From SUN/Oracle to "Hybrid" Scaling the HPC Cluster "Hamming"

The NPS High Performance Computing (HPC) center has come a long way since the ribbon-cutting ceremony in 2009 for the newly installed Hamming supercomputer. The system is named after the late NPS Professor Richard Hamming. The installation of a state-of-the-art closed loop "Hot Aisle Containment System" for cooling and a 500KVA UPS system for power was the solid foundation for the start of HPC at NPS. The original Hamming Cluster consisted of four racks of Sun Micro System Model 6048 processors with 144 blade servers with -eight core CPUs each (a total of 1,152 CPU cores). The network was a 1 gigabit per second private network connecting all servers at a single data rate of 10 gigabits per second. A second private network linked 36 servers with a switch running at 20 gigabits per second. HPC storage comprises 60 terabytes locally via a fast network and 99 terabytes of Sun Storage connected via a slower network and used for backups and archiving.

During the 2011 summer break, an infrastructure upgrade to the power and cooling was performed. All equipment racks then possessed maximum power and cooling in preparation for a design change to the Cluster hardware architecture, which was the first stage in designing a Hybrid Cluster. With this upgrade, HPC users have flexibility in scaling and installation. The HPC team now has the mobility to combine various original equipment manufacturer products to the cluster architecture. Also installed over the summer break was a 216-port switch capable of 40 gigabits per second speed to allow for the integration of denser servers nodes at a faster transfer rate. The HPC team also replaced several Sun servers with AMD 48-core nodes capable of 40 gigabits per second transfer speeds, as well as introducing graphical processing units (GPUs) with upwards of 3,000 plus GPU cores. At this time, the local high-performance disk storage was increased to 199 terabytes.

With spring break around the corner, ITACS Research Computing is continuing to develop the Hybrid Cluster. The HPC team is planning to install new AMD 64-core servers. The CPU core count will reach 2,112 cores and over 5,000 GPU cores connected by a 40 gigabit per second internal network. The new products will be under test and development and scheduled for installation during the 2012 summer break. Also at that time, the fast disk storage will increase to 259 terabytes. The Hamming Cluster is current with the advancement in dense technology and is a major shared resource at NPS.

High Performance Computing Mission Statement:

Promote scientific computing at NPS by providing support to researchers and departments that wish to engage in scientific computing, and establish NPS as a nationally recognized HPC "Center of Excellence."

Video Conferencing at NPS

Several different research groups at NPS have been using various tools to include remote users in their discussions. These users not only are from across the country but from across the world. To reach these users, some groups solely use Elluminate Live!, some use Elluminate and Skype while others are using Elluminate, Skype AND a

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phone bridge to provide their remote participants several ways to connect.

Elluminate has the tools available for viewing another person's desktop, white-boarding, recording the session plus much more while Skype has superior audio providing noise canceling without special equipment. Both tools have good capabilities for displaying a web camera. To use Elluminate, Java must be installed while for Skype, the Skype client needs to be installed, an account created and possibly a Skype business account purchased depending on how many people need to be connected and if web cameras are being used in Skype.

Although, each group may experience a bit of a learning curve to ensure all users are connected as expected, and the proper equipment is obtained, however, once working properly, the experiences have been better and cheaper than just using a phone bridge.

If your research group or class is interested in these features and capabilities, more information is available at https://wiki.nps.edu/display/SakaiCLE/Video+Conferences.

Herrmann Hall Welcome Center

The new NPS Welcome Center will greet visitors when the Herrmann Hall renovation project is finished. Located just inside the main entrance, the Welcome Center will be a convenient resource for information about NPS, the Hotel Del Monte, and local activities and attractions on the Monterey Peninsula.

Responding to requirements from the customer, Educational Technologies has

proposed a set of interactive kiosks. Each kiosk will include an LED-illuminated LCD video display with a touch screen overlay to enable customer-driven content selection. Specialized loudspeakers with tightly controlled coverage patterns will accompany each display. These "Audio Spotlights" will be located above each kiosk and will allow audio content to be heard only in the immediate area. Thus, each kiosk can play audio content without disturbing visitors using the other kiosks.

NPS Welcome Center
Herrmann Hall
(proposed)
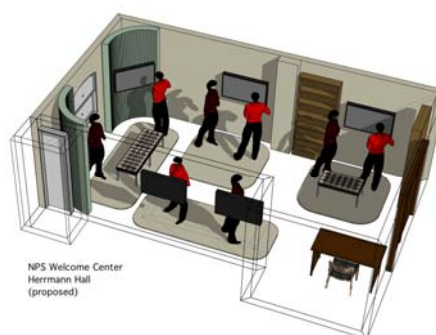
Digital media players will store audiovisual content locally at the displays, but can be updated remotely over the NPS LAN using included authoring software. The content author will define screen layouts and interactive elements. For example, users might touch a thumbnail to bring up a high-resolution version of an historical photo or film clip of the Hotel Del Monte, contemporary videos highlighting current research work at NPS, or regional maps.

By using standardized display architecture with networked media players and remote authoring and updating tools, single-purpose hardware is avoided; the kiosks can be focused on specific themes, while still allowing access to other content. All kiosks can evolve and adapt to changing requirements, with content updated as needs dictate. The media

players will be network appliances, easy to swap and free of hard drives and the management and security concerns of computer operating systems. During normal operations, they will not respond to incoming requests from any device on the network, but will instead "pull" updated content from a pre-determined storage location on the network. All content will be stored locally on solid-state memory on the player. Therefore, network outages will not interrupt content.

PARTNERSHIPS AND OUTREACH

New Monterey County CIO Visit to NPS – Dr. Christine Haska and the ITACS staff hosted an orientation meeting for the new Monterey County CIO, Dianah Neff. In addition to Ms. Neff, Mr. Fred Cohn, the Assistant City Manager for the City of Monterey and Ms. Bonnie Gawf, the Director of Resources & CIO for the City of Monterey, were in attendance. The purpose of the orientation meeting was to introduce Ms. Neff to NPS and discuss recent collaborative efforts, as well as determine next steps forward.

CENIC 2012 Beyond the Network Conference – Dr. Christine Haska and Mr. Joe LoPiccolo attended this year's conference held in Palo Alto, CA. In addition to numerous seminars and workshops, a luncheon was held honoring the 2012 Innovations in Networking Award recipients. NPS and DLIFLC jointly received the award and Dr. Haska accepted the award on behalf of NPS, and COL Dino Pick, DLI Commandant, accepted the award on behalf of DLIFLC.

New CENIC CEO Visited NPS – On March 27th, Dr. Christine Haska and the ITACS staff hosted Dr. Louis Fox, the new CEO of the Corporation for Education Network Initiatives in California (CENIC), for an orientation visit to NPS. Dr. Fox was accompanied by Mr. David Reese, CENIC CTO. They met with President Oliver and DLI representatives. The purpose of the visit was to introduce Dr. Fox to NPS and its mission, and to provide opportunities for him to meet NPS faculty members and learn about some of their research projects. CENIC's role in NPS' efforts to establish and maintain an education and research network has been strategic, and it is important for CENIC's new leadership to understand how NPS benefits from the network.

The Navy Higher Education IT Consortium (consisting of USNA, NPS and NWC CIOs and senior staff) met several times over the last month to discuss concerns about recent discussions about the future of academic networks. An issue paper was developed providing background on the NHEITC and its function that was put into memorandum format and sent from the three CIOs to the leaders of the three Navy higher education institutions. The paper will be the focal point of one of the agenda items of the Advanced Education Review Board meeting on April 6th with N1 and the VCNO.

KFS 4.1.1 Migration Update

The KFS Team is currently on schedule to release KFS 4.1.1 with integrated NPS specific code at end of March 2012. The Kuali Foundation released KFS 4.1.1 on September 9, 2011 and represents over 1 and ½ years of effort in bug fixes, improvements and new features. The Kuali Foundation made the previous major KFS 3.0.1

release currently in use at NPS initially available on February 5, 2010.

Bug fixes are the most notable improvement that KFS 4.1.1 provides NPS: 37 in Chart of Accounts, 26 in General Ledger, 45 in Identity Management, and most importantly, due to heavy usage of the Purchasing module at NPS, 106 in Purchasing. Several of the issues addressed in KFS 4.1.1 are known issues encountered at NPS that have not yet been solved independently. KFS 4.1.1 also provides two new features not available in KFS 3.0.1: Kuali Endowment Module and Kuali Access Security Module. Although the Kuali Endowment Module is not required at NPS, the Kuali Access Security Module will provide the ability to control document attribute level security based on roles and permissions. Previous to the release of this feature, security was controlled only at the document level and not the document attribute level. Granular control of attribute level security is useful if information associated with certain parts of a document is required to perform work, but access to other pieces of information associated with the same document, for example, should not be available.

The KFS 4.1.1 release, which also coincides with a process level improvement at NPS, in addition provides comprehensive unit and integration tests. The success rate against the KFS demo test data is nearly 100 percent. This testing success rate is important as potential errors introduced by NPS code changes should be easily apparent. It is also now possible to incorporate NPS specific tests into the test suite to validate the release candidate further.

Safeguarding Personally Identifiable Information (PII) During Tax Season

Tax season is upon us once again and your personal income tax forms are key documents that contain a great deal of PII that must be protected. The following is a quick review and reminder about PII:

Personally identifiable information is defined in OMB Memorandum M–07–16 as "information which can be used to distinguish or trace an individual's identity, such as their name, social security number, biometric records, etc. alone, or when combined with other personal or identifying information which is linked or linkable to a specific individual, such as date and place of birth, mother's maiden name, etc."

Thus, all tax documents contain a lot of PII.

The NPS Information Assurance Manager would like to remind everyone to observe the following guidelines to ensure the confidentiality of their PII and the PII of others when handling tax forms for personal or business use:

- Do not email, mail or courier tax forms on CDs, DVDs, hard drives, flash drives, USB drives, floppy disks, or other removable media unless the tax forms are encrypted.
- Do not leave tax forms unattended on a network printer, fax machine, or copier.
- Do not send tax forms to a fax machine without contacting the recipient to arrange for their receipt.

- Physically secure tax forms (e.g., in locked drawer, locked cabinets, safe) when not in use.

Please note that email is **NOT** a secure form of communication unless the message or the information it contains is encrypted. Sending an email from your personal email account to your tax advisor's business email account is usually not encrypted; thus, it is not a secure method to transfer your information. Talk to your tax advisor about how to communicate securely. If that person cannot provide a way of electronically delivering documents securely, then deliver them in person or look for a new tax advisor.

Remember, you are responsible for protecting PII. Review the links below for more good information.
-Sophos Nakes Security: IRS releases its top 'Dirty Dozen' tax scams –
http://nakedsecurity.sophos.com/2012/02/22/irs-releases-its-top-dirty-dozen-tax-scams/
-IRS Dirty Dozen Tax Scams for 2012 –
http://www.irs.gov/newsroom/article/0,,id=254383,00.html
-Protect Yourself During Tax Season: Purchase a Paper Shredder! –
http://whitakerbrothers.hubpages.com/hub/How-To-Protect-Yourself-During-Tax-Season
-National Park Service PII Article –
http://home.nps.gov/applications/digest/headline.cfm?type=Announcements&id=11564&urlarea=npsnews

ITACS Recommendations for Those Departing NPS

If you are leaving NPS employment, a few things must be completed concerning your computer accounts. This checklist will avoid any oversights of important details, and ensure you have everything   necessary.

Communicate Your Departure

Those who try to contact you via email will appreciate receiving a message that you have left NPS, which is easily done by turning on the Out-of-Office Announcement in Microsoft Outlook. You may want to provide a new means of contacting you (e.g., new email address, telephone number, or mailing address). If you are on the NPS faculty or staff, you might provide the name and contact information for the person assuming your duties. In Outlook 2010, click the File tab, then click "Automatic Replies (Out of Office). In Outlook 2007, click the Tools tab, then click "Out of Office Assistant." In Outlook 2011 (Mac), click Tools on the menu, then click "Out of Office."

Clean up Your Email

Delete all emails you no longer need. Any emails that you want to retain can be archived. Instructions for creating an archive folder can be found on the Wiki at https://wiki.nps.edu/display/TAC/TAC. Select Windows or Mac and then go to the link for the instructions to create archives. A file is created with a .PST extension. In Windows, it typically resides on your H drive. On the Mac, it is normally on your hard drive. That file can then be copied to a CD, taken with you to your new location, and imported into Outlook.

Back-up and Delete Your Files

Your data files can be found on your personal network drive, in My Documents, on your desktop, and any other location you may have chosen to save such files. Delete those no longer needed. The remaining files can be copied to a CD and then deleted. Alternatively, if you have a very small number of files that are small in size, they can be forwarded as email attachments to your new location.

Telecommunications Office (TCO)

If you have been provided with a cellular device or blackberry service, the device must be returned to your Local Telecommunications Coordinator (LTC). Also, the ITACS TCO must be notified via email of any change in status or assignment of the device (tco@nps.edu). Every department has at least one LTC responsible for requesting telephone additions, moves or changes. Staff and faculty should request that their LTC retire or reassign their extension and voicemail upon leaving NPS. Since voice services are not provided for students at this time, it is not applicable to them.

Account Extension

Once you leave NPS, your ERN account will remain active for 90 days. If you need additional time to complete a thesis, contact your Ed. Tech. who in turn will contact the Registrar's Office. If an extension is needed for any other reason, a sponsor is required who will contact the Registrar's Office.

Microsoft Office 2010

If you have installed Microsoft Office 2010 products (Outlook, Word, Excel, PowerPoint, Project, or Visio) on your personal computer as a download from our software download page, be aware that your Microsoft Office 2010 will be deactivated by Microsoft six months after losing access to NPS.

The staff at ITACS thanks you for your cooperation in assuming personal responsibility for the proper closure of your computing accounts and wishes you well in your next assignment.

TAC STATISTICS

From 1 – 29 March 2012, the Technology Assistance Center (TAC) received 4,938 requests for assistance, 3,603 of which were resolved by the Tier 1/Tier 2 areas. The remaining 1,335 requests were escalated to groups outside of TAC for specialized assistance. Overall, there has been a 2% increase in requests for assistance compared to the month of March 2011. Requests for assistance were categorized as follows:

Phone: 2,563
E-Mail: 2,022
Walk-in: 315
Web: 0
Technician: 38

This month, 92% of all calls were resolved within the Service Level Agreement (SLA). Those that were carried over are awaiting parts or pending information from customers.