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# Information Technology and Communication Services Annual Accountability Report 2011

Monterey, California. Naval Postgraduate School

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NAVAL  
POSTGRADUATE  
SCHOOL

INFORMATION TECHNOLOGY AND  
COMMUNICATIONS SERVICES

**ANNUAL  
ACCOUNTABILITY  
REPORT 2011**

# TABLE OF CONTENTS

MESSAGE FROM THE VICE PRESIDENT OF INFORMATION RESOURCES AND CHIEF INFORMATION OFFICER .....	4
ITACS STRATEGIC PLAN: FIVE CATEGORIES OF RECOMMENDATIONS .....	6
INFORMATION TECHNOLOGY AND COMMUNICATION SERVICES .....	7
ACADEMIC APPLICATIONS AND SERVICES .....	8
HIGH PERFORMANCE COMPUTING (HPC).....	11
CLASSIFIED COMPUTING PROGRAM .....	13
CYBERINFRASTRUCTURE .....	14
CYBERSECURITY AND PRIVACY .....	16
ADMINISTRATIVE APPLICATIONS AND SERVICES .....	24
RESOURCE MANAGEMENT .....	28
COMMUNICATIONS, PARTNERSHIPS AND OUTREACH .....	30
ITACS FIVE-YEAR STRATEGIC GOALS AND FY12 INITIATIVES .....	32

## NAVAL POSTGRADUATE SCHOOL

**MISSION** The Naval Postgraduate School Mission is to provide relevant and unique advanced education and research programs in order to increase the combat effectiveness of the U.S. and Allied armed forces, and to enhance the security of the United States.

**VISION** NPS is dedicated to providing relevant, quality graduate education and research, enabling all Navy and Marine Corps officers easy access to the education, information and support services they need, anytime, anywhere. This approach begins with the Naval Services and extends to the other U.S. Armed Services, other nations, and to the defense community at large. The NPS Vision is to be the world's leader in naval and defense-related graduate education, and to prepare the intellectual leaders of tomorrow's defense forces.

# MESSAGE FROM THE VICE PRESIDENT OF INFORMATION RESOURCES AND CHIEF INFORMATION OFFICER



Dr. Christine M. Haska is the Vice President of Information Resources and Chief Information Officer of the Naval Postgraduate School. Since 2001, Dr. Haska's responsibilities have included oversight of Information Technology and Communications Services, Educational Technologies, and the Offices of Institutional Advancement and Institutional Research. Dr. Haska partnered with colleagues at the U.S. Naval Academy and Naval War College to establish the Navy Higher Education Information Technology consortium; oversees the Monterey Peninsula Department of Defense Net, a regional infrastructure linking six local Department of Defense organizations; the institution's Internet2 membership and related activities; and has been active in publishing articles and presenting papers at IT, Institutional Research, and Accreditation professional association conferences.

FY11 was a year of challenge and change at NPS with opportunities arising both from within and outside of the institution. Government agencies everywhere were challenged to find more efficient ways of providing services. At the same time, NPS has received tremendous support from both the past and current Chiefs of Naval Operations. For NPS, this means continuing to achieve more while keeping a determined eye towards increased efficiencies. This year's focus in ITACS was on increasing and improving services and capabilities for the NPS academic and research communities. This included an upgrade of internal ITACS capabilities in order to move from a reactive posture to one of monitoring and prevention.

Key areas of increased support to the campus included:

- Support for the construction of the new academic building (Building 310) to ensure the learning spaces support the pedagogical requirements of the faculty and students. The result is a new building with the most flexible and technologically-capable class and meeting rooms on campus.
  - Virtualization of servers to increase efficiency and reduce costs. Three-quarters of all enterprise servers are now virtual.
  - Increased focus on identifying potential security threats earlier and responding faster. New technologies were acquired in FY11 and will be operationalized in FY12 to improve NPS' network security posture. Fortinet provides multi-threat security solutions that are engineered to furnish the in-depth defense needed for modern enterprise networks. The NetApp storage solution provides a robust infrastructure that allows increased capabilities, redundancies and the ability to grow as requirements change.
  - Training in security was expanded and made easier for more campus personnel to meet the required coursework. In addition to the "All Hands IA training," numerous courses in subjects including Digital Signature and Encryption, Password Management, and Social Media were created and presented to small groups of faculty, staff, and students. These courses continue today on an "on-demand" basis. Providing the campus community an in-person training option to computer-based training was well received.
  - A classroom hotline was developed in order to provide faculty with fast service response for technology issues in the classroom.
  - A new self-help wiki was created in order to allow users to get more information faster and reduce the number of calls and e-mails to the help desk. A user-controlled password reset process was tested and will be initiated in FY12.
- The capabilities of the Hamming supercomputer were increased with a system upgrade and more storage capacity. The upgrades will improve input and output as well as overall computational speed.

The Defense Language Institute (DLI) moved its domain from .mil to a .edu in order to better support its language training mission. DLI partnered with NPS, leveraging NPS' existing cyberinfrastructure and executing a pilot project which allowed DLI to offer services on the .edu domain quickly and securely, maintaining mission capability during the transition. The pilot was successful and was recognized by Secretary of Defense Leon Panetta during his visit in August. Active duty language students were able to demonstrate how the flexibility of the .edu network enhanced their ability to learn the language.

ITACS partnered with Monterey-based PERSEREC (Personnel Security Research Center) to assist them in relocating to another facility on the Peninsula, ensuring their connectivity throughout the move between two locations and leveraging existing arrangements with other DoD partners to lower overall cost to the government. Locally, ITACS also continues to work with the Department of Defense Manpower Data Center, Fleet Numerical Meteorological and Oceanographic Center, and the Naval Research Lab-West.

I had the privilege this past year of serving as Vice Chair to Chair RADM (ret.) Jerry Ellis on the Committee on the Future. The committee spent a year interviewing over 100 senior leaders in the Department of the Navy, Defense, other federal agencies, higher education institutions and global partners. Their positive outlook and vision for NPS was strong and inspirational although they cautioned about a future marked by uncertainty, complexity, and rapid technological change. The committee concluded that NPS must maintain and enhance its flexibility in order to respond effectively to emerging requirements.

The final report is being used to inform the work of the Strategic Planning Task Force, currently underway and chaired by Dean Peter Purdue. We look forward to the completion of the new strategic plan and the opportunities it will provide for ITACS to serve the NPS campus community and its strategic goals and priorities.

As you read in the following pages about the work of the past year, I hope you will see the level of energy and dedication of the entire ITACS organization in serving the academic mission of NPS. Please know that all of us are inspired by your support and partnership and we look forward to working with all of you this year.

# ITACS STRATEGIC PLAN

## FIVE CATEGORIES OF RECOMMENDATIONS

The vision of Information Technology (IT) at the Naval Postgraduate School (NPS) is to enable the institution to realize its goal of becoming one of the top research universities in the United States.

The IT environment at NPS — characterized by innovation, talent, access to advanced tools, collegial and transparent decision-making, commitment to service, integrated, efficient administrative systems, accountability to stakeholders and effective leadership — is a centrally-coordinated IT service organization that provides as its core mission high-level support for education, research and service to the Department of the Navy (DoN), the Department of Defense (DoD) and the nation.

Both the “NPS Strategic Plan: Vision for a New Century” and the “Educational Effectiveness Review Report” submitted to the Western Association of School and Colleges underscore the importance of the technology and communications infrastructure and services as strategic institutional resources which have an impact on every dimension of the School’s mission.

Five categories of recommendations have been identified in the five-year “IT Strategic Plan: Advancing the Mission.”

**Cyberinfrastructure** includes data and network security; the campus Intranet; Internet, wireless and remote access; connectivity to high-speed national and international networks; access to data repositories; e-mail; applications; backup capabilities; collaboration tools; telecommunications, hosting services and the required systems support for hardware, software and network access.

**Academic Applications and Services** encompasses equipment acquisition, maintenance and replacement; visualization; high-performance computing; classified computing, the Technology Assistance Center (helpdesk function); and support of educational technologies in local and distributed settings.

**Administrative Applications and Services** include web-enabled, intuitive administrative systems and resources that support the conventional management practices of assessment, improvement and planning.

**Resource Management** includes oversight of human resources: recruitment, retention, professional development and training; budget development and execution; procurements; contracts; office and space management; and investments, all managed with the highest levels of accountability and responsiveness to institutional goals.

**Communications, Partnerships and Outreach** includes frequent, timely and accessible communications about IT issues — an integral part both of ITACS’ and the larger advancement strategic plans for NPS. Vital to institutional goals, partnerships are sought and cultivated with agencies such as the Department of Defense, Department of the Navy campus constituents, industry partners, local governments, and peer institutions.

# ITACS SERVICES

*As the central Information Technology organization for the Naval Postgraduate School, ITACS covers a broad spectrum of services including:*

## EDUCATION TECHNOLOGY

Education Technology is responsible for all technology, learning spaces, and audio-visual systems used in teaching both resident and non-resident students. This includes oversight of 12 computer labs, 96 smart classrooms, five conference facilities, and 250 software packages. Academic Systems maintains the Sakai Collaborative Learning Environment, web-based collaboration and streaming, on-demand video systems, on-campus podcasting, and the robust video tele-education infrastructure. It also has oversight of the Technology Assistance Center, the primary IT support for students and faculty.

## CYBERINFRASTRUCTURE

The Network Operations Center operates seven networks that connect more than 7,500 wired and wireless edge devices to the California Research and Education Network (CalREN), the .mil DoD Research Engineering Network (DREN), and several classified networks. The 10 gigabit per second (gbps) network backbone connects to the Digital California network backbone for the commercial Internet and the High-Performance Research networks for Internet2, U.S. Department of Energy’s Energy Sciences Network, National LambdaRail and other research capabilities. NPS operates its mainframe on a 24/7 basis. Unified Communications supports all the e-mail, telephone, VoIP, cell phone, Blackberry and video tele-conferencing communications at NPS.

## CYBERSECURITY AND PRIVACY

The Cybersecurity and Privacy Team is responsible for securing the networks and data on campus, including computer network defense and monitoring, anti-virus and vulnerability management, operating system and application patch management, and certification and accreditation of networks and applications. The team also provides the tools and technologies to find, protect, and react to the unauthorized disclosure of sensitive privacy data on NPS networks and liaises with third parties throughout DoD, DoN, the greater academic community, as well as state and local government organizations to maintain currency with the latest cybersecurity and privacy policies, guidelines, threats, and vulnerabilities. Additionally, the team delivers relevant cybersecurity and privacy training to the campus user population, and collaborates with faculty and students on cybersecurity-relevant research topics.

## ENTERPRISE INFORMATION SYSTEMS

The Enterprise Information Systems team provides integrated, comprehensive technology solutions that enable NPS to streamline and improve its business processes and practices. This includes the technical implementation of the NPS public website (www.nps.edu), the NPS Intranet site, maintenance and administration of over 50

locally developed and commercial web applications, development of new web applications, administration of 310 relational databases on 30+ instances of database servers, implementation and maintenance of a web-based issue tracking and project management system, and implementation and maintenance of web-based collaboration tools, such as SharePoint and Enterprise Wiki.

## HIGH-PERFORMANCE COMPUTING

High-Performance Computing at NPS includes one dozen computing clusters, the largest of which is named Hamming after the computer pioneer and former NPS professor, Dr. Richard Hamming. Currently, it is comprised of 1,488 computational cores plus an additional 4,928 “GPU” (graphical processing unit cores).

## CLASSIFIED COMPUTING PROGRAMS

Classified Computing Programs provides staff and infrastructure to support the operations of the University’s five classified networks. Leveraging the expertise found in ITACS’ other functional areas, Classified Computing Programs supports classrooms, computer labs, secure video teleconferencing, distance learning, conferences, and seminars in the Sensitive Compartmented Information Facility (SCIF), Systems Technology Battle Lab (STBL), the Dudley Knox Library, Watkins Hall, and in various auditoriums and lecture halls around campus.

# ACADEMIC APPLICATIONS AND SERVICES

## FY11 PROGRESS

### FIVE-YEAR STRATEGIC GOAL

- Invest in the infrastructure and research required to make learning resources more flexible and mobile.
- Begin integrating audio and video capture functionality into all learning spaces for distributed learning purposes.
- Research and pilot emerging technologies to ascertain their potential to increase the effectiveness of distributed educational programs.
- Develop an academic portal which will deliver technologies, required software, electronic educational materials, and a single sign on (SSO) to promote delivery of information and resources to the student based on curriculum and permissions.
- Present with faculty at national conferences to promote the solutions that NPS has deployed.
- Expand the NPS computational and data grid to enable research with large data sets immense computations in a distributed environment.
- Improve processes and explore leading-edge technology to meet the functionality required by faculty and researchers.
- Upgrade and deliver technologies and systems capable of supporting the five-fold growth in the distributed learning population.
- Update and re-purpose learning spaces to reflect active learning principles that leverage the power of information technology to enhance the learning experience in both classified and unclassified environments.

### FOREIGN AREA OFFICER (FAO) WEB

In FY11, the following improvements were made:

- Upgraded FAOweb to Liferay 6 which includes a number of improved features, bug fixes and security enhancements. The result will be increased collaboration and versatility in the site's content.
- Implemented a new design for FAOweb with themes for Liferay and Sakai that are virtually identical, making the transition between systems very transparent.
- Provided the ability to link to specific language or region resources within FAOweb's single sign-on sources. FAOweb users can now get directly to a language or region within Joint Language University (JLU) or Transparent Language CL-150, reducing the amount of clicks necessary to access a relevant resource.
- Configured Elluminate Live for use within FAOweb for video and audio conferencing. This will also be used to conduct Oral Proficiency Interviews (OPI). FAOs in the field will be able to connect online from anywhere in the world to fulfill this requirement via FAOweb.
- Created a new video pop-up box for FAOweb videos. This loads the video in a new box, hides the background content, and prevents scrolling while the video is played.
- Finished development of the FAOweb users map portlet, which shows a Google map with points for every location from which users have logged in.

### SYSTEMS ENGINEERING PORTFOLIO SYSTEM IN SAKAI

The first steps in creating an e-portfolio system for student work were taken with the evaluation of a pilot project for the Systems Engineering department. Faculty would be able to assess the work in portfolios, reflect upon it in curricular contexts, and use the data and reflections to plan for improvement. The portfolio section of Sakai can also provide a method for faculty to collect coursework examples. More work on this project will follow in FY12.

### ESTABLISHED THE 6911 HOTLINE

The x-6911 classroom support hotline was established in the spring of 2011 to provide faculty with immediate assistance when encountering IT or Audio Visual (AV) issue in the classrooms and labs. Incoming calls are routed through desk phones and cell phones to the appropriate technician in the PC and AV shops, or Technology Assistance Center (TAC). Since May 2011, approximately 40 uses of the hotline have been documented.

In addition, physical inspection of all classrooms and labs were conducted to determine critical infrastructure and equipment needs in support of instruction.

### PASSWORD RESET — DEVELOP AUTOMATED PASSWORD RESET

In FY11, 54% of the support calls to the Technology Assistance Center (TAC) involved resetting a password or unlocking an account. If users locked out their accounts, they had to contact a support technician during customer service support hours.

A review of software solutions was conducted and led to the selection of a product best suited for the NPS environment. Included in the product is a profile validator, similar to that used in commercial websites, that allows users to define their own security questions and gives them the capability to unlock their account without resetting their password.

### WINDOWS USER PROFILE IMPROVEMENTS

A Windows roaming user profile allows a user to log-on to any domain-connected computer on the same network, access their documents and network shared drives, and have a consistent desktop experience. In FY10, 12% of the support calls received by the Technology Assistance Center Help Desk concerned broken or corrupted profiles, or crippling login/logout delays (5-10 minutes).

This project provided an enterprise-wide solution to eliminate excessive profile load times on various Windows operating systems, reduce broken or corrupt profile support calls to less than 1%, and maintain backups of data in case of hardware failure. Profile load times were reduced to less than one minute.

### INSTRUCTIONAL VIDEOS

Following the successful development of a video for technology use in Building 310, ITACS fulfilled a request to create similar videos for all classrooms. The videos include 1) a picture of the classroom; 2) room capacity; 3) room type; 4) video instructions and 5) written instructions.

### LIVE STREAMING OF EVENTS

ITACS increased its ability to provide live streaming in FY11. Every graduation is streamed live with the link posted to the Internet for those who cannot attend in person. Due to this increased ability, guest lectures of top leadership including Secretary of Defense Leon Panetta and Secretary of the Navy Ray Mabus were streamed. This service is available to the entire community upon request.

### INFORMATION TECHNOLOGY SELF-HELP SUPPORT WEBSITE

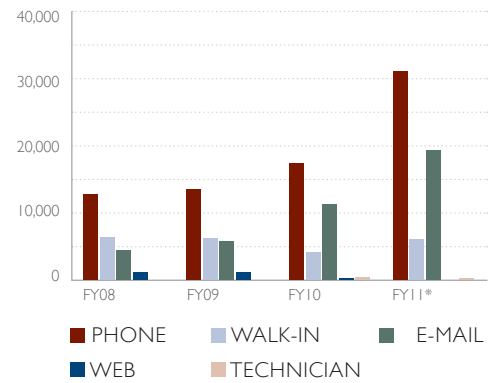
The Technology Assistance Center created a self-help wiki site to allow students, faculty and staff access to information that addresses common questions. Many solutions are published allowing users to find quick answers to questions without the need to open a support case. There are over 100 pages in five categories: Windows, Mac, Linux, Mobile Devices, and Forms.

### FY11 GOALS

- Develop automated password reset functionality for NPS passwords
- Fully launch the EMS conference room request system
- Install "red phones" in all NPS classrooms and labs for emergency faculty support
- Continue to develop academic system portlets for the NPS portal
- Fully configure and launch a paperless workflow for the AV system
- Physically combine the AV shop, PC shop and lab support group
- Refine the lab and classroom recapitalization plan in order to improve sustainability
- Continue to expand external DoD partnerships, especially in areas of learning technologies

## ITACS CASES BY TYPE OF SUPPORT

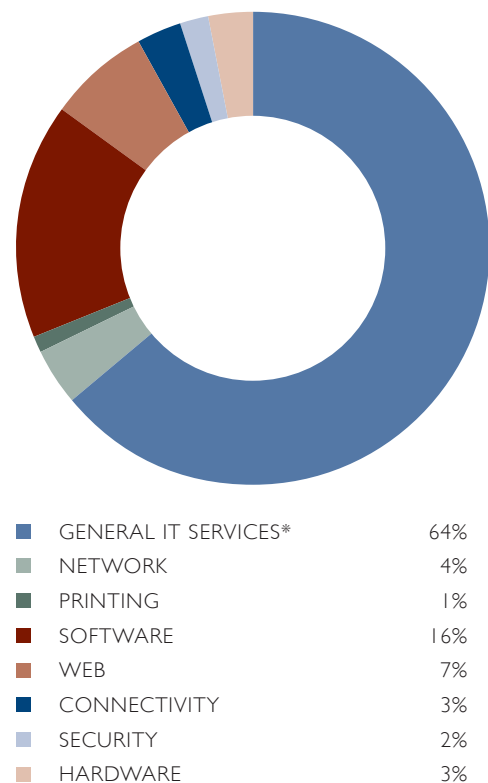
The following graph provides the distribution of total ITACS Helpdesk calls for FY11, "by Type of Support" categories.



\*The number of phone calls increased in FY11 due to improved data collection of reporting.

## ITACS CASES BY MAJOR CATEGORIES

The following graph provides the distribution of total ITACS Helpdesk calls for FY11, "by type of call" categories.



\*The category, General IT Services includes: password resets, software check-out/check-in, locked accounts and general questions.

## REFINE THE LAB AND CLASSROOM RECAPITALIZATION PLAN

The lab and classroom recap plan was reviewed and updated in FY11 with the intent of better and more complete data collection regarding equipment refresh timing and costs. This will allow for better planning of budgetary requirements for classroom and lab equipment.

## FULLY CONFIGURE AND LAUNCH A PAPERLESS WORKFLOW FOR THE AV SYSTEM

Since the inception of the Audiovisual Department at NPS in the 1990s, all requests for AV services were done via a physical documentation system. This system has many drawbacks and moving to an electronic, paperless system would resolve many, if not all, of the following issues: legibility which leads to mistakes, remote accessibility; metrics; redundancy; inefficiency; waste of paper through printing; and space used for storage of paper documents. This functionality is currently being piloted.

## PHYSICALLY COMBINE THE AV SHOP, PC SHOP AND LAB SUPPORT GROUP

Early in FY11, the lab support, Audiovisual, and PC shop personnel were brought together in a single physical space in order to increase efficiency, remove redundancy and streamline workflow. PC and lab support members conducted cross training with members of the AV group and all members now answer 6911 (classroom hotline) calls.

## IMPROVED HARD DRIVE IMAGING

During FY11, new methods of imaging hard drives more efficiently were investigated. The current system was slow and cumbersome. The new product, (ICS RapidImage), allows for faster speeds, is independent of the network, can run multiple imaging sessions at once and is compliant with DoD standards.

## EMS ROOM TRACKING AND INVENTORY SYSTEM

NPS procured and began the configuration and implementation of an Event Management System (EMS), selected after an extensive evaluation period that included site visits to Stanford and UC Berkeley and a briefing to the IT Task Force. Once the system is fully online, members of the NPS community will have the ability to go to a single website and request to use any classroom, conference room or auditorium on campus.

Currently the application is being piloted by the ITACS Video Tele Education office, and both the Audiovisual and Operations Research departments. Many other departments have shown interest in utilizing this application once it is released campus-wide.

## EDUCATION TECHNOLOGY METRICS

	FY08	FY09	FY10	FY11
(48) Point Multipoint Control-Unit (MCU)/Video Bridge	1	1	1	1
ISDN Video-Conferencing	165	165	165	165
Multimedia Presentation Systems	100+	132	132	132
Video-Conferencing Facilities	2	14	14	42 <sup>1</sup>
Video Tele-Education Systems	7	10	10	10
Class hours recorded and delivered through web-conferencing system	5,808	6,128	6,255	6,194
Courses hosted on the learning management system	3,780	4,705	5,953	3,054 <sup>2</sup>
Academic Servers	6	6	6	6

<sup>1</sup> This reflects the total number of available video-conferencing facilities. Previous editions only accounted for facilities managed by ITACS.

<sup>2</sup> Drop is due to no longer running Blackboard and Sakai simultaneously, Blackboard went offline at the end of FY10.

## HIGH PERFORMANCE COMPUTING

### FY11 PROGRESS

**Improved the Hamming Supercomputer Capabilities** In FY11, upgrades were added to the Hamming supercomputer. These included: an infiniband interconnect functionality and a series of switches. The upgrades will improve input and output as well as overall computational speed.

**Increased the Disk Storage Capacity of Hamming** The HPC lab gained additional storage, going from 99 TB to 159 TB. The storage is enclosed in a rack made by Data Direct Networks (DDN) and is a "best of breed" HPC storage server capable of read/write speeds of up to 5 gigabytes per second.

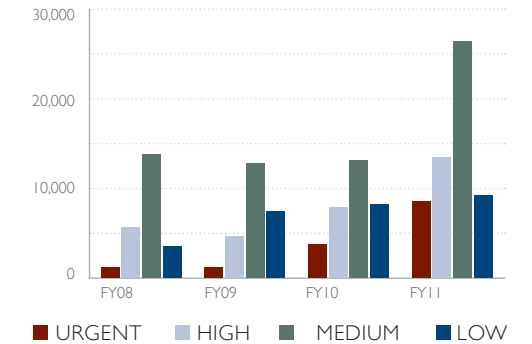
**Expanded Graphic Processing Unit (GPU) Capability** In FY11, Hamming expanded from two GPUs (graphical processing unit) to 17 GPUs. Two new nodes each contain four GPUs, and a node purchased jointly by the Mathematics Department and ITACS contains seven GPUs. GPUs are popular due to advances in the gaming industry but because they are very fast with certain types of calculations (fast fourier transforms and matrix operations, for example), they have also become very popular in the HPC community.

**Accomplished Major HPC System Upgrade** A major system upgrade took place between June 20 and July 5, 2011. The electrical and cooling capacity were both doubled. The new upgrade increased both the number of cores and the hard disk storage capacity. The upgrade also improved the internal network. In 2009, the HPC was supported by 144 eight-core Sun servers. The 2011 upgrades provided many available slots to add capacity at a later date.

**Provided Regular User Tutorials and Question/Answer Sessions** Throughout the year, the HPC staff, usually the lead system engineer, provided tutorials to users on

## ITACS TOTAL NUMBER OF CASES BY PRIORITY

The following graph provides the distribution of total ITACS Helpdesk calls for FY11, "by priority" categories.



## FY11 HPC GOALS

- Add infiniband interconnect functionality to the entire Hamming supercomputer.
- Increase the disk storage capacity of Hamming.
- Pursue a general purpose GPU initiative, and continue the GPU computing initiative.
- Implement a sustainable HPC program.
- Continue series of short courses that educate users on cutting-edge research computing topics.
- Develop NPS visualization for Research Computing.
- Use the Hamming supercomputer to produce research computing content for the Sony 4K system.
- Utilize the CENIC connection to rapidly receive and deliver data from partner institutions.



an almost weekly basis. Users were able to do hands-on programming and learn about the HPC batch submission process, and could also discuss issues or problems.

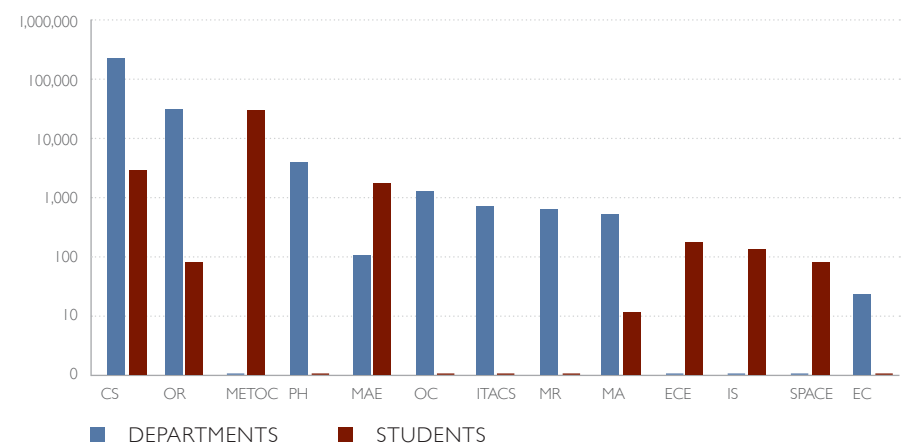
**DoD High Performance Computing and Modernization Program Participation**

Professor Timour Radko of the NPS Oceanography Department continued to leverage the DoD High Performance Computing and Modernization Program (HPCMP) computers in support of his work at NPS. The DoD HPCMP provides access to large HPC systems with tens of thousands of processors. The program encourages new users, as many are Hamming users, to take advantage of the DoD HPCMP resources. By applying for an account at the DoD HPCMP, models developed on Hamming requiring more processors than are available at NPS, can gain access to the necessary processing resources. Professor Radko and his group have been using NPS HPC resources for several years, and a couple of years ago began using DoD HPCMP resources. For the first couple of years, their group was using approximately 10,000 CPU-hours on DoD HPCMP machines. In FY11, they used over 100,000 CPU hours, and for FY12, they are projecting to use approximately 1.2 million CPU hours at DoD HPCMP centers.

**HIGH PERFORMANCE COMPUTING METRICS**

The chart below shows the distribution of jobs and CPU hours used on the Hamming supercomputer by various departments and institutions at NPS from April 1 through August 30, 2011. The vertical axis on each chart is on a logarithmic scale, indicating that the usage across departments can vary by orders of magnitude. The chart shows the numbers of “jobs submitted” by each department.

**JOBS SUBMITTED**

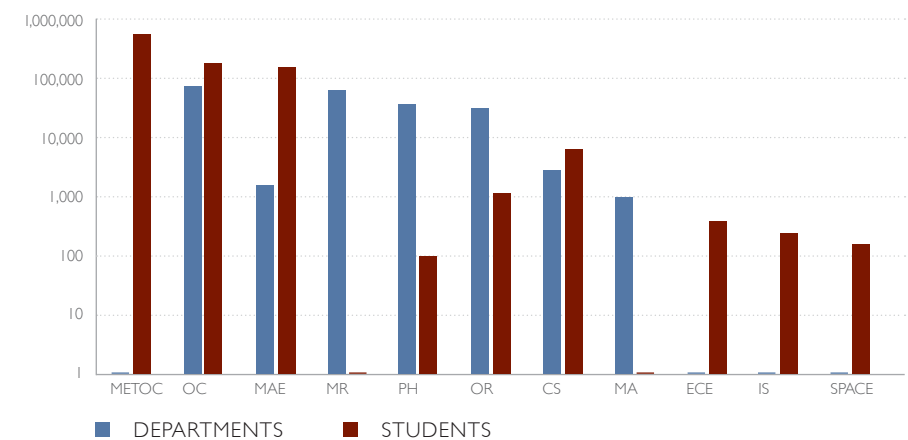


Jobs submitted by various NPS departments. The vertical axis shows the number of jobs submitted, the horizontal axis gives the code for each department. See the text for a detailed explanation.

The second chart shows the number of CPU-hours used by various departments delineating which departments use Hamming most heavily. A CPU-hour is defined as the number of CPUs used multiplied by the amount of time used. For example, someone using a single CPU for 24 hours is using 24 CPU-hours. A user using 8 CPUs in parallel for 3 hours is also using 24 CPU-hours.

In the period April 1 to August 30, 2011, the total amount of CPU time used on Hamming was over 128 years; in other words, over a century worth of processing was done in just five months demonstrating the power of using hundreds of processors in parallel.

**CPU HOURS**



CPU-hours consumed by various NPS departments. The vertical axis shows the number of CPU-hours consumed, the horizontal axis gives the code for each department. See the text for a detailed explanation.

**CLASSIFIED COMPUTING PROGRAM**

In recognition of NPS’ unique position within DoD and the Navy for its capability to do classified research and teaching, ITACS established the Classified Computing Program Division as a separate group within Research Computing. This new section will be responsible for the campus’ classified IT infrastructure, staffing, services, and programs. An experienced senior level manager was hired to lead the section and to collaborate with faculty and staff in order to grow and strengthen the University’s classified computing infrastructure.

Concurrent with the creation of a new division focused on classified computing, a Classified Computing Committee was formed as a sub group of the IT Task Force. The committee is composed of experienced faculty and staff deeply involved in classified teaching and research. The committee acts in an oversight and advisory capacity in the management of classified computing services by setting priorities for the allocation of resources, ensuring alignment of proposed projects with the institution’s mission, and providing a campus wide forum for discussion of the NPS Classified Computing Program.

To support this new focus, funds were provided to improve bandwidth, facilities, furniture, and equipment within the Sensitive Compartmented Information Facility (SCIF) and the System Technology Battle Lab (STBL).





# CYBERINFRASTRUCTURE

## FY11 PROGRESS

### FIVE-YEAR STRATEGIC GOALS

- Establish appropriate wireless network access controls and policies with respect to applications and networks.
- Capture metrics on the use of remote access to measure resource requirements and security capabilities.
- Provide a flexible education and research network environment, as accessible and open as possible, to enable academic work, consistent with other research universities.
- Conduct security audits on a regular basis.
- Develop partnerships with local Department of Defense agencies for cooperative data and service redundancy using the ITACS Disaster Recovery Plan as a guide.
- Implement virtualized architectures for critical services.
- Capitalize on the full capability of the upgrade to a 10 gbps physical infrastructure.
- Leverage NPS membership in CENIC and associated connections to CalREN for research and education.
- Incorporate regular refresh and upgrade of the school's wireless network and wired plant.
- Develop an integrated approach to voice, video and data network requirements.
- Include off-site storage when upgrading the enterprise backup and restore capability.
- Create professional services for programming support and technical expertise for faculty and students.
- Expand innovation throughout the IT staff—build in-time for development, testing and experimentation of new technologies.
- Incorporate security and privacy practices into the university's daily business processes and continue to research solutions to evolving threats.

### 911ETC

Two systems from 911Etc were implemented this fall to improve ITACS' ability to support emergency 911 calls by providing accurate locations of 911 callers from campus phones. This information will appear as a Windows pop-up at designated security phones and as SMS/text messages sent to designated first responders' cell phones. The Locate911 system extends this capability to over 400 VOIP (Voice Over IP) phones currently in use.

### IMPROVE WIRELESS SERVICE

NPS conducted a limited wireless survey in 2010. Based on the findings, ITACS has enacted several changes to the wireless infrastructure that has led to improvements in the reliability and accessibility of wireless service. In order to meet the growing demand and the ever-growing number of mobile devices, ITACS is planning to invest in additional improvements to the wireless network in FY12.

### GUEST WIRELESS

ITACS installed a commercial SSL certificate in the Guest Wireless RADIUS Server to simplify guest wireless user's access to the NPS wireless network.

### ACTIVE DIRECTORY 2008 UPGRADE

The main servers or domain controllers that comprise the Active Directory infrastructure were upgraded to the latest and more secure functional level. This new Directory provides better management capabilities, improved automated monitoring and advance identity and access management. The Domain Name System (DNS) and Dynamic Host Configuration Protocol (DHCP) services, which are critical in the NPS IT infrastructure, were also upgraded resulting in improved capabilities in security, reliability, and manageability.

### AVAYA SWITCH UPGRADE

Avaya phone hardware and software were replaced in August with the latest and most secure versions. The version change also provides support for future improvements of both Avaya and third party unified communications services. As part of the upgrade, AT&T local circuits were re-provisioned and call flow modified to provide better redundancy in the event of failure of individual circuits. As a result, the single point of failure that caused the base-wide outage of all digital and analog phones on July 10, 2011 has been eliminated. Additionally a circuit has been prepared for use by 911Etc systems slated for installation in the fall.

### E-MAIL MIGRATION TO EXCHANGE 2010

The Exchange 2010 migration successfully transferred over 9,000 mailboxes from Exchange 2003 to 2010. A wide variety of communications was used to keep the end-user informed. The Exchange 2010 wiki site provided a one-stop shop for migration information and schedules and was introduced to the NPS community by e-mail, through the Intranet page and door posters.

The migration to Exchange 2010 introduced new features for the NPS E-mail Community, such as:

- New Webmail or Outlook Web Access interface with more supported browser features.
- Support for the Microsoft Outlook 2010 (Windows) and Outlook 2011 (Mac) clients.
- Exchange 2010 Autodiscover which automatically configures your MAPI or EWS mail settings.
- Exchange 2010 Outlook Anywhere which offers options to access e-mail in MS Outlook without the need of a VPN connection.
- Unified IMAP, POP, and SMTP server name; Single server name for these e-mail protocols.
- Mac Mail integration with iCal and Address Book.
- High availability with improved ability to bring up the Exchange e-mail system faster during network or e-mail outages.
- New Out-of-Office Assistant in Outlook for Webmail and Outlook 2010.

### BACKUP HARDWARE AND SOFTWARE CONVERSION

ITACS transitioned to a CommVault Data Protection Server infrastructure (commonly referred to as a backup). Currently the Exchange 2010 Database Servers and various file servers are protected and the transition will continue through 2012.

### VIRTUALIZATION

ITACS has aggressively pursued virtualization of enterprise class servers. Since October 2010, 91 virtual servers have been added to the virtual farm resulting in 95% of all new enterprise servers being virtualized. The ITACS data center is currently at an overall 3:1 ratio of virtual servers to physical servers.

ITACS will continue to implement virtualization whenever possible. This technology has proven successful in more efficient operations, saving HVAC and power consumption, avoiding the cost of physical servers, providing a better turnaround time for standing up a server as well as providing better security and configuration management. In FY12 ITACS is pursuing virtualization of applications and desktop systems to improve the delivery of applications to faculty and students as well as improve administration of lab and classroom systems. While this strategy will be implemented wherever possible, physical servers will continue to be supported for situations when virtualization does not apply.

### GREEN INFORMATION TECHNOLOGY INITIATIVES

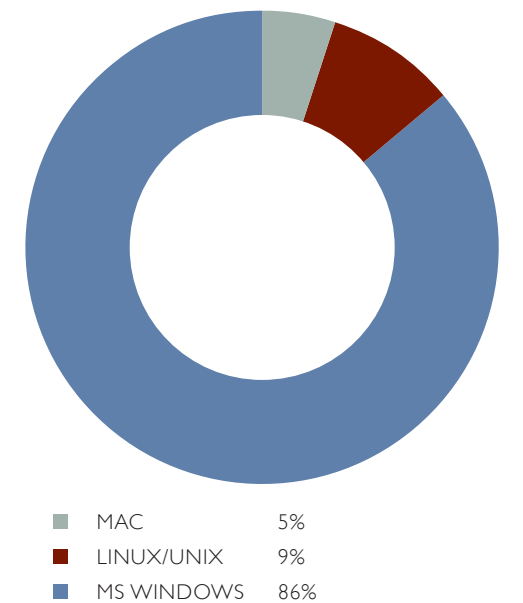
Several ongoing green initiatives are being implemented by ITACS Server Management with minimal interruption in service to the campus:

- Continuing the virtualization of servers and expand those services to other departments.
- Implementing the latest technologies to improve monitoring and self-healing abilities.
- Redistributing physical hardware into a hot/cold aisle configuration to

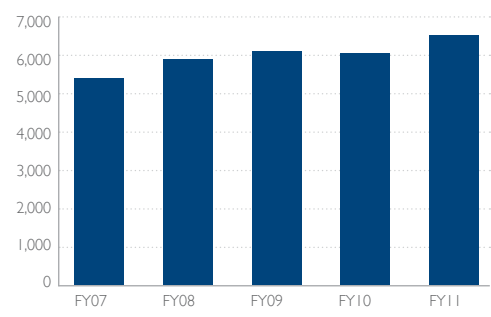
### FY11 GOALS

- Installation of 911Etc.
- Take action based on the results of the FY10 wireless access survey to improve wireless service.
- Introduction of simpler guest wireless access method.
- Continue efforts toward a comprehensive Identity Management capability through Active Directory.
- Introduction of Unified Communications (UC) to the campus.
- Migration of the campus to Outlook 2010 to take full advantage of the range of services provided by the Exchange 2010 migration.
- Continue to grow the backup and retention capacity of the .edu in a cost-effective manner.
- Continue to increase the capacity in the VM (virtual machine) farms as demand for server hosting continues to grow.
- Continue the green IT initiatives working with Public Works to improve the power efficiency of the data center.

### DISTRIBUTION OF CLIENTS BY OPERATING SYSTEM FY11



**ENTERPRISE SERVER METRICS: ACCOUNTS SUPPORTED**



The graph above provides a comparison of the number of active user accounts on the NPS network between fiscal years 2007 and 2011. The growth can be attributed to growth in DL programs. The increase in 2009 and decrease in 2010 reflects a change in the administrative processes used to manage accounts, specifically the deletion process.

**COMPARISON OF FY09 THROUGH FY11 PHYSICAL AND VIRTUAL SERVERS**

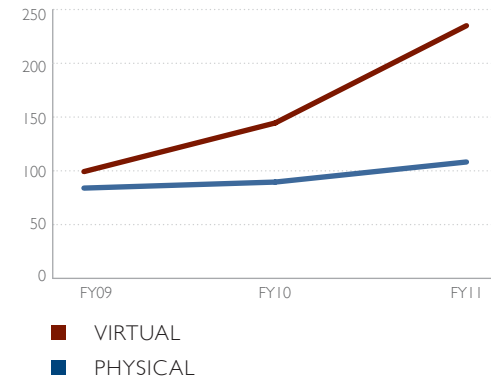


Figure: The graph above shows the growth in virtual servers from FY09 through FY11. The VM capability provides flexibility and rapid response.

**NETWORK CYBERINFRASTRUCTURE METRICS FOR FY 2011**

- Wireless access coverage ..... 94%
- Number of buildings covered by wireless ..... 30
- Average number of systems connected wirelessly ..... 700

- reduce physical space, power and air conditioning needs.
- Upgrading and standardizing server support equipment.
- Upgrading the Data Center electrical system to one which is semi-movable and modular, allowing easier access to servers and devices. This upgrade eliminated the electrical hazard by moving the cabling and electrical outlets from under the floor to above-ground. This upgrade was necessary to meet the growth in storage and computing power for ITACS.

**ATHOC IMPLEMENTATION**

NPS Alerts, powered by AtHoc, is a network-centric emergency notification system. Emergency alerts can be delivered via voice, windows pop-up, e-mail and SMS/text. Currently the system is being tested and has already been pushed out to Windows clients. The system capabilities include cell phone opt-in by customers, canned alerts content review, assignment and training of alert release authorities. ITACS will continue to work with NPS leadership to fully implement the AtHoc capabilities.

**NEW ACADEMIC BUILDING (BUILDING 310)**

Building 310 sets a new standard for the way NPS leverages technology to support learning and improve the user's experience. Seating layouts, student desks, IT needs, as well as presentation and video conferencing requirements were revised to ensure that the learning spaces would support the faculty's pedagogical requirements and the students' learning needs. Emphasis was placed on creating flexible learning spaces with support for collaborative approaches to instruction.

**Digital Signage** Each of the six classrooms and two conference rooms are equipped with an interactive digital display outside the entry door that displays current room schedules and other contextually relevant information allowing the user access to information via a touch-sensitive surface.

**Digital Signal and HDCP Support** The classroom AV systems are the first at NPS to include direct support for the digital signal formats. The digital inputs are compliant with High-Bandwidth Digital Content Protection (HDCP), allowing the use of content and devices that would otherwise be incompatible.

**Support for Legacy Computers** Analog VGA inputs ensure compatibility with the large installed base of legacy desktop and laptop computers.

**Room Combining** Two pairs of the classrooms are equipped with retractable dividing walls, and the audiovisual systems can be combined with a simple push of the button. For the first time at NPS, seating capacity and presentation capabilities can be quickly changed to meet demands.

**Video-Conferencing (VTC)** Every classroom and meeting space is VTC enabled allowing program planners to include non-resident instructors or presenters in the curriculum without the extensive schedule juggling and space conflicts normally associated with video-conference planning. Classrooms can also be used to augment VTC programs.

**Collaborative Meeting Rooms** There are two conference room which are equipped with collaboration tables. These tables house multiple laptop inputs which are connected to a central presentation display.

**MASSIVE MULTIPLAYER ONLINE WARGAME LEVERAGING THE INTERNET (MMOWGLI) SUPPORT**

For three weeks in May, 2011, the Office of Naval Research (ONR) ran a new Internet wargame to collaborate on solving real-world problems facing the Navy. The Massive Multiplayer Online Wargame Leveraging the Internet (MMOWGLI) exercise attracted a community of more than 1,000 players from across the government to suggest ways of combating piracy off the coast of Somalia.

"MMOWGLI is an online game designed to find and collectively grow breakthrough ideas to some of the Navy's most complex problems — those 21st century threats that demand new forms of collaboration and truly outlying ideas," said Dr. Larry Schuette, ONR's Director of Innovation, whose office is managing the project.

At the request of the MOVES Institute, ITACS provided assistance in preparing the launch of the game, and in developing a scalable solution that could support the unexpectedly high number of participants. The initial launch was deemed a success, and the MMOWGLI team is preparing another major event in early FY12.

**DLIFLC – NPS PARTNERSHIP**

DLIFLC requested assistance from NPS for support in moving the DLI educational community from .mil to .edu to better support its language-training mission. NPS was able to offer the .edu infrastructure to expedite this process. ITACS established all necessary subnets and networks in order to support this effort.

Team Monterey, an organization of all DoD facilities in Monterey County initiated by Representative Sam Farr (D-CA), requested each DoD activity explore ways of sharing DoD resources and enabling shared missions. The DLIFLC and NPS partnership is a good example of sharing resources between the Army and Navy.

DLIFLC requested assistance from NPS for support in moving the DLI educational community from .mil to .edu to better support its language-training mission. Leadership decided to sponsor a pilot project between DLIFLC and NPS. NPS was able to offer the .edu infrastructure to expedite this process. ITACS established all necessary subnets and networks in order to support this effort.

The pilot project was launched within the Multi Language School with approximately 150 users. DLIFLC began to acquire additional network equipment and server hardware to build out a full .edu network. The second stage of the pilot was the Technology group at Monte Vista School, approximately 300 users, who were to be moved to Ryan Ranch McGraw Hill facilities. DLIFLC administrators were able to bring online additional storage for e-mail, which was added to the pool of storage for Exchange 2010. Working together, ITACS and DLIFLC administrators were able to define processes to move a large group of users into the ERN domain. EHelpdesk was used to monitor the processes and provide notifications.

ITACS provided space within the NPS NOC workroom for setup and configuration of the equipment that was to be deployed to Ryan Ranch. Additional equipment was also provided to ensure they would have enough ports available for network phones. DLIFLC and NPS engineers formed a joint team that met the requirements in a cost-effective and timely manner allowing DLIFLC to offer services on the .edu domain quickly and securely, while maintaining mission capability during the transition.

In May 2011, IT began providing VOIP (Voice Over IP) phone services, including voice-mail, at three DLI locations at Ryan Ranch and Building 420 at the Presidio of Monterey.

**STORAGE METRICS**

	FY08	FY09	FY10	FY11
User data:	32.5TB	34.5TB	39TB	39TB
Profile and H drive	25TB	27TB	13.4TB	18.3TB
Group Shares	7.5TB	7.5TB	4.4TB	5.6TB
Virtual Machines and Databases			21.1TB	21.2TB

Data storage on virtual machines was added in FY10

**TELEPHONE METRICS**

	FY09	FY10	FY11
Voice Over Internet Protocol Installed	135	136	435
Phones: Number of work orders	1,539	1,028	1,211
Phones: Assigned numbers and subscribers	2,764	2,812	3,323
Reliability of phone system	100%	100%	98%

In FY11 the telephone system was upgraded to include increasing the capacity to add additional telephone lines. The growth in both VoIP and analog telephone was possible due to the upgrade. The growth also includes about 300 numbers being used by DLIFLC as part of the proof of concept.

**NETWORK CONNECTION AVAILABILITY**

The availability of the Internet to the internal users on a network is used as a primary indicator regarding the performance of the network. The data provided below show the level of performance maintained on the NPS unclassified networks.

Unclassified Networks	FY07	FY08	FY09	FY10	FY11
Nps.navy.mil (DREN)	.999933	1.0	1.0	.998571	0.999763
Nps.edu (CalREN)	.999189	.999660	1.0	.997143	0.998179

The data in the table above are based on the following formula (005 minutes calculated against unscheduled downtime): Total minutes – 005 minutes

Working together, ITACS and DLIFLC administrators were able to define processes to move a large group of users into the ERN domain. EHelpdesk was used to monitor the processes and provide notifications.

# CYBERSECURITY AND PRIVACY

## FY11 PROGRESS

### FIVE-YEAR STRATEGIC GOAL

- Incorporate security and privacy practices into the daily business processes at the University and continue to research solutions to evolving threats.

### FY11 GOALS

- Complete the new Network and Security Operations Center and Collaborative Space.
- Refine and mature the centralized logging capability with an activity correlation and reporting tool.
- Continue enabling the Network Access Control capabilities on the network.
- Team with external Computer Network Defense (CND) service providers to share information about known threats and vulnerabilities.
- Test and deploy a Personal Identifiable Information (PII) Data at Rest detection and protection solution.

### INCREASED NETWORK SECURITY SITUATIONAL AWARENESS

In FY11, Cybersecurity began the build-out of the new Network Security and Operations Center (NSOC)/Regional Security Operations Center (RSOC). The new space improves real-time situational awareness of activity on the NPS .edu network. The NSOC was configured to provide a highly collaborative space allowing for a more organized, efficient, and timely response to incidents during the latter half of the year.

Additionally, the team invested in new tools for a more comprehensive security technology infrastructure allowing not only a real-time situational approach in defense of the network but also improving the ability to stay ahead of performance impacts of abnormal network activity. While not all abnormal network activity is a security concern, often abnormal activity can lead to decreases in overall system performance and reliability. Improvements in this area have allowed the team to identify, correct and restore services more quickly than in the past.

The major elements of the enhanced security architecture included the following new capabilities:

- Began the roll-out of a Unified Threat Management infrastructure across the ERN to increase the ability to watch internal network traffic for anomalies that could be indications of malicious activity within the network. This awareness helps identify issues before they impact the greater population of users and services on the network.
- Improved the centralization of logs to a common repository to increase information dissemination when an incident does occur. This led to a significant reduction in the reaction time from when a machine is infected and when it is removed from the network.
- Development of a Cybersecurity wiki space that considerably improved the Cybersecurity team's capability to store and search documentation and to rapidly adapt to new events and emerging threats. The wiki provides the team an environment to be more effective in collaborating in real time as incidents develop.

In the area of preventative security, the team tested and deployed:

- A Network Access Control appliance that verifies the operating system patch levels and existence of anti-virus software on computers that connect to the NPS network. This includes personally-owned or non-ITACS managed machines that are introduced to the campus temporarily, but that require access to NPS computer resources.
- An automated web application scanning tool giving NPS a more comprehensive method of penetration testing for web applications. This allows NPS to address previously unidentified vulnerabilities in a timely manner.
- A new vulnerability scanning tool was added to complement other vulnerability scanning tools and provide an ability to remove false positives immediately from consideration.

During 2011, the Cybersecurity team responded to and managed 103 security-related incidents. This is a significant increase from prior years, indicating a higher

situational awareness achieved over the past year and an ever-increasing amount of malicious activity on the Internet.

### SPAM ACTIVITY

	FY09	FY10	FY11
Daily inbound e-mail classified as SPAM	124,662	142,354	53,931

### TOTAL COST AVOIDANCE DUE TO SPAM FILTER

YOUR INPUT	
E-mail Users	10,000
Length Of Analysis (In Years)	1
Spam Messages Received Per User Each Day	5.3
Employee Average Yearly Salary	\$105,000
YOUR RESULTS	
User Productivity Lost	\$1,159,375
Storage Costs	\$368,054
Management Costs	\$2,187
Downtime Costs	\$656
<b>TOTAL COST AVOIDANCE OF SPAM</b>	<b>\$1,530,272</b>

Source: [www.barracudanetworks.ca/spam-firewall/spam-calculator.aspx](http://www.barracudanetworks.ca/spam-firewall/spam-calculator.aspx)

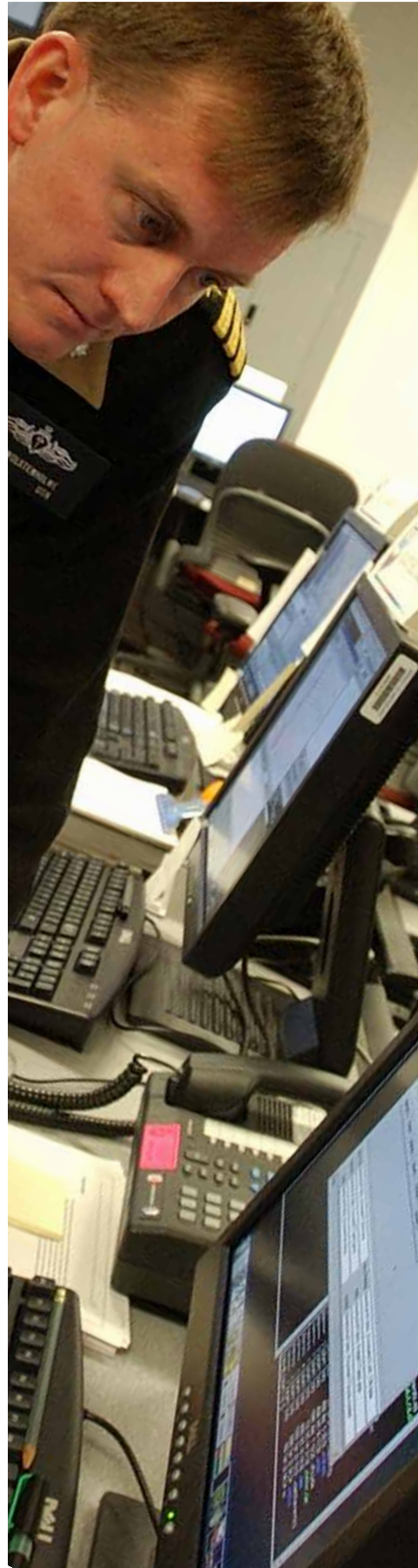
This year, approximately 53,931 (66%) of daily e-mail traffic was considered Spam and was blocked from delivery to end-user mailboxes. This is a substantial decrease from last year both as a percentage (almost 85%) and a total (142,354). This decline is likely attributed to major sources of Spam being stopped by international law enforcement earlier in the year. Trends now indicate more targeted malicious e-mails (i.e., "spear phishing e-mails") are sent to end-users rather than broad delivery of unsolicited marketing e-mails and advertisements.

### IMPROVED COMPUTER NETWORK DEFENSE PROCESSES

ITACS conducted a Computer Network Defense-Service Provider (CND-SP) gap analysis to study NPS' current CND capabilities. This study led to the development of a list of long- and near-term investment priorities to improve the CND tool set as well as identified redundant efforts for cost recovery.

To further improve ITACS' ability to identify, target and eliminate new threats on the network, a malware analysis lab was constructed. This new lab was built in collaboration with other members of the ITACS Cybersecurity team and provides ITACS a test-bed to analyze the behavior of newly-identified threats on a protected network





environment separate from the live operational network. This allows activity that is unique or characteristic of the malware to be identified and for that knowledge to be applied to the team's network monitoring and detection alert capability on the operational network. This lab has also identified real world malware for further analysis to NPS researchers for more in-depth discovery and analysis of how attackers are adapting their techniques, tactics and procedures.

As part of the analysis of unusual activity, NPS makes forensic hard disk (HDD) copies of potentially infected or compromised computers. To address the tracking of the greatly increased number of HDDs copied during 2011, ITACS developed an inventory and tracking database to ensure proper accountability of all copied or confiscated hard drives, ensuring infected drives did not accidentally make their way back into operational use and providing a positive chain of custody for drives that needed to be destroyed or further analyzed by external parties.

ITACS acquired a DoD-approved application to permanently erase unused space on HDDs involved in electronic spillages of classified information. The ability to use this software quickly provides a much less intrusive option to end users for cleaning up after such a spillage. The alternative, confiscation of every hard drive involved in a spillage often results in users being without important data or without their computers for an extended periods of time while a new hard drive was imaged and the data recovered from the confiscated drives. This process was utilized in FY11 and kept hundreds of NPS users from being required to turnover HDDs.

#### COLLABORATION WITH NPS FACULTY AND STUDENTS AND OTHER UNIVERSITIES

In support of NPS faculty research efforts using field experimentation, ITACS facilitated the certification of a new classified network node at Camp Roberts. ITACS coordinated the communications with the Defense Information System Agency, the Navy Circuit Management Office, Camp Roberts SATCOM and the research team at NPS to ensure a smooth standup of the circuit.

The Cybersecurity team brought in a third party cybersecurity compliance consultant to evaluate three organizations on campus to include both virtual and physical protection of IT assets. ITACS worked with the three organizations to prioritize, fix, and mitigate vulnerabilities uncovered by the consultant.

Several members of the Cybersecurity team attended the EDUCAUSE Security Professionals' Conference and the annual Research and Education Networking Information Sharing and Analysis Center meeting. These conferences provide opportunities to connect with security professionals in academia in a cybersecurity-focused setting, hearing about the latest issues in cybersecurity.

The Cybersecurity team provided support to thesis research projects including one evaluating a new open source Intrusion Detection System (IDS). The resulting thesis showed great promise for this newcomer to the IDS space and demonstrated the potential for this product to be operational on a supercomputer and in NPS' live network environments.

The Cybersecurity team assisted the newly formed Defense Language Institute-Foreign Language Center (DLIFLC) Cybersecurity team to help establish their .edu network with appropriate security policies and practices. This partnership allowed NPS and DLIFLC to work cooperatively to improve the level of situational awareness on both networks.

#### EXPANDED CAMPUS-WIDE CYBERSECURITY AWARENESS

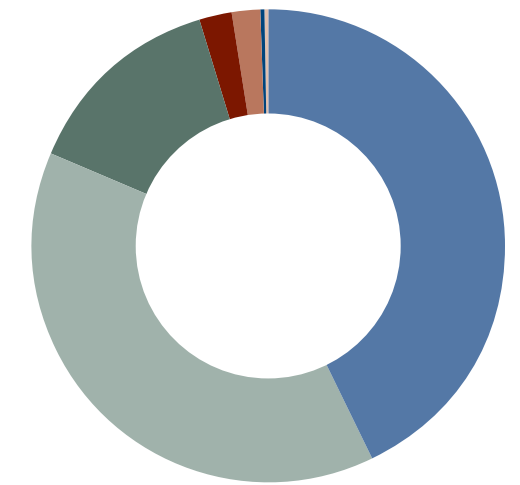
Starting with the first Cybersecurity Awareness Month in Oct 2009, Cybersecurity has endeavored to increase understanding of security issues across campus. In addition to the All Hands Information Assurance training, numerous courses in subjects including Digital Signature and Encryption, Password Management, and Social Media were created and presented to small groups of faculty, staff, and students. These courses continue today on an "on-demand" basis.

The team put together two wikis — one for campus-wide use and one for internal ITACS and Research System Administrators. The first wiki provides information for the end user on the latest threat information and how they can protect themselves at work and home. The second wiki provides all system administrators around campus with current policies and procedures and an area to manage detailed information about the systems they maintain.

The team also deployed a server tracking tool, leveraging NPS' investment in the enterprise wiki, to ensure that servers hosted in the ERN are well-documented and that the documentation is available on demand during a network security or performance event to improve the response time to the event. Additionally, this tool provided researchers, needing to host servers on the ERN, a more manageable method of keeping everyone informed of configuration changes impacting security or performance.

Two newly established Cybersecurity Subcommittees (Technical and Usability) were added to the IT Task Force with representation from staff, faculty, and students. Each subcommittee provides additional insight to the Cybersecurity team to put in place the proper controls and the training content to best protect NPS' research and education environments.

#### RISK DISTRIBUTION BY EVENT SOURCE

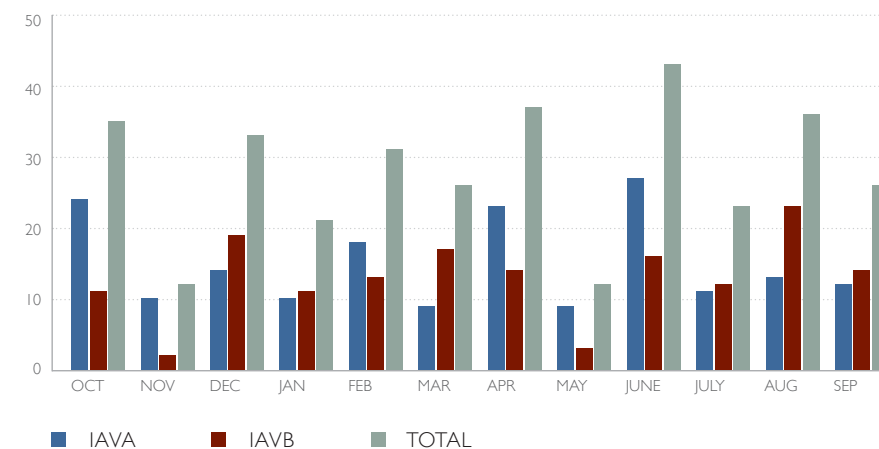


AUTO-PROTECT SCAN	2030	43%
SCHEDULED SCAN	1829	38.5%
MANUAL SCAN	680	14%
DEFWATCH	89	2%
REBOOT PROCESSING	81	2%
MANUAL QUARANTINE	10	>1%
STARTUP SCAN	2	>1%

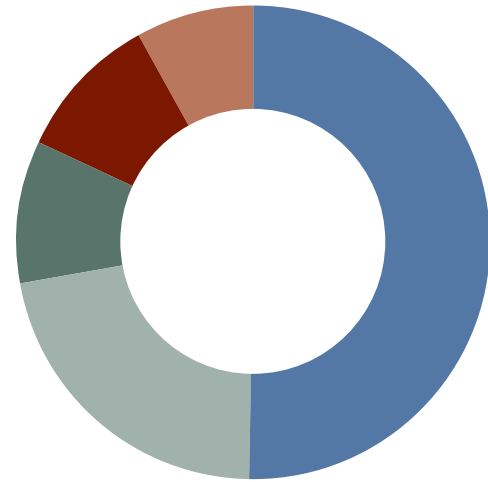
#### CRITICAL PATCHING CATEGORIES BY FISCAL YEAR

	FY09	FY10	FY11
Information Assurance Vulnerability Alert (IAVA)	109	175	180
Information Assurance Vulnerability Bulletin (IAVB)	65	105	155
<b>Total</b>	<b>174</b>	<b>280</b>	<b>335</b>

#### IAVA'S AND IAVB'S BY MONTH FOR FY11



## TOP FIVE SOFTWARE PATCHES



MICROSOFT UPDATES	51%
MOZILLA FIREFOX	22%
ADOBE ACROBAT READER	10%
ADOBE ACROBAT PROFESSIONAL	10%
ADOBE FLASH	8%

Information Assurance Vulnerability Alerts (IAVA's) and Information Assurance Vulnerability Bulletins (IAVB's) are issued periodically by Navy Network Warfare Command and require immediate acknowledgment. Alerts outline required patches to go into production quickly to address high risk vulnerabilities in network devices, workstations, servers, and other technologies.

The U.S. Navy as a whole experienced an almost 20% increase in these notifications, each of which is assessed by ITACS for applicability on all NPS networks. Those that required some action resulted in a number of patches that had to be tested, deployed, and then monitored on the ERN, DREN, and STBL networks. The patching categories primarily had to do with Microsoft and Adobe products.

## NUMBER OF TOTAL CRITICAL PATCHES INSTALLED ON THE ERN BY FISCAL YEAR AND CATEGORY

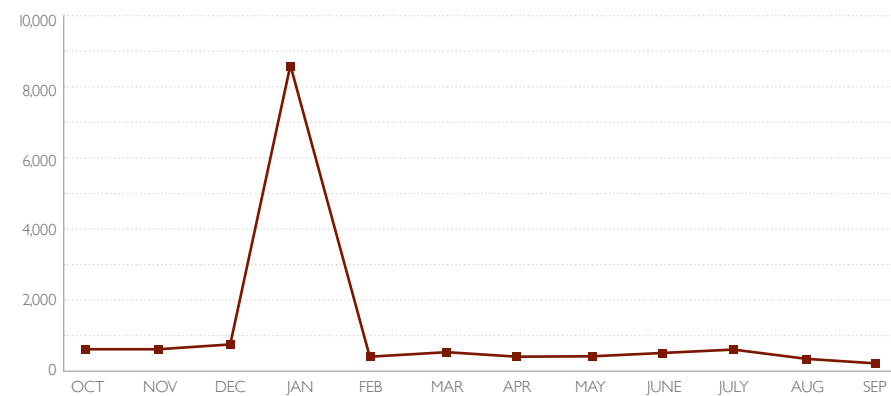
	FY09	FY10	FY11
Information Assurance Vulnerability Alert (IAVA)	99,145	104,490	119,140
Information Assurance Vulnerability Bulletin (IAVB)	34,935	38,047	47,972
<b>Total</b>	<b>134,080</b>	<b>142,537</b>	<b>167,112</b>

The patch management process continues to be a focus of the defense strategy. Of the 335 total IAVA's and IAVB's issued, NPS applied 167,112 patches across the largest network alone, the ERN. This is an increase of 17% over the previous year.

## ANTI-VIRUS METRICS

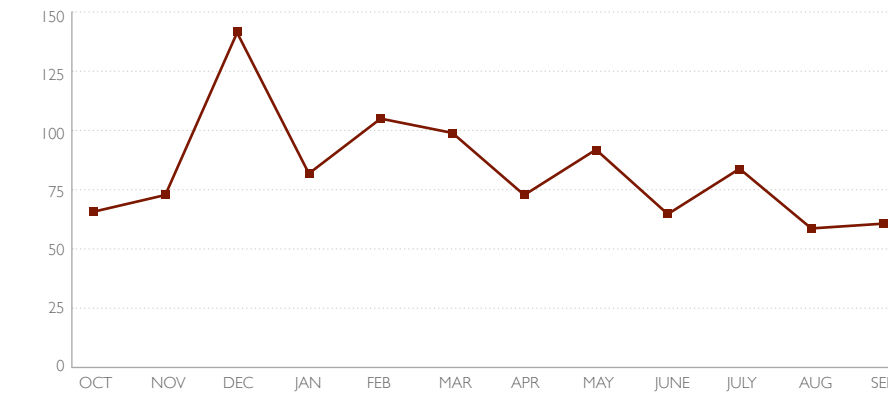
In FY11, ITACS protected NPS users on the ERN from a variety of malicious threats from the Internet, many of which were attempts to install and run viruses on users' desktops. Over the year, ITACS' anti-virus efforts prevented 380 unique pieces of malware from infecting 13,873 files on 1,000 machines.

## NUMBER OF BLOCKED FILE INFECTIONS

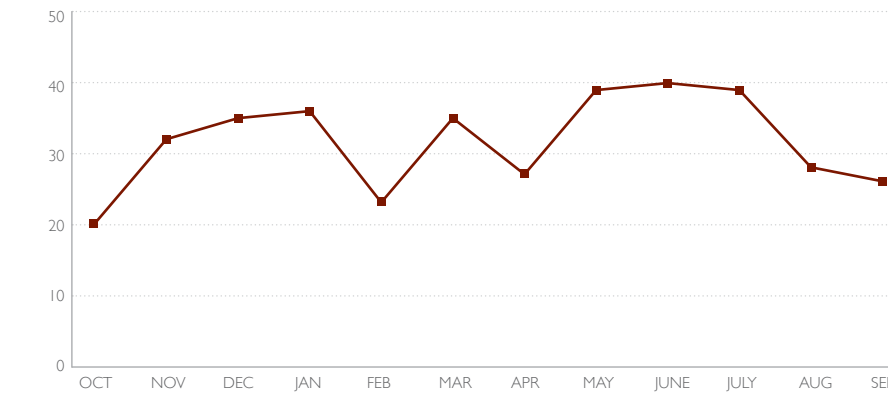


January saw a spike in blocked file infections due to persistent malware that tried to infect a machine 8,142 times over three days.

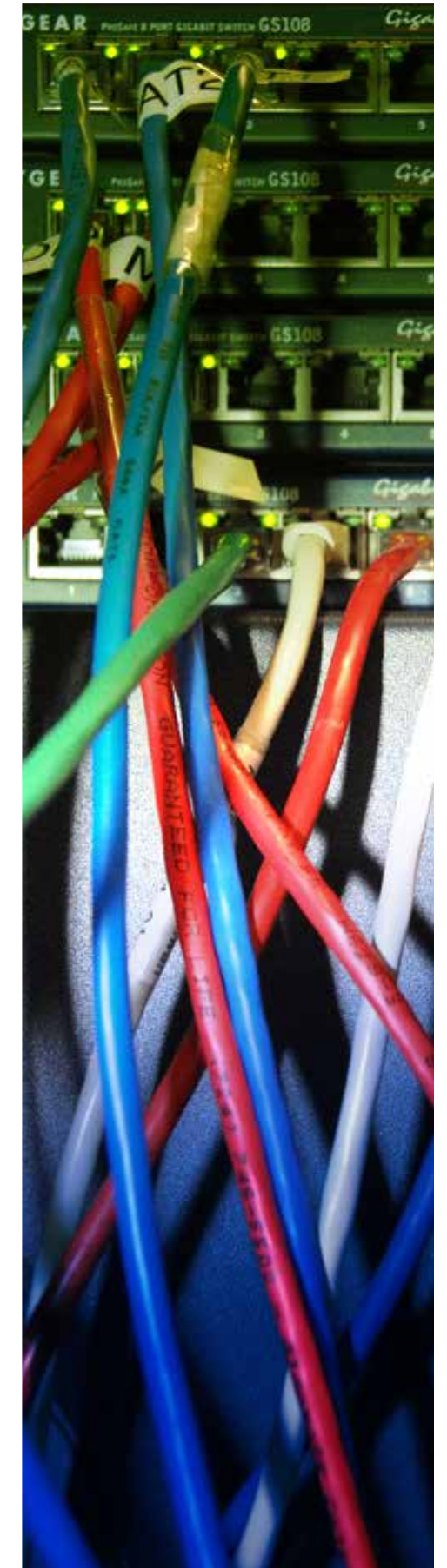
## NUMBER OF BLOCKED MACHINE INFECTIONS



## NUMBER OF UNIQUE THREATS BLOCKED



Another important metric is "effectiveness of managed antivirus." Continuously running AntiVirus Auto-Protect caught 43% of attempted virus attacks while daily AntiVirus Scheduled Scans found 38.7% of the viruses. This is an increase in viruses caught by Auto-Protect from previous years, but shows that scheduled scanning is still very important. Both methods caught over 82% of attempted infections. Five other capabilities detected the remaining 18%.



# ADMINISTRATIVE APPLICATIONS AND SERVICES

## FY11 PROGRESS

### FIVE-YEAR STRATEGIC GOAL

- Continue to improve business systems that support the university environment.
- Evaluate emerging web technologies and leverage their flexibility and ease of use of administrative services to the university.
- Implement an NPS portal to deliver training and to connect people, information and tools.

### FY11 GOALS

- Continue to improve business systems that support the university environment.
- Use open source applications and standards where possible and appropriate.
- Evaluate emerging web technologies and leverage their flexibility and ease of use of administrative services to the university.
- Implement an NPS portal to deliver training and to connect people, information and tools.

In FY11, Administrative Applications and Services worked several critical projects aimed at improvement of business systems in support of the institutional priorities. Open source applications were used wherever possible. The following summarizes the projects.

### ACADEMIC INFORMATION DATA WAREHOUSE

To better serve the campus reporting needs — ITACS, working with Academic Affairs, Academic Planning, and Institutional Research — started development of an enterprise data warehouse in October 2009. A data warehouse enables consistent reporting and storage of historical data at an enterprise level and has been a much-needed addition for reporting to the NPS academic community. Development of Phase 1 of the project began in February 2010 and focused on incorporating student data, including classes, degrees, and theses.

Phase 2 of the project began in December 2010 with the development and implementation of a faculty database with web-based functionality. Data will be transferred from the existing legacy database to the new database server. After the inclusion of faculty data and the transition of reporting to the data warehouse, there will then be a single source of authoritative and consistent data for reporting academic data. The Academic Information Data Warehouse is scheduled for completion in FY12.

### ACTIVE DIRECTORY DOMAIN

ITACS implemented a new Microsoft Active Directory domain (EXERN) for NPS faculty and staff to enhance collaboration with users outside of NPS. The EXERN Active Directory allows for applications to mix internal and external users, granting external users access to internal applications and software.

The EXERN domain is integrated with the Central Authentication Service (CAS) in order to allow login to multiple applications based upon assigned permissions, such as the NPS Wiki or NPS Subversion. EXERN accounts are created and managed by Enterprise Information Systems, which is working on integrating a password policy system that checks with CAS and the NPS Password application to detect soon-to-expire passwords or locked accounts on EXERN profiles. In the future, it will be used for additional applications, such as Sakai, the myNPS portal, FAOWeb and other resources that will be used by NPS partners.

### SUBVERSION PILOT PROJECT

Subversion is an open source version control system in use at NPS since 2005 to manage all external web content and to provide re-versioning and backups. EIS has been using Subversion for locally developed software and also for configuration control of the Kualu Financial System (KFS) software.

NPS personnel can request the creation of EXERN user accounts in order to participate with the Subversion Pilot Project, enabling NPS faculty members who col-

laborate with outside researchers and universities to have access to the same files on an NPS server.

Enterprise Information Systems (EIS) began the Subversion Pilot Project in May 2011 and set up a separate Subversion server outside the internal firewall as a pilot for the Regional Arctic Climate System Model project to share code with colleagues outside of NPS. They can also manage files and directories of their applications, while tracking each change made when the file is uploaded to the server.

### KUALI FINANCIAL SYSTEM IMPLEMENTATION, PHASE 2

Kuali Financial System provides NPS a centralized financial information and management system — directly supporting the NPS strategic goal of seeking operational excellence in financial, business, administrative, and support areas. In FY11, KFS started Phase 2 of implementation which included integrated labor, travel, and other data from DoD and NPS systems. Enterprise Information Systems automated secure systems and business processes to strip out sensitive Personally Identifiable Information data before being input into KFS.

EIS also installed and configured new dedicated hardware for KFS which provides the processing power and redundancy needed to keep KFS running smoothly and reliably. Migration to KFS 4.x, along with transferring from an Oracle database to MySQL database, is scheduled for FY12.

The KFS User Community was established on the NPS Enterprise Wiki to provide self-help resources and information about modifications and enhancements to KFS. KFS had an average of 99% total uptime availability to the NPS user community during FY11 (measured as website availability not including scheduled maintenance time).

### myNPS WEB PORTAL

The myNPS portal delivers secure access to NPS resources from anywhere at any time without the necessity of accessing through the virtual private network (VPN).

The myNPS portal is still in development, but has begun some implementation including portal branding, creating an e-mail portlet, personal bookmark portal, and enabling single sign-on for both the portal and Sakai. The portal was implemented in open source software, Liferay EE 6.0.

The myNPS portal will provide the campus community with the following:

- **Secure Access from Anywhere at Any Time** myNPS provides access to resources and applications without having to install any software!
- **Secure Single Sign-on** myNPS portal utilizes an open source single sign-on solution. Using a single sign-on reduces security risk by reducing the exposure of the user's password to applications.
- **User Personalization and Customization** Users are provided with personal pages that can be customized to their liking by adding, removing, and posi-





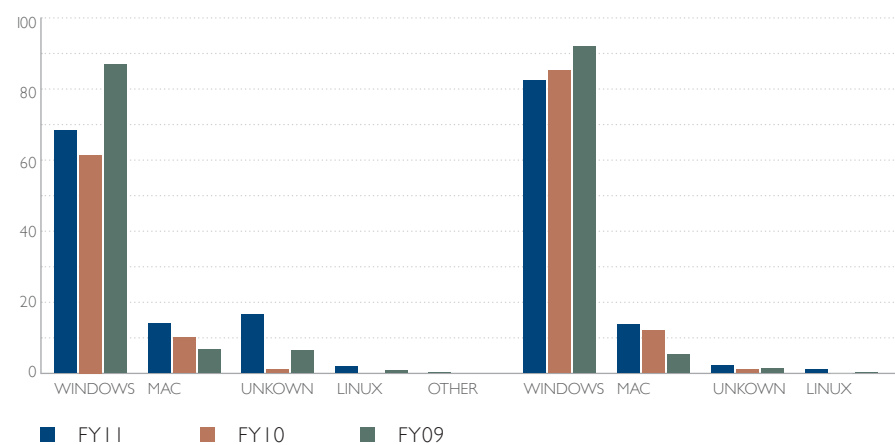
tioning portlets, delivering only that information essential to the user. E-mail, student muster and campus information can all be accessed as required.

- **Collaborative** myNPS portal allows users to engage with the community through chat, blog and message boards.
- **Role Based Content Delivery** myNPS portal delivers content, applications and resources based on 3 specific roles: students, faculty and staff. Default pages are tailored to deliver pertinent information and applications in an effort to foster success in academic and professional pursuits.

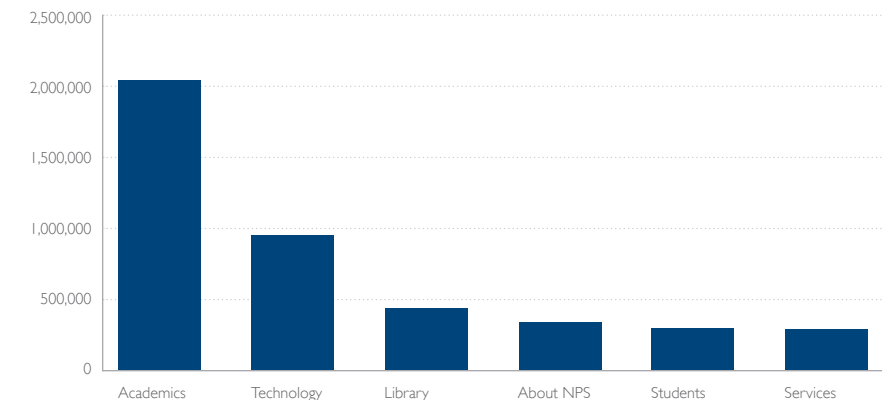
### NPS VISITOR PARKING APPLICATION

In July 2010, the Director of Institutional Relations requested EIS to construct a Visitor Parking Reservation Application for the Protocol Office. There are limited reserved spaces for VIPs and visitors to the campus and a better request-tracking system was needed. The Visitor Parking Application allows NPS personnel to request and reserve special parking spaces for their VIP visitors in front of Herrmann Hall.

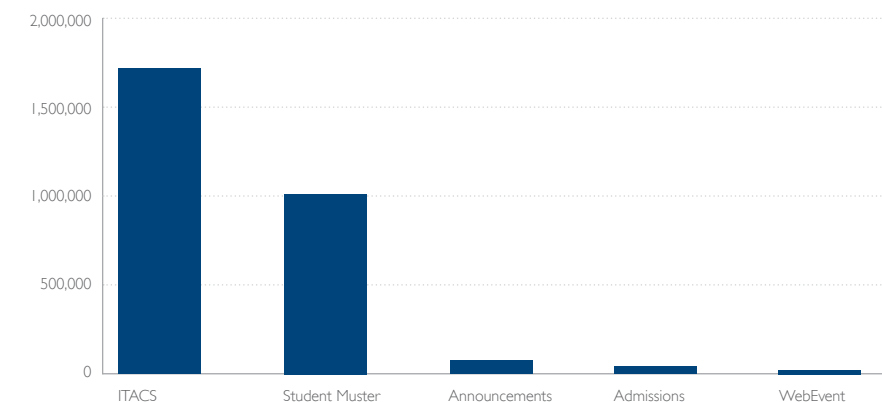
### MOST POPULAR OPERATING SYSTEMS



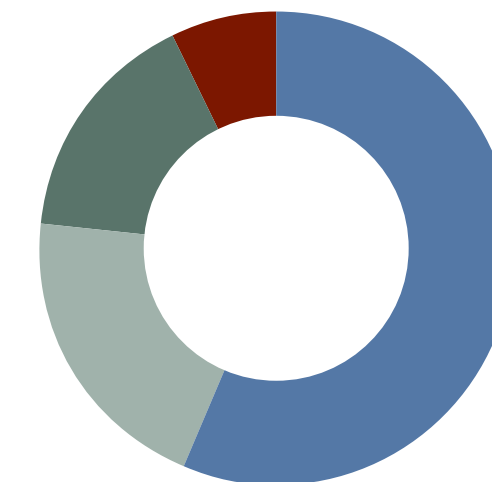
### EXTRANET: MOST POPULAR WEB CONTENT



### INTRANET: MOST POPULAR WEB CONTENT

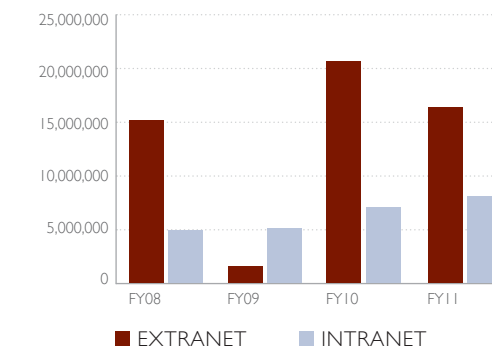


### MOST POPULAR WEB BROWSERS



INTERNET EXPLORER	48.10%
FIREFOX	17.36%
SAFARI	13.61%
CHROME	6.01%

### PAGE VIEWS



A drop in numbers is reflected in FY11 page views due to an upgrade in our analysis software, Urchin, which is used to calculate traffic data throughout our Enterprise applications. This version of Urchin provides better support for filtering non-human traffic, such as automated search engines and spiders, which would cause some of the numbers for FY11, such as page views, to be seemingly lower.

# RESOURCE MANAGEMENT

## FIVE-YEAR STRATEGIC GOAL

- Continue to professionalize ITACS resource accountability to include Human Resources, budget, space, equipment, and contracts.
- Improve customer service at the university, including training and workshops.
- Ensure appropriate levels of funding for staffing and technology to deliver flagship-level services in support of NPS strategic imperatives.
- Report annually on IT expenditures.
- Continue implementation of management practices that include a five-year strategic plan for ITACS.
- Develop annual operational plans that align with the five-year IT Strategic Plan.
- Include an IT-review of all proposals for institutional funding to realize economies of scale and to ensure that technology investments are consistent with support and maintenance policies.
- Encourage partnerships between IT and other NPS departments to leverage opportunities and resources.
- Evaluate customer service through regular surveys.
- Seek out partnerships and consortia arrangements with peer institutions to better leverage IT investments.
- Ensure efficient IT planning by formally including IT requirements in any and all plans for renovations or new construction.

## FY11 GOALS

- Continue to update and review all position descriptions.
- Expand use of KFS to include report generation and expense tracking.
- Fill vacant positions.
- Conduct budget review of ITACS expenditures and develop cost models for services provided.
- Continue to develop alternative funding, such as grant opportunities and consortium arrangements.

## OVERVIEW

Resource Management fully supports all operational areas within ITACS, as well as the Office of Institutional Advancement and the Office of Institutional Research in budget, procurement, contracts and some Human Resources (HR) services. Resource Management oversees space, personnel, equipment and finance. In addition, Resource Management supports ITACS in areas of training, travel, and communications.

## FY11 PROGRESS

In FY11, progress was made on each of the goals as follows:

- New position descriptions for seven members were updated or created to ensure documentation was aligned with current responsibilities and expectations.
- The Kuali Financial System (KFS) was successfully implemented for the entire IR Directorate; creating business processes and re-evaluating the process for improvements. ITACS members participated on several campus-wide committees involved in the conversion to KFS.
- 13 employees were hired to existing billets vacated due to attrition or retirement and eight summer students were sponsored.
- At the request of NPS leadership Resource Management worked with the ITACS leadership to establish collaborative projects with the Monterey Peninsula Department of Defense Network (MP DoDNet) partners to pilot two efforts: shared network infrastructure and .edu services, as well as a Regional Security Monitoring Center.
- The annual update of the ITACS space inventory was completed and presented to NPS leadership.
- Resource Management continued to work with managers to meet training and development needs.
- Resource Management continued to develop and populate metrics regarding IT Human Resources.
- Windows Power Shell Training was provided locally at a lower cost in support of the upgrade of the Exchange e-mail system and the underlying Windows servers to Windows 2008

## FY11 ITACS EXPENDITURES

During FY11, ITACS continued to focus on increased accountability and efficiency in providing support services. ITACS continues to pursue succession development within the organization, and spending resources to ensure services had adequate coverage. ITACS allocated roughly \$180K for professional development activities, such as attendance at technology conferences, and management skills training.

## CONFERENCES ATTENDED BY ITACS PERSONNEL

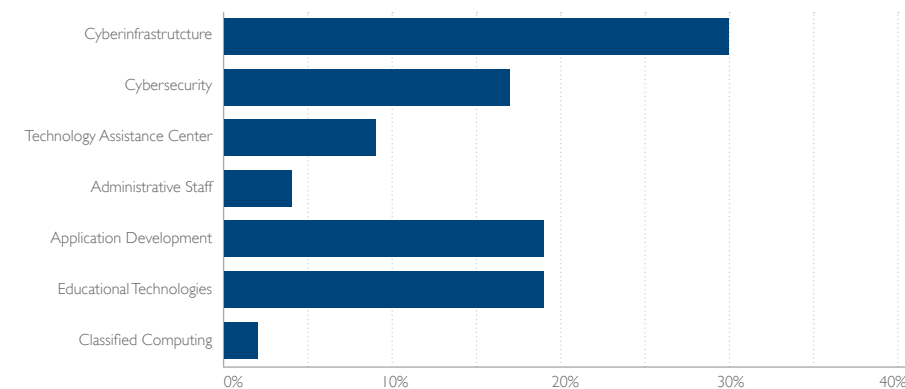
- Campus Technology
- CENIC Annual Conference
- CineGrid Annual Conference
- DREN Conference
- DoDIIS Worldwide Conference
- DON IM/IT West Coast Conference
- EDUCAUSE Security Conference and REN-ISAC
- EDUCAUSE

- Kuali Days
- Liferay West Cost Symposium
- NATO Higher Education Conference
- Super Computing
- Oracle Database Admin Workshop
- VM World Conference

## NPS COMMITTEES, TASK FORCES, AND COUNCILS WHICH ITACS PERSONNEL SUPPORT/SERVE

- Distance Learning Advisory Council
- Executive Council
- Faculty Council
- Information Technology Task Force
  - ~ Classified Computing Subcommittee
  - ~ Cybersecurity Subcommittee
- International Management Education Training Committee (IMET)
- Kuali Financial System Configuration Control Board
- Kuali Steering Committee
- Naval Support Activity — Monterey
- New Student Orientation
- President's Senior Staff
- Provost's Council
- Research Committee
  - ~ High Performance Computing Subcommittee
- Senior Military Advisory Council
- Staff Development Committee
- Student Council
- Union Representatives

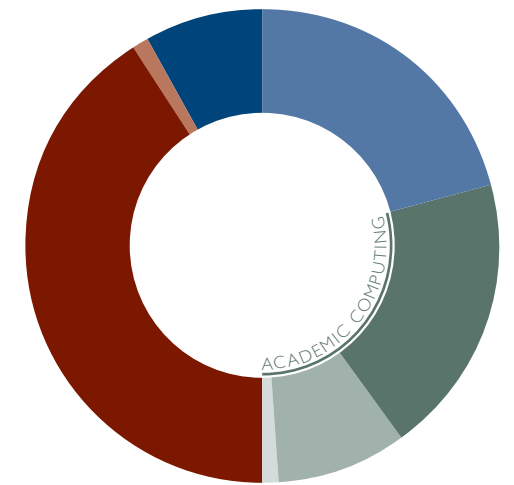
## FY11 DISTRIBUTION OF TRAINING DOLLARS BY ITACS OPERATIONAL UNITS



## ITACS STAFFING

Executive Director ITACS.....	1	Enterprise Information Systems.....	10
Deputy Executive Director ITACS.....	1	Helpdesk.....	9
Senior Leadership Team .....	5	IT Resources .....	5
Education Technology .....	10	Network/Server Management .....	11
Classified Computing.....	3	Research Computing.....	4
Cybersecurity and Privacy .....	4	Unified Communications.....	4
<b>Total.....</b>	<b>68</b>		

## FY11 ITACS EXPENDITURES

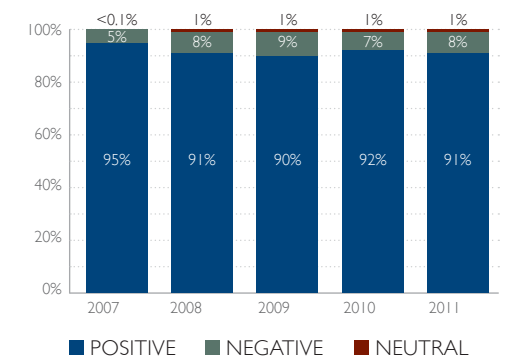


- APPLICATION DEVELOPEMENT 21%
- ACADEMIC COMPUTING 29%
- HIGH PERFORMANCE COMPUTING 19%
- CLASSIFIED COMPUTING 9%
- OTHER 1%
- CYBERINFRASTRUCTURE 41%
- CYBERSECURITY 1%
- OTHER 8%

Provides the summary of the distribution of ITACS Non-Labor dollars. The "Other" category includes supplies, administrative costs, and non-IT expenditures for the operation of the department.

## PERCENT POSITIVE, NEGATIVE AND NEUTRAL RESPONSES TOWARDS ITACS

The following graph provides a comparison of customer satisfaction from FY07 through FY11. Computer users responded with their level of satisfaction to the following prompt: NPS computer services met all my course work and research needs.





# COMMUNICATIONS, PARTNERSHIPS AND OUTREACH

## FY11 PROGRESS

### FIVE-YEAR STRATEGIC GOAL

- Continue to expand venues for communications on Information Technology.
- Continue to develop partnerships within DoD, industry, education and research in support of the School's strategic imperatives.
- Ensure that IT, as a strategic institutional resource, maintains its status as a core competency.

### FY11 GOALS

- Create or strengthen partnerships with departments and campus leadership.
- Continue partnerships with the City of Monterey, California State University Monterey Bay, Department of Defense Monterey Peninsula, and other local institutions.
- Continue partnerships with Quali Financial Systems consortium, Quali Student Consortium, SAKAI Consortium, Liferay Consortium, EDUCAUSE, DON, NETWARCOM, the U.S. Naval Academy, Naval War College, Internet2, and CENIC.
- Create or strengthen partnerships with peer institutions.
- Create or strengthen partnerships with industry.
- Create or strengthen partnerships with local city, county and state agencies.

Throughout FY11, ITACS worked with a variety of partners across campus, the Departments of Defense and the Navy, and a number of associations, activities and individuals from the broader academic and industry communities.

**RDML William Leigher, USN, Deputy Commander of the U.S. 10th Fleet in June 2011 visit** During Rear Admiral Leigher's visit to NPS, Mr. Joe LoPiccolo presented the ITACS department capabilities and services offered to the campus. Rear Admiral Leigher highlighted that he was impressed with the approach ITACS has taken in providing technical solutions that enable NPS to conduct the mission of research and education.

**Kuali Financial System Configuration Control Board** ITACS participates in the NPS Kuali Financial System Configuration Control Board (CCB). The KFS CCB will consider changes and improvements to KFS. Changes to KFS are authorized by the CCB only after sufficient consideration is given to the potential impact and implication that a proposed change has to different segments of the user community and to the integrity and maintenance of KFS. Collectively, the CCB membership has a joint responsibility to understand all impacts and implications across all KFS stakeholders when considering specific changes to ensure a product suite is useful and usable, and improves with time.

**Kuali Foundation Partnership** The Kuali Foundation is a community of universities, colleges, businesses, and other organizations partnering to build and sustain open-source software for higher education, through higher education. By participating in the Kuali Foundation, and more specifically, the Kuali Student Board, the Naval Postgraduate School is able to influence the strategic direction of the Kuali Student project. NPS intends to move to Kuali Student as a replacement to its legacy student management system. Mr. Joe LoPiccolo was elected to the Foundation board and will serve a two-year appointment.

**DoD Information Systems Agency** Mr. Jon Russell, Chief Technology Officer of the Defense Language Institute (DLI), and Mr. Joe LoPiccolo, Executive Director of ITACS, conducted a formal presentation to a special panel in Washington, D.C. on April 19, 2011, after which the panel gave unanimous approval for the Department of Defense Global Information Grid (DoD GIG) waiver, which will allow funding for NPS to support DLI's transition to an .edu domain.

**Distance Learning Coordination Committee (DLCC)** The DLCC represents all DoD educational institutions and provides a platform to connect initiatives. ITACS participated in the DLCC to discuss current distance learning projects at NPS and the standardization of the tools used in the delivery of DoD education.

**U.S. Army 106th Signal Brigade** ITACS presented the NPS/DLI academic network initiative to 106th Signal Brigade which serves as the Army's primary IT service provider. Mr. Joe LoPiccolo and Mr. Jon Russell captured complete endorsement and partnership for the project.

**Navy Higher Education Information Technology Consortium** The CIOs from NPS, the Naval War College, and the United States Naval Academy conducted their annual meeting from June 21–23, 2011 at NPS. The agenda included visits to NetApp, VMware and Google in Silicon Valley and on-campus discussions about challenges and opportunities upon which to develop a common position. The visit to Google's Executive Briefing Center included an overview of future developments in collaborative tools which could support distance learning.

**Corporation for Education Network Initiatives in California (CENIC) Chief Operating Officer, Mr. John Charles** On August 23rd the new Chief Operating Officer of the Corporation for Education Network Initiatives in California (CENIC), Mr. John Charles, visited NPS ITACS. Mr. Charles received an overview brief of the campus to increase his understanding and awareness of the NPS mission and requirements for participating in CENIC.

**CENIC 2011 Conference** NPS' Modeling, Virtual Environments and Simulation (MOVES) Research Associate, Jeff Weekley, was Program Chair for the CENIC 2011 Conference which was held from March 7–9, 2011 at UC Irvine in Irvine, California. NPS presented in three sessions at this year's CENIC conference. NPS actively participates with CENIC throughout the year and will continue to submit proposals to the annual conference as a method staying connected and relevant in the California education and research community.

**Jasig Partnership** Jasig Institutional Members are schools that make use of one or more of Jasig's open source products. NPS uses the Central Authentication Service and several Jasig-adopted portlets. In the future NPS will be using the enterprise calendar, Bedework. Jasig announced merging the Jasig and Sakai Foundations, strengthening the longevity of both products.

**NetAPP** ITACS visited the Executive Business Center at NetAPP several times during FY11 to learn about their storage solution which was selected for the DLIFLC and NPS collaborative project. This solution used existing resources from DLIFLC and offered NPS a replacement for aging storage. In addition to the improvements to storage for both institutions, NetAPP is working to showcase their capabilities as a possible Continuity of Operations Plan and Disaster Recovery Plan.

**Apple** ITACS met with Apple to discuss educational technology collaborations within academia. Apple discussed their involvement with other academic institutions and the successful implementation of iPads.

**InCommon Partnership** This is a membership to a federation that will enable NPS to share authentication with others once our identity management (IdM) project matures. NPS would no longer have to create external accounts for trusted partners at other InCommon participant institutions. NPS would also gain access to a variety of services other participants offer.

**VMware** The ITACS Education Technologies staff met with Professional Services coordinator, Mr. Mo Shahin, to discuss how VMware can assist with current and future virtualization efforts. In FY12, ITACS will work with VMware Professional Services to develop a road map and ensure that NPS capabilities are aligned with mission needs as well as provide methods of creating efficiencies, economies and improved service.

**Brocade, Mr. John McHugh** NPS hosted Mr. John McHugh, the Vice President and Chief Marketing Officer for Brocade. Mr. McHugh received presentations from Dr. Douglas Fouts, Mr. Robert Beverly, and Mr. Joe LoPiccolo. His visit included briefs to further his understanding of NPS. Brocade and NPS have partnered to build an educational lab that will serve for both research and computer science curriculum. Brocade is also a participant with the NPS Foundation.

In FY11, ITACS and CS department faculty Mr. John Gibson, Mr. Brian Steckler, Mr. J.D. Fulp also explored a partnership with Brocade in order to modernize NPS' networking laboratory. Networking courses are planned to be offered by the CS faculty to U.S. Government civilian and military employees through short and distance learning modalities.

**IBM** Mr. Gary Ambrose, IBM's Vice President of DoD, visited NPS and received presentations from Dr. Douglas Fouts and Mr. Joe LoPiccolo. Mr. Kevin Hopkins from IBM presented on the company's smarter planet initiative, which helped ITACS further expand its own green IT plans and helped provide ideas for other green solutions on the NPS campus.

# ITACS FIVE-YEAR STRATEGIC GOALS AND FY12 INITIATIVES

## CYBERINFRASTRUCTURE AND CYBERSECURITY/PRIVACY

### FIVE-YEAR STRATEGIC GOALS

- Establish appropriate wireless network access controls and policies with respect to applications and networks.
- Monitor tools that will capture metrics on the use of remote access and measure resource requirements and security capabilities. These metrics will be included as part of network performance metrics.
- Provide a flexible education and research network environment, which is as accessible and open as possible to enable academic work that is consistent with other research universities.
- Conduct security audits on a regular basis.
- Develop partnerships with local DoD agencies for cooperative data and service redundancy using the ITACS Disaster Recovery Plan as a guide.
- Implement virtualized architectures for critical services.
- Capitalize on the full capability of the upgrade to a 10 gigabit physical infrastructure.
- Leverage NPS membership in the Corporation for Education Network Initiatives in California (CENIC) and associated connections to the California Research and Education Network (CalREN) for research and education.
- Build into the NPS plan the regular refresh and upgrade of the school's wireless networks and wired plant.
- Develop an integrated approach to voice, video and data network requirements.
- Provide users with required access to all internal NPS resources — remote access is required as a core business capability.
- Include off-site when upgrading the enterprise backup and restore capability.
- Create professional services for programming support and technical expertise for faculty and students.

- Expand innovation throughout the IT staff; allow development, testing and experimentation of new technologies.
- Incorporate security and privacy practices into the daily business processes at the School and continue to research solutions to evolving threats.

### CYBERINFRASTRUCTURE FY12 INITIATIVES

- Change Management
- Core Ethernet Fabric
- Fortinet
- Hot Aisle Expansion
- IPv6
- Operations Center Physical layout improvement
- Network and Security Operations Center
- Network Operations
- Power Expansion
- Private Cloud
- Unified Communications
- Virtualization
- Wireless Upgrade

### CYBERSECURITY AND PRIVACY FY12 INITIATIVES

- Continue to refine cybersecurity architecture and response capabilities.
- Achieve and maintain accreditation for sponsored networks and applications.
- Continue professionalization of the Information Assurance Workforce.
- Support cybersecurity research collaboration with faculty.

## ACADEMIC APPLICATIONS AND SERVICES

### FIVE-YEAR STRATEGIC GOALS

- Invest in the infrastructure and research required to make learning resources more flexible and mobile.
- Begin integrating audio and video capture functionality into all learning spaces for distributed learning purposes.
- Research and pilot emerging technologies to ascertain their potential to increase the effectiveness of distributed educational programs.
- Develop an academic portal which will deliver technologies, required software, electronic educational materials and a single sign on (SSO) to promote delivery of information and resources to the student based on curriculum and permissions.
- Present with faculty at national conferences to promote the solutions that NPS has deployed.
- Expand the NPS computational and data GRID to enable research with large data sets and immense computations in a distributed environment.
- Improve processes and explore leading-edge technology to meet the functionality required by faculty and researchers.
- Upgrade and deliver technologies and systems capable of supporting the five-fold growth in the distributed learning population.
- Update and re-purpose learning spaces to reflect active learning principles that leverage the power of information technology to enhance the learning experience in both classified and unclassified environments.

### FY12 INITIATIVES

- Recapitalization Plan
- VDI pilot
- Upgrade the Video Steaming System
- Virtual delivery of academic software

### HIGH PERFORMANCE COMPUTING

- Invite experts to teach short courses that educate users on cutting-edge research computing topics.
- Develop NPS visualization for Research Computing.
- Implement a sustainable HPC program.
- Use the Hamming supercomputer to produce research computing content for the Sony 4K projector system.
- Utilize the CENIC connection to rapidly receive and deliver data from partner institutions.

### CLASSIFIED COMPUTING PROGRAM — FY12 INITIATIVES

- Continue to plan and manage the lifecycle maintenance plan for classified labs, classrooms and infrastructure.
- Assist the command in the SCIF Expansion project, ensuring that the needs of the faculty, students and researchers are met.
- Continue to co-chair the Classified Computing Committee.
- Continue to develop staff to ensure training and certification requirements are maintained for the various classified systems and networks.
- Continue to participate in classified conferences in order to stay abreast of changes and opportunities.

## ADMINISTRATIVE APPLICATIONS AND SERVICES

### FIVE-YEAR STRATEGIC GOALS

- Use open-source applications and standards where possible and appropriate.
- Continue to improve business systems that support the School's environment.
- Evaluate emerging web technologies and leverage their flexibility and ease of use to administrative services to the School.
- Implement an NPS portal to deliver training and to connect people, information and tools.

### FY12 INITIATIVES

- **Event Registration Application** An Event Registration Management application is needed to allow event planners and recurring conferences an internal registration option for their visitors.
- **Foreign Area Officer (FAO) Web Redesign** Redesign and organize FAO web content and resources with Liferay's CMS features, including tags and categories so that content is searchable and accessible through multiple pathways.
- **Identity Management System** The new system will provide a self-service feature for users to easily update their information, as well as an administrative end to provide permissions to specific information.
- **Kuali Product Suite**
  - ~ **Kuali Coeus 4.0** Install/Configure Kuali Coeus version 4 when it is released for testing by the Resource Sponsored Program Office and other members of the NPS community.
  - ~ **Kuali Rice 2.0** Install and configure Kuali Rice 2.0 when available as a stand-alone instance to evaluate its use with Kuali Financial System 5.0 and Kuali Coeus 5.0, as well as evaluating its suitability as a platform for rapid application development.
  - ~ **Kuali Student Development** The Kuali Rice software provides an enterprise class middleware suite of integrated products that allows for applications to be built in an agile fashion. This enables developers to react to end-user business requirements in an efficient and productive manner so that they can produce high quality business applications.

- **SharePoint Upgrade** The NPS user community has expressed an interest in the new features of SharePoint 2010, such as integration with Exchange 2010, workflow, improved organization and structure of content, social networking and personalization, and business connectivity services.
- **SharePoint Connector for Confluence (Enterprise Wiki)** Campus users will be able to have all their collaborative content in one location by embedding their existing legacy SharePoint content into their wiki pages.
- **Transformative Education Forum (TEF) Portal** Participants from North and South America, Africa, Europe and Asia use the portal to discuss the complex facets of education in an increasingly globalized world.
- **Web Survey Application** Users will be able to create custom surveys on the fly without relying on ITACS to develop custom features for them.
- **Web Content Management System (WCM) Replacement Project** Users will have the ability to create their own web forms, multi-view calendars, mobile-ready web pages, and RSS feeds, considered as standard features in modern applications.
- **Web-based Calendaring System Implementation** The launch of an enterprise calendar system will allow calendars to be used in a multitude of ways through RSS feeds, subscriptions, imports and exports.

## RESOURCE MANAGEMENT

### FIVE-YEAR STRATEGIC GOALS

- Continue to professionalize ITACS resource accountability to include Human Resources (HR), budget, space, equipment, and contracts.
- Improve customer service at the School, including training and workshops.
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- Encourage partnerships between IT and other NPS departments to leverage opportunities and resources.
- Evaluate customer service through regular surveys.

- Seek out partnerships and consortia arrangements with peer institutions to better leverage IT investments.
- Ensure efficient IT planning by formally including IT requirements planning in any and all plans for renovations or new construction.

### FY12 INITIATIVES

- Continue to develop alternative funding, such as grant opportunities and consortium arrangements.
- Conduct budget review of ITACS expenditures and develop cost models for services provided.
- Assess the ITACS business processes for efficiencies and improvements.
- Improve communications processes and update ITACS publications.
- Review ITACS and Resource Management metrics to validate and ensure ITACS is measuring relevance and effectiveness related to mission and quality of service.
- Establish a grant process and develop possible areas for grant opportunities.

## COMMUNICATION, PARTNERSHIP AND OUTREACH

### FIVE-YEAR STRATEGIC GOALS

- Continue to expand venues for communications on Information Technology.
- Continue to develop partnerships within DoD, industry, education and research in support of the School's strategic imperatives.
- Ensure that IT, as a strategic institutional resource, maintains its status as a core competency.
- Continue participation in the Navy Higher Education IT Consortium, which provides a formal venue for the review of best practices, common approaches to shared challenges, and cooperative initiatives.
- Continue coordination of IT-related corporate vendor relations within ITACS.
- Continue participation in the Monterey Peninsula DoD-Net, an infrastructure made possible by the City of Monterey, for connection to the regional DoD assets.
- Continue partnership with the state higher education network, CalREN, and the Corporation for Education

- Network Initiatives in California (CENIC).
- Make outreach to the local communities a part of the central IT agenda.

### FY12 INITIATIVES

- Continue partnerships with the City of Monterey, California State University Monterey Bay, Department of Defense Monterey Peninsula, and other local institutions.
- Continue partnerships with Kuali Financial Systems Consortium, Kuali Student Consortium, Sakai Consortium, Liferay Consortium, EDUCAUSE, DON, NETWARCOM, the U.S. Naval Academy, Naval War College, Internet2, and CENIC.
- Create or strengthen partnerships with industry.
- Create or strengthen partnerships with peer institutions.
- Create or strengthen partnerships with departments and campus leadership.
- Create or strengthen partnerships with local city, county and state agencies.



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