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Colleagues,

While the NDSU Information Technology Division made many behind-the-scenes changes during the previous fiscal year, changes in the 2013-14 fiscal year were more noticeable to our campus community. Upgrades to our wireless infrastructure yielded much better performance across campus. Demand for student football tickets in fall 2013 compelled us to adjust our work priorities to implement technology that now allows students to reserve nearly 4,000 tickets within just a few minutes. In spring 2014, the building that houses many of our offices and services was renamed the Quentin Burdick Building in honor of the long-serving U.S. Senator from North Dakota. These are just a few of the changes that occurred, with more details in this year’s annual report.

While we worked on these initiatives, new challenges and opportunities arose for our division. Most notably, NDSU and Sanford Health partnered to transition the Sanford College of Nursing in Bismarck, North Dakota, to NDSU Nursing at Sanford Health in Bismarck. In many ways, providing technology services at the NDSU Nursing at Sanford Health site was no different than providing services at our downtown campus – the drive was just a little longer. The distance compelled us to do more detailed planning as we aimed to outfit the site with the same technologies available on the NDSU main campus. Overall, staff in the IT Division embraced the project with excitement, and we rose to the occasion to meet the challenges of bringing a new remote site online.

Finally, I would like to reflect on some trends we saw during FY 2014, which we expect to continue. First, the North Dakota University System elevated the role of information technology security in their overall mission. IT security is of utmost importance in our increasingly connected world, and changes made at the university system level should help protect confidential data at NDSU and throughout the university system. Second, the catalogue of software and services used at NDSU continues to grow and become more diverse. Review of software licenses and service contracts to ensure compliance with campus policies, North Dakota University System policies and state law consumes much time and effort. Apart from the contractual review of such services, managing these resources represents a burgeoning challenge for the IT Division. Many online services benefit from integration with NDSU’s central authentication and account management systems. Such “cloud” services are easy to bring online, but require care and management similar to traditional services. Expect more news on the progress we have made in light of these challenges in the coming year.

Sincerely,

Marc Wallman
Vice President for Information Technology
North Dakota State University
GROWING NEED FOR WIRELESS CONNECTIVITY CALLS FOR BIG CHANGES

Students stay connected at the Babbling Brook, one outdoor wireless location on campus.

More than 20,000 wireless devices – including laptops, smartphones, and tablets – connected to NDSU’s wireless network per week during the 2013-14 academic year. Demand for wireless access has grown substantially across campus, and user expectations have changed since the network was first put in place in 2005.

Wireless is now the most widely used network commodity on campus. The wireless network was initially built to supplement the university’s wired network. However, wireless usage has outpaced use of the wired network, likely due to consumer demand for mobility.

In an effort to meet the growing demand for mobility and connectivity, Network Engineering completed a major overhaul of the university’s wireless network. The team upgraded equipment from the network core to its edge. The project used a three-phase approach, which involved upgrading the core infrastructure underlying the wireless network, replacing wireless access points in classrooms and replacing wireless access points in high-traffic public areas on campus, including the Memorial Union and Main Library.

More than 450 new wireless access points were installed on the campus to replace outdated equipment. The last new access point was installed in late January 2014.

The new access points use cutting-edge technology to minimize radio frequency interference, which occurs when unwanted radio waves disrupt access to the network. Cordless phones, Bluetooth devices, wireless game controllers and microwaves, as well as wireless printers, mice and keyboards, can all cause interference.

The new equipment also provides expanded coverage, meaning users can be farther away from an access point and still connect. In 2005, when wireless was launched on campus, each access point was designed to accommodate 15 devices. Now each access point accommodates up to 100 devices.

Since all three phases of the wireless improvement project are complete, some students are noticing the difference. “I can stay on the wireless network when walking between buildings,” said first-year student Jake Lynch. “I don’t get out of range anymore when on campus.”

STUDENT DEMAND FOR BISON FOOTBALL TICKETS REQUIRES INNOVATIVE SOLUTIONS

When students rushed to claim the first Bison football game tickets of the 2013 season, it quickly became clear the Web-based ticket reservation application needed to be revamped to meet demand.

The 3,916 free student tickets available for each home game are released at 8 a.m. Monday before each game to be reserved on a first-come, first-served basis. In order to claim a ticket, students log in and “line up” early in the application to wait for tickets to be released at 8 a.m.

The reservation system failed shortly after 8:01 a.m. Monday before the first game of fall 2013. Students claimed 643 tickets in that first minute, despite the fact students were on holiday in observance of Labor Day.

To fix the discovered issues in preparation for the next game, staff in the Enterprise Computing and Infrastructure Department made changes to the application. A bug was eliminated from the database and server to speed up the reservation process and increase the number of requests handled at once. Also, the landing page for the website was optimized to get students in and out of the system as quickly as possible.

Despite these efforts, the system crashed again while students were reserving tickets for the second game of the season. Staff manually intervened to provide intermittent access to the ticket system. “I’m blown away by the diligence and perseverance of the team working on this behind the scenes,” said Sarah Russell, executive commissioner of technology in NDSU’s student government. “As students sit at their computer and click a button to reserve their ticket, there are people behind the screen working to make it happen.” Even with spotty access to the system, students claimed all tickets in slightly over an hour.

After the second game, several additional fixes were put in place and a decision was made to move the ticket reservation application to a virtual machine. The NDSU Technology Fee Advisory Committee, which makes recommendations to the Vice President for Information Technology regarding appropriate use of the student technology fee, was instrumental in funding the equipment used to host the virtual machine.

Anticipating an increase in traffic on NDSU’s website during the ESPN “College GameDay” coverage on Sept. 21, staff worked with University Relations to preemptively optimize the NDSU homepage in the same way they had done previously for the ticketing system site. Ticket reservations for the game went without any major disruptions, and the NDSU website had an increase in traffic of 25 percent on the homepage and 44 percent on the university’s admission site.

In early October, NDSU Homecoming game tickets were all claimed within six minutes of being released, and students saw no problems. Approximately 2,000 of those tickets were gone within the first minute.

“It speaks volumes when IT staff put that much time and effort in so students can enjoy their Homecoming game,” Russell said. “There’s a sense of community for students surrounding Bison football, and when we gain national attention and see increased admissions traffic, it benefits everyone.”
LAND GRANT

RESEARCH NETWORK CONNECTIVITY ENHANCED TO ADVANCE ENVIRONMENTAL SCIENCE

NDSU researchers who work with the National Oceanic and Atmospheric Administration now can exchange data more efficiently as a result of a recent expansion of NOAA’s science network, N-Wave, through the Northern Tier Network, a robust research connection for educational institutions in the upper-northwest states.

NOAA’s recent partnership with the Northern Tier Network Consortium and Pacific Northwest Gigapop established the newest segment of N-Wave’s backbone, including a fifth and most recent core node located in Seattle. Culminating nearly two years of work, this new circuit went live during the week of April 15, 2013.

“Much of N-Wave’s network foundation is based in its partnerships with the research and education community,” said Robert Sears, network engineer for NOAA. Sears said NOAA’s partnership with the Northern Tier Network Consortium extends the “overall stability of N-Wave and sets the foundation for future scientific collaboration.”

As a result NOAA’s partnership with the Northern Tier Network Consortium, N-Wave now uses the consortium’s Northern Wave optical data connection as a backup pathway to ensure continued connectivity between core nodes in Chicago and Seattle. From Seattle, Pacific Northwest Gigapop serves as a gateway to other sites in the Pacific region, with the first being the NOAA Pacific Regional Center in Hawaii.

The consortium’s Northern Wave provides a shared 10-gigabit per second network for research and education institutions along the Northern Tier path in Wisconsin, Minnesota, North Dakota, South Dakota, Montana, Idaho and Washington. Marc Wallman, principal investigator for the Northern Wave project, said the partnership between NOAA and the consortium is good news for NDSU researchers who are working with NOAA and other related agencies. They will have better connectivity for sharing data and resources.

Adnan Akyuz, assistant professor at NDSU and director of the North Dakota Agricultural Weather Network, said access to NOAA resources is crucial for his work as a researcher and state climatologist. “Without access to NOAA resources, there would not be any state or regional climatology data, and there would not be any historical context for today’s weather,” Akyuz said.

By using advanced research and education network connections like N-Wave and the Northern Tier Network, Akyuz and climatologists from other states can exchange data with other institutions, including NOAA. The North Dakota Agricultural Weather Network gathers microclimate data from 72 sites distributed across the state, the Red River Valley and border regions of surrounding states, and provides that data to NOAA. This collaboration serves to fill climate data gaps with detailed data that NOAA would not otherwise be able to capture.

As a member of the global research and education community, Akyuz is one example of many researchers across the United States who benefit from access to a highly reliable, high-capacity network that meets the demands of big data and connects to a fabric of other research and education networks around the globe.

NDSU AND SANFORD HEALTH PARTNER TO SERVE NORTH DAKOTA

On July 1, 2014, the Sanford College of Nursing in Bismarck, North Dakota, became NDSU Nursing at Sanford Health. NDSU acquired the program at the request of Sanford Health, in light of strong existing partnerships and reputations for high standards of learning at both institutions.

In order to provide NDSU students, faculty and staff at Bismarck with the same experience as those at the Fargo campus, NDSU invested significant information technology resources in Bismarck before the end of June 2014.

Network Engineering installed infrastructure to connect the Bismarck campus to the state network, STAGEnet, at one gigabit per second. The unit also installed a new wireless system with increased bandwidth availability.

Technical Support Services set up new classroom technologies in Bismarck, including Smart boards, computers and LCD projectors. For added connectivity to Fargo, one classroom and one conference room were equipped with videoconferencing technology.

Faculty and staff were well supported during the transition phase. All were provided with new computers and monitors. Desktop Support provided one-on-one support and setup assistance when the new computers were installed. Instructional Services provided three days of on-site training for the NDSU’s learning management system, lecture capture technology, student response system and other classroom technologies. The Telecommunications and Emergency Support Technologies department provided instruction for staff in Bismarck on how to set up and use the new phone system, which was installed in preparation for the start of the new fiscal year.

Overall, successful implementation of information technology services and ongoing support contributed to the success of the nursing school acquisition project, furthering NDSU’s land-grant mission to serve North Dakota and meet the state’s public health care needs.
NDSU BUILDING RENAMED IN HONOR
OF U.S. SEN. QUENTIN BURDICK

Birch Burdick speaks about his father’s legacy in North Dakota.

A ceremony to celebrate the renaming of NDSU’s Industrial Agriculture and Communications Center as the Quentin Burdick Building was held May 2, 2014.

The building was renamed in honor the memory of Quentin N. Burdick, the long-serving U.S. senator from North Dakota, who was a strong advocate for agriculture, the state and NDSU.

Burdick was born and raised in North Dakota. He represented the state in both the U.S. House of Representatives and the U.S. Senate. During his more than 30 years on Capitol Hill, Burdick pursued funds to support agriculture research and education, including federal research stations and facilities at NDSU. Burdick served as senator when federal funds were secured for the multi-function computer center at NDSU and helped move the project forward.

Several distinguished guests spoke at the rededication ceremony, including NDSU President Dean L. Bresciani; Judge Myron H. Bright, U.S. Court of Appeals for the Eighth Circuit; Birch Burdick, Sen. Burdick’s son; and Jan Mary Hill, Sen. Burdick’s daughter.

The Quentin Burdick Building, located at 1320 Albrecht Boulevard, houses NDSU’s main computer center as well as several departments and offices. Construction on the building began in April 1991, and it was dedicated in 1993. The State Board of Higher Education approved the name change in September 2013.

RESEARCH UNIVERSITY

NEW COLLABORATION AND STORAGE OPTIONS AVAILABLE FOR FACULTY AND RESEARCHERS

NDSU added two new file storage and collaboration options through Microsoft Office 365 and Google Apps for Education.

In July 2013, NDSU email for faculty and staff was upgraded to the latest version of Microsoft Office 365. Faculty and staff gained access to Microsoft Office Web Apps and OneDrive for Business. Office Web Apps are online companions to Word, Excel, OneNote and PowerPoint that can be used to open documents on mobile devices and on computers without Microsoft Office software. OneDrive for Business provides significant, secure storage space for storing, organizing, and sharing documents, photos and other files.

Microsoft Office 365 also includes email, calendar, Lync for instant messaging and online meetings, and SharePoint Team Sites for collaboration and document sharing. These tools enable faculty, researchers and staff to collaborate on-the-go with colleagues at NDSU and elsewhere.

In December, NDSU announced the addition of Google Drive through Google Apps at NDSU.

Google Drive provides 30 gigabytes of space that can be used to create and store documents, spreadsheets and presentations. Those files can be easily shared with other NDSU faculty, staff and students and with people outside of NDSU. Google Drive also cab be used to collaborate in real time and sync files to a computer or mobile device.

Google Drive was approved by NDSU’s General Counsel and can be used to store data and records protected by the Family Educational Rights and Privacy Act, known as FERPA.

NDSU faculty, staff and students have a number of options for storing data related to their academic, business-related and research work at the university. “The Information Technology Division is expanding options for data storage, and we’re working as a campus to develop guidelines to help select the best storage option for the specific data you’re working with,” said Marc Wallman, vice president. “We recognize departments have diverse needs, and with that, we know the decision-making process requires discussion between our staff and the employees who are storing data.”

INAUGURAL INFORMATION TECHNOLOGY EXPO HOSTED AT NDSU

A student majoring in architecture demonstrates 3-D printing.

NDSU faculty, staff and students were invited to explore technologies for teaching, learning and research at the inaugural NDSU Information Technology Expo on Oct. 23.

Attendees got a hands-on look at the impact of NDSU technology services and resources on campus. The event included interactive demonstrations, panel discussions, presentations and a technology fair.
Marc Wallman, interim vice president, was the keynote speaker. His presentation, “NDSU Information Technology Roadmap,” focused on trends in the information technology industry, across higher education and at NDSU. He shared information about developments like cloud computing, mobility, device proliferation, connectivity and consumer technologies. Wallman discussed new issues in higher education, including massive open online courses (MOOCs), growing challenges related to storing, transporting, protecting and sharing big data, and new efforts to mine and analyze institutional data to improve student success. In the context of these trends, he shared goals and strategies for continuing the advancement of technology to support research, academics and outreach at NDSU.

Other demonstrations, panels and presentations included:

- 3-D Printing for Teaching, Research and Design
- Wireless Updates and Solutions
- Group Decision Center Interactive Demo
- Advanced Technologies to Support International Collaboration
- Desktop Support: 10 quick tips to make the most of your IT
- Using NDSU’s Online Marketplace to Collect Registrations and Process Payments
- Active and Flexible Learning Spaces
- An Introduction to Server Virtualization
- CMS Updates: A First Look at What’s Coming Soon to NDSU’s Web Content Management System
- Communicating and Collaborating with Microsoft Lync
- Still Monkeying Around? Get Started Using Qualtrics
- ResponseWare: Classroom Polling Solution for Mobile
- Read and Write Gold: Tools for Reading, Writing, Studying and Research

The Information Technology Division hosted the expo, in partnership with other NDSU departments that provide and support IT services.

**Qualtrics Promoted as Gold Standard Tool for Research**

Distance and Continuing Education’s Group Decision Center and the NDSU Information Technology Division launched a campaign in February 2014 to encourage faculty, staff and students to use Qualtrics for research and other data collection.

Qualtrics is a quality data collection and analysis software that is approved by the North Dakota University System and NDSU’s General Counsel. The addition of Qualtrics software at the Group Decision Center enables NDSU faculty, staff and students to use the tool at no cost.

Qualtrics is widely used at more than 1,300 major universities and by more than half of Fortune 100 businesses. Compared to other online survey tools, Qualtrics offers more robust features in survey building, reporting, distribution, data organization and survey analysis.

“We anticipate NDSU faculty and researchers will adopt Qualtrics as a long-term replacement for other less secure and less robust survey tools,” said Marc Wallman, interim vice president for information technology. “We encourage faculty to use Qualtrics and provide us with feedback regarding their experiences.”

**Project Activity**

- **Requests accepted in FY 2014: 42**
- **Completed in FY 2014: 29**
## FINANCIALS

### FY14 - SOURCES OF IT SALARY AND OPERATING BUDGETS

<table>
<thead>
<tr>
<th>FUNDING SOURCE</th>
<th>AMOUNT</th>
<th>% OF TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>North Dakota University System - Service Level Agreement</td>
<td>$430,040</td>
<td>3.4%</td>
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<tr>
<td>NDSU-Base Appropriated</td>
<td>$4,896,283</td>
<td>38.6%</td>
</tr>
<tr>
<td>NDSU-Appropriated One-time</td>
<td>$2,978,177</td>
<td>23.5%</td>
</tr>
<tr>
<td>NDSU-Appropriated for Tech Fee Reimbursement</td>
<td>$0</td>
<td>0.0%</td>
</tr>
<tr>
<td>Student Technology Fee*</td>
<td>$1,131,449</td>
<td>8.9%</td>
</tr>
<tr>
<td>Local/Recharge</td>
<td>$3,262,314</td>
<td>25.7%</td>
</tr>
<tr>
<td>Grants/Northern Tier</td>
<td>$0</td>
<td>0.0%</td>
</tr>
<tr>
<td>Capital</td>
<td>$0</td>
<td>0.0%</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>$12,698,263</strong></td>
<td><strong>100.0%</strong></td>
</tr>
</tbody>
</table>

*TOTAL TECHNOLOGY FEE RECEIPTS FOR FY14: $2,634,433

### FY14 IT EXPENDITURES: $12,698,263

- **NDSU-Base Appropriated**: 39%
- **NDSU-Appropriated One-time**: 23%
- **Local/Recharge**: 26%
- **StUDENT TECHNOLOGY FEE**: 9%
- **NDUS-SLA**: 3%
TECHNOLOGY FOR TEACHING AND LEARNING
TEGRITY LECTURE CAPTURE

Use of Tegrity lecture capture technology continued to grow rapidly during the 2013-14 fiscal year. Tegrity enables instructors to record everything that is said and viewed in the classroom to produce an integrated audio-video product. Tegrity uses plug-and-play equipment to record lectures and then creates a link to the video in the Blackboard learning management system, enabling students to play back lessons, bookmark sections of the lecture using a smartphone application and find specific information using a built-in search engine.

In addition to instructor-created recordings, many students are now creating Tegrity recordings as part of their coursework. As one example, students in an online course used Tegrity to create self-introduction videos for their peers to view.

The following table imparts the sizeable increase in the use of Tegrity at NDSU during the past three years.

<table>
<thead>
<tr>
<th>STATISTIC</th>
<th>FY 2012</th>
<th>FY 2013</th>
<th>FY 2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faculty, staff and students creating Tegrity recordings</td>
<td>36</td>
<td>198</td>
<td>372</td>
</tr>
<tr>
<td>Classes using Tegrity</td>
<td>43</td>
<td>196</td>
<td>344</td>
</tr>
<tr>
<td>Unique recordings created</td>
<td>860</td>
<td>2644</td>
<td>4,580</td>
</tr>
<tr>
<td>Hours of content recorded</td>
<td>616</td>
<td>2032</td>
<td>3,344</td>
</tr>
<tr>
<td>Hours of content viewed</td>
<td>16,538</td>
<td>21,399</td>
<td>30,763</td>
</tr>
<tr>
<td>Content views</td>
<td>30,486</td>
<td>48,704</td>
<td>81,778</td>
</tr>
</tbody>
</table>

STUDENT RESPONSE CLICKERS

Use of Turning Technologies student response “clickers” continues to increase, as more faculty use technology to foster engaging classroom experiences for their students. Following a successful pilot program in fall 2013, Instructional Services and the NDSU Bookstore introduced Turning Technologies’ Web and mobile application, ResponseWare, for spring 2014 semester. ResponseWare gives students the option to use their smartphones, tablets and laptops to respond to in-class polls. Students opting to use ResponseWare during spring 2014 semester accounted for about 17 percent of those students utilizing Turning Technologies in their courses. The remaining students continue to use Turning Technologies’ hardware device. Strong integration of the clicker hardware and the ResponseWare application allows use of both among students in the same class.

Despite a modest start in adoption of ResponseWare on campus, Instructional Services anticipates ResponseWare use to increase significantly as educational uses of smartphones, tablets and other Web-enabled devices becomes more prevalent in classrooms. Faculty and students using ResponseWare have provided largely positive feedback, pointing to increased convenience and flexibility, with the need for little additional support and training.

USE OF CLICKERS AND RESPONSEWARE

<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Classes</td>
<td>10</td>
<td>20</td>
<td>9</td>
<td>15</td>
<td>29</td>
<td>35</td>
</tr>
<tr>
<td>Students using clicker hardware</td>
<td>N.A.*</td>
<td>N.A.*</td>
<td>2,982</td>
<td>3,175</td>
<td>4,348</td>
<td>4,407</td>
</tr>
<tr>
<td>Students using ResponseWare</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>883</td>
</tr>
<tr>
<td>Total students</td>
<td>N.A.*</td>
<td>N.A.*</td>
<td>2,982</td>
<td>3,175</td>
<td>4,348</td>
<td>5,290</td>
</tr>
</tbody>
</table>

* Data not available
Blackboard Learn is an online course management system that allows faculty to interact with students and post grades, information and assignments.

NDSU’s Blackboard system was successfully upgraded at the end of the 2013-14 fiscal year. New enhancements include the integration of SafeAssign, a plagiarism-checking tool, with the assignments tool and the addition of anonymous and delegated grading. Previously, instructors deployed SafeAssign as a separate tool, but now it is an option included in the assignment creation tool.

The addition of anonymous and delegated grading allows instructors to prevent graders from identifying students when grading. The instructor can also assign specific graders to particular sets of students.

Figure 1 below shows average users per month from July 1, 2013, to June 30, 2014. The general trend is an increase in users. The dip in the data reflects the biannual purge process we conduct to remove users who have graduated or otherwise left the university. Figure 2 shows the increase in the average number of courses in Blackboard per month during FY 2014.

Use of the Blackboard Mobile application for smartphones and tablets increased significantly during the 2013-14 fiscal year. There were nearly 19,000 unique users, an increase of 800 users from the last fiscal year. Approximately 70 percent of those users accessed the application from an Apple iOS device.

As of fall 2013, all general purpose classrooms are outfitted with standard instructional technology. The Technical Support Services team, which provides and supports technology in classrooms and computer labs on campus, received funding to purchase and install equipment in 26 remaining general purpose classrooms to complete this project. Through the annual technology refresh process, the team continues to upgrade classroom control systems to the Crestron touchscreen panel and to convert the systems from analog to high definition.

Technical Support Services and the Libraries co-authored an NDSU Impact Grant to enhance student collaboration using technology. The grant was funded to provide a display with connections to 10 group study rooms located in the Main Library. The technology enables individual group members to quickly and easily share content from their electronic devices on the fly.

Several other key projects related to technology in classrooms and computer labs are ongoing:

• Planning for the purchase, installation and support of classroom technology, computer lab, student printing, and videoconferencing services at NDSU Nursing at Sanford Health in Bismarck, which is scheduled to be complete by fall 2014.

• Planning for the new STEM building classrooms and computer lab, which is scheduled to open spring 2016.

• Implementing solid state drives for all Windows computers in instrumented classrooms and computer labs, which will reduce the time it takes to log in. This project was scheduled to be finished by fall 2014.

• Installing dedicated, one-gigabyte network jacks to each computer in instrumented classrooms and computer labs to reduce the time it takes to image computers. This project was scheduled to be complete by December 2014.
VIDEOCONFERENCING

The Technical Support Services team supported videoconference connections to the following countries during FY2014: Spain, Uzbekistan, India, Pakistan, Sweden, Germany, Greece and Uganda. These connections were established to support collaborative agreements with other universities, establish research connections, support classroom instruction, enable students to interview for remote positions, as well as to present at and host national and international conferences.

CLASSROOM AND COMPUTER LAB SUMMARY

<table>
<thead>
<tr>
<th>Statistic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supported computers on campus</td>
<td>903</td>
</tr>
<tr>
<td>Public computer labs on campus, located in 21 buildings</td>
<td>38</td>
</tr>
<tr>
<td>Windows computers in the computer labs</td>
<td>511</td>
</tr>
<tr>
<td>Mac computers in the computer labs</td>
<td>72</td>
</tr>
<tr>
<td>Pieces of software installed in the computer labs per instructor request</td>
<td>53</td>
</tr>
<tr>
<td>Computer logins per week in fall 2013</td>
<td>18,027</td>
</tr>
<tr>
<td>Hours spent logged into computers per week in fall 2013</td>
<td>14,409</td>
</tr>
<tr>
<td>Computer logins per week in spring 2014</td>
<td>15,699</td>
</tr>
<tr>
<td>Hours spent logged into computers per week in spring 2014</td>
<td>11,967</td>
</tr>
<tr>
<td>Interactive Video Network (IVN) classes sent or received during fall 2013</td>
<td>36</td>
</tr>
<tr>
<td>Students who participated in IVN classes during fall 2013</td>
<td>382</td>
</tr>
<tr>
<td>IVN classes sent or received during spring 2014</td>
<td>34</td>
</tr>
<tr>
<td>Students who participated in IVN classes during spring 2014</td>
<td>354</td>
</tr>
<tr>
<td>Sheets of paper used through the Go-Print printers compared to 5,194,179 sheets last year</td>
<td>4,867,135</td>
</tr>
</tbody>
</table>

STATISTICAL CONSULTING

The Information Technology Division and the Statistics Department jointly support Statistical Consulting Services at NDSU. These services are available to all faculty, staff and students at North Dakota University System institutions, typically at no charge.

The Statistical Consulting unit provided services during the past year through the efforts of one full-time staff member and two statistics graduate students.

CONSULTING STATISTICIANS’ TOTAL NUMBER OF CLIENT CONTACTS FROM 2000–14

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>Stats</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
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</tr>
<tr>
<td>2001</td>
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<td>0</td>
</tr>
<tr>
<td>2002</td>
<td>800</td>
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</tr>
<tr>
<td>2003</td>
<td>1,200</td>
<td>0</td>
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<td>2004</td>
<td>800</td>
<td>0</td>
</tr>
<tr>
<td>2005</td>
<td>1,200</td>
<td>0</td>
</tr>
<tr>
<td>2006</td>
<td>800</td>
<td>0</td>
</tr>
<tr>
<td>2007</td>
<td>1,200</td>
<td>0</td>
</tr>
<tr>
<td>2008</td>
<td>800</td>
<td>0</td>
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<tr>
<td>2009</td>
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<td>2010</td>
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<td>2011</td>
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<td>2012</td>
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<td>0</td>
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<tr>
<td>2013</td>
<td>1,200</td>
<td>0</td>
</tr>
<tr>
<td>2014</td>
<td>800</td>
<td>0</td>
</tr>
</tbody>
</table>
ENTERPRISE SYSTEMS AND APPLICATION DEVELOPMENT

Enterprise Systems operates centralized IT systems for NDSU. Services include Blackboard, file and Web services, print management, document imaging, server hosting, application hosting, authentication and identity management.

Enterprise Application Development provides software engineering and development services to NDSU departments. The engineers work on institutional priorities set by the IT Division leadership team and collaborate with campus business and subject matter experts to constantly improve existing software and devise solutions specially for the university’s needs. The group’s imperatives are self-service applications that put the controls in the hands of people best suited to use them; automation with fail-safes and safe-guards to handle service interruptions without loss of data; cross-system integration, including third-party vendors whether hosted on or off-site; and iterative redesign and constant improvement based on active, end-user experiences, with the goal of serving customers efficiently and resolving issues quickly with minimum confusion.

Enterprise Application Development engineers maintain and upgrade NDSU’s Content Management System, Web and mobile Web presence, search engine, user account provisioning and purging, Identity Access Management system for self-service application authorization, and NDSU and NDSCS Central Authentication Service for Web authentication that is also integrated via Federated Identity Manage offered by Internet2. The engineers build, maintain and upgrade high demand and high profile Web applications, including the first-come, first-served “Football Tickets” distribution system for student tickets to home games; staff and student government election software; “PhotoUpload” for processing photos for use on campus ID Cards by the Card Center; a Web directory of campus buildings and offices; and “Track Training” for review of training requirements and compliance history.

952,866,718 files backed up by our backup system

2,954,986 files recovered and restored

874,470,282,792,904 bytes [874.47 terabytes] backed up by our backup system

1,315,959,970,331 bytes [1,316 gigabytes] recovered and restored

59,716,890 email messages processed by mail servers

235 live websites in NDSU’s content management system

154 live NDSU websites outside CMS in Pubweb
NETWORK ENGINEERING AND OPERATIONS

Network Engineering and Operations engaged in several key activities during FY 2014 to move the campus data network forward, creating opportunities and new services to achieve the shared goals of the university and the North Dakota University System.

The team continued to advance key elements of a strategic network upgrade that was initiated in 2013 and, at that time, was projected for completion well into 2014.

Strategically, four specific areas were identified as in need of immediate attention. Each area was targeted as an emerging concern or as part of our overall strategy to prepare the network core infrastructure for the next six to seven years.

1. **Network core.** The new core platform has been installed and has dramatically increased overall performance and reliability. This improvement also gives the flexibility to make adjustments and further develop the core as networking technology continues to evolve at a rapid pace.

2. **Wireless networking.** The two primary design considerations in deploying wireless infrastructure are coverage (area of exposure) and capacity (measure of simultaneous users accessing the Wi-Fi network). Both have been vastly improved with the migration to new Wi-Fi technologies, which include 3x4 MIMO (three spatial streams) and clean-air technology that assists in mitigating external wireless interference. These new technologies, coupled with installation of additional access points, have had a positive impact on both coverage and capacity.

3. **Network edge.** The network edge, which includes the point of entry for each facility from the network core and the conduit to each network data jack or workstation, has been replaced with the next generation of network switches. This enhanced switching technology delivers greater bandwidth, a converged wired and wireless architecture, greater resiliency and redundancy, and enhanced security.

4. **Extending the core network infrastructure to the data center.** Network Engineering continues to collaborate with Enterprise Systems to extend the network core to the primary data center. This is part of a comprehensive design to create a dynamic, unified network fabric that is scalable and flexible, while providing greater bandwidth options as enterprise systems evolve and virtualize.

While Network Engineering has made significant advancements during FY 2014, the team is well aware of the work that needs to continue to ensure the campus community has access to the resources they need for a strong and healthy educational, research and business network environment.

WIRELESS NETWORK

The campus wireless network is a popular commodity, and usage continues to climb. Increasing demand for this service has not yet greatly strained the capacity. However, Network Engineering staff members have identified several campus locations that will need to be addressed in the near future. The team is evaluating IEEE 802.11ac technology, which will provide greater speeds on the wireless network. Theoretically, this technology can facilitate speeds of 1.3 gigabytes per second, depending on environmental factors. The technology will be available on the 5 GHz band.

The number of unique machine addresses accessing the wireless network is growing. This trend is expected to continue into the unforeseen future, as the need for device mobility proliferates.

WIRELESS ACCESS DURING THE 2013-2014 ACADEMIC YEAR:

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unique devices connected during the peak week</td>
<td>22,804</td>
</tr>
<tr>
<td>of the year (Oct. 7-11, 2013)</td>
<td></td>
</tr>
<tr>
<td>Devices connected during the average week</td>
<td>18,242</td>
</tr>
<tr>
<td>Wireless access points</td>
<td>977</td>
</tr>
</tbody>
</table>

The challenge for Network Engineering during this academic year will be to ensure demand for more wireless coverage and greater capacities are addressed and met in a timely manner. Installation of the advanced wireless infrastructure will significantly assist in achieving this objective.
WIRED NETWORK

As part of the 2013 strategic network enhancement, Network Engineering continues to make significant improvements to the wired network. The goal is to ensure each key academic and administrative building has 10 gigabytes per second uplink to the network core. Work is being done to evaluate and upgrade each client access jack and workstation to one gigabyte per second.

We continue to see a slight decline in the number of clients accessing the wired network, which is partly due to the increasing popularity of Wi-Fi. The wired network is still the preferred method when transferring large files or working on computational intense systems due to its ability to deliver greater bandwidth.

<table>
<thead>
<tr>
<th>Wired Access During the 2013-14 Academic Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>12,078 unique devices connected during the peak week of the year (Sept. 9–13, 2013)</td>
</tr>
<tr>
<td>10,121 devices connected during the average week</td>
</tr>
<tr>
<td>496 total switches currently deployed with 21,160 active ports</td>
</tr>
</tbody>
</table>

NETWORK INFRASTRUCTURE

Network Engineering continued facing challenges in providing design, leadership and project management for several key initiatives throughout this past academic year.

Telecommunications and Emergency Support Technologies collaborated with Network Engineering to design and install the initial phase and rollout of the campus surveillance system. Network Engineering provided design and leadership to provision cable infrastructure to support this system. This initial phase was successfully completed, and plans are under way to expand the system during the next fiscal year.

During spring and summer 2014, the department took on responsibility for design and project management to upgrade to one-gigabyte network access in campus computer labs and classrooms. The upgrade will significantly improve the Classroom Technologies unit’s ability to deliver computer images to labs and classrooms. This project will continue into 2015.

With the Sanford Nursing School in Bismarck becoming part of NDSU, Network Engineering was charged with re-architecting and significantly modifying the internal network to meet NDSU requirements. This required several months of planning and design, as well as engaging Sanford to ensure a smooth transition. The state of North Dakota’s Information Technology Department assisted with preparing the data network for this facility. The project was completed successfully in July 2014.

Demand for increased network access, infrastructure modifications and adjustments, and isolating and resolving data and telecommunications issues have substantially increased this past year.

The activity on campus in preparing for the 2014-15 academic year was very aggressive and much of it required the involvement of Network Engineering.

Approximately 90 percent of all requests were completed prior to the start of the 2015 academic year.

INFRASTRUCTURE QUICK FACTS

<table>
<thead>
<tr>
<th>Quick Facts</th>
</tr>
</thead>
<tbody>
<tr>
<td>469 Telephony requisitions completed</td>
</tr>
<tr>
<td>193 Data services completed</td>
</tr>
<tr>
<td>170 Voice trouble resolved</td>
</tr>
<tr>
<td>53 Data trouble resolved</td>
</tr>
<tr>
<td>Approximately 62,000 feet of cable installed</td>
</tr>
<tr>
<td>440 additional wired ports</td>
</tr>
<tr>
<td>120 hours of underground cable locating</td>
</tr>
</tbody>
</table>
OTHER NETWORK ENGINEERING INITIATIVES:

✓ IPv6 has made strides in that approximately 40-50 percent of incoming traffic is IPv6

✓ Installed Juniper Northern Lights Gigapop router in the Fargo AT&T building

✓ Upgraded Residence Life Cinema

✓ Adjusted Mikrotik for NDSU instructions to support XpressConnect

✓ Collaborated with NDSU parking to firewall parking meters

✓ Made significant changes to accommodate the depletion of IPv4 addresses

✓ Changed DHCP options for all IP phones at NDSU

✓ Completed design changes for the STEM Building

✓ Completed design changes for Sanford Health Athletics Complex

Network Engineering finished a remarkable year achieving many goals outlined at the beginning of the fiscal year. The department is on track to build a progressive network infrastructure that will position NDSU to meet the business, academic and research challenges of the near and extended future.
Telecommunications and Emergency Support Technologies

Telecommunications and Emergency Support Technologies serves NDSU students, faculty, staff and a variety of NDSU partners by providing leadership and expertise in enterprise voice, emergency support technologies and the university’s underground communications infrastructure. To proactively improve security and increase the awareness and responsiveness of the campus, the department’s overall role is supporting NDSU’s Police and Safety 24-hour Communications Call Center, with the infrastructure and technologies necessary to provide ongoing vigilance and timely response to life safety threats at NDSU.

With a staff of 10, an FY2014 budget of $4.3 million, and strong collaborative partnerships with Network Engineering and Operations and Facilities Management, the department provides oversight, strategic planning, coordination and management of the university’s transport facilities infrastructure, voice networks, call management, Voice over Internet Protocol (VoIP) telephony, cellular communications, Bison Lines long distance service, cable television (CATV), centralized and integrated security card access and video surveillance. Unique as a communications utility relating to business aspects, the department operates on a cost recovery basis, serving nearly 6,600 students, faculty and staff on the main campus and 12 remote sites, including the North Dakota State College of Science and the Dickinson Research Extension Center.

The foundation is laid for next generation infrastructure, Internet Protocol technologies and services including single mode fiber, unified communications and advanced collaborative mobility functionality. During FY 2014, the department focused on advanced feature functionality and infrastructure reinforcement and expansion in support of NDSU’s vast network of departmental telephone administrators, heightening service provision and remote learning. Collaborative efforts with state government and University System institutions are now realizing the efficiency and convenience benefits of enhanced and transparent Unified Communications. Leveraging the North Dakota state network, these initiatives include providing centralized enterprise voice services and five-digit VoIP dialing between campuses.

Emergency Support Technologies are a vital service component for ongoing vigilance and timely response when life safety, property preservation and security are threatened. The Telecommunications and Emergency Support Technologies department continues to work toward developing an emergency support standard of securing the exterior envelope of all campus facilities and implement new advanced technologies designed to enhance the security and safety of the campus. Emergency Support Technologies now encompasses more than half of the department’s business. The department provides tools and technical expertise for the life safety needs of NDSU. It serves the philosophical and pragmatic needs of University Police and Safety, Facilities Management and Student Life and works with trust and collaboration with these partners.

Telecommunications and Emergency Support Initiatives

- Leveraging the North Dakota state network (STAGEnet), expanded centralized VoIP services to provide fully transparent unified communications to NDSU Nursing at Sanford Health in Bismarck, including the provision of 5-digit dialing.

- Continued leveraging STAGEnet to expand VoIP five-digit dialing. This statewide effort, initiated by Telecommunications and Emergency Support Technologies in collaboration with state government and respective University System institutions, is realizing the efficiency and convenience benefits of the original 1994 dial plan design for enhanced and transparent communications between institutions and state government.

- The recent engineering study conducted in the Quentin Burdick Building, overviewing a $4 million tier 3.5 design, to continue providing increased electrical capacity and duplicated uninterruptible power supplies for redundancy to NDSU’s voice and data centers, is ongoing. Reliable emergency backup power is needed to minimize interruptions to critical life safety systems, telecommunications operations and data networks. NDSU received authorization to proceed with construction of the Quentin Burdick Building upgrades to electrical infrastructure, including increased generator capacity. This Phase II project at an estimated cost of $1 million will be funded from 2013-15 appropriated operations funding. Future phases include mechanical/HVAC upgrades to both the voice and data centers.

- To proactively improve security, the university’s centralized and integrated video surveillance system continues to be expanded. The system supports full feature interoperability with the centralized card access and voice recording systems, alarming back to the 24/7 Police Communications Call Center. This centralized system of surveillance is a continuing evolution of the university philosophy of one system adherence to the Clery Act and Higher Education Opportunity Act. It also serves the philosophical and pragmatic needs of University Police and Safety, it is essential that this ongoing system initiative is scalable, sustainable and expandable.

> A major upgrade was completed of the centralized system allowing dual recording of all cameras, and providing new equipment for expanded monitoring at the 24/7 Police Communications Call Center.

> Continued incorporating pan/tilt/zoom (PTZ) cameras into video surveillance projects to capture a broader safety and security surveillance picture of the campus, with cameras placed in strategic locations to increase the overall safety and security of the campus. This effort will maximize surveillance efforts, particularly at night, for the movement of people on the core campus.
As planned, additional phases will bring existing independent campus video surveillance locations onto the system, with policy development and a costing structure to include a scalable model for expansion as funding is available. The partnership with Network Engineering and Operations continues for video surveillance installation and maintenance.

- Continued expansion and upgrades of the campus underground transport infrastructure supplements existing aged infrastructure. The work provides greater bandwidth and higher connection speeds to campus buildings in support of future academic and research requirements, extending the university’s infrastructure to the north and east parts of campus.

- Continued expansion of the campus CATV infrastructure to provide the Emergency Alert System. This system now provides an emergency TV broadcast to 1,994 residence hall and apartment units and 168 administrative and academic locations in 57 campus buildings. Routine testing of all systems continues on the first Wednesday of each month.

- Extended CATV signal to eight additional buildings, including the West Building, Engineering Complex buildings and Loftsgard Hall.

- Continued project planning to increase the 27 existing blue light emergency phones. Providing proactive and highly visible security creates campus awareness and responsiveness of emergency communication, which is vital for establishing safe environments for students, residents, employees and visitors both daytime and nighttime.

- Continued partnership with North Dakota State College of Science, now in its sixth year, in the growth of advanced voice and mobile functionality, the expansion of IP telephones across campus and the ongoing development of Telecommunications business operations.

- Continued efforts to expand IT Division business processes utilizing BITEK, the Telecommunications’ accounting and billing management system, to customize and consolidate the division’s billing, accounts receivable and reporting processes.

- Security card access is a vital component in the ongoing vigilance and timely response to life safety, and property preservation threats at NDSU. Its philosophical priority includes securing the exterior facility entrances for the campus by providing electronically controlled access to the “envelope” of each building for life safety operations. This direction provides a mechanism to comply with the intent of state and federal acts and regulations, including the Clery Act and Higher Education Opportunity Act. It also provides a means to comply with other auditing requirements and to reasonably mitigate potential liabilities.

- Security card access continues to grow and expand campuswide, both in new construction and existing facilities. Major construction projects were completed at the AES Greenhouse Phase III, Library, West Building and the Auxiliary Building. Design and engineering continues for additional campus facilities.

- Collaborative efforts continue with Facilities Management in the expansion of installations, trouble resolution and preventive maintenance of security card access. This “card access shop” philosophy has led to improved focus on quality, consistency and enhanced alarm accuracy to the 24/7 Police Communications Call Center.

*Enhanced centralized and integrated enterprise systems alarming and recording to the 24/7 Police Communications Call Center.*
TELECOMMUNICATIONS TECHNOLOGIES

INFRASTRUCTURE

Inside cable
1,860,000 feet (352.2 miles)
Outside copper network
28,000,000 conductor feet (5,303 miles)
Outside fiber-optic network
112,200 strand feet (21.3 miles)
Outside cable TV network
18,000 feet (3.4 miles)
Inside cable TV network
299,100 feet (56.7 miles)
Leased fiber-optic
80,100 feet (16.2 miles)
Underground conduit
91,000 feet (17.2 miles)
Fiber-optic cables
2,250 strands

VOICE AND EMERGENCY COMMUNICATIONS

6,589 dial tone lines (includes 12 remote locations)
729,320 long distance minutes annually
400+ custom phone features/buttons
253 users of phone-to-cellular bridge
27 blue light emergency phones

CELLULAR PHONES

515 total users
373 smartphones
1,710,773 cellular minutes annually

CABLE TV

Cable TV distribution to
57 main and remote campus buildings
168 administrative and academic locations
1,994 residence hall and apartment unit locations

CARD ACCESS

460 doors equipped for card access
18,000 users with access privileges
300–2,400 access and door schedule changes per week
25,000 door access card reads on a typical day
HELP, SUPPORT AND TRAINING

IT HELP DESK

The IT Help Desk is the first point of contact for all campus IT services and support. The Help Desk provides support for all NDSU faculty, staff and students through online support documentation, a Web-based ticketing system, email, telephone and chat. Other services include large-format printing for posters or presentation materials, Optical Mark Reader scoring for exams and checkout of equipment such as digital still and video cameras, laptops and podcast recording units.

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<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Calls</td>
<td>30,116</td>
<td>25,221</td>
<td>22,461</td>
<td>21,989</td>
</tr>
<tr>
<td>Walk-up</td>
<td>9,506</td>
<td>6,810</td>
<td>9,982</td>
<td>10,618</td>
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<tr>
<td>Email</td>
<td>9,104</td>
<td>6,326</td>
<td>4,147</td>
<td>4,481</td>
</tr>
<tr>
<td>Chat</td>
<td>600</td>
<td>1,800</td>
<td>1,500</td>
<td>760</td>
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<tr>
<td>Web form submission</td>
<td>1,304</td>
<td>946</td>
<td>1,892</td>
<td>1,734</td>
</tr>
<tr>
<td>Equipment checkout</td>
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<td>2,691</td>
<td>2,112</td>
<td>2,450</td>
</tr>
<tr>
<td>Optical mark reader</td>
<td>2,346</td>
<td>2,416</td>
<td>2,290</td>
<td>1,217</td>
</tr>
<tr>
<td>Plotting</td>
<td>1,373</td>
<td>1,086</td>
<td>989</td>
<td>986</td>
</tr>
<tr>
<td>TOTALS</td>
<td>58,670</td>
<td>47,296</td>
<td>45,373</td>
<td>45,197</td>
</tr>
</tbody>
</table>

DESKTOP SUPPORT

Desktop Support continues to offer next-level support to departments across campus, assisting staff and faculty with technical issues. Services are offered on campus and to remote locations in downtown Fargo and in Bismarck.

The five-member team manages more than 1,700 computers. The team’s use of Active Directory and Microsoft’s System Center Configuration Manager system allows for high efficiencies and quicker response times.

Desktop Support’s top goals for the upcoming fiscal year:

- Promote campuswide use of OneDrive, a cloud-based application that allows for file and folder synchronization.

The team will focus on promoting OneDrive as a data backup option for faculty and staff, with additional benefits of remote access and sharing options.

- Conduct a campus sweep. Performed every few years, the process involves touching each computer to confirm baseline software (e.g., Microsoft Office 2013, Forefront Antivirus, SCCM) are installed and functional on customer computers.

- Implement Casper Suite for Mac. This backend support tool will facilitate remote control, software deployment, security updates and patch management for Apple computers on campus.

INFORMATION TECHNOLOGY SECURITY

Top priorities for the Information Technology Security team include policies, procedures, risk management, assessment, education, training and awareness. Major initiatives completed in FY2014 include:

- Partnered with various campus groups to review and update NDSU’s Identity Theft Protection Plan.

- Brought the Gramm-Leach-Bliley Act task force together to review and update the GLBA Customer Information Safeguarding Program.

- Teamed with NDSU’s General Counsel to review and update the procedures for copyright infringement violations and public records requests for email communication.

- Implemented required online training for all who use electronic imaging systems for documents. This met the North Dakota University System policy 1901.4, Electronic Imaging Systems, objective of providing required training and education for users of electronic imaging systems.

- Removed all systems using the Windows XP operating system from the public-facing network.

- Worked with central and distributed technical staff on a campuswide initiative to remediate and mitigate the Adobe Heartbleed vulnerability.

SOFTWARE ASSET MANAGEMENT

Software Asset Management and IT Security are partnered to facilitate efficient review of software contracts and terms of use. Highlights from FY 2014 included the following:

- Reviewed 215 software and online service agreements and licenses for compliance with North Dakota state law and NDSU policy.

- Hosted two MATLAB software training sessions for faculty, students and staff.

- Hosted an educational meeting for all department software contacts.

- Absorbed the responsibilities and duties for Records Management and Retention.
TECHNOLOGY TRAINING

Instructional Services and the Technology Learning and Media Center provide support, technology training and media services for NDSU students, faculty and staff. During the FY 2014, Instructional Services moved toward a more efficient way of training by combining some of the faculty/staff training and the student training offerings. In the past, the two audiences were trained separately, resulting in duplication of effort. The new efficiencies allow the team to offer more subjects and spend time developing just-in-time training tutorials instead. More information about technology training and resources is available at www.ndsu.edu/its/training.

TRAINING FOR FACULTY AND STAFF

Training specifically geared towards faculty and staff was offered through 74 regular training sessions and one three-day faculty workshop. Instructional Services also partnered with two vendors to offer “A Day of Blackboard” training and a Turning Technologies “Meet and Greet” luncheon with special sessions using the student response tools. The most popular and frequent training offerings for faculty and staff include Blackboard, the TYPO3 Web content management system and Microsoft Access. New training sessions were offered on the SMART interactive whiteboard, Microsoft Lync, Office 365, SharePoint and using tablets in the classroom.

The seventh annual faculty training workshop, “Dive In,” was held at the Sanford School of Nursing in Bismarck to help NDSU’s newest faculty convert to Blackboard, Tegrity lecture capture, Microsoft 365 email and calendar and the newer versions of Turning Technologies response systems and software. Instructional Services also offered breakout-training sessions at the fall and spring NDSU Extension Conferences.

TECHNOLOGY LEARNING AND MEDIA CENTER

The Technology Learning and Media Center, or TLMC, provides a variety of technology learning and media services for the campus community, including multimedia services, classroom project support, plotting services, coursework assistance, and technology workshops. Multimedia services include video and audio recording studios, special software and equipment, and consulting services.

Many students used the TLMC lab and media studio to work on group and individual multimedia projects, and the TLMC provided drop-off services for media conversion projects. Technology workshops continue to be popular with students, faculty and staff. During FY 2014, TLMC staff members provided 62 workshops for the general campus population and delivered 91 workshops to specific classes, in response to instructor requests. Combined, these workshops served 2,228 students.

The number of reservations for the media studio increased 45.5% over the previous year’s statistics. This significant increase of use reflects the growing interest and application of audio-video recording on campus. The Graduate School’s requirement of a three-minute audio-video summary for all theses is an example of the ubiquitous use of media on campus. To handle the growing use of the studios, the TLMC added a modular “Whisper Room” audio recording booth in the main TLMC center.

It was an excellent experience getting to use the media studio and being trained on the software we used. The podcast project really helped me to learn something new and work with a type of technology that was previously unfamiliar to me. – Feedback from an NDSU student

TRAINING SUMMARY

2,228 attendees at technology workshops

197 total hours of training offered

153 total technology workshops offered

91 technology workshops offered to classes by instructor request

62 technology workshops offered to students

MEDIA STUDIO AND VIDEO PROJECTS SUMMARY

489 media studio reservations

971 hours reserved in the media studios

VIDEO PROJECTS

- State Board of Higher Education meeting
- Information Technology Expo
- Health, nutrition and exercise science
- Developmental science
- Three-Minute Thesis pilot
- TLMC faculty information
- Veterans Upward Bound
- Quentin Burdick Building rededication ceremony
- Choral auditions
- Commencement speaker submissions
- Philosophy Club debate
- Candidate interviews
- Innovation Week 2014
- Student technology services for Bison Information Network
The Advanced Applications and Outreach unit provides support and enables use of resources available through global research and education networks.

Activities during FY 2014 included managing North Dakota’s Internet2 and Sponsored Education Group Participant related member services. The Advanced Applications and Outreach unit represents NDSU and the NDSU IT Division in state and national research and education network initiatives. It coordinates efforts for collecting, analyzing and reporting evidence of impact from grant activities and facilitates agreements with external partners requesting access to the Northern Tier Network. The unit also collaborates with other higher education institutions, K-12 schools and research centers on a variety of projects.

ADVANCED NETWORKS ENABLE RESEARCHERS TO CONNECT

**INTERNET2**
www.internet2.edu

NDSU is a founding member of Internet2, a member-owned consortium of leaders in higher education focusing on research, academia, industry and government collaborating to develop and deploy innovative advanced networking technologies.

**NORTHERN TIER NETWORK**
www.ntnc.org

The Northern Tier Network Consortium is a regional network initiative that provides a robust research network connection for educational institutions in the upper-northwestern states by creating a national backbone route across the northern United States. A founding member of this effort, NDSU serves as the lead administrative and fiscal agent for the North Dakota segment of the consortium, the Northern Tier Network – North Dakota.

**NORTHERN WAVE**
www.pnwgp.net/services/northern-wave/

Built by NDSU and the Pacific Northwest Gigapop using National Science Foundation stimulus grant funds, the Northern Wave further enhances the capacity of the NTN through the addition of an optical data connection between Seattle and Chicago. The connection provides for a shared 10 gigabit per second network for research and education institutions along its path across Wisconsin, Minnesota, North Dakota, Montana, Idaho and Washington.

**EDUROAM**
www.eduroam.org

Eduroam is the secure, worldwide wireless access service developed for the international research and education community. Eduroam grants faculty, staff and students secure, authenticated wireless access at participating institutions around the world. For the traveler, eduroam provides secure wireless network access for visitors from participating institutions, without the need to gain guest credentials on arrival to an eduroam enabled location. Study abroad students can join thousands of eduroam hotspots seamlessly while avoiding data roaming charges. For a detailed map of Eduroam institutions across the U.S. and around the world, visit www.eduroam.us

**INCOMMON**

InCommon, operated by Internet2, provides a secure and privacy-preserving trust fabric for research and higher education, and their partners, in the United States. InCommon operates an identity management federation, which results in fewer usernames and passwords to remember as demonstrated by it’s use for our institution’s Educause membership. NDSU faculty and staff can access their Educause member account using their NDSU electronic ID and password.

**NDSU EXPLORES INTERNET2 NET+ SERVICES**
www.internet2.edu/vision-initiatives/initiatives/internet2-netplus

Internet2’s list of vetted partnerships with technology services and applications vendors continues to grow. NDSU has actively engaged in Internet2’s Net+ expansion of services and has served as a member of the Net+ Service Validation team for two potential Net+ Services. This process allows NDSU to partner with other campuses across the country in negotiating service contracts that are cost-effective, easy to access, simple to administer and tailored to the unique needs of our higher education community. InCommon participation is required for most services.
OUTREACH ACROSS DISCIPLINES AND AMONG PARTNER ORGANIZATIONS

NDSU's unique position and responsibility in serving both administrative and fiscal agent capacities for North Dakota's engagement in the global R&E network community carries the responsibility of communicating the latest updates to the North Dakota academic and research community.

NTN-ND RESEARCH AND EDUCATION STAKEHOLDERS

NDSU convenes an annual meeting of North Dakota stakeholders via videoconference to provide updates on current activities such as state and regional network upgrades and contracts, grant activities and improvements that positively impact research and academics across the state. Stakeholders in this group include representatives of the North Dakota University System and representatives from each of the public universities, technical colleges, Tribal Colleges, K-12 education technology services and the state Information Technology Department.

CAMPUS CYBERINFRASTRUCTURE CONFERENCES

In collaboration with the North Dakota Experimental Program to Stimulate Competitive Research (ND EPSCoR) and NDSU's Tribal College Partnership in the office of Equity, Diversity and Global Outreach, the NDSU Information Technology Division has partnered to develop and facilitate annual virtual conferences for the state's Tribal Colleges and University System campuses. Initiated as part of dissemination activities for a recent EPSCoR funded grant, these virtual gatherings provide updates on access to resources for academics and research accessible via the global research and education network community. Conference sessions feature use cases involving remote instrumentation of high-end scientific tools, virtual computing and computational modeling, and access to extensive digital repositories. Participants in the 2014 conference included faculty and staff from the Tribal Colleges, UND’s National Resource Center on Native American Aging, NDSU’s Tribal College Partnership program in the office of Equity Diversity and Global Outreach, NDSU’s Master of Public Health program and NDSU’s IT Division.

NDSU CIVIL AND ENVIRONMENTAL ENGINEERING GLOBAL STEM INITIATIVE

Achintya Bezbaruah, assistant professor of civil and environmental engineering, and NDSU IT Division staff members Daniel Erichsen, Bruce Curtis and Kim Owen presented “K-12 Education: Training the Next Generation of STEM Researchers” at the 2014 Internet2 Global Summit on April 10. The presentation featured Bezbaruah’s WateRediscover Initiative, in which students and teachers from across the globe interact using online resources, such as Internet2, and learn about research methodologies. Bezbaruah coordinates the program and guides student groups and their mentors on research projects. The program culminates each year in an international virtual conference where students present their findings.
PARTNERSHIPS

IT COUNCIL
The IT Council serves as the primary advisory body for IT strategic planning, policy development and service review for the university. The council serves in a consultative capacity to the vice president for IT and as a governing body for all formal IT Advisory Groups to help facilitate campuswide communication related to IT.

TECHNOLOGY FEE ADVISORY COMMITTEE
The Technology Fee Advisory Committee makes recommendations to the vice president for IT on the uses for which student technology fee dollars are to be expended and evaluates the effectiveness of funded projects.

More information is available at www.ndsu.edu/tfac.

IT COMMUNICATION LIAISONS
This program designates representatives from departments across campus to serve as conduits for information and feedback regarding information technology. The program has been remarkably successful in communicating and coordinating technology issues and efforts, and in gathering feedback from participating technology users. We have found that departments with active representation in the liaisons group feel better prepared to adapt to changes in technology services and successfully utilize available technology resources at NDSU.

IT TECHNICAL PROFESSIONALS
The IT Technical Professionals is a special-interest group sponsored by the IT Division’s Enterprise Computing and Infrastructure department that provides the opportunity for technical discussions and exchange of information between distributed technical staff, ECI and the IT Division.

Through regular exchange of information and social activities, a more cohesive technical infrastructure is achieved for NDSU. Collaboration between technical staff across campus means better and more seamless IT services, a benefit not only for IT Technical Professionals but also for those we serve.

SOFTWARE LICENSING CONTACTS
Software licensing contacts serve as a liaison between departmental faculty, staff, student employees and software licensing personnel regarding software licensing questions, ordering and installing, and miscellaneous information pertaining to software licenses. The software contact for a given department is responsible for the ordering, tracking and compliance of software licensing issues for all department-owned computers.

TELEPHONE ADMINISTRATORS
Telephone administrators provide direct services to NDSU departments for all telecommunications needs. They are the first point of contact for new requests, changes and issues related to telecommunications services.

STUDENT TECHNOLOGY SERVICES
Student Technology Services is a valuable program that serves student employment needs of the IT Division and the professional development needs of student employees. A student manager in STS assists in all aspects of hiring for the various IT workgroups, including recruitment, advertisement, interviews and new employee orientation. The success of this ongoing long-standing program helps to ensure there is a coordinated effort to recruit, train and handle student related staff issues. The STS manager also helps full-time staff organize and conduct summer orientation sessions and encourages other IT students to be part of this activity. Students and staff share knowledge and expertise, learning from each other through real-life work experiences. The IT Division appreciates student employees as part of our organization’s outreach activities. An internal advisory board provides oversight for the program.
ABOUT OUR ORGANIZATION

NDSU’s Information Technology Division is the primary provider for a variety of information technology services and computing resources at NDSU. The IT Division acknowledges the diverse and ever-changing needs of those we serve as we aim to enable the success of our student-focused, land grant, research university.

The IT Division is comprised of a talented team of professionals who strive to provide reliable systems and services, and to encourage the adoption of innovative technologies. Our organization is committed to the idea that technology is never an end in itself, but is a tool to support the success of individuals in the NDSU community.

SIXTH ANNUAL IT AWARDS

Employees who are recognized are more engaged in their work and have a vested interest in contributing to the success of the organization. Understanding the significance of the relationship between recognition and engagement, the IT Division continues to publically acknowledge staff members who have demonstrated their commitment to excellence through professionalism, knowledge, performance and collaboration. The organization takes pride in its IT Awards recognition program and values the support received by the campus in nominating outstanding individuals and teams.

This year, 11 individuals were recognized as nominees for the Innovation, Collaboration and Excellence (I.C.E.) Award, and two groups were recognized as nominees for the IT Team Award. The Information Technology Division recognized all nominees during an awards event held on March 27, 2014. Many of the nominees received multiple nominations.

INNOVATION, COLLABORATION AND EXCELLENCE AWARD

Daniel Erichsen, interactive technologies consultant, was selected to receive the 2014 I.C.E. Award. Erichsen received 10 nominations from NDSU faculty and staff members highlighting his creativity, innovation and resourcefulness to globally connect with faculty, researchers and guest lecturers around the world. His positive attitude, initiative and delivery of excellent IT service exceed expectations.

OTHER I.C.E. AWARD NOMINEES:

- Vince Anderson, desktop support specialist
- Zach Anderson, audiovisual technician
- Tammy Cummings, instructional services consultant
- Enrique Garcia, computer systems analyst
- Cody Greff, desktop support technician
- Blair Johnson, desktop support specialist
- (Ag Extension Services)
- Lorna Olsen, instructional services consultant
- Jill Peterson, database applications developer
- Luke Prather, instructional services consultant
- Amber Rasche, IT communications coordinator

IT TEAM AWARD

NDSU’s Technology Learning and Media Center received the 2014 IT Team Award. Team members include full-time staff members Sheree Kornkven, TLMC manager, and Steve Beckermann, media technologies consultant, and 11 student staff members: Niloufar Alenjery, Jon Antus, Nick Buck, Pavan Chevuri, Puneet Mehta, Glen Peterson, Mary Pfeifer, Rumana Rashid, Patrick Schaefer, Zakia Triffi and Ben Whalen.

The TLMC received seven nominations, all of which praised the team’s efforts to go above the call of duty to help instructors and students with course projects that incorporated use of technology. The TLMC team met with instructors to plan each project and share best practices, and provided students with in-class technology training as well as one-on-one assistance and online resources.

OTHER IT TEAM AWARD NOMINEE:

- IT Budget Database Team
GREEN AND GOLDEN GLOBE DIVERSITY AWARDS

Two staff members from the IT Division were recognized at the fifth annual Green and Golden Globe Diversity Awards for the support they provide to enhance diversity on campus. Staff in the Office of Multicultural Programs honored Lincoln Bathie, desktop support manager, and staff in the International Student and Study Abroad Services program honored Tim Mooney, system administrator.

ORGANIZATION AND STAFF CHANGES

The IT Division implemented several organizational changes to improve business functions and to better serve campus needs.

TECHNICAL SUPPORT SERVICES NEEDS CONTINUE TO GROW

Campuswide support for computer labs, instrumented classrooms, GoPrint systems, videoconferencing and multimedia carts continues to be a priority for the Technical Support Services team. More than 30 new classrooms were added during summer 2013, which tripled the previous year’s request. The work involved to equip and maintain computer labs and classrooms has changed dramatically. Today’s classroom environments contain highly sophisticated networked computers and instrumentation. David Hamiga, from the Desktop Support team, moved to the Technical Support Services unit, to focus on improving overall efficiencies in how ITS develops, implements, and deploys a suite of computer images and applications. Additionally, Donovan Dobler and Zach Anderson, audiovisual technicians, were hired to support ongoing technical support needs, which also presented opportunities to offer expanded evening hour coverage.

Donovan Dobler resigned his position in January, and Trevor McNeil was hired in February to replace him. As result of the continued need to support interactive classroom environments, and expand the delivery of dynamic classroom connectivity, Zach Anderson was promoted to a classroom technologies specialist in April 2014.

HELP DESK FILLS ONE-YEAR TEMPORARY POSITION

Former student employee Stan Kwiencien was hired in August 2013 to fill a one-year temporary position to help backfill work responsibilities created by a shift in leadership related to interim positions. Having this position has helped sustain adequate staffing levels, minimized overtime, allowed for planned leave and provided support for ongoing Help Desk services.

DESKTOP SUPPORT CREATES TWO ENTRY-LEVEL POSITIONS

The Desktop Support team provides campuswide support for faculty and staff machines across campus. Core support functions for this team include computer setups, software installations and printer configurations. The unit continues to expand its support to include specialized software for departments, remote software deployment, faster hardware procurement, and new initiatives like Microsoft’s OneDrive for Business. Cody Greff and Daniel Koiner, were hired as desktop support technicians to provide support for the team’s core functions, allowing senior-level staff an opportunity to focus on more technical issues, image creation, technical documentation and advancing automated software deployment.

TELECOMMUNICATIONS AND EMERGENCY SUPPORT TECHNOLOGIES STAFF CHANGES

Prompted by an anticipated staff retirement in August 2014, Lisa Benz, telecommunications analyst, was hired to help keep pace for planned future projects and the transitioning of work responsibilities. As a member of this team, Benz coordinates requests for planning, prioritizing, and implementing enterprise telecommunications solutions and emergency support systems and services with internal staff and campus departments.

ENTERPRISE COMPUTING AND INFRASTRUCTURE STAFF CHANGES

Steve Sobiech continues to serves in a dual leadership role as acting director of Enterprise Computing and Infrastructure and Help Desk manager. In addition, two staff members, Nem Schlecht, system administrator, and Nate Olson, manager of enterprise systems resigned their positions. Search activity began immediately to replace these critical positions.

NEW STAFF HIRES

- Donovan Dobler, audiovisual technician Aug. 1, 2013
- Zach Anderson, audiovisual technician Aug. 1, 2013
- Stan Kwiencien, Help Desk consultant (one year) Aug. 16, 2013
- Cody Greff, desktop support technician Sept. 23, 2013
- Daniel Koiner, desktop support technician Sept. 23, 2013
- Trevor McNeil, audiovisual technician Feb. 3, 2014
- Lisa Benz, Telecommunications analyst May 13, 2014

STAFF RESIGNATIONS/RETIREMENTS

- Nem Schlecht, system administrator Oct. 8, 2013 RESIGNED
- Donovan Dobler, audiovisual technician Jan. 2, 2014 RESIGNED
- Nate Olson, manager, enterprise systems May 8, 2014 RESIGNED
- Kathie Silkey, telecommunications analyst May 8, 2014 RETIRED
EMPLOYEE LIST
Following is a list of employees in each IT Division department as of June 30, 2014

OFFICE OF THE VICE PRESIDENT FOR INFORMATION TECHNOLOGY
Marc Wallman INTERIM VICE PRESIDENT FOR INFORMATION TECHNOLOGY AND CIO
Kimberly Carlson office coordinator
Curt Doetkott consultant statistician
Jeff Gimbel senior IT security analyst
Cathy Hanson IT STAFF DEVELOPMENT COORDINATOR
Kim Owen ADVANCED APPLICATIONS OUTREACH COORDINATOR
Amber Rasche IT COMMUNICATIONS COORDINATOR
CeCe Rohwedder ASSISTANT TO THE VICE PRESIDENT FOR IT
Theresa Semmens chief IT SECURITY OFFICER
Janet Stringer IT ASSET MANAGEMENT COORDINATOR

BUSINESS OPERATIONS POLICY AND STRATEGIC SERVICES
Sharon Brinkett SENIOR ACCOUNT TECHNICIAN
Kim Lammers IT BUSINESS MANAGER
Rhonda Nilles IT BUDGET AND COST ACCOUNTING MANAGER

ENTERPRISE COMPUTING AND INFRASTRUCTURE
Steve Sobiech ACTING EXECUTIVE DIRECTOR OF ECI AND HELP DESK MANAGER
Jon Bronken ASSISTANT MANAGER AND SYSTEM ENGINEER
Eric Christeson APPLICATION DEVELOPER
Diane Clark NETWORK INFRASTRUCTURE TECHNICIAN
Bruce Curtis SENIOR NETWORK ENGINEER
David Dahl SENIOR NETWORK INFRASTRUCTURE SPECIALIST
Jason Eide SYSTEM ADMINISTRATOR
Chad Foster NETWORK INFRASTRUCTURE TECHNICIAN
Richard Frovarp SENIOR SOFTWARE ENGINEER
Brian Kennedy SYSTEM ADMINISTRATOR
Bryan Mesich SYSTEM ADMINISTRATOR
Tim Mooney SYSTEM ADMINISTRATOR
Val Nordsletten NETWORK ENGINEER
Jill Peterson APPLICATION DEVELOPER
Matt Reimer NETWORK INFRASTRUCTURE TECHNICIAN
Jim Ross LEAD APPLICATION DEVELOPMENT SPECIALIST
Dale Summers DATABASE ADMINISTRATOR
Kelly Summers NETWORK INFRASTRUCTURE TECHNICIAN
Bob Viol NETWORK ENGINEER
Carla Wells NETWORK INFRASTRUCTURE TECHNICIAN
Greg Wettstein IT PRINCIPAL ENGINEER
Gary Whaley SYSTEM ADMINISTRATOR
Terry Wieland DIRECTOR OF NETWORK ENGINEERING AND OPERATIONS

INFORMATION TECHNOLOGY SERVICES
Jean Ostrom-Blonigen INTERIM ASSISTANT VICE PRESIDENT FOR INFORMATION TECHNOLOGY SERVICES
Michael Aho HELP DESK CONSULTANT
Vince Anderson DESKTOP SUPPORT SPECIALIST
Zach Anderson CLASSROOM TECHNOLOGIES SPECIALIST
Lincoln Bathie DESKTOP SUPPORT MANAGER
Steve Beckermann MEDIA TECHNOLOGIES CONSULTANT
Neil Brock HELP DESK CONSULTANT
Chad Coleman DESKTOP ENGINEER
Tammy Cummings INSTRUCTIONAL SERVICES CONSULTANT
Daniel Erichsen INTERACTIVE MEDIA SPECIALIST
Jon Fry DESKTOP SUPPORT SPECIALIST (AG EXTENSION SERVICES)
Enrique Garcia COMPUTER SYSTEMS ANALYST CO-ASSISTANT HELP DESK MANAGER
Nathan Geset CO-ASSISTANT HELP DESK MANAGER
Cody Greff DESKTOP SUPPORT TECHNICIAN
David Hamiga IT/AV SYSTEMS SPECIALIST
Blair Johnson DESKTOP SUPPORT SPECIALIST (AG EXTENSION SERVICES)
Cj Johnson INSTRUCTIONAL SERVICES CONSULTANT
Daniel Koiner DESKTOP SUPPORT TECHNICIAN
Sheree Kornkven TECHNOLOGY LEARNING AND MEDIA CENTER MANAGER
Stan Kwicien HELP DESK CONSULTANT
Nancy Lilleberg INSTRUCTIONAL SERVICES MANAGER
Micah McGowen CLASSROOM TECHNOLOGIES MANAGER
Trevor McNeil AUDIO VISUAL TECHNICIAN
Lorna Olsen INSTRUCTIONAL SERVICES CONSULTANT
Luke Prather INSTRUCTIONAL SERVICES CONSULTANT
Jerry Ranum DESKTOP SUPPORT SPECIALIST (AG EXTENSION SERVICES)
Jim Sellner DESKTOP SUPPORT SPECIALIST
Jim Senechal COMPUTER SYSTEMS SPECIALIST
Melissa Stotz TECHNICAL SUPPORT SERVICES MANAGER
Josh Teegarden HELP DESK CONSULTANT
Michael Wolf DESKTOP ENGINEER

TELECOMMUNICATIONS AND EMERGENCY SUPPORT TECHNOLOGIES
Joan Chapek ASSISTANT VICE PRESIDENT FOR TELECOMMUNICATIONS AND EMERGENCY SUPPORT TECHNOLOGIES
Lisa Benz TELECOMMUNICATIONS ANALYST
Gail Bjornstad TELECOMMUNICATIONS ANALYST
Jason Blosser TECHNOLOGY SYSTEMS COORDINATOR
Vance Gerchak DIRECTOR FOR TELECOMMUNICATIONS AND EMERGENCY SUPPORT TECHNOLOGIES
Susan Jenstead TELECOMMUNICATIONS ANALYST
Cindy Kozojed TELECOMMUNICATIONS ANALYST
Linda Krogen-Brandt TELECOMMUNICATIONS ANALYST
Brian Millet TELECOMMUNICATIONS ANALYST
Jayme Pfeifer TELECOMMUNICATIONS ANALYST
Nathan Robideau TELECOMMUNICATIONS ANALYST

IT STAFF IN NUMBERS
78 IT staff members
50+ student staff members