the POES program scheduled for completion in late December, GOES is scheduled for early March of 05 and DMSP scheduled for late June of 05. This project will replace antiquated equipment and also enable the programs to better support new IT security policies.

The Data Collection System / DAPS system is in the process of being replaced and should be on line by close of FY 2005. This system replaces an antiquated system designed and implemented in the late 1980's.

The FCDAS, WCDAS and SOCC admin LANS are being updated to include new Active Directory Servers and will be connected via an internal LAN that will increase data speed, provide diverse routing capability and more active security controls. A Web filtering and monitoring system was added in FY 2004 with a patch management and Intrusion detection software package slated for FY 2005 installation.

1.4.1.5 Office of Systems Development (OSD)

During FY 2005, the Office of Systems Development is contributing to the general improvement of NESDIS Information Technology in three major ways: planning for the protection of critical infrastructure (see OSDPD-CIP sections), integrating legacy satellite and in-situ data into comprehensive large-array archives (see CLASS sections), and planning and developing new IT capabilities and systems that will make their way into NESDIS operational ground systems (see GOES GS sections). Summary lists of the systems being replaced or improved and the processes being improved follow.

Some highlights of OSD systems / processes being replaced or improved in FY 2005 follow.

Critical Infrastructure Protection

- OSDPD backup facility
- IT Transition to NOAA Satellite Operations Facility

Integrating Legacy Satellite Data Collections into Comprehensive Large Array-data Stewardship System

- Incremental builds to CLASS system functionality
- Incremental build to associated NESDIS-wide web access
- GOES / POES / DMSP transition to operations under CLASS
- Planning for future support of IJPS / METOP data

GOES GS

- Data Collection System (DCS) Automated Processing System (DAPS) prototype employing Code Division Multiple Access (CDMA) technology

General IT

General contribution to planning, engineering, and developing new IT technology throughout NESDIS.

1.4.1.6 National Climatic Data Center (NCDC)

- Established an Architecture Planning and Implementation Group
- Installed Configuration Management hardware and software
- Established a Software Development Working Group (SDWG)
- Provided training in configuration management, enterprise architecture and Java NCDC Systems replaced or improved:
- Installed a Wireless Network in NCDC conference rooms
- Successfully replaced InForms
- Began to support the transition to IPv6
- Replaced Mail Server
- Upgraded the High Performance Storage System to support LTO Gen-2 and 3592 tape drives
- Reduced hardware and software maintenance cost by moving to Dell servers and replacing proprietary operating systems with Linux
- Implemented a gigabit LAN connection
- Life-Cycle Technology (RefreshUpgrades – End of Life Replacements)
- Implemented a more comprehensive HelpDesk system
- Eased system management over the network by using Ghost multi-cast
- Continue to increase number of products available through the web
- Selected SAN solution for CLASS/NCDC with DataDirect

NCDC Processes being improved:

- "Bullet Proofing" Critical IT infrastructure by isolating the development and test systems from the operational environment
- Replacing the fire suppression system
- Upgrading the customer service telephone system
- Beginning to perform scientific data stewardship using new hardware and software infrastructure
- Providing hardware and software necessary to make satellite data available via NOMADS
- Improving ingest and archive processes to provide more timely turnaround of products and data to customers
- Enhancing network and communication nodes to increase website accesses
- Integrating legacy data into archive systems

1.4.7 National Geophysical Data Center (NGDC)

- Coordinating new data management systems requirements, design, and development with other components of NESDIS through the CIO office, NVDS, CLASS, ITAT and the NESDIS Data Archive Board. Similar activities with other NOAA line offices through the ESDIM, CDMP and HPCC programs.
- Reducing hardware maintenance costs by phasing out Sun hardware and consolidating server operations on redundant Intel processor servers and low cost Linux operating system. These systems are inexpensive to purchase, maintained by in-house personnel and are easily and inexpensively upgraded with new processors, additional RAM and more disk. Deploying new and standardized desktop systems to facilitate support by small IT staff.
- Reducing software maintenance costs by phasing out the Sun Solaris operating systems, using more low cost Linux operating systems, standardizing on one version of the MS Windows operating system and using group contracts & site licenses.
- Providing WWW user access to more data by increasing on-line storage
- Taking advantage of higher bandwidth LAN, MAN and WANs
- Working with Boulder NOC, NCAR and HPCC to provide Gigabit networking from the NOAA DSRC building to the Front Range Gigapop and Abilene Networks and planning for testing and implementing Lambda Rail in the future
- Implementing gigabit LAN connectivity for all servers
- Increasing use of COTS software for data management including ESRI GIS software, Oracle RDBMS, IDL graphics display software, ADIC Store Next Management System, Blue Angel Metadata Management, and Veritas disk to tape backup software.
- Improving tape storage capacity by the use of LTO (100-200 gigabyte) tape robotic systems for both ingest of new environmental data archives and for backups of disk files
- Consolidating disk storage and implementing a SAN
- Replacing 3590 tape library with a less expensive and higher capacity LTO-2 robotic tape library.
- Upgrading the computer rooms infrastructure to increase electrical capacity and UPS capacity, installing gas fire suppression system, improving EPO and connecting to emergency generator
- Replacing Tivoli Storage Manager software with ADIC shred file system and HSM capabilities
- Planning for implementing cost effective iSCSI SAN capabilities
- Improving IT security by increasing vigilance & user awareness, training of systems administrators and implementing better security policies and standardized security administration software tools
- Implementing redundant systems and automatic failovers
- Providing standardized systems configurations and tools for systems administration to improve support staff productivity
- General technology refresh on a 3-5 year schedule to maintain security, improve performance, reduce maintenance costs and improve systems administration.

1.4.1.8 National Oceanographic Data Center (NODC)

- Automated control of NODC archive operations using an Accession Tracking Database (ATDB) system.
- Convergence of server systems from RISC-based running brand name UNIX to Intel-based running Linux.
- Uniform Desktop configurations running under common OS (WIN2000) throughout NODC and Library.
- Periodic desktop refresh strategy for obsolescence avoidance.
- Autonomous desktop monitoring, installation, and security monitoring features through the use of LANDesk v8.0 to manage desktop resources centrally.
- Network security for problem avoidance for enhanced productivity of center IT resources (proactively seek and activate security patches rather than wait for notification).
- Conformance to NESDIS common web identity implementation standards to provide uniform appearance to external contacts.
- Host and maintain a Distributed Oceanographic Data System server (DODS) compatible with established systems supported by academic oceanographic installations.
- On-site NODC desktop systems support for NODC and Library operations.
- Move to IT to open system solutions to mitigate cost and reduce maintenance burdens.
- Exploit e-learning facilities to promote staff productivity and advancement.
- Transition of off-line archive media to advanced LTO tape technologies.
- Expansion of on-line access resources to accommodate reprocessing and data fusion analysis.
- IT Task Assignment Plan in place.

1.4.1.9 National Coastal Data Development Center (NCDDC)

Description of NCDDC Process Improvements for IT:

- NCDDC has implemented system scanning procedures to meet security requirements and maintain a secure IT environment.
- NCDDC has implemented software integrity checks prior to the deployment of any new applications
- NCDDC has continued to update and improve procedures for patch management, system backup, system setup and requests for IT services
- NCDDC continues to upgrade its metadata management system that includes secure remote access to allow organizations outside NCDDC and NOAA to manage their metadata within the NCDDC system
- NCDDC has developed and documented a business process that allows for improved tracking of resource and tasking
- NCDDC has provided additional security training to its users on securing home computers

1.4.10 Integrated Program Office (IPO)

NPOESS Ground System

On May 6, 1994, Presidential Decision Directive NSTC-2 was signed to merge the Nation's civil and military polar-orbiting operational meteorological satellite systems into a single national entity capable of satisfying both civil and national security requirements for space-based remotely sensed environmental data. Convergence of these programs is the most significant change in U.S. operational remote sensing since the launch of the first weather satellite in April 1960, and marks a significant departure from the eight previous attempts over the last 20 years to combine these separate programs.

The NESDIS NPOESS Ground System, which will be the successor to the current POES Ground System in 2009, will continue and broaden the current polar orbiting mission. The NPOESS is a satellite system used to monitor global environmental conditions, and collect and disseminate data related to: weather, atmosphere, oceans, land and near-space environment and climate.

NPOESS is a tri-agency program with NOAA, DoD, and NASA contributions. The Integrated Program Office (IPO) was established to develop, acquire, operate, and maintain the NPOESS. The NPOESS IPO is staffed with personnel from the DoD, DOC, and NASA. The NPOESS merges U.S. polar-orbiting satellite programs previously operated by the Air Force and the National Oceanic and Atmospheric Administration (NOAA). NPOESS works in partnership with space agencies in Europe (EUMETSAT) and Japan (NASDA) and will leverage appropriate technologies from NASA programs to provide continuous global coverage of the Earth.

The IPO is currently following the steps below to ensure its program office IT devices are replaced:

a. Allocating funding for IT related items. (IT security, technology refresh)
b. Training users and IT personnel
c. Inventory of all IT devices
d. IT standardization (hardware, software, firmware)
e. Policies and procedures (configuration management, change control)
f. Technology adoption lifecycle

1.4.2 National Marine Fisheries Service (NMFS)

Through innovative use of new technology, business process reengineering and managing IT, NOAA Fisheries is significantly streamlining and improving many aspects of its key business processes of Administering Agency Operations; Servicing Internal and External Constituents; Researching, Developing, and Applying Science to Support Living Marine Resources; Managing and Regulating Fisheries; Conserving and Restoring Habitat; Protecting Living Marine Resources (LMR); and Informing and Collaborating with Internal and External Constituents. This section describes some of the specific business processes that are being improved and the IT systems and organizational structures that are being enhanced to support the business process improvements.

1.4.2.1 Business Process Improvements

Some specific examples of the many business process improvements that are facilitated by the application of new and improved IT are:

- Development of regulations to preserve the nation's LMR is being streamlined with the aides of electronic rulemaking, electronic permitting, electronic commenting on proposed regulations, electronic forms and web-based tracking systems.
- Protection of marine mammals is being improved with systems to track marine mammal strandings, store and retrieve data to support tissue analysis data, and PDAs to enable members of the stranding networks to report and access data from the beach.
- Preventing threats to endangered species and critical habitats is being facilitated by web-based systems that track consultations with other federal, state and local agencies.
- Scientific ecosystems-based analysis is being supported by metadata, GID and interrelated individual investigators databases.
- Enforcement of fisheries regulations is being supported by a sophisticated electronic surveillance of fishing vessels.
- Development of administrative records to support and defend regulatory decisions is being addressed by establishing an electronic records and document management system.
- Collaboration and information sharing within NOAA Fisheries and with constituents is being improved with an expanding and more secure WAN and LANs
- Internal administrative processes of budget planning and execution, calendar management, case tracking and administration of the Paperwork Reduction Act are being engineered and supported by new and improved IT applications and tools.
- Information management is being improved by an increasing body of IT management policies and practices.

1.4.2.2 IT System Improvements

Many enterprise–wide and regional IT systems are being developed and enhanced with infusions of new technology to support the wide range of business process improvements throughout the agency. This section briefly summarizes a few of the key improvements that have major impacts on our organization:

- Communications are continually being expanded, improved and made more secure to provide full secure service to all NOAA staff in all locations. Router-to-router encryption is being deployed to ensure end–to-end confidentiality of sensitive data.
- An Electronic Document Management and Records Administrations process is under study to respond to the agency's increasing records management burden.
- Video conferencing is being improved with new hardware and software resulting in significantly reduced travel requirements and enhanced interpersonal communications.
- NMFS Financial Reporting System (FRS) is evolving to integrate with new NOAA CAMS software and to better meet NMFS budget planning and execution requirements.
- The Fisheries Information Systems (FIS) is integrating and providing a portal to NOAA Fisheries vast array of commercial and recreational fisheries independent databases.
- GIS platforms are being established along with policies and procedures to provide a robust enterprise-wide infrastructure to meet NOAA Fisheries' extensive GIS requirements.

- Electronic rulemaking is being deployed to streamline our regulatory process and develop regulations more responsive to the American public
- Forms that constituents need to comply with regulations are being offered electronically.
- Web-based systems are being deployed to allow fishers to apply for and renew permits online.
- The Vessel Management System (VMS) is being expanded nationally to improve and significantly reduce cost of tracking fishing vessels in regulated waters.

1.4.2.3 IT Organizational Improvements

The operation of the four IT Boards and Committees, the NIMB, RITCs, HIMCC and the OITCs continued to allow NOAA Fisheries to take a more collaborative approach to IT management, to better explain our IT management issues, and to involve employees in the management process more often and earlier. In this way, NOAA Fisheries builds support for its IT management measures and strengthens our overall operations. The NIMB continued to improve and refine its strategy for managing IT as a strategic resource for the agency by integrating regular face-to-face meetings with video conferences as needed to address key issues and by serving as the NOAA Fisheries IT Review Board. The relative roles and responsibilities of the NIMB, RITCs, HIMCC and the OITCS were further solidified in FY2004. The RITCs serve as technical support for the NIMB and the OITCs serve as technical support for the HIMCC.

The RITCs have been very active in FY2004 At the NIMB's request, they reviewed the agency's expanded use Oracle products and provided recommendations for an optimal Oracle enterprise-wide database architecture and a cost-effective operational model. The recommendations, which were accepted by the NIMB, resulted in an estimated cost avoidance of nearly $2 million in Oracle license expenses. They also collectively attended the NOAA Security Workshop, met to discuss common IT issues and developed a Patch Tool Strategy for the agency.

1.4.3 NOAA Ocean Service (NOS)

Active Directory Deployment

In FY04, NOS migrated more than half its users to a single Active Directory domain for network operations. NOS had a variety of Microsoft Windows NT networks. Each program or staff office had at least one NT network. This duplication was an inefficient use of resources and did not promote communication among NOS entities. Furthermore, Microsoft is ending support of Windows NT at the end of calendar year 2004. Active Directory (AD) is Microsoft's replacement networking technology for Windows NT.

The NOAA CIO's office is leading the implementation of AD in NOAA. NOS is deploying AD as a stand-alone NOS-wide implementation and has hired a full-time consultant to assist in planning, implementation, migration and maintenance of the NOS AD. Once other NOAA offices implement AD, NOS will establish trust relationships with them as required to support collaboration.

Network Security

IMD working in conjunction with the NOAA NOC will continue with migrating all of the NOS internal (non public service) computer networks onto the TCN. IMD will coordinate activities with the NOAA NOC to ensure a highly available, reliable, and secure computer network is maintained.

NOS will continue to migrate public web and database servers to the Secure Public Access Network (SPIN) to protect them from malicious access from the Internet.

The IMD Network Manager and the IMD IT Security Officer working with other NOS field sites to establish and implement improved secure computer networks and remote communications across all of NOS offices.

In FY04, the IMD Network Manager and the IMD IT Security Officer working with other NOS IT personnel will redesign the NOS portion of the NOAA TCN, located in Silver Spring, Maryland, allocated IP address space in an effort provide improved network services and security. A contractor has been hired to review the current network structure and prepare a plan for a new architecture. To facilitate managing the IP space, the new architecture will reassign the existing IP addresses in a more logical manner to follow organizational boundaries rather than physical boundaries. The planned architecture will also include intrusion detection and protection systems to add another layer of defense to the network. A remediation virtual LAN (VLAN) is also planned to quarantine unpatched systems before they can join the network. Systems on the remediation VLAN will be scanned for vulnerabilities and brought up-to-date with the latest patches, then allowed onto the production network.

1.4.4 National Weather Service (NWS)

NWS IT systems perform operations, Research and Development, web, and administration (including desktop) functions. There is a need to develop security policies that are tailored for each environment because uniform policies will impede system functionalities or jeopardize security. For example, remote access policies need to be more restrictive for operational systems compared to ones for Research and Developement systems. The plan is to fully develop security policies for these environments and automate as many of them as possible by building them into the firewall or servers

1.4.5 Office of Oceanic and Atmospheric Research (OAR)

FY 2004 was a challenging year. The Office of Management and Budget (OMB) required agencies to respond to a growing number of information calls in an increasingly shorter turn-around time. Most of the calls were focused on achieving the goals set forth in the President's Management Agenda, the President's E-Gov and Federal Enterprise Architecture initiatives, and IT security compliance with the Federal Information Management Security Act (FISMA). NOAA Research efforts include:

- Acquisition Reform

  - Microsoft Enterprise Agreement (NOAA Research represented NOAA on the DOC Team)
  - RedHat Linux NOAA-wide contract (NOAA Research Team lead)
  - CIO Consolidated IT and Administrative Support Services Contract (Headquarters Administrative and Program Offices, including all grants programs, and the NOAA CIO HPCC Office)

- Capital Investment Planning
  - Consolidated R&D High Performance Computing System Initiative: draft HPC Exhibit 300 prepared for presentation to the CITRB (scheduled for 10/27/2004)

- Policy
  - NOAA Research Team lead for NOAA's Office Automation Policy (effective December 30, 2004)
  - NOAA Research Patch Management Policy (effective September 30, 2004)
  - NOAA Research IT Security Training Policy (effective April 5, 2004)
  - NOAA Research Procurement Policy (effective April 5, 2004)

1.4.6 Office of Marine and Aviation Operations (NMAO)

- Employees of NMAO who perform IT work have an element in their performance plan that evaluates their improvement in the way their IT work is performed. This element is established and evaluated by the employee's direct supervisor and the most senior IT manager for those personnel.

- Upgrading the majority of servers to Windows 2003 Server for greater reliability and scalability throughout NMAO.

- In a pilot project for all of NMAO, NMAO's Aircraft Operations Center (AOC) in Tampa, FL, is implementing Share Point so that each user and management can have their own home page and directory shares for easier operational duties and management of network resources.

- Started the implementation of Microsoft Active Directory NMAO wide. Coordinated with other
- NOAA Line Offices eliminating duplication of effort, ensuring consistency, and compatibility, which will enable a possible NOAA wide implementation in the future.

- Performed a system evaluation of the NMAO Shipboard Mail System as part of NOAA's enterprise-wide upgrade of the Sun Directory and Mail system. Procurement of new hardware will support life cycle planning of the NMAO system. Custom and off-the-shelve software components tested and modified to insure full integration with the NOAA system.

1.4.7 Office of Chief Information Officer (OCIO)

- The capacity of the SSMC campus network is being increased to accommodate the rapidly growing programmatic requirements of NOAA organizations in the metropolitan DC area, particularly during hurricane season and major weather events.

- Nationally, e-mail systems are being consolidated resulting in the elimination of dozens of servers and establishing a national directory fail-over environment.

- A network architecture is being implemented in accordance with national requirements that were developed in FY04.

- Enterprise architectures across the NOAA Line Organizations will be consolidated.

- The section 515 Information Quality process will be fully implemented.

- A national wireless network policy will be developed.

- Policies and procedures for a consolidated national IT inventory will be developed.

- Planning and requirements will be developed for a NOAA Management Information System.

1.4.8 Office of NOAA Finance and Administration (NFA)

- The CAMS computing and data storage infrastructure will be upgraded.

- Business processes will be re-engineered to integrate application requirements with the operations infrastructure.

- The Grants-Online system will be operationally deployed.

- Technical assistance will be provided in the development of a Facilities Real Property Assessment Tool.

- The Information Technology Center infrastructure will be upgraded to accommodate new systems and to improve the speed and reliability the CAMS applications.

1.5 An update of your operating unit's compliance with the Departmental IT Security Program requirements, including security awareness.

1.5.0 Introduction

The NOAA-wide IT Security Program is a broadly-based, decentralized program that relies on Line and Staff Office participation, partnership, and enforcement. The objective of the program is to protect the integrity, availability, and confidentiality of NOAA's sensitive systems and data,

including approximately 284 sensitive systems for which security plans have been developed. The following paragraphs describe how NOAA and its Line Offices comply with the Departmental IT Security Program requirements, including security awareness

1.5.1 National Environmental Satellite, Data, and Information Service (NESDIS)

The NESDIS IT Security Program complies with the Federal Information Security Management Act (FISMA) of 2002, the Department of Commerce (DOC) IT Security Program Policy, the NOAA Administrative Order 212-13: NOAA Information Technology (IT) Security Policy, the NOAA IT Security Manual: NOAA 212-1300, the USA Patriot Act of 2001 and Homeland Security Presidential Directive /Hspd-7.

The assigned and responsible IT security resources in the local offices actively participate in the ongoing security program planning and implementation, security test and evaluation and patch management appropriate for the life cycle stage of the IT system. Responsible named resources maintain intrusion detection software on the desktop environment for all users and collaborate with the NOAA Computer Incident Response Team (N-CIRT) upon detection of policy violations, malicious software detection or similar occurrences.

In addition, the accountable resources are members of the Information Technology Architecture Team (ITAT) Security Team that meets monthly via video teleconference (VTC) to coordinate IT Security Activities throughout NESDIS. NESDIS also continues to enhance its IT Security Infrastructure to ensure safeguarding of the infrastructure and alignment with the Federal Enterprise Architecture (FEA) Framework.

During FY 2004, all NESDIS Personnel took the New FY 2004 NOAA Security Awareness Course. During FY 2004, System Administrators (SAs) and Network Administrators (NAs) in NESDIS took the Track 1: SANS Security Essentials Course as noted in the NOAA IT Security Manual 212-1304: Operational Controls- Attachment 1 - Mandatory IT Security Awareness, Training and Education Requirements. Additionally, new SAs / NAs will also take the CISSP 10 Domains with Certification Interactive Security Course from the SANS Institute as soon as possible, after they come aboard. The appropriate NESDIS staff completed the NIST SP 800-26 Security Self Assessment Checklist on All NESDIS IT Systems and conducted internal and external vulnerability tests as elements of a compressive risk analysis. The results of the NIST SP 800-26 as well as the results of the security test and evaluation were sent to the NOAA Security Office for compilation and transmission to the Department.

Plans of Actions and Milestones (POA&Ms) Status Reports were submitted on schedule, monthly, quarterly, and annually, throughout FY 2004. Of the 126 total weaknesses, 124 were closed on schedule. The remaining two are specific to an OIG recommendation to investigate alterative fire suppression systems and determine the cost-effectiveness of replacing the water based system.

All NESDIS Resources answered the Department's CIO's calls for verification of compliance with the Patch Management Policy (DOC IT Security Program Policy 3.10.6), the Password Policy (DOC Policy on Password Management - Attachment 1), the E-Authentication Ramp up

Planning Report to OMB for Department of Commerce, the OIG inquiry regarding Penetration Testing for National Critical IT systems, and Network Boundaries and Perimeter Security (DOC IT Security Program Policy 3.16.3). NESDIS Resources also responded to the Office of the Inspector General's (OIG) call for review of several National Critical and Mission Critical IT systems.

The NESDIS ITSO participated on the NOAA Team which developed policy and procedures for submission to the NOAA CIO Council in support of the Council's initiatives and requests. The NESDIS ITSO, accountable resources and Community of Interest (COI) IT Staff are participating in the NOAA Public Key Infrastructure (PKI) Policy Development and PKI Usage Test Bed Efforts.

NESDIS significantly contributes to the DOC and the NOAA IT Security Office Programs. These Programs consisting of System Security Plans, Risk Analyses, Vulnerability Assessments, and Disaster Recovery/Contingency Plans are prepared and maintained for all inventoried IT systems.

To meet the evolving requirements of FISMA and the Department, NESDIS developed an IT Security Program that establishes a repeatable and sustainable methodology to update all IT System Security Plan Certification and Accreditation Packages to meet the National Information Assurance Certification and Accreditation Process (NIACAP) Standards and to facilitate re-certification and re-accreditation (C&A) in FYs 2006 and 2007.

Moreover, in support of evolving FISMA requirements for IT System Security Test and Evaluation (ST&E), NESDIS IT Security, Network Administration, and System Administration Resources participated in the NOAA Security Test and Evaluation (ST&E) Program to acquire an automated tool set that provides system vulnerability testing and audit capabilities. Furthermore, NESDIS System and Network Administration Resources conducted training for ITAT IT Security VTC attendees on how to configure and to use the NOAA provided tool. The tool set was deployed throughout NESDIS and NOAA in FY 2004.

1.5.2 National Marine Fisheries Service (NMFS)

NOAA Fisheries has become increasingly dependent on IT. The ability of IT systems to collect, store, analyze, and communicate data has become a critical element of Fisheries operations. As a large geographically dispersed organization, Fisheries uses IT to improve the efficiency of performing its research, regulatory and administrative functions. Consequently, Fisheries is acting proactively to protect electronic assets by implementing an effective information assurance program. NOAA Fisheries IT Security Program combines planning efforts, risk assessment, security awareness, vulnerability testing and technical guidance to facilitate an effective information assurance program. Recommendations made by the DOC Office of the Inspector General (OIG) during a routine security audit have been implemented further tightening up and fine-tuning NOAA Fisheries information assurance program. Specifically we have:

- Certified all our 30 security plans,

- Developed a formal process using Secure MGR from NetIQ for reviewing WAN and Headquarters' LAN audit logs,
- Developed a LAN Log and wireless policy,
- Trained NOAA Fisheries IT Security Officers in reviewing best practices,
- Established a patch management process using Microsoft SUS,
- Evaluated fire protection alternatives to the water sprinkler system currently installed,
- Assessed the sensitivity levels of the data and applications on networks,
- Developed a plan and schedule for the review and revision of all assessments and plans,
- Developed definitions for sensitivity levels that will be promulgated to all Fisheries sites, and
- Conducted risk assessments whenever a major system change occurs.

Also many Regional Offices further expanded their security protocol to include Internet usage policies, email best practices, and software licensing management to ensure thorough security patch distribution.

For more details see NOAA Fisheries FISMA Report.

1.5.3 NOAA Ocean Service (NOS)

In FY 2002, NOS instituted its own security program. The NOS IT Security Program is staffed by a full time Federal employee as the IT Security Officer (ITSO) and a full time contractor to support the ITSO as the Security Technical Staff (STS). The ITSO reports to the NOS CIO.

In the FY04, all NOS security plans were re-certified and re-accredited. In this process the security plans were updated, new risk assessments performed, contingency plans updated and tested and a security self-assessment performed on all systems. If any weaknesses were identified, a plan of action and milestones (POA&M) was implemented.

In FY05, NOS plans to add a technical writer to the IT Security Program staff to assist the program offices to write meaningful, accurate and useful security and contingency plans and other security documentation.

<u>IT Security Program Responsibilities</u>

The NOS IT Security Program (ITSP) provides comprehensive coverage to ensure that NOS IT assets are protected. The ITSP is the cornerstone of IT security in NOS providing planning, monitoring, training and other services to assist NOS IT administrators protect their systems against threats and disaster. The ITSP is responsible for ensuring that all Federal, DOC, NOAA and NOS security policies and guidelines are implemented within NOS.

The NOS ITSP works closely with the NOAA Information Technology Security Program and the NOAA Computer Incident Response Team (N-CIRT) to ensure that NOS operates consistently and with NOAA and DOC IT security policies and practices. Data calls, plan accreditation and policy development is coordinated through the NOAA IT Security Office. The

NOS ITSP works as an extension of the N-CIRT during incident response and uses the N-CIRT as a resource for monitoring and managing IT security.

The ITSP performs several broad functions in support of NOS IT security:

Planning

The ITSP coordinates security planning efforts by managing the accreditation of all security systems. The ITSP advises and assists the NOS office level IT security contacts in writing security plans and updating the plans annually or when a significant change to the system occurs. By holding workshops on IT security planning, the ITSP provides guidance and assistance in performing risk assessments, contingency planning and writing disaster recovery plans. Accomplishing these tasks ensures the systems are successfully accredited as required every three years.

Training

Internal incidents have demonstrated that continual training in IT security best practices is a necessity in NOS. The ITSP determines core competency levels for system administrators and employees that perform IT as part of their duties. The ITSP arranges for vendor training, distance learning (Internet-based training) and holds seminars in IT security. Training in configuring anti-virus programs and securing servers is required for system administrators and help desk personnel.

The ITSP also ensures that all NOS employees have completed the on-line security awareness program presented on the NOAA IT Security Program web site. In FY04, 2149 NOS employees or contractors completed the IT Security Awareness Course, 99.6% of the total number of employees and contractors, up from 97% in FY03.

Inspection

Determining how well NOS systems are secured is a responsibility of the ITSP. Using state-of-the-art monitoring equipment and working with the N-CIRT, the ITSP performs scheduled and unscheduled scans of NOS systems. Using the results, the ITSP works with the system administrators to increase the security of NOS systems.

The ITSP also coordinates annual self-assessments of NOS systems. The NIST guidance on self-assessment and industry standard information security assessment methodology is followed to determine where IT security can be improved. Using the self-assessments, the ITSP works with NOS offices to increase the level of security of their systems.

To ensure that the NOS IT security program is functioning well, that known security vulnerabilities are addressed and security plans are up-do-date, the ITSP coordinates independent self-assessments as needed and conducts periodic IT security reviews of the NOS programs.

Protection

The ITSP functions as a clearinghouse of information about the latest Internet threats, instructional material, anti-virus program files, patches and other information pertinent to IT security. The ITSP ensures that all NOS IT security contacts have the latest information regarding what they need to do to make their systems as secure as possible.

The ITSP also works closely with the N-CIRT and the NOAA Network Operations Center (NOC) to advise and assist NOS offices to secure their systems behind firewalls and still be able to perform the office business with the outside world.

Incident Handling

When incidents occur, the ITSP works closely with the N-CIRT to assist NOS administrators to stop the intrusion and recover from whatever damage was inflicted. The ITSP monitors and tracks incidents to watch for patterns and vulnerabilities.

Data call response

By managing the above functions, the ITSP has the information on hand to answer data calls from NOAA, DOC and OMB. The ITSP coordinates responses from NOS offices and works with the NOAA IT Security program to provide the requested information in a timely manner.

IT Security industry monitoring

As IT security threats evolve, so does the technology to quell them. The NOS ITSP monitors the security industry for information on new threats and new methods for protecting systems. The ITSP advises the NOS CIO and NOS offices on ways to improve IT security in NOS.

Field Offices

A large portion of NOS systems and personnel are located in field offices across the country. The ITSP is not concerned with the Silver Spring campus alone, it provides services to the field offices as well. All of the above functions are performed with the field offices in consideration so that NOS managers can be assured that all IT systems are fully protected, no matter where they are located.

IT Security Officer Duties

The duties of the NOS ITSO are:

- Collect and analyze metrics quarterly in accordance with NOAA's Computer Security Manual and assist the NOAA ITSO to assess the state of NOAA's IT security posture.
- Implement and manage execution of the IT security program for NOS systems.
- Act as the focal point for NOS for all matters relating to any type of IT security related incidents or violations.
- Act as part of the NOAA CIRT.

- Assist system owners in preparing an accreditation package for all IT systems.
- Develop, implement and manage a computer security awareness training program for all employees and contractors.
- Review/audit security controls for all systems/applications semi-annually and provide reports to the NOAA ITSO. Provide as required IT security related reports to the NOAA ITSO.
- Develop and maintain an inventory of NOS IT systems/applications.
- Provide management of security for all IT resources within the NOS to include ensuring the development of all NOS policies, plans and procedures commensurate with requirements.
- Provide security budgetary advice consistent with business needs to the NOS CIO for planning purposes.
- Review and advise the CIO of technological advances in IT security that can be used on a NOS scale and provide reduced cost for security efforts.
- Assist the STS to perform periodic inspections, both scheduled and unscheduled, of NOS systems to ensure that NOS is maintaining a secure environment.
- Coordinate the annual reviews required by GISRA and follow-up on any suggestions to improve IT security within an office.

An alternate ITSO performs the duties in the absence of the ITSO.

Security Technical Staff Duties

Duties of the NOS STS are:

- Develop, implement, and maintain internal incident response procedures and coordinate those procedures with the NOAA Computer Incident Response Team (N-CIRT).
- Work directly with the N-CIRT on their NOS system computer incidents.
- Participate in training identified/provided by the NOAA IT Security Office for system and network administrators.
- Perform inspections on NOS systems to identify vulnerabilities and assist the system administrators to eliminate the problems.
- Assist the NOS contact during incidents.
- Work closely with the NOS ITSO in the security training program.

1.5.4 National Weather Service (NWS)

NWS is in compliance with DOC's IT Security Program Implementation Policy. It has initiated and/or completed the following IT security actions:

- Re-Certification and Accreditation of all IT systems using the National Information Assurance Certification and Accreditation Process (NIACAP) has been completed
- Completed annual review and update of IT systems security plans
- Completed annual review and update of IT systems FISMA self-assessments
- Completed periodic vulnerability scanning on NWS systems and LANs

- Annual security awareness training has been completed for all NWS personnel (employees and contractors)
- Developed and implemented local IT security policy and guidance

1.5.5 Office of Oceanic and Atmospheric Research (OAR)

NOAA Research has taken a proactive approach in facilitating the planning, implementation, and ongoing improvement of IT security, in accordance with Federal legislation and regulations and Departmental and NOAA policies and best practices.

- 100% systems re-certified and re-accredited (12/2003);
- 100% system security plans updated (7/2004); 100% risk assessments updated (8/2004); 100% contingency plans updated (9/2004);
- Implemented Patch Management (effective 9/30/2004) and IT Security Training (effective 4/5/2004) policies, signed by the Deputy AA;
- Installation of the Harris Vulnerability Scanning Software Tool; implementation of the NOAA vulnerability scanning standards; delivery of quarterly reporting to the Department; remediation of "high" vulnerabilities;
- Incremental testing of contingency plans (ongoing);
- Installation of personal firewalls for Tier 2 and Tier 3 Government furnished PCs; dissemination of user guidance for personal firewall configuration on personal equipment; and,
- Deployment of the NOAA CIRT Satellite Office for Boulder facilities with IDS capability.

1.5.6 Office of Marine and Aviation Operations (NMAO)

NMAO's IT Security Program complies with the DOC and NOAA IT Security Program. Security Awareness is provided through inter office eMail announcements, alerts, warnings and posters. The NOAA on-line Security Awareness Training is mandatory for all shore based NMAO employees. A mandatory off-line version has been implemented for employees on NOAA ships to take the training and automatically register their completion in the NOAA ITSEC Awareness Student Data Base.

1.5.7 Office of Chief Information Officer (OCIO)

The IT Security Office also includes the NOAA Computer Incident Response Team (N-CIRT) that has responsibility for the prevention, identification, containment, eradication, recovery, and follow-up of incidents and the maintenance of evidentiary chains.

Statutory requirements for this program are derived from the Computer Security Act of 1987, (Public Law 100-235); the Federal Information Security Management Act, the Office of Management and Budget Circular A-130, "Management of Federal Information Resources"; and the A-130 Appendix III, "Security of Federal Automated Information Resources". NOAA Administrative Order 212-13, "Information Technology Security Management", explains the

roles and responsibilities of individuals and organizations involved in computer security within NOAA.

In addition to the formal requirements dictated by OMB, the program is based on security awareness training and information dissemination, risk assessments, formal security site reviews, corrective actions, and technical support. The core of OMB requirements apply to each system and includes a formal system security plan, risk assessments, contingency plans, development of plans of actions and milestones for identified weaknesses, certification, system accreditation, and verification reviews. Security awareness training is provided through new employee and manager training, a mandatory web-based IT security tutorial, seminars, and conferences. Information dissemination includes: topical workshops, a NOAA Security Web page, a web-based IT security tutorial, security alerts, quarterly meetings among security officers, coordination with other Federal agency security officers, and publications such as the IT Security Planning Guide. Risk assessments and corrective actions occur through formal site reviews and independent technical evaluations. To further support these activities NOAA has assembled suites of software for protecting systems (commercial anti-virus and security planning software, public domain Internet tools), and performs periodic security assessments of critical systems. The IT Security Office completed FY2004 NOAA-wide security awareness training for all NOAA employees, including contractors. The office held a two-day IT Security Conference in May 2004, which included technical training classes. In addition, it contracted with SANS on pricing agreement for technical IT security training for system and network administrators. Finally the IT Security OfficeHeld DOC sponsored DAA training and a 4 day NIACAP C&A Workshop for ITSOs and other security staff.

1.5.8 Office of NOAA Finance and Administration (NFA)

IT Security within NOAA Finance and Administration is addressed through the following activities:

- Security Awareness training for all employees and contractors
- IT Network Protection through virus protection and patching
- Annual FISCAM Audits

All finance and administrative personnel are required to take the annual IT Security Awareness training online. In addition, all incoming contractors are required to take this course prior to access to NOAA's systems.

Based on past experiences with computer infections NFA has become much more aggressive in preparing for future computer infections. NFA continues to implement the following actions to improve our response to computer threats:

- Requiring physical and technical access to all machines on NFA networks, including training and special software computers, regardless of who is responsible for updating and maintaining the machines;
- Restricting and monitoring access to local area network (LAN) server rooms;

- Investigating the use of Instant Messaging to improve communications with users and among systems support staff;
- Reconfiguring and activating software (E-Policy Orchestrator) to scan for infections every 4 hours; if an infection is found, additional software (Stinger Tool) will clear the machine;
- Establishing and configuring a Microsoft System Update Server to automatically identify and push updates to computers.
- Establishing and configuring an imaging server to ensure consistency in loading standard software configurations on desktop machines.

1.6 A brief summary of prior year, FY 2004, accomplishments

1.6.0 Introduction

A summary of FY 2004 accomplishments for each NOAA Line Office is provided in the following paragraphs.

1.6.1 National Environmental Satellite, Data, and Information Service (NESDIS)

1.6.1.1 FY 2004 IT Portfolio Systems

1.6.1.1.1 NOAA/NESDIS Office of Satellite Data Processing and Distribution (OSDPD) Systems CIP

Brief Summary of FY 2004 Accomplishments:

- Finished creating detailed CEMSCS backup operations plan
- Initiated procurement activities to support CEMSCS backup system development

1.6. 1.1.2 NOAA/NESDIS/ NOAA National Data Centers (NNDC)

NOAA is the Federal Agency with statutory responsibility for long-term archive management of the Nation's collection of environmental data and information. NOAA provides its data and information products to be available to the Nation as part of a national decision support system. With the advent of Internet technologies a decade ago, the number of accesses for data and information managed by NNDC has increased by several orders of magnitude. NNDC's vast data holdings are collected and stored in various forms of storage media and located at the following four locations: National Climatic Data Center, National Oceanographic Data Center, the National Geophysical Data Center, and the National Coastal Development Data Center. The NNDC exhibit 300 also includes two supporting projects: National Virtual Data System (NVDS), Climate Data Modernization Program (CDMP). The NNDC are responsible for the perpetual stewardship, archiving, and dissemination of climatological and environmental data. All of NNDC's strategic objectives are dependent upon the use of extended environmental and climatological data and information periods of record. Continued improvement and the very real economic benefits to our Nation obtained from those improvements require continued access to the rapidly increasing volume of historical data.

1.6. 1.1.3 NOAA National Data Center's (NNDC) National Virtual Data System (NVDS)

The NOAA National Data Centers (NNDC) Server system has been operational since 2000 and is a distributed, web-based system with nodes at the three physical data centers (NCDC located in Asheville, NC; NGDC located in Boulder, CO; and NODC located in Silver Spring, MD). The NNDC is logically connected by the Internet and is a virtual data access system portal identified as the National Virtual Data System (NVDS). NNDC is not a data collection interface; however, it is the repository of the dataset inventories including environmental data, information, and products accessible through NVDS. NVDS provides an e-Government component for purchase and order fulfillment. The functionality of NVDS will be integrated into CLASS over time and as funding permits.

Systems and processes improved and replaced:

System Replacement: The Customer Order Management Processing System (COMPS), the e-Government component known as COMPS is specialty software and has become outdated, difficult to update, and difficult to integrate with even the "more ordinary" newer technologies such as windows XP and faster CPU speeds.

COTS software replacement applications: Consistent with our Information Technology Architecture, NESDIS acquired the Oracle e-Business suite to serve both NVDS now and CLASS when appropriate. The COTS software addresses and satisfies all of the NESDIS e-Government requirements and e-Business rules and provides equal or better capability and functionality than currently available. The COMPS replacement system is called the NESDIS e-Commerce System or NeS. The COTS is web-based giving greater flexibility in use by more users for NVDS and that which will be required by CLASS. The COTS will also support additional customer service requirements from any NESDIS on-line service. Appropriate hardware consistent with both NVDS and CLASS target goals was also acquired and provides total redundancy.

Process Improvement: The NVDS Metadata and Geospatial map services/display processes, updated in FY 2002, continue process improvement. Development of the NOAA Metadata Management Repository is in process and will eliminate dependence on the older technology and approach used by NOAAServer. NESDIS and NOAA continue to move toward a strong metadata process and enhanced Geospatial capabilities. Another goal is to employ a web-based metadata tool providing accessibility to all of NESDIS.

Brief Summary FY 2004 Accomplishments:

- Apr 04 - Phase 1 code freeze, NCDC users parallel testing NeS and COMPS
- Jun 04 - NGDC and NODC users begin parallel testing NeS and COMPS
- Sep 04 - Full implementation of NeS Phase 1; all Data Center off-line orders processed through NES; COMPS placed in standby mode
    - Web based Blue Angel Metadata Tools (BAT) to all data centers
    - Continued increase in data product and dataset inventory by 10%

- Continued increase in metadata inventory by 10%

1.6. 1.1.4 Climate Database Modernization Program (CDMP)

The major objective of the National Oceanic and Atmospheric Administration's (NOAA's) Climate Data Base Modernization Program (CDMP) is to acquire, digitize and provide access to the climate and environmental data held in the national archives of NOAA, other U.S. government agencies, and some foreign institutes/archives. Once the data are imaged and indexed and/or keyed and placed into a NOAA database, the next step is to make them available electronically via the Internet. This not only benefits NOAA by modernizing its activities, but more importantly, it directly benefits researchers, global change scientists, and the general public. Improved metadata is also a critical aspect of the CDMP effort, adding value to the data by providing answers to many of the questions concerning the data and how they were collected and processed. CDMP supports NOAA's core mission functions to archive, store, and manage environmental data and information under data stewardship for the United States. Indeed, these holdings are part of the U. S. National Archives. Many were recorded on paper, film, and digital media, and stored at various NOAA Centers. The demand for rapid and complete access to the Nation's and world's climate data by researchers and global change scientists was a key driver in the establishment of CDMP, which is managed through the National Climatic Data Center located in Asheville, NC. This program was initiated by Congress to assist NOAA in modernizing and improving access to the Nation's climate history as well as its current climate data and information. The program has created several hundred data entry/information management jobs in areas of underemployment in eastern Kentucky, West Virginia and Maryland.

Brief Summary of FY 2004 accomplishments:

The number of records made available on-line via the CDMP WSSRD® system (Web Search Store Retrieve Display) has grown from just one-half million in 2000 to over forty- three million in 2004, equating to near 5 terabytes of data. CDMP has keyed 27 million additional surface hourly meteorological records, extending the database from 1948 back to the establishment of some 150 airport stations. The period of record will be extended back into the mid 1800s by keying the city Weather Bureau office and Army Signal Service records. Other databases throughout NOAA are being expanded with the support of CDMP through the efforts of numerous task managers and international partners. The program continues its international connection, with data modernization efforts underway in Africa and Central America. CDMP has also helped arrange agreements to image or key marine databases with Canada, Germany, China and the World Meteorological Organization's library.

The scope and variety of CDMP's data recovery projects is testimony to the wide application of the program. Projects supported by CDMP range from space to the ocean's bottom, e.g. keying ionospheric data used to build climatologies of the near-earth space environment, to digitizing Mechanical Bathythermograph (MBT) data measurements of water temperatures at various ocean depths.

All these data have valuable uses. The ionospheric records represent the best long-term measurements of the critical regions that are important to the operation of radio communications, surveillance radars, satellite to ground communications, and data-driven space environmental models. Meanwhile, the bathythermograph data will help fill in important gaps in the sea temperature database.

At the coastline, CDMP continues to support a multi-year U.S. shoreline vectorization project which contributes to the modernization and access of a climate database – the only high-resolution, tidally controlled shoreline database in existence.

Through the efforts of CDMP, the NOAA library has been able to provide the Daily Weather Map series and the Monthly Weather Review to web users. This was possible through the imaging of these valuable historical documents. These digital images of actual weather maps, dating from the 1870s up to the current year, are now only a mouse click away on the Internet.

The Iraqi Upper Air Collection data from the late 1950s thru the mid 1980s were loaned to CDMP through the Air Force Combat Climatology Command (AFCCC). These one-of-a-kind records were provided so they could be preserved before deteriorating beyond the point of readability. Approximately 22,500 records have been imaged through CDMP. After completion, the Air Force will return the original records to the Iraqi Meteorological Service.

In all, NOAA's three data centers (National Oceanographic Data Center, National Geophysical Data Center and National Climatic Data Center) plus the other NOAA line organizations had 43 tasks underway through CDMP as of June, 2004.

On-line Data Innovations. To provide access to the millions of climate records imaged through CDMP, an innovative, web-based tool was needed. CDMP partner and contractor Information Manufacturing Corporation (IMC) provided the solution. IMC's image retrieval system, known as WSSRD® , is a searchable, web-based system for displaying images, text and PDF files, and other documents that can be indexed and stored in a data base. CDMP contracted with IMC in 2001 to begin uploading images. Now, any researcher with Internet access and a WSSRD® user account can have access to literally millions of images on-line.

In 2003, through cooperative efforts of the CDMP contractors, NCDC placed a new system on-line to provide transparent public access to recent and historical serial publications for both paying customers (through the NVDS On-line Store) and for free access users (government, education, and military). The first publication offered through this system was the Climatological Data (CD) publication. Previously, on-line subscribers were only able to access this publication back to October, 1997. Now, it is available back to 1890. Through CDMP, all five serial publications (Climatological Data, Hourly Precipitation Data, Storm Data, Monthly Climatic Data for the World, & Local Climatological Data) have been scanned, and all but the Local Climatological Data Publication are available through the on-line store. All are available on WSSRD®.

- NCDC – See Section 1.6.1.2.6

- NGDC – See Section 1.6.1.2.7

- NODC – See Section 1.6.1.2.8

1.6.1.1.5 NOAA/NESDIS/Comprehensive Large Array-data Stewardship System (CLASS)

Brief Summary of FY 2004 Accomplishments:

Integrated Legacy satellite data into CLASS Separate archive systems:

- Configured and tested CLASS at NCDC and transitioned to operations
- Established CLASS as operational within the SAA environment with POES, DMSP, and GOES data sets
- Completed NPP/NPOESS Campaign Implementation Plan
- Completed IJPS / METOP Archive and Access Segment Preliminary and Critical Design Reviews
- Completed Software Release 2.0/ 2.1 / 2.2, establishing the CLASS Operational Dual-site Configuration within the SAA environment.
- Completed Software Release 3.0 providing Delivery Manifest and initial Web Enabled Subscription Management

1.6.1.1.6 NOAA/NESDIS/ Satellite Operations Control Center Command and Data Acquisition (SOCC/CDA)

The following simplification/reengineering/design projects are required for GOES ground system:

- Increase automation of more operations including the increased use of Consolidated Workstation (CWSs)
- The CWS in continuing and should be complete within all of OSO by June of 2005
- Improve IT security such as by using full encryption technology for data and command traffic
- All traffic to and from the NOAA satellites are encrypted. All data within the OSO environment (SOCC, FCDAS, WCDAS, ESOC, SOC) are provided by point to point connections that are controlled by physical security.
- New processes have been put into place to move the OSO environment to be ISO compliant within three years. These processes include new control boards, new procedures and new policies that reflect the ISO standard.
- Encourage adherence to standards to ease integration, interoperability, and communications among products developed by different vendors
- New policies have been put into place including project management assignments with set procedures to ensure proper communication is addressed with the use of scheduled meetings, team building and formal Configuration Control Board approval. This ensures all NOAA policies are adhered to, all IT security concerns are addressed and documentation of all needed procedures is accomplished.

- Replace VAX VMS computers with high performance servers and workstations to gain improvements in performance (i.e., processing power; for example, the number of tasks performed per unit of time), compatibility, supportability, and maintainability; replacement decision will be based on a trade-off analysis that takes into consideration the outstanding reliability of the VAX VMS computers, exhibiting 200 days to a year of continuous uptime
- The CWS project addresses the bulk of VAX / VMS systems being replaced. The VAX Dechub networking hub replacement project was completed at all OSO sites in FY 2004. A new study will be proposed in FY 2006 to address the functionality and maintainability of the other VAX / VMS systems.
- Retire the DEC Routers and replace them with Cisco routers to gain improvements in throughput, response time, and maintenance
- The DEC router replacement project is continuing with 50 percent of the routers being replaced. The project will be complete by the end of FY 2005.

The following simplification/reengineering/design projects are required for POES ground system:

- Polar Acquisition control System (PACS) Development Rail - Provides an offline system for testing new software releases to reduce risk before putting into operating PACS.
- The PACS development rail backbone network has been configured throughout all of the OSO sites. With the completion of the DEC route about replacement project, the Dev rail project will be complete.
- Satellite Operations Management System (SOMS): Provides capability for simultaneous, coordinated support of ground and space activity of multiple satellites of the ATN family and other non-NOAA polar-orbiting meteorological programs.
- The SOMS project is continuing. During FY 2004 a SOMS station was added at the WCDAS and FCDAS facilities.
- Initial Joint Polar Satellite Program (IJPS): Ground system changes must be made to interface with the European satellites (Metop) that will be part of the joint system.
- The IJPS project is on schedule with the networking system being installed at this time. The network backbone will be complete by Dec. of 04
- Coriolis Support: Changes are required to support this Air Force and Navy satellite mission.
- The Coriolis system has been installed at the FCDAS OSO facility and is operational.

1.6.1.1.7 NOAA/NESDIS/ NPOESS Ground System

- Software Integration Check (SWIC 1.1) for IDPS
- Successful completion of C3 component of SWIC
- All ground systems elements are well underway and development schedules support mission readiness testing

1.6.1.1.8 NOAA/NESDIS/ GOES Ground System

Brief Summary of FY 2004 Accomplishments:

- Data Collection System (DCS) Automated Processing System (DAPS) – Performed system integration with new demodulator front end, acceptance testing, parallel operations, and phase-in operations

Note: See the SOCC/CDA descriptions (Sections 1.6.1.4, 3.2.4, 3.3.4) for a summary of the OSO systems that support GOES Ground System operations (e.g. GOES Archive System, GIFTS program, GOES N/O/P/Q Spacecraft Support Ground System, etc.)

1.6.1.1.9 NOAA/NESDIS/POES Ground System

See Section 1.6.1.4 for POES accomplishments as well as Section 1.6.2.10 (Integrated Program Office) for WindSat/Coriolis accomplishments.

1.6.1.1.10 NOAA/NESDIS/ Environmental Satellite Processing Center (ESPC)

Activities which directly support the NOAA goal of Advance Short-Term Warnings and Forecasts" and are Exhibit 300-related:

CEMSCS accomplishments:

Porting Project: OSDPD proposes to migrate the processes and services that currently run on the Amdahl mainframe to an IBM RISC based architecture running an AIX operating system, a version of UNIX. A porting migration implementation plan has been completed and accepted by management. An Application Porting Plan has been written to guide the process of migration. A separate acceptance plan is being written for each application.

Soundings Software Porting: Completed the porting of the Soundings application software from the OS390 and UNICOS environments to the UNIX environment. This accomplishment takes advantage of emerging technology, improves product systems interoperability with other software systems, provides cost effective maintainability, and product reliability.

Integrate AMSU-B into ATOVS (System 200x): The Soundings application software was modified to integrate ATOS with AMSU-B and is known as System 200x. This system serves as a benchmark capability compatible with planned next generation National Polar-orbiting Environmental Satellite Systems (NPOESS).

AWIPS Support for Soundings Product Quality Assurance: An AWIPS workstation was procured to monitor the soundings data products quality and assist users in the field.

Initial Joint Polar-orbiting Operational Satellite System (IJPS) Preparations: The IJPS Ingest and Preprocessing team completed the detailed design (pipeline processing mode, etc.) and presented a review for both the Advanced Front End Processor (AFEP) ingestor and the preprocessors. They also worked toward completing all upgrades, approved by the SPSRB, for the NOAA-N preprocessors. This includes the new HIRS version 4 for calibration, the Lunar detection for HIRS, the Lunar Contamination and Correction for AMSU-A, simulating MHS data (as well as

using thermal vacuum data) to complete testing the MHS preprocessor, upgrading the 1b* utilities to handle version control and making modifications/upgrades to the 1b* and the 1b formats, for NOAA-N. Since the NOAA-N launch was moved to February 11, 2005, they have also ran an acceptance test for the AFEP to make it operational, and started to produce test data for the 1b* and 1b users, as the plan is to change the NOAA-15, 16 & 17 1b*and 1b formats, to the NOAA-N format some 30 days prior to launch.

Meteorological Operational Satellite (METOP) Software and Hardware: The new Advanced Front End Processor was fully tested and replaced the outdated Front End Processors. The new IBM P655 is being used as the operational platform, and application software from the development IBM SP and CRAY was migrated to the P655.

Advanced Microwave Scanning Radiometer for EOS (AMSR-E) – The NASA supplied raw L1B processing software for AMSR-E has been implemented on NOAA equipment at the Goddard Space Flight Center. In addition, the NASA supplied L1B to L2 and L1A to L1B processing software for AMSR-E has been implement on NOAA equipment at the Suitland Federal Building 4 (FB4). The AMSR-E L1B data was integrated into the L2 process at FB4.

Derived GIS and CoastWatch products for L2 AMSR/AMSR-E products. Provided AMSR/AMSR-E data/products in near real time to the National Center for Environmental Prediction (NCEP), European Centre for Medium-range Weather Forecasts (ECMWF), Japanese Meteorological Agency (JMA), and Fleet Numerical Meteorology and Oceanography Center (FNMOC). Provide risk reduction assessment of AMSR/AMSR-E back to the Integrated Program Office (IPO).

Systems/Processes Improved and Replaced - Amdahl: In FY 2004, the z/OS operating system was put into production on the Amdahl. z/OS replaced the current operating system, OS/390, which will not be supported after September of 2004.

Configuration Management (CM): In FY 2003, IPD installed and began using the CM tool "Dimensions". The Dimensions tool is being used to automate and enforce IPD CM processes. During FY 2004, Dimensions was customized to improve, automate, and document changes to IPD hardware and software systems.

Low Rate Information Transmission (LRIT) Upgrades: The Geostationary Operational Environmental Satellite (GOES) East Weather Facsimile (WEFAX) to LRIT digital format was completed in FY 2003 with time share to begin 7 October 03 and full operations to begin approximately October 2004. In addition to WEFAX type products, LRIT also includes GOES Data Collection System data. National Weather Service products and messages are also anticipated to commence in FY 2004. GOES West product development and LRIT transmissions will commence in FY 2004. These new digital data broadcasts will improve the quality and timeliness of satellite and other critical weather data for all GOES direct readout users including schools, national and international government decision makers, weather forecasters, emergency managers and homeland security, military tactical teams, and many other environmental data users.

Facsimile Transmission System (FXTS) Replacement: The FXTS has produced Geostationary Operational Environmental Satellite (GOES) Weather Facsimile (WEFAX) products for well over a decade and is far beyond its life expectancy. Immediate major concerns are obsolete boards with no vendor or third party support and no spare parts for critical components. Though Low Rate Information Transmission will eventually replace WEFAX, WEFAX is expected to continue operating until after the new NOAA Satellite Operations Facility (NSOF) move. Preliminary assessments determined that the new NSOF mainframe system will not be able to support the FXTS, which uses an IBM Bus and Tag Channel connection and emulates an old style magnetic tape drive. Even if the mainframe can support this configuration, the interface and necessary support will be very costly. Requirements for a replacement FXTS have been given to Avtec Systems Incorporated, subcontractor to Computer Science Corporation Incorporated. The new system will use COTS components and utilize common network connections for communications. Avtec is currently building the new FXTS replacement and is 60% complete.

Desktop: Purchase of approximately 39 desktop personal computers. The incremental replacement of personal computers allows for a constant refresh of technology each year and facilitates the speedy deployment of new technology throughout the organization. IPD is able to take advantage of the constant improvements in PC technology. Achieve full implementation of Windows XP for office automation. Purchase software and software upgrades to maintain compatibility with our customers.

SATEPS accomplishments:

- Creating of Private Optical Network (PON). Retooling of all SATEPS ingest/server systems to a "single pull" coding technology which also facilitated and implemented prime and redundant (hot backup) T-3/PON pathway switching for SATEPS data acquisition systems. Further retooling of these same systems provided for limited Continuity Of Operations (COOP) off-site primary sensor data acquisition (i.e., limited pulls from SSEC, and the relocations of SATEPS NSC backup ingest systems to FB4) was also implemented.
- Upgraded all CISCO router and enterprise servers to IOS 12.2.18
- Installed secure VPN server.
- Built a Windows 2003 Active Directory Domain.
- Implemented Progeny security patch service.
- Transition in all SATEPS mission ingest server systems to "single pull" coding technology to reduce bandwidth utilization across the aging T-3 microwave and in preparation for T-3/DS3 upgrade services. Relocated seven ingestors to FB4 and are pulling imagery and data over the PON though TCP/IP with error correction.
- Implemented the Amanda backup server.
- Acquired laptops and docking stations for users who access SATEPS remotely.

1.6.1.1.11 NOAA/NESDIS/ Search and Rescue Satellite-Aided Tracking (SARSAT)

The SARSAT System works in the following manner. Search and rescue instruments are flown on the United States' NOAA polar-orbiting and geostationary-orbiting satellites and Russian Nadezhda series of polar orbiting satellites. These instruments are capable of detecting signals on

the earth's surface transmitted from emergency distress beacons referred to as Emergency Locator Transmitters (ELTs), Emergency Position Indicating Radio Beacons (EPIRBs), or Personal Locator Beacons (PLBs). ELTs are primarily used by aircraft, EPIRBs by maritime vessels, and PLBs by individuals on land.

ELTs, EPIRBs, and PLBs may operate on the 121.5, 243 or 406 MHz frequencies. 121.5/243 MHz beacons transmit an analog signal that does not contain any information about the beacon or user. Alternatively, the 406 MHz beacons transmit a digital code that contains information about the type of beacon. Each 406 MHz beacon in the world has a unique identifier. The unique identifier allows for additional information called registration data to be linked to each beacon. The Federal Communications Commission CFR Title 47, Part 80, CFR Title 47, Part 87, and CFR Title 47, Part 95 require 406 MHz emergency beacons to be registered with NOAA.

The SARSAT ground stations, after computing the location of the emergency beacon using Doppler technology, transmits an alert message to the U.S. Mission Control Center (USMCC) via a data communication network. The USMCC performs matching and merging of alert messages with other received messages, geographically sorts the data, and subsequently transmits a distress message to another MCC, an appropriate search and rescue authority such as a national Rescue Coordination Center (RCC) or a foreign Search and Rescue (SAR) Point of Contact (SPOC).

Brief Summary of FY 2004 Accomplishments include:

New Ground station equipment installed:

The installation of the all new satellite ground station equipment, aka Local User Terminals (LUTs), was completed in 2004. Eleven new POES ground stations as well as the 3 new GOES ground stations, are now operational after successful completion of both NOAA specific acceptance testing and the international mandated Cospas-Sarsat commissioning process. The POES ground stations are located in located in Alaska, California, Florida, Guam, Hawaii, and Maryland while the GOES ground stations are located in Maryland only.

Network Upgrade:

SARSAT completed a life cycle refresh of the LAN components supporting the operational SARSAT network. This includes network components such as routers, hubs, switches, and security related components of firewalls, intrusion detection systems, and automated security monitoring tools.

LAN Segmentation: DSD physically separated the SARSAT operational and administrative LANs. The DSD administrative LAN, is now on an enterprise LAN segment also supporting the OSO and OSD administrative LAN. The DSD administrative LAN is now part of NOAA5028 Satellite Operations Control Center Local Area Network.

This change in our LAN configuration brings us closer to the currently evolving "network

operations center" concept being developed for the NSOF era. It demonstrates that three separate NESDIS offices can be successfully managed and maintained by a common network support team.

FTP Over VPN:

SARSAT has established an isolated FTP segment and restricted access to international COSPAS-SARSAT partners. Access to this segment is limited to partners through established an established VPN capability. Work continues to bring partners online on an individual basis as capabilities are established in the host countries.

1.6.1.2 FY 2004 Additional IT Accomplishments

1.6.1.2.1 NESDIS Headquarters (HQ)

The NESDIS Office of the CIO (OCIO) is charged with developing and maintaining an Information Technology (IT) Enterprise that fully supports the life cycle of NOAA's Satellite and Information Services programs; is secure, reliable, and cost effective; encourages information sharing; and complies with all applicable policies. The OCIO provides the functions for planning, resource allocation, application, integration and utilization of a wide realm of IT capabilities and components. The OCIO, located in the Headquarters NESDIS facility, supports all the Offices and Centers throughout NESDIS and also manages the Local Area Network (LAN) for NESDIS Headquarters.

The OCIO provides oversight and support for the NESDIS IT Architecture Team (ITAT), consisting of senior IT professionals from each NESDIS Office and Center who meet regularly on enterprise-wide IT issues. The OCIO is responsible for overall IT Security in NESDIS (see Section XX for details).

The OCIO Help Desk team maintains the NESD Headquarters LAN, the enterprise e-mail system, the Lightweight Directory Access Protocol (LDAP), and supports over 150 local users.

In FY 2004, the OCIO accomplished the following activities:

- Managed successfully the conversion from WordPerfect to Microsoft Word as the NOAA standard for document exchange. Training information was provided to NESDIS Offices and Centers.

- Coordinated NESDIS participation in the DOC-wide enterprise software buy for Microsoft Office products.

- Continued technology refresh of the NESDIS Headquarters LAN installed Personal Computer (PC) base.

- Replaced several servers as part of technology refresh for the LAN infrastructure.

- Supported NOAA Line Offices in the internal assessment process for OMB Exhibit 300 documents. This was a short-fused activity that enabled NOAA to provide more robust submissions.

1.6.1.2.2 Office of Satellite Data Processing and Distribution (OSDPD)

The Office of Satellite Data Processing and Distribution (OSDPD) is comprised of three divisions with ancillary operational support in the National Ice Center. These divisions include the Information Processing Division (IPD), the Direct Services Division (DSD), and the Satellite Services Division (SSD). The Office provides data collection, analyses, and interpretations from polar-orbiting and geostationary satellites. It also maintains an operational satellite data distribution network providing user access to real-time or near real-time environmental data and information.

Working with other organizations within NESDIS and NOAA, new products are tested, evaluated and implemented when deemed operationally useful. In partnership with other agencies, OSDPD evaluates and deploys new technologies to satisfy emerging requirements. OSDPD supports disaster mitigation and warning service for U.S. Federal agencies and the international community. Routine environmental analyses are provided to forecasters and the models of the National Weather Service (NWS), and to oceanographic and other environmental users.

The Central Environmental Satellite Computer System (CEMSCS) (see section 3.4) is located in the IPD. CEMSCS ingests environmental data from NOAA's polar and geostationary spacecraft, and produces environmental products and parameters such as vertical atmospheric measurements (soundings), low-level wind vectors, and sea surface temperatures. These data and products are critical inputs to NWS analysis and forecast models. The system is also used for satellite image production and serves as the files server for the digital satellite data archive. CEMSCS also ingests and processes data from non-NOAA satellites to produce products to support protection, restoration, and sustainable use of coastal and oceanic ecosystems.

The Satellite Environmental Processing System (SATEPS) (see section 3.5) is housed in the SSD. The SSD serves as the primary interface between NESDIS and geostationary environmental satellite data users. SATEPS is a client/server workstation/PC platform environment which supports the continuous (24 hours per day and seven days per week) flow of data. SATEPS provides the real-time processing, file transfers to server systems, raw data and re-mapped areas to the weather customer. Time-constrained processing and deadlines are met with high-end systems that must keep pace with the demand for more products, more quickly.

The Search and Rescue Aided Tracking (SARSAT) (see section 3.8) System can be found in the DSD. Search and rescue instruments are flown on the United States' NOAA polar-orbiting (POES) (see section 3.2) and geostationary-orbiting satellites (GOES) (see section 3.1) and Russian Nadezhda series of polar orbiting satellites. These instruments are capable of detecting signals on the earth's surface transmitted from emergency beacons. The satellites relay these distress signals to SARSAT ground stations, which after computing the location of the emergency beacon using Doppler technology, transmits an alert message to the U.S. Mission

Control Center (USMCC) via a data communication network. The USMCC performs matching and merging of alert messages with other received messages, geographically sorts the data, and subsequently transmits a distress message to the appropriate authorities.

In addition to the SARSAT, the Direct Services Division also supports other processing Capabilities including the Data Collection System (DCS), Automated Processing System (DAPS), the Low-Rate Information Transmission (LRIT) System, and the Emergency Managers Weather Information Network (EMWIN) System.

Data Collection System (DCS) Automated Processing System (DAPS): The GOES system supports a point-to-point radio relay Data Collection System (DCS). DCS is used to collect environmental data that are transmitted from over 16,000 active domestic and international remote platforms that are mainly Government owned. The platforms contain sensors that gather environmental data, such as wave height, river level, and seismic activity. These data are then shared cooperatively among the various Government agencies. Using DCS, remote platform radio sets transmit through the GOES spacecraft back to the NESDIS Wallops Command and Data Acquisition (CDA) facility. DCS users receive data in real time via General Electric's Americom Domestic Satellite (DOMSAT) relay, National Weather Service NOAAPort, or directly from GOES. Users can also access data, review monthly activity reports, and modify their database records via the Internet or by modems connected to the DCS Automated Processing System (DAPS). NESDIS is in the process of replacing the DAPS computers to better support the growing demand on the DCS, and is expected to go operational with the DAPS II system in early 2004. DAPS II will provide complete functionality at both the Wallops CDA, and at the Suitland OSDPD Management Office through a closed network, and will provide better monitoring, administrative, and customer service capability to GOES DCS management and customer service staff. NESDIS is also investigating a backup site for the GOES DCS, to eliminate the single point of failure that exists at the Wallops Island facility.

Low-Rate Information Transmission (LRIT) Upgrades: The LRIT produces a digital product that replaces the analogue Weather Facsimile (WEFAX) product for disseminating GOES, POES, and foreign satellite meteorological data. The WEFAX technology has become antiquated with the increase of digital technology. The LRIT system improves the quality and timeliness of satellite and other critical weather data for all GOES direct readout users. GOES 10-12 support either WEFAX or LRIT, but GOES-N will only support digital technology, this will allow a complete transition from the older technology.

Emergency Managers Weather Information Network (EMWIN) Receiver Development: The National Weather Service gathers real-time weather and emergency information from sources all over the world. The EMWIN system broadcasts this information via satellite, radio, and the Internet. A satellite downlink enables computer users to access a stream of real-time weather information from GOES-10 and 12. Both a new transmit system and new receive system are needed. During the GOES-N era, planned upgrade to the current EMWIN will provide additional bandwidth to supply more data. The current system must provide continuous operational data during transition.

OSDPD Accomplishments

- Commenced Software porting and migration of all Amdahl based systems to accommodate realignment efforts
- Provided support for NPOESS and METOP future satellite missions
- Spear-headed several NOAA Satellite Operations Facility (NSOF) Workgroup's Planning
- SARSAT New Ground station equipment installed
- Optimized web-based architectural approach which distributes the user load across geographically dispersed servers during severe weather events to support the 20,000,000 hits per day during hurricanes
- Provided daily Operational Significant Event Imagery (OSEI) – SSD OSEI analysts provided daily special imagery during the during significant events. OSEI analysts daily inspected all available Polar and Geostationary satellite imagery, including Advanced Very High Resolution Radiometer (AVHRR), METEOSAT, and Moderate Resolution Imaging Spectroradiometer (MODIS) imagery for notable features of interest. Additionally, imagery was provided to the NOAA Public Affairs Office in the form of a daily media update to inform various media outlets of the availability of NOAA imagery accessible through the OSEI Web site. OSEI imagery was published by various media outlets including: CNN, ABCNEWS.com, BBSNews, AgWeb, CNN.com, Yahoo News, Naples Daily News, NY Times, Reuters etc.
- Participated in the NOAA and NESDIS Continuity of Operation Plan (COOP).
- The Geostationary Operational Environmental Satellite (GOES) East WEFAX to LRIT digital format was successfully placed into production.
- Improved AWIPS Product Quality Assurance
- Improved Fire and Smoke (and Snow and Ice) products using new NASA satellite (MODIS) data
- Continue to make additional product available through GIS and a geo-database
- All CISCO switch IOSs were upgraded
- Began the implementation of SANS technology to provide "central" storage accessible by multiple servers /processors and reduce network traffic.
- Started to develop an operational Ocean Color system.
- DSD has physically separated the SARSAT operational and DSD administrative LANs
- Created a Private Optical Network (PON) for SATEPS
- Installed secure VPN server.
- Built a Windows 2003 Active Directory Domain
- Implemented Progeny security patch service in SSD
- Transition in all SATEPS mission ingest server systems to "single pull" coding technology to reduce bandwidth utilization across the aging T-3 microwave and in preparation for T-3/DS3 upgrade services. Relocated seven ingestors to FB4 and are pulling imagery and data over the PON though TCP/IP with error correction
- Implemented the Amanda backup server.
- Acquired laptops and docking stations for users who access SATEPS remotely and replaced desktops as scheduled

OSDPD Realignment

In January of 2004 an external review of the Office of Satellite Data Processing & Distribution (OSDPD) was completed. The review team identified findings and recommendations that related to OSDPD's culture, its business processes, organization, requirements management; and leadership. One of the major recommendations of this review team concerned OSDPD's organizational structure. The team recommended that: OSDPD should be realigned along functional lines. The review team concluded that there were two primary reasons for realigning OSDPD, as follows:

- "OSDPD's present organizational approach leads to numerous inefficiencies, such as poorly coordinated IT services/architecture/security functions, and duplication of resources and effort (e.g., multiple/disconnected IT security and program planning functions), and unmet needs".

- "There is also an increasing need by OSDPD's and NESDIS' customers for integrated data from multiple sources (e.g. polar/geostationary satellites, and in-situ observing systems) as well as an increasing need for development and enforcement of a common architecture for satellite data processing and distribution. Because of the current fragmentation of OSDPD's science and customer interface activities, the review team sees the current organization to be an impediment to its ability to (1) partner with other elements of NOAA for R&D support (e.g., NOS), and (2) to provide blended satellite products/services across NOAA and to outside constituencies".

This proposed OSDPD realignment will consolidate Information Technology (IT), scientific product implementation, and program planning activities that are now dispersed within OSDPD's existing three Divisions.

This recommended IT consolidation will eliminate the SATEPS operations at SSD and combine it with CEMSCS operations at IPD to form the Environmental Satellite Processing Center (ESPC), to be located in Suitland, Maryland.

1.6.1.2.3 Office of Research and Applications (ORA)

• Replaced all Windows NT Servers and Workstations with Windows 2003 Servers and Windows XP Workstations, and Active Directory

We have eliminated our final 86 Windows NT Servers and Workstations and implemented a Microsoft Active Directory - based Windows 2003 Server and Windows XP Workstation environment. We now have 5 Windows 2003 Servers and 149 (vs. 114 a year ago) Windows XP Workstation desktops and notebooks. The investment required was not cheap, but the advantages of the Active Directory - based Windows operating systems over NT will save us support costs in the longer run. Some advantages Windows 2003/XP over Windows NT are:

- Security Policies

Windows 2003/XP provides for the setting of security policies at the user, computer, group, domain, and/or enterprise level.

- Automatic Patching

We now can employ Microsoft's Software Update Service which enables individual workstations to check for new patches, especially security patches, and update themselves automatically.

- Centralized Management

Windows 2003/XP provides extensive tools in this area. This allows system administrators to set policies on, investigate, change, fix, update, etc., any or all machines and/or users in a domain from their personal PC, rather than requiring them to physically visit every user PC. This obviously saves time and money.

- Remote Management

Windows XP provides the Remote Access utility that allows a system administrator to Atake over@ a remote PC, be it across the hall or across town, and remotely debug problems. This, again, is an obvious time and money saver.

- 3rd Party Applications and Support

Because Windows 2003/XP is the latest and greatest Microsoft operating system, the industry is eager to provide 3rd party applications and support for it, with less attention being paid to the older Windows systems, resulting in fewer compatible 3rd party applications and their fixes for them. The same is true for Microsoft-supplied applications and support. Compatibility, or the lack thereof, between operating systems and applications is a big problem for us. We must get and remain current in both areas and using the newest Microsoft operating systems helps us with that.

- Implemented our own DNS domains

Our UNIX/Linux and Windows NT computers in WWB previously fell under the nesdis.noaa.gov DNS domain, which this office does not manage. We have now implemented and manage two DNS domains, and have shifted all of our IT into them. The orbit.nesdis.noaa.gov DNS domain contains our UNIX/Linux IT, and the orbit1.nesdis.noaa.gov DNS domain contains our Windows IT. Controlling the DNS domains under which our devices fall allows us to better implement, maintain, and troubleshoot our network environment without having to deal with technical and political issues with the other NOAA offices in WWB.

- Implemented our own network segments

Previously, our WWB network devices were scattered over 8 different network segments. This presented us with network implementation, maintenance, and troubleshooting problems. We took advantage of the implementation of Virtual LAN technology in WWB and consolidated our

network devices onto just 2 network segments, over which we now have control. This autonomous control allows us to better implement, maintain, and troubleshoot our network environment without having to deal with technical and political issues with the other NOAA offices in WWB. This reduction in network segments allowed us to reduce the number of our UNIX/Linux Network Information Service servers from 16 to 3.

- Moved behind the WWB firewall

We moved all of our IT behind the new WWB firewall, managed by NWS/NCEP. We now, utilizing the firewall, block all incoming network traffic to our Windows and UNIX domains except for our DNS, web, email, and SSH/SCP servers.

- Eliminated FTP and implemented Secure Copy (SCP)

We eliminated the use of FTP within our IT environment and now use Secure Copy (SCP) instead. FTP sends passwords and data over the network in clear text, thus they can be easily captured and used to gain unauthorized access to our systems. SCP encrypts passwords (as well as data) before they are sent over the network, thus making it considerably more difficult (they would have to be decrypted) for hackers to use them

- Implemented a VPN concentrator and eliminated dial-up modems

We eliminated our dial-up modem pool because we could not adequately secure it. We then implemented a VPN concentrator to allow encrypted remote connections into our IT domains.

- Implemented an SSH/SCP gateway

In order to allow the most secure remote access (login and file transfer) we can into our IT domains, we have implemented an SSH/SCP (Secure Shell / Secure Copy) gateway. This gateway accepts only connections from a specific, known list of remote IP addresses, which are specifically allowed through the WWB firewall, and employs a one-time password scheme (s-key). Those connections are encrypted, as are the subsequent connections from the gateway to specific computers within our domain.

- Implemented a Patch Management Plan

We have implemented a painstaking patch management plan which includes daily patch checks, weekly reports, and monthly verifications.

- Implemented McAfee anti-virus ePolicy Orchestrator

We have implemented McAfee's ePolicy Orchestrator to give us centralized control over our Windows anti-virus software and updates to it. This saves us the task of managing the anti-virus software on our 150 Windows computers individually.

- Implemented a new Web/FTP server

Our previous Web/FTP servers were old, SGI Origin 200s. Our main problem with them is that software support for them from SGI, including bug fixes and especially security fixes for their Irix operating system, is not reliable or timely. Instead of offering patches to fix security problems and bugs for our current version of Irix, which is not unreasonably old, SGI often requires an upgrade of the entire operating system. This is a time consuming and risky task, many things can go wrong, and it could bring our servers down for days while the upgrade is performed.

Instead, we retired these two old servers and implemented one new Dell Intel-based Web/FTP server running the Red Hat Linux operating system and the Apache web server software, and loaded it up with memory and disk space, and a Gigabit Ethernet connection. We have utilities in place to automatically patch our Red Hat computers with bug and security fixes as soon as they are available. Support for Linux is much more readily available than for Irix. The whole Dell/Linux/Apache solution is much easier to deal with than the SGI/Irix/Apache combination we are now dealing with. This has led to much easier administration, thus saving time and money. See the AShifting from UNIX to Linux@ discussion above.

- Implemented Backup Servers

Because of the sheer volume of data processed with ORA WWB computers, it is not feasible for us to back it all up. Instead, we implemented two Backup Servers, one for the Windows domain, and one for the UNIX/Linux domain, upon which all users can deposit important files. We back up these servers regularly to tape and maintain copies on and off site.

1.6.1.2.4 Office of Satellite Operations (OSO)

The Office of Satellite Operations has implemented a Policy Control Board to review and approve policies that effect the IT environment. All current NOAA and DOC IT policies have been reviewed and individual procedures have been developed to support the policies. Current policies in effect that have been developed within the last six months include: IT Program management, IT security policies addressing external network connections, securing operational computers and patch management. A new IT Security configuration control board consisting of representatives from all OSO programs has been created and meets on a regular basis to address IT security issues.

FY 2004 Planned Activities status

- Low-Rate Information Transmission (LRIT) Upgrades – Complete transition plan.
  - The LRIT upgrades have been completed and fully tested. More development is planned.

- Data Collection System (DCS) Automated Processing System (DAPS) – Perform system integration with new demodulator front end, acceptance testing, parallel operations and phase-in operations.

  - The new demodulators are scheduled for a Nov. 15th installation for DAPS1. The DAPS 2 system will start preliminary acceptance testing Oct. 26th with a possible phase in date of March of 05. This will replace the current DAPS 1 system.

- GOES Archive System (GAS) – System will become operational.
  - The GOES Arch sys has been installed and is operational on the GOES N system. The system is in testing on the GOES I-M LAN and should be operational by late December FY 2005.

- GOES Archive Interface Machine (GAIM) – System will become operational.
  - The GAIM system is operational.

- Secure Remote Access System (SRAS) – System will become operational.
  - Due to new requirements to add Internet access, the SRAS is continuing testing with a completion date of late December of FY 2005.

- Emergency Mangers Weather Information Network (EMWIN) Receiver Development – Receivers will be delivered and tested. Complete transition planning.
  - The EMWIN system has been installed and tested; the system is fully functional with new receivers.

- Common Engineering Analysis System (CEAS) – Phase over from GOES engineering analysis system.
  - The CEAS system is operational on the GOES N-P system and will become operational on other systems as the CWS program is phased in.

- Common Workstation (CWS) – Complete operational phase over.
  - The CWS system is completed for the GOES N-P system. The POES system is scheduled for a December release. The GOES I-M system is scheduled for a late March 05 release. The DMSP system is scheduled for a Late June 05 release.

- Sensor Processing System (SPS) rehost – Rehost will be completed.
  - The MSPS system has been installed and tested. The system has been rehosted at all OSO sites except the FCDAS, which will be operational by the end of Oct. 04.

- GOES N/O/P/(Q) Spacecraft Support Ground System (SSGS) – Install and test Build 8.
  - The GOES N to P SSGS system has been installed and tested with release 8. Training has been completed at the OSO sites. The SSGS is currently ready for launch and is continuously being tested for readiness.

1.6.1.2.5 Office of Satellite Development (OSD)

During FY 2004, OSD performed the chairmanship duties of the NESDIS Information Technology Architecture Team (ITAT). These duties included coordinating the agenda and logistics of monthly ITAT teleconferences and three yearly face-to-face ITAT meetings, publishing meeting minutes and action items, updating the ITAT website, and maintaining

awareness of relevant IT issues external to NESDIS (e.g. Federal Enterprise Architecture requirements).

1.6.1.2.6 National Climatic Data Center (NCDC)

The National Climatic Data Center (NCDC) is the Commerce Department's only Agency Record Center. The NCDC archives meteorological data obtained by the National Weather Service (NWS) including data received from cooperative observers, military services including the Coast Guard, and Federal Aviation Administration. The NCDC archives 99% of all National Oceanic and Atmospheric Administration (NOAA) data. Through the use of more than a hundred years of meteorological data that has been electronically stored, the NCDC monitors the climate and provides a historical perspective.

Brief Summary of FY 2004 Accomplishments

IBM SP2: Preparing for an FY 2005 migration off of the IBM SP-2 switch to independent IBM servers using IBM's p660 line of servers. Two nodes were retired this year; both were 135MHz wide nodes.

Ground Systems Support: Through the use of Ground Systems funding, NCDC refreshed about one-third of the desktop PCs and many older printers, upgraded the internal LAN to 100/1000 Gbps, installed HP OpenView, funded the consolidation of three IBM 3494 tape libraries into one and added five 3592 300GB tape drives, and added two additional LTO Gen-2 tape drives to the IBM 3584 tape library.

CLASS Support: CLASS funded the purchase of two Data Direct Storage Area Network (SAN) systems: one 57 terabyte SATA disk system and a 10 terabyte fibre-channel disk system managed through a Brocade 24000 Director SAN switch.

Tivoli Storage Manager: TSM (Tivoli Storage Manager) is the enterprise-wide backup solution for NCDC, automating computer room system backup and restore. We have extended backup support to over 130 servers. This includes backing up operating systems, application files, and Oracle databases.

Hierarchical Data Storage System (HDSS) Archive Activity: The NCDC grew from 320 terabytes to over 500 terabytes of archival data to the HDSS during FY 2004. Archiving activity increased to an average of 800 GB per day with a peak rate approaching 2 terabytes per day. NCDC participated in the HPSS (High Performance Storage System) User Forum in Santa Fe, NM.

Linux Web Farm / FTP Load Balancing System: A Cisco load balance appliance capable of accommodating both the web farm and FTP load balancing system was installed.

Linux Servers: NCDC is having problems with the RedHat version of Linux operating system. With about 125 Linux servers, this is becoming a serious problem which will be resolved in FY 2005.

Local Data Manager (LDM): A load balancing farm that consists of six back-end LDM servers and two system traffic directors was designed to retrieve data from remote sites. Five LDM servers run RedHat Linux and the sixth runs Debian Linux.

Mail Server Upgrade: The NCDC installed three new SunFire mail servers to allow compatibility with the new NESDIS mail system and to provide NOAA COOP connectivity in the event of a disaster.

Climate Reference Network (CRN) Support: The NCDC IT Branch personnel worked with USCRN to specify and install new Linux servers in support of scientific analysis and web development.

NEXRAD Data Access Upgrade: A joint initiative between NOAA and several universities has 125 radar sites being ingested and archived in near-realtime via Wide Area Networks (WAN). The ingest and archive of near-realtime data via WAN's significantly increases the data capture rate over 8mm tapes (approximately 60% to 90%), provides the data for redistribution 90 times faster, and is an automated non-manual process.

Desktop System Upgrades: Through the use of Ground Systems funding, NCDC refreshed 35 of the desktop PCs and ten older printers. All new systems were delivered with the new Windows XP operating system. Low-end systems were donated to local schools in Western Carolina.

Off-site Tracking System: IT Branch developed a web-based program to track and manage items stored in the off-site facility including backup copies of all software, pre-staging of COOP equipment, etc.

Customer Interface Support: IT support has been significantly improved through the use of Help Desk, InfoDesk, and Automated System Access Request systems. The NCDC Help Desk system was upgraded to "Cerberus Helpdesk" – a web-based system. These readily available tools have improved response time for problem resolution, reduced security risks from inactive accounts, and made available specific IT information to end users. For example, more than 7,000 requests were made through Help Desk this past year and over 90% of all requests for support were completed and closed out within 24 hours.

Desktop Operating System Upgrades: All NCDC desktop systems are running Windows XP Professional Service Pack 2 allowing us the ability to manage systems and applications through Active Directory's group policies. We are now able to force policy compliance such as password protected screen savers and limit application installs.

Network Operating System Upgrades: Developed procedures and applied Microsoft critical updates to all Windows systems. An FY 2005 initiative will replace the current Windows2000 Advanced Server system with Microsoft Server2003.

Standard Software: The NCDC installed the standard software suite consisting of Microsoft Office 2003 Professional; Internet browsers comprised of Netscape and Microsoft Internet Explorer; and the McAfee ePolicy Orchestrator enterprise virus protection package.

Support to Major Programs: Provided support to CLASS, USCRN, CDMP, NeS, and the ITAT projects. As the NOAA COOP Site C location, developed an operational plan and implemented procedures in support of the NOAA Continuity of Operations Plan.

Support to Customers: Installed and deployed an update to the Center's PC faxing facility providing users the ability to fax directly from their desktop. In a joint team effort, developed a VPN system allowing users the ability to access network drives and folders via NCDC's VPN connection. Common use PCs were placed throughout the Center in order to allow convenient internet access for NCDC's visitors.

Communication Circuit Upgrades: The NCDC established a relationship with the Education and Research Consortium (ERC) as the NCDC data communications provider. The ERC provides affordable high-speed access to the Internet, Abilene (I2), and a tie-circuit with Suitland to support the CLASS program objectives as well as the ingest, archive, and access functions. A redundant fiber gigabit line links the ERC's MetaPoP and NCDC.

Network Monitoring: The NCDC downloaded, compiled and installed the latest version of the Big Brother system software which monitors the status of all critical servers and provides notification to the computer room staff when a problem occurs. Set up MRTG to monitor traffic flow for all NCDC's routers. Cricket was installed to monitor specific server activity patterns, and HP OpenView network management software monitors all the critical systems.

Wireless Technology: A secure wireless communications system was established in the main conference room to allow the use of wireless laptop and printer use during conferences and meetings.

Contingency/Disaster Recovery: The Contingency Disaster Plan is maintained by the Information Technology Security Officer (ITSO). The plan was tested by all the Branch and Division chiefs using a paper simulation of a disaster. As the result of the simulation, changes were made to the plan and implemented.

SANS (SysAdmin, Audit, Network, Security) Training: The SANS Security training continues to be required by all NCDC system administrators. The NCDC ITSO and Deputy ITSO are fully SANS certified.

Centralized logging: A secure web interface was created to allow the viewing of system logs and file integrity reports.

Acceptable Use Policy: NCDC implemented an IT Resources Use Policy which employees and contractors were required to sign prior to being given system access. All new employees are required to review and sign the policy prior to system access.

Remote Access: A Linux-based PPTP and SSL-based Virtual Private Network (VPN) was set up for remote access into NCDC. The VPN testing has been completed and is now fully operational. NCDC implemented a CISCO VPN concentrator which replaced the Linux-based VPN.

Audits: Routine host-based and network scans are performed on the network for vulnerabilities. Any security issues are discussed with the administrators and possible solutions and/or work rounds are addressed.

Network Monitoring and Intrusion Detection: The network monitoring server has been a successful tool in managing the proper use of network resources.

Secure Network Communication: Systems personnel fixed multiple compatibility issues with SSH and OpenSSH by only using OpenSSH across the NCDC Unix platforms to replace the use of programs such as rsh, telnet, and ftp. NCDC is working on implementing SSL-enabled FTP.

Secure Server Installation: NCDC now has a security guideline that all system administrators must follow prior to attaching a new Linux system to the network. Guidelines are currently being developed for secure installation of Windows, AIX, and Solaris Systems. The ITSO developed a tutorial-based security program for Solaris Systems.

1.6.1.2.7 National Geophysical Data Center (NGDC)

The National Geophysical Data Center (NGDC) is the Nation's source of global data and information for marine geology and geophysics, natural hazards, geomagnetic models, solar-terrestrial physics and space weather. NGDC is located in Boulder, Colorado, and is one of four NOAA National Data Centers logically connected through a virtual data access system.

- 508 compliance assured on all new systems purchased.
- Expanded Gigabit LAN connectivity
- Completed Gigabit connection to Abilene
- Increased commodity Internet connection speed from 18 to 155 Mbps
- Archived all new incoming data to 3590E tape using Tivoli Storage Manager
- Completed conversion of all 3480 and 8 mm Exabyte archive tapes to 3590
- Fully implemented Veritas network disk to LTO tape backups for all systems
- Continued testing to optimize speed for long haul data transfers on Abilene
- Participated in planning and development activities for CLASS.
- Started development of spatial data access tools for CLASS data
- Operated the NGDC node of the NVDS
- Converted 3 WWW Sun servers to Linux
- Implemented an operational mirror site for ingest, archive and access of NOAA/NOS CORS (Continuous Operating Recording Systems) GPS data.
- Expand the volume of on-line data for access by WWW users to ~10TB
- Increased the archive volume of data by 20%
- Increased the tape archive capacity by purchasing LTO-2 robotic tape library

- Made use of the E-Learning system for some required IT training.
- Completed the SANS IT security training for all new systems administrators
- Upgraded Web-CD system for WWW users to create custom CD-Rs & DVD-Rs
- System security policy upgraded
- Security plan tested, approved and certified
- Connected computer room electrical circuits to emergency generator
- Upgraded UPS and emergency power off (EPO) systems
- Planned for adding more cooling capacity to computer rooms
- Planned for installing HFC125 gas fire suppression system
- Did capacity planning for future large volume satellite data streams
- Converted 66% of linux systems to Red Hat Enterprise to improve IT security and systems administration
- Implemented Patchlink patch management software on all MS windows systems
- All NGDC staff completed the on-line IT Security Awareness training.
- Implemented wireless networking for connecting outside the NGDC LAN for the two NGDC conference rooms
- Planned for transition of e-mail server administration to the NOAA Boulder NOC

1.6.1.2.8 National Oceanographic Data Center (NODC)

The National Oceanographic Data Center (NODC) is located in Silver Spring, Maryland. It is designated as a World Data Center for Oceanography to manage the world=s collection of publicly available scientific ocean data. NODC holds in situ and remotely sensed physical, chemical, and biological oceanographic data from coastal and deep ocean areas. The holdings currently amount to less than 5 terabytes of data, extending back over one hundred years. The NOAA Library operations are administered by NODC. The IT infrastructure to support archive and access processes is performed by the Information Systems Management Division (ISMD) reporting to the NODC Director's office.

The network infrastructure at NODC is based on Transmission Control Protocol/Internet Protocol (TCP/IP) and operates at 10/100/1,000 Mb/s internally. External connection from NODC to the campus network and to external campus or Internet destinations is through a 100 Mb/s switch. The NODC network infrastructure is segregated into a number of public and private sub-nets by way of packet filtering firewalls that provide Network Address Translation (NAT). Layered automated intrusion detection systems are operated to monitor and report unauthorized connection attempts to NODC systems. NODC provides public access servers to support standard Internet protocols including, Simple Mail Transfer Protocol (SMTP), Hyper Text Transfer Protocol (HTTP) and File Transfer Protocol (FTP), and the Open-source Project for a Network Data Access Protocol (OPeNDAP). Tools are developed by NODC to support public submission of data for archival storage at NODC, and public online access to selected archive data sets.

NODC operates a variety of operating systems including UNIX variants (Solaris, Linux, Irix), Microsoft Windows variants (WIN 2000 and NT) and Mac OS. These systems are used for day-to-day operations for data ingest maintenance, quality assurance, customer services, application development, web publishing, metadata generation, and personnel productivity.

NODC systems automatically perform virus scans of data in near-line storage both during ingest and periodically thereafter. Cryptographic checksums of all digital archive data for integrity verification are automatically processed as a method of determining data corruption due to media failure or accidental or intentional data corruption. This supports archive integrity when data are migration across future generations of storage media and systems.

NODC operates high-capacity RAID (Redundant Array of Inexpensive Disks) disk storage systems to support data ingest, working storage, online products and database search and retrieval systems. A 13TB RAID system provides access for all NODC data services.

Tape backup systems using DLT technology and controlled by Legato Networker backup software provide automated and manual backup facilities supporting the NODC workstations and servers as well as near-line mass storage (the backup copy results in a third copy of the original data). Tape media systems are maintained to support data retrieval from legacy tape formats such as 9-track, and migrate data to IBM 3590 tape media for offsite, deep-storage archive. Unlimited storage capacity is available off-line in the form of removable media storage.

On-site IT resource management with 5x8 staff, system availability for operations 7x24.

Archive & Metadata Management – entire archive of over 20,000 data sets in the NODC Archive Management System now available on NODC Ocean Archive System website for public access. Added 377 metadata files to CoRIS (a 171% increase). Accountability of data access statistics can now be recorded to track usage on a per-data set basis. Archive Tracking Data Base developed to autonomously assign a unique integrity life-time identifier for ingested data sets. Metadata search engine configured to interface with NODC on-line metadata management system.

IT Security – aggressively addressed vulnerabilities to NODC IT infrastructure as they became known. Added new IT security staff member. Received highly favorable review from NESDIS Patch Management Review group for IT security management. Contributed to NESDIS Continuity of Operations planning. Deployed secure network for public PCs in the NOAA Library.

Enterprise web activities – Developed NESDIS budget website, and supported NOAA Race for the Cure website. NODC web masters played a significant role in the success of the WebShop Planning Committee for 2004. Coordinated Section 508 accessibility survey at the NESDIS level.

Collaboration – Compiled a Joint Project Agreement (JPA) for sea level data and shipboard ADCP data hosted on University of Hawaii Web servers to facilitate NOAA data on a non-NOAA server. Worked with DOC Web Advisory group to establish guidelines and training for webmasters to implement mandatory machine readable Privacy Policy (P3P) on all websites.

IT infrastructure – 13 Terabytes of RAID installed to host entire data center holdings. LANDESK v8.0 installed to automate desktop management. Converging to Intel-based data

management services running Linux. Intel-based desktop services running Microsoft WIN2000/ XP and Microsoft Office products.

Access Performance Measures:

FY Access Statistics	2003	2004	% Change
Hosts (unique hosts per-month)	914,070	1,189,176	+23.13
Files Transferred	21,330,632	25,829,993	+17.42
Millions of Bytes of data transferred	982,474	2,909,818	+66.24

CORIS Performance Measures

Performance Measure	September 2003	September 2004	Change
Number of Metadata Files Number of Publication References	220 650	597 822	+171 % +26 %
Number of Data & Information Products[1] (including publications)	5,571	6,254	+12 %
Web Usage Number of Visitor Sessions Number of Mbytes Downloaded (total)	 10,392 1,607	 21,447 4,952	 +106 % +208 %
[1] Count does not include 4,269 coastal aerial photographs.			

1.6.1.2.9 National Coastal Data Development Center (NCDDC)

The National Coastal Data Development Center (NCDDC) is located at the Stennis Space Center, Mississippi. The NCDDC became operational in April 2002 and its mission is to support ecosystem stewardship by providing access to the Nation's coastal data resources. NCDDC works closely with many of the Federal, state, and local agencies, along with academic institutions, and the private sector to create a unified, long-term archive for coastal data sets. NCDDC is a national facility established to provide for the archive of and access to the long-term coastal data record to support environmental prediction, scientific analyses, and formulation of public policy. Because much of this data is stored at geographically distributed repositories in a variety of formats, NCDDC must work closely with many federal, state and local agencies, academic institutions, and the private sector to create a unified, long-term database of coastal data sets. NCDDC catalogs available coastal data and employs middleware technology to create a virtual data system that links this distributed network of data repositories. NCDDC does not

conduct any data collection program of its own, although it is involved with other NOAA offices that do data collection. NCDDC facilitates the archive of data through its middleware architecture to existing NOAA storage activities. NCDDC is located at Stennis Space Center which is a NASA facility and is dependent upon NASA for external communications services. NCDDC infrastructure initiatives are supported by the NNDC OMB 300 documentation. Current funding levels maintain the current mode of operations which includes limited development of discovery and access capabilities along with enhancement of display functionality.

Overview of NCDDC's Current and Planned IT Architecture:

NCDDC's physical architecture is a mixture of Windows 2000 and Linux. For its LAN capabilities, there are Windows workstations for desktop systems, 2 Windows 2000 servers (acting as primary and secondary domain controllers and DNS servers) and Linux systems for production level testing. Within the public access domain, Linux is used for all systems except one Windows 2000 platform which hosts the Geographic Information System (GIS) display capability. Migration to a Linux system for this display capability is underway. Both the LAN and public access domains are located behind a firewall and connected to the Internet via a T1 line.

NCDDC focuses its efforts within the NESDIS Access Domain, where it is providing a capability to access, disseminate and display coastal data that may or may not be held within NOAA. This is done by providing a catalog of metadata that is searchable for discovery of existing data holdings, and access mechanisms that allow a user to pull data directly from an existing repository without requiring the data to be held locally. NCDDC provides users with tools to evaluate and display this data prior to downloading. Additionally, NCDDC is providing a metadata management and generation tool for data repository personnel to allow for a user friendly environment for the management of metadata.

Brief Summary of NCDDC FY 2004 accomplishments

- Upgrades were completed on back-up software, operating systems and enterprise firewall software
- All System Administration personnel have completed the required SANS training.
- NCDDC deployed an upgrade to its metadata generation and management system (MERMAid v1.2) which included support for the FGDC Remote Sensing profile. This tool allows NOAA and non-NOAA personnel to manage metadata in a user friendly manner and allows NCDDC publish that metadata to the its coastal catalog
- NCDDC has completed development on the data access components of the system architecture to allow users to merge disparate data sets. This capability will be deployed in FY 2005 and additional data will be added.
- NCDDC continues to add capabilities to deliver data in multiple supported formats and provide unit conversions.
- Upgrades to the search and discovery capabilities now support a map display which allows users to graphically distinguish the location of a discovered dataset
- Migration of Linux OS to Red Hat Enterprise is underway

- Migration of the GIS public display system to Linux is underway
- Improvement of monitoring capabilities and auditing techniques within the Windows LAN environment have been completed to reduce system administration resources required for these efforts
- Deploy NOAA mandated security and auditing software tools including the Harris Tool and upgrade to the McAfee virus scan tool have been completed
- Update of the NCDDC Business Continuity Plan was completed, and is available in Draft form.

1.6.1.2.10 Integrated Program Office (IPO)

- Continuity of Operations (COOP) Plans completed
- Assessment and integration of Patchlink Tool for patch management efforts
- Set up alternate Website in support of COOP operations
- November 2, The Weather Channel's (TWC)Forecast Earth program broadcast, Sentinels Against the Storm. This 30 minute program featured NPOESS, POES, GOES and DMSP. TWC also included the program in its Weather Classroom endeavors and promoted it in their newsletter to educators.
- Completed and submitted all items related to the IT Certification and Accreditation package for the IPO LAN IT system.
- Developed and integrated a secure collaborative environment with IPO's main contractors supporting the NPOESS system.
- Developed and deployed a Patch Management solution.
- Implemented internal IT policies and procedures in compliance with NOAA laws and regulations (i.e., Patch Management, Configuration Management, Change Control, Remote Access, IT Disaster/Recovery Plan).
- Implemented WebCims, an electronic correspondence and action-item tracking system. Lessons learned will be forwarded to the NESDIS Information Technology Architectural Team (ITAT) Office Support Team (OST) to assist in determining if the system is a candidate for enterprise solution.
- Implemented a test-bed lab for the next generation IP protocol (IP version). Research is and will be valuable to NESDIS and NOAA IT systems.
- Assessed and deployed Microsoft Windows 2003 Server and Active Directory.
- Performed vulnerability and penetration testing. These efforts are critical for risk reduction.
- Tested IT systems supporting the COOP. Results were documented for review.
- Acquired and deployed infrastructure for a video over IP solution.
- WindSat Coriolis:
- Satisfying Data Latency Requirements
- Initiated and completed Integration with IPO Svalbard Ground Station for Downlink and Data Distribution
- Coriolis Data Distribution System (CODDS) links FCDAS, FNMOC, RSK Kirkland AFB, AFR, NESDIS, and Spectrum Astro

1.6.2 National Marine Fisheries Service (NMFS)

Much activity occurred in FY2004 that resulted in specific accomplishments that expanded the organizations ability to meet the NOAA Fisheries Strategic Planning Goals and Objectives. Management decisions affecting technology standards laid the foundation for successful infrastructure upgrades and applications development. With the agency-wide focus on information quality, assurance and secured availability, many new applications and modifications to existing legacy systems resulted in the ability for our constituents to access living marine resource information over newly designed Internets, Intranets and Extranets. Additionally, constituents are now able to electronically download and submit NOAA Fisheries permits. The following sections highlight key management, infrastructure and applications initiatives that occurred in FY2004.

1.6.2.1 IT Management Accomplishments

Strategies for managing the selection, development and deployment of IT to improve NOAA Fisheries business processes were significantly improved in FY2004 Polices, operational procedures, governance processes and standards for managing IT were established and refined. The following lists key technology management improvements that were accomplished in FY2004.

Paperwork Reduction

In FY2004 NOAA Fisheries revamped its business process of preparing and submitting clearance requests to OMB for information collections in support of the Federal Government's commitment to reduce the paperwork burden on the American public. New policies, operating procedures, and performance metrics were established which significantly streamlined the business process and resulted in fewer late renewals and legal vulnerabilities.

Policies and Guidance

NOAA Fisheries body of IT policies, operational procedures, standards, guidance and training was significantly increased in FY2004. New and/or improved policies were established for wireless LANs, Oracle Calendar, teleworking, fax servers and deploying GIS. In addition the RITCs recommended an enterprise-wide policy for patch management. The mounting assemblage of IT policy provides the foundation and a framework for increasing information assurance, business process improvement and ensuring the positive return on IT investments while reducing the risk of failure. In FY2004 further inroads were made in solidifying the agency's system development environment to increase productivity and to reduce risk of systems development activities. Policies and procedures for developing and deploying Cold Fusion-Oracle web-based applications were deployed and the technology was used extensively to develop small to medium sized applications at Headquarters. Configuration management and version control using SourceSafe has improved the overall management and quality of software development activity and reduced the administrative burden for web developers and quality assurance personnel.

User Training and Fostering Cultural Change

Migrating agency-wide IT was supported by establishing and executing comprehensive roll out and training plans for key technologies. To support the adoption of an agency-wide electronic calendaring system, the OCIO conducted extensive web-based and instructor-led training that was hailed as very successful. The migration from WordPerfect to Microsoft Word is being supported by carefully orchestrated training.

Training for IT Staff

To keep abreast of fast moving changes in technology, and to prepare for advancement within the IT workforce, NOAA Fisheries IT staff need regular training. In FY2004 technical training focused on; web development technologies; Oracle and other data base management systems; Red Hat Linux, Cisco routers and other communications systems; firewalls; security awareness, intrusion detection and response. As deploying IT systems requires keen project and contract management skills, many developers were trained in those areas as well. To encourage upward mobility from junior to senior positions in systems development and ultimately to IT management, staff participated in communications, presentations, diversity and other personal development classes. To provide deeper, more resilient IT support a environment of ever increasing demand for IT services, staff are being cross-trained in each others areas of expertise.

Web Design and Content Management

Enterprise-wide teams were formed to foster the development of a consistent look and feel of NOAA Fisheries web sites and to conform to NOAA, DOC and Federal web design policy.

Electronic Data Management (EDM)

In FY 2004. NOAA Fisheries put in place key foundational components for establishing NOAA Fisheries enterprise-wide electronic document management and records administration system. The Administrative Records Task Group (ARTG) reviewed the agency EDM requirements and made specific recommendations to the NIMB. The CIO briefed and received the endorsement the agency's Leadership Council to accept the recommendations that included creating a position of Records Administrator in the OCIO. This effort will be carried out in concert with the President's Management Agenda, Electronic Records Management initiative.

Additionally the Southwest (SW) Region deployed the SW Records Management System that supports the entry and reporting of documents for SW projects and the Alaska Region enhanced their Electronic Administrative Records Management System (eARMS) to assist staff to respond more quickly to FOIA requests.

IT Governance Boards

The WAN Review Board continued to review and approve all changes and additions to the agency WAN. Through diligent monitoring and managing changes to the WAN, network outages and downtime have been reduced to a minimum.

Database Management

Headquarters engaged Oracle contractor support to conduct a database health check of its enterprise-wide Oracle database infrastructure. They recommended tuning and reconfiguring the database parameters and replacing the out dated servers. To leverage the WAN Review Board's success in managing the WAN, the NIMB recommended establishing a database governance board to more effectively manage agency DBMS licenses and consolidate database servers.

Provision of IT Services

The NIMB recommended that the CIO and RITCs develop fee-for-service charge back models to recover expenses incurred to support their respective programmatic business processes.

1.6.2.2 IT Infrastructure and Users Services

This section highlights FY2004 accomplishments of projects under the IT Infrastructure and Users Services cluster of the DOC Consolidated Infrastructure project.

1.6.2.2.1 Enterprise-wide and Headquarters

Wide Area Network

Many enhancements were made to the NOAA Fisheries networking infrastructure to increase network resources and improve performance, security, reliability, accessibility and uptime. Overall LAN and WAN services were significantly increased and expanded to provide access to all NOAA Fisheries employees while realizing a decrease in telecommunication costs. These improvements have resulted in a more stable, scalable and secure network that provides the flexibility to support current and anticipated future data communications and teleworking demands.

Final phases of the Virtual Private Network (VPN) rollout were completed. The VPN now provides secure Intranet access for over 50 remote offices, and over 700 employees. Many new routers were deployed supporting router to router encryption over the WAN in support of the IG's recommendations to encrypt sensitive Magnuson-Stevens fisheries information over the network. Bandwidth for Long Beach, Portland, and ST. Petersburg Offices was significantly increased.

Below are pictures of the current WAN Frame Relay and VPN infrastructure.

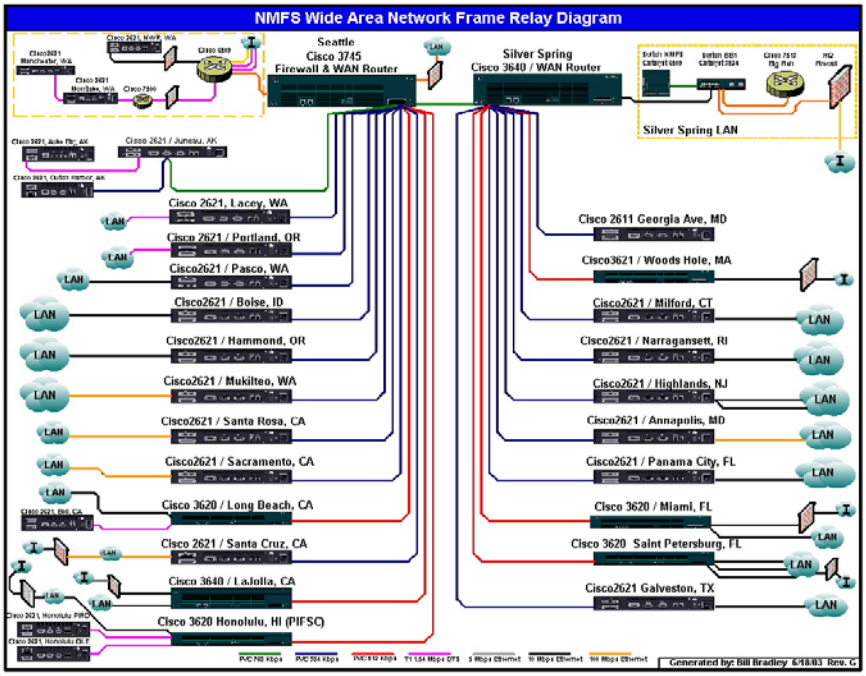


Figure 3 Fisheries Wide Area Network

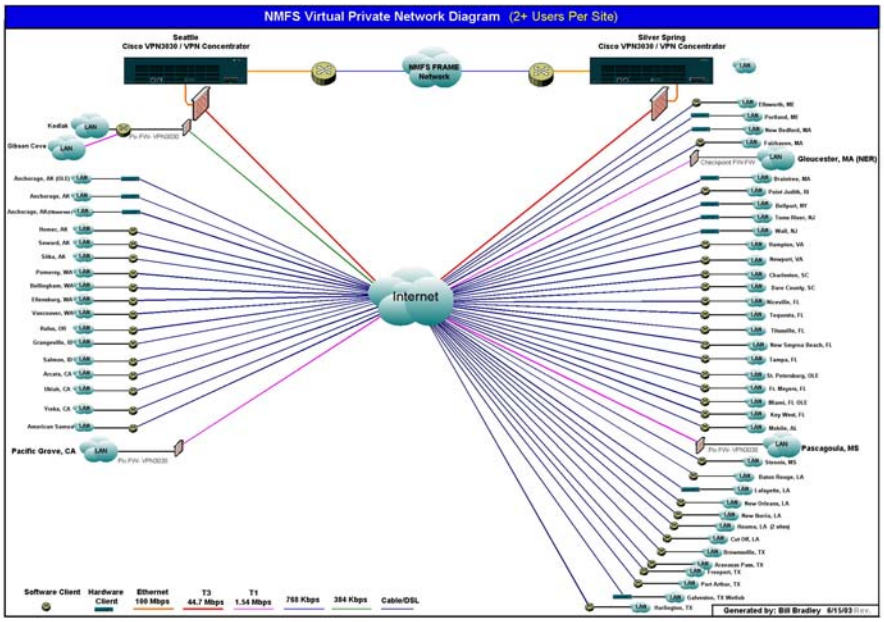


Figure 4 Fisheries Virtual Private Network

HQ Local Area Network

The HQ Infrastructure provided a highly reliable resource for the Headquarters-based users and those across Fisheries accessing Headquarters-based resources, with an overall availability rate in excess of 99. 999%. The Headquarters' Infrastructure Team deployed wireless networks in HQ conference rooms and deployed a fax server to support accepting public comments and distribution of fisheries information. They also began deploying an automated patch

management solution using MacAfee Orchestrator and MS SUS. The Helpdesk continued to provide desktop support and taught courses for Oracle Calendar.

Fisheries Information System (FIS)

The Fisheries Information System (FIS) provides a context for the design, development, and implementation of data collection and data management for fishery dependent statistics nationwide to improve the timeliness and accuracy of data. FIS is a portal that identifies the existing federal and state fisheries information systems or databases (data collections) and provides integrated business solutions for effective information sharing. FIS supports fisheries management decisions by developing a virtual application portal environment and providing integrated business solutions and data sources in web browser interface. Over the last year, the FIS has made great progress. Five Professional Specialty Groups (PSGs) were established. Region and Center offices expertise working with HQ, FINs, and state commissions worked together on the FIS Roadmap and initial management plan. National meetings were held to share the best practices and technologies for solving business problems. Multiple projects were funded during the FY04. proposal funding process. All project teams developed the project plans. National Metadata system prototype (InPort), and FIS portal capabilities were demonstrated during the second national meeting. A more detailed program management plan will be developed in the FY05, governance structure will be established, proposal funding process will be established, and more project will be defined for the national FIS implementation.

General Counsel Litigation Database (GCLD)

Deployed by the NMFS OCIO in FY03, the GCLD provides NOAA Fisheries and the Office of General Counsel the capability to input, update and report on information about NOAA Fisheries open and closed legal cases in a secure web-based environment. The system provides ad-hoc search and query capabilities, and can generate detail and summary reports on a variety of case information. Response to the system has been quite positive - information requested by Congress can be assembled within hours and days instead of days and weeks. Significant time has been saved preparing quarterly audit reports -- two months reduced to one week. The GCLD will interface with external DOC/NOAA litigation docket systems, providing periodic data exchange, when those systems become available. In FY2004 a major module was added to track and report on appeals.

CAMS FRS (CFRS)

The Financial Reporting System (FRS) was enhanced to become the CAMS FRS, integrating budget modules with NOAA. A new labor projection module was added, the match process was improved and twenty new reports were created. A successful FRS workshop was held in FY2004 and partnering with the NMAO enabled significant cost sharing.

Electronic Forms Portal

NOAA Fisheries Electronic Forms Portal serves up forms and permit applications to the public and the fishing industry making it easier for them to comply with the regulations that preserve

the nations living marine resources. The first version of the site deployed in FY2004 has proven to be a resounding success -- web site metrics indicate that the site is used to download thousands of forms each month.

Annual Operating Plan (AOP)

AOP was fully integrated with CAMS in FY2004AOP is a web-enabled application that provides NMFS managers and employees the capability to manage, monitor and report on resource allocation for programs, projects and milestones within the agency. Tracking and reporting is available to assess budget vs. strategic and operating plans, and to crosswalk a variety of information involving programs, budgets, personnel, accomplishments, costs, issues and opportunities. The AOP is fully integrated with the FRS.

Restoration Center Data Base (RCDB)

RCDB is a web-based application that tracks a variety of information about the NMFS Restoration Center's (HC) restoration projects. Enhancements include an Internet component, allowing the general public to view information about various restoration projects, including pictures and photographs. A GIS component that displays maps associated with selected restoration projects was added in FY2004 will soon be available through the RDCD web site.

National Estuary Restoration Inventory (NERI)

NERI is a web-based application that tracks estuary habitat restoration projects across the nation, provides information on restoration projects to help improve restoration methods and tracks acreage restored toward the Act's one million acre goal of the Estuary Restoration Act. The system was rolled out in FY2004 with a pubic map feature which utilizes the new NOAA Fisheries GIS infrastructure.

Electronic Rulemaking

NOAA Fisheries is moving very quickly to full electronic rulemaking in accordance with the Presidents Management Agenda for electronic rulemaking. We are partnering with EPA making our Federal Register notices available for public comments thorough www.regulations.gov, accepting email comments, and laying plans to participate in the EPA’s government-wide electronic docket. NOAA Fisheries is also participating on several government and academic fronts to examine and deploy new technologies to improve the rulemaking process.

Public Consultation Tracking System (PCTS)

PCTS was integrated with the Protected Resources Information and Status Management (PRISM) system creating a single centralized database with portions of data available through the PCTS web site. In FY2004 the system was rolled out to several additional regions.

Law Enforcement Automated Data System (LEADS)

The Office of Enforcement is replacing it's outmoded Enforcement Information Management Systems (EMIS) to manage and track its cases with Intergraph's LEADS. The COTS product was procured in FY2003 and is being reengineered to support Fisheries enforcement in FY2004Deployment is planned for FY2005.

Vessel Monitoring System (VMS)

The NOAA Fisheries Office of Enforcement completed the activation of the VMS SmartTrac Vessel Tracking System for absolute communications, accessing the 84.-nation International Mobile Satellite Organization (Inmarsat), consisting of eight satellites in a geostationary orbit. SmartTrac provides a GIS-based representation of vessel positions throughout each region's area of responsibility. The system also utilizes Argos Satellite Services, a satellite-based system that collects, processes and disseminates environmental data from fixed and mobile platforms worldwide and can geographically locate the source of the data anywhere on Earth. The Office continued using an Oracle database to archive vessel position data. Historical track lines of vessel movement were available to the VMS operators within the Regional Offices. Vessel information was also made available to Enforcement agents in the field via the Microsoft terminal server applications.

NOAA Fisheries Internet Website

This website is the NOAA Fisheries public web presence, consisting of approximately 30 portal pages guiding users to information available at agency sponsored web sites. Providing users valuable information, links and transactional capabilities on www.nmfs. noaa.gov reduces administrative burden and improves customer satisfaction. An initial website face-lift was completed to include easier subject oriented navigation and more intuitive look and feel. In FY2004 a Google search engine was added and an extranet server in the HQ DMZ was deployed. The common look and feel of the HQ Offices web was extended down to the third level, and regional templates were disseminated. Also a web design resource page was deployed that supports collaboration among enterprise-wide web developers and serves as a repository for reusable code.

NOAA Fisheries Intranet

This Intranet site provides information to agency staff regarding employee services. Providing valuable, frequently requested information within a secured online environment improves employee satisfaction and reduces administrative burden. The site was updated with a more intuitive navigation and look and feel. Content consolidation has begun, and mirroring technology has been deployed to provide remote access for authorized users.

1.6.2,2.2.Regional Offices

Regional LAN servers, storage devices, routers, firewalls, backup devices and other components were replaced, enhanced and added to improve performance, reliability and security across the computing architecture. Desktops were refreshed and upgraded to improve resource sharing, expand access, and to allow users to leverage new application

Many sites are migrating to Red Hat Linux operating systems to dive down hardware and software maintenance costs and replacing outmoded 3Com switches with new Cisco switches to increase security. Some specific examples of infrastructure upgrades include:

- The Northeast Fisheries Science Center (NEFSC) installed new servers.
- The Southeast Fisheries Science Center (SEFSC) set up new servers and workstations for their field offices.
- The Southwest Fisheries Science Center (SWFSC) upgraded its database servers and replaced all CRT monitors with LCD monitors to free up desk space, improve health conditions, and save energy.
- The Northwest Fisheries Science Center (NWFSC) purchased new servers for all field office to support its migration to Active Directory.
- The Pacific Islands Fisheries Science Center (PIFSC) purchased new Oracle servers and integrated them with their fiber channel RAID.

The regions continue to build up a robust IT workforces to support scientists' and resource managers' ever increasing demand for IT services to meet their mission requirements. Two new IT Specialists were hired at the SWFSC to meet users demands, the NWFSC added new positions for a web developer and a GIS analyst and the PIFSC added a database design specialist.

Research scientists aboard research vessels were further empowered with IT. Shipboard data entry systems, including the Scientific Computer System (SCS), the Fisheries Scientific Computer System (FSCS), and the SEAMAP Data Entry System were deployed upon NOAA Fisheries research ships. Fiber optic data lines were extended to docks to provide network connectivity for vessels in port.

IT Regional CoastWatch nodes were significantly improved to enhance ecosystems research that supports the management of living marine resources. These sites, which process satellite data to provide sea surface temperature maps to help fisherman find optimal fishing grounds and scientists to identify harmful algal blooms, were upgrade with new servers, software and connectivity. For instance, the West Coast site replaced production servers, increased the bandwidth, improved backup capabilities and added new suites of output products and the Pacific Islands upgraded their server with new faster system board and more memory.

Many regions deployed, secured and enhanced wireless networks. The SWFSC improved on-site WLAN communications by replacing an 802.11b access point with two 801.11g access points increasing the theoretical throughput from 11 Mbps to 54. Mbps and improved security through use of WPA instead of WEP. The NWFSC designed systems for research survey vessels and for use along the Columbia River estuary. The SWSFC also provided travelers the opportunity to use Wireless Internet Service Provider's (WISPs) for nationwide wireless connectivity to the WAN.

The following sections detail specific regional accomplishment in FY2004:

Northeast

The Northeast Fisheries Science Center (NEFSC) continued migrating their SUN O/S servers to Red Hat Linux, installed web servers and added SAS Graph to the 10 user SAS license for Linux purchased in FY2003.They completed an Image Retrieval web page for the Fisheries Sampling Branch's Observer that allows users to locate a set of scanned images based on database parameters associated with the image files.

Southeast

The Southeast Regional Office completed an extensive reengineering of the Permits organization. This redesign of the business processes included a complete As-Is Business Process analysis, a regulatory analysis, and comparative study. The regulatory analysis, best practices, senior management and the General Council dictated changes to the As-Is model. These changes have been incorporated into a new business model to be implemented in early 2005. Working closely with the NMFS Webmaster, they redesigned the Regional Office Internet web presence. They are also developing a comprehensive Permits Information Management Systems (PIMS) based on business process analysis and current regulations. This system is schedule for initial deployment early in FY2005.

The Southeast Fisheries Science Center has fully deployed a data warehouse with an OnLine Analytical Processing (OLAP) tool that protects the confidentiality of sensitive data, and all data extract, transform, and load modules. They have developed and deployed a portable LAN comprised of both wired and wireless components, that empowers scientific workshops held at strategic locations to have full access to the IT infrastructure to share information. They continue to support the Ocean Biogeographic Information System - Spatial Ecological Analysis of Megavertebrate Populations (OBIS-SEAMAP) a program developed in collaboration with Duke University. The SEFSC also began converting all databases, warehouse, and front end applications to Oracle 10G to reduce the number of versions of Oracle being supported.

Other applications initiated and/or deployed by the SEFSC in FY2004include:

- The FIS Portal prototype by collaborating with the National Biological Information Infrastructure (NBII) a program of the USGS;
- An Enhanced Economic Data Validation system that manages fisheries logbook data;
- A Yearly Cost Data application that enable permit holders to enter catch-effort information online through a web interface;
- Data Quality Act Online that manages information and documentation required by the Data Quality Act. The application, developed collaboratively with the HQ Office of S&T, will serve a model to be deployed enterprise-wide; and

a web-based application to manage non-disclosure agreements pursuant to NOAA Administrative Order 216-100: Protection of Confidential Fisheries Statistics that enables enterprise-wide staff to verify filings of non-discloser documents.

Southwest

The Southwest Regional Office (SWRO) conducted desktop, LAN and WAN upgrades and standardization activities to improve resource sharing, expand access, and to allow users to leverage new application software. File servers, backup devices and desktop hardware were added to improve performance, reliability and security across the computing architecture. They also implemented the Southwest Records Management System (SWRMS, a web-based Oracle application to support records management for Southwest projects. The system can reference and/or link to all documents associated with SWFSC projects and is integrated with the Public Consultation Tracking System (PCTS) to eliminate redundant data entries. It also contains geographic location references to interface with GIS applications.

The Southwest Fisheries Science Center (SWFSC) continues to upgrade and improve infrastructure. Internet, intranet, and data portal web servers were upgraded. New SQL Server and Oracle database servers and a new a Oracle applications server were installed. Desktop backups were improved through the use of a near line disk-to-disk to tape backup scheme and the installation of a Spectralogic Bullfrog Tape Library and Legato client licenses for all production servers. Network Associates ePolicy Orchestrator and SMS 2003 were deployed for desktop anti-virus software management, patch management and remote control help desk support. LAN IP space was converted from legacy ISP IP space to NMFS IP space making the LAN more easily managed and more closely integrated with the NMFS WAN while implementing a secure DMA for public server access.

The SWFSC enhanced its historical highly migratory species (HMS) data holdings. Data were cleansed and integrated and FGDC formatted meta data was developed and posted SWFSC Data Portal. A major historical data store, CalCOFI, was migrated from Oracle to SQL Server 2000 to performance and management efficiencies have increased. A project was conducted to integrate diverse data sets collected over the past 10 years by various U.S. Antarctic Marine Living Resources collaborators. The database design, development, and population has occurred and work continues to complete a web-based single point of access for exploration, query, and display of these integrated data sets.

Major inroads were made in electronic document management: over 100,000 pages of historical technical memorandums, administrative reports, and collected reprints dating back to the early 70s were scanned and made available on the Intranet in searchable formats. GIS productivity increased with the initiation of over 20 new GIS users that were effectively trained and that are taking advantage of the improved functionality of ESRI's new generation ArcGIS software suite. A desktop video conferencing pilot project was completed linking the three Center sites using inexpensive cameras, iVisit videoconferencing software, and the Internet to connect the site Directors.

Northwest

The Northwest Fisheries Science (NWFSC) added a GIS analyst and a web developer to their team. With the support of this additional staff, they continued to build web applications to increase functionality and workflow efficiency, including a Check-in/Check-out Application, Event/Room Reservations Calendar, Maintenance Work Request application, Motor Pool Vehicle Application, Publications application, Standard Operating System application, and Training Application.

They ported web sites from Windows to Linux. Salmon migration data are being made available on the web and historical Columbia River Estuary data is being rescued. Wireless systems were deployed on survey boats and on the Columbia River Estuary. Wireless access was provided to dock, stream and research tank locations.

The NWFSC and the Northwest Regional Office teamed together to develop databases and GIS applications to assess performance metrics of endangered salmon recovery programs. Also, requirements analysis for a new Oceanographic Database has been completed. Project planning is underway for the Columbia Basin Sub Basin Pilot Monitoring and Evaluation Database. The Pacific Salmon Habitat Restoration Project Tracking Database has been piloted.

Alaska

The Alaska Fisheries Science Center (AKFSC) IT staff created a web-based search tool to locate AFSC produced publications. This database contains approximately 4.869 entries. They also worked with the Publications staff to develop an AFSC Publications Posters database. They continue to work with the AKFSC's Safety Officer to implement an automated float plan system.

The Alaska Regional Office (AKRO) established collaboration sites for Crab Rationalization and BSAI Amendment 82 workgroups. These sites facilitate close coordination amongst the members and make it possible for them to work simultaneously on the same document(s). Two features were added to the Region's Electronic Administrative Records Management System (eARMS) that will assist the Records staff in responding to FOIAs more rapidly. Implemented Agency policy to accept public comment via e-mail and created regional Standard Operating Procedures for implementing and maintaining this new policy. Established a Network Management Server that will be used to monitor network status, manage Virus and Operating System software patches and updates. Streamlined website design and AKR web page download times by implementing Cascading Style Sheets and stripping antiquated HTML from 1,500 some HTML pages on our web server. Implemented the new IFQ landing ledger application for Restricted Access Management, which replaces the dated IFQ Reporting Terminals. Improved the network access time, availability and security of the Region's public servers (Web server, Unix server, VMS Server) by moving them to a special subnet linked to the network connection to ACS Alaska (local T1). Improved turnaround time and stability of the Virtual Private Network (VPN) connections to the Anchorage and Dutch Harbor field offices and mobile users by moving the Region's VPN concentrator from the Frame Relay network connection linking the Regional Office with the Seattle Science Center to the Local T1 network connection with ACS

Alaska. Updated the IT Contingency Plan and IT Security Plan to reflect changes in the Region's IT Architecture, current IT policies and threats to the Region's systems.

Pacific Islands

The newly formed Pacific Islands Regional Office (PIRO) has designed an expanded and upgraded Active Directory-based LAN to support its change in status and expansion a from local area office to an official Regional Office.

The PIFSC developed and implemented a local credit card purchase capability to automate capture of data and provide managers with ability to track purchases and manage spending. They also applied PIR data quality standards to existing databases and initiated three FIS projects for development of the Hawaii Economics Data Module, the national FIS metadata repository, and the packaging and publishing of data management tools for use by other Fisheries regions and partners. The PIFSC promoted quality data management practices through presentations at regional and national level meetings at WPRFMC, NOAA Tech 2004., FIS, HMS and NOP.

The PFSFC enhanced the Hawaii Longline Observer Data System to streamline data to enable individual data stewards to maintain the integrity and documentation of their data and are developing the FIS InPort Metadata Catalog to manage information about NOAA Fisheries organization, projects, data, publications and information products.

1.6.3 NOAA Ocean Service (NOS)

NOS Data Explorer

The NOS Data Explorer, the web-portal of the enterprise GIS (E-GIS) effort to improve access to NOS spatial data resources, has been developed in a partnership between CSC and MB. The enhanced user interface was finalized and introduced to the public in the summer of FY04. The E-GIS team engaged all NOS program and staff offices to appoint a spatial data liaison to work closely with the team. The liaisons provide inventories of spatial data holdings and act as contacts for the NOS metadata specialist. The NOS metadata specialist worked with the NOS program and staff offices to assist them in producing high quality, useful metadata to support the search mechanisms in E-GIS.

NOS continues to chair the NOAA Enterprise GIS Committee. The Committee has been tasked to evaluate GIS use and geospatial data distribution within NOAA and will make recommendations to the NOAA CIO on how to better use those resources. The NOS Data Explorer portal is expected to play an important role in any NOAA-wide GIS portal development.

IT Security Plans Certified and Accredited

In the FY04, all NOS security plans were certified and accredited. In this process the security plans were updated, new risk assessments performed, contingency plans updated and tested and a

security self-assessment performed on all systems. If any weaknesses were identified, a plan of action and milestones (POA&M) was implemented.

Conversion of PORTS® Lites to full PORTS®

PORTS® has been defined by NOS as "a system minimally consisting of (1) a suite of oceanographic and/or meteorological sensors; (2) baseline data acquisition system (DAS) running a CO-OPS standard and approved operating system; (3) software at the DAS to perform quality control and to generate quality control flags for measuring quality of the sensor data; (4) a Department of Commerce (DOC) FTS (Federal Technology Service) designated contracted WAN (wide area network) communication link with the Continuous Operational Real Time Monitoring System (CORMS); (5) a fully staffed CORMS providing 24 x 7 personnel coverage; and (6) an installation and operations/maintenance agreement with a local responsible party sponsoring the PORTS® ."

Prior to establishing PORTS® as an operational system and program, NOS satisfied the real time requirements of a few locations by installing "voice modems" on some of their tide gauges. This provided the ability for users to dial the gauge and receive the latest observation in voice form from that single gauge. Among other differences from a full PORTS® installation, no quality control was performed and there was no 24 hour monitoring of the gauge performance. These installations were referred to as PORTS® Lites.

PORTS® is now a mature and established Program within NOS. CO-OPS has completed the migration of PORTS® Lites to full PORTS® installations. They now comply with the NOS definition of a PORTS® through enhanced communications, acquisition of the data via a PORTS® DAS, quality control of all data, and the implementation of a signed agreement with a sponsoring partner that includes funding for recurring operations and maintenance.

Storm Surge Quick Look Product

CO-OPS rolled out a new product in time for this year's Hurricane season called Storm Surge Quick Look. This product integrates NOAA's National Weather Service (NWS) storm track information with water level storm surge and meteorological observations from stations experiencing Hurricane effects. The product presents a significant amount of information in a readily understandable graphical format. The Storm Surge Quick Look product is supported on a 24x7 basis during Hurricane events and is updated in tandem with NWS track updates.

Participation in the Integrated Ocean Observing System (IOOS) Program

In FY2004, CO-OPS made substantial progress towards its goal to become an active participant within the IOOS community as a regional data/information provider and recipient. CO-OPS expanded it capabilities to acquire and display data from the Texas Coastal Ocean Observing Network (TCOON), the Florida Department of Environmental Protection (FDEP), and the Carolinas Coastal Ocean Observing and Prediction System (CARO COOPS).

CO-OPS initiated the process for hiring a full time IOOS contractor to support CO-OPS in working with up to 14 extramural data sharing entities. It is anticipated that the contractor will report to CO-OPS in the first quarter of FY2005.

Streamlined Data Processing and Integrated Databases (and System Re-engineering)

In order to most effectively meet its mission for supporting safe and environmentally-sound marine transportation, OCS must get the latest chart updates from its sources to the charts and into the hands of the public as quickly as possible. Human and environmental safety and critical economic activities are dependent on highly accurate chart products. Currently there are data flow bottlenecks and parallel paper and electronic charting production processes that constrain optimal program efficiency.

An internal technical study team conducted an initial analysis and produced a final report and recommendations (Phase I) presented to the OCS Senior Management Team in February 2003. During FY '04, the Implementation Team (Phase II) addressed system analyses to determine solutions for maximizing the efficiency of OCS data pipeline. A Management Team meets at least twice a month to review OCS's goals for the data streamlining process. These Team meetings began in July, 2004.

In its part of the data streamlining effort, MCD awarded a five-year, $9.4 million IT services contract to Software Performance Systems Inc. This contract will assist OCS/MCD with the following areas of IT support for the Nautical Charting System and Marine Charting Program: developing a requirements analysis, developing systems engineering and system test plans, developing system methodologies and project plans, conduct project reviews, oracle support, web publishing software procurement and maintenance, and e-commerce support. The contract will be on contribute to the transition from a dual production line system (Generation 1) to a single production line system (Generation II). In a single production line system all nautical products will be derived from a single source database to help eliminate data application redundancy. As a result, the customer will receive the most accurate data possible.

1.6.4 National Weather Service (NWS)

- Installed upgrade to NCEP's Weather and Climate Supercomputer located in Gaithersburg, Maryland to provide 2.5 times more computing capacity. It is scheduled to reach its full operational capability in January 2005.

- NCEP's Weather and Climate Supercomputer backup facility located in Fairmont, West Virginia, provides, for the first time, a full and offsite backup for the critical model guidance. The backup system is scheduled to reach full operational capability in January 2005.

- User access to the NWS websites during the 2004 hurricane season totaled about 2 billion hits for the four hurricanes (Charley, Frances, Ivan, and Jeanne) over a combined period of about 10.5 days. This is equivalent to an average of 190 million hits per day. The peak daily volume was about 300 million hits. The average web traffic for a hurricane in 2004

has doubled that of Isabel in 2003. To put these numbers in perspective, during the deployment of the MARS Exploration Rovers, there were 6.5 billion web hits over a 45 day period from the NASA web site, averaging about 144 million hits per day.

- NWS achieved the Initial Operational Capability (IOC) for collecting and distributing, in near real-time, the highest resolution radar data from the national network of 124 NEXRAD radars. The Final Operational Capability (FOC) of 133 radars rely solely on NWS network infrastructure and Internet 2 backbone network.

- NWS' new era of digital forecasting was implemented in an experimental service that provides data from the National Digital Forecast Database (NDFD), an integrated data set produced by Weather Forecast Offices (WFO) throughout the United States, across the World Wide Web (WWW) in eXtensible Markup Language (XML) to better disseminate its forecasts to customers and partners.

- NWS modernized 120 Cooperative Observer systems in New England. The upgrade included deployment of sensors and data logging equipment to these sites. A high resolution temperature model is being run operationally at 8 sites to improve NWS' temperature forecast accuracy.

- NWS launched the 'fully operational' first phase of the National Air Quality Forecast capability in the northeastern United States providing hourly ozone forecast information (DOC/NOAA Press Release of 9/15/04).

- NWS deployed Advanced Weather Information Processing System (AWIPS) Linux workstations to all sites. The performance improvement was greatly needed to enable the new forecasting and warning tools to operate adequately.

- Completed the major software and hardware upgrades to all Resources Information Management System (RIMS) servers.

- Completed the WSR-88D RPG System Security Authorization Agreement (SSAA) and incorporated the requirements mandated in the approved SSAA into the WSR-88D System Specification.

- Implemented the WSR-88D Security Patch Process, which outlines the steps required to release an emergency security patch to all 159 radars in a quick manner.

- Completedthe SANS security essentials course for the Radar Operations Center (ROC) staff with root or administrator access on WSR-88D systems.

- ASOS
    - Completed ASOS Ice Free Wind Operational Acceptance Test
    - Deployed ASOS ACU processor to at least 300 of the 313 NWS sites
    - Deployed ASOS Dewpoint sensor to at least 300 NWS sites
    - Deployed ASOS AWPAG to at least 250 NWS sites

- Awarded ASOS Ceilometer development contract

- Continued monitoring the collaboration efforts in the regions to consolidate IT resources, when practicable, to increase cost effectiveness.

1.6.5 Office of Oceanic and Atmospheric Research (OAR)

NOAA Research CIO Office

- **IT Training** – The NOAA Research CIO office periodically offers in-house training courses in standardized desktop applications to all personnel headquartered at the Silver Spring Campus. To improve this capability, the NOAA Research CIO and the NOAA Finance and Administration CIO collaborated in establishing a shared training facility located on the 10th floor of SSMC3. In FY2004, classes taught using the new facility focused on providing training for NOAA Research's transition from OnTime to NOAA's Oracle Enterprise calendar and from Corel WordPerfect to Microsoft Word 2003. The CIO Office is also coordinating the implementation of the Department-wide E-Learning Program across NOAA Research organizational components.

  - The NOAA Research CIO Office organized two NOAA-wide training events this year: the annual NOAA IT Security Conference and the annual NOAA Webshop.

    - The two day NOAA IT Security Conference brought to an audience of NOAA IT Security Professionals a number of credentialed government and industry speakers. The NOAA IT Security Office authorized 16 IT security training credit hours to attendees. A two day Windows Security course was held in conjunction with this event, and attendees were also authorized 16 IT security training credit hours by the NOAA IT Security Office.

    - The three day NOAA Webshop event, held in Philadelphia, attracted more than 200 web developers who were able to share accomplishments and best practices.

- **Grants Online –** NOAA Research's grant funding Program Offices, Headquarters Program Policy Division, and the CIO Office are members of the NOAA Grants Online Steering Committee. During the past year, the Committee has worked with the contractor, Bearing Point, to develop interative system builds. In November, NOAA Research's National Sea Grants Program, National Undersea Research Program, and Ocean Exploration Program are scheduled to make the transition; the Office of Global Programs is scheduled for migration of its existing database for transition in December.

Boulder Network Operations Center (NOC)

- Among other duties, the NOAA Boulder Network Operation Center (NB-NOC) focused on 4 major projects in 2004:
  - Negotiated a contract with the Front Range GigaPOP (FRGP) which included National Light Rail (NLR) services.

  - Deployed a building-wide wireless network.
  - Planned the build of web cluster capabilities in advance of a predictably busy 2004 hurricane season.
  - Completed a transition from ATM-based LANs to a Gigabit Ethernet-based LAN and backbone, positioning our tenants for smooth transitions to 10-Gigabit Ethernet technology.

- Previous WAN services from the FRGP were delivered on the basis of blanket PO. In 2004, it became apparent that the value of services sought for the Boulder campus would go beyond the allowable limits of small procurements. The NOC set out to reach a contractual agreement with UCAR (the FRGP parent organization) based on a Participant Agreement they had drafted for other FRGP members. After several iterations of meetings and the involvement of various Department lawyers, NOAA drafted a contract that provides for 5 option years of Internet 1, NGI, and NLR services at a very reasonable cost to our Campus customers.

- In the Wireless LAN space, the NB-NOC completed the deployment of a building-wide service consisting of Cisco 350 and Cisco 1200 series wireless access points. The scientific community has been increasingly utilizing the service to facilitate conferences, presentations, and general mobility. 2005 goals include the improvement of this very practical service, to include its coverage, security, and performance characteristics. In conjunction with the wireless project, the NOC built an out-of-band services network to span the building for other common services, such as building administration, and device and environmental monitoring.

- The NOC added server nodes and monitoring capability to a reliable web cluster in April of 2004. This advanced planning successfully met the demands of the peak loads resulting from Hurricane events (in the late summer months) at more than double last year's load. WAN links were driven near their limits and traffic engineering was necessary, so in 2005 additional capacity is planned for the commodity Internet connectivity.

- The DSRC backbone was initially built upon ATM LANE technology offered by Fore Systems. It was decided in early 2002 that a transition to Gigabit Ethernet technology would be essential to the future of Enterprise networking at the DSRC. That transition was completed with the migration of CDC to the Cisco Catalyst 6500-based Gigabit backbone. That backbone is now 10-Gigabit ready, and some of this year's funds will augment its capabilities by adding upgraded Supervisor 720 Modules in the network core, to provide IPv6, improved security features, and per-port monitoring.

Aeronomy Lab

- Operating Systems – Provide an OS with more security and capabilities. The Mac O/S 10.x will become the mainstream operating system. 80% of the Mac OS9 systems were upgraded/replaced by the more secure and capable OSX operating system for both desktops and servers. Improved customer services include a more reliable FTP server and for some of the scientists, both a new operating system and hardware platform. ($70K in hardware/software; 2.0 years in staff costs)

- System Management Funding – Provide capabilities at a lower price. At a reduced cost, 110 desktop seats for Office Pro with Virtual PC and one license for a Windows 2003 standard server license were enrolled under the Microsoft licensing and Software Assurance Program using the MS DOC Enterprise Agreement. All linux systems were enrolled in the NOAA RedHat enterprise licensing maintenance and support contract. (annual cost of $17K)

- Security – Improved Climate information and products. In support of the ICARTT field study, a LAN was installed and IT and logistical support provided. These networking capabilities provided connectivity for scientists with NOAA, NASA and other collaborators to accomplish their tasks as well as onsite IT and web page support. ($50K for hardware and communications)

Air Resources Lab

- Operating Systems – Divisions standardized on a single version of Linux, to ease support and patching, and provide a homogenous computing environment for users. This also served to tighten security and provide increased capabilities for the users. All 5 ARL divisions chose to standardize on Red Hat Enterprise Linux, and joined in the NOAA mass purchase to obtain the best possible pricing for support and service subscriptions. ($5K per year in software costs; 0.25 years in staff costs)

- System Management Funding – Provide capabilities at a lower price. At a reduced cost, 31 desktop seats for Microsoft Office Pro, 3 for Front Page, one Visio, and one license for a Windows 2003 standard server license were enrolled under the Microsoft licensing and Software Assurance Program using the MS DOC Enterprise Agreement. Additionally, 23 Linux systems were enrolled in the NOAA Red Hat enterprise licensing maintenance and support contract. (annual cost of $10K)

- System/Network Administration – ARL is moving towards automated patch management solutions. Quicker and easier applications of operating systems patches are deployed on 100% of all Linux systems at ARL, and Windows XP systems are all set for automated patch downloads.

- ARL has deployed Harris STAT vulnerability scanning software on all its networks, and provides scan data to NOAA and DOC at least quarterly. Additionally, several divisions are using Nessus scanning software to scan systems not covered by the Harris product.

Atlantic Oceanographic and Meteorological Lab

- Training was provided to three AOML employees in IPv6 and Juniper router OS configuration via workshops. An additional Juniper router and a Cisco switch capable of 10Gbps were obtained.

- AOML is connected to the Internet 2 Abilene Network via the University of Miami.

- No teleworkers have presently signed up. All workers who already have signed the Remote Access form are theoretically eligible.

Climate Diagnostics Center

- Added 18 terabytes of storage, effectively doubling existing storage capacity. This provides the ability for CDC researchers store and access to new, higher resolution datasets, including the ECMWF Reanalysis-40 (ERA-40) dataset. The ERA-40 dataset provides over 6 times the data at each time step compared to previous data sets, and over twice the vertical resolution.

- Provided remote access to CDC systems for authorized users via a one-time password, token-based authentication scheme. Increased security of CDC information assets by implementing a new security architecture, including a DMZ for outside looking services such as FTP and HTTP. Providing a secure infrastructure with remote access availability supports the CDC mission by enabling Telework, as well as allowing outreach and dissemination of research results and datasets.

- Replaced 2 Sun large memory compute servers with Linux servers in CDC's batch systems, upgrading the throughput capability of the available batch systems. Upgraded our linux cluster computing capabilities by adding 8 more processors to bring the total to 44. Upgrading our compute server capabilities supports CDC's mission by providing CDC researchers the ability to work with upgraded datasets and models.

- Developed an experimental distributed computing network of Macintosh Dual PowerPC G5 desktop machines, to be used both as an upgraded desktop capability and as a distributed cluster using the second processor. The Macintosh G5 provides significantly enhanced capabilities on the individual researchers desktop, enabling individuals to accomplish more of the research mission on their own desktop without resorting to shared, centralized compute facilities.

Climate Monitoring and Diagnostics Lab

- Security – CMDL has enhanced security for the network by establishing a true firewall. The Cisco firewall software, installed on the Cisco 6509 router, uses stateful packet inspection. Prior to that, CMDL capability was limited to only router access lists. (~$4,000)

- Data Storage – CMDL purchased new data storage devices that provide network connected systems with an increase from 1 to now 2 terabytes of online data archival capability. ($6,000)

- Total Cost of Ownership – All Windows NT systems are now upgraded to Windows XP. The ease of system administrators to maintain uniform operating systems, in addition to the ability to implement remote patch management, are some of the benefits realized. (30 licenses a $4,000)

- System/Network Administration – CMDL is moving towards automated patch management solutions. Quicker and easier applications of operating systems patches are deployed on 75% of all systems at CMDL. ($3,000 for HfsNetecheck software for Windows; ($500 for storage space for Fedora core and CentOS distribution mirror)

Environmental Technology Lab

- Performance – ETL continues to procure systems based on the AMD core processors. During FY 2004 ~50 systems were purchased to complete the three year cycle of technology refreshment. These systems easily met the 80% price/performance breakpoint set in the NOAA Research Architecture Plan.

- Data Storage – ETL's Computer Services Division seed funded several high performance data arrays during FY 2003 to demonstrate the feasibility and cost effectiveness of this technology. During FY 2004 Research Projects continued to include funding to extend this capability for use in specific projects. Approximately 12 terabytes of data capacity was added to the ETL network.

- User Desktops – ETL completed the third year of a four year refreshment cycle of by refreshing 1/3 of the user desktop systems during FY 2004.

- Office Automation - ETL continued to push the transition from Corel WordPerfect to Microsoft Office applications. During FY 2004 over 100 personnel from ETL converted. ETL also negotiated with NOAA Research Headquarters and ASAP to convert existing Software Assurance agreements to the new NOAA Microsoft Enterprise Agreement.

- Open Source Software – Rich Beeler of ETL led a NOAA team of Information Technology Specialists to establish the first NOAA-wide Red Hat Service/Support Contract. This contract will save NOAA $2.6M over the three year period of the contract.

- System/Network Administration Tools – ETL adopted several software administration tools during FY 2004 to help improve the administration of their systems; OK Print Watch was added to track/report printer usage. EZ-Audit was added to perform automated hardware/software asset tracking for Windows systems.

- Operating Systems – ETL began its upgrade to Red Hat Enterprise Linux (RHEL) during FY 2004. Network operating systems are limited to RHEL 3.0 and Windows 2000/XP.

- IT Management Structure – ETL continues to support and provide leadership for several NOAA Research level activities including Architecture, Red Hat Support/Service Contract, and the IDL contract used by NOAA Research and NESDIS.

- Security – ETL has implemented the NOAA provided Harris Scanning tools, is working closely with the NOAA CIRT office in Boulder for Intrusion Detection, and has begun to use the Red Hat Management tools to implement errata and security patches to Linux systems.

- Total Cost of Ownership/System Management Funding – ETL continued to refine its Information Technology budget in FY 2004. Funding for IT Infrastructure is taken as part of the overhead structure with the goal of providing consistent funding. The goal established in FY 2001 to flatten the IT Infrastructure budget was nearly completed in FY 2004.

- Server and Desktop Capability – ETL completed its transition from the DSRC ATM network to the Gigabit Ethernet backbone during FY 2004. This included connection speeds of 1 Gigabit for servers and 100 Mbps for all desktops.

- Teleworking – ETL completed its infrastructure to support teleworking of employees during FY 2004.

Forecast Systems Lab

- Replaced a 75kVA UPS in the central facility computer room with a 100kVA UPS to eliminate a failing UPS and increase support for the electrical capacity of the computer room.

- Implemented Gigabit Ethernet and eliminated ATM, providing a single network protocol and improved topology resulting in better network performance, improved network traffic monitoring capabilities, and improved long-term network maintainability.

- Expanded wireless network access to the entire David Skaggs Research Center.

- Hardened the network perimeter firewall by creating a public access area for sharing research information with collaborators and further restricting access to internal processing clusters, servers, and workstations.

- Implemented high-availability Linux on pairs of processing systems, providing auto-failover capabilities to ensure high reliability for data ingest and processing.

- Implemented SystemImager for production data ingest and distribution servers to provide for rapid and accurate deployment of production systems and to ensure rapid recovery from any system failures.

Geophysical Fluid Dynamic Lab

- Funding received under the Climate Change Computing Initiative (CCCI) was used to procure additional SGI high-performance computing equipment in the form of three SGI Altix platforms totaling 608 processors. The Altix platform was deemed to be the most cost-effective solution, offering at least twice the performance of the previous generation Origin systems. These resources will enable simulations addressing policy and business issues, and turn NOAA's investments in the Climate Change Research Initiative (CCRI) research into policy relevant knowledge.

- GFDL undertook a significant re-engineering of its network in FY04 in order to improve its IT security posture. A Cisco Pix firewall (with backup) replaced the old packet-filtering system, and a DMZ was created to provide external services. The old web server was replaced by modern internal and external servers, and a synchronization tool was developed to refresh the external pages from internal originals. At the same time, GFDL significantly updated all of its web pages, ensuring implementation all of the DOC and NOAA policies through the use of style sheets.

- GFDL awarded a Software Development and Technical services contract to RS Information Systems, Inc. This contract directly supports the mission goals of GFDL and NOAA, both in the development of models which are the foundation for the Laboratory's research and in the maintenance and administration of the IT resources on which those models are run and analyzed.

- A Circular A-76 streamlined competition of multiple functions at GFDL including Computer Operations, Scientific Illustration, Library Support, and Travel Management was completed. The cost analysis conducted in the competition resulted in performance decisions in favor of the in-house team.

- GFDL served on NOAA's High-Performance Computing (HPC) Board during their assessment of alternative ways for NOAA to manage its HPC resources. This assessment resulted in a decision to separate Operational vs. Research and Development (R&D) systems. Furthermore, a consolidated R&D HPC procurement was begun covering the R&D activities of GFDL, FSL, and NCEP.

- As part of its ongoing testing of its Contingency Planning readiness, GFDL conducted a "tabletop" disaster exercise. A mock disaster was presented involving a water leak and an asbestos release. Following the latest Disaster Recovery Plan (DRP), the disaster teams conducted meetings, developed short- and long-term actions to be taken, identified contacts to be made, and put together schedules for addressing the event. The test revealed a number of areas of the DRP that could be improved, including a number of items that could be prepared in advance of any disaster.

Great Lakes Environmental Lab

- Improved on "Security" with the implementation of automated management tools to monitor, assess and deploy system patches, virus software updates and assess system vulnerabilities. GLERL staff installed the client/server tools McAfee "eOrchestrator" and Microsoft "Software Upgrade Services". Also the Harris STAT was used to scan for system vulnerabilities.

- Improved on "Operating Systems" by narrowing the number of operating system that support staff was required to maintain. SGI Ultrix, Digital Unix (Alpha) and older SunOS were eliminated from the network. Also fully deploying Microsoft Windows XP on all user systems has reduced the support required for multiple variants of Windows. Mac OS-X is now the only supported Apple system.

- Improved on "Data Storage" with implementation of additional 1.5 terabytes of external storage to provide system backup and data storage.

- Improved on "Modeling" by replacing a user desktop and modeling system with a Mac dual G5 for improved performance and compatibility with standard Office Automation applications

National Severe Storms Lab

- ***2004 NOAA Technology Transfer Award*** – "For development of a national real time radar data archival and Internet2 delivery system for the university, government, and private sectors". CRAFT (Collaborative Radar And Field Test) required a unique collaboration that was jointly led by NSSL and the University of Oklahoma and includes partners from two Agencies (DoC and Federal Aviation Administration), three NOAA Line Offices, three universities, and UCAR's UNIDATA. The initial test bed of six radars in 1999 has now expanded across agencies, and taking this project nationwide, NWS implemented initial operational capability in February 2004, using the Internet2/Abilene network and state of the art computer software and hardware.

  Kevin Kelleher, NSSL Deputy Directory and Project co-leader, with Dr. Droegemeier of the University of Oklahoma (OU) and original CRAFT member brought together the existing efforts of OU, NSSL, and NWS into a single project team and added several collaborators including NESDIS for real time archival. Mr. Kelleher obtained key grants from two Programs, ESDIM and HPCC, to extend CRAFT from a regional experiment to a national prototype. Working with the OU Computer Science, Kevin led the effort to research the radar data compression that resulted in an algorithm requiring less bandwidth and conducted network simulations to study data loading on the NWS networking infrastructure in anticipation of a national implementation.

- ***2004 NOAATECH Award*** - CRAFT was the recipient of a NOAATECH award for "excellence in the research and application of advanced computing and Internet technologies to further NOAA's service to the nation". The specific citation was "Best Presentation – technology transfer to operations." At the exhibit, NSSL presented a real time demonstration of both WDSS-II (Warning Decision Support System – Integrated Information) and QPE-SUMS (algorithm for estimating precipitation).

- Security – Activities that improve the overall security in network management by the system administration staff for inter-NOAA communications:
  - upgraded 100+ Linux workstations to RedHat Workstation 3 with improved security features
  - purchase of SSL certificates to support the intranet server and email
  - installation of ePolicy Orchestrator for local Virus updates
  - deployment of Harris Stat scanner per NOAA policy
  - upgraded firewall software and management system latest release for security
  - upgraded local LDAP support to get closer to a single sign-on system
  - installation of Barracuda SPAM/Virus firewall in front of local email server
  - installation of NESSUS security scanning tool for local and ad hoc use to back-check Harris tool. NESSUS works with systems that Harris does not and is much easier to configure and use for new installations, changes, and pop-up needs.

- User Desktops – Removed from service 30+ Solaris systems and replaced with Sunray clients for cost savings and productivity.

- Performance – Upgraded Sunray server to support 30+ Sunray clients

- Modeling – Updated Research and Operational compute clusters with new networking hardware and upgraded local compute power for modelers by procuring SGI Altix configured with 12 Itanium2 processors and 18 GB of common RAM.

- System/Network Administration Tools – Upgraded network statistic computer to enable metrics from all networked switches.

- Server Capability – Upgraded Windows Domain controllers to 2003 on new hardware.

- Data Storage – 2 large RAID arrays were procured and put into production for the Phased Array Radar Development team and upgraded tape backup system to double density drives.

- Operating Systems – Upgraded all Windows licenses using the NOAA model.

- World Wide Web Documentation and Publication Management:
  - Created virtual servers to support NESDIS satellite data mirrors. Testing and put into operation.
  - Put into production HPCC project Squid Server to be front-end for all of our webservices, except for Secure web connections. This includes local NSSL, SPC, NHC, and NESDIS pages.
  - Upgraded HQ purchased load-balancing switch to Gigabit interfaces to support Squid Cluster.

- Total Cost of Ownership – Infrastructure improvements to support Programs and Projects:
  - Re-wrote software for E-Field Mill (EFM) so that firmware changes could be accommodated and modified sync coding for reliability. (2004 NSSL Spring program).
  - Replaced failed boot-time disks for 3D Lightning Mapping Array system
  - Integrated vehicle tracking of storm intercept vehicles into WDSS II system (meteorological situation display) for Spring project.

Pacific Marine Environmental Lab

- **NOAA Research FDMS.** The NOAA Research Financial Data Management System (FDMS) supports administrative and financial users and senior management throughout NOAA Research with a secure, uniform, centrally managed financial software application. Within each local operating unit, commitment data is entered, managed and retrieved by administrative staff and reconciled with data downloaded from the CAMS data warehouse. Senior management at NOAA Research HQ can access NOAA Research-wide, consolidated financial reports through the SuperFDMS software application. FDMS is continuously updated to accommodate changes in CAMS, NOAA business rules and new reporting requirements. Security is consistently reviewed and improved. In FY2004, the FDMS team developed and tested a low-cost, on-line, near real-time contingency backup system for FDMS in FY2004. The system is working operationally in FY2004. The FY2005 objective

is to complete documentation and include in contingency plan for FDMS.

- **NOAA Research Hot Items.** The NOAA Research Hot Items is a news utility that serves as a realtime, central, web-based clearing house for information throughout NOAA Research. All NOAA Research operating units (laboratories, program offices, HQ) enter news items which appear immediately on the Hot Items website. The NOAA Research Hot Items website is a primary source of news items for the NOAA Research Outreach office and for NOAA Research reporting to NOAA management. The NOAA Research Hot Items is continuously being upgraded for improved functionality and security.

- **3D visualization.** PMEL has replaced the large, expensive ImmersaDesk /SGI visualization system (cost $174K) with a newer, light-weight, low-cost ($8K) PC-based GeoWall system. Both systems provide advanced 3D stereographic virtual reality visualizations of scientific data and model results. Transporting the fragile, thousand-pound ImmersaDesk required a large truck with air shocks. The eighty-pound GeoWall can be checked as baggage in an airport, eliminating thousands of dollars of transportation costs for each trip. In FY2004, in addition to desktop use, PMEL staff took the GeoWall equipment to ten scientific meetings, and gave over one hundred and four demonstrations locally and at scientific meetings.

•	• ***ImmersaDesk***	• ***GeoWall***
• ***Weight***	• Idesk = 950 lbs • SGI = 215 lbs • Total 1165 lbs	• 2 projectors @ 6.5 lbs ea = 13 lbs • 1 pc @ 23 lbs • 1 screen @ approx 35 lbs • Total approx 80 lbs
• ***Cost***	• Idesk = $100k • SGI = $74k • Total $174k	• 2 Infocus LP530 projectors @ $1,999 = $4k • 1 Dell Dimension 4600 @ $3k • 1 nVidia Quadro card @ $1k • Total $8k

- **IT System Patching** - Developed a patch management strategy for all supported operating systems deployed within PMEL. This will ensure that PMEL has the capability to meet the regular and emergency patching requirements established by NOAA for all IT systems. Platform specific solutions were implemented for MS Windows, Mac OS, Red Hat Linux and Sun Solaris operating systems. Each process was tailored towards the unique issues related to that platform. The procedures range from fully automated applications that efficiently push updates out for individual desktop systems to manual efforts where system administrators visit each system. The procedures have been set up to provide as much flexibility as possible in order to minimize the impact to research operations.

- **Security training**. PMEL initiated and implemented the concept of Developer Forums, a training program that bring to focus the role of end users in making IT Security an integral part of web development coding. PMEL shared this experience in developing training seminars in a well-received talk at the NOAA Web Shop 2004.

- **Remote Access**. PMEL has completed the implementation of a comprehensive solution for allowing remote access to PMEL IT resources by authorized personnel. The ability to securely regenerate an application session directly into the Web browser on a remote desktop was adapted as the cornerstone for the design and deployment of remote access within the laboratory. All PMEL users are now able to take advantage of this new technology for application level access. As a result of this accomplishment, PMEL will not have to maintain alternate systems for special access to internal IT resources.

- **Web-based IT Service Desk**. PMEL has improved work flow, communications and activities reporting for IT services. After reviewing requirements and evaluating potential solutions it was determined that a commercial software product called FootPrints by Unipress Software would best meet PMEL needs. The successful implementation of this software has increased communications with customers and provided valuable information that is assisting with more effective IT task management.

Space Environment Center

- Expanded SEC's Web user capacity by mirroring data to local Network Operations Center (NOC) Web Farm. Increased SEC's ability to support user queries during peak activity from 2 million hits per day to over 23 million hits per day.

- Redesigned and enhanced SEC's WWW and FTP Server Usage Statistics. Added Web Farm WWW logs, moved processing to internal machine, switched to Webalizer for WWW log statistics, enhanced Anonymous FTP log analysis, put reports on SEC Intranet, and continued to integrate WWW statistics with NCEP Central Operations.

- Operationally deployed:
  - A programmatic messaging service capability that allows SEC applications to send/receive text messages to/from other SEC applications. The first use of this service is in the GOES 12 SXI Real Time Client Software and the GOES 12 SXI Processor.
  - A DataBridge Service and Clients to provide public access to SEC's Space Weather Data Stores.
  - FTP Ingest and Dissemination Servers for handling receipt and dissemination of FTP data products.
  - A Logging Service Client and Store for capturing SEC custom application log messages. These include warnings, errors, status and informational messages.

- Transitioned off unsupportable fiber channel RAID hardware to new SCSI RAID.

- Retired 3 legacy systems.

Office of Global Programs

- Participated in the DOC/NOAA Microsoft Enterprise Agreement which has enhanced administrative functionality and standardized the Office desktops on the Microsoft Office Suite.

- Implemented a Cisco firewall at the entry point of the network. Personal firewalls have also been installed at individual workstations.

- Implemented Apple Desktop remote to improve the efficiency of OGP's system/network by automating system, virus, and limited application updates.

- Migrated to the Oracle Calendar System.

1.6.6 Office of Marine and Aviation Operations (NMAO)

- As part of NMAO's four year IT Technology Refreshment, replaced outdated user workstations with the latest DELL PC's to enhance efficiency in the user's daily operational duties. All systems are now installed with Windows XP Professional and the current Microsoft Office Professional in accordance with NOAA's plan to standardize on Microsoft Office by December 2004.

- Adhering to strict wireless security standards, AOC implemented wireless PDA and PC networking technologies throughout all AOC buildings including the flight line in the aircraft hanger. This provides network accessibility to critical flight preparation plans and allows collaboration of users moving throughout the AOC facilities.

- In compliance with NOAA's policy of server consolidation, eMail users at the AOC location were shifted to a NOAA MOC eMail server in Silver Spring, MD. The AOC eMail server was taken off line and retired.

- Integrated the NOS Coast Survey, N/CS5 Nauticus office in Norfolk, VA, to the NMAO Marine Operations Center-Atlantic local area network. This cross-Line Office cooperative effort will benefit NMAO and NOS by sharing network resources in the Norfolk area.

- Implemented Virtual Private Network technology enabling telecommuting and NMAO wide collaboration.

- Performed market survey and analyzed new satellite technologies with the intent of increasing Internet access at sea within funding constraints.

- Installed the latest version of Seaworthy Shipboard Automated Maintenance Management (SAMM) system on the NOAA Ship THOMAS JEFFERSON.

- Evaluated the Xantic AMOS Maintenance system as a replacement to the SAMM system that is currently deployed throughout the NOAA Fleet.

- Conducted design and develop tasks for the NOAA Fleet Information System (NFIS) to assist management of the NOAA Fleet.

1.6.7 Office of Chief Information Officer (OCIO)

IT Operations

- Developed Enterprise Network Architecture including Business Case Analysis
- Established Enterprise Calendar
- More than doubled the number of sites on the OCIO Web Farm, reducing the number of NOAA web servers for increased efficiency and security.

IT Security

- Certified and Accredited all National Critical (NC), Mission Critical (MC) and Business Essential (BE) systems (284 systems NOAA-wide).
- Completed update of IT Systems Inventory.
- Reviewed and tested new security planning software.
- Developed FISMA Plans of Actions & Milestones for FY2004 identified weaknesses.
- Established the satellite CIRT in Seattle, and tested equipment for installation in FY05.
- Mitigated all high and medium risks vulnerabilities, via implementation of a NOAA-wide scanning tool.
- Provided and implemented NOAA-wide solutions for personal firewalls.
- Developed a NOAA-wide policy for patch management implementation.
- Completed a refresh of SSMC CIRT equipment.

1.6.8 Office of NOAA Finance and Administration (NFA)

- Added 250KVa generator to lease to avoid ITC system shutdown due to power loss.
- Upgraded Cisco routers for the WAN and the ITC data center.
- The Power Distribution Unit (PDU) was upgraded at the ITC to provide greater capacity and future expansion.
- ITC IT Support services contract was recompeted and awarded.
- Grants Online hardware was deployed at the ITC.

- Acquired an H-P ES80 to improve performance of the CAMS Data Warehouse.
- Upgraded CAMS OLTP databases from Oracle 7.3.4 to Oracle 9i.
- Upgraded CAMS data warehouse databases from Oracle 8.1.7 to Oracle 9i.
- Migrated CAMS databases from legacy RAID file systems to EVA virtualized storage arrays while increasing storage to 3 terabytes.
- Completed multiple upgrades of the Oracle 9iAS application server software used for NOAA Bankcards servers.
- Acquired two H-P Alpha ES47s and EVA5000 Storage Array for Disaster Recovery site for CAMS Data Warehouse and Production CAMS.
- Established a NFA Section 508 Coordinator as liaison to the NOAA Section 508 Coordinator and to NFA offices to ensure that all new and existing applications and web pages are Section 508 compliant
- Completed the design, development, and implementation of the NOAA Speech Tracking and Retrieval System (NSTAR) for the NOAA Decision Coordination Office (DCO)
- Completed the design, development, and implementation of the Publications Tracking Database System for the NOAA Decision Coordination Office (DCO) for the management, information retrieval, and location identification of Publications maintained within the DCO.
- Completed the design, development, and implementation of the Future Significant Actions Database for the NOAA Decision Coordination Office (DCO), to log, track, report, and maintain a list of upcoming activities and actions taking place by NOAA upper management and NOAA Line Office senior managers
- Participated, as “Tiger Team” members in the NOAA Facilities Management Program to evaluate organizational components of NOAA Facilities and evaluate activities and processes within those components to determine areas for improvements and opportunities for internal reorganization.
- Participated, as the technical expert and advisory organization to the NOAA Facilities in the requirements development, solution design, vendor system evaluation, and procurement of a solution to provide a facilities management tool which will report on the condition of NOAA facilities
- Completed the requirements development, system design, and system prototype development of the “Cash-In-Your-Account” processing web application in support of Workforce Management.

- Completed enhancements to the NOAA ELearning processes for compatibility with changed DOC and NOAA ELearning agreements as described by NOAA Workforce Management.

- Provided technical consulting services to the NOAA Acquisitions in the evaluation and procurement of the Appian Procurement Commercial Off-the-Shelf (COTS) software product for Advanced Acquisition Planning.

- Provided technical consulting services to the NOAA PA&E in the contractor re-engineer of the Program Information Reporting System (PIRS)

- Completed the deployment of approximately 50 new WebCIMS users throughout NOAA

- Completed efforts, working with the NOAA Table of Organization (TO) contractor, to include NOAA Corp data in the NOAA TO processing and to implement the updated software version.

- All ASC System Divisions replaced aging and obsolete infrastructure components including network servers, PC workstations and laptops, networking components, and networked printers, routes, switches and storage arrays.

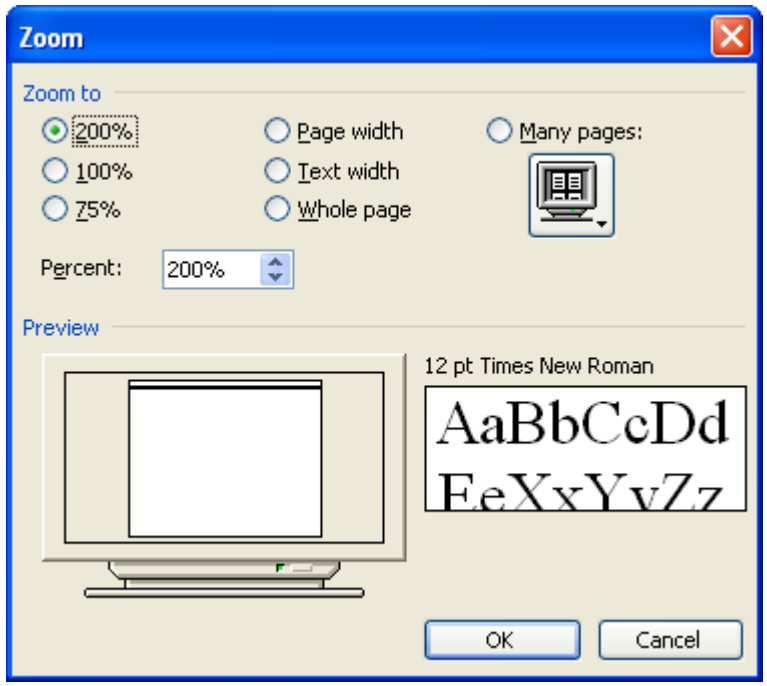
- WASC and MASC purchased additional software and hardware storage capacity to supplement existing networking infrastructures to implement and support a potential COOP and DR plan.

- Acquired CAMS “Disaster Recovery” network servers and storage to back up the main production data center, ITC, in Landover, MD in order to mirror production and data warehouse data from the ITC to WASC

Section 2.0 Financial Summary of IT Expenditures

2.1 Exhibit 53 for NOAA IT expenditures

Note: To view table on next five pages set zoom to 200 percent.



Department of Commerce IT Investment Portfolio

NOAA Internal 53 BY 06

October 18, 2004

2005 UPI	2006 UPI	Investment Title	Investment Description	PY 2004	CY 2005	BY 2006	Financial	IT Security	HomeLand Security	DME PY 04	DME CY 05	DME BY 06	SS PY 04	SS CY 05	SS BY 06
006-48-00-00-00-0000-00-000-000	**006-48-00-00-00-0000-00-000-000**	**NOAA Total IT Investment Portfolio**		**488.662**	**516.342**	**508.158**				**182.329**	**177.978**	**158.259**	**306.333**	**338.129**	**349.666**
006-48-01-00-00-0000-00-000-000	**006-48-01-00-00-0000-00-000-000**	**Part 1. IT Systems by Mission Area**		**383.318**	**408.395**	**396.487**				**161.536**	**155.862**	**135.049**	**221.783**	**252.533**	**261.439**
006-48-01-01-00-0000-00-000-000	**006-48-01-01-00-0000-00-000-000**	**Financial Management**		6.429	6.409	7.776				0.2	0.2	1.415	6.229	6.209	6.361
006-48-01-01-01-3803-00-402-129	006-48-01-01-01-3803-00-402-129	NOAA/NFA/ NOAA Non-Core CAMS Financial Management Systems (TM/PCS/DW)	In addition to DOC CAMS, NOAA uses its non-core CAMS financial system modules, e.g. Permanent Change Station, Travel Manager and Data Warehouse, to manage financial data in accordance with departmental guidelines.	1.029	1.009	0.911	100	3		0	0	0	1.029	1.009	0.911
006-48-01-01-01-3803-04-402-129	006-48-01-01-01-3803-04-402-129	NOAA ORF 006-48-1450		1.029	1.009	0.911									
006-48-01-01-01-3803-09-402-129	006-48-01-01-01-3803-09-402-129	Total Yearly Budgets		1.029	1.009	0.911									
006-48-01-01-01-3801-00-402-139	006-48-01-01-01-3801-00-402-125	NOAA/NFA/ Financial Management IT Operations	This system provides the central computing services for NOAA financial and administrative activities.	5.4	5.4	6.865	50	10		0.2	0.2	1.415	5.2	5.2	5.45
006-48-01-01-01-3801-04-402-139	006-48-01-01-01-3801-04-402-125	NOAA ORF 006-48-1450		5.4	5.4	6.865									
006-48-01-01-01-3801-09-402-139	006-48-01-01-01-3801-09-402-125	Total Yearly Budgets		5.4	5.4	6.865									
006-48-01-12-00-0000-00-000-000	**006-48-01-12-00-0000-00-000-000**	**NOAA - Weather and Water**		301.777	305.648	292.082				151.644	141.578	120.65	150.133	164.07	171.432
006-48-01-12-01-3111-00-104-007	006-48-01-12-01-3111-00-104-007	NOAA/NWS/NOAA Weather Radio (NWR) All Hazards Weather Network (NAHWN) aka All Hazards Emergency Message Collection System (HazCollect)	This project is to automate the collection and dissemination of non weather civil-emergency messages over NOAA Weather Radio (NWR) and to quickly and securely authenticate messages received by emergency managers.	5.5	0	0	0	55	5	5.5	0	0	0	0	0
006-48-01-12-01-3111-04-104-007	006-48-01-12-01-3111-04-104-007	NOAA PAC 006-48-1460		5.5	0	0									
006-48-01-12-01-3111-09-104-007	006-48-01-12-01-3111-09-104-007	Total Yearly Budgets		5.5	0	0									
006-48-01-12-01-3117-00-108-023	006-48-01-12-01-3117-00-108-023	NOAA/NWS/ NWS COOP Modernization	COOP Modernization will allow NWS to provide single points of access for near real time surface weather data. Observations will be transmitted to a central collection point via various communication methods including the Internet, in near real time.	4.155	1.4	4.4	0	1		3.855	0	2.9	0.3	1.4	1.5
006-48-01-12-01-3117-04-108-023	006-48-01-12-01-3117-04-108-023	NOAA ORF 006-48-1450		4.155	0	0									
006-48-01-12-01-3117-04-108-023	006-48-01-12-01-3117-04-108-023	NOAA PAC 006-48-1460		0	1.4	4.4									
006-48-01-12-01-3117-09-108-023	006-48-01-12-01-3117-09-108-023	Total Yearly Budgets		4.155	1.4	4.4									
006-48-01-12-01-3104-00-108-023	006-48-01-12-01-3104-00-108-023	NOAA/NWS/Weather and Climate Supercomputing	NCEP supercomputing resources produce environmental forecasts and warnings. Supercomputing resources are needed to improve the ability to assimilate more data and integrated improved models.	19.083	19.285	19.285	0	1	4, 5	0	0	0	19.083	19.285	19.285
006-48-01-12-01-3104-04-108-023	006-48-01-12-01-3104-04-108-023	NOAA PAC 006-48-1460		19.083	19.285	19.285									
006-48-01-12-01-3104-09-108-023	006-48-01-12-01-3104-09-108-023	Total Yearly Budgets		19.083	19.285	19.285									
006-48-01-12-02-3116-00-108-023	006-48-01-12-01-3116-00-108-023	NOAA/NWS/ Office of Operational Systems - Other	IT investments are for telecom for NOAA Weather Wire system, International Satellite Communication System, and some NOAA Weather Radio lines for issuing forecasts and warnings. In addition to IT support services for weather data received from data buoys.	4.7	4.8	4.8	0	6.5		0	0	0	4.7	4.8	4.8
006-48-01-12-02-3116-04-108-023	006-48-01-12-01-3116-04-108-023	NOAA ORF 006-48-1450		4.7	4.8	4.8									
006-48-01-12-02-3116-09-108-023	006-48-01-12-01-3116-09-108-023	Total Yearly Budgets		4.7	4.8	4.8									
006-48-01-12-02-3115-00-108-023	006-48-01-12-01-3115-00-108-023	NOAA/NWS/ NWS Office of Hydrologic Development	Nationwide water resource forecasting capability, enhanced short-term predictions of river levels and longer-term probabilistic forecasts.	2.344	2.649	6.86	0	4	1, 3, 4, 5	1.389	1.614	4.975	0.955	1.035	1.885
006-48-01-12-02-3115-04-108-023	006-48-01-12-01-3115-04-108-023	NOAA ORF 006-48-1450		2.344	2.649	6.86									
006-48-01-12-02-3115-09-108-023	006-48-01-12-01-3115-09-108-023	Total Yearly Budgets		2.344	2.649	6.86									
006-48-01-12-01-3112-00-108-023	006-48-01-12-01-3112-00-108-023	NOAA/NWS/ National Air Quality Forecast Capability	This proposal is to implement NOAA Air Quality forecasting operationally.	3	5.5	6.79	0	2	1, 5	2.9	4.29	4.58	0.1	1.21	2.21
006-48-01-12-01-3112-04-108-023	006-48-01-12-01-3112-04-108-023	NOAA ORF 006-48-1450		3	5.5	6.79									
006-48-01-12-01-3112-09-108-023	006-48-01-12-01-3112-09-108-023	Total Yearly Budgets		3	5.5	6.79									
006-48-01-12-02-3118-00-108-023	006-48-01-12-01-3118-00-108-023	NOAA/NWS/NWS Regions & Field	IT resources for weather and water information and warning services are used by the NWS Regions & Fields, the single points of access, to federal, state and local governments and emergency manager coordinators in every state.	20.8	21.9	21.9	0	10		0	0	0	20.8	21.9	21.9
006-48-01-12-02-3118-04-108-023	006-48-01-12-01-3118-04-108-023	NOAA ORF 006-48-1450		20.8	21.9	21.9									
006-48-01-12-02-3118-09-108-023	006-48-01-12-01-3118-09-108-023	Total Yearly Budgets		20.8	21.9	21.9									
006-48-01-12-01-3102-00-108-023	006-48-01-12-01-3102-00-108-023	NOAA/NWS/Next Generation Weather Radar (NEXRAD) System Planned Product Improvement	The NPI Program is replacing the IT components of the Radar Product Generation (RPG), Radar Data Acquisition (RDA), and Principal User Position (PUP) components of NEXRAD with open systems designs (Oxxx).	11.38	11.85	9.85	0	2	5	11.38	11.85	9.85	0	0	0
006-48-01-12-01-3102-04-108-023	006-48-01-12-01-3102-04-108-023	NOAA PAC 006-48-1460		11.38	11.85	9.85									
006-48-01-12-01-3102-09-108-023	006-48-01-12-01-3102-09-108-023	Total Yearly Budgets		11.38	11.85	9.85									
006-48-01-12-01-3105-00-108-023	006-48-01-12-01-3105-00-302-095	NOAA/NWS/Weather and Climate Supercomputing Backup	This is the backup system for NCEP to produce environmental forecasts and warnings whenever the primary system is not functioning.	7.15	7.15	7.15	0	6	4, 5	0	0	0	7.15	7.15	7.15
006-48-01-12-01-3105-04-108-023	006-48-01-12-01-3105-04-302-095	NOAA PAC 006-48-1460		7.15	7.15	7.15									
006-48-01-12-01-3105-09-108-023	006-48-01-12-01-3105-09-302-095	Total Yearly Budgets		7.15	7.15	7.15									
006-48-01-12-01-3212-00-108-023	006-48-01-12-01-3212-00-108-023	NOAA/NESDIS/ NPOESS Ground System	IT support for the Nation's civil and military polar-orbiting operational meteorological satellite system into a single national entity capable of satisfying both civil and national security requirements for space-based remotely sensed environmental data.	74.682	75.657	52.516	0	4		74.682	75.657	52.516	0	0	0
006-48-01-12-01-3212-04-108-023	006-48-01-12-01-3212-04-108-023	NOAA PAC 006-48-1460		74.682	75.657	52.516									
006-48-01-12-01-3212-09-108-023	006-48-01-12-01-3212-09-108-023	Total Yearly Budgets		74.682	75.657	52.516									
006-48-01-12-01-3101-00-108-023	006-48-01-12-01-3101-00-108-023	NOAA/NWS/Advanced Weather Interactive Processing System	AWIPS is an interactive computer system that integrates all meteorological and hydrological data and all satellite and radar data and enables the forecaster to prepare and issue more accurate and timely forecasts and warnings.	49.198	51.857	52.222	0	3	5	13.985	14.13	14.13	35.213	37.727	38.092
006-48-01-12-01-3101-04-108-023	006-48-01-12-01-3101-04-108-023	NOAA PAC 006-48-1460		13.985	14.13	14.13									
006-48-01-12-01-3101-04-108-023	006-48-01-12-01-3101-04-108-023	NOAA ORF 006-48-1450		35.213	37.727	38.092									
006-48-01-12-01-3101-09-108-023	006-48-01-12-01-3101-09-108-023	Total Yearly Budgets		49.198	51.857	52.222									

006-48-01-12-01-3206-00-108-023	006-48-01-12-01-3206-00-108-023	NOAA/NESDIS/ Satellite Operations Control Center Command and Data Acquisition (SOCC/CDA)	It is used by the Office of Satellite Operations (OSO) the Satellite Operations Control Center (SOCC) to command and control the POES and GOES satellites, to track the satellites, and to acquire their data.	11.7	10.5	12.638	0	3		11.7	6.107	7.645	0	4.393	4.993
006-48-01-12-01-3206-04-108-023	006-48-01-12-01-3206-04-108-023	NOAA ORF 006-48-1450		11.7	10.5	12.638									
006-48-01-12-01-3206-09-108-023	006-48-01-12-01-3206-09-108-023	Total Yearly Budgets		11.7	10.5	12.638									
006-48-01-12-01-3502-00-108-023	006-48-01-12-01-3502-00-108-023	NOAA/OAR/ FSL - High Performance Computing and Communications	High performance computing resources to support describing and predicting the physical, chemical and biological makeup of the earth and its environment.	3.9	3.9	3.9	0	4		0.226	0.226	0.226	3.674	3.674	3.674
006-48-01-12-01-3502-04-108-023	006-48-01-12-01-3502-04-108-023	NOAA ORF 006-48-1450		3.9	3.9	3.9									
006-48-01-12-01-3502-09-108-023	006-48-01-12-01-3502-09-108-023	Total Yearly Budgets		3.9	3.9	3.9									
006-48-01-12-01-3103-00-108-023	006-48-01-12-01-3103-00-108-023	NOAA/NWS/Next Generation Weather Radar (NEXRAD) Operations and Maintenance	NEXRAD is NWS prime observation system for acquiring information about tornados & severe thunderstorms. The doppler weather radar system is a tri-agency program of DOC, DOT, & DOD.	14	15.7	15.78	0	4	5	0	0	0	14	15.7	15.78
006-48-01-12-01-3103-04-108-023	006-48-01-12-01-3103-04-108-023	NOAA ORF 006-48-1450		43.576	42.861	42.861									
006-48-01-12-01-3103-09-108-023	006-48-01-12-01-3103-09-108-023	Total Yearly Budgets		43.576	42.861	42.861									
006-48-01-12-01-3201-00-108-023	006-48-01-12-01-3201-00-108-023	NOAA/NESDIS/ GOES Ground System	GOES ground system monitors and controls NOAA's geostationary environmental satellites.	2.574	4.195	2.64	0	3		2.574	4.195	2.64	0	0	0
006-48-01-12-01-3201-04-108-023	006-48-01-12-01-3201-04-108-023	NOAA PAC 006-48-1460		2.574	4.195	2.64									
006-48-01-12-01-3201-09-108-023	006-48-01-12-01-3201-09-108-023	Total Yearly Budgets		2.574	4.195	2.64									
006-48-01-12-02-3113-00-108-023	006-48-01-12-01-3113-00-108-023	NOAA/NWS/NCEP Weather and Climate Forecast System IT Support	IT resources are for weather and climate forecasting and operational model development capabilities for forecasts and warnings.	12.39	12.79	14.825	0	27	4, 5	0	0	0	12.39	12.79	14.825
006-48-01-12-02-3113-04-108-023	006-48-01-12-01-3113-04-108-023	NOAA ORF 006-48-1450		12.39	12.79	14.825									
006-48-01-12-02-3113-09-108-023	006-48-01-12-01-3113-09-108-023	Total Yearly Budgets		12.39	12.79	14.825									
006-48-01-12-01-3204-00-302-095	006-48-01-12-01-3204-00-302-095	NOAA/NESDIS/ Office of Satellite Data Processing and Distribution (OSDPD) Systems CIP	The NESDIS CIP project will provide a backup facility to the primary facility, Environmental Satellite Processing Center (ESPC), that is the central processing system for environmental satellite data.	2.748	1.441	2.005	0	4		2.748	1.441	2.005	0	0	0
006-48-01-12-01-3204-04-302-095	006-48-01-12-01-3204-04-302-095	NOAA PAC 006-48-1460		2.748	1.441	2.005									
006-48-01-12-01-3204-09-302-095	006-48-01-12-01-3204-09-302-095	Total Yearly Budgets		2.748	1.441	2.005									
006-48-01-12-02-3114-00-108-023	006-48-01-12-01-3114-00-108-023	NOAA/NWS/ Office of Science and Technology, Other Systems	IT resources are being used for the distribution of radiosonde and upper air data. The radiosonde replacement system will distribute high-resolution data sets and give users access to the full set of observed data collected by the system.	9.26	9.26	7.265	0	0		6.916	6.989	6.58	2.344	2.271	0.685
006-48-01-12-02-3114-04-108-023	006-48-01-12-01-3114-04-108-023	NOAA ORF 006-48-1450		2.344	2.271	0.685									
006-48-01-12-02-3114-04-108-023	006-48-01-12-01-3114-04-108-023	NOAA PAC 006-48-1460		6.916	6.989	6.58									
006-48-01-12-02-3114-09-108-023	006-48-01-12-01-3114-09-108-023	Total Yearly Budgets		9.26	9.26	7.265									
006-48-01-12-01-3202-00-108-023	006-48-01-12-01-3202-00-108-023	NOAA/NESDIS/ POES Ground System for NPOESS Data Exploitation	An FY06 Initiative. POES ground system monitors and controls NOAA's polar-orbiting operational environmental satellites. IT hardware/software upgrades are underway for future satellites. This is for the IT HARDWARE ONLY, not the non-IT, e.g. antennas.	3.132	3.952	7.497	0	3		3.132	3.952	7.497	0	0	0
006-48-01-12-01-3202-04-108-023	006-48-01-12-01-3202-04-108-023	NOAA PAC 006-48-1460		3.132	3.952	3.397									
006-48-01-12-01-3202-04-108-023	006-48-01-12-01-3202-04-108-023	Appropriation		0	0	4.1									
006-48-01-12-01-3202-09-108-023	006-48-01-12-01-3202-09-108-023	Total Yearly Budgets		3.132	3.952	7.497									
000-00-00-00-00-00-0000-00-000-000	006-48-01-12-01-3213-00-108-023	NOAA/NESDIS/ Environmental Satellite Processing Center (ESPC)	This investment is for the consolidation of two environmental processing systems for Polar (CEMSCS) and GOES (SATEPS) satellite data, into one central processing system for environmental satellite data, Environmental Satellite Processing Center (ESPC).	25.442	26.183	25.509	0	4		4.867	5.807	4.016	20.575	20.376	21.493
000-00-00-00-00-00-0000-00-000-000	006-48-01-12-01-3213-04-108-023	NOAA ORF 006-48-1450		20.575	20.376	21.493									
000-00-00-00-00-00-0000-00-000-000	006-48-01-12-01-3213-04-108-023	NOAA PAC 006-48-1460		4.867	5.807	4.016									
000-00-01-00-00-00-0000-09-000-000	006-48-01-12-01-3213-09-108-023	Total Yearly Budgets		25.442	26.183	25.509									
006-48-01-12-01-3109-00-108-023	006-48-01-12-01-3109-00-108-023	NOAA/NWS/Automated Surface Observing System (ASOS)	ASOS, the nation's primary surface weather observing network, supports aviation operations & weather forecasting. Replacing manual surface observation techniques, it provides improved efficiency to acquire & record surface atmospheric phenomena.	0.3	0.3	0.3	0	1		0.3	0.3	0.3	0	0	0
006-48-01-12-01-3109-04-108-023	006-48-01-12-01-3109-04-108-023	NOAA ORF 006-48-1450		0.3	0.3	0.3									
006-48-01-12-01-3109-04-108-023	006-48-01-12-01-3109-04-108-023	NOAA PAC 006-48-1460		0	0	0									
006-48-01-12-01-3109-09-108-023	006-48-01-12-01-3109-09-108-023	Total Yearly Budgets		0.3	0.3	0.3									
006-48-01-12-01-3106-00-108-023	006-48-01-12-01-3106-00-302-095	NOAA/NWS/National Weather Service Telecommunication Gateway (NWSTG) System (Legacy, Replacement, and CIP)	The NWS Telecommunications Gateway disseminates (message-switching services) weather observations and guidances to a national and international community of customers. The Gateway services this customer base in a near-real-time operational environment.	13.158	14.198	11.769	0	4		5.49	5.02	0.79	7.668	9.178	10.979
006-48-01-12-01-3106-04-108-023	006-48-01-12-01-3106-04-302-095	NOAA ORF 006-48-1450		10.318	10.458	10.569									
006-48-01-12-01-3106-04-108-023	006-48-01-12-01-3106-04-302-095	NOAA PAC 006-48-1460		2.84	3.74	1.2									
006-48-01-12-01-3106-09-108-023	006-48-01-12-01-3106-09-302-095	Total Yearly Budgets		13.158	14.198	11.769									
006-48-01-12-02-3110-00-108-023	006-48-01-12-02-3110-00-108-023	NOAA/NWS/Data Assimilation and Modeling	IT resources used to develop new methods for coupling atmosphere, ocean, land surface and cryosphere models which will enable the next generation of numerical forecast systems to be developed.	1.181	1.181	2.181	0	1		0	0	0	1.181	1.181	2.181
006-48-01-13-00-0000-00-000-000	**006-48-01-13-00-0000-00-000-000**	**NOAA - Climate**		60.656	81.704	81.176				3.491	9.903	8.95	57.165	71.801	72.226
006-48-01-13-01-3501-00-108-023	006-48-01-13-01-3501-00-108-023	NOAA/OAR/ GFDL High Performance Computing System	GFDL's High Performance Computing resources are used for climate and weather research in the development and use of sophisticated numerical models to predict and understand atmospheric and oceanic phenomena.	20.887	20.888	20.888	0	4		0.17	0.176	0.41	20.717	20.712	20.478
006-48-01-13-01-3501-04-108-023	006-48-01-13-01-3501-04-108-023	NOAA ORF 006-48-1450		10.992	10.888	10.888									

006-48-01-13-01-3501-04-108-023	006-48-01-13-01-3501-04-108-023	NOAA PAC 006-48-1460		9.895	10	10									
006-48-01-13-01-3501-09-108-023	006-48-01-13-01-3501-09-108-023	Total Yearly Budgets		20.887	20.888	20.888									
006-48-01-13-01-3504-01-108-023	006-48-01-13-01-3504-00-108-023	NOAA/OAR/ NOAA Scientific Computing Support	Periodic technical refreshment of IT computing resources and associated IT maintenance and support services used to conduct short, mid and long term climate and weather research.	15.189	15.423	16.095	0	13		0.121	0.127	0.14	15.068	15.296	15.955
006-48-01-13-01-3504-04-108-023	006-48-01-13-01-3504-04-108-023	NOAA ORF 006-48-1450		15.045	15.273	15.939									
006-48-01-13-01-3504-04-108-023	006-48-01-13-01-3504-04-108-023	NOAA PAC 006-48-1460		0.144	0.15	0.156									
006-48-01-13-01-3504-09-108-023	006-48-01-13-01-3504-09-108-023	Total Yearly Budgets		15.189	15.423	16.095									
006-48-01-13-01-3209-00-202-070	006-48-01-13-01-3209-00-108-023	NOAA/NESDIS/ NOAA National Data Centers (NNDC)	The NOAA NESDIS National Data Centers have the ultimate responsibility for the long term-management and stewardship of the bulk of NOAA's data, in addition to environmental data collected by other Federal agencies, countries and research programs.	21.38	35.793	35.793	0	7		0	0	0	21.38	35.793	35.793
006-48-01-13-01-3209-04-202-070	006-48-01-13-01-3209-04-108-023	NOAA ORF 006-48-1450		21.38	35.793	35.793									
006-48-01-13-01-3209-09-202-070	006-48-01-13-01-3209-09-108-023	Total Yearly Budgets		21.38	35.793	35.793									
006-48-01-13-01-3205-00-202-070	006-48-01-13-01-3205-00-108-023	NOAA/NESDIS/Comprehensive Large Array-data Stewardship System (CLASS)	The CLASS project will implement efficient management of high volumes (petaybtes) of data and automate the means of data ingest, quality control and access.	3.2	9.6	8.4	0	4		3.2	9.6	8.4	0	0	0
006-48-01-13-01-3205-04-202-070	006-48-01-13-01-3205-04-108-023	NOAA PAC 006-48-1460		3.2	6.6	6.6									
006-48-01-13-01-3205-04-202-070	006-48-01-13-01-3205-04-108-023	NOAA: PAC B 006-48-1460		0	3	1.8									
006-48-01-13-01-3205-09-202-070	006-48-01-13-01-3205-09-108-023	Total Yearly Budgets		3.2	9.6	8.4									
006-48-01-14-00-0000-00-000-000	**006-48-01-14-00-0000-00-000-000**	**NOAA - Coastal and Marine Ecosystems**		**2.6**	**2.7**	**2.91**				**2.14**	**0.4**	**0.37**	**0.46**	**2.3**	**2.54**
006-48-01-14-02-3304-00-117-057	006-48-01-14-02-3304-00-117-057	NOAA/NMFS/ Fisheries Information System	Harmonization and integration of disparate state and federal information collection systems to enhance the ecosystems-based management of marine fisheries.	0.52	0.52	0.52	0	5		0.46	0.4	0.37	0.06	0.12	0.15
006-48-01-14-02-3168-00-115-045	006-48-01-14-02-3168-00-115-045	NOAA/NMFS/ Vessel Monitoring System	The Vessel Monitoring System (VMS) is a satellite based tool for monitoring control and surveillance of the 3.4 million mile jurisdiction of the NOAA Office for Law Enforcement.	2.08	2.18	2.39	0	5		1.68	0	0	0.4	2.18	2.39
006-48-01-15-00-0000-00-000-000	**006-48-01-15-00-0000-00-000-000**	**NOAA Commerce and Transportation**		**11.856**	**11.934**	**12.543**				**4.061**	**3.781**	**3.664**	**7.796**	**8.153**	**8.88**
006-48-01-15-01-3402-00-118-062	006-48-01-15-01-3402-00-118-062	NOAA/NOS/ PORTS & NWLON	PORTS and NWLON programs have become tightly integrated. PORTS brought to NWLON the ability to collect data in real-time and NWLON brought to PORTS a well-established network of stations from which to gather water level data.	2.57	2.5	2.8	0	3	4	1.45	1.3	1.6	1.12	1.2	1.2
006-48-01-15-01-3402-04-118-062	006-48-01-15-01-3402-04-118-062	NOAA ORF 006-48-1450		2.57	2.5	2.8									
006-48-01-15-01-3402-09-118-062	006-48-01-15-01-3402-09-118-062	Total Yearly Budgets		2.57	2.5	2.8									
006-48-01-15-01-3401-00-118-062	006-48-01-15-01-3401-00-118-062	NOAA/NOS/ Nautical Charting System	The Nautical Charting System (NCS) supports the production of essential navigation products that currently comprise a suite of 1000 paper and raster products and ultimately 1000 Electronic Navigational Charts (ENC).	3.192	3.17	3.201	0	10	2	0.988	0.987	0.988	2.205	2.183	2.214
006-48-01-15-01-3401-04-118-062	006-48-01-15-01-3401-04-118-062	NOAA ORF 006-48-1450		3.192	3.17	3.201									
006-48-01-15-01-3401-09-118-062	006-48-01-15-01-3401-09-118-062	Total Yearly Budgets		3.192	3.17	3.201									
006-48-01-15-01-3208-00-104-010	006-48-01-15-01-3208-00-104-010	NOAA/NESDIS/ Search and Rescue Satellite-Aided Tracking (SARSAT)	SARSAT system locates those in distress almost anywhere in the world at anytime. Its Mission Control Center processess the distress signal and alerts the appropriate search and rescue authorities to who is in distress and where they are located.	3.106	2.987	3.188	0	4	5	0.7	0.525	0.175	2.406	2.462	3.013
006-48-01-15-01-3208-04-104-010	006-48-01-15-01-3208-04-104-010	NOAA PAC 006-48-1460		0.7	0.525	0.175									
006-48-01-15-01-3208-04-104-010	006-48-01-15-01-3208-04-104-010	NOAA ORF 006-48-1450		2.406	2.462	3.013									
006-48-01-15-01-3208-09-104-010	006-48-01-15-01-3208-09-104-010	Total Yearly Budgets		3.106	2.987	3.188									
006-48-01-15-01-3403-00-117-057	006-48-01-15-01-3403-00-117-057	NOAA/NOS/ Geodetic Support System	The Geodetic Support System processes data for the National Spatial Reference System and geoid models. Plans are to expand to 1,000 Continously Operating Reference Stations (CORS).	0.95	1.155	1.07	0	5		0.26	0.28	0.16	0.69	0.875	0.91
006-48-01-15-01-3403-04-117-057	006-48-01-15-01-3403-04-117-057	NOAA ORF 006-48-1450		0.95	1.155	1.07									
006-48-01-15-01-3403-09-117-057	006-48-01-15-01-3403-09-117-057	Total Yearly Budgets		0.95	1.155	1.07									
006-48-01-15-02-3601-00-404-139	006-48-00-00-02-3601-00-404-139	NOAA/nmao/ NOAA Marine and Aviation Operations	NOAA ships use IT resources to support data acquisition capabilities, which enable scientists and environmental managers to make decisions based on real-time data access and visualization.	2.038	2.122	2.284	0	2.8		0.663	0.689	0.741	1.375	1.433	1.543
006-00-02-00-00-0000-00-000-000	**006-00-02-00-00-0000-00-000-000**	**Part 2. IT Infrastructure and Office**		**99.279**	**100.899**	**106.676**				**15.033**	**15.394**	**18.66**	**84.246**	**85.505**	**88.016**
006-48-02-01-00-0511-00-404-139	006-48-02-01-00-0511-00-404-139	NOAA-Wide IT Infrastructure	Consolidate IT Infrastructure	99.279	100.899	106.676				15.033	15.394	18.66	84.246	85.505	88.016
		NESDIS		10.516	11.044	11.404				2.006	3.082	3.451	8.51	7.962	7.953
		NMFS		24.398	25.463	25.564				2.44	2.547	2.557	21.958	22.916	23.007
		NOS		20.5	20.83	21.114				4.87	4.409	4.67	15.63	16.421	16.444
		NWS		21.393	21.687	22.047				1.827	1.614	1.503	19.566	20.073	20.544
		OAR		13.49	12.159	12.477				0.793	0.708	0.796	12.697	11.451	11.681
		NMAO		1.937	2.077	2.137				0.093	0.103	0.113	1.844	1.974	2.024
		NFA		1.273	1.226	1.336				0.947	0.9	1.336	0.326	0.326	0
		OCIO		5.772	6.413	10.597				2.057	2.031	4.234	3.715	4.382	6.363
006-48-02-01-00-0511-04-404-139	006-48-02-01-00-0511-04-404-139	NOAA ORF 006-48-1450	Total ORF 006-48-1450	90.043	94.347	100.941									
		nesdis ORF		8.51	7.962	7.953									
		nmfs ORF		20.898	25.463	26.885									
		nos ORF		20.5	20.83	21.113									
		nws ORF		20.893	21.187	21.547									
		oar ORF		11.533	10.415	10.709									
		nmao ORF		1.937	2.077	2.137									
		nfa ORF	Did not report	0	0	0									

		ocio ORF		5.772	6.413	10.597										
006-48-02-01-00-0511-04-404-139	006-48-02-01-00-0511-04-404-139	NOAA PAC 006-48-1460	Total PAC 006-48-1460	5.567	3.146	3.605										
		nesdis PAC		2.006	3.082	3.541										
		nmfs PAC		3.5	0	0										
		nos PAC		0	0	0										
		nws PAC		0	0	0										
		oar PAC		0.061	0.064	0.064										
		nmao PAC		0	0	0										
		nfa PAC		0	0	0										
		ocio PAC		0	0	0										
006-48-02-01-00-0511-09-404-139	006-48-02-01-00-0511-09-404-139	Total Yearly Budgets		95.61	97.493	104.546				0	0	0	0	0	0
006-00-03-00-00-0000-00-000-000	**006-00-03-00-00-0000-00-000-000**	**Part 3. Enterprise Architecture & Planning**		**3.73**	**4.179**	**4.67**				**3.475**	**3.903**	**4.275**	**0.254**	**0.041**	**0.161**
006-48-03-00-01-0521-00-404-142	006-48-03-00-01-0521-00-404-142	NOAA-Wide Enterprise Architecture	Enterprise Architecture	1.815	2.197	2.03				1.56	1.921	1.635	0.254	0.041	0.161
006-48-03-00-01-0521-04-404-142	006-48-03-00-01-0521-04-404-142	NOAA ORF 006-48-1450		1.815	2.197	2.03				1.56	1.921	1.635	0.254	0.041	0.161
006-48-03-00-01-0521-09-404-142	006-48-03-00-01-0521-09-404-142	Total Yearly Budgets		1.815	2.197	2.03				1.56	1.921	1.635	0.254	0.041	0.161
006-48-03-00-02-3703-00-304-102	006-48-03-00-02-3703-00-304-102	NOAA/noaa systems/ NOAA-Wide Enterprise IT Planning	IT resources are used to support NOAA-wide IT Planning activities for strategic, operational and capital planning and investment management.	1.915	1.982	2.64	0	3		1.915	1.982	2.64	0	0	0
006-00-04-00-00-0000-00-000-000	**006-00-04-00-00-0000-00-000-000**	**Part 4. Grants Management**		**2.335**	**2.869**	**0.325**				**2.285**	**2.819**	**0.275**	**0.05**	**0.05**	**0.05**
006-48-04-00-01-3802-00-205-080	006-48-04-00-01-3802-00-117-057	NOAA/NFA/ NOAA Grants Back-End System Development	The NOAA-wide Grants back-end processing system consists of a web-based application that will interface with grants.gov for the "Find and Apply" functions.	2.335	2.869	0.325	5	10		2.285	2.819	0.275	0.05	0.05	0.05
006-48-04-00-01-3802-04-205-080	006-48-04-00-01-3802-04-117-057	NOAA ORF 006-48-1450		2.305	2.839	0.295									
006-48-04-00-01-3802-04-205-080	006-48-04-00-01-3802-04-117-057	MBDA: Minority Business Development 006-40-0201		0.03	0.03	0.03									
006-48-04-00-01-3802-09-205-080	006-48-04-00-01-3802-09-117-057	Total Yearly Budgets		2.335	2.869	0.325									
006-00-07-00-00-0000-00-000-000	**006-00-07-00-00-0000-00-000-000**	**Part 7. NON-IT**		0	0	0				0	0	0	0	0	0

Section 3.0, Management and System Initiatives

3,1 Provide a list of the systems that comprise your IT portfolio.

The list of systems making up NOAA's IT Portfolio for FY 2005 is shown on the next page.

LIST OF SYSTEMS MAKING UP NOAA'S IT PORTFOLIO FY 2005

Detail information on the major IT systems, i.e. the OMB Circular A-11 Exhibit 300 information, can be found within eCPIC.

Line Office	Major IT Systems	Name of System	Project Manager
NFA		NOAA Grants On-Line	Ken Sraggs
NFA		Financial Management IT Operations	Joseph Smith III
NFA		NOAA Non-Core CAMS Financial Mangement Systems (TMPCS/DW)	Teg Wolfgang
NWS		Advanced Weather Interactive Processing System (AWIPS)	Charles Piercy
NWS		Automated Surface Observing System (ASOS)	Richard Ahlberg
NWS		Next Generation Weather Radar(NEXRAD) Operations & Maintenance(O&M)	John McNulty
NWS		Next Generation Weather Radar(NEXRAD) Planned Product Improvement(PPI)	Greg Cate
NWS		Weather and Climate Supercomputing	Kevin Cooley
NWS		Weather and Climate Supercomputing Backup - CIP	Kevin Cooley
NWS		NCEP Weather and Climate Forecast System IT Support	Kevin Cooley
NWS		National Air Qualty Forecast Capability	Paula Davidson
NWS		National Weather Service Telecommunications Gateway (NWSTG) System (legacy, replacement, & CIP)	Edward Cormier
NWS		National Weather Service (NWS) COOP Modernization	Kenneth Crawford
NWS		NOAA Weathe Radio All Hazards Weather Network	Lawrence Lehmann
NWS		Office of Hydrologic Development	Gary Carter
NWS		Office of Operational Systems - Other	John Van Kuren
NWS		NWS Regions and Field	Thomas Schwein
NWS		Office of Science and Technology - Other Systems	
NESDIS		Goestationary Operational Environmental Satellte (GOES) Ground System	Richard G. Reynolds
NESDIS		Polar-orbiting Operational Environmental Satellite (POES) Ground System	Richard G. Reynolds
NESDIS		National Polar-orbiting Operational Environmental Satellite System (NPOES) Ground System	John Cunningham
NESDIS		Central Environmental Satellite Computer System (CEMSCS)	Reginald Lawrence
NESDIS		Satellite Environmental Processing System (SATEPS)	Reginald Lawrence
NESDIS		Office of Satellite Data Processing and Distribution (OSDPD) Systems-CIP	Richard G. Reynolds
NESDIS		Satellite Operations Control Center Command & Data Acquisition(SOCC/CDA)	Eric Clemons
NESDIS		Comprehensive Large Array-data Stewardship System (CLASS)	Richard G. Reynolds
NESDIS		NOAA National Data Center (NNDC)	Kendra Traver
NESDIS		Search and Rescue Satellite-Aided Tracking (SARSAT)	Ajay Mehta
NOS		Nautical Charting and Surveying System	Kathryn Ries
NOS		PORTS & NWLON	David MacFarland
NOS		Geodetic Support System	Richard Snay
OAR		Forecast Systems Lab (FSL) High Performance Computing & Communications	Leslie Hart
OAR		Geophysical Fluid Dynamics Lab (GFDL) High Performance Computing (combines Climate Change Computing)	Brian Gross
OAR		NOAA Research Scientific Computing Support	Nancy Huang
All LOS		DOC - NOAA-Wide Consolidated Infrastructure and Office Automation	LO CIOs
	Non-Major IT Systems		
NMFS		Fisheries Information System	Tina Chang
NMFS		Vessel Monitoring System	Mark Spurrier
NMAO		NOAA Marine and Aviation Operations	Gregory Bass
NWS		Data Assimilation and Modeling	Stephen J. Lord
NOAA-Wide		NOAA-Wide Enterprise IT Plannng	

3.2 Provide detail for the current year, FY 2005. Provide out-year information for systems that begin in FY 2005 or are ongoing beyond FY 2005. Exhibit 300's of IT Portfolio

3.2.1 National Environmental Satellite, Data, and Information Service (NESDIS)

3.2.1.1 NOAA/NESDIS/ Office of Satellite Data Processing and Distribution (OSDPD) Systems CIP

OSDPD is located in both Suitland and Camp Springs, Maryland. The OSDPD systems provide a unique capability since they ingest, process, distribute, and archive environmental satellite data and information received from all of NOAA's satellites, several foreign country satellites, and Department of Defense satellites. They distribute the information to the National Weather Service's National Centers for Environmental Prediction and its field offices, the US Air Force's primary forecast centers, international forecast centers, private sector organizations, and the general public. This initiative provides Critical Infrastructure Protection for the OSDPD systems.

FY 2005 Cost = $1,441K (see Section 3.3.1 for details). Note: Cost / schedule deviations do not exceed 10%

Planned FY 2005 Activities:

1) Complete development of backup capability

- Description - The CIP initiative will provide a backup facility (WCDAS, Wallops VA) to perform the critical data processing functions for OSDPD in the event of a catastrophic outage at the primary sites.
- Milestone – 09/30/05
- Performance Measure - # of months variance from Master Project Plan
- Major Issues / Risks and Approaches / Mitigations - Connectivity inside and outside of OSDPD is of utmost importance and is being incrementally established with the selected backup site over the first three years of the effort. The existing OSDPD sites will be fortified for security, availability, and robustness under this initiative.
- Security activities - The entire C&A suite of documentation is expected to be submitted for DAA review and approval before the system is made operational by 2nd or 3rd quarter FY 2005.

2) Validate and test new OSDPD capability at NSOF

- Description - The first phase of the project will provide a backup capability for CEMSCS. This initial backup capability will be developed for the NOAA Satellite Operations Facility (NSOF).

- Milestone – 09/30/05

- Performance Measure - % of Mission Critical CEMSCS functions operational at NSOF

- Major Issues / Risks and Approaches / Mitigations – The initial backup at NSOF will mitigate risk to current FB-4 CEMSCS operations, minimize implementation risk, and facilitate testing of the new CEMSCS architecture. Once operations at the NSOF have been tested and accepted, the FB-4 CEMSCS system will be used to populate the off-site backup facility.

- Security Activities - The entire C&A suite of documentation is expected to be submitted for DAA review and approval before the system is made operational by 2nd or 3rd quarter FY 2005.

3.2.1.2 NOAA/NESDIS/ NOAA National Data Centers (NNDC)

NODC:

IT Infrastructure for Satellite Ocean Data & Products - FY 2005 Request: $500K:

The accumulation of advanced in-situ data sets and large increases in satellite data and product volumes will require systematic upgrades to existing NODC IT ingest and access services, metadata and discovery tool development, communications infrastructure, and data and information stewardship and management infrastructures. Associated changes in IT system architectures are needed to affect interoperability with NESDIS satellite data processing and archive operations, compatibility with CLASS, NOAA and NESDIS networks, extended support of IT security and disaster recovery, and data management/storage/electronic exchange system component replacement/upgrades.

Modernization of core IT infrastructure supporting:

1. NODC Silver Spring (NODC SS/MD)
2. NOAA Central Library (NODC NCL) Division of NODC.

BENEFITS: Maintain compatibility with the NESDIS enterprise and expand functionality to meet new mission requirements and data paradigms in a manner to be independent of impact to current capabilities.

IMPACT: Existing archive and information management system infrastructures cannot accommodate requirements from new and advanced observing programs and users. Failure to upgrade will impede access and reduce availability to both existing and new volumes of data and information, and fail to address demographics associated with an expanded user community and associated requests for data and information.

Facilities Upgrade & Replacement - FY 2005 Request: $60K:

Desktop systems and associated supporting infrastructure services must be extended to increase productivity and efficiency during periods of level staffing. Network infrastructures need to match the processing increases to not hinder the potential for full exploitation of data. Metadata paradigms are under development that link data bases to provide virtual storage to reduce the impact of providing distributed storage to accommodate diverse data usage. Space and non-computing equipment must accommodate upgrades to not impact on-going operations.

Sub activities include: Computer site utilities, facilities, replacement, services, human resources improvements, build-out of desktop and server upgrades and systems to support additional processing capabilities, and support development of advanced access and discovery paradigms.

BENEFITS: Enable increased efficiency and productivity while maintaining level staffing at Silver Spring, and increase the levels of automation necessary to meet a growing diversity of users and usages with less latency of response.

IMPACT: Failure to provide adequate facility support will impede the ability to implement new operations and data utilization support services without impacting on-going operations, and will limit full exploitation of expanded NODC data assets.

Conventional and In-situ Data – FY 2005 Request: $454K:

Though satellites produce large volumes of ocean data, in-situ data will continue to serve as a critical element for ground truth assessment used to characterize space observations. In-situ data represents the greatest variety and complexity of data to manage. Volume is a mechanical management problem where variety extends requirements to extend data base management requirements to support broader needs for discovery, and providing for the seamless access to data from multiple sources, in and outside of NOAA. Data center operations will continue to support these data as equals to satellite ocean observations. Data recovery and rescue is an on-going process to be serviced.

Modernization of core IT infrastructure supporting:

1. Network, Desktop and Server Upgrades
2. Archive Storage & Media upgrades
3. Disaster Recovery
4. Data rescue

BENEFITS: Critical non-satellite data collected as direct ground truth data will not be compromised for future assessment as these data represent constant fields against which all other measurements are compared. Some ocean observations are only available from conventional methods extending the dimension of observations beyond the capability of satellite observations (deep ocean for example) and represent extended storage management requirement to address the preservation of data in a diverse media environment (video, audio, as well as conventional digital storage formats). Extended metadata and supporting discovery tool development can progress as necessary to meet new media types and structures.

IMPACT: Without this funding, access mechanisms for managing highly variable in-situ data sources may not sufficiently interact with modern and rapidly changing space observing system technologies. Access to important climate data sets will be limited to a closed community who have intimate knowledge of the data source abrogating the mission intent of the data center to provide access to a broad NOAA user community.

EOS Ocean Color Archive and Access - FY 2005 Request: $135K:

Implementation of the online ocean color products archive are coordinated with NESDIS CoastWatch. Tasks included design and development of automated quality control and metadata management system software, and extension of these capabilities to non-NOAA satellite ocean color data streams such as the NASA EOS data sets and future ocean color data products.

BENEFITS: With the infusion of ocean color products to serve NODC users, capacity adjustments to accommodate these data will enable further exploitation of data for continued assessment and characterization.

IMPACT: Long-term records of ocean color related to biological productivity is an important data set in fisheries management and climate change monitoring. Without support, the long-term archive will not be able to react seamlessly in providing data for use in fisheries management and climate change analysis.

POES CoastWatch/Sea Surface Temperature Products Archive -FY 2005 Request: $135K:

SST products from POES satellite sources are derived from both NOAA and other satellite sources for use by federal, state, regional and local coastal users. To ensure ocean community access to a highly accurate sea surface temperature records, NODC must develop and implement an online sea surface temperature products archive. Tasks include the design, archival, and development of automated quality control (both physical and spatial) and metadata discovery tools software for SST products.

BENEFIT: Users will have a common site to examine and acquire extended ocean product sets acquired from POES observatories available to NOAA.

IMPACT: Users will continue to have top seek multiple sources for a number of important ocean data sets.

GOES CoastWatch /Sea Surface Temperature Products Archive - FY 2005 Request: $135K:

Ocean products from Geostationary observatories are derived from NOAA GOES satellites for use by federal, state, regional and local coastal users. NODC must develop and implement an online archive of products derived from GOES. Tasks include the design, archival, and development of automated quality control (both physical and spatial) and metadata discovery tools software for SST products.

BENEFIT: Users will have a common site to examine and acquire extended ocean product sets acquired from GOES observatories available to NOAA.

IMPACT: Users will continue to have to acquire data from multiple sources for a number of important ocean data sets.

Polar Satellite Synthetic Aperture Radar (SAR) Ocean Products Archive – FY 2005 Request: $90K:

NOAA environmental forecasting and fisheries management activities, especially offering support in high latitudes, exploits SSAR satellite data. Currently, a full set of SSAR products is not readily available as a NOAA archive resource. This task supports the design development and installation of an operational SSAR Products Archive that will support access to the long-term record of SSAR observation products.

BENEFIT: System implementation to accommodate SAR data for future reference will add a further dimension to NODC data and information holdings.

IMPACT: Access to historical SSAR data will increasingly become limited and possibly incomplete without the systematic archive and management of these data.

EOS Satellite Altimetry Archive & Access - FY 2005 Request: $110K:

NOAA is a partner in the international, high-resolution satellite altimetry observation program. Multiple, continuous missions (e.g., TOPEX/POSEIDON, JASON 1 and OSTM) are now approved and will provide multi-decade records of sea surface elevation products that will contribute to climate change analyses. Additional and follow-on missions are planned into the future. The proposed task will help develop, establish and provide user access to a consolidated long-term satellite altimetry archive. Other non-NOAA sources of satellite altimetry data, like the JPL PO DAAC manage altimetric data.

BENEFIT: Adds a new dimension to NODC data holdings to service existing and extended user requirements for a consolidated source.

IMPACT: Without additional funding, satellite altimetric data products archive access will not be resident in the NOAA ocean archive system. This will impede any access to long-term data record. The lack of a proper data management support service will leave a data resource gap.

Geosat Satellite Altimetry Archive & Access - FY 2005 Request: $110K:

GEOSAT launched in 1985 provided a complete coverage of the earth's oceans. This data set was made available by the NAVY for all ocean areas in 1995. This data set formed the basis for many new ocean products. The NAVY began operations with a GEOSAT Follow-on (GFO) satellite in November 2000 and has conducted an altimetry measurement program since. NODC intends acquire these data to provide for a multi-decade record of sea surface elevation products

to support critical climate change analyses. The proposed task will support the development to establish and provide user access to the long-term satellite altimetry archive.

BENEFIT: Add an important new data set to NODC holdings to service existing and extended user requirements for a consolidated source.

IMPACT: Without this funding, satellite altimetric data products archive access will not be available to include the full satellite coverage spectrum leaving a data resource gap.

NPP /NPOESS Ocean Archive and Access. - FY 2005 Request: $95K:

This task supports the design, development and installation of resources to address archive, automated quality control, and user access for NPP and NPOESS satellite observational products. The NPP satellite is scheduled to launch in 2006 with NPOESS program to begin in 2010. Data from these programs will provide expanded spectral coverage of the ocean to improve wind, SST, ocean color, and altimetry products. Additional science support positions will be required for each of these major product areas to facilitate rapid response to properly analyze archive discovery tools for these new observing technologies.

BENEFIT: NPP science services are essential in developing validation and verification of products from NPOESS. Archive and access service resources will be an essential enabling tool for supporting these services to adequately meet NPOESS development support efforts.

IMPACT: Without this funding an opportunity to meet new archive and access services for the ocean community may delay the full exploitation of expanded observation technologies compromising the investment in obtaining advanced ocean product observations from funded satellite systems.

Ocean Observations System Archive & Access - FY 2005 Request: $270K:

NOAA is committed to the deployment of a sustained ocean observing systems. Early components within these systems, such as selected products derived from polar-orbiting satellites and the International ARGO Ocean Buoy Program, are already in place. This task supports the design, development and installation of a NOAA Ocean Observation Archive that provides advanced archive operations, automated quality control, and “full-reach” metadata with discovery tools. The NOAA Ocean Observation Access portal will provide data discovery capabilities and a flexible metadata management systems that can be used by data providers to document their observations and products. These data management services are necessary to support expanded user access for the increasing number and types of in-situ and satellite and related data and products supporting the national commitment to a sustained, ocean observation program.

BENEFIT: Observation technologies that are accelerating at a rate comparable to data processing technologies will dramatically expand the understanding of ocean parameters. The ability to properly manage and convey these data will service the needs of the ocean community on a continuing basis.

IMPACT: Without this support, the Ocean Observations System Archive to track advances in new oceanographic observation systems will lag and, thus, impede public and government access to critical data and information necessary for contributing to comprehensive understanding of climate change and resulting economic impacts for which programs are funded. Also, the lasting asset value of ocean data and information will diminish from entropy resulting from inactivity.

Ocean Digital Video Data Management System - FY 2005 Request: $500K:

Digital video data is an increasing source of ocean and coastal environment data. For example, the bulk of oceanographic data generated by NOAA's Ocean Exploration Program is in the form of digital video data of the ocean's floor and sub-surface. Data archive management techniques and IT supporting infrastructure now used with conventional oceanographic data (both in situ and satellite) do not appropriately accommodate the archival and management of the high volume digital video data. It will be necessary to support the design, development and implementation of a digital video oceanographic archive that provides continued asset supporting NOAA's video observational programs.

BENEFIT: Digital video offers a new dimension for assessing environmental change. A formal archive process extends the utility of these data for building composite observations and for adjusting to new technologies.

IMPACT: If an active digital video archive cannot be implemented, access to the complete Ocean Exploration record will be limited with an impending risk at loss of data knowledge through lack of contact.

Fishery Ecosystem Data Archive & Access - FY 2005 Request: $445K:

Fishery management is increasingly dependent upon the availability and access to long-term environmental data records from a variety of sources including satellite data and products that contain primary ecosystem indicators that support regional management requirements. Data archive components within NODC collectively address these needs, e.g., polar and geostationary satellite SST, ocean color, ocean wind and others. Access to ecosystem indicators that support regional management requirements in a distributed data environment will be provided to allow these indicators to be used in decision making tools and capabilities. This task will support the development of inter-archive data access tailored to support Fishery Ecosystem requirements to consolidate data product delivery capabilities within NODC and elsewhere.

BENEFITS: As part of the NOAA enterprise, a collective archive of data and products meeting fishery assessment and process development needs will provide the means to protect, restore, and manage the use of coastal and ocean resources through ecosystem based management.

IMPACT: Environmental satellite data requirements supporting fishery ecosystem management will not be addressed, thereby denying the use of NOAA and non-NOAA satellite data to critical fisheries management. The lack of comprehensive metadata concerning NOAA and non-NOAA

satellite data and products will limit the development and delivery of satellite data product records for use in fishery ecosystem management.

Coastal Ocean Model Archive and Access System - FY 2005 Request: $60K:

Ocean and coastal forecast models are serving a need to analyze and assess coastal ocean impacts. NOAA regularly produces several ocean model products that have not been routinely preserved. Metadata, including documentation of the model software configuration and ancillary data, needs to be captured at the time model runs are conducted in order to allow proper interpretation for future use. This task will extend the archive and metadata functionality to include model output and essential ancillary data as a new data stream.

BENEFIT: Archive management of coastal ocean model data provides a database from which model performance can be verified and adjusted to match actual conditions. Also, trend analyses can be performed to estimate and assess change using model output, initially produced as a once-used process, as a marker for future models.

IMPACT: Without this funding, gridded fields and other model results, produced at considerable effort, may not be retained in a usable form after their initial use for forecast operations.

NGDC:

- Expand Gigabit LAN connectivity
- Test HDWDM for connecting to Lambda Rail network
- Migrate 3590E tape archive using Tivoli Storage Manager to LTO-2 tape using ADIC SNMS software
- Plan and implement necessary infrastructure upgrades to accommodate the CLASS archive at NGDC
- Acquire 64 bit processing systems for geomagnetic modeling and other cpu intensive applications
- Maintain Veritas network disk to LTO tape backups for all systems
- Improve the backup capabilities for active data bases (Oracle, etc.)
- Transition of e-mail server administration from NGDC to the NOAA Boulder NOC
- Continue testing to optimize speed for long haul data transfers on Abilene & Lambda Rail networks
- Participate in planning, development and implementation activities for CLASS.
- Operate the NGDC node of the NVDS
- Convert remaining Sun servers to Linux
- Implement Windows Server 2003 with active directory to replace older MS servers
- Maintain the operational mirror site for ingest, archive and access of NOAA/NOS CORS (Continuous Operating Recording Systems) GPS data.
- Expand the volume of on-line data for access by WWW users
- Increase the volume of data archived by 20%
- Use the NOAA E-Learning system where possible for required IT training.

- Provide additional critical training to systems administrators that is not available on NOAA E-learning
- Complete SANS IT security training for all new systems administrators
- Upgrade the NGDC IT systems security policy
- Maintain certification and accreditation of the NGDC IT Security Plan
- Connect computer room electrical circuits to emergency generator
- Complete upgrade of UPS systems
- Complete reconnection of all individual UPS to central emergency power off (EPO) s
- Add more cooling capacity to computer rooms
- Complete HFC125 gas fire suppression system installation in two computer rooms
- Plan for installing HFC125 gas fire suppression system in third computer room
- Do capacity planning for future large volume satellite data streams
- Convert 100% of linux systems to Red Hat Enterprise to improve IT security and systems administration
- Implement Patchlink patch management software on all Macintosh systems and MS Windows systems

NCDC:

CDMP Brief Summary of FY 2005 Planned Activities

The National Oceanic and Atmospheric Administration holds a vast amount of a variety of climate data. It is the goal of the Climate Database Modernization Program (CDMP) to digitize these data thus making them accessible via the World Wide Web. Many of these tasks are multi-year projects and if the funding continues for CDMP at least at the current levels then CDMP will continue to support the on-going multi-year tasks. In addition, a Data Access Workshop is planned for November 8-9, 2004, for the other NOAA organizations to present new proposals for CDMP support in FY 2005. A number of national and international observational journals are slated for keying in FY 2005 if funding is available. Examples are the Atlantic Lightship observations for NMFS, the Maury logbook for OAR, and the Smithsonian observations from Alaska to expand the daily observation database at NCDC. Collaborative projects with the NWS International Affairs office include data rescue efforts to image and key data in Uruguay and the Dominican Republic.

NVDS Brief Summary FY 2005 Planned Activities

The following IT related items are managed by the NVDS Team, the NESDIS e-Government System Implementation Team, and the NNDC/NVDS Metadata Team.

· Complete implementation and transition to the NESDIS e-Government System to serve the NVDS On-Line Store and CLASS. Implementation will be completed by September 2005
· Complete the migration and transition the legacy customer database from COMPS
· Investigate the use of the metadata tool to other NOAA Line Offices

NCDC Brief Summary of FY 2005 Planned Activities

Acquisition Process: The NCDC will continue to support NESDIS and NOAA IT guidelines and policies. All IT purchases will comply with NESDIS IT Architecture, and all new IT purchases will be annotated and submitted for inclusion to the Technical Reference Model (TRM).

Fire Suppression System: The Ground Systems support will fund the installation of a computer room fire suppression system using inert gas to replace the water-based system currently in use.

IBM SP2: The SP-2 switched architecture will become unsupported by the end of FY 2005, so NCDC will migrate off of the IBM SP-2 switch to independent IBM servers using IBM's p660 line of servers.

CLASS Server Upgrade: The IBM p660 servers at NCDC will be replaced with p550 Power5 servers. This will include four production and two test servers. Also the web and FTP servers will be upgraded to IBM p520 servers.

CLASS Robotics and HSM: CLASS will install a new HSM (Hierarchical Storage Management system) in conjunction with new CLASS LTO tape library.

Storage Area Network Upgrades: NCDC will purchase a Serial ATA (SATA) SAN to replace the older SMS SAN. This will provide disk cache for on-line customer access of the most popular data sets. The new fibre-channel SAN will also receive additional disk capacity to support Oracle and HPSS metadata.

3494 Tape Library Upgrade: The IBM 3494 tape library will be consolidated from three robots to one in early FY 2005 (FY 2004-funded initiative). This will include the installation of five 3592 300GB tape drives which will be used to migrate data from the 3590E 40GB tapes as both a technology upgrade and to reduce the number of tapes by approximately 750%.

Linux Servers: NCDC is having problems with the RedHat version of Linux operating system. With about 125 Linux servers, this is becoming a serious problem and alternatives are being explored. One option is to replace RedHat with Debian (open source, free) for non-Oracle servers and use SuSe for Oracle servers.

Windows Server Upgrade: The existing Windows2000 Advanced Server system will be replaced with Microsoft Server2003. This will include new hardware in addition to the software.

Training: Continued emphasis on both formal and on-the-job training to ensure our users are provided with the best support possible.

Critical Software Updates: Continued emphasis on ensuring Microsoft critical updates are installed on all Windows systems in a timely manner with the least impact on the end user.

IT Policies: Formalizing Center policies on IT issues for visitors. In addition, continue to develop documented procedures for in/out processing of federal/contractor personnel and visitors.

Support to the ERC: The NCDC continues to work with the Education and Research Consortium (ERC) as the NCDC data communications provider. This project delivers affordable high-speed data access to NCDC which is used to support the CLASS program objectives as well as the ingest, archive, and access functions.

IP v6: NCDC will be receiving a NESDIS-funded Juniper Router (FY 2004-funded initiative) which will allow the implementation of IP v6.

Cisco 6513 Switch: NCDC will purchase a Cisco 6513 switch with integrated firewall modules allowing wire-speed firewall protection for the gigabit links with the ERC's MetaPoP.

Security Training: NCDC plans to continue providing in-depth training on identifying security compromises, showing administrators how to perform and automate host-based audits, how to interpret the file-integrity reports, and present security presentations to NCDC employees, contractors, and other government agencies located at NCDC. The Center will also convert its weekly security digest to a monthly document that will be available for review through the NCDC intranet. The security digest will provide all NCDC employees and contractors with updated security issues and concerns. Additional security training will be provided through the DOC e-learning environment.

Research Network Monitoring and Intrusion Detection: The ITSO and DITSO continue to evaluate security tools to assist with network monitoring, access control, and intrusion detection. An increase in automated monitoring will increase the ITSO's capability to detect unauthorized access and misuse of networked systems. The ITSO is collaborating with researchers at Carnegie Mellon by testing a distributed intrusion detection program. NCDC has also developed an OpenMosix cluster for performing data-mining on security and intrusion detection logs. Storage capacity and performance of the cluster is being upgraded to allow for efficient and data-mining and report generation. The monitoring server will be added to the NCDC cluster.

3.2.1.3 NOAA/NESDIS/Comprehensive Large Array-data Stewardship System (CLASS)

The purpose of the CLASS Project, including the Earth Observing System (EOS) component, is to enhance NOAA's capability to predict and assess decadal to centennial climatic changes. The CLASS Project will build upon the NOAA capability to provide virtual environmental data and information archive and access services to the Nation through the effective application of modern, proven techniques and technology. The project places special emphasis on the ability to efficiently archive the vast quantities of NOAA satellite and in situ observational data currently being collected and to provide rapid and secure access by the public to those data for future generations. The heart of the CLASS Project is upgraded communication capabilities, increased computer storage and power, high capacity acquisition and ingest capabilities, use of commercially available, modular hardware and software, and expanded World-Wide Web access to the data and information.

FY 2005 Cost = $9,600K (see Section 3.3.3 for details). Note: Cost / schedule deviations do not exceed 10%

Planned FY 2005 Activities:

1) Increase availability of on-line NESDIS data sets and products (with a goal of achieving a 10% increase in 2004 bulk orders available to the customer)

- Description - A large portion of the Nation's current archive of environmental data is stored and maintained by the National Climatic Data Center (NCDC), National Oceanographic Data Center (NODC), National Geophysical Data Center (NGDC), and the Satellite Active Archive (SAA). To prepare for the large increases in data volumes over the next 15 years, NOAA must increase the data-handling capacity and capabilities of its Data Centers. The CLASS project will afford efficient management of high volumes (petabytes) of data critical to the United States Global Change Research Program and scientific community. Management of these data requires a rapid expansion in storage capacity at the Data Centers and automation of the means of data ingest, archive, quality control, and access.

- Milestones:

- CLASS Release 3.2 (Scheduled for March 2005)

    - McIdas-less ingest
    - Support for Metop-1 data / readiness for IJPS End-to-End test
    - Subscription for GOES data
    - Upgrade to AIX 5.2/5.3

- Other Development Goals

    - Development Team SEI-CMM Certified
    - Establishment of a Development Environment at TMC/Fairmont
    - Integration of new SAN Disk Storage
    - METOP-1 Pre-Launch Testing and Operational Readiness
    - NPP “Campaign” Development and Testing
    - EOS-MODIS “Campaign” Development and Testing
    - Metadata “Campaign” development continues
    - Geospatial Capability development begins
    - Jason/OSTM ”Campaign” development begins
    - Operations Continue

- Performance Measure - % increase (in bulk data orders) per year

- Major Issues / Risks and Approaches / Mitigations - To avoid the costs associated with large, complex, and (potentially) inflexible programs, CLASS is built utilizing a modular campaign by major data platform approach. Building off each successful campaign allows the project to maximize efficiency and take advantage of new technology. In addition, an SEI / CMM Certification Process for the total Development Team has commenced.

- Security activities - Security is provided by program office direction. The system will operate within the confines of the overall NOAA security infrastructure. Additionally, firewall protection between internal and external CLASS data sources are planned to be in place. A security review and update is planned for FY 2005.

2) Increase website accesses NESDIS-wide (with a goal of achieving a 10% increase in 2004 subscription volume)

- Description – This activity is addressed through CLASS Release 3.3 (see below) and by ongoing increases in NESDIS telecommunications capacity (currently T3, OC3 with plans for future increases, e.g. to OC12 by FY 2006)

- Milestones –

    - CLASS Release 3.3 (Scheduled for June 2005)

    - Upgrades to the Help Pages/Static Pages
    - Map server upgrades
    - CLASS-NMMR Interface
    - Security enhancements, including capability to deliver data encrypted

- Performance Measure - % increase (in subscriptions) per year

- Major Issues / Risks and Approaches / Mitigations – To avoid the costs associated with large, complex, and (potentially) inflexible programs, CLASS is built utilizing a modular campaign by major data platform approach. Building off each successful campaign allows the project to maximize efficiency and take advantage of new technology. In addition, an SEI / CMM Certification Process for the total Development Team has commenced.

- Security Activities - Security is provided by program office direction. The system will operate within the confines of the overall NOAA security infrastructure. Additionally, firewall protection between internal and external CLASS data sources are planned to be in place. A security review and update is planned for FY 2005.

3.2.1.4 NOAA/NESDIS/ Satellite Operations Control Center Command and Data Acquisition (SOCC/CDA)

The Office of Satellite Operations (OSO) manages and directs the operation of NOAA's geostationary and polar orbiting environmental satellites and the acquisition of remotely sensed data. OSO has operational responsibility for the Satellite Operations Control Center (SOCC) at Suitland, MD, Command and Data Acquisition (CDA) facilities at Wallops, VA and Fairbanks, AK, and Wallops Backup (WBU) facility, located at NASA Goddard Space Flight Center (GSFC) in Greenbelt, Maryland, to command and control the satellites, to track the satellites, and to acquire their data. SOCC/CDA supports both the Geostationary Operational Environmental

Satellites (GOES) and Polar -orbiting Operational Environmental Satellites (POES) Ground Systems.

OSO command and control ground system provides uninterrupted availability of critical information and supports NOAA's critical National support functions that are not available commercially such as real-time hurricane support.

The SOCC/CDA also encompasses the Jason-2 program, an FY 2006 Research to Operations initiative. Jason-2 is a satellite altimetry mission that provides sea surface heights for determining ocean circulation, climate change and sea-level rise. These funds support the transition of operational control for the Jason series of satellite from NASA to NOAA -- key non-NOAA research satellites and instruments whose environmental data have become crucial to accomplishing the NOAA mission.

SOCC/CDA, to include the new Jason initiative, incorporates a formal performance measurement process. Within the SOCC/CDA, the Jason program is a pure development project that will utilize an Earned Value system for monthly basis to the program management team for input and direction. The remainder of the SOCC/CDA effort is a mixed life-cycle project in the capital planning and investment control (CPIC) process. While portions of SOCC/CDA are steady state, new applications and enhancements considered development are continuously incorporated to accommodate new requirements as they arise. This mixed life-cycle requires a set of performance measures appropriate for those applications and enhancements that are under development and a set for those that are operational and in steady state.

Development Component: SOCC/CDA development projects are handled through the Office of Systems Development, which conducts system development on behalf of OSO. Currently, tools such as Microsoft Project 2000 and Excel are utilized for project integration and management of the WBS. Earned value will be utilized on Jason to ensure both cost and schedule variances are kept to a minimum while maintaining adherence with both program and Line office strategic management objectives. Earned Value on Jason will be reported on a monthly basis to the program management team for input and direction. Managers in charge of the development of new applications and enhancements will use EVMS data to direct systems and component developers, control costs, meet deadlines, and ensure successful execution and completion of the project. EVMS data will provide the basis for holding the Agency, project managers, and contractors accountable through the ongoing development of enhancements and applications throughout the SOCC/CDA life-cycle.

Operational Component: OSO performs extensive, continuous Operational Analysis on the performance of its SOCC/CDA components. This ensures that the system resources and the ancillary supporting infrastructure (security, training, facilities, etc.) as well as labor resources remain optimally functional and configured to suit the NESDIS/NOAA's goals. OSO's Operational Analysis consists of a hybrid of system and non-system components.

OSO conducts an objective measurement of resource and performance metrics of the SOCC/CDA elements. For all IT and non-IT components, performance thresholds have been established. For IT systems, performance is measured continuously through an automated

process. For non-IT systems, performance is measured weekly through a manual process. Performance data is gathered at the OSO functional level and reported to OSO management on a weekly basis. OSO Management reports to the NESDIS Program Office on a weekly basis. Performance deficiencies in both IT and non-IT systems resulting from hardware are referred to the maintenance contractor for remediation. Performance deficiencies for IT systems resulting from software problems are referred to the OSO in-house software maintenance group for resolution. Key performance issues and risks are identified through these reviews and tracked by OSO management.

Given that the SOCC/CDA operational environment includes a large IT component, OSO must keep abreast of changes in technology that would impact operations. Often, this is done in conjunction with the Office of Systems Development (OSD), which performs system development and identification of new technologies on behalf of OSO. These changes identify risks to current operations in addition to identifying viable alternatives for improving systems and processes within OSO. The results of this analysis are the basis for OSO input to the Ground System Five Year Plan.

OSO conducts a variety of budget analyses throughout the fiscal year. Obligations and expenditures are tracked on a weekly basis. Labor costs and full time equivalent usage are tracked on a bi-weekly basis. Variances to budget plans are analyzed monthly and reported to OSO Management as well as NESDIS management. A Needs Analysis is conducted annually in conjunction with the PPBES and Ground System processes. Key budget issues and risks are identified through these reviews and tracked by OSO management.

Contract performance is monitored to support both budget and performance measurements. Although the majority of OSO operations are conducted utilizing government FTEs, contractors are utilized to support operations at the Fairbanks CDA and also provide support to OSO software maintenance and engineering. For these contracts, OSO receives monthly status reports and meets at least quarterly with contract management to review performance, priorities, lessons learned, and work plans. A more formal review is held at the end of each contract year to assess the performance, come to agreement on ways to maximize the efficiency and productivity, and decide on potential corrective actions and milestones. Hardware maintenance contracts are reviewed on a semi-annual basis for technology advances impacting system maintainability, reliability, and interoperability.

Finally, OSO also monitors the programmatic value of its activities to assure that the work being performed by the OSO systems and people are meeting NOAA's mission goals. This involves a regular review of system performance tracked to the performance goals set forth in the OSO Annual Management Contract. It also includes a review of future programmatic changes required to ensure the continued successful operation of OSO as defined by NESDIS/NOAA. These reviews are conducted on a team level as well as on an OSO-wide level. Management adjusts resource allocations as required to ensure continued support of OSO's core mission to meet NOAA's mission goals.

SOCC/CDA variances are not greater than 10%.

SOCC/CDA expects to meet all performance goals. For the steady state components of the SOCC/CDA, regular reviews of systems performance are conducted to ensure the program is meeting objectives, as well as the needs of the owners and users.

The ETC and EACs are in line with projected planning and show the program to be in line with cost and schedule milestones. No deviations are expected to move this program off its intended performance, cost or schedule goals.

The following simplification/reengineering/design projects are required for GOES ground system:

Complete the replacement of X.25 interfaces throughout by TCP/IP

Migrate to gigabit Ethernet interfaces; the move to this interface with the high data rate is natural when moving to TCP/IP

Increase automation of more operations including the increased use of Consolidated Workstation (CWSs)

Improve IT security such as by using full encryption technology for data and command traffic

Encourage adherence to standards to ease integration, interoperability, and communications among products developed by different vendors

Replace VAX VMS computers with high performance servers and workstations to gain improvements in performance (i.e., processing power; for example, the number of tasks performed per unit of time), compatibility, supportability, and maintainability; replacement decision will be based on a trade-off analysis that takes into consideration the outstanding reliability of the VAX VMS computers, exhibiting 200 days to a year of continuous uptime

Retire the DEC Routers and replace them with Cisco routers to gain improvements in throughput, response time, and maintenance

The following simplification/reengineering/design projects are required for POES ground system:

Common engineering analysis System and Common Workstations - standardizes the satellite control workstation for the POES, GOES, and DMSP satellites.

Polar Acquisition control System (PACS) Development Rail - Provides an offline system for testing new software releases to reduce risk before putting into operating PACS.

Satellite Operations Management System (SOMS): Provides capability for simultaneous, coordinated support of ground and space activity of multiple satellites of the ATN family and other non-NOAA polar-orbiting meteorological programs.

Initial Joint Polar Satellite Program (IJPS): Ground system changes must be made to interface with the European satellites (Metop) that will be part of the joint system.

Command and Data Acquisition Hardware Upgrade: Needed to handle the future European satellites (Metop) that are part of the IJPS.

Development Telemetry Command Subsystem: An offline testing system that can be used without interrupting operations.

Coriolis Support: Changes are required to support this Air Force and Navy satellite mission.

Distributed Communication Controllers (DCC): Installed to support the AFSCN communication upgrades.

The C&A documentation suites, which include system security plans [NOAA5003 (GOES), NOAA5026 (POES), NOAA5004 (DAPS/DCS), NOAA5008 (FCDAS Administrative LAN), NOAA5032 (WCDAS Administrative LAN), and NOAA5038 (SOCC Administrative LAN)] were reaccredited on 31 December 2003. The systems are fully accredited under requirements spelled out in NIST Special Publication 800-37. System Security Plans, Risk Assessments, and Contingency Plans have been certified and approved. The systems were accredited by the DAA, the acting NESDIS Chief Information Officer.

3.2.1.5 NOAA/NESDIS/ NPOESS Ground System

The IPO and NESDIS monitor the achievement or deviation from goals during the lifecycle of NPOESS by using the following approaches: First, to help monitor the performance of contractors, a commercial PC-based software package, WInsight by C/S Solutions (ANSI 748-A compliant), is used to perform earned value management calculations using electronic files submitted on a quarterly basis by various sensor vendors. Currently, a deviation scale of +/- 10% is used for contractual review and sequential data is tabulated automatically by the software. As a backup, the vendors also submit standard adobe Acrobat (.pdf) files each quarter and whenever a flash report is requested between quarterly submits. Second, the IPO performs monthly reviews to ensure that each part of the NPOESS system is progressing on schedule and within budget, and is on track to satisfy the operational requirements. Contractor performance is evaluated and award fee determinations are made based on demonstrated progress toward the agreed upon goals. As part of the review, all lessons learned are communicated to the contractors and incorporated in their planning.

3.2.1.6 NOAA/NESDIS/GOES Ground System

NESDIS operates a system of environmental satellites in geostationary orbits, known as GOES, to provide data for short-term weather warnings and forecasts. GOES satellites provide images of the entire United States every 15 minutes. NESDIS can also acquire GOES images as frequently as every minute to monitor the development of severe weather. The National Weather Service (NWS) uses GOES temperature and water vapor data in powerful numerical prediction models to form the basis of local weather forecasts. The GOES Ground System commands and

controls the operation of the GOES satellites and the acquisition of remotely sensed data. The GOES ground system consists of the Satellite Operations Control Center (SOCC) at Suitland, MD, and Command and Data Acquisition (CDA) facilities at Wallops, VA and Fairbanks, AK, and Wallops Backup (WBU) facility, located at NASA Goddard Space Flight Center (GSFC) in Greenbelt, Maryland, to command and control the satellites, track the satellites, and acquire their data. The GOES Ground System supports the launch, activation, and evaluation of new satellites and the in-depth assessment of satellite data. The GOES ground system contains components of the following major sub-systems; Central Environmental Meteorological Satellite Computer System (CEMSCS), Satellite Environmental Processing System (SATEPS), Search and Rescue Satellite Aided Tracking (SARSAT), the SOCC, and the CDA. Theses systems are integral components required to ensure the successful receipt, processing, transmission and distribution of environmental, telemetry, and emergency search and rescue data.

FY 2005 Cost = $4,195K (see Section 3.3.6 for details). Note: Cost / schedule deviations do not exceed 10%.

Planned FY 2005 Activities:

FY 2005 activities for the GOES GS will continue to concentrate on the development of new systems and capabilities for the GOES ground system infrastructure. The specific focus in FY 2005 will be the Data Collection System (DCS) Automated Processing System (DAPS).

- Description - In response to the growing requirements of existing environmental program, the GOES DCS program is investigating ways to increase system capacity and improve data throughput. One option is the use of Code Division Multiple Access (CDMA) technology. The CDMA spread spectrum communication techniques will alleviate the current overcrowding of the DCS GOES radio frequency band by allowing utilization of the entire bandwidth. In FY 2003, a joint study with DOD was initiated to determine the benefits of this option. Based on study results, a prototype system will be developed in FY 2005. Full deployment of the system is scheduled to begin in FY 2008.

- Milestone – CDMA Prototype (09/30/05)

- Performance Measure - Quarterly percent of DCS data that is successfully transmitted to users

- Major Issues / Risks and Approaches / Mitigations - To avoid the cost, schedule, and performance risks inherent in integrating new technology into operational systems, the GOES GS program is employing a prototyping approach with CDMA.

- Security activities - The NOAA NESDIS OSO is responsible for the secure operations of the GOES ground system. The OSO Security Plan complies with OMB and NIST guidance. The Accreditation Statement, which includes Security Plan Approval and Certification Statement, was approved on 15 August 2002.

3.2.1.7 NOAA/NESDIS/ Environmental Satellite Processing Center (ESPC)

CEMSCS

Porting Project: The Amdahl mainframe will continue to be in operation until and throughout the move to NSOF. During the next year, applications will gradually move off the mainframe and into production on the IPD SP and p655. The Amdahl will become the backup system as each application moves into production on the AIX systems.

Ingest Upgrade: The Active Archives Project report regarding "NCDC GVAR Provider Options" conducted in March 2003 recommends that IPD take on the prime NESDIS responsibility for ingesting GVAR data. In order to accommodate this new requirement a modification will have to be made to the current IPD Advanced Front End Processors (AFEP).

FXTS Lifecycle Replacement: The Facsimile Transmission System (FXTS) converts WEFAX imagery, located on the CEMSCS main processor, to analog signals for broadcast over the GOES spacecraft. This system was developed over 10 years ago and has outlived its expected life. The FXTS processing boards are no longer supported by the OEMs. There are limited spares in-house and no spare for one critical board. It may be possible to keep the FXTS running until WEFAX goes away, but there is a high degree of risk. There is even more risk involved if the systems are moved to the NSOF.

Product Systems Refurbishment: IPD's GOES product systems require modifications to support the new LRIT digital formats as well as to meet LRIT project requirements. In addition IPD has implemented a major application porting project to migrate applications from the legacy OS390 system to a UNIX/LINUX environment. IPD wants to eliminate the use of legacy systems and move to more commercially viable systems. The GOES Winds applications will be ported and migrated as part of this overall effort. These efforts will result in continued services with improved product to the WEFAX user community.

In addition, these efforts will eliminate costly legacy systems that are reaching their maximum performance limits and are no longer or soon to be no longer supported by the vendors. A move to more commercially viable systems will allow IPD to maintain compatibility with our primary customer, the NWS. Further, this effort will position IPD for the move to the NSOF and the establishment of a CEMSCS hot site backup facility.

Storage Area Network: In FY 2003, IPD had begun the initial migration from a direct attached storage architecture to a network centric storage management architecture. The Gartner target architecture study (2003) recommended that IPD establish a storage area network over multiple years to spread out the costs and to position itself to make the major investments after the move to the NSOF in 2005 and in time to meet the tremendous storage needs starting in 2006.

SATEPS

Ingestor: (specific hardware and software) modifications are required to access the new satellite data before products can be produced. To be able to incorporate the satellite data changes and

generate operational products within SATEPS, SSD must procure new product processors and workstations. New servers and web-based platforms are required to distribute new products and services from SATEPS. Data volume from the new satellites will exceed the existing network capacity. New telecommunications hubs, distribution boxes, amplifiers, antenna links, and multiplexors must be attained to support rapid receipt and relaying of data, products and services to and from SATEPS.

The SP servers are slated to be upgraded in three steps:

1. Migrate PSSP 3.2 to PSSP 3.4
2. Migrate AIX 4.3.3 to AIX 5L 5.1
3. Migrate PSSP 3.4 to PSSP 3.5

This upgrade is required for IT security patch-support end-of-support-cycle reasons, although several new features are available under the new operating system. It is unlikely that major improvements will be made to the system during FY 2005, but it is expected that GOES-N testing and implementation for remapping will occur at minimum; Met-5, Met-7, MSG-1(/MET-8), MSG-2(/MET-9) HRIT and LRIT checkouts and transitions for operational implementation for remapping will occur at minimum, as well as a likely MTSAT-1R test and implementation. FOS (NOAAport transition from SBN to DVBS telecommunications technology) acquisition changes at SATEPS must also be made during FY 2005.

Implement TCP/IP network over the DS3 t3.

Recent work has occurred which allows FOB-4 to receive the MODIS data at 1Gpbs rates, and which should allow SATEPS to move forward with the deployment. Owing to Line Office reorganization, funding reductions in force, NSOF migrations, and IPD mainframe decommissioning, planned SATEPS network enhancements for AIRS acquisitions (similar to MODIS network planning) has been moved off to FY 2006. The transfer of the 3 AWIPS dedicated GINI telecommunications landlines from the current SATEPS NSC location to the new NSOF facilities is likewise moved to FY 2006.

Complete migration of desktops to Windows 2003 Active Directory.

Security Patch Management:

The Patchlink package is expected to be received and deployed for patch maintenance and centralized maintenance improvements to the 100 Windows-based client systems in addition to the Linux/UNIX systems. This project intends to reduce the amount of manual work on individual client computers required to maintain operating system and third-party applications to adhere to the SATEPS client application baseline and the NOAA IT Security Office patch-maintenance requirements.

Relocate all Help Desk monitoring to COB at FB4.

- Migrate SATEPS to their own network to segregate them from the NCEP network and facilitate the move to the NSOF.
- Acquire MODIS based on the successful implementation of item 5 above.
- Complete migration of Linux servers to RedHat Enterprise.
- The Red Hat Enterprise deployment began at the end of FY 2004, but the majority of the work will occur early-to-mid FY 2005. This deployment will require the individual re-configuration of each system and re-compilation/validation of each application. Initial deployments have shown minor differences, but no major setbacks at this time.
- GOES-N checkout and implementation
- MSG-1/MET-8 HRIT and LRIT (SKU Encrypted) implementations and transition to operations
- MSG-2/MET-9 HRIT and LRIT (SKU Encrypted) PLT checkout and implementation
- Operational Transition of MSG-1/MET8 for MET-7 at 0 WLat/0 NLon subpoint
- Operational Transition of MET-7 for MET-5 at 60 ELat/0 NLon subpoint
- Transition of SBN/DVBS for FOS acquisition
- Transition and full implementation of SATEPS HelpDesk remote monitoring systems for a single FB4/NSOF “one stop” Consolidated OSDPD Help Desk.
- Completion of (SATEPS assistance with) all tasks for IPD Mainframe Decommissioning.
- Completion of VIE replacement (ingest system modifications or vendor supplied HW systems to implement downlink distribution amplifier Demodulation, frame sync, and bit sync functions) for geostationary satellite data at SATEPS.
- Transition of SATEPS Low Earth Orbit (LEO) data Decoders to LEO Satellite Desktop Ingestor (SDI) systems

3.2.1.8 NOAA/NESDIS/ Search and Rescue Satellite-Aided Tracking (SARSAT)

Brief Summary of FY 2005 Planned Activities

SARSAT performs extensive, continuous Operational Analysis on the performance of it's space and ground segments. This ensures that both the operational resources and the ancillary supporting infrastructure (beacon registration support, IT security, SAR responder training, international program coordination, outreach, etc.) remain optimally functional and configured to suit both international Cospas-Sarsat performance standards and SARSAT program goals.

SARSAT's operational analysis consists of four primary components. The first component is the objective measurement of resource and performance metrics of the operational system. The SARSAT LUT maintenance contract mandates specific requirements for successful delivery of satellite pass data, which is a function of satellite pass availability, ground station processing, solution accuracy, etc. Successful passes are measured on a continuous basis and compiled monthly and compared with the contract's requirements. The contractor is financially penalized for any performance below the contract specified performance level of 98%. If a LUT delivers less then 95% of passes the contractor payment for that month is 0%. Additionally, SARSAT continuously monitors the timeliness, accuracy, and availability of LUT data, the USMCC, and associated system components.

The second component involves the monitoring of contract performance and a continuous

analysis of alternatives. In addition to special meetings to address pressing problems, this is done through bi-weekly meetings with vendor personnel to review system performance and reliability, discuss planned system modifications, and evaluate any advances in the technology and prospective upgrade opportunities. The status of the system's vulnerability to an ever-changing threat environment is reviewed and potential security upgrades/measures are evaluated. This is also an opportunity for the vendor to suggest ways to improve the maintainability of the system(s). A more formal review is held at the end of each contract year to assess the vendor's performance, come to agreement on ways to maximize the efficiency and productivity of the system(s), and decide on potential corrective actions and milestones.

The third component involves the monitoring of the needs and requirements of the users of the systems on a regular basis. A Joint Working Group (JWG) composed of NOAA, NASA, USAF, USCG, FAA, and FCC representatives meets at least quarterly. The JWG provides a formal mechanism to forward agency issues that rise above typical operational maintenance level. The JWG allows validation of agency level requirements as well as coordination of SARSAT technical and programmatic efforts. The goal of these meetings is: to provide updates on the status the systems; to educate the partners about selected topics; and to coordinate and out year planning.

The fourth component involves Program Steering Group (PSG) monitoring the programmatic value of the system to assure that the work being performed on the system meets NOAA's and partner agency mission goals. The PSG is comprised of agency level SARSAT managers from NOAA, NASA, USAF, and USCG. PSG oversight involves a regular review of system performance to ensure that the targeted programmatic goals are being given proper resources. In addition, the PSG performs a semi-annual review of resource allocations by program category and evaluates resource allocations by programmatic goal. Management then issues revised resource allocations for the coming year that are consistent with NOAA mission goals.

Specific Steady State Maintenance it activities planned for FY 2005 include the life-cycle replacement of USMCC processors, OS, and COTS applications. The cost of this refresh is estimated at $200K.

3.2.1.9 Line Office Infrastructure Investments

INVESTMENT NAME: Network Consolidation - FY 2005 Request: $50K:

PURPOSE: Reduce Network Administrative Resources through refreshment and technology improvement and cost avoidance.

BENEFITS: Reduce costs of administration and use cost and resource savings to upgrade switch.

IMPACT: Improve efficiency and reduce long term maintenance costs.

INVESTMENT NAME: Calendaring System Purchase - FY 2005 Request: $75K:

PURPOSE: Bring NESDIS units under one functional calendaring system.

BENEFITS: Improve efficiency of users; save approximately 200 staff-hours each year on maintenance (compared to current systems).

IMPACT: Improve efficiency of users through availability of better tool sets and reduce long term maintenance costs.

INVESTMENT NAME: Microsoft EA- FY 2005 Request: $225K:

PURPOSE: Blanket purchase of Microsoft Software to support NESDIS.

BENEFITS: Enhanced technical support, better compliance with license and save money over current purchase capabilities.

IMPACT: 36% savings over GSA Schedule price

INVESTMENT NAME: IDL License Support-

FY 2005 Request: $40K:

PURPOSE: To meet mission needs with adequate software capabilities.

BENEFITS: Will enable ability to efficiently meet 100% of mission needs at a cost effective rate.

IMPACT: Improved capabilities and mission accomplishment met.

3.2.2 National Marine Fisheries Service (NMFS)

In order to support the agency's migration to e-Government activities and related internal business process reengineering, NOAA Fisheries plans to significantly enhance its IT Infrastructure to expand accessibility and improve security, performance and availability by deploying best-in-class proven technologies. Advancements in network monitoring software will also be leveraged in FY2005 in a continuing effort to proactively manage the LANn and WANn infrastructure. Reliable, secured, high performance communications are critical to the information gathering, analyzing and sharing activities required for advance fishery and habitat conservation management and enforcement.

Infrastructure upgrades are planned for FY2005 that include expanding wireless networking and improving fault tolerance and network security. Cisco Works monitoring software features will be further utilized to enhance existing monitoring software. An upgraded Oracle Infrastructure at Headquarters will be deployed. The new environment will implement performance and

security enhancements recommended by TUSC in last year's database health check. The enterprise-wide GIS infrastructure will be upgraded. HQ will migrate to Microsoft Active Directory. The VPN project will be completed by providing connectivity to remaining NOAA Fisheries employees. Router-to-Router encryption will be completely deployed for all Wide Area Network locations. Harris Stat scanner, e-Policy Orchestrator, and Netcheck will be deployed and integrated to provide comprehensive desktop virus scanning, patch management and vulnerability testing throughout the Wide Area Network and Headquarters Local Area Network.

Headquarters and the regions will continue to replace or upgrade outdated network hardware and PC hardware and software. Many Regions plan to move to Microsoft Active Directory and deploy Red Hat Linux servers to drive down costs and increase security.

Database systems will be enhanced to support a wide range electronic data capture technologies including ruggedized tablets with GPS for use in remote marine locations. We will continue to expand security features of our LANs and peripheral hardware systems and expand web-based metadata systems for scientific databases. GIS capabilities will be expanded to support ecosystems-based research.

NOAA Fisheries will continue to develop an Electronic Data Management capability working closely with EPA and NARA, the managing partners in the President's Management Agenda, Electronic Records Management initiative. We plan to fill the position of Records Administrator. As an initial task the new administrator will analyze EDM requirements and develop a project plan for a small pilot focusing on the administrative record business process.

The agency plans to leverage efforts in FY 2004. to further advance electronic rulemaking. The public can now access NOAA Fisheries Federal Register notices open for comment through the www.regulations.gov web site and submit comments either on the sites web forms or in emails directly to the individual at NOAA Fisheries responsible for the rule. In FY 2005 we plan to deploy a regulatory tracking capability that is fully integrated with PRIME, the DOC regulations management tool. We will also begin to transition to the EPA's government-wide docket system, FedDOCKET, that will provide one public access point for all federal regulatory actions and supporting information.

Other plans for FY2005 include:

- The Southeast Regional Office plans to deploy a comprehensive Permits Information Management Systems (PIMS) in FY2005.
- The Office of Enforcement will be deploying and transitioning its case management to I/LEADs.
- The Southwest Region and Fisheries Science Center will be implementing Microsoft Windows Server Active Directory to simplify management, strengthen security, and increase interoperability for the Local and Wide Area Networks.
- The newly formed Pacific Islands Regional Office (PIRO) will continue expanding and upgrading and expanding their LAN and deploying Active Directory.

The SEFSC plan an extensive upgrade to the infrastructure of its Miami Science facility. The SEFSC also plans to: deploy an OLAP front end to the data warehouse; complete the FIS Portal project, the Enhanced Economic Data validation module as well as a web-based yearly cost data entry system; reconcile data between Federal logbooks and state trip ticket data and landings and between federal and state dealer codes and dealer codes; enhance of the Data Quality Act Online application to catalogue new information for librarians and to meet Section 515 information quality requirements; and migrate the Mississippi Laboratory data to a new Oracle server.

3.2.3 NOAA Ocean Service (NOS)

PORTS & NWLON

PORTS is a decision support tool, unique at each site, which improves the safety and efficiency of maritime commerce and coastal resource management through the integration of real time environmental observations, forecasts, and other geospatial information. NWLON is a network of continuously operating long-term water level stations in the U.S. coastal areas, U.S. possessions, and the Great Lakes which provide the tidal and Great Lakes vertical water-datum control for the nation.

Each year a budget request is submitted to management which includes maintenance of existing operational systems as well as new development, expansion, and modernization. The budget request reflects the fiscal planning that was conducted and documented in CO-OPS Work Plan for the given budget year. It also reflects the planning contained within the various IT Plans and within the context of the IT Architecture Plan. Prior to submitting the budget request, it is checked for consistency in projected costs and for any course corrections that are needed using actual costs from the previous years as a guide and benchmark. The budget request is submitted to management and the funds provided for maintenance of operational systems is resolved and approved. Monthly reviews are performed by management.

PORTS and NLWON has teams which meet on a weekly basis to discuss operational issues, including performance, cost, and scheduling concerns. A report of these issues is provided to senior management every two weeks. PORTS and NWLON generates quad charts on a quarterly basis to provide details regarding the program's performance parameters, schedule, budget, and any key risks that arise. This information is provided to the Program Manager of the Marine Transportation System Program, a component of NOAA's Commerce and Transportation Strategic Goal. The Program Manager reviews this information to ensure consistency with agency established budgets, program goals and policies.

Geodetic Support System

The National Geodetic Survey (NGS), a program office in NOAA's National Ocean Service, is responsible for the development and management of the National Spatial Reference System (NSRS), a nation-wide framework for geographic reference.

This is a steady state operational project. The operational analysis system we use to manage our program performance consists of tracking subtasks and milestones on a task by task basis as

subtasks are assign. The Program manager will monitor the results of the task performance against the established expected performance quarterly. If any contracts are ever let by this system, they will be structured to include incentives and disincentives which are directly related to performance. Baseline metrics will ensure a minimum level of quality is identified at the outset. Failure to perform at the minimum level of quality will result in disincentives and/or termination as defined by the contract. Performance which exceeds the minimum standards will be rewarded with incentives. Potential vendors will be given the opportunity to present the government with input regarding performance measures, incentives, and disincentives. Cost, schedule and performance goals will be linked to our annual management contract metrics.

Nautical Charting System

The Nautical Charting System underpins production of NOAA's nautical charts, which are the most critical tools for safe, efficient and environmentally sound navigation in U.S. waters.

In house projects are managed through the use of performance metrics that measure productivity gains, backlog reduction and new edition production. Generation II will use EVMS techniques to monitor Cost, Scope, and Schedule of the project. The main software that will be used to monitor Generation II analysis, integration, implementation, and deployment will be Microsoft Project.

For the contract, performance based metrics will be established for each subtask. The COTR will monitor the results of the contract performance against the performance metrics quarterly. Task monitors will monitor performance for individual work orders against agreed-to-performance measures monthly. Baseline metrics will ensure a minimum level of quality is identified at the outset. Failure to perform at the minimum level of quality will result in disincentives and/or termination as defined by the contract.

3.2.4 National Weather Service (NWS)

The current exhibit 300's for the (16) major investments of NWS are on file in DOC's e-CPIC system.

Additional information to be provided.

3.2.5 Office of Oceanic and Atmospheric Research (OAR)

Exhibit 300s for NOAA Research High Performance and Computing Systems (located at GFDL and FSL) and the NOAA Research Scientific Computing Support Initiative are available electronically through eCPIC. The major FY 05 activities under the NOAA Research Scientific Computing Support investment are discussed below.

Program Highlights

Ocean Observations for Climate (+$10.7M) to continue building and maintaining a global ocean observing system that will accurately document climate-scale changes in ocean heat, carbon, and sea level. This request is part of a multi-year, phased implementation to achieve 99% completion by FY 2009.

Carbon-Cycle Atmospheric Observing System (+$6.5M) to continue implementation of a Carbon Cycle Atmospheric Observing System, focused on North America, to determine carbon dioxide sources and sinks in and around the U.S and to improve meteorological transport models. The goal is to reduce the uncertainty in the estimation of the U.S. terrestrial carbon sink and to gauge the effectiveness of future U.S. carbon emission and sequestration strategies.

Aerosols, Clouds, and Climate Change (+$6.5M) will initiate a new five-year observation and modeling-based focus on gaining a better predictive understanding of how aerosols influence climate by their interaction with clouds. Research will support quick-response decisionmaking in the Nation's efforts to address climate-change issues.

Phased Array Radar: NOAA requests $1.01M to develop the phased array radar. Following transfer of a phased array antenna from Lockhead Martin to the National Severe Storms Laboratory (NSSL) in Oct 2003, the system is now ready to be used as a testbed for reengineering, meteorological studies, and software development. NSSL will mount a vigorous field campaign in FY 2005 to compare the capabilities of phased array and the current NEXRAD system to detect severe weather.

Program Decrease

NOAA Profiler Network: As required in the FY 2004 Appropriation, the National Weather Service is undergoing a cost and operational effectiveness analysis to determine which of seven alternatives is the most cost-effective observing system. The analysis is nearing completion. NOAA will continue operations and maintenance of the NPN with $4.15M in FY 2004. NOAA requests no funds to operate the National Profiler Network (NPN) in FY 2005.

Program Transfers

Space Environment Center: NOAA requests a transfer of $5.3M from NOAA Research to the National Weather Service for the Space Environment Center (SEC) to operate within the National Centers for Environmental Prediction (NCEP) to reflect the operational nature of solar forecasts. SEC will continue to support the research framework necessary to ensure that new research findings are utilized at SEC.

U.S. Weather Research Program: NOAA requests a transfer to the National Weather Service of $5.2M for the U.S. Weather Research Program to continue to support applied weather research so that positive research results may be transitioned to operations.

3.2.6 Office of Marine and Aviation Operations (NMAO)

Information Technology is a part of everything NMAO does. All NMAO IT investments are part of greater NMAO programs and projects and are not broken out into OMB A-11 Exhibit 300 IT Initiatives. One exception is that an Exhibit 300 was prepared for a FY04 Initiative "24x7 Internet at Sea." That document can be updated in the event funds are approved in the PPBES07 process for this initiative.

3.2.7 Office of Chief Information Officer (OCIO)

The NOAA Infrastructure investments supported by NOAA's Office of the CIO are as follows:

- The Headquarter Network Operations Center including the Washington Metropolitan Area Network (MAN)
- The NOAA Messaging Operations Center and the NOAA Enterprise Messaging System
- The OCIO Web Service under the Web Operations Center
- The NOAA enterprise network project.

The Headquarters Network Operations Center (NOC) including the Washington Metropolitan Area Network (MAN). The HQ NOC provides configuration management, fault isolation, security services for the Silver Spring Campus Backbone network and the Metropolitan Area Network. The NOC also provides consulting design services to the Line Office network managers, operates a secure Virtual Private Network (VPN) for remote users, manages NOAA's access to the Commodity Internet, and Research Network, operates the NOAA SSMC firewall, collects and analyzes network utilization metrics for trend analysis and planning. The NOC provides coordination and technical support for NOAA-wide infrastructure design and provides NOAA-wide services for DNS and load balancing of web servers.

The NOAA Messaging Operations Center (MOC) and the NOAA Enterprise Messaging System (NEMS) NEMS includes the overall system of e-mail and directory servers that provides electronic mail and related directory services for NOAA's approximately 18,000 employees, contractors, and associates. NEMS also includes the Enterprise Calendar System. NEMS includes over 70 email servers and 40 LDAP directory servers most of which are operated by the Line Offices. The Messaging Operations Center Operates the Enterprise Messaging servers, the top tier directory servers, maintains the overall messaging architecture, manages Spam mitigation efforts, antivirus software, coordinates with and supports Line Office email administrators

The OCIO Web Service under the Web Operations Center
The Office of the CIO operates a web server cluster that supports a wide variety of NOAA web sites including NOAA.gov and most NOAA headquarters level servers and a wide variety of sites which support Goal Mission Programs. The WOC also support Line Office Web Masters with development issues and applications and supports web based video broadcasts.

The NOAA Enterprise Network Project The Office of the CIO and the Network Advisory Committee have developed the Enterprise Network Architecture, a detailed approach for moving NOAA to a unified network platform including network management, transport, common governance, security, and network enabled applications. In FY 2005 NOAA will begin to move towards that Target Architecture by implementing a pilot which include key Weather Service locations as well as the current administrative network. A broadly based implementation plan which will document the overall approach for bringing other networks and locations under the enterprise network will be completed in the first quarter of FY 2005.

3.2.8 Office of NOAA Finance and Administration (NFA)

NOAA Grants On-Line

Grants On-Line will be delivered for iterations 1-6 in November 2004. All critical design, development, testing, and implementation work is on schedule and on cost. There are no implementation problems identified at this time. Additional funding is required in FY05 in the amount of $2.5m to fully provide for the deployment and management of the system throughout the fiscal year.

Financial Management IT Operations

All milestones are on schedule and activities are currently on schedule. The key issue for this investment in FY05 is the filling of key technical and managerial vacancies at the ITC. An outside consultant in FY04 conducted an assessment of the ITC. The assessment concluded that the center was in crisis and that a number of short term and long actions were required in order to ensure the future ability of the ITC to meet NOAA administrative system requirements. CIO management will take actions in FY05 to address the recommendations of the assessment and will also take action to integrate capabilities between the OCIO office and the NFA CIO office in the areas of networking, technical support, and email management.

Non-Core CAMS Financial Management System

All milestones and activities are on schedule.

3.3 Provide a milestone table describing the status of all current major initiatives.

3.3.1 National Environmental Satellite, Data, and Information Service (NESDIS)

3.3.1 NESDIS/ Office of Satellite Data Processing and Distribution (OSDPD) Systems CIP (valid Sept. 28, 2004)

	Planned						Actual			
	Schedule		Duration		Plan	Funding	Schedule		%	Actual
Description	Start Date	End Date	Days	Hours	Cost	Agency	Start Date	End Date	Complete	Cost
3 FY05 OSDPD-CIP	10/1/2004	9/30/2005	364	0	$1,441.00	DOC				$0.00
3.1 CIP Engineering Support	10/1/2004	9/30/2005	364	0	$338.00	DOC				$0.00
3.2 CIP Backup Site Construction	10/1/2004	9/30/2005	364	0	$100.00	DOC				$0.00
3.3 IPD-NSOF System/Equipment	10/1/2004	9/30/2005	364	0	$520.00	DOC				$0.00
3.4 CIP Equipment	10/1/2004	9/30/2005	364	0	$483.00	DOC				$0.00

3.3.2 NESDIS/ NOAA National Data Centers (NNDC) (valid Sept. 29, 2004)

	Planned						Actual			
	Schedule		Duration		Plan	Funding	Schedule		%	Actual
Description	Start Date	End Date	Days	Hours	Cost	Agency	Start Date	End Date	Complete	Cost
4 FY05 NNDC Enhancements and Maintenance	10/1/2004	9/30/2005	364	0	$35,793.00	DOC			0	$0.00

3.3.3 NESDIS/Comprehensive Large Array-data Stewardship System (CLASS) (valid Sept. 28, 2004)

Note on FY05 Budget: Funding for the CLASS Project is a combination of PAC line items supporting CLASS

	Planned						Actual			
	Schedule		Duration		Plan	Funding	Schedule		%	Actual
Description	Start Date	End Date	Days	Hours	Cost	Agency	Start Date	End Date	Complete	Cost
2 Core CLASS development	10/1/2003	9/30/2010	2556	0	$24,830.00	DOC/NOAA	10/1/2003		4	$1,213.00
3 CLASS Campaigns	10/1/2003	9/30/2010	2556	0	$34,400.00	DOC/NOAA	10/1/2003		4	$1,867.00
4 Metadata	10/1/2003	9/30/2010	2556	0	$2,520.00	DOC/NOAA	10/1/2003		3	$125.00
7 Ops & Maintenance	10/1/2003	9/30/2010	2556	0	$26,151.00	DOC/NOAA	10/1/2001		3	$785.00

3.3.4 *NESDIS/ Satellite Operations Control Center Command and Data Acquisition (SOCC/CDA) (valid Sept. 28, 2004)*

	Planned						Actual			
	Schedule		Duration		Plan	Funding	Schedule		%	Actual
Description	Start Date	End Date	Days	Hours	Cost	Agency	Start Date	End Date	Complete	Cost
2 FY05 SOCC/CDA	10/1/2004	9/30/2005	364	0	$6,107.00	DOC				$0.00
2.1 T&C/Instrument Support	10/1/2004	9/30/2005	364	0	$3,465.00	DOC				$0.00
2.2 Special Projects	10/1/2004	9/30/2005	364	0	$2,542.00	DOC				$0.00
2.3 Communications	10/1/2004	9/30/2005	364	0	$100.00	DOC				$0.00
9 Operations and Maintenance	10/1/2003	9/30/2010	2556	0	$106,523.00	DOC	10/1/2003		11	$11,717.53

3.3.5 *NOAA/NESDIS/ NPOESS Ground System (valid Sept. 28, 2004)*

	Planned						Actual			
	Schedule		Duration		Plan	Funding	Schedule		%	Actual
Description	Start Date	End Date	Days	Hours	Cost	Agency	Start Date	End Date	Complete	Cost
3 FY05 IT Expenditures	10/1/2004	9/30/2005	364	0	$75,657.00	DOC				$0.00

3.3.6 *NOAA/NESDIS/ GOES Ground System (valid Sept. 28, 2004)*

	Planned						Actual			
	Schedule		Duration		Plan	Funding	Schedule		%	Actual
Description	Start Date	End Date	Days	Hours	Cost	Agency	Start Date	End Date	Complete	Cost
2 FY05 GOES Ground System/Infrastructure	10/1/2004	9/30/2005	364	0	$4,195.00	DOC				$0.00
2.1 Communications	10/1/2004	9/30/2005	364	0	$1,358.00	DOC				$0.00
2.2 Product Generation & Distribution	10/1/2004	9/30/2005	364	0	$2,837.00	DOC				$0.00

3.3.7 *NOAA/NESDIS/ Environmental Satellite Processing Center (ESPC) (valid Sept. 28, 2004)*

	Planned						Actual			
	Schedule		Duration		Plan	Funding	Schedule		%	Actual
Description	Start Date	End Date	Days	Hours	Cost	Agency	Start Date	End Date	Complete	Cost
2 FY05	10/1/2004	9/30/2005	364	0	$26,183.00	DOC				$0.00
2.1 CEMSCS PG&D/Special Projects	10/1/2004	9/30/2005	364	0	$3,902.00	DOC				$0.00
2.2 CEMSCS Ops & Maint	10/1/2004	9/30/2005	364	0	$8,227.00	DOC				$0.00
2.3 SATEPS PG&D	10/1/2004	9/30/2005	364	0	$1,905.00	DOC				$0.00
2.4 SATEPS Ops & Maint	10/1/2004	9/30/2005	364	0	$12,149.00	DOC				$0.00

3.3.8 NOAA/NESDIS/ Search and Rescue Satellite-Aided Tracking (SARSAT) (valid Sept. 08, 2004)

	Planned						Actual			
	Schedule		Duration		Plan	Funding	Schedule		%	Actual
Description	Start Date	End Date	Days	Hours	Cost	Agency	Start Date	End Date	Complete	Cost
FY05 Operations	10/1/2004	9/30/2005	364	0	$1,230.00	DOC/DOT/DOD				$0.00
FY05 Maintenance	10/1/2004	9/30/2005	364	0	$3,630.00	DOC/DOT/DOD				$0.00
3rd Generation LUT Life-Cycle Replacement	10/1/2002	12/31/2004	822	0	$3,871.00	DOC	1/1/2002		88	$3,407.00

3.3.9 NOAA/NESDIS/ IT Infrastucture

	Planned						Actual			
	Schedule		Duration		Plan	Funding	Schedule		%	Actual
Description	Start Date	End Date	Days	Hours	Cost ($K)	Agency	Start Date	End Date	Complete	Cost
Network Consolidation	10/1/2004	9/30/2005	364	0	$50.00	DOC				$0.00
Calendaring System Purchase	10/1/2004	9/30/2005	364	0	$75.00					$0.00
Microsoft EA	10/1/2004	9/30/2005	364	0	$225.00					
TDL License Support	10/1/2004	9/30/2005	364	0	$40.00					

3.3.2 National Marine Fisheries Service (NMFS)

NMFS / Fisheries Information System

Planned						Actual			
Schedule		Duration		Plan	Funding	Schedule		%	Actual
Start Date	End Date	Days	Hours	Cost ($K)	Agency	Start Date	End Date	Complete	Cost
10/1/2004	9/30/2006	729	364	$291.00	DOC				
8/1/2003	9/30/2007	1521	1521	$973.00	DOC				
6/1/2004	9/30/2006	851	851	$681.00	DOC				

3.3.2 NMFS / Vessel Monitoring System

	Planned						Actual			
	Schedule		Duration		Plan	Funding	Schedule		%	Actual
Description	Start Date	End Date	Days	Hours	Cost ($K)	Agency	Start Date	End Date	Complete	Cost
Increase VMS Program Particaption to 3,500	10/1/2004	9/30/2005	364	1920	$150.00	DOC				

3.3.3 NMFS / IT Infrastructure

	Planned						Actual			
	Schedule		Duration		Plan	Funding	Schedule		%	Actual
Description	Start Date	End Date	Days	Hours	Cost	Agency	Start Date	End Date	Complete	Cost
WAN - Complete VPN Deployment	10/1/2004	12/31/2004	90	0		DOC				
Web Development - Establiah enterprise-wide Internet web template	10/1/2004	9/30/2005	364	0		DOC				
EDM - Hire NOAA Fieheries Records Administrator	10/1/2004	12/31/2004	90	0		DOC				
SER PMS - Deploy initial PIMS System	10/1/2004	3/31/2005	270	0		DOC				
LEADS - Complete migration to LEADS from EMIS	10/1/2004	6/30/2005	180	0		DOC				
WAN - Complete WAN encryption	10/1/2004	3/31/2005	90	0		DOC				
Security - Conduct vulnerablity testing	10/1/2004	9/30/2005	364	0		DOC				
Security - NIMB approval of a patch management policy	10/1/2004	3/31/2005	180	0		DOC				

3.3.3 NOAA Ocean Service (NOS)

PORTS & NWLON

Description	Planned					
	Schedule		Duration			Funding
	Start Date	End Date	Days	Hours	Plan Cost	Agency
homogenous information architecture	1/1/2004	6/30/2006	911	8320	$1,152.00	DOC/NOAA
1 Implement the metadata component of the homogenous information architecture	1/1/2004	12/31/2004	365	2080	$288.00	DOC/NOAA
2 Implement the data archive component of the homogenous information architecture	1/1/2005	12/31/2005	364	2080	$288.00	DOC/NOAA
3 Implement the real-time data ingestion and dissemination component of the homogenous information	7/1/2005	6/30/2006	364	2080	$288.00	DOC/NOAA
4 Implement the data processing and analysis component of the homogenous information architecture	7/1/2005	6/30/2006	364	2080	$288.00	DOC/NOAA
8 Acquire all CO-OPS data in real-time mode	10/1/2004	9/30/2005	364	1440	$144.00	DOC/NOAA
9 Plan and design a CMM-based software development process	1/1/2005	9/30/2005	272	1440	$108.00	DOC/NOAA
10 Integrate PORTS/NWLON with the IOOS Community	1/1/2005	12/31/2005	364	1920	$150.00	DOC/NOAA
1 Define data format standards for IOOS data coming into the PORTS/NWLON databases	1/1/2005	6/30/2005	180	960	$75.00	DOC/NOAA
2 Define data dissemination standards for IOOS data disseminated via PORTS/NWLON	7/1/2005	12/31/2005	183	960	$75.00	DOC/NOAA
11 Design and implement initial case-based reasoning capabilities into CORMS AI	1/1/2005	12/31/2005	364	2080	$300.00	DOC/NOAA
12 Develop and implement a prototype Automated Real-Time Narrative Summary application	1/1/2005	6/30/2005	180	960	$60.00	DOC/NOAA
13 Design and implement initial water current processing and analysis tools	1/1/2005	12/31/2005	364	2080	$300.00	DOC/NOAA
14 Installation of an additional PORTS	5/1/2005	6/30/2005	60	480	$35.00	DOC/NOAA

Geodetic Support System

Description	Planned					
	Schedule		Duration			
	Start Date	End Date	Days	Hours	Plan Cost	Funding Agency
System	10/1/2004	9/30/2005	364	2912	$1,155.00	DOC

Nautical Charting System

Description	Planned					
	Schedule		Duration			
	Start Date	End Date	Days	Hours	Plan Cost	Funding Agency
3 Generation II Market Survey	10/1/2003	2/1/2005	489	3912	$208.13	NOAA
4 Generation II Test Plan Development	2/1/2005	11/1/2005	273	2184	$277.50	NOAA
5 Generation II Detail Evaluation	2/1/2005	11/1/2005	273	2184	$346.88	NOAA

3.3.4 National Weather Service (NWS)

3.3.1 NWS/ NWS Telecommunciations Gateway System (Consolidation of legacy, replacement, and backup)

Description	Planned						Actual			
	Schedule		Duration		Plan	Funding	Schedule		%	Actual
	Start Date	End Date	Days	Hours	Cost ($K)	Agency	Start Date	End Date	Complete	Cost
MS3 Unit (complete Message Switch Software integration)	9/14/2004	8/8/2005	360	0		DOC				
MS3 Code Conversion Testing (Prism)	9/23/2004	1/31/2005	129	0		DOC				
Implement NWS.NET monitoring	9/28/2004	11/19/2004	53	0		DOC				
Implement MS3 Test Environment	8/23/2004	12/17/2004	116	0		DOC				
Design internal network	8/2/2004	12/7/2004	130	0		DOC				
Beneficial Occupancy Date at Mt.Wx	11/10/2004	11/10/2004	1	0		DOC				
Install Systems consoles at Mt. Wx	1/10/2005	1/21/2005	11	0		DOC				
Acquire, install & integrate WAN/LAN equipment at SSMC2	1/3/2005	3/31/2005	87	0		DOC				
Acquire, install & integrate WAN/LAN equipment at Mt. Wx	3/18/2005	6/17/2005	91	0		DOC				
Implement Legacy Replacement at SSMC2	2/1/2005	1/13/2006	350	0		DOC				

3.3.2 NWS/ Air Quality Forecast Capability

	Planned						Actual			
	Schedule		Duration		Plan	Funding	Schedule		%	Actual
Description	Start Date	End Date	Days	Hours	Cost ($K)	Agency	Start Date	End Date	Complete	Cost
Begin experimental production of expanded air quality forecast quidance over Eastern US	10/1/2004	6/30/2005	274	0		DOC				

3.3.3 NWS/ AWIPS

(Technology Infusion)

	Planned						Actual			
	Schedule		Duration		Plan	Funding	Schedule		%	Actual
Description	Start Date	End Date	Days	Hours	Cost ($K)	Agency	Start Date	End Date	Complete	Cost
Complete five year roadmap for AWIPS	10/1/2004	6/30/2005	274	0		DOC				
Begin deployment of AWIPS Data Server replacement	10/1/2004	3/31/2005	182	0		DOC				
Complete deployment of AWIPS release OB4	3/31/2005	3/31/2005	1	0		DOC				
Begin deployment of AWIP release OB5	6/30/2005	6/30/2005	1	0		DOC				
Complete deployment of AWIPS communications, processing and security upgrades	9/30/2005	9/30/2005	1	0		DOC				
Award AWIPS re-compete operations & maintenance contract	9/30/2005	9/30/2005	1	0		DOC				
Deploy NEXRAD Level II data distrubution Full Operating Cabability	3/31/2005	3/31/2005	1	0		DOC				
Begin TDWR deployment	9/30/2005	9/30/2005	1	0		DOC				

3.3.5 NWS/ NEXRAD PPI

	Planned						Actual			
	Schedule		Duration		Plan	Funding	Schedule		%	Actual
Description	Start Date	End Date	Days	Hours	Cost ($K)	Agency	Start Date	End Date	Complete	Cost
Begin NEXRAD ORDA deployment	6/30/2005	6/30/2005	1	0		DOC				
				0		DOC				

3.3.6 NWS/ ASOS

	Planned						Actual			
	Schedule		Duration		Plan	Funding	Schedule		%	Actual
Description	Start Date	End Date	Days	Hours	Cost ($K)	Agency	Start Date	End Date	Complete	Cost
Completed deployment of 2 ASOS sensor upgrades and begin deployment of a third	6/30/2005	6/30/2005	1	0		DOC				
Ice Free Wind Sensor	6/1/1999	10/1/2005		0		DOC				
Enhanced Precipitation Identifier	1/1/2002	6/30/2006		0		DOC				
All Weather Precipitation Gauge	10/1/1999	8/1/2004		0		DOC				
25,000 Foot Ceilometers	3/1/2003	6/30/2008		0		DOC				
sensor	10/1/1998	6/30/2008		0		DOC				

3.3.7 NWS/ COOP Modernization

	Planned						Actual			
	Schedule		Duration		Plan	Funding	Schedule		%	Actual
Description	Start Date	End Date	Days	Hours	Cost ($K)	Agency	Start Date	End Date	Complete	Cost
Modernized CWOS	1/1/2003	1/1/2014	5096	0		DOC				
Central Servers/ NCDC QC	1/5/2004	5/1/2008	1572	0		DOC				
Comms Hardware	1/1/2003	1/1/2014	5096	0		DOC				
USDA Sensors	1.01/2004	1/1/2006	728	0		DOC				
Site Survey/ Preparation	1/1/2003	1/1/2014	5096	0		DOC				
Logistics	1/3/2003	1/1/2014	5096	0		DOC				
Field Spares/test kits / stock	1/1/2004	1/1/2014	3640	0		DOC				
Data Continuity	1/1/2005	5/1/2008	1169			DOC				
Model Development & Operation	4/1/2003	1/1/2014	3915			DOC				
NCDC-Data-Proeessing hardware / software	1/1/2005	5/1/2007	849			DOC				
						DOC				

3.3.8 NWS/ Office of Hydrology Development

	Planned						Actual			
	Schedule		Duration		Plan	Funding	Schedule		%	Actual
Description	Start Date	End Date	Days	Hours	Cost ($K)	Agency	Start Date	End Date	Complete	Cost
Advanced Hydrologic Prediction System IT Development Forecast Location Points:1522	10/1/2004	9/20/2005	364	0		DOC				
Hydro-meteorologic Automated Data System (HADS) and Development Environment IT (DEIT) HADS Data Product Timeliness: DEIT (Steady State) Uptime:96%	10/1/2004	9/30/2005	364	0		DOC				
				0		DOC				

3.3.9 NWS/ All Hazards (NAHWH) HAZCollect

	Planned						Actual			
	Schedule		Duration		Plan	Funding	Schedule		%	Actual
Description	Start Date	End Date	Days	Hours	Cost ($K)	Agency	Start Date	End Date	Complete	Cost
Requirements definition and analysis	10/10/2003	11/1/2003	21	0		DOC				
Security Implementation	10/31/2003	2/1/2004	94	0		DOC				
Engineering development	10/31/2003	2/1/2004	94	0		DOC				
Software development	10/31/2003	2/1/2004	94	0		DOC				
Integration & Test	2/3/2004	8/1/2004	180	0		DOC				
Deployment	8/6/2004	9/1/2004	27	0		DOC				
Enginnering Management	10/10/2003	9/1/2004	355	0		DOC				
Hardware	8/6/2004	9/1/2004	27	0		DOC				

3.3.10 NWS/ Weather & Climate Forecast Supercomputing

	Planned						Actual			
	Schedule		Duration		Plan	Funding	Schedule		%	Actual
Description	Start Date	End Date	Days	Hours	Cost ($K)	Agency	Start Date	End Date	Complete	Cost
Performance	10/1/2004	9/30/2005	364	0		DOC				
				0		DOC				
				0		DOC				
				0		DOC				
				0		DOC				
				0		DOC				

3.3.11 NWS/ Weather & Climate Forecast Supercomputing Backup -CIP

	Planned						Actual			
	Schedule		Duration		Plan	Funding	Schedule		%	Actual
Description	Start Date	End Date	Days	Hours	Cost ($K)	Agency	Start Date	End Date	Complete	Cost
Base Period of Performance	10/1/2004	9/30/2005	364	0		DOC				
				0		DOC				
				0		DOC				
				0		DOC				
				0		DOC				
				0		DOC				

3.3.5 Office of Oceanic and Atmospheric Research (OAR)

3.3.1 OAR/ High Performance Computing and Communications

	Planned						Actual			
	Schedule		Duration		Plan	Funding	Schedule		%	Actual
Description	Start Date	End Date	Days	Hours	Cost ($K)	Agency	Start Date	End Date	Complete	Cost
Procurement of the R&D HPCS under the HPCS Acquisition	10/1/2004	9/30/2005	364	0	$147,000.00	DOC				

3.3.2 OAR / Air Quality Acquaculture, Climate Environmental Modeling, Weather and Water, Science and Technology Infusion,Undersea Research and Exploration

	Planned						Actual			
	Schedule		Duration		Plan	Funding	Schedule		%	Actual
Description	Start Date	End Date	Days	Hours	Cost ($K)	Agency	Start Date	End Date	Complete	Cost
Business Case NITRB Presentation	10/1/2004	12/31/2004	90	0		DOC				$0.00
Business Case CITRB Presentation	1/3/2005	3/31/2005	90	0		DOC				$0.00
Acquisition Plan ARB Presentation	1/3/2005	3/31/2005	90	0		DOC				$0.00
DPA	4/1/2005	6/30/2005	90	0		DOC				$0.00
NEXGEN Solicitation	4/1/2005	6/30/2005	90	0		DOC				$0.00
NEXGEN Source Solicitation	4/1/2005	6/30/2005	90	0		DOC				$0.00
Contract Award	7/1/2005	9/30/2005	90	0	$50,000.00	DOC				$0.00

3.3.6 Office of Marine and Aviation Operations (NMAO)

None

3.3.1 NMAO

	Planned						Actual			
	Schedule		Duration		Plan	Funding	Schedule		%	Actual
Description	Start Date	End Date	Days	Hours	Cost ($K)	Agency	Start Date	End Date	Complete	Cost
	10/1/2004	9/30/2005	364	0		DOC				$0.00
	10/1/2004	9/30/2005	364	0		DOC				$0.00
	10/1/2004	9/30/2005	364	0		DOC				$0.00
	10/1/2004	9/30/2005	364	0		DOC				$0.00
	10/1/2004	9/30/2005	364	0		DOC				$0.00

3.3.7 Office of Chief Information Officer (OCIO)

3.3.1 OCIO / IT Operations

	Planned						Actual			
	Schedule		Duration		Plan	Funding	Schedule		%	Actual
Description	Start Date	End Date	Days	Hours	Cost ($K)	Agency	Start Date	End Date	Complete	Cost
Dvelop Enterprise Target Network Implementation Plan	10/1/2004	12/31/2004	90	0		DOC				$0.00
Complete Upgrade to DC Metro Area Network	1/1/2005	3/31/2005	90	0		DOC				$0.00
Complete Email Server Consolidation Plan	1/1/2005	9/30/2005	90	0		DOC				$0.00
Move NOAA Administrative Wide Area Network to the Enterprise Network	4/1/2005	6/30/2005	90							
Reduce Number of Email Servers from 72 to no more than 36	7/1/2005	9/30/2005	90							
Establish Enterprise Email Failover Capability	7/1/2005	9/30/2005	90	0		DOC				$0.00

3.3.2 OCIO / IT Security

	Planned						Actual			
	Schedule		Duration		Plan	Funding	Schedule		%	Actual
Description	Start Date	End Date	Days	Hours	Cost ($K)	Agency	Start Date	End Date	Complete	Cost
Approval of Patch Management Policy	10/1/2004	12/31/2004	90	0		DOC				$0.00
Complete developmetn of a standard process for providing acceptable C&A documentation	10/1/2004	12/31/2004	90							
Implement new IT Security program performance metrics	10/1/2004	12/31/2004	90							
Complet testing of new security planning software, NOAA Total Security Management Software (TSMC)	10/1/2004	12/31/2004	90							
Implement the FY05 NOAA-wide web-based security awareness tutorial	1/1/2005	3/31/2005	90							
Ensure all NOAA employees/contractors complete annual awareness	1/1/2005	3/31/2005	90							
Complete the review of CIRT internal procedures	1/1/2005	3/31/2005	90							
Develop a plan and schedule to complete penetration testing on all national ciritical	1/1/2005	3/31/2005	90							
Security Conference	4/1/2005	6/30/2005	90							
Complete deployment of 7,500 personal firewalls throughout enterprise	4/1/2005	6/30/2005	90							
Start Development of NOAA-Wide automated patch application	7/1/2004									
Start implementation to deploy Intrusion Detection Software at major sites	7/1/2005	9/30/2005	90							
Establish the Satellite CIRT in Seattle	7/1/2005	9/30/2005	90							
Implement and Test N-CIRT COOP hot site	7/1/2005	9/30/2005	90							
Provide FISMA Plans of Actions & Milestones for FY2003 and FY2004	7/1/2005	9/30/2005	90							
Review/ Update IT Systems Inventory	7/1/2005	9/30/2005	90							
Ensure all IT system security plans are reviewed / updated	7/1/2005	9/30/2005	90							
Mitigate all high & medium risks vulnerablities, via implementation of scanning tool	7/1/2005	9/30/2005	90							

3.3.8 Office of NOAA Finance and Administration (NFA)

3.3.8.1 NFA / NOAA Grants On-Line

	Planned						Actual			
	Schedule		Duration		Plan	Funding	Schedule		%	Actual
Description	Start Date	End Date	Days	Hours	Cost ($K)	Agency	Start Date	End Date	Complete	Cost
Development & Deployment	11/10/2003	11/5/2004	362	0	$1,536.20	DOC/NOAA	11/10/2003		85.9	$1,319.72
Hardware SubOption	2/23/2004	11/3/2004	255	0	$970.19	DOC/NOAA	6/16/2004		91.89	$891.50
Mitgration of Legacy Data	5/3/2004	11/7/2004	189	0	$596.73	DOC/NOAA	6/16/2004		31.23	$186.36
Training & Helpdesk Development Option	5/12/2004	2/6/2005	271		$505.34	DOC/NOAA	6/16/2004		37.58	$189.93
Help Desk, Operations and Maintenance Option	2/7/2005	8/2/2007	907	0	$2,552.11	DOC/NOAA				$0.00
MBDA	3/1/2002	9/30/2007	2040		$207.00	DOC/MBDA	3/1/2002		77.77	$210.00
NOAA Progam Management Office (PMO) & Technology Refresh	3/1/2002	9/30/2007	2040	0	$4,200.00	DOC/NOAA	3/1/2002		44	$1,376.76

3.3.8.2 NFA / Financial Management IT Operations

	Planned						Actual			
	Schedule		Duration		Plan	Funding	Schedule		%	Actual
Description	Start Date	End Date	Days	Hours	Cost ($K)	Agency	Start Date	End Date	Complete	Cost
Initiate Facility Support Services Contract Year 1	5/4/2004	5/2/2005	364	0	$5,400.00	DOC	5/4/2004		45	$2,450.00
Facility Support Services Contract Year 2	5/3/2004	5/3/2006	366	0	$5,400.00	DOC				$0.00

3.3.8.3 NFA / NOAA Non-Core CAMS Financial Management Systems

	Planned						Actual			
	Schedule		Duration		Plan	Funding	Schedule		%	Actual
Description	Start Date	End Date	Days	Hours	Cost ($K)	Agency	Start Date	End Date	Complete	Cost
Begin the implementation of the new E-Travel system across select NOAA Line Offices.	10/1/2004	9/30/2005	364	0	$1,029.00	DOC				$0.00
Deployment of financial system enhancements, upgrades to current DOC technology, and completion of cross-	10/1/2004	9/30/2005	364	0	$0.00	DOC				$0.00

3.4 Provide a brief summary of systems that deviate from cost, schedule, or performances goals by a factor of 10% or more. Describe corrective measures planned for each of these systems.

NOAA has two systems that in FY 2004 (as of August 2004) that deviated from the cost, schedule, or performances goals by a factor of 10% or more.

1. NWS / NWR All Hazard Weather Network Cost and Schedule Explanation and Corrective Action

The Schedule Variance Percentage (SV%) was calculated to be -83.7% (as of Aug. 2004) Baseline schedule was based on receiving appropriation on October 1, 2004. Funding not provided to program manager until April 2004 which impacted the original schedule by 8 months. Initial development schedule was extended to incorporate a better design dependent on AWIPS build 6 (to be delivered 1st quarter pf FY 2006). Completion date is now end of FY 2005. All funds have been obligated and project is meeting revised schedule milestones.

2. NWS/NWSTG System (consolidated Legacy, Replacement and CIP) Cost and Schedule Explanation and Corrective Action

The Schedule Variance Percentage (SV%) was calculated to be -14.9% (as of Aug 2004). The values used to calculate the SV% are BCWP=2,100,000 and BCWS = 2,470,500. This variance reflects the fact that the work scheduled has a level of uncertainty because it entails integrating COTS software with custom applications. The task durations are difficult to calculate because each task may become more or less complex than projected depending on the amount of code to be converted and supporting documentation available. The Integrated Project Office (IPO) anticipates that methodologies developed for some applications will be applicable to subsequent applications and, therefore, less time will be required to integrate subsequent applications. IPO is also investigating the use of 3rd party contractor staffing to assist in routine code conversion tasks to accelerate the project schedule. In summary, IPO is confident that the project will be completed on schedule.

The Cost Variance Percentage (CV%) was calculated to be -49% (as of Aug. 2004). The values used to calculate the CV% are BCWP= 2,100,000 and ACWP= 3,132,575. This variance is reflective of the cost overrun incurred when a new contract was awarded on September 14, 2004 to complete the Message Switching Software System (MS^3) development task on which the EV calculations are based but is not reflective of the entire DME portion of the NWSTG Systems Project (**projected $3.5M overrun on a $40M budget = 8.75% cost variance**)

The NWS Integrated Project Office (IPO) has taken the following steps to mitigate risk to the current NWSTG program:

To mitigate the budget overrun anticipated to occur in September 2004 when a new contract is awarded to complete the MS^3 software integration task, the IPO has acquired the services of a contractor (Prism Inc.) to supplement NWS and IBM personnel in converting sixty (60) legacy C programs into useable C sub-routines for parse bulletins and build collectives. Prism Inc. has gained extensive experience with weather message coding through a contract with the NWS ASOS Program. Additionally Prism, will conduct unit, integration and performance testing as well as Independent Verification and Validation (IV&V). The IV&V will provide an independent verification for all unit and integration testing of the MS^3 system. The addition of Prism will reduce the hours required of IBM and the Government at a significantly reduced hourly labor rate. Additionally Prism will replace IBM as the primary Testing company further reducing the overall budget overrun. As a result, the projected budget overrun of $3.5 million ($2.5M for MS3 and $1M for testing) for the entire DME portion of the NWSTG Systems Investment over the project performance period is estimated to be reduced by 33% to $2.4 million.

To mitigate the schedule variance the IPO is using a 3 prong approach. First the Prism contractor will supplement the Government and IBM on the remainder of the program code conversion providing approximately 25% more staffing expertise to provide parallel development and therefore compress the schedule. Secondly, the IPO has decided to reduce the message flow development remaining by IBM by 33%. The message flow in question can be implemented in post operational updates by the government with no impact to system performance or initial system requirements. This action will also compress the schedule. Thirdly, further schedule compression can be expected because other tasks in the MS^3 project plan will be worked on in parallel due to the required reduction in government staff on the legacy code conversions. The results of these risk mitigation action would lessen schedule impact on non/partial completion of a task under the MS^3 Detailed Project Plan, reduce the number of hours and dollars of the project thru Q&A, provide early detection and verification of the system, and establish a Capability Maturity Model (CMM) base process. The IPO estimates that the mitigation actions taken have no calculated risks. Prism as a new subcontractor would have some risk but their extensive experience on a similar program in nature and magnitude from a program code conversion perspective and their institutional knowledge of hydrometeorological data completely mitigates this issue. The projected schedule slip of approximately 23 months can be reduced a minimum of 2 months with an additional 3 months possible with the parallel development efforts. The additional 3 months savings will be fully understood after the completion of the parallel development effort scheduled for completion in August 05. This effort will reduce the schedule slip by approximately 25%.

Since this investment consolidates the NWSTG CIP and NWSTG Legacy Replacement projects, current baselines reflect the individual projects only. IPO has proposed and the Agency Head has concurred that the NWSTG Systems Program Schedule shall be rebaselined to start October 1, 2003 and complete on October 30, 2006.

3.5 Describe management IT initiatives and associated performance measures planned for FY 2005. Examples are IT studies, new IT management processes, new IT security measures, establishment of software or system standards, etc.

3.5.0 Introduction

Management IT initiatives and associated performance measures planned for FY 2005 are described in the paragraphs below.

3.5.1 National Environmental Satellite, Data, and Information Service (NESDIS)

3.5.1.1 Headquarters

Planned activities for FY 2005 include:

- Continued technology refresh for installed PC base, with the goal of replacing about 1/3 of the PCs each year.

- Assessment and tracking of contractor security clearances for IT-related positions.

- Enhancements to the business process for IT Certification and Accreditation and the regular updating of IT Security Plans.

- Deployment NESDIS-wide of automated patch management software tools to enable more efficient and effective patch management of IT systems.

3.5.1.2 ORA

- Implement Microsoft System Management Server (SMS)

  We are implementing Microsoft's System Management Server (SMS) in order to give us greater, centralized control over our Windows domain. SMS should allow us to remotely update all of our Windows computers with patches and software upgrades in one fell swoop, rather than having to visit the computers individually as we do now for some software upgrades. This is especially important for security upgrades which must be applied quickly. SMS should also give us better inventory control.

- Migration of Linux domain to Red Hat Enterprise

  Through a NOAA agreement with Red Hat, we have purchased Red Hat Enterprise Linux licenses for all of our Linux resources, which will be migrated to this version of Red Hat from our current version 9. We are doing this because the free Red Hat 9, and its follow-on versions, are not adequately supported or stable, while Red Hat Enterprise is stable and supported via updates which can be automatically searched, downloaded, and applied by our

Red Hat computers. This increases their security and manageability, thus saving system administration time, and therefore, money.

- Implement Mozilla email client

  We are replacing our Netscape email client software with the Mozilla email client, along with the Mozilla web browser and web page editor. We are not comfortable staying with Netscape, since it is now owned by AOL. And Microsoft's Internet Explorer has fundamental deficiencies and is a target of hackers because of that, and its widespread use. We feel that the open-source Mozilla suite is the most secure and best supported of these choices, and has a good array of features and capabilities. It is free.

- Implement PatchLink

  NESDIS has purchased PatchLink software for all of its offices. We will implement it in ORA in order to enhance our patch management process.

- Implement a new email server with the latest messaging server software

  In order to replace our current, aging Red Hat Linux - based email server and software, we are purchasing, and will implement, a new Sun Solaris email server, running the latest NOAA-mandated messaging server software, and utilizing a 1 TB RAID, and tape backup capability.

3.5.1.3 NCDDC

Brief Summary of FY 2005 Planned Activities

Within the next year, NCDDC expects to continue to add metadata records to its virtual catalog and to include additional gateways to data held at various locations. These data access gateways will support the Ecosystem Observing Program which is one of the nine programs within the Ecosystem Mission Goal. Specific center projects include Harmful Algal Blooms Observing System (HABSOS), Coastal Ecosystems, Coastal Risk Atlas (CRA), Ocean Exploration (OE) and the Coastal Ocean Observing System.

Specific IT plans for FY 2005 include:

- Metadata tool improvements including data dictionary support
- Deployment of the data access components of the system architecture to allow users to merge disparate data sets. Additional data sets will be added to this merge capability in FY 2005, along with additional supported formats and conversions.
- Additional upgrades to the search and discovery capabilities to be incorporated include a more user friendly interface
- NCDDC continues evaluating evolutionary solutions to information systems and processes to match changing user and performance requirements such as the semantic web and ontologies to provide users with a metadata and data discovery system that is

both easy to use and will provide the information necessary to maintain the integrity of the data associated with the metadata. This is an on-going effort with the focus on implementing a system within the NCDDC architecture.

- Implement of the upgraded NEMS mail server. This task was scheduled for FY 2004, but was delayed due to the delay in the deployment of the directory server
- Complete the migration of Linux OS to a long-term supported level
- Complete the migration of the GIS public display system to a Linux OS
- Additional improvements to the monitoring capabilities and auditing techniques to reduce system administration resources required for these efforts
- Complete the implementation and deployment of an IDS system for public access platforms
- Deploy additional NOAA mandated security and auditing software tools
- The NCDDC Business Continuity Plan will be reviewed and finalized and a plan for the implementation of the NCDDC mirror site will be developed.
- A Contingency Test Plan will be developed and implemented with a minimum of one test each year. These tests will be documented and included in the Certification and Accreditation process.

3.5.1.4 IPO

Program Office

- Internet Protocol version 6 (IPv6) research
- Intrusion Prevention System
- Centralized policy management system
- Automated configuration change system
- IT user awareness and best practices

3.5.2 National Marine Fisheries Service (NMFS)

NOAA Fisheries carries out IT management in accordance with the strategies described in Section 1. In FY2005, NMFS plan to hold regular NIMB face-to-face meeting and videoconferences to review IT investments, develop national information management policy, strategy, and guidelines, and oversee implementation of investments. RITCs plan to hold biweekly voice conferences. The HQ OITCs will meet monthly. The CIO and NIMB will actively participate in the FY07 budget development process to ensure that initiatives adequately provide for IT resources. The agency's security process will be substantially improved in FY 2005 by:

- Adopting an agency-wide patch management policy
- Promulgating a formal process for the reviewing of WAN and HQ's LAN audit logs by system administrators;
- Continuing training Fisheries IT Security Officers in reviewing best practices,
- Developing a plan and schedule for the review and revisions of all assessments and plans,
- Conducting data sensitivity analysis and define enterprise sensitivity levels based on the nature and usage of data

- Conducting risk assessments whenever a major system change occurs.
- Continuing to update system inventory information for the Federal Information Security Management Act.
- Conducting quarterly vulnerability testing.

Other IT management initiatives include:

- Establishing HQ and regional algorithms for charging back IT fees to the programs and developing a database governance process,
- Developing enterprise-wide templates for Internet web sites
- Establishing a enterprise-wide web content management team to promote the disciplines of managing the content on the pages.
- Reducing dependency and cost of proprietary database management systems and move toward open architectures,
- Establishing an agency-wide Patch Management Policy,
- Governing the addition and modification of WAN components,
- Further developing environmental data management plans through FIS, and
- Conducting training for MS Word.

3.5.3 NOAA Ocean Service (NOS)

IT Security Improvements

At the end of FY04, MB contracted Astor to do a review and redesign of the SSMC backbone and LAN. The contract included a reallocation of IP addresses in a more logical, manageable plan. The first draft of the redesign has been presented to the IMD staff. When the final plan is presented, IMD will determine how to implement it in a manner that causes the least disturbance to NOS users.

As part of the network redesign and to comply with DOC IT Security Program Policy that mandates web servers implement host level intrusion detection systems, NOS is investigating adding Intrusion Detection and Intrusion Prevention systems (IDS/IPS) to the NOS network.

Many past IT security incidents have been caused by unpatched, infected laptops rejoining the network after a period of time. New methods employed in MB should help keep most systems updated with the most current patches, but computers that are off the network on travel or in reserve, are often left unpatched and vulnerable to the latest virus or unauthorized access attack. As part of the network redesign, MB is investigating implementing a separate quarantine virtual LAN (VLAN). Computers that are not patched to the current level will be directed to this VLAN where the latest patches and anti-virus signature files will be applied. After the machine is brought up-to-date it will be allowed on to the NOS LAN. Because this is a complex architecture, the redesign of the network might have to be completely implemented before this can be put into use. Less complex, and likely less effective, methods of dealing with this problem will be put in place in the meantime.

The System Security Plan Certification and Accreditation Process brought to light the need for assistance in writing security documentation. In FY05, NOS plans to add a technical writer to the IT Security Program staff to assist the program offices to write meaningful, accurate and useful security and contingency plans and other security documentation.

Configuration Management Process Improvements

The NOS Management and Budget (MB) Office Information Management Division (IMD), NOS CIO's office, is piloting an implementation of LANDesk, a configuration management system. In FY05, IMD will complete the roll-out to MB and start using some of the advanced features including a patch management system, software deployment, inventory system and standard desktop/laptop configurations.

IMD expects that LANDesk will improve IT management in several ways. LANDesk provides a system inventory with detailed information about each computer found on the network. This information can be used to age machines for technology refreshment planning, determine driver levels for upgrade planning and software inventory. The software inventory can be compared to a database of licenses to determine if additional licenses of applications are required thus assisting in software license management.

LANDesk can also be used to roll-out standard desktop configurations. Each desktop can be built similarly to cut down on the number of different configurations resulting in better help desk problem resolution. LANDesk can also monitor changes in configuration, notifying the administrator when something has changed. The administrator can monitor the machine and if necessary alert the IT Security Program of a possible security incident.

The NOS CIO's office expects that the patch management capability will be the most valuable. Patches can be applied overnight when the users will not be affected and can be applied as soon as they are available and tested.

LANDesk will be piloted for a period of time in the MB offices. Once the IMD staff is confident in the stability and usability of the software, it will be made available to other NOS offices that would like to benefit from its use.

Active Directory

NOS will finish the migration to a single Active Directory domain in FY05. Once fully implemented, the AD will have a number of benefits for NOS:

- A single network directory for NOS will enhance security. Network configurations are replicated across the network. Under an NOS implementation, copies of the configuration will be stored on servers in SSMC4, SSMC3, CSC, Ft. Johnson, Beaufort, and Seattle. Backups can be performed over the network on a regular basis so that critical files will be saved off site. Access to critical resources will be available even if a site is closed.

- A single network directory for all of NOS will reduce the amount of account maintenance required by system administrators freeing them to perform more programmatic functions.
- A single network directory for all of NOS would allow offices to collaborate and communicate by sharing network resources (files, RAID backup systems, large format printers, etc.). NOS personnel on travel to field offices can have easy access to their office automation resources.
- Maintenance of field offices will be easier. Active Directory offers a method for updating software remotely, avoiding the cost of travel to some of the satellite offices for IT maintenance personnel.
- Document management and version control will be more efficient. Rather than attaching copies of documents to email messages, NOS personnel can collaborate on a single file stored on the network avoiding multiple copies of the same document and confusion as to which is the most current version.

Software Configuration Management

CO-OPS produces and disseminates critical real-time products to a wide variety of users in the maritime industry. CO-OPS also produces the nation's Tide and Current Tables, required by all ships carrying 1600 or more gross tons. NOAA assumes liability for the performance of their products. NOAA has the responsibility to reduce this risk and to employ their "best effort" in insuring that high quality and accurate products are sent to the public. One of the most important ways CO-OPS and all NOAA organizations can demonstrate best effort is to implement software policies and procedures that could be used in the event that litigation is necessary. Software Configuration Management is an integral part of most software engineering and management processes and forms a foundation for any software management environment. Configuration management and the entire software process are detailed in the Carnegie Melon University, Software Engineering Institute, Capability Maturity Model (CMM) (URL: http://www.sei.cmu.edu/cmm/cmms/cmms.html) which would serve as the model for a software management initiative. In addition to a requirement to address liability issues, NOAA line offices need to adhere to the National Oceanic and Atmospheric Administration Policy Directive of September 4, 2002, Information Technology, Management of Environmental and Geospatial Data and Information. Under this policy:

> "Each NOAA Program Manager shall be responsible to: Be alert to and mitigate the threats caused by change of instruments, platforms, locations, and observation or data processing methods. Comply with Section 515 of Public Law 106-554 to ensure and maximize the quality of information disseminated by NOAA. Quality of information includes objectivity (accuracy and absence of bias), utility (usefulness) and integrity (protection from unauthorized disclosure of changes). Scientific procedures shall be followed to ensure the quality control and calibration of the data."

To adhere to the software process model within the Capability Maturity Model (CMM-SW) and to comply with the NOAA Policy Directives, a software management environment must be created. Standards would be a primary tool in creating such an environment. Successful

implementation of a software management environment would include requirements management, project planning, project tracking/oversight, quality assurance, configuration management, organizational process flow, training, integrated software management, software project management, software project engineering, intragroup coordination, peer reviews, quantitative process management, defect prevention, incorporation of technology changes, post mortem reviews, and continuous process improvement. A robust and integrated software management process would promote simplified documentation, provide software process training, and the use of simple metrics for measurement.

CO-OPS is trying to create such a software development environment that is conducive to realizing creative ideas while insuring that all software development is done within a defined process.

CO-OPS Information Architecture Redesign

Based on an assessment of the CO-OPS current information architecture produced by a consulting contract with Northrup Grumman in FY2003, a decision was made to make changes to the current architecture. The assessment recommended that the independent NWLON data flow be merged with the independent PORTS data flow in order to better accommodate business user requirements that span both data flows. In order to complete such a task, CO-OPS has been investigating and analyzing the current environment in order to define the scope of the task.

As the requirements analysis and the development of proposed solutions have progressed, it has become apparent that the level of effort required for a complete re-engineering of CO-OPS Information Architecture exceeds available resources. At this time, an evaluation is underway to determine if there are portions of the re-engineering that can be accomplished within cost and schedule constraints that would address the most serious limitations of the current architecture. The portions under consideration would directly support the efforts to enhance CORMS AI and to design a current meter data processing and analysis system. The re-engineering effort will be re-focused to generate revisions to the metadata structures and applications that can be implemented in parallel with these efforts.

3.5.4 National Weather Service (NWS)

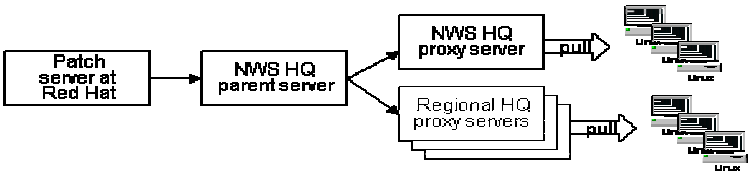
3.5.4.1 Develop consistent network and management practices for the wide area network

NWS has a long-term plan to implement a consistent wide-area network across the whole organization to improve network security. NWSNet is the NWS enterprise network (see figure below) that currently connects all locations within the six NWS regions and NWS HQ. NWSNet uses private, point-to-point, frame relay circuits which are very secure. But the network is based on a “hub and spoke” topology and has many single points of failure.

NWS is currently upgrading the NWSNet backbone network to Multi Protocol Label Switched (MPLS) Virtual Private Network (VPN) with plans to eventually upgrade all NWSNet circuits to this service. Connections to AWIPS, all NCEP centers, the NDBC, the National Reconditioning Center, the ROC, and the National Training Center are in the NWSNet long range plans.

3.5.4.2 Enterprise agreement in OS selection and Linux patch management

All the regions and their field offices will have a standard version of Red Hat Linux for their servers and NWS has purchased a mechanism (see figure below; to be delivered and implemented) for keeping HQ and regional servers up-to-date with security patches.



The NWS HQ parent server will pull patches from the patch server at Red Hat. The proxy servers in HQ and the regions will in turn pull patches from the HQ parent server. System administrators will then pull these patches to the Linux servers. The advantages of this arrangement are

- Better control of the versions of OS upgrades and patches that are applied NWS-wide
- Patches or operating system upgrades need only be transmitted once from HQ to the regions, reducing bandwidth usage during operations

3.5.4.3 Security monitoring

NWS has purchased a real-time security monitoring system, which will schedule scans, perform intrusion event analysis and asset discovery. The system performs both active and passive network security monitor. It learns about servers, services, and vulnerabilities by performing signature and protocol analysis of the observed network sessions. Regional IT Security Officers will have accounts on this system so that they can manage their own systems.

3.5.4.4 Web farm load balancing

Manual load balancing was first used in the 2004 season during Frances. The current load balancing system is limited in configuration and difficult to change once it was set up. This became a key concern during Ivan when Central Region requested to have their share of the radar traffic reduced because of active weather near Chicago and the need to ensure adequate service for local users. New hardware has been ordered and should be in operation by next hurricane season to effect automated load balancing.

3.5.5 Office of Oceanic and Atmospheric Research (OAR)

OAR Management IT Initiatives and FY2005 Performance Measures are shown in the tables below.

Activity	Performance Measurement	Program	FY2004 Actual	FY2005 Goal
Business Process Re-engineering	***NOAA Research Intranet:*** Implement COTS Content Management System (CMS) solution in NOAA Research Headquarters by FY2005	IT Services	0%	50%
Consolidation	Establish the Boulder IT Services Consolidation Implementation Plan by FY2005	IT Services	0%	100%
IT Training	Implement e-Learn @ noaa.gov across NOAA research by FY2005	Workforce Management	TBD	50%
Teleworking	Deploy MS EA Home Use desktop applications (MS Office Pro 2003) to eligible desktop users and eligible teleworkers within NOAA Research by FY2005	Workforce Management	ARL - purchases made; scheduled deployment 1st qtr FY2005	50%
IT Security	Hire FTE NOAA Research alternate ITSO by 1st Qtr. FY2005	IT Services	2 FTEs @ 35% each	1 FTE @ 100%; 1 FTE @ 35%

3.5.6 Office of Marine and Aviation Operations (NMAO)

- NMAO plans to solve the shipboard on-line e-Learning at sea training issues.
- Complete the upgrading all servers to Windows 2003 servers and implementation of Microsoft Active Directory for greater reliability, scalability and policy promulgation/enforcement throughout NMAO.
- Plan to build on AOC's wireless experience to assess and install secure wireless networks on other NMAO facilities on a site-by-site basis.
- Improve secure storage to enhance data storage and data backup requirements. Investigate current technology to satisfy off-site backup/recovery security requirements without magnetic tape transport.

- Complete design and develop tasks for the next version of the NOAA Scientific Computer System (NSCS) to administer and manage data collection within the NOAA Fleet.

3.5.7 Office of Chief Information Officer (OCIO)

- CIO and NFA CIO management will determine areas of possible consolidation and efficiencies between two staff's in anticipation of a future formal reorganization per the NFA reorganization study.

3.5.8 Office of NOAA Finance and Administration (NFA)

- A management review of the LMI ITC Assessment will be conducted to determine actions to improve the management and operations of the ITC.

- The third year of the Microsoft Enterprise agreement will be implemented.

Appendix A
FY 2004 NOAA Enterprise IT Architecture Capability Maturity Scorecard[1]
Revision 1

Evaluation	FY03	FY04	Comments
1. Architecture Process: Is there an established IT Architecture process?	3.06	3.1	
Level 0: Architecture process not established. 1: Ad-hoc and localized architecture process defined. 2: Basic IT Architecture Process program is documented based on OMB Circular A-130 and Department of Commerce IT Architecture Guidance. The architecture process has developed clear roles and responsibilities. 3: The architecture is well defined and communicated to IT staff and business management with Operating Unit IT responsibilities. The process is largely followed. 4: IT Architecture process is part of the culture, with strong linkages to other core IT and business processes. Quality metrics associated with the architecture process are captured. These metrics include the cycle times necessary to generate IT Architecture revisions, technical environment stability, and time to implement a new or upgraded application or system. 5: Concerted efforts to optimize and continuously improve architecture process.			The NOAA Enterprise IT Architecture (EITA) is federated architecture and is well defined and communicated to IT staff and management with Line Office IT responsibilities. NOAA has established an IT Review Board (ITRB), chaired by the CIO that manages architectural process throughout NOAA and sets policy and standards for IT. In addition, NOAA has chartered an Enterprise IT Architecture Committee (EITAC) that reports to NOAA's CIO Council. EITAC serves as a resource to help address, research, define, develop, and promote the implementation and use of Enterprise IT Architecture(s) as a strategic information management and decision-making practice throughout NOAA
2. Architecture Development: To what extent is the development and progression of the Operating Unit's IT Architecture documented?	2.86	3.05	
Level 0: No IT Architecture documentation to speak of. 1: IT Architecture processes, documentation and standards are established by a variety of ad hoc means, and are localized or informal. 2: IT Vision, Principles, Business Linkages, Baseline, and Target Architecture are documented. Architecture standards exist, but not necessarily linked to Target Architecture. Technical Reference Model and Standards Profile framework established. 3: Gap Analysis and Migration Plan are completed. Architecture standards linked to Business Drivers via Best Practices, IT Principles and Target Architecture. Fully developed Technical Reference Model and Standards Profile. 4: IT Architecture documentation is updated on a regular cycle to reflect the			The NOAA architecture vision, mission and principles are stated in its framework document. The NOAA EITA Framework links to the NOAA strategic goals, the Capital IT Investment process, and incorporates the Federal Enterprise Architecture (Business, Service Component, Performance and Technical) Reference Models.

[1]Meta Group, AArchitecture Maturity Audit: Part 2", Meta Practice, Volume 4, Number 5, May, 2000.

Evaluation	FY03	FY04	Comments
updated IT Architecture. Business, Information, Application and Technical Architectures defined by appropriate de-jure and de-facto standards. 5: Defined and documented IT Architecture metrics are used to drive continuous process improvements. A standards and waivers process are used to improve architecture development process improvements.			
3. **Business Linkage**: To what extent is the IT Architecture linked to business strategies or drivers?	2.88	3.1	
Level 0: No linkage to business strategies or business drivers. 1: Minimal, or implicit linkage to business strategies or business drivers. 2: Explicit linkage to business strategies or drivers. IT Architecture is integrated with capital planning and investment control. Explicit linkage to business drivers and information requirements. Capital planning and investment control are adjusted based on the feedback received and lessons learned from updated IT Architecture. Periodic re-examination of business drivers. Architecture metrics are used to optimize and drive business linkages. Business involved in the continuous process improvements of IT Architecture.			The NOAA ITRB was established to ensure that all IT investments are compliant with the Enterprise IT Architecture, and that they link to the business drivers and support e-Government initiatives. The FY04 annual update to all line office architectures included an identification of the FEA BRM lines of business.
4. Senior Management Involvement: To what extent are the senior managers of the Operating Unit involved in the establishment and ongoing development of an IT Architecture?	2.86	2.96	
Level 0: No management team awareness or involvement in the architecture process. Limited management team awareness or involvement in the architecture process. Occasional/selective management team involvement in the architecture process with various degrees of commitment. Senior-management team aware of and supportive of the enterprise-wide architecture process. Management actively supports architectural standards. Senior-management team directly involved in the architecture review process. Senior-management team directly involved in the optimization of the enterprise-wide architecture development process and governance.			Senior management is supportive of the Enterprise IT Architecture effort within NOAA. By establishing the NOAA ITRB and the CIO Council, NOAA's executive team recognizes that IT is an important component of NOAA's mission and that it needs to be managed at a high level.
5A. Operating Unit Participation: To what extent is the IT Architecture process accepted by the Operating Unit?	2.64	2.86	
Level 0: No Operating Unit acceptance. 1: Limited Operating Unit acceptance of the IT Architecture process. 2: IT Architecture responsibilities are assigned and work is underway. There is a clear understanding of where the organization's architecture is at			Each NOAA line office participates in the IT Architecture process and is represented on the NOAA Enterprise IT Architecture Committee. All line offices actively participate in all EITA tasks as assigned by the NOAA CIO Council.

Evaluation	FY03	FY04	Comments
present time. 3: Largest elements of Operating Unit show acceptance of the IT Architecture process. 4: The entire Operating Unit accepts and actively participates in the IT Architecture process. 5: Feedback on architecture process from all Operating Unit elements is used to drive architecture process improvements.			
5B. Operating Unit Participation: To what extent is the IT Architecture process an effort representative of the whole organization?	2.92	3.16	
Level 0: No enterprise-wide effort. 1: Localized individual support of IT Architecture process. 2: Limited organizational involvement. 3: Majority of organization is involved. 4: Cross-enterprise architecture involvement. Entire organization uses feedback on the architecture process to improve its process.			NOAA has several cross-cutting architecture segments. All Line Offices have input into the segment architecture process. Cross-cutting architectures in NOAA include the NOAA Enterprise Network, IT Security, NOAA Observing Systems, High Performance Computing and Administrative Systems..
6A. Architecture Communication: To what extent are the decisions of IT Architecture practice documented?	2.73	2.89	
Level 0: No documentation is available. 1: Little communication exists about the IT Architecture process and possible process improvements. The DoC IT Architecture Web Page contains the latest version of the Operating Unit's IT Architecture documentation. 2: The Operating Unit Architecture Home Page, which can be accessed from the DoC IT Architecture Web Page is updated periodically and is used to document architecture deliverables. Communication about architecture process via meetings, etc., may happen, but sporadic. Few tools (e.g., office suite, graphics packages) are used to document architecture. 3: Architecture documents updated and expanded regularly on DoC IT Architecture Web Page. Periodic presentations to IT staff on Architecture process, content. Tools are used to support maintaining architecture documentation. 4: Architecture documents are updated regularly, and frequently reviewed for latest architecture developments/standards. Regular presentations to IT staff on architecture content. Architecture documents are used by every decision maker in the organization for every IT-related business decision.			All Line Offices update their EA models and corresponding documents annually or more often if necessary. Architecture documents are updated and uploaded regularly to the DoC Enterprise IT Architecture Web Page. Periodic presentations to NOAA/DoC IT staff on Architecture process and content. All of NOAA's Line Offices are using Metis to model their Enterprise Architectures.

Evaluation	FY03	FY04	Comments
6B. Architecture Communication: To what extent is the content of the IT Architecture made available electronically to everybody in the organization?	3.35	3.73	
Level 0: No electronic means of communication. 1: Limited electronic means of communication. 2: Occasional updates published via e-mail. 3: More widespread electronic publication of IT Architectures. 4: An online Web site is used to make available communications across the organization. 5: All Operating Units are actively involved through electronic updates.			All architecture, standards, and policy documents are available on the DoC and NOAA EITA web sites. All line offices also have their respective documents available on internal intranets. The Metis modeling software tool (browser) is available for download from the NOAA EITA website.
6C. Architecture Communication: To what extent is architecture education done across the business on the IT Architecture process and contents?	2.75	2.91	
Level 0: No education. 1: Limited education. 2: Architecture education done for IT staff. 3: More widespread education done across various Operating Units. 4: Most Operating Units participate actively in IT Architecture education. Ongoing education on the value of an IT Architecture across Operating Units. 5: All Operating Units participate in staff education and understanding of IT Architecture. Various education/communication tools utilized across all Operating Units.			NOAA established an IT Architecture Working Group in 2000. This group has been trained in the basics of IT Architecture. The architecture process is dynamic and many changes are occurring. The line offices require training in the FEA reference models, automated tracking and Metis. Education is an on-going process.
7. **IT Security**: To what extent is IT Security integrated with the IT Architecture?	3.05	3.17	
Level 0: No IT Security considerations in IT Architecture. 1: IT Security considerations are ad hoc and localized. 2: IT Security Architecture has defined clear roles and responsibilities. 3: IT Security Architecture is fully developed and is integrated with IT Architecture. 4: Performance metrics associated with IT Security Architecture are captured. 5: Feedback from IT Security Architecture metrics are used to drive architecture process improvements.			**NOAA incorporates IT security into all IT Architecture processes. NOAA has a fully defined IT Security Architecture, which is currently being modeling into Metis.** **NOAA established an NOAA IT Security Committee (ITSC). The ITSC completed its update of both the NOAA IT Architecture IT Security Plan and the NOAA IT Architecture IT Security Technical Reference Model and Standards Profile 4th qtr FY2003. The Plan includes the current baseline and target architecture requirements for NOAA's security domains, cross-walked to security guiding principles and objectives. The gap analysis study provides the basis for implementing a migration plan for achieving target goals.**

Evaluation	FY03	FY04	Comments
			Beginning in December 2003, DoC required all operating units to provide a periodic update on their performance against a set of IT security measures established by OMB under FISMA. Metrics that are established and reported quarterly are the number and percentage of systems assessed for risk and assigned a level of risk, that have an up-to-date IT security plan, certified and accredited, with security control costs integrated into the life cycle of the system, for which security controls have been tested and evaluated in the last year, with a contingency plan, for which contingency plans have been tested, and employees who have received security awareness training. **As part of the process conducted in FY2003 for acquiring a NOAA-wide automated scanning and vulnerability software tool, the IT Security Scanning Working Group, a sub-group of the ITSC, was formed to establish standards for scanning NOAA systems. The first scanning reporting was completed in December, 2003 (subsequent reporting is performed quarterly using updated input files). Vulnerabilities found in scans are included in Line Office level corrective action.**
8. Governance: To what extent is an IT Architecture governance (governing body) process in place and accepted by senior management ?	3.14	3.15	
Level 0: None. Everyone does their own thing. 1: No explicit governance of architectural standards. Limited agreement with governance structure. 2: Governance of a few architectural standards (e. g. desktops, database management systems) and some adherence to existing Standards Profile. Various degrees of understanding of the proposed governance structure. 3: Explicit documented governance of majority IT investments. Formal processes for managing variances. Senior management team is supportive of enterprise-wide architecture standards and subsequent required compliance. 4: Explicit governance of all IT investments. Formal processes for managing variances feed back into IT Architecture. Senior-management team takes ownership of enterprise-wide architecture standards and governance			NOAA has developed guidelines for managing IT investments. The guidelines include a governance model, the architecture process, and a long-term planning model. Senior managers are in support of the architecture process and comply with the governance model. Further documentation is required with a formalized process to manage changes in standards and policy.

Evaluation	FY03	FY04	Comments
structure. 5: Explicit governance of all IT investments. A standards and waivers process is used to improve governance process improvements.			
9. IT Investment and Acquisition Strategy: To what extent does the Enterprise Architecture influence the IT Investment and Acquisition Strategy?	3.13	3.57	
Level 0: No regard for Enterprise Architecture in formulation of strategic IT acquisition strategy by Operating Unit. 1: Little or no involvement of strategic planning and acquisition personnel in enterprise architecture process. Little or no adherence to existing Standards Profile. 2: Little or no formal governance of IT Investment and Acquisition Strategy. Operating Unit demonstrates some adherence to existing Standards Profile. IT acquisition strategy exists and includes compliance measures to IT Enterprise Architecture. Operating Unit adheres to existing Standards Profile. RFQ, RFI and RFP content is influenced by the IT Architecture. Acquisition personnel are actively involved in IT Architecture governance structure. Cost-benefits are considered in identifying projects. All planned IT acquisitions and acquisitions are guided and governed by the IT Architecture. RFI and RFP evaluations are integrated into the IT Architecture planning activities. Operating Unit has no unplanned IT investment or acquisition activity.			NOAA established an Information Technology Review Board (NITRB) to specify policy and responsibilities for NOAA's IT capital planning and investment control process. The NITRB ensures that proposed investments contribute to NOAA's strategic vision and mission, employ sound IT investment methodologies, comply with NOAA systems architectures, and provide the highest return on the investment with acceptable project risk. Establishment of the NITRB supports IT management improvement goals of the Clinger-Cohen Act of 1996 (CCA), the Paperwork Reduction Act of 1995 (PRA), and related implementing regulations and guidance.