

**NETWORK INFRASTRUCTURE AND SERVICES
ADVISORY SUBCOMMITTEE
May 6, 2016**

Attendees: Morgan Allen, Ron Angert, Brock Burroughs, William Dougherty, Mark Gardner, Richard Hach, Kimberley Homer, Joe Hutson, Brian Jones, Steve Lee, Edward Lenner, Heidi McCoy for Chris Kiwus, Mike Moyer, Nicholas Polys, Jeff Reed, Pat Rodgers, Andi Sherlock, Ryan Spoon, Steven Vanderloo, and Brenda van Gelder.

William announced that summaries for the last two meetings are now posted on the website. He welcomed the committee members who introduced themselves, stating their home department.

New Hall West and Ambler Johnston Hall Updates – Joe Hutson: Joe Hutson reported on the status of work in New Hall West and AJ, furthering work on the Residential Network Upgrade project. The wireless network upgrade in New Hall West was completed in January. The AJ network upgrade is scheduled to begin after spring commencement and be completed in June. The upgrades will increase connection speeds from 100Mbps to 1Gbps, consistent with residence work completed last summer. The service model was changed, going from one port per student down to one wired connection per room. Comprehensive wireless coverage is provided at roughly 2000 access points and is 802.11ac capable. NI&S now has a more functional relationship with the Division of Student Affairs and Housing and Residence Life. We are working through some life cycle planning for replenishment on a 5-year cycle for all the residence halls. Innovate Space in the Oak Lane community is the only remaining building still on Cisco wireless equipment and will be scheduled for upgrade in the near future. Later in the meeting, Steve Lee will discuss some of the other wireless service enhancements related to guests and registration of gaming and other wireless devices. Ron Angert asked about student satisfaction on the wireless. Are students saturating the network? Feedback from HRL thus far has been positive, but a survey has not been conducted. Performance testing in terms of coverage and speed indicates it is consistent with the design. Early on, there were a couple issues with Juniper equipment used for aggregation causing service interruptions, but we are aware of no other issues. Kimberley indicated there have been complaints about wireless service in Owens, which has not been upgraded. However, it should be noted that user expectation now is for the greatest possible coverage everywhere. Joe indicated there are nine remaining buildings in scope for the Unified Communications upgrade, and Owens is on that list. Procurement for the access points in Owens should go out within the next two weeks.

Building Aggregation Routers (BAR) Project – Joe Hutson: The BAR Project is focused on improving network reliability and performance, replacing equipment over 12 years old, which Joe described. The project was kicked off in December; the planning and procurement process has begun, equipment has been received, and there is a target completion date of November, 2016. In addition to the replacement of some outmoded and outdated technology, NI&S will be able to provide 10Gbps

connectivity to 30 buildings on campus as part of the scope of this management project. There are some additional capabilities in terms of our isolation of the control plane from the user data plane which has been a source of some network service interruptions usually around holidays. The hardware upgrade is a significant investment at \$750,000. The project will be a rolling migration of at least 30 buildings with better connectivity, reliability, performance, and decreased operational cost and complexity with some of the legacy Cisco network components. The equipment is in place, connected, and some configurations are being finalized, with migration scheduled to begin later this summer.

William referenced Joe's comments on the ability to provide 10Gbps service to certain buildings. NI&S is taking part in a grant the Division of IT has received from NSF-CC-DNI. Mark Gardner and Eric Brown are PIs on the project, and Nicholas Polys from ARC is involved. We are soliciting and have received submissions for pilot groups to begin receiving 10Gbps/second. The plan is to do 12 or more buildings (25 total connections) within two years. A true timeline is not available at this point, but the work is being done in parallel with some of the other campus work, and we are taking the opportunity to purchase a second 40Gbps/second line card for one of the core routers. That will assist others in the buildings, whether or not they are researchers, who wish to receive enhanced 10Gbps service. The goal is to plan for the future; the line card listed for \$2M but it was discounted to \$200,000 with annual support at \$300,000. The core network upgrade project has largely been folded into the BAR project. Joe has a list of the buildings targeted to be connected, and Mark Gardner noted the biggest challenge is that not everyone will get the 10Gbps; they are having difficulty identifying who can benefit from it. Mark explained the procedure to receive the research network upgrade and asked the committee membership to please let him know if they become aware of someone who can benefit from the 10Gbps. William stated that in addition to the almost \$500,000 grant, the Division of IT provided seed money. The CIO stipulated that this 10Gbps service should be offered for the same monthly rate as the 1Gbps service, \$15/month, an excellent price for the 10GB connection. Brenda van Gelder mentioned her conversation with ICAT and discussion of research they would like to do with Randolph Hall and the ASPIRES Lab. It is still early and specs are not available, but Ben Knapp mentioned Internet2 type activity between ICAT and Randolph. Tanner Upthegrove would have more technical information.

Other Updates from Joe Hutson: NI&S is continuing to work on the Unified Communications infrastructure projects. Nine buildings are still on the list for work, including an inside cable plant upgrade, and wired and wireless networks. Those nine buildings have some dependencies on contractors for external room construction, but staying on schedule could have the project closed out by December 2016 from a cabling and building network upgrade perspective. There is also some (network) work to do in the Data Center.

Indoor Emergency Telephones. For this residential project, around 180 or 190 blue emergency telephones were installed in the residence halls (not indoor blue light telephones but blue emergency telephones). NI&S partnered with VT Emergency Management for funding. Beginning this week, another 100 telephones will go in

academic and administrative buildings. They will be high availability, emergency only telephone devices largely in hallways or common areas. The targeted completion date is the end of this fiscal year along with work to improve the performance and capabilities of the VT Alerts product. Getting phones funded and identifying the areas of greatest needs with regard to public safety, and establishing a refreshment lifecycle has been a positive collaboration between NI&S, VTEM, and the VTPD. VTEM and VTPD establish the priorities and identify the locations for installations to take place. NI&S handles the procurement, installation, and technical aspects of the project.

Regional Dispatch Center: Virginia Tech is working with the New River Valley Emergency Communications Authority (NRVECA), a consortium of Virginia Tech, the Town of Blacksburg, Town of Christiansburg and Montgomery County, on plans to begin routing 911 traffic to the regional authority beginning in July. The target date of July 11 is contingent upon current issues with some Verizon telco facilities because of the ongoing strike being resolved. For the last 25+ years, campus 911 calls have been routed to a secondary PSAP (Public Safety Answering Point) in Sterrett. Beginning in July these will go to Christiansburg and be dispatched from the regional authority. Heidi McCoy mentioned that the regional authority was created based on lessons learned after April 16, 2007. She described how some of the transfers from Sterrett will occur. Donna Brown is the Executive Director of the NRVECA. The system will be evaluated once it is up and running.

Wi-Fi Enhancement Project (with Guest Wireless Service) – Steven Lee: Steven Lee made a presentation on Virginia Tech wireless service updates and provided a demonstration. The slides are attached. Significant investments have been made in the upgrading of the wireless infrastructure. William indicated his thanks and congratulations on the success that has been achieved in these projects. Everyone is encouraged to try out Eduroam.

Cellular Plans and New Policy - Pat Rodgers: For years NI&S has provided cellular devices and plans to the university. Recently, the university has developed a new policy, No. 3960, “Mobile Communication Devices.” This policy provides another cellular option to departments for employees. An employee with a personal device who wants to be reimbursed for voice and text, or voice, text, and data, can work with the department head for non-taxable reimbursement through Payroll. The employee must provide justification to the department head for approval. The policy is relatively new, and NI&S has not seen a mass exodus from its customers, but anticipates that another six months may provide a pattern. William noted that those in NI&S who have requested reimbursement did not already have university cell phones. He also noted that once the request form is signed and approved, devices are subject to FOIA and other e-discovery type activities. William indicated that NI&S has a separate form mandating use of various security measures, etc. as this is not explicitly stated on the signed request form, though security is mentioned in the university policy. He agreed to share the form with Ron Angert. The employee reimbursement plan must be renewed by each person annually. NI&S will be reviewing its cellular offerings on a continuing basis and making changes as needed.

Listserv to Google Groups Update - Kimberley Homer: Listserv Functionality is being phased out in favor of Google group functionality for classes and other large group distributions. Listserv is a licensed product which requires an annual fee. Kimberley provided a history of the transfer of lists from Listserv to Google. Most moves to Google groups have now occurred. Listserv will be shut down in July. There are currently over 35,000 Google groups. Anyone who wants to create a Google group without the “-g” on the end can submit a ticket to 4Help with the desired group name. William indicated that a delay in the transfer was caused by not having FERPA authorization from the Registrar for any of the Google products. He worked with Rick Sparks and the Registrar’s Office to cover the issues and now has an agreement authorizing Google Apps for Education for FERPA use at Virginia Tech. The university is working on a mass mailing process to consolidate mass mailing tools on campus that likely will not be ready by July. Canvas also has campus mail lists.

Distributed Antenna System (DAS) Update - Richard Hach: DAS has previously been discussed at the subcommittee meetings and Richard reviewed the history of the topic. The process began in 2010 with Verizon becoming the first to partner with Virginia Tech in a distributed antenna system. There was interest in coverage at the stadium, in residence halls and in administrative buildings. The business model is carrier funded and university owned, working through the Virginia Tech Foundation. A carrier shelter now exists with full Verizon coverage provided. AT&T has now become a more possible potential partner. Verizon is working to fill in coverage gaps. The desire now is to expand the DAS and grow it. Because of the spectrum allocation and lower frequency of Verizon, Verizon customers usually get the best building penetration. Richard indicated other potential carriers and will keep the group updated.

Network Infrastructure and Services Reorganization Update - William Dougherty: NI&S had announced a plan to reorganize late in 2015. After that announcement, the entire IT area reorganized, leaving NI&S in organizational transition as part of NI&S was shifted to other areas. University Computing Support and the Virginia Tech Operations Center formed a new department in IT under Claire Gilbert called IT Experience and Engagement (ITEE). The goal of this shift was to provide a higher level of attention to the user/customer support operation and a new era of customer engagement. The intent is to engage more directly before problems arise. NI&S is working through the transition, with Pat and William spending time on financial and logistical issues associated with the changes. The NI&S organization wants to better align the services we offer with the organization. Six core programs have been identified and we want groups aligned to support the services offered so the services can be handled as much as possible by that individual group. Michael Moyer is director of the Data Center and joins this group. Kimberley Homer will be leaving the NI&S Department to work with the IT Chief Technology Architect in data mining and analysis and related projects. She may continue to be a member of this group in that capacity. A copy of the most recent organization chart is included in the minutes, and there will continue to be updates.

With the agenda concluded, William opened the floor for any questions or comments. Ron Angert shared about his experience working with a group of students on the Practice

Civility Initiative. He described being with them for 2-1/2 hours one day at Deet's Place. Within that time period, the students went from conceiving of an idea, funding it and getting a graphic artist to work on the logos. The printing subsequently occurred. This was a commendable accomplishment. Ron referred the group to a resource, Sherry Turkle from MIT. She studies digital discourse, and there is a 20 minute audio describing her book on that topic which is relevant in today's world of devices. The last minutes of the audio discuss the work place.

Congratulations to Steve Vanderloo on his graduation! Andi Sherlock is present today and will be joining the subcommittee next year.

Joe reported on NI&S interns. For the past 6-12 months, the department has been more active in recruiting and mentoring undergraduate and graduate students. Approximately 12 student interns are engaged in our applications management, software development, user experience, and network engineering groups, in addition to work last summer in the cable and network installation for the RNU and UC projects. This has made significant impact on the energy and enthusiasm in our organization and allowed us to creatively fund some research and development efforts we need in order to continue to evolve and grow as an organization.