



OPTIMIZATION FORWARD



GOVERNANCE

VCU Technology Services again participated in a number of governance initiatives this year including continued facilitation of and participation in the **IT Governance** process at Virginia Commonwealth University. The IT Governance Committee, with representation from students, staff, and faculty across both campuses, is tasked with the stewardship of IT resources and investments at Virginia Commonwealth University. This year there were **23 total proposals** that were approved totaling over \$8.6 million in value.

VCU Technology Services rolled out an **updated Records Management program** for Virginia Commonwealth University that better aligns with Commonwealth of Virginia records retention regulations and best practices. The program includes new procedures and training for University personnel as well as additional staffing to support records management activities. The Information Security Office is currently revising all University-wide **computing policies and standards** including the Computer Network Resource Use Policy. The new policy framework will allow for a

consistent overarching policy around the acceptable use of VCU computing resources along with a set of technology and security standards and baselines that will continuously evolve as technology and cybersecurity practices change.

Another area of improvement in governance practices for VCU Technology Services is a revamped **Change Management** process. After months of planning, the new Change Management process kicked off towards the end of the fiscal year. This implementation, a collaboration between Application Services and the IT Service Management Office, provides a more defined process to ensure evaluation of changes before they are implemented. VCU Technology Services also worked with University Relations to develop a draft of a comprehensive **Web Policy** that promotes the use of VCU technology and branding standards. To support the policy, Technology Services continues to assist in converting older sites to the TERMINALFOUR web content management system and has also begun work on provisioning a safe and reliable WordPress environment. This collaborative work has resulted in 265 University websites hosted in the web content management system at the end of the fiscal year.

ACADEMICS AND RESEARCH

VCU Technology Services again provided comprehensive support for academic activities both in the classroom as well as online systems. The Labs and Classrooms team **replaced over 260 centrally scheduled classroom and lab computers** for the year. This group also created the **Academic Software Library** for all University classroom and lab technicians to use to access software titles for deployment in their classrooms and computer labs. The group has also established a **classroom blog** to keep technicians updated on the activities of the centrally scheduled classroom support group. The Classroom Support group, responsible for the audio/visual support

for centrally scheduled classrooms, completed **17 comprehensive classroom audio/visual upgrades** on both campuses this year. This group is also responsible for the student **Tech Squad's routine room checks and support of faculty** in the classroom. This year the Tech Squad performed 5,880 room checks and responded to 1,531 requests for assistance with audio/visual equipment issues were completed. The Classroom Support group also rolled out an **eco-friendly classroom equipment monitoring system** that allows the audio/visual system to monitor rooms through the use of occupancy sensors. The system can determine if the classroom audio/visual system was left on unintentionally and if so the classroom system can be shut down to save on energy consumption and projector lamp usage.

Online academic support was enhanced with the spring **Blackboard system upgrade**, which included the Goal Performance Dashboard,

enhanced Video Everywhere support, better Calendar management and a host of other improvements. Eleven new Blackboard **Building Blocks** were deployed in addition to 37 building block updates during the year. Academic Technologies debuted the new **Kaltura video streaming service** this past spring. The Kaltura service is a cloud-based video management system that combines intuitive methods for recording, publishing and interactive viewing on any device in or outside of the classroom. The service was rolled out in March and by June 865 gigabytes of media content had been added with 23,443 views of University content on Kaltura.

For Academic Technologies, reaching out to the University community is important for successful support. On the MCV Campus, the new **Media Support Services MCV Technology Managers group** was established to create collaborative instructional technologies projects for the





campus between the centrally scheduled and department supported classrooms. A similar group is being established on the Monroe Park Campus in collaboration with the Alt Lab. Outreach was the driving force in the creation of the Learning Systems new **Learning Systems Specialist** position. This position provides support for faculty who use technology to enhance teaching and learning, and the individual in this role will provide extended user support, consultations, and customized workshops to Blackboard faculty and staff.

Research support is an important aspect of VCU Technology Services daily activities. This year we provided support for 179 **research-related requests for service** and 11,382 downloads of **research-based software** through the Software Center. We continue to support the Koti server for SAS and conducted 201 **classes for SPSS and SAS training**. Network Services provided

many infrastructure improvements that benefited research at the University. This work included migrating 20 dedicated School of Engineering **virtual network domains** to Internet2, the largest and fastest, coast-to-coast research and education network. Other work that Network Services began this year that will benefit research at VCU includes a Department of Pharmacy **direct connection to the Research High Speed Backbone** to transfer multi-gigabyte research files, planning for a 100 gigabit (Gb) connection to the MARIA and Internet2 networks, and provisioning high-end data center devices that will provide a 160 Gb network connection between the two University computer centers. The University Computer Center (UCC) continued their tradition to provide support for the research community. The UCC provided hardware expertise and advice to specify and support the hardware for the **research enterprise data warehouse project**. In addition, the UCC managed and supported a

cluster, database, and storage for the Office of Research, provided database support for 62 research databases, provided **database and server support for 4,417 REDCap users supporting 8,952 projects**, and provided data backup services for multiple research groups. The University Computer Center and Network Services partnered with the Office of Research and Innovation and the Center for Clinical and Translational Research on a new **research enterprise data warehouse** project to support a Hadoop research platform proof of concept. The UCC implemented a Hadoop cluster which includes managing and supporting 4 Hadoop data nodes and 2 Compellent controllers with Dell storage arrays of 400 terabytes for the project. Network Services connected this cluster to the new **ResearchNet 40 Gb backbone** for high-speed data transfers.



CAMPUS INITIATIVES

High availability of computing resources is always the standard for VCU Technology Services. Keeping an eye on new service opportunities is important for our operational stance as well. To that end, we announced the **Identity and Access Management (IAM)** project this year. The goal of IAM is to allow near real-time onboarding and offboarding of University student, faculty, and staff accounts across various enterprise-wide systems, role-based access provisioning, and secure access certification. This will mean reduced wait time for access to resources with near real-time account provisioning. We also expect to see an improved security posture and reduced risk and liability

due to real-time removal of access to critical systems. Another important forward-looking initiative is the **Virtual Desktop Infrastructure (VDI)** program. VDI refers to a practice of hosting a desktop operating system within a virtual machine running on a centralized server in the data center. Use cases for VDI in various departments and schools here at Virginia Commonwealth University include lab and classroom computers, kiosk desktops, and resources for some sets of administrative staff. Benefits from the VDI deployment include redeployment of updated images and rollback to previous versions when needed and mobile access to desktops which promotes bring-your-own-device and anytime-anywhere access. Of particular interest is the partnership with the School of Dentistry to deploy 160 desktops for their clinical labs this fall. We expect to be able to support 500 desktops via VDI by the start of the fall semester. This year, VCU Technology Services and Alt Lab partnered to launch **LyndaCampus** for Virginia Commonwealth University in January. LyndaCampus is a service of Lynda.com, a well-known and respected online learning service, that specializes in subjects covering software, design, writing, business, and personal development. Skill levels range from beginner to advanced courses. After debuting in January, we had over 4,000 LyndaCampus accounts in the first four months of operation.

Another important collaboration this year has been the new data feeds for **Education Advisory Board's Student Success**

Collaborative Campus that provides advisors and students with a web-based tool to support advising, counseling, campus-wide case management, and other student success services. Banner continues to be an area of collaboration as the **Banner XE** upgrade project was initiated which will, over the next year, completely replace the technology behind the Banner user interface. The Administrative Systems team will be partnering with a number of administrative and academic departments on this project. Work on continued revitalization of our Banner system continues, with one example being the implementation of the Banner XE **eTranscripts** API. This allows VCU academic transcripts to be ordered and purchased online via the National Student Clearinghouse. Academic Technologies again provided support for the 2nd annual **Beyond Orientation** online course via Blackboard and Collaborate. This five-month course provided by the Office of the Provost is designed to help parents support their child's first year at VCU. Similar to the Classroom Support group's monitoring for classroom equipment use mentioned earlier, the Events2HVAC project was a collaboration between Student Commons, Facilities Management, and Technology Services to link the Events Management System utilized to schedule rooms to the building automation systems utilized to control air conditioning. By automatically **reducing energy consumption** when rooms are not in use, VCU saves \$30,000 annually. This is a great example of collaboration and smart use of technology.

SERVICE ENHANCEMENTS

Technology Services worked this year with the Office of Institutional Equity to ensure VCU's websites are accessible to all. **Accessibility** standards for university websites are mandated by the federal government through the Americans with Disabilities Act. Building an accessible website means making sure a site's images, style sheets, and scripts load properly as well as making sure text is readable for a variety of users who may or may not have vision impairment. Accessibility is one of many keys to providing a better web experience. **Courseleaf** continues to be an area of collaboration as Administrative Systems worked with the Office of Provost on updates that automated the online catalog and curriculum process this year. Courseleaf is a state-of-the-art web-based academic catalog management software deployed last year to streamline our course catalog update process from proposing new courses through the entire process ending with final publishing online. Administrative Systems also provided support to the Financial Aid Office as they worked to outsource daily **Standard**

Verification of Institutional Student Information Records to our new Financial Aid Services partner. Work with the Office of the Provost's area also extended into the residence halls this year. Network Services assisted Residence Life and Housing with their new streaming television project. **Streaming television over the network** for the residence halls has provided a cost-effective alternative to cable television services. By using the campus network, it eliminated the need for head-end equipment to bring television service on campus and additional wiring to distribute the service to the residence halls. This collaboration has resulted in better service for students.

The **Zoom desktop teleconferencing** service has been widely deployed this year to replace the previous teleconferencing service. Zoom is now available to all University faculty and staff. Zoom will also be installed in classrooms as a more cost-effective and user-friendly alternative to existing hardware teleconferencing devices. The response to Zoom has been overwhelmingly positive. Other service enhancements include the Applications Services team assisting with the completion of the **T2 parking system** deployment this year. New T2 parking features and upgrades are already planned for the upcoming year. Campus Card Services

began supporting **biometric authentication** via the Door Access and point-of-sale systems for the new basketball facility and the Monroe Park dining center. Student athletes can use their fingers to securely move around the new Basketball Development Center while students with meal plans can use iris scans to enter the dining hall in Shafer Court Dining Center.

The VCU helpIT Center morphed into the **IT Support Center** this year and changed their training stance to **just-in-time training** with the deployment of LyndaCampus and their 1-on-1 Consultation service. The IT Support Center also worked with Application Services to roll out **ticket surveys** this year as an additional feedback mechanism on service quality for the incident and request submissions from the University community. At the end of the fiscal year, Very Satisfied ratings were running at 82% of all responses. The Technology Support Services and Academic Technologies groups made a move from the basement of Sanger Hall to the third floor of the **VMI Building** on the MCV campus this year. As part of this service, IT Support Services is working to mirror services provided on the Monroe Park Campus for the MCV Campus community. Enhanced services have also come in the form of a **new agreement with Microsoft** this year. Besides continuing access to Windows operating systems and Office products, the campus now has access to campus licensing for Windows server and SQL server products for all VCU IT operations. This should assist with more quickly deploying virtual environments.





INFRASTRUCTURE

The **VCU Computer Center upgrade** leads the way for infrastructure enhancements this year. The project was completed in June and the center is now a fully redundant, reliable and resilient data center for all University administrative and departmental computing. This upgrade virtually eliminates the possibility of loss of computing, data storage and network infrastructure services provided by Technology Services. The VCU Computer Center also has provisioned a more robust **VMWare virtual machine environment** that allows the UCC the ability to support significantly more and larger servers at a cost saving to the university. This is important as now the VMWare environment can support more complex virtual servers for a wider

range of applications. In the past many of these servers would have had to be provisioned on a hardware-based server environment that is harder to replicate for disaster recovery purposes.

The Network Services team kicked off a multi-year plan to **upgrade our fiber backbone** infrastructure on both campuses. A significant amount of fiber has already been installed or replaced on the MCV Campus and improvements on the Monroe Park Campus will start in early 2017. The new fiber will allow for speeds of 40 gigabits and beyond, which is needed to support the growing demand from students, researchers, and faculty/staff. The Network team also replaced our discontinued **load balancer equipment** with F5's Big IP appliance. Load balancers allow our applications to achieve high availability by routing network traffic appropriately based on equipment health and the volume of requests for a service. Network Services also pitched on the new VCU Police building project by **extending the VCU network to the new VCU Police building** as well as working with the City of Richmond to incorporate their network in the location to support computer-aided dispatch that VCU Police share with Richmond Police Department.

The Information Security Office team continued the deployment of the **DUO two-factor authentication** service by working with the Web Services team to integrate DUO with the Central Authentication Service (CAS) used by the University community to access online services such as email and the myVCU Portal. Combining CAS and DUO provides members of the

University community with a second layer of security requiring two different channels of multi-factor authentication. This new process better protects people's logins from remote attacks that may exploit stolen credentials. The Information Security team also enabled additional **network monitoring services** this year to provide security analysts with better visibility into the environment for increased detection and prevention of security incidents.

Campus Card Services completed 22 building conversions to the new **Door Access** system nearing the halfway mark for buildings targeted for conversion. The group also worked with Business Services to deploy the Freedom Pay advanced payment platform at University-owned retail dining outlets. Freedom Pay features PCI-Validated Point-to-Point Encryption that is fully audited and validated according to **PCI Security Standards**. The new transaction system supports traditional and emerging payments technologies including EMV chip cards this fall.

The Desktop Services team now supports over **2,200 desktops through service level agreements** with administrative and academic units. The group utilizes LANDESK for managing Windows desktops and has selected Jamf Software's Casper product to manage Apple computers starting this fall. The Telecommunication Services group deployed the **Avaya one-X Agent** this fall for the IT Support Center to remotely support University operations during the recent UCI World Cycling Championships hosted in Richmond. The agent is a computer-based tool that allowed the IT Support Center team to log into the console and handle support calls remotely.

IN THE NUMBERS

VCU Technology Services takes great pride in providing quality and timely customer service to the entire VCU community. This past year, was no exception.

Below is a small sampling of the outstanding accomplishments that our VCUTS teams have achieved during the previous year. Our dedicated commitment continues to shine.

8.83 million logins to myVCU Portal

14,723 total Microsoft downloads

9,763 Blackboard courses/sections offered

VDI (Virtual Desktop Infrastructure) are currently able to serve 250 desktops

22,164 peak concurrent users authenticated on the wireless network

38,162 average views per month with Echo360

53,358 downloads of VCU Mobile

UCC backup diesel powered motor generator can provide 36 hours of run time

4,721,097 RamBucks Point of Sale transactions totalling \$18,181,625

23,214 VCUCards issued FY 15-16

6,305 external locations (IPs) blocked due to malicious activity

Lynda.com launched in January 2016 with over 4,700 active accounts in five months

8,684,482 files currently uploaded to Google Drive

IT Support Center responded to over 5,700 support emails, and responded to 1,089 chats

IT Support Center launches in-house 24/7 Phone Support with overnight and weekend call answer rates increasing from 77% to 90%

1,018,147 documents added via ImageNow

Desktop Services support approximately 2,282 computers (desktop and laptops) for 1,788 customers on both campuses

70% increase in certificates of record destruction from Records Management

7,594 clients managed in LANDESK

265 T4 managed websites

99.999% Network Up Time

IT Support Center technicians received a total of 49,182 calls, answering 47,318 of those calls with a call answer rate of 96.28%.

Campus Card Services provided 6,896,118 building access transactions

Telecommunications manages 39,000 services across multiple locations in Richmond and other areas throughout the state

52,240 average Bb Mobile Learn logins per month

\$2.5 million in equipment purchases made on behalf of MSS projects/stakeholders

99.9% availability for eServices/Banner Forms

381,830 patches successfully deployed to client devices

4,012 cell phone charger users in Shafer Court Dining Hall

206,000 reports run in the VCU Reporting Center

8.89 million Central Authentication Systems (CAS log-ins) during the last quarter

1,770 Zoom meetings launched since January roll-out

Awarded 3 Best of Category SIGUCCS Communication Awards

66,691 detected and triaged security events

5,880 Preventative Maintenance checks on our centrally supported classrooms performed by Student Tech Squad

To better protect our constituents from cyber threats, two-factor authentication integrated into the VCU VPN system

27,052 library laptop kiosk loans



Every day VCU students, faculty, and staff are working to make a difference and “make it real”.

As a premier urban, public research university focused on academic success, research and scholarly productivity, and engagement with the communities we serve and change, VCU must have

a robust and flexible technology infrastructure that enables teaching, learning, research, and all of the other critical activity that supports the pursuit of excellence. The team of dedicated service-oriented professionals that make up VCU Technology Services, along with partners across the institution, works every day to build, manage, and support the infrastructure, applications, and services our institution needs. I invite you to learn about all we do to make it real.

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