Focused Response to Extraordinary Events Annual IT Report 2020

University Technology Services
Oakland University
July 2020

2020 Vision

University Technology Services participated with our campus community to respond to the extraordinary events of 2020. Our commitment to deliver the services that our campus expects was shifted to include 100% online services. We remained focused and dedicated to support emerging technology needs as they surfaced during the transition to remote work and online learning.

We are especially grateful to campus leadership, our vendor partners, as well as faculty, staff and students for their feedback in identifying needs and providing solutions along the way.

Learn more about our Vision and Mission.

2020 Values

We continue to evaluate and implement technology that supports and aligns to Oakland University goals and priorities as documented in the Oakland University 2025 strategic plan.

- Student Success
- Research and Scholarly Activity
- Community Engagement
- Diversity in all endeavors
- Technology excellence

The UTS Organization

University Technology Services staff members made significant contributions to address many on demand requests to support unplanned technology requests as a result of COVID-19. Most often this work is transparent to the campus allowing our community to focus on education goals. Contributions included:

- Creating health assessment forms for students and employees
- Expanding the Virtual Private Network (VPN) environment for secure remote access
- Enabling remote access to student labs allowing students to have access to critical applications
- Deploying softphones to allow student servicing staff to utilize their Oakland phones while remote
- Creating documentation to support Remote Work Information for staff
- Creating documentation with recommendations for securing home networks
- Procuring loaner laptops for faculty, staff, and students
- Completing software reviews to support various simulators, exam proctoring, and virtual graduation needs
- Working with the Provost & Associate Deans to expand virtual software environments to make class and lab software available to students

UTS Staff Achievements

University Technology Services values strong technical skills among individual team members and a dedication to research and lifelong learning. Staff members participated in over 50 training and professional development events in the last year. There is also countless hours dedicated to community groups, forums and peer mentoring activities.

Many vendor partners view Oakland University technical staff members as trusted and valued resources based on feedback and collaboration when designing, updating, and configuring new solutions and performing maintenance and upgrades.

UTS Leadership Transition

Lori Tirpak, Executive Director for UTS, and Director for Enterprise Applications was named Interim CIO this year when our CIO announced her retirement after decades of outstanding contributions and exemplary work in UTS.

Lori's tenure in UTS and at Oakland University has provided a seamless transition.

UTS Commitment to Support Diversity

UTS staff members are committed to all aspects of diversity. We know that our creativity and problem-solving abilities are improved by having an inclusive environment that welcomes diverse perspectives.

Making an Impact All Year

Successful completion of campus community needs:

12,231   Ticket contacts for project work, issues, and account provisioning

11,778   New NetIDs created, creating a larger population of campus technology users

214 / 98%   Procurement projects to update and improve the campus technology experience. Out of 214 goals, 98% were completed by June 30, 2020

1,794   SPSS licenses accessed by students and faculty

187,435   Qualtrics Survey responses in the past 12 months

2,818   "Eduroam" guest access requests accepted

Making an Impact All Year

1133   Ellucian Banner updates, upgrades, and issue requests processed

500   Virtual servers running in OU's Data Centers, hosting critical campus applications

213   Indicators of account compromises, resulting in several thousand accounts being evaluated

15   Incident Action Responses (IARs) conducted to address security related incidents such as internal / external investigations, server compromise, etc.

1000+   Phishing emails proactively blocked by custom compliance filters

100+   Threat actors identified and blocked via enhanced threat hunting procedures

2020 Extraordinary Events Horizon View

The short term and long term effects of COVID-19 on all industries are still unknown. We are aware that some vendors and solutions may be permanently impacted by current events. We are committed to continue monitoring vendor mergers and acquisitions in the technology space so that we can react accordingly.

We are discovering that some technology solutions were not designed for remote access, online teaching and learning, or for remote administration. Researching and implementing solutions to address these gaps remains a top priority. Some solution reviews will take more time than others.
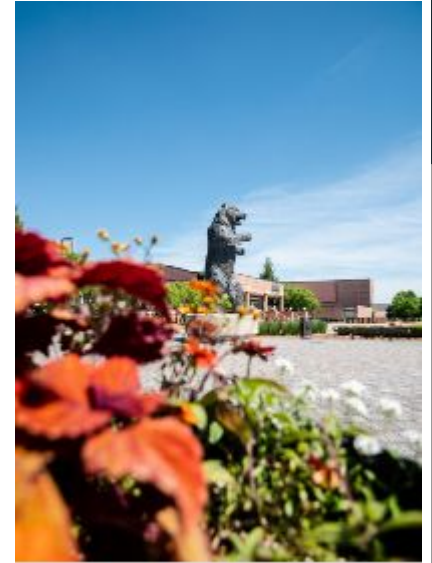
2020 Change Drivers

We expect that we will discover new change drivers that are a direct result from unintended and unplanned needs to support remote work and online learning. Some of these unplanned needs have moving parts that will require additional time to discover the most efficient and effective solutions. We have responded quickly to provide solutions that have been successful to support this transition:

- Online Health Screening forms for faculty, staff, students, and guests
- Additional Virtual Private Network (VPN) connections to support remote work and access to critical business systems
- Remote Work Technology Guidelines
- Procurement of loaner laptops for faculty, staff and students
- Expedited technology and software reviews
- Softphone technology
- Remote lab access

Change Drivers – Technical Excellence

The campus made significant investments enhancing and purchasing Enterprise Solutions in response to feedback from our constituents. Many employees were involved in the bid process for these solutions. The time and effort to participate on these committees is voluntary and is in addition to their daily tasks. Their work and dedication is appreciated. The campus is excited for these tools that will support 2020 and beyond:

- Plagiarism Detection and Education
- Digital Course Content Usability and Accessibility Solution
- Exam proctoring
- University Event Calendar
- Talent Management and Learning Management Solution
- Lecture capture with video content management, live streaming and video conferencing
- Constituent Relationship Management Solution

Change Drivers – New Varsity Esports

- Co-Founded Esports along with Athletics Director
- Michigan's first Division I Varsity Esports team
- OU partnered with GameTime and professional Esports team Renegades
- Created Esports committee which has been meeting monthly to make programs successful
- Committee transitioned existing student organization Esports teams to formalized club Esports teams
- Committee working on finding funding to create Esports Arena within the Oakland Center
- Athletic Esports Varsity team hired first coach and held tryouts for League of Legends, Rocket League and Smash Brothers

Change Drivers – HPC and Storage

- In conjunction with the OU Research Office, UTS is working on the implementation of a High Performance Computing cluster, the first in OU history
- The cluster is built upon state-of-art leading hardware platform and the best available cutting-edge technologies and solutions
- The new computing platform will allow our researchers to be competitive, attract additional research funding and support rapid growing of research at OU
- The growing importance of data, online teaching, research, and analytics requires us to invest and implement modern high capacity storage solution
- We are implementing a highly available and redundant storage solution on campus
- The total capacity of the installed units exceeds 1.5 PB (petabytes) = 1500 TB (terabytes)

Change Drivers – Cloud Computing

Cloud offerings are changing the responsibilities for many roles on campus.

Departments are responsible to assign application owners to manage their software solutions to the vendor contract, and communicate the contract terms including appropriate usage terms, support models, training offered, and access controls provided to their end users.

All cloud offerings are dependent on reliable network access. Our annual software procurement is now approximately one-third cloud-based.

Change Drivers – Virtual and Remote Access

The ability to support online learning models has a dependency on the ability to access academic labs and computing resources from any location at any time. The Office of the Provot along with the Associate Deans are identifying the courses and curriculum that depend on this method of delivery.

UTS collaborated with the School of Engineering and Computer Science to architect and implement a secure method of remote access to instructional labs.

There are great opportunities to streamline and centralize the delivery of software applications for all users through this model. In addition, we are working in cooperation with a third-party vendor to deliver modern virtual applications environment to support online teaching model in the coming year.

Operational Excellence – Network Support

Network management and operations are designed to be cost effective and predictable. This requires a planned cyclical refresh of hardware both for the data centers and for individual buildings. This year, we completed network switch refreshes for these locations:

- Network Border Routers
- Hannah Hall
- Oakland Center
- Pawley Hall
- Varner Hall
- Oakview Hall
- Baseball Diamond, Softball Diamond and Golf Driving Range.

High Performance Networks

A major wireless refresh was completed in Kresge Library. Validation surveys were completed to improve the wireless performance in the existing Wilson Hall building and Meadow Brook Theater to complement the planned Wilson Hall expansion project.

Projects like Kresge and Wilson highlight our commitment to our fiduciary duty to manage resources effectively and responsibly. Early projections forecasted a greater number of wireless access points required for the Kresge Library refresh. We took advantage of a tiered pricing discount on access point devices (APs) and purchased in bulk. Once the validation surveys projected a reduction in wireless access points needed, we were able to redeploy those APs to the existing Wilson Hall and Meadow Brook Theater spaces to reduce the burden on the expansion project. This was in collaboration with the Chief Financial Officer to allow us to reallocate the funds to these additional locations.
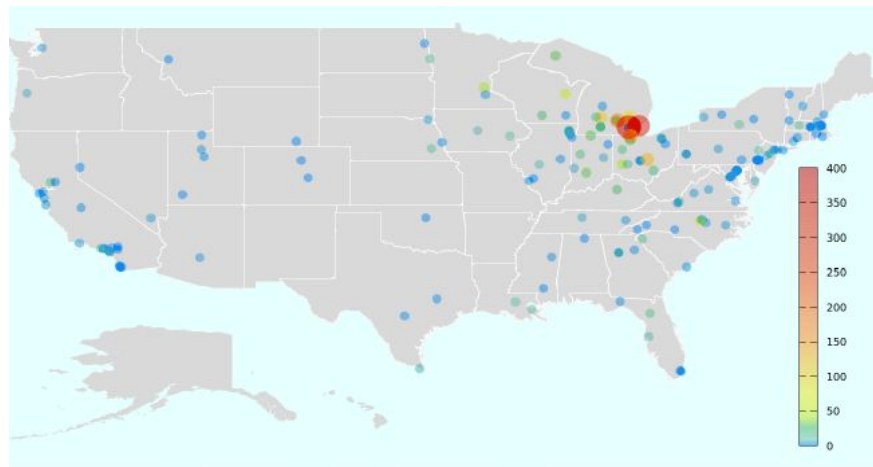
- 104 wireless access points were installed within Kresge Library
- 50 wireless access points are planned for Wilson Hall and Meadow Brook Theater
  (based upon square footage and number of floors)

eduroam Project First Year Response

Number of guest devices by institution of origin.

Where in the **United States** are your eduroam guests coming from?

Last year we completed the project to provide "eduroam" access to the OU community. This year we have data results for the utilization and proliferation of how our community stayed connected.

The eduroam guest network provided access to 2,818 guest devices from 197 different institutions from 27 countries. eduroam authenticated OU's faculty, staff and students in 77 different institutions, spanning 9 countries

High Performance Networks

Comparing April 2019 to the same month in 2020, we would have expected the network traffic to mirror what we saw last year. This is a visual representation of the impact that moving to remote work had on our campus network when students, faculty and staff rely on their home internet service providers instead.
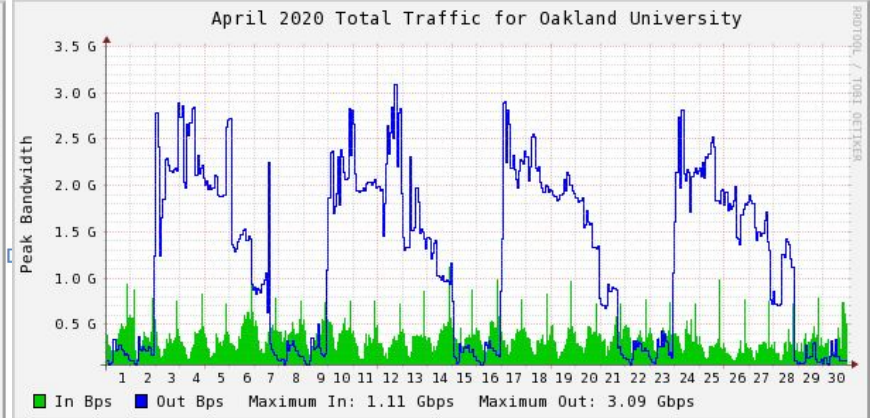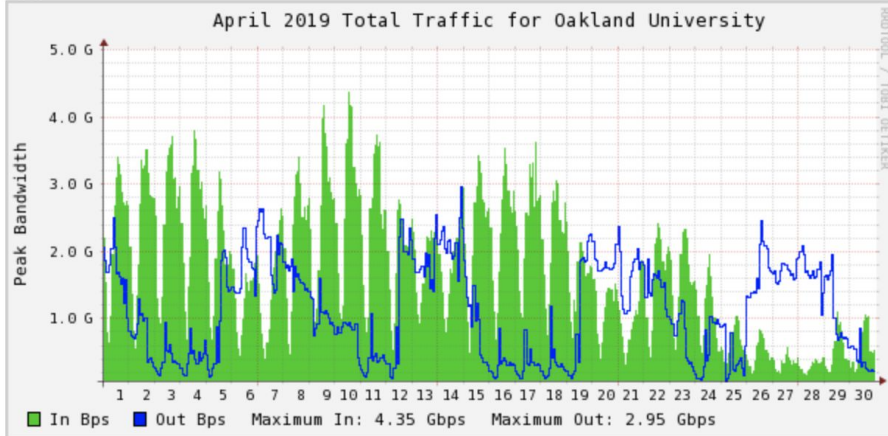
Software-Defined Data Center

The Software-Defined Data Center initiative represents innovation and operational excellence. With expansion and innovation comes the responsibility to ensure that the existing environment remains highly functional, secure, updated, and maintained. Maintenance and updates are not limited to product feature enhancements, but are critical to ensure optimal performance and mitigate security vulnerabilities to protect university systems and data.

The adoption of cloud computing and cloud applications creates a dependency on the vendor's roadmap and timing for new releases and updates. This requires a significant and consistent investment from UTS to monitor and manage several sources of information to ensure that upgrades and maintenance will not negatively impact any peripheral or co-dependent system.

Operational Excellence – Identity

Identity and Access Management is critical to the security of systems and networks.

- The login environment efficiently processes high traffic volume averaging 20,000 unique user logins for the first day of Fall classes, 143,000 total Single-SignOn authentications, and 2,550,000 total operations.

- In collaboration with the Network Team to support GrizzNet-Secure and eduroam (wireless), all students were added to ADMNET. This service provides access to the broad range of directory-based identity-related services allowing students the ability to log in to any domain-joined lab computer using a single password. GrizzNet-Secure and eduroam utilize data encryption to ensure that information being sent over the wireless network cannot be snooped or compromised.

Operational Excellence – Identity

Identity and Access Management is critical to the security of systems and networks.

- Many parts of the identity management system scripts were upgraded and rewritten to Java and Spring Boot during the 2019-20 goal cycle, improving performance and quality.

- A new process was developed to help onboard student employees into the VPN to help adjust a remote working environment to respond to COVID-19.

Operational Excellence

Ellucian Banner operations required cross-team collaborative effort to achieve success.

- **87** Banner system upgrades were accomplished in the 2019-20 goal cycle.
- Ellucian's Banner contract was approved for a five year contract extension by the Board of Trustees. This contract provides new options for Oakland University such as additional Oracle database licensing that allows for further redundancy at a cost savings. Additionally more cost savings measures have been on-going migrating applications from Oracle Weblogic to open source solutions.
- **1,133** Banner related tickets were resolved during the 2019-20 goal cycle that required enhancements, repairs, data fixes, security changes and upgrades.
- Banner Document Retention (BDR) was implemented. This supports Human Resources to help automate deletion of documents to meet regulatory requirements.

Operational Excellence

Ellucian Banner process enhancements helped university departments:

- Multiple projects were completed to help integrate data with third party applications and PostgreSQL datastores for College of Arts and Sciences, University Advancement, Undergraduate Admissions, Finance, Graduate Admissions, Institutional Research and Assessment and others.
- Integrations were custom built by UTS to integrate Destiny to Banner to help improve the customer experience for Continuing Education students.
- Many new connections were added to Argos reporting including Ellucian Recruit's clone database that allowed for further integrations with products such as Signal Vine (Text Messaging Platform).
- Argos was enhanced to allow for reports to be saved to network drives to help improve distribution of reports for university departments.

Operational Excellence

- The MySAIL portal was logged into over **3 million times** by OU students from July 1, 2019 to June 30, 2020. The portal was upgraded to the latest version and further rewrites were accomplished to modernize the user interface and improve accessibility compliance. 112 MySAIL related tickets were resolved in the 2019-20 goal cycle.

- UTS developed an integration platform to work as middleware to help integrate on-site systems to cloud vendors. The first integrations to use this new middleware platform are Destiny Solutions for Continuing Education (PACE) and Signal Vine for Undergraduate Admissions.

- Multiple forms were developed to further improve processing efficiency in a remote working environment.

- **247** Perfectforms related tickets were resolved during the 2019-20 goal cycle that required enhancements, repairs, enhancements and upgrades.

- **108** GoAnywhere projects exist in production that help move and integrate data in scheduled and on-demand jobs.

DegreeWorks

Two upgrades were performed (4.1.6 to 5.0.0, then 5.0.0 to 5.0.2SP1). This upgrade required a major re-architecture of the entire system. This included going from 12 virtual servers (test and production) to 20 virtual servers and adding 8 new services to operate DegreeWorks version 5.0.

Applications Upgraded include:
Transfer Equivalency, Student/Advisor Dashboard (used by all students and advisors for course planning, credits and progress to degree tracking), Transit Tool, Student Planner, Scribe Tool and Composer.

New technologies implemented include:
Upgraded versions of Virtual Machines/Linux-Redhat OS, Tomcat, RabbitMQ, Spring Boot, Oracle RDBMS, Gateway, etc. These upgrades have greatly helped improve redundancy, performance, load capacity, security and accessibility compliance (both presently and for future releases.)

Argos Reporting

Argos continues to grow in usage and is helping to meet reporting needs in many departments:

542 Total users in Argos reporting

226 Users were added into Argos reporting in last year

205 Users have logged into Argos in the last 30 days (June 29 - July 29, 2020)

 40 DataBlock designers (develop dashboards and reports)

150 Active schedules

412 Total DataBlocks (containing multiple dashboards and reports in each DataBlock)

Departments relying on Argos: First Year Advising Center, Registrar's Office, University Technology Services, University Advancement and Student Affairs

Operational Excellence – E-Learning

Projects that contributed to a quality E-learning environment and experience:

- Upgraded the core software of operating systems, backups, databases, caching, and Web for the next version of Moodle
- Expanded Moodle storage capacity in order to accommodate the expected growth of online courses with a new architecture of two new redundant database virtual machines and one new storage virtual machine
- Improved monitoring of search functionality with performance analytics
- Configured the load balancer to encrypt all session cookies per annual penetration test findings
- Reviewed Moodle Apps Plans to continue to provide a means for students to see their courses, to receive notifications of activity and to complete assignments from their mobile devices

Operational Excellence

Other projects contributed to a quality technical environment and experience:

- Procured IPv6 address space to position the University to move to the next generation IP network
- Enabled dynamic IPv6 routing on our core network infrastructure
- Deployed Grizznet-Secure wireless network with 15% user adoption rate prior to COVID
- Upgraded server operational monitoring in Cacti environment
- Expanced department share reporting to give departments valuable feedback about how their shares are used and who has access
- Completed upgrade for the F5 load balancing / reliability environment for critical systems. Moved the environment to a virtual platform
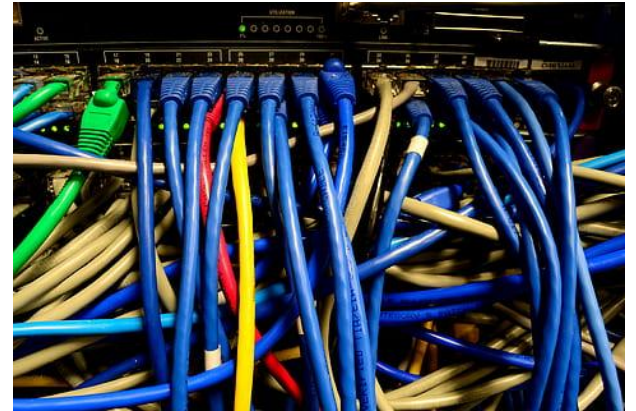
Managing Security, Risk, and Compliance

Security, Risk Mitigation, and Compliance initiatives are core services.

- Rapidly provisioned VPN environment to support 400% growth in concurrent usage
- Addressed multiple findings from security assessments, penetration tests, and audits
- Completed projects for 185 security certificate upgrades, Windows shares security, and file transmission protocols
- Created a data center security architecture refresh with associated business case to address aging data center firewall architecture concerns

Managing Security, Risk, and Compliance

Security, Risk Mitigation, and Compliance initiatives are core services.

- Implemented DUO multi-factor authentication for logging into Banner Admin pages and for DUO / Shibboleth integration address audit finding
- Implemented DUO multi-factor authentication for the majority of the Security portfolio to address audit finding(s)
- Completed security review to address a letter from the APLU on Undue Foreign Influence and Security
- Improved data security by implementing Google Data Loss Prevention, preventing unintentional personally identifiable information (PII) disclosure
- Expanded and matured vulnerability monitoring, threat hunting, logging and alerting processes

Managing Security, Risk, and Compliance

Compliance projects included:

- Maintained high standards need for PCI compliance and HIPAA compliance
- Enabled over a dozen departments and over 50 users to review web content for IT accessibility standards compliance
- Finalized Financial Aid security review for compliance with NIST 800-171 compliance
- Developed and implemented a data steward review access and review verification process to demonstrate compliance with mandates for Banner access, including deletion of access upon transfer or termination, and with year end summary statements
- Licensed an alert keyword for emergency alerts for specific events
- Completed additional FERPA review, allowing for expanded utilization of Google Drive storage

Community Building

- Initiated two new Communities of Interest, Security and Software Licensing and invited campus IT professionals to join a monthly meeting to share information, provide professional development learning, and obtain feedback. There were 12 meetings held addressing several topics. This builds strong partnerships between local and distributed IT support staff.
- Hosted 2nd Annual Cybersecurity Roundtable which included other security professionals from Michigan universities and our third-party security company, Campus Guard.
- Worked extensively with The Research Office to identify the business processes for requesting access and resources for the new HPC research cluster. Ensuring that a steering committee is created to sustain this process and ensure efficiency for the faculty request process.
- Began working with The Research Office on emerging Department of Defense requirements
- Provost invited CIO to join Provost Council Committee

Thank you for Our IT Partnership

We share our news, as we are proud of our commitment, contribution, and success. Please tell us how we can help you. What experience are you trying to create, and how can information technology help?

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