Information Technology Services

Administrative Activities Review

August 2018

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Basic Facts and Description of the Unit

On December 17, 2003, the division formerly known as "Information Services" was officially renamed "Information Technology Services" (ITS). This new name was assigned to the division, as noted by the Board of Trustees, to "reflect its increased focus on an information-technology-specific mission".

This division, under both the old and new name, has been instrumental in the University's continued expansion in the use of technology to achieve its academic mission. This support includes the establishment of computer assisted instructional programs in 1973, the provision of email accounts for all students in 1994, the online registration of classes in 1998 and the establishment of an entirely wireless campus in 2001.

Information Technology Services has been made up of various departments throughout its history in support of the technology needs for the University. Departments including University Library Services, Institutional Research, Instructional Services, Training Services and Web Services were part of the division at some points in its recent past. Currently, the core departments within the ITS division include IT Infrastructure Services, Application System Services and IT Support Services. Information Technology Services as a division reports directly to the Chief Information Officer who in turn reports to the Vice President of Finance / Chief Financial Officer to the University of Akron.

Mission and Goals

Mission Statement: "Information Technology Services provides systems, services, solutions and access to technology and information that advance the goals of the University of Akron towards teaching and learning, research and innovation, collaboration and commitment to the University community."

Information Technology (IT) serves as the foundation for most activities performed at the University of Akron with the ITS team providing the services and support associated with this. Information Technology is critical to recruitment and enrollment, teaching, learning and student success, research and innovation, and most other academic and administrative activities that are core to the University. Technology is woven into the fabric of the University and ITS supports this technology.

Increased reliance on technology leads to an increasing value of the information provided along with it. Information is as critical as technology to the University towards its goals for enrollment, student success, research and development activities. ITS is providing an increasing level of support and services to manage the access and processing needs of this information and to facilitate the analytical activities critical to the University.

Goals for the ITS department have been defined to address the mission and role of Information Technology Services at the University of Akron. These goals include:

1. Protect the integrity of the University's information, digital and data assets by strengthening the backup, recovery and cybersecurity measures utilized.
2. Modernize the technology infrastructure to provide robust and on-demand access to the technology and information resources of the University.
3. Promote and support cloud adaptation to meet the expanding technology and service needs of the University.
4. Modernize, promote and support analytics technology and the access to critical data sources to facilitate timely and informed decision-making by the University and its leadership.
5. Develop skills and career paths that position the ITS organization to support next generation technologies and technology services.

6. Establish levels of service and enhance communication processes to those that are responsive to the University community and promote increased user satisfaction.

Services

Information Technology Services is currently broken up into 3 core areas with each area having a Director to lead the staff and the services provided by the area. The first core area is IT Infrastructure Services which provides the services to maintain and leverage much of the technical infrastructure used at the University including that used for the network, telecommunications and servers. The next area, IT Support Services, primarily provides the services used to maintain the client-based technology at the University; laptops and desktops as well as providing the staff and support of the main campus Help Desk. Finally, Applications Systems Services provides support and services for most enterprise systems used at the University as well as for the databases and business intelligence technology used at the University.

Application Systems Services

Application Systems Services is responsible for computer application support of enterprise systems for academic and administrative departments. This support includes on-premise applications, as well as cloud-based systems and is critical to University operations.

1) Application Development

This includes custom development within the PeopleSoft architecture and integrations built between enterprise systems.

A. PeopleSoft Application Development

Summary

Custom development including modifications to align PeopleSoft with the critical processes of the University. As the University moves into the future, these modifications allow PeopleSoft to be an effective tool and not a barrier to necessary business process improvements.

Critical Partners

- PeopleSoft Power Users
- Oracle Vendor Support

Customers and End Users

- Students: Consumers of the applications provided
- Faculty: Consumers of the applications provided
- Staff: Consumers of the applications provided
- Staff Subject Matter Experts: Consumers of the applications, but also critical in the definition of the business processes which the applications are designed to support

Brief Assessment

We have a significant amount of PeopleSoft expertise in Application Systems Services. Current staff are well experienced in PeopleSoft development and provide exceptional levels of service and a high commitment to meeting deadlines. The level of customization in some

PeopleSoft modules, especially Campus Solutions, will require significant resources to manage.

B. Integration Development

Summary

Custom development focused on the integration of applications. This has become critical due to the availability of affordable third-party software solutions available to various University constituents. Most of these third-party applications require some form of integration with PeopleSoft and even possibly other third-party applications to provide secure, accurate and consistent data across UA's application portfolio.

Critical Partners

- Server Support
- Oracle Vendor Support
- Web Development Team
- Third-Party Vendors
- Application Power Users

Customers and End Users

- Students: Consumers of the applications provided
- Faculty: Consumers of the applications provided
- Staff: Consumers of the applications provided
- Staff Subject Matter Experts: Consumers of the applications, but also critical in the definition of the business processes which the applications are designed to support

Brief Assessment

The PeopleSoft team excels at integrating on premise applications with third-party vendors. The number of third-party systems continues to expand and due to this, these services have become a significant portion of our overall efforts.

C. PeopleSoft Batch Job Development

Summary

Creation and maintenance of batch jobs including scheduling, monitoring, and data transmission. These batch jobs are used by customers to access the information they need on a regular basis.

Critical Partners

- PeopleSoft Power Users

Customers and End Users

- Faculty: Consumers of the information provided
- Staff: Consumers of the applications provided
- Staff Subject Matter Experts: Consumers of the information, but also critical in the definition of the batch jobs and approval of the release of protected information.

Brief Assessment

We have a significant amount of PeopleSoft and SQL expertise for the technology supporting this. Expect continued expansion on the services offered for this as long as the Oracle-PeopleSoft ERP system remains.

D. Business Intelligence and Analytics Development

Summary

Development and support for Business Intelligence dashboards, reports and analytics using technology hosted through the Oracle Analytics Cloud (OAC) solution.

Critical Partners

- Institutional Research
- Data Owners
- Subject Matter Experts
- Database administration
- Server administration
- Vendor support and hosting from Oracle

Customers and End Users

- Faculty: Consumers of the reports
- Staff: Consumers of the reports
- University leadership and the Board of Trustees
- Regulatory and accreditation organizations and other external users (HEI, IUC, NSA, HLC)

Brief Assessment

Oracle Analytics Cloud has been recently implemented replacing several analytics technologies that had previously been used. OAC builds on the expertise that had originally been needed to support Oracle Business Intelligence Enterprise Edition (OBIEE) which had been used for several years. Expect to see a significant increase in the responsibilities and resources needed to support the demand for this service.

E. Business Process Analysis

Summary

Analyze current systems and processes to identify gaps, research and recommend improvements and participate in efforts to implement and support the solutions.

Critical Partners

- Application Power Users
- Subject Matter Experts
- Department Heads

Customers and End Users

- Staff Subject Matter experts: Assist in evaluating current business processes
- Staff and departmental users of solutions

Brief Assessment

This service was formally and recently defined within the ITS group on a pilot basis with Business Analysts hired to support the Human Resources and Benefits areas. The centralization of this service from what had been a decentralized model was done to position the University to migrate to a cloud-based ERP system in the near future. The services provided by Business Systems Analysts will expand significantly with cloud-based ERP systems. Expect continued growth and the expansion of areas and systems support by this team as the centralization efforts continue over the coming months.

2) Application Support

Ongoing day to day support of the Oracle-PeopleSoft ERP and all other administrative applications.

Metrics that have been defined for Application Support showing results for this service over the last five years are available in Appendix D

A. Application Support/Maintenance

Summary

Maintaining applications, application software, and patching services including change control. This also includes problem resolution for PeopleSoft, including orphaned rows, tables incorrectly setup, incorrectly run jobs, login issues, and other related issues.

Critical Partners

- PeopleSoft Power Users
- Third Party Vendor Support
- Oracle Vendor Support

Customers and End Users

- Students: Consumers of the applications provided
- Faculty: Consumers of the applications provided
- Staff: Consumers of the applications provided
- External users: student and employee recruits, retirees and alumni

Brief Assessment

Current staff are well experienced in application support and provide exceptional levels of service and quick turnaround when problems do occur. Third party cloud applications require coordination with these vendors and have proved challenging.

B. Application Security Requests

Summary

Services to provide access to the core administrative applications, primarily Oracle-PeopleSoft, for approved users.

Critical Partners

- Data owners
- Department heads

Customers and End Users

- Students: Consumers of the applications provided
- Faculty: Consumers of the applications provided
- Staff: Consumers of the applications provided

Brief Assessment

Application Security Requests are handled on a daily basis, from a variety of departments and areas. Automation efforts have been put in place and continue to be enhanced to improve the turnaround time for processing requests balanced against the need to insure security for the critical administrative systems used at the University.

C. Implementation Services

Summary

Support of initial application implementations, primarily third-party systems, used to extend functionality not provided within the Oracle-PeopleSoft ERP system.

Critical Partners

- Vendor support from Oracle
- Vendor support from third party vendors
- Power Users
- Heads of departments

Customers and End Users

- Students: Consumers of the applications provided
- Faculty: Consumers of the applications provided
- Staff: Consumers of the applications provided

Brief Assessment

With the diminished level of new functionality being provided within the Oracle-PeopleSoft ERP system, a growing number of third-party systems are being implemented to provide necessary functionality. Many of these third-party systems are also cloud-based.

D. Database Administration

Summary

Services to maintain the Oracle databases, database users, servers and software that are necessary for critical administrative and analytics applications to run properly and efficiently.

Critical Partners

- Vendor support from Oracle
- Server administration
- Power users

Customers and End Users

- Students: Consumers of the applications provided
- Faculty: Consumers of the applications provided

- Staff: Consumers of the applications provided

Brief Assessment

The Database Administration team is responsible for the stability of the Oracle-PeopleSoft ERP system and many other administrative systems that are maintained on-premise. Patches and upgrades that must be applied to the database is a continuous effort.

E. Upgrade Services

Summary

Upgrades of critical administrative systems, including the Oracle-PeopleSoft ERP application, as well as many third-party applications.

Critical Partners

- Vendor support from Oracle
- Vendor support from third party vendors
- Power Users
- Heads of departments

Customers and End Users

- Students: Consumers of the applications provided
- Faculty: Consumers of the applications provided
- Staff: Consumers of the applications provided

Brief Assessment

This service is focused on upgrades of on-premise administrative systems, including Oracle-PeopleSoft. A significant number of upgrades are planned and will continue to planned each year for the Oracle-PeopleSoft and many of the supporting third part administrative systems.

IT Support Services

IT Support Services, provides services and support, used to maintain the client-based technology used at the University. IT Support Services provide the following services:

- Hardware and Software Support: Support for the University-supplied laptops, desktop computers and tablets. Support for Endpoint software installation, troubleshooting.
- Help Desk: Tier One phone support and call center support for the entire campus and its satellites, as well as providing the staff and support of the main campus Help Desk
- Procurement Services: Support in the purchase of client-based hardware and software as well as vendor management for purchasing, licensing and support issues.

1) Hardware and Software Support

Support for the client hardware and peripherals provided by the University and the client-software used on these devices.

A. Data Recovery / Backup Services

Summary

Recover user's data in the event of a hard drive failure or back up a user's data if the machine needs reimaged.

Critical Partners

- Departmental technicians (for those departments having these)

Customers and End Users

- Students
- Faculty
- Staff

Brief Assessment

Assist users every day with system issues requiring some level of data recovery or backup. We are also trying to inform users of cloud services that they have access to reduce the need of this task and better protect the user's data.

B. Computer Labs, Digital Signage and Kiosks

Summary

Maintain 43 general-use lab locations located on campus and the University's satellites, for over 1,000 machines and print stations. Assist departmental technicians used by some departments in the creation and support of lab images.

Critical Partners

- Hardware vendors for support and updates
- Departmental technicians
- Department administrators

Customers and End Users

- Students
- Faculty
- Staff

Brief Assessment

The use and support for lab-based computer equipment continues to expand as the use of technology for academic use expands. The Support Services team recently upgraded the three labs supported and funded by ITS.

C. Software Licensing and Services

Summary

Oversee the software licensing used across campus or utilized in general use computer labs. This includes the software provided through the Microsoft agreement, Adobe Creative Cloud, SPSS, SAS, and many more. In conjunction is the overseeing of services like Hoonuit (online tutorials) and Kivuto (software download hosting).

Critical Partners

- Department administrators
- Support from software vendors

Customers and End Users

- Students
- Faculty
- Staff

Brief Assessment

By centrally overseeing the software licensing we have been able to combine separate departmental licenses with vendors to reduce cost and leverage campus FTE counts for greater discounts. There has been a trend to use more cloud-based or browser-based access to software reducing the number of client-based installations of software necessary.

D. Departmental Support

Summary

Provide endpoint computer hardware and software support on University machines for most buildings on campus along with working with Departmental Technicians as backups and more difficult computing issues arise that they cannot resolve or address.

Critical Partners

- Departmental technicians

Customers and End Users

- Faculty
- Staff

Brief Assessment

Support Services has been able to support over 6,000 computer devices by standardizing on the hardware and software supported, in conjunction with using some automation tools like Bomgar and SCCM that also provide remote access to the devices.

E. Personal Computer Repair and Service

Summary

As a service to the University community we offer to repair personally-owned computers (both hardware and software) to faculty, staff and students for a nominal fee.

Critical Partners

- Hardware and software vendors

Customers and End Users

- Students
- Faculty
- Staff

Brief Assessment

There are two locations established for walk-in drop-off; one in the

Computer Center and the other in the Bierce Library which offers extended hours. Services provided range from diagnostics of hardware and software issues to wireless setup to the campus wireless network.

2) Help Desk Support

The IT Help Desk provides level one phone support for the University campus community to call for any technology problem, issue or request. Services are provided by full-time and student employee help.

A. Help Desk

Summary

This support includes password resets, guest account creation, service ticket creation, and others.

Critical Partners

- Departmental technicians
- Campus administration
- All other ITS groups

Customers and End Users

- Students
- Faculty
- Staff
- Campus guests / visitors

Brief Assessment

The Help Desk is available for support seven days a week, with the Bierce Library location providing support until 11:30PM during the core academic year. An upgrade in underway to the system and technology used for managing support tickets. This upgrade will provide enhancements to automate many of the types of standard requests that come in as well as to expand the modes of communications that are offered such as the use of chatbots and other more recent features offered by support desks.

Metrics that have been defined for the Help Desk showing results for this service over the last five years are available in Appendix D.

3) Procurement Services

Services offered to students, staff and faculty to order and purchase hardware and software for university or personal use.

A. Computer Store

Summary

The Computer store assists departments with computer hardware, software, and peripheral specifications, quotes and order placement.

Critical Partners

- Vendors
- Purchasing
- Departmental administrators

Customers and End Users

- Faculty
- Staff
- Students

Brief Assessment

Several years ago, the Computer Store closed the on-campus location in the Student Union moving from a brick and mortar to an online service. There have been some significant efficiencies realized as a part of this changeover.

IT Infrastructure Services

IT Infrastructure Services provide services and support for the core technology and technology operations at the University. Infrastructure Services support the following categories:

- Hardware: Servers, computers, data centers, switches, hubs, routers, cable and other equipment
- Software: Enterprise resource planning (ERP), customer relationship management (CRM), productivity applications and more
- Network: Network enablement, internet connectivity, firewall and security

A detailed description and breakdown of the specific service categories and the services within these includes:

1) Network Services

This involves all services associated with the digital communications network on which data is exchanged between devices, such as laptops and other wireless devices, both on and off the University campus and its satellites. The data that is exchanged is critical and foundational to the academic and administrative operations of the University with the network providing the backbone to support this exchange.

A. <u>Wired & Wireless Network Services</u>

Summary

The wired and wireless networks represent the access layers that end-users use to connect to the Internet and to local IT resources. Given the increasing dependency on cloud-based systems and services, continuous, uninterrupted and efficient access through the network is now a necessity. The equipment involves hardware such as switches, wireless access points, and wireless controller.

Critical Partners

- Telecommunications: Provides the physical cabling which supports both the wired and wireless networks.
- Network hardware and support vendors: This includes outside vendors on contract with ITS who provide staff augmentation services when there is a significant initiative or event where there are insufficient resources on staff to mitigate the event or effort.
- Server group: Support provided by server administrators from the UA server team.

- IT Support Services: Provides operational support and problem solving to send users connecting to the network.

Customers and End Users

- Students: Provides all students with daily 24-hour access to the systems and data necessary to complete their academic career at the University.
- Faculty and Staff: Provides all faculty and staff with daily 24-hour access to the systems and data necessary to complete their work for the University.
- Visitors: Ensure visitors to the campus have access to the systems and information that is important for their needs.

Brief Assessment

The wired and wireless networks are in the midst of a complete replacement / upgrade, expected to be completed by fall of 2019. This upgrade provides a stable network foundation, enhanced security features, and offers support for future voice communications.

B. <u>Network Backbone</u>

Summary

The network backbone consists of the switches and routers that connect buildings to each other and to the Internet border.

Critical Partners

- Telecommunications: Provides the fiber optic plant and configuration necessary to interconnect networking electronics.
- Capital Planning: Staff coordinate with Telecommunications and Network Service to ensure connectivity for new construction or remodeling.
- PFOC: Facilities staff provide support for repair and installation of the network backbone.

Customers and End Users

- Students: Provides all students with daily 24-hour access to the systems and data necessary to complete their academic career at the University.
- Faculty and Staff: Provides all faculty and staff with daily 24-hour access to the systems and data necessary to complete their work for the University.
- Visitors: Ensure visitors to the campus have access to the systems and information that is important for their needs.

Brief Assessment

A new IP network backbone has been constructed in parallel with the legacy backbone. Upon completion of the network migration, the new backbone will offer increased redundancy, reliability, and speed, and support incremental upgrades as needed.

C. <u>Firewall Administration</u>

Summary

Campus firewalls protect our internet border and critical services from external and internal threats.

Critical Partners

- Application Systems Services: Staff from Application Systems Services help to identify the access needed to the necessary environments and systems.
- Server Team: Provides technical details of applications necessary for implementation of firewall rulesets.

Customers and End Users

- Students: Provides all students with daily 24-hour access to the systems and data necessary to complete their academic career at the University.
- Faculty and Staff: Provides all faculty and staff with daily 24-hour access to the systems and data necessary to complete their work for the University.
- Visitors: Ensure visitors to the campus have access to the systems and information that is important for their needs.

Brief Assessment

A migration to modern next generation firewalls is underway and will be completed in spring of 2019. This environment will offer a consistent interface for management and monitoring.

D. Internet Access Services

Summary

This involves services providing the access through the network to the commodity internet and all cloud-based systems.

Critical Partners

- Ohio Academic Resources Network (OARnet): state-funded organization that provides the University with intrastate networking support which includes access through the OARnet network and Internet2.

Customers and End Users

- Students: Provides all students with daily 24-hour access to the systems and data necessary to complete their academic career at the University.
- Faculty and Staff: Provides all faculty and staff with daily 24-hour access to the systems and data necessary to complete their work for the University.
- Visitors: Ensure visitors to the campus have access to the systems and information that is important to their needs.

Brief Assessment

Upgrade of the primary internet circuit from 10 gigabits to 100 gigabits is underway. This upgrade will offer increased access to cloud services and

shared academic resources. An additional 10 gigabit circuit is being installed to provide redundancy and survivability.

E. <u>Remote Access Services</u>

Summary

Remote access services provide access to secured devices or systems through a Virtual Private Network while off campus, and secure point to point connectivity to external partners.

Critical Partners

- University Police Department.
- Akron City Police Department.
- Lorain County Community College.
- Secondary education partners.
- External Service Providers.

Customers and End Users

- Students: Provides all students with daily 24-hour access to the systems and data necessary to complete their academic career at the University.
- Faculty and Staff: Provides all faculty and staff with daily 24-hour access to the systems and data necessary to complete their work for the University.
- Visitors: Ensure visitors to the campus have access to the systems and information that is important to their needs.

Brief Assessment

Use of remote access services will continue to expand to provide seamless access to growing number of cloud-based services.

2) Server Administration

The server administration group provides installation and operational support for on-premise servers, services, and cloud-based services.

A. <u>Application Infrastructure Services</u>

Summary

Support for the administration and services to run critical systems that are maintained on premise.

Critical Partners

- Application Systems Services.

Customers and End Users

- Students: Provides all students with daily 24-hour access to the systems and data necessary to complete their academic career at the University.
- Faculty and Staff: Provides all faculty and staff with daily 24-hour access to the systems and data necessary to complete their work for the University.

- Visitors: Ensure visitors to the campus have access to the systems and information that is important to their needs.

Brief Assessment

Application infrastructure services efforts are shifting to focus on cloud-based software as a service, and platform as a service support.

B. Operating System Services

Summary

Support for the administration and services to run operating systems that are maintained on servers. Installation, management and patching for operating environments - Windows, Linux, and VMware.

Critical Partners

- Networking Services
- Application Systems Services

Customers and End Users

- Students: Provides all students with daily 24-hour access to the systems and data necessary to complete their academic career at the University.
- Faculty and Staff: Provides all faculty and staff with daily 24-hour access to the systems and data necessary to complete their work for the University.
- Visitors: Ensure visitors to the campus have access to the systems and information that is important to their needs.

Brief Assessment

Significant level of activity for this team. Currently, to manage growing number of security threats, additional Windows server security tools are being deployed, which will be completed by the end of 2018. Additional standardization, automation of provisioning, and security baselining is underway.

C. Cloud Services

Summary

Support for servers and services running in Azure, Amazon Web Services, Oracle Cloud, and various Infrastructure and Platform as a Service offerings.

Critical Partners

- Application Systems Services
- Networking Services

Customers and End Users

- Students: Provides all students with daily 24-hour access to the systems and data necessary to complete their academic career at the University.
- Faculty and Staff: Provides all faculty and staff with daily 24-hour access to the systems and data necessary to complete their work for

the University.

- Visitors: Ensure visitors to the campus have access to the systems and information that is important to their needs.

Brief Assessment

The use of cloud-based services to augment capabilities, add redundancy, and replace on premise systems is steadily expanding over time. Migration to cloud-based services generally offers efficiencies and cost savings compared to what may be offered on premise.

D. Collaboration Services

Summary

Support for cloud and premise-based collaboration solutions (Exchange Online, Gmail, SharePoint, Skype, Google sites).

Critical Partners

- Application Systems Services.
- Networking Services.
- IT Support Services.

Customers and End Users

- Students: Provides all students with daily 24-hour access to the systems and data necessary to complete their academic career at the University.
- Faculty and Staff: Provides all faculty and staff with daily 24-hour access to the systems and data necessary to complete their work for the University.
- Visitors: Ensure visitors to the campus have access to the systems and information that is important to their needs.

Brief Assessment

Enhancements to email security will be implemented by fall 2018. These will better prevent phishing and email fraud, protect University data, and reduce support time associated with responding to incidents.

E. Identity and Access Management Services

Summary

Support for the provisioning of identities for authentication and authorization into the University network and access to critical systems. Administration for Active Directory, LDAP, PeopleSoft Security and standalone enterprise systems. Coordinate federated authentication (Shibboleth) configuration with internal and external application partners.

Critical Partners

- Application Systems Services.
- Networking Services.
- IT Support Services.

Customers and End Users

- Students: Provides all students with daily 24-hour access to the

systems and data necessary to complete their academic career at the University.

- Faculty and Staff: Provides all faculty and staff with daily 24-hour access to the systems and data necessary to complete their work for the University.
- Visitors: Ensure visitors to the campus have access to the systems and information that is important to their needs.

Brief Assessment

Efforts were recently completed to provide cloud-based replicas of our critical authentication systems providing for greater business continuity for the University. Significant efforts are planned in the next few years to upgrade and enhance the identity management systems and services offered.

F. Workstation Management Services

Summary

Support for management of the images and packages for University-supplied equipment including desktop and laptop computers or tablets and for lab machines. Push regular updates and patches to these University-supplied and managed workstations.

Critical Partners

- Departmental technical administrators: This includes UA staff funded and directed by departments outside of ITS. They provide dedicated but similar network services to the department and facilities supported primarily for day to day support issues.
- IT Support Services.

Customers and End Users

- Students: Provides all students with daily 24-hour access to the systems and data necessary to complete their academic career at the University.
- Faculty and Staff: Provides all faculty and staff with daily 24-hour access to the systems and data necessary to complete their work for the University.
- Visitors: Ensure visitors to the campus have access to the systems and information that is important to their needs

Brief Assessment

The variety of devices to support continues to expand with the growing use of tablets in addition to traditional desktop and laptop computers. Continuing maintenance and upgrades of these management systems ensures that they are able to manage newly released Operating Systems for patching and imaging.

G. Data Storage Services

Summary

Support for management of user, server, database, and backup storage.

Critical Partners

- Application Systems Services
- IT Support Services

Customers and End Users

- Students: Provides all students with daily 24-hour access to the systems and data necessary to complete their academic career at the University.
- Faculty and Staff: Provides all faculty and staff with daily 24-hour access to the systems and data necessary to complete their work for the University.
- Visitors: Ensure visitors to the campus have access to the systems and information that is important to their needs.

Brief Assessment

Migration to a new storage platform will be completed by the end of 2018. This will allow for better performance, scalability, and improved recoverability.

H. Hardware Platform Services

Summary

Support for the maintenance and monitoring of physical servers, virtual host servers, hyper-converged infrastructure, and database appliances.

Critical Partners

- Server hardware vendors.
- External maintenance providers.

Customers and End Users

- Students: Provides all students with daily 24-hour access to the systems and data necessary to complete their academic career at the University.
- Faculty and Staff: Provides all faculty and staff with daily 24-hour access to the systems and data necessary to complete their work for the University.
- Visitors: Ensure visitors to the campus have access to the systems and information that is important to their needs.

Brief Assessment

Significant level of activity for this service as an effort to modernization the University's VMware environment is underway and will be completed by the end of 2018. This will increase performance and reliability of our general-purpose computing platforms. A concurrent upgrade of our hyper-converged infrastructure will allow increased availability of high-performance applications, such as business analytics.

3) Telecommunications

This involves all services supporting the telecommunications technology and equipment for the University.

A. <u>Telephone Services</u>

Summary

Support for the University-supplied land-line telephones used throughout the campus including desk and departmental telephones and the blue light emergency telephones.

Critical Partners

- University Police Department
- PFOC
- Telephone vendors

Customers and End Users

- Students: Provides all students with daily 24-hour access to the systems and data necessary to complete their academic career at the University.
- Faculty and Staff: Provides all faculty and staff with daily 24-hour access to the systems and data necessary to complete their work for the University.
- Visitors: Ensure visitors to the campus have access to the systems and information that is important to their needs.

Brief Assessment

Services offered and skills necessary for support will change to support migration from traditional voice services to Voice over IP (VOIP) services.

B. <u>Cellular Services</u>

Summary

Support for the centralized contract management for cellular services.

Critical Partners

- Purchasing
- Cellular telephone providers

Customers and End Users

- Faculty and Staff: Provides all faculty and staff with daily 24-hour access to the systems and data necessary to complete their work for the University.

Brief Assessment

Efforts for and services offered will continue to expand with the expanding use of cellular-based devices on campus. Cellular coverage and carrier availability are continuously evaluated, with campus weak spots being reported back to the appropriate carriers.

C. <u>Campus Cable Services</u>

Summary

Support for the underground fiber optic lines, telephone lines and coax cabling. Also, support for the interior horizontal and vertical cabling found in all University structures and buildings.

Critical Partners

- PFOC
- Capital Planning
- Cabling vendors

Customers and End Users

- Students: Provides all students with daily 24-hour access to the systems and data necessary to complete their academic career at the University.
- Faculty and Staff: Provides all faculty and staff with daily 24-hour access to the systems and data necessary to complete their work for the University.
- Visitors: Ensure visitors to the campus have access to the systems and information that is important to their needs.

Brief Assessment

The current campus fiber plant is capable of supporting all of our foreseeable needs, with proper maintenance and accommodation for new construction.

D. Campus Cable Television Services

Summary

Support for the cable television services provided to Residence Halls and University facilities.

Critical Partners

- Residence Life and Housing.
- External cable television providers.

Customers and End Users

- Students: Provides all students with daily 24-hour access to the systems and data necessary to complete their academic career at the University.
- Faculty and Staff: Provides all faculty and staff with daily 24-hour access to the systems and data necessary to complete their work for the University.

Brief Assessment

A significant effort to upgrade the campus cable television system from analog to digital was recently completed which improved the video quality and number of options available.

E. Campus Radio System Services

Summary

Support for the radio system to support PFOC, athletics, residence life, student life, and police operations.

Critical Partners

- University Police Department

- PFOC

Customers and End Users

- University Police Department
- PFOC
- Athletics
- Residence Life and Housing
- Parking Services
- Student Life

Brief Assessment

Efforts to upgrade the campus radio system and hardware was recently completed moving from analog to digital technology.

Resources

Information Technology Services has a significant level of resources at its disposal to provide the services critical to the academic mission of the University. These resources include personnel, funding, hardware, software and facilities.

Personnel

Over the last five years, there have been a significant reduction in the staffing levels for the ITS division. Part of this reduction, as noted in the introduction, is due to the transfer of other technology-focused departments out of the ITS division and into other divisions of the University. Most recently, the Web Services and Instructional Services teams reported through ITS until they were each moved out to other divisions in FY 2016.

More critically, a number of staff positions were permanently eliminated in Information Technology Services as part of the cost reduction strategy implemented university-wide in FY 2016. This eliminated some services provided by the ITS division including software training and project management. The net result is that staffing levels have been reduced by approximately 40% within ITS as a result of these changes. These changes in ITS staffing levels are reflected in the following graph.
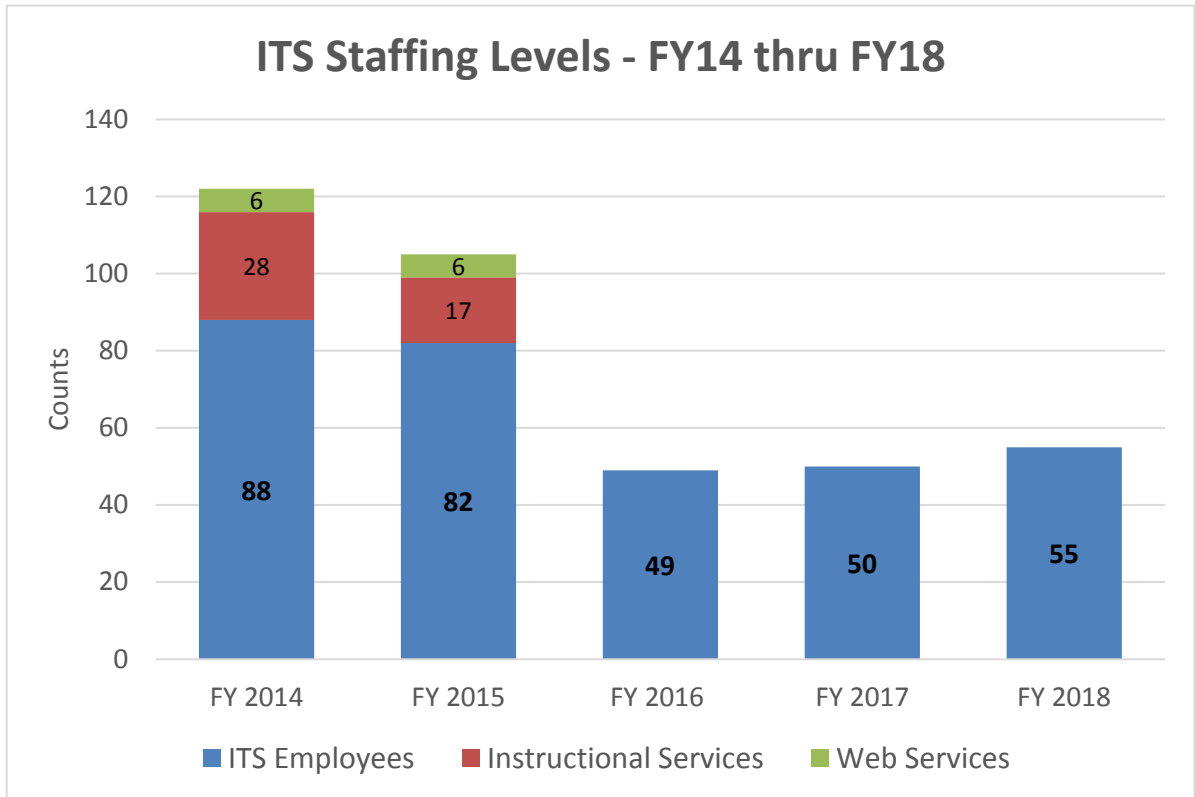
One group of support not reflected in the preceding graph but one which is critical to the services provided by the ITS involves student employees. Student employees are critical to the support provided for services including the Support Center, Client Services and Network Services. A total of approximately 50 student employees are active workers in the ITS division at any point of the academic year. This level of staffing has been remained steady over the last five years largely due to a number of student employees being funded through the Federal Work Study (FWS) program. The funding history associated with the payroll expenses for student employees is noted in the graph below.

Expenses: Student Workers - FY14 thru FY18
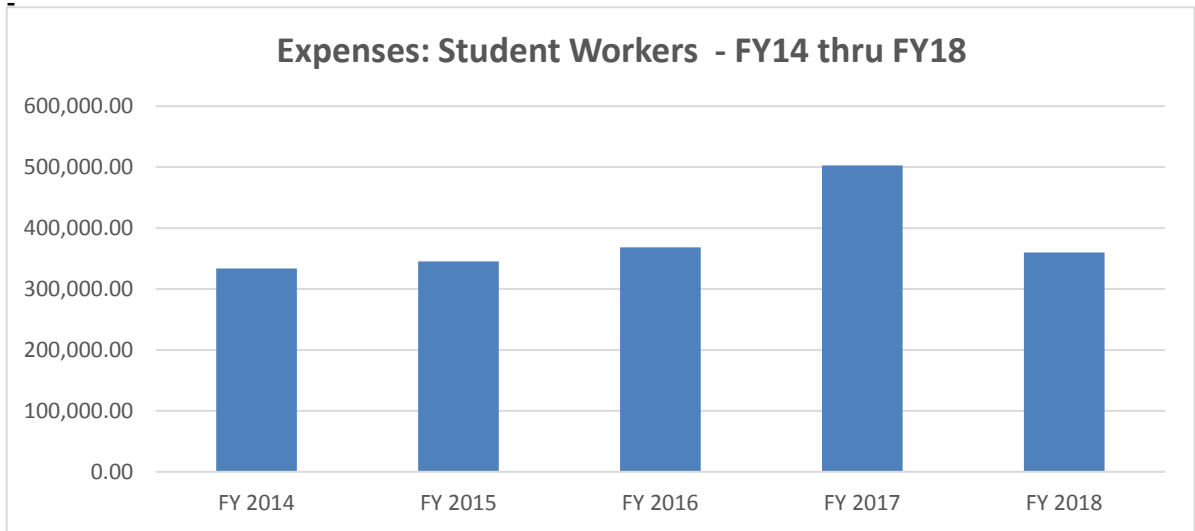
An Organization Chart and detailed table defining each position within the Information Technology Services division is available in Appendix A.

Financials

The primary funding sources that have been provided to the ITS division have been a mixture of general funds, technology fees and revenues generated for several technology services provided by Information Technology Services. There have been reductions in expenses and significant reductions in revenues for the ITS division Information over the last five years. These reductions are reflected in the graphs that follow.

Expenses: Budget v Actuals - FY14 thru FY18
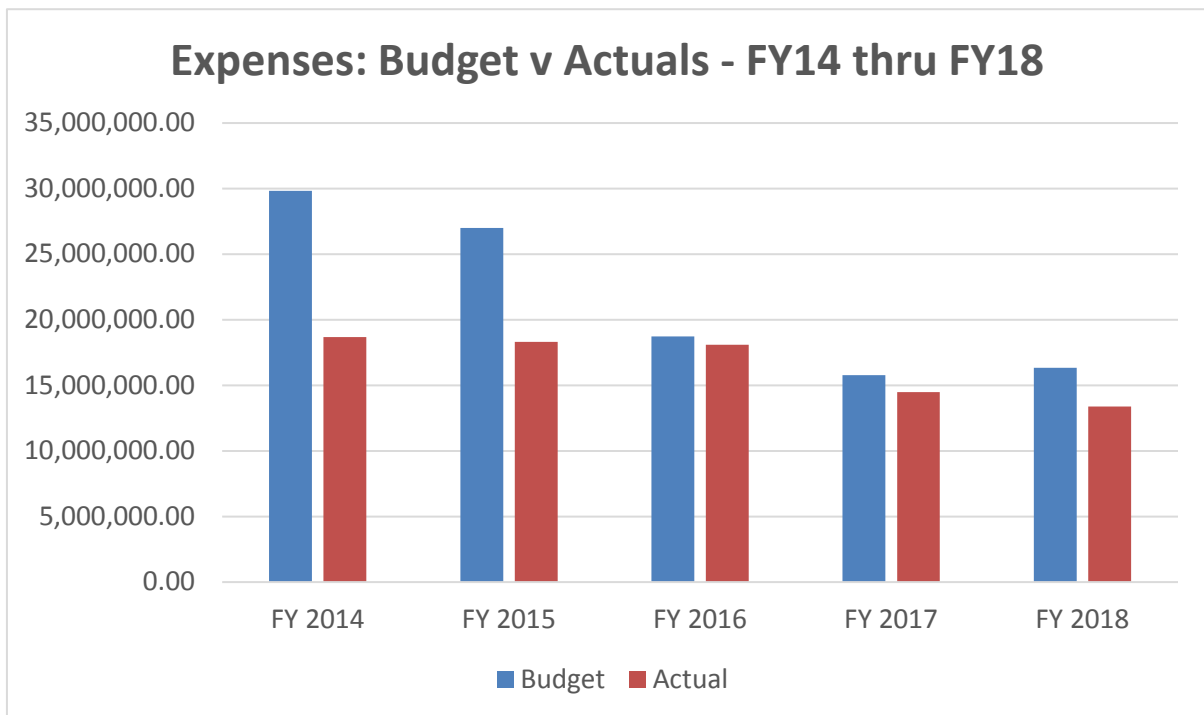
■ Budget ■ Actual

For expenses, the budget and actuals for salaries, wages and benefits have dropped due to the reduction in the number of employees working in Information Technology Services. The other noticeable change in the budget has been the significant reduction in the budget established for Supplies and Services. Starting in FY 2016, funds reserved for project accounts were eliminated from the budget established for this expense category. The net result has been a much closer result for both the budgeted and actuals associated with this category.
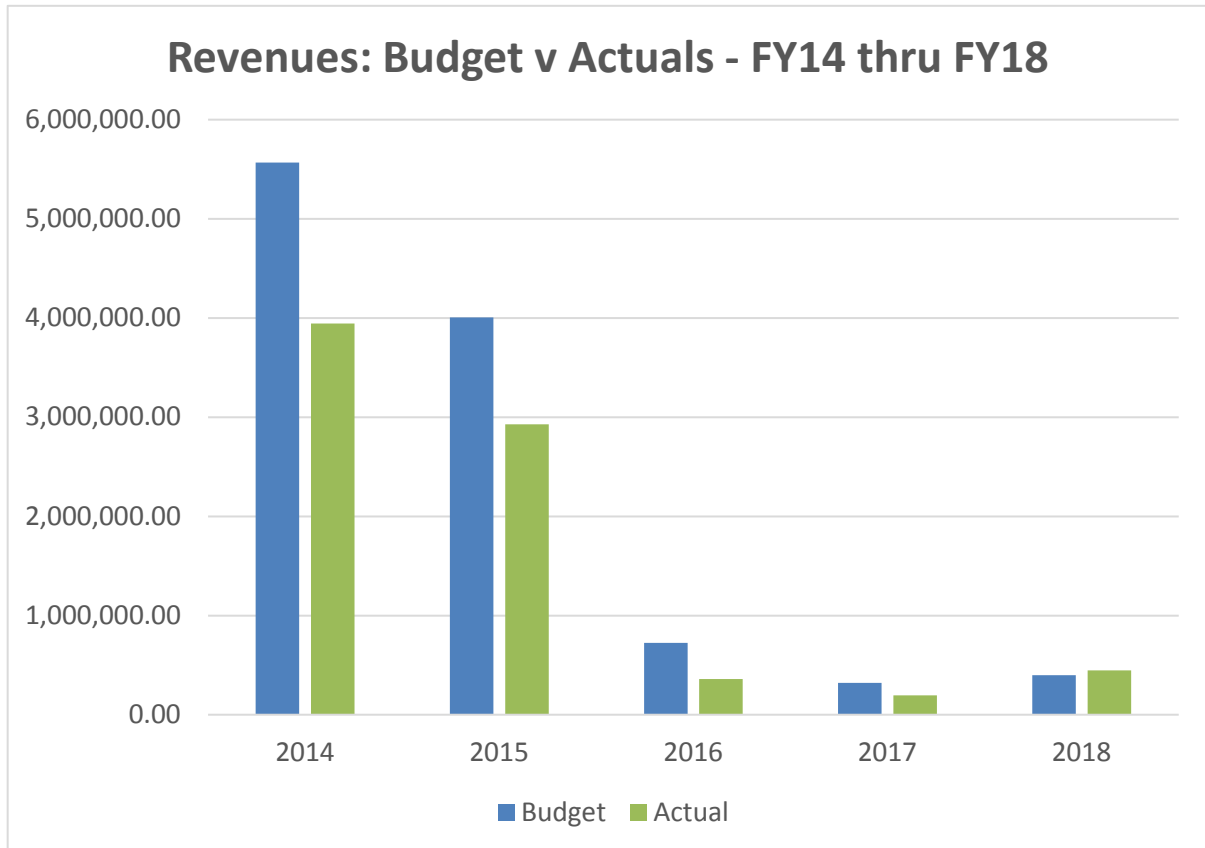
For revenues, there have been some significant strategic changes that have been implemented that have largely eliminated the revenues that had been generated by Information Technology Services over the last five years. Historically, there have been three primary services provided by ITS that have generated revenues for the division. The first source has been the sales of software and hardware generated by the Computer Store. In FY 2016, the space in the Student Union which had been used as the physical location for the Computer Store was closed and all sales that were generated were done so through online services from that point on. The second source of revenue had included charges made to each department at the University for the services provided by Telecommunications. This includes charges for all work and hardware involved to install and activate phones on campus as well as for charges on the local and long-distance calls that were made. In 2016, the chargebacks as revenues to ITS for these services was eliminated. A final source of revenue has been charges for hosting services provided to and paid by Lorain County Community College for the management of their Oracle-PeopleSoft systems. A breakdown of the actual revenues that have been generated by each source is reflected in the graph which immediately follows.

Revenues: Actuals by Source - FY14 thru FY18

(Chart: Stacked bar chart showing revenues by source from FY 2014 through FY 2018. Y-axis ranges from -500,000.00 to 4,500,000.00. Categories: LCCC Hosting, Comp Store, Telcomm.)

- FY 2014: approximately 4,000,000
- FY 2015: approximately 3,250,000
- FY 2016: approximately 400,000
- FY 2017: approximately 475,000
- FY 2018: approximately 500,000

Legend: ■ LCCC Hosting ■ Comp Store ■ Telcomm

A detailed financial report for the budgeted and actual expenses and revenues for the Information Technology Services division is available in Appendix B.

Equipment and Technology

Information Technology Services provides and supports a significant level of equipment related to Information Technology uses. This includes University supplied hardware such as laptops, desktop computers and tablets. It includes servers used to provide access to critical systems. It also includes the telephones and cellular phones provided to employees. An inventory (not comprehensive) of some of this equipment includes:

Servers

27 - VMware ESXi hosts that support 370 virtual servers
4 - Virtual Desktop Infrastructure servers that support 120 3D accelerated virtual desktops for engineering and scientific applications
76 - Physical Servers
5 - Oracle Database Appliances to support Oracle-PeopleSoft ERP and the Oracle Data Warehouse
2 - Petabytes of raw storage in NAS and SAN systems to provide primary and backup storage.

Networking

2,500 - 802.11AC Aruba wireless access points
200 - Dell 10/40Gb switches to support building and Data Center connectivity
730 - Dell Power over Ethernet Gigabit switches to support end users, wireless, and future telephony needs
57 - Fortigate firewalls to provide network service protection, remote access, and virtual private networks.

Telecomm

5,384 - Avaya handsets and phone lines

5 - Digital Radio Repeaters
450 - Radio Handsets
1,800 - Active cable TV drops

Space

The ITS main offices and the data center are located in the Computer Center building at 185 Carroll St. The current Computer Center building was first occupied in 1981 and has 22,740 square feet of space available.

A secondary service location used by the IT Support Services team is located in the Bierce Library on the main floor (308 sq ft) and in Room 52c (298 sq ft) where walk-in service is available along with Help Desk personnel who support this secondary location.

Help Desk

The Help Desk has two locations, the main location resides in 185 Carroll St, in approximately 416 square feet, there are eight staff workstations, including an administrator's workstation and six employee work spaces. The second location is a walk-up counter on the main floor of Bierce Library and uses approximately 308 square feet.

Data Center

The Data Center uses two rooms in the Computer Center and houses the majority of the servers that ITS maintains and is approximately 2542 square feet, with a secondary room that is approximately 680 square feet. Both rooms have independent cooling and are protected by a Holon fire suppression system, are maintained with 2 UPS units and backed-up by a generator.

Map of locations for space utilized by Information Technology Services is available at Appendix C.

Future Plans

The Education Advisory Board's (EAB) research group recently noted that the 21st century represents the next stage for technology generally known as the "Digital Age". With the Internet of Things (IoT), the growing use of technology, especially mobile technology, and the expanding use of cloud-based solutions the support that Information Technology organizations provide is rapidly shifting from hard assets to services. Additionally, many of the services that are provided are rapidly being automated through technologies such as artificial intelligence (AI) and intelligent devices.

Per Gartner Research, higher education has lagged in the adoption of the newer technologies but is now rapidly embracing these technologies to adopt to a more competitive environment amongst colleges and universities. Because of this, Gartner expects the next ten years to be "transformational" as institutions move forward towards digitation. For example, EAB has estimated that over 75% of colleges in the United States now use cloud-based services and technologies in some form. The following note some of the changes and trends contemplated as part of the ever-changing technical environment.

As the technology advances and evolves, the skills necessary to support the newer Information Technology organization are also changing. Information Technology Services will need to change to address this. The following notes some of the potential changes affecting the services offered by ITS.

Potential Changes

Analytics

Gartner outlines the use of business intelligence and analytics is one of the top trends for higher education and calls this the growing use of "analytics everywhere". The "information" part of Information Technology is now recognized as a critical asset and differentiator between universities.

Reflecting this, the University of Akron has engaged in several key endeavors to expand its use of business intelligence and analytics. For example, ITS is currently supporting the deployment of Oracle Analytics Cloud to the campus while also migrating dashboards engineered for the University to OAC while also supporting a student success program that will be the first use of predictive analytics using the OAC technology.

A BI team within ITS was established in 2001 with the implementation of Oracle-PeopleSoft Campus Solutions and currently consists of two full-time ITS resources to support the BI and analytics needs of the University. Increases in the levels of ITS staff used to support this service will be needed to manage the increasing needs for analytics. While there are a greater number of self-service features imbedded in business intelligence and analytics tools, including OAC, ITS resources will be needed to help in the development of user-friendly and efficient data models, growing number of cloud-based data sources and in the use of sophisticated analytics, especially involving predictive and prescriptive analytics.
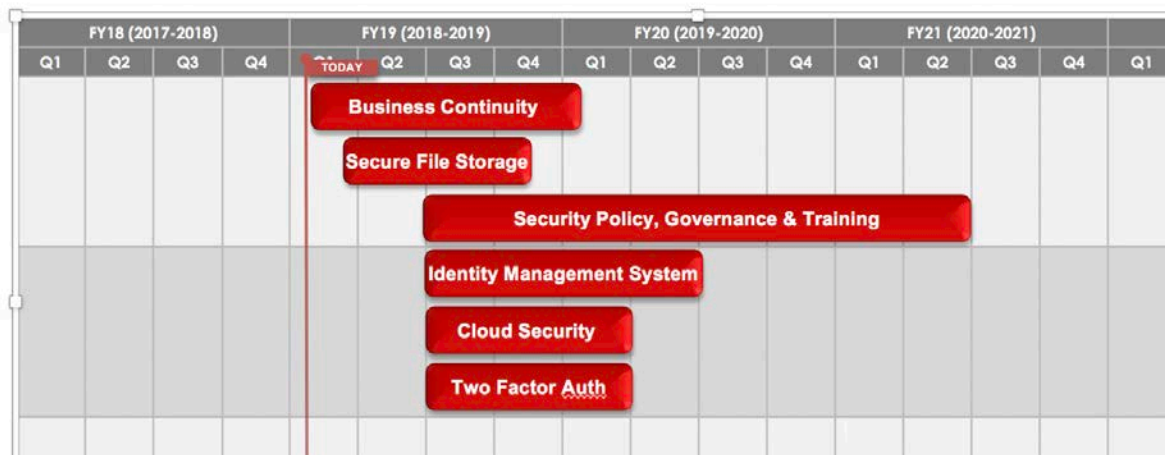
Cybersecurity

With the growing use and need for data comes a growing need to protect the data assets of the University. In addition, recent regulatory and statutory changes such as the

European Union's General Data Protection Regulation (GDPR) and California's recent Consumer Protection Act and the National Science Agency's research requirements are highlighting a growing need to manage data security. Gartner has identified cybersecurity support staff as the most in-demand role identified by colleges and universities. Centralized roles and positions to provide this support will be needed by the University.

In addition, investments in technology, services and systems to monitor and react to the increasing number of attempts to attack networks and breach the data sources at organizations will be needed. ITS will be moving forward with several initiatives to procure and implement technology to better secure the University's data. The information that follows shows some of the initiatives that are being planned.

Security Initiatives Planned - Timeline

	FY18 (2017-2018)				FY19 (2018-2019)				FY20 (2019-2020)				FY21 (2020-2021)				
	Q1	Q2	Q3	Q4	TODAY Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	

Business Continuity

Secure File Storage

Security Policy, Governance & Training

Identity Management System

Cloud Security

Two Factor Auth

Business Systems Analysts

As noted earlier, a pilot is in place to centralize the services provided by business systems analysts within Information Technology Services. EAB has noted that the skills for IT staff are changing as organizations migrate to more cloud-based solutions. The skills for business analysts are evolving and increasing in complexity as vendors of cloud-based systems offer complex yet self-service functionality to their solutions. Within the next decade, the University will need to migrate to a cloud-based ERP administrative system to replace the current Oracle-PeopleSoft system which is currently managed on premise. Based on the experience of organizations that have made this migration and based on the research of EAB and Gartner, the centralization of this service will position the University to better enable this migration and support it afterwards. The intent is to expand this service to the other key administrative functions and units of the University.

Integration Services

The days of a single monolithic on-premise platform has evolved to one that is primarily cloud-based. In addition, a single provider for all of the services needed by an organization has evolved into a multitude of vendors and technologies offered. EAB has noted that the centralization and effort needed for integration services will expand as the number of integrations increases. Another change anticipated by ITS is to formally define and train resources to manage the integrations necessary for all of the systems requiring data from the core administrative systems. This transition will again position the University to migrate to and support a cloud ERP system in the future.

Trends

Many of the trends affecting Information Technology have been noted. An increasing proliferation and reliance on analytics and technology, a growing focus and investment regarding cybersecurity and a growing reliance on cloud-based solutions. Some of the changes to the organization and role of ITS are reflected in the section regarding changes.

Other significant trends noted by Gartner affecting higher education include:

- Digital credentials; this is another factor suggesting investments in cybersecurity resources

- Blockchain; also, an impact to security and the identity management

- Cloud-based Student Information Systems; as part of the cloud ERP solution offered by a few vendors

- Growing use of artificial intelligence; will have an impact on the services offered and the elimination or repurposing of staff who currently support technologies offered by ITS

In general, the trends continue towards more cloud-based, more data-focused or data-driven and more secure technologies offered by the IT organizations. ITS will continue to evolve to meet these trends.

Appendices

Appendix A: ITS Organizational Chart and Position Table

THE UNIVERSITY of AKRON

Information Technology Services

Version: 7-16-18

Chief Information Officer (1)

Budget Administrator (1)

Dir Applications System Services (1)

- Sr Systems Analyst Programmer (1)
- Software Developer (1)
- Business Intelligence Analyst (1)
- Data Architect (1)

Manager of Business Systems – Students (1)
- Sr Systems Analyst Programmer (5)
- Systems Analyst Programmer (1)

Manager of Business Systems – Employees (1)
- Sr Systems Analyst Programmer (1)
- Systems Analyst Programmer (1)

Manager of Database Management (1)
- Enterprise Database Administrator (2)
- Sr PeopleSoft Administrator (1)

Lead Business Analyst – IT (1)
- Business Analyst – IT (1)

Application Systems Tech Lead (1)
- Sr Systems Analyst Programmer (1)
- Systems Analyst Programmer (1)

Application Systems Services

Dir IT Support Services (1)

Systems Administrator (1)
- Computer Support Specialist (2)

Senior Technology Specialist (1)
- Senior Technology Specialist (1)
- Technology Specialist (3)

- Technology Specialist (Labs) (1)
- Senior Technology Specialist (1)
- Comp Store & Tech Support Manager (1)

IT Support Services

Dir Infrastructure Services (1)

Manager of Telecommunications (1)
- Telecomm Network Admin (1)
- Telecomm Technician II (1)

Manager of Network Communications (1)
- Lead Network Engineer (1)
- Senior Network Engineer (3)
- Network Engineer (1)

Manager of Server Operations (1)
- Lead System Administrator (1)
- Senior Systems Administrator (2)
- Software Deployment Specialist (1)
- Systems Administrator (1)
- Technology Specialist (1)
- IT Infrastructure Server Admin (1)

Infrastructure Services

Information Technology Services		
Title	**Description of Key Functions**	**# of employees**
Chief Information Officer	Provide the visionary leadership in the development, implement and maintenance of the institution-wide enterprise information system that supports and enhances the university. Responsible for aligning IT initiatives with the university's mission, culture and long-term goals.	1
Budget Analyst	provide support and analysis in the development, coordination and subsequent monitoring of the university's unrestricted fund and auxiliary budgets.	1
Application Systems Services		
Title	**Description of Key Functions**	**# of employees**
Director of Application Systems Services	Provides vision and leadership in the strategic planning, development, implementation and support of applications information services technology	1
Manager of Business Systems - Students	Responsible for the management of system applications development, project management and technical support for the business units supporting the Admissions, Registrars, Housing, Advising and other administrative business systems. Also provides development resources for supported business units.	1
Manager of Business Systems - Employees	Responsible for the management of system applications development, project management and technical support for the business units supporting the Human Resources, Benefits, Payroll and other employee-related administrative business systems. Also provides development resources for supported business units.	1
Manager of Database Management	Oversee all activities pertaining to the development, access, and administration of the University's centralized business databases and ERP architecture and software.	1
Lead Business Analyst - IT	Serves as primary liaison between the campus community, business units, related third parties and the IT organization in to provide business process solutions to meet departmental and institutional needs	1
Application Systems Tech Lead	Responsible for the management of system applications development, project management and technical support of business units. Also provides development resources for supported business units.	1
Senior Systems Analyst Programmer	Support and maintain information systems, coordinate projects, and resolve system problems.	8
Systems Analyst Programmer	Use computer applications to provide reliable data to the campus community, external individuals and organizations.	3
Business Intelligence Analyst	Work closely with business units to tum data into critical information and knowledge providing data that is accurate, congruent, reliable and easily accessible.	1
Data Architect	Perform data administration activities for all central data warehouses used to provide management with decision support information	1
Enterprise Database Administrator	Administer and maintain enterprise-level databases, servers, services and/or applications	2
Senior PeopleSoft Administrator	Manage PeopleSoft Administrator functions which support applications and technology upgrades. Provide technical support on a 24 X 7 basis for PeopleSoft applications.	1
Business Analyst - IT	Serves as a liaison between the campus community, business units and the IT organization to provide business process solutions to meet departmental and institutional needs.	1
Software Developer	Develop, install and maintain applications in support or extending the Universities enterprise systems	1

	IT Support Services	
Title	**Description of Key Functions**	**# of employees**
Director IT Support Services	provide vision and leadership in the strategic planning, design, development and implementation of the university operational technology support services responsible for planning and directing the development of distributed technology computing systems and the implementation of enterprise management solutions to protect and support the academic missions. provide technical direction to the campus community while assisting in the identification and development of the long and short-term plans of the campus for associated support services.	1
Systems Administrator	provide enterprise-wide communications and computing support to the campus community by installing, integrating and managing network-based services, including server and storage hardware, system software and internet and intranet applications such as file storage, authentication, directory, email, database, web, ERP, learning management and other services. perform system integration and software development functions to enhance the use of those services.	1
Technology Specialist (Labs)	Project team member as required for technology projects that benefit students, departments, colleges or the entire campus. Responsible for maintaining the technological direction of the computing environment as established by management, while ensuring continued technology security, performance and stability. provided technology assistance to campus community.	1
Senior Technology Specialist	project leader or project team member as required for technology projects that benefit students, departments, colleges, or the entire campus. Responsible for maintaining the technology direction of the computing environment as established by management, while ensuring continued technology security, performance and stability.	3
Comp Store & Tech Support Manager	Governs and facilitates technology purchases and distributions of client and server computers, tablets, software and peripherals for the campus and its satellites. Work involves use of extensive product knowledge and frequent communications and contact with faculty, staff, student and vendors. provide support for all apple related hardware for the campus including the development, testing and deployment of client's images for this equipment as well as desktop support and out of warranty repairs for this.	1
Customer Support Specialist	Assist customers who are experiencing any procedural or operating difficulty with the use of information technology applications, products or services. Create call tickets for all customer calls and resolves level 1 issues. May assist customers as needed in retail operation.	2
Technology Specialist	Project team member as required for technology projects that benefit students, departments, colleges or the entire campus. Responsible for maintaining the technological direction of the computing environment as established by management, while ensuring continued technology security, performance and stability. provided technology assistance to campus community.	3

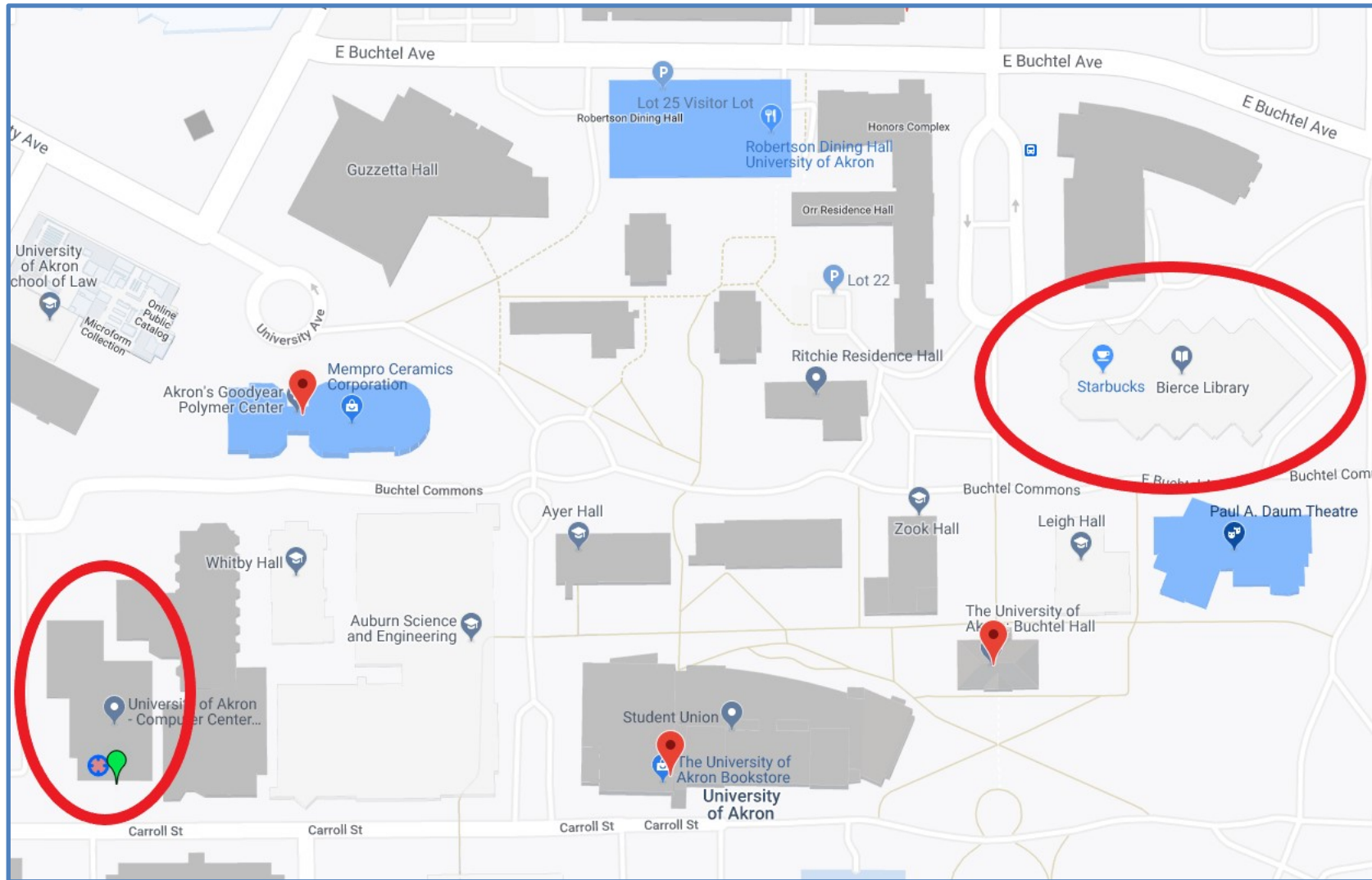| Infrastructure Services		
Title	**Description of Key Functions**	**# of employees**
Director of Infrastructure Services	plan, direct and control IT infrastructure related to the network, telecommunications, server and database services for all the university. Provided vision and leadership in the strategic planning, development, implementation, support, and measurement for server hardware, operating system, databases, infrastructure tools and software, data network, voice network and other related infrastructure.	1
Manager of Telecommunications	manage all operational aspects of the department of telecommunications including the design, engineering, installation, testing and maintenance of the university's low voltage communications infrastructure for data, voice, CATV, video, and security networks. responsibilities include: direct supervision, training of employee resources, small and large project planning, materials allocation, inventory control, and the management of contractors.	1
Manager of Server Operations	provide enterprise-wide computing support to the campus community by installing, integrating and maintaining server infrastructure, system software and internet and intranet applications. Evaluate and recommend new server hardware and software products.	1
Manager of Network Communications	responsible for senior-level management and maintenance of the university of Akron WAN environment.	1
Telecomm Network Admin	Responsible for the administration and maintenance (including back-ups) of the university's enterprise communications server for the university and its remote locations. Utilize and customize software applications for call processing in response to requests from the campus community. evaluate the telecommunications IP network ongoing performance and takes corrective actions when deemed necessary.	1
Telecomm Technician II	Install, Monitor, maintain, and test the university voice, video, and data network including the PBX telephones system, peripheral equipment, cables and circuits for the computer data network. Establish satellite downlinks and monitor all university for performance and make corrections as necessary. oversee the telecommunications tech 1.	1
Lead System Administrator	Provide enterprise-wide computing support to the campus community by installing, integrating and maintaining server infrastructure, system software and internet and intranet applications. Evaluate and recommend new server hardware and software products. assist in the long-term infrastructure planning and design process and the development of new technical standards. resolve complex problem related to systems and services. perform as a team or project leader for complex systems administration and integration projects.	1
Senior Systems Administrator	Provide enterprise-wide communications and computing support to the campus community by installing, integrating and maintaining network-based services, including server and storage hardware, system software and internet and intranet applications. evaluate and recommend new server hardware and software products. assist in the long-term infrastructure planning and design process and development of new technical standards. resolve complex problem related to systems and services.	2
Systems Administrator	Provide enterprise-wide communications and computing support to the campus community by installing, integrating and managing network-based services, including server and storage hardware, system software and Internet and Intranet applications such as file storage, authentication, directory, email, database, web, ERP, learning management and other services. Perform system integration and software development functions to enhance the use of those services.	1
Technology Specialist	Project team member as required for technology projects that benefit students, departments, colleges or the entire campus. Responsible for maintaining the technological direction of the computing environment as established by management, while ensuring continued technology security, performance and stability. provided technology assistance to campus community.	1

Software Deployment Specialist	Responsible for the administration and implementation of the enterprise management software. Provide comprehensive software deployment methodology and development solutions for the university's desktop and laptop computers. Responsible for maintaining the technological directions the desktop/laptop environment as devised by management, while ensuring continued desktop/ laptop security, performance and stability.	1
IT Infrastructure Server Admin	Administer and maintain enterprise-level servers, services, databases, network equipment, and/or applications. Provide support for hardware, system software, network, and /or applications such as authentications, network management, server management, web services, line of business applications, and databases. administer departmental and personal accounts for those services. perform system integration and software development functions to enhance the use of those services.	1
Lead Network Engineer	provide supervision to the network staff and assigns daily activities to insure reliable computing connectivity for all campus clients and multiple campus networks including academic network, residence life network, distance learning network, guest network and others. provide project leadership for the communications and network department and represents the department to internal and external customers. assist with creating and implementing the strategic direction of the university's data network. responsible for the creation of weekly/monthly reports including performance measurements and metrics.	1
Senior Network Engineer	Maintain the campus network backbone to provide computing connectivity for the entire campus and distance learning network. Provide network support to the university's faculty, staff and students. Resolve complex computer network problems. Install and maintain all computer network connections and hardware. attend technical seminars/educational conferences to keep current with emerging trends. meet with vendors to select appropriate network equipment. design and implement off campus distance learning network.	3
Network Engineer	Maintain the campus network backbone to provide computing connectivity for the entire campus data network. Provide network support to the university's faculty, staff and students. Resolve complex computer network problems. Installs and maintains all computer network connections and hardware. meet with vendors to select appropriate network equipment. assist with design and implementation of campus data network and supporting technologies.	1

Appendix B: Financial Summary

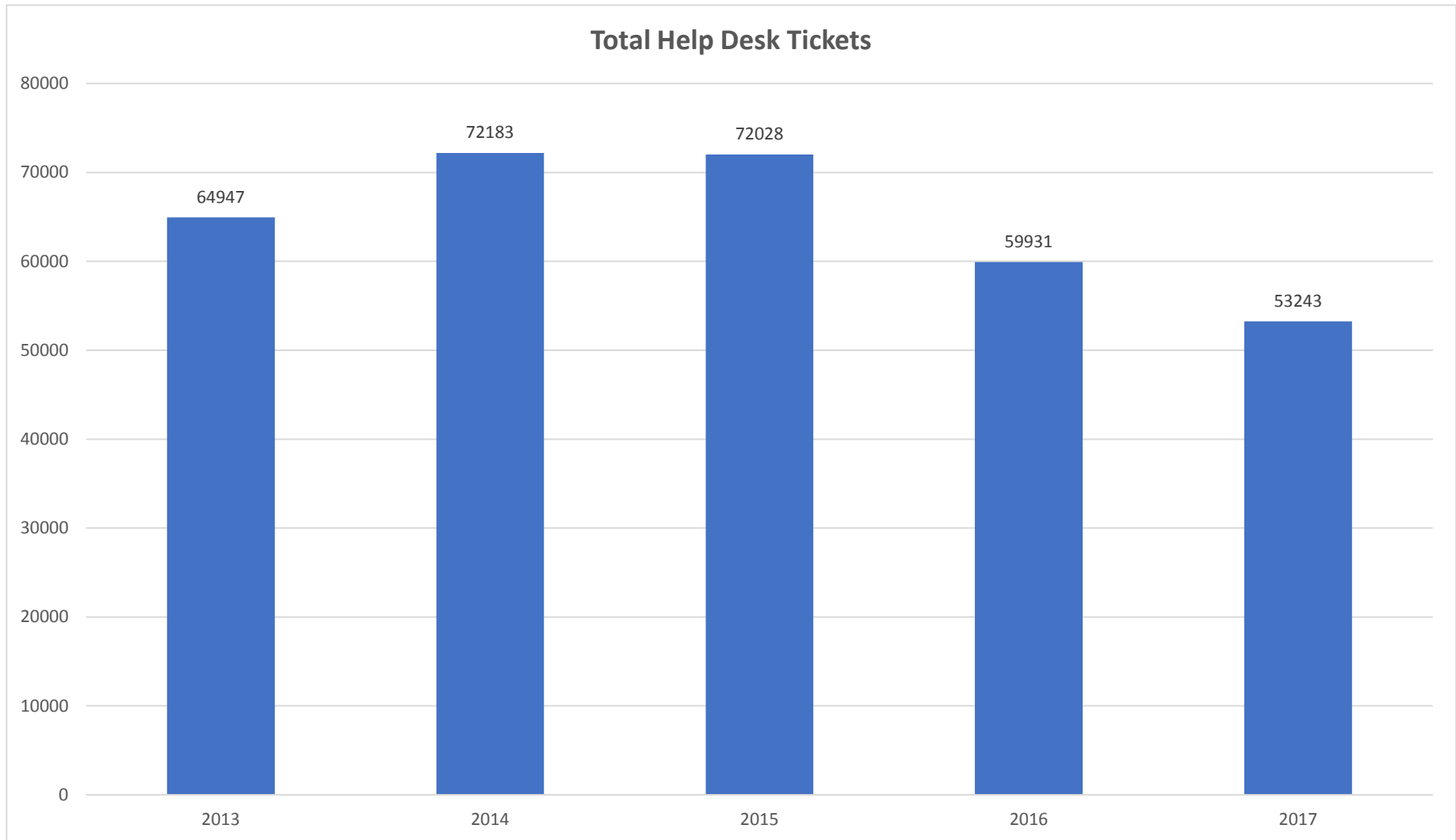|	2014			2015			2016			2017			2018		
	12 months ended June 30, 2014			12 months ended June 30, 2015			12 months ended June 30, 2016			12 months ended June 30, 2017			12 months ended June 30, 2018		
	Budget	Actual	Difference	Budget	Actual	Difference	Budget	Actual	Difference	Budget	Actual	Difference	Budget	Actual	Difference
Expenses:															
Salaries, Wages, and Benefits	9,314,508.20	9,343,536.77	(29,028.57)	8,852,858.55	8,916,733.61	(63,875.06)	6,649,750.08	6,606,043.82	43,706.26	6,238,091.64	6,044,296.67	193,794.97	5,793,514.10	5,707,071.76	86,442.34
Student Assistants	387,497.26	333,851.20	53,646.06	418,903.61	345,400.82	73,502.79	441,900.86	368,576.82	73,324.04	652,213.85	502,680.11	149,533.74	395,979.10	375,322.24	20,656.86
Supplies and Services	14,617,637.80	5,768,726.90	8,848,910.90	14,820,133.63	6,015,681.27	8,804,452.36	7,593,837.93	7,106,000.42	487,837.51	6,423,973.83	5,561,024.55	862,949.28	8,890,294.80	6,744,558.32	2,145,736.48
Communications	1,681,017.95	1,914,541.87	(233,523.92)	1,846,782.91	2,076,075.88	(229,292.97)	1,253,917.37	1,443,880.07	(189,962.70)	1,621,395.45	1,723,780.60	(102,385.15)	1,255,406.91	1,255,406.91	0.00
Moveable Equipment	309,040.11	227,643.09	81,397.02	245,246.81	280,933.98	(35,687.17)	2,439,465.72	2,357,843.68	81,622.04	589,255.28	633,069.28	(43,814.00)	1,166,080.30	563,940.03	602,140.27
Plant Fund Expense	1,494,809.87	293,172.14	1,201,637.73	57,042.00	169,103.00	(112,061.00)	0.00	279,367.13	(279,367.13)	300,000.00	139,402.52	160,597.48	58,447.92	58,447.92	0.00
Cost of Goods Sold	2,000,000.00	651,822.10	1,348,177.90	415,000.00	7,075.76	407,924.24	400,000.00	2,423.99	397,576.01	0.00	0.00	0.00	48,272.00	0.00	48,272.00
Travel and Hospitality	53,634.37	30,096.99	23,537.38	25,437.96	5,096.01	20,341.95	37,049.91	24,549.91	12,500.00	16,243.49	7,377.40	8,866.09	12,235.92	4,960.91	6,413.94
Other	(17,993.02)	118,225.39	(136,218.41)	315,102.72	510,056.22	(194,953.50)	(97,446.06)	(81,181.58)	(16,264.48)	(61,938.90)	(130,809.69)	68,870.79	(952,535.82)	(993,352.34)	40,816.52
Total Expenses:	29,840,152.54	18,681,616.45	11,158,536.09	26,996,508.19	18,326,156.55	8,670,351.64	18,718,475.81	18,107,504.26	610,971.55	15,779,234.64	14,480,821.44	1,298,413.20	16,667,695.23	13,716,355.75	2,950,478.41
Revenues:															
Sales and Services	5,546,620.00	3,945,370.67	1,601,249.33	4,005,840.00	2,881,961.55	1,123,878.45	725,000.00	229,803.70	495,196.30	20,000.00	12,538.16	7,461.84	400,000.00	152,618.74	247,381.26
Other Sources	21,049.00	0.00	21,049.00	0.00	47,143.82	(47,143.82)	0.00	128,581.80	(128,581.80)	300,000.00	183,562.68	116,437.32	0.00	293,824.95	(293,824.95)
Total Revenues	5,567,669.00	3,945,370.67	1,622,298.33	4,005,840.00	2,929,105.37	1,076,734.63	725,000.00	358,385.50	366,614.50	320,000.00	196,100.84	123,899.16	400,000.00	446,443.69	(46,443.69)

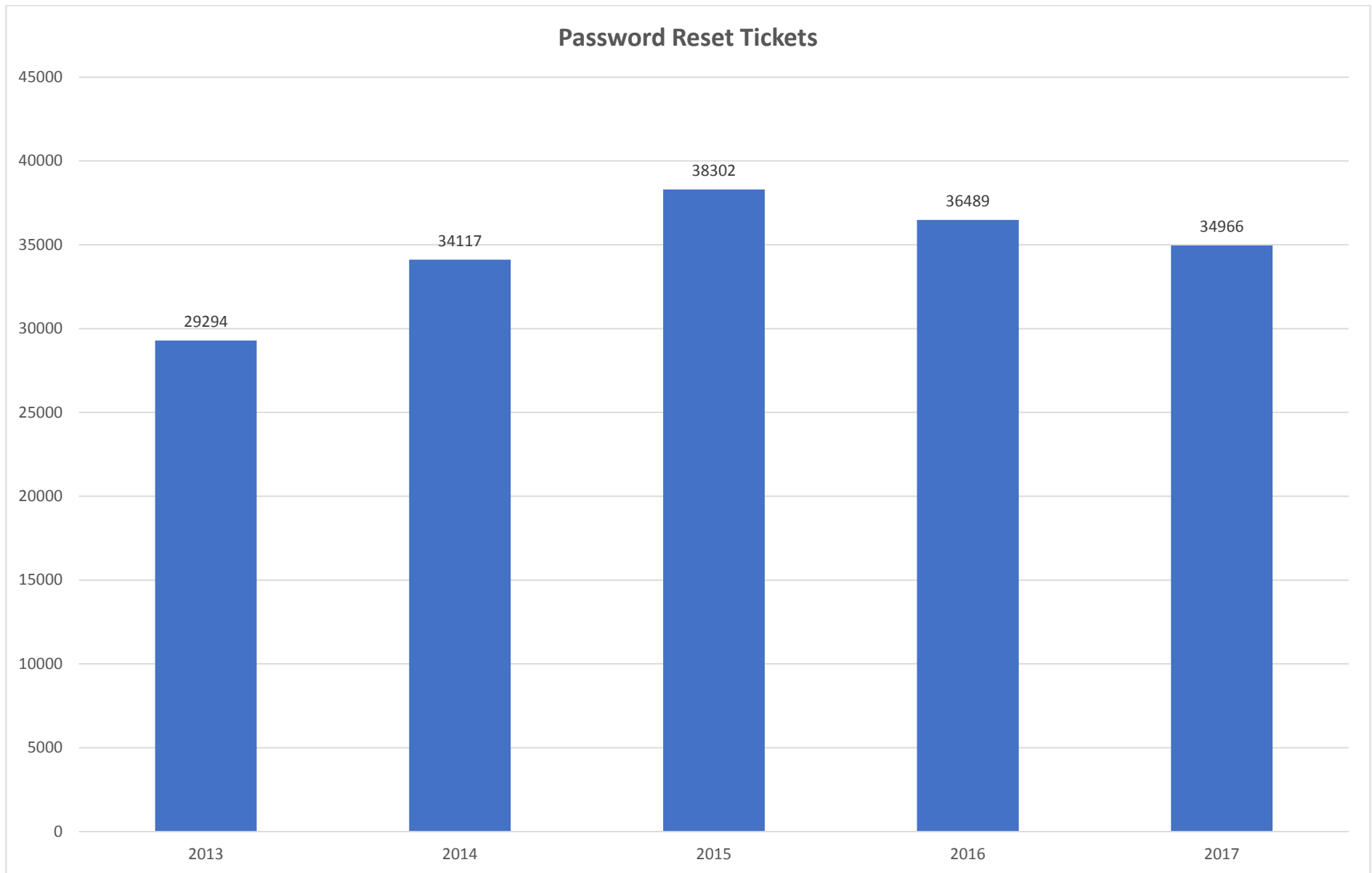## Appendix C – Map of Information Technology Services Space

Most Information Technology Services staff and employees are located in the Computer Center building. The Data Center is located in the Computer Center building as well. The Help Desk has staff located in the Computer Center and Bierce Library.
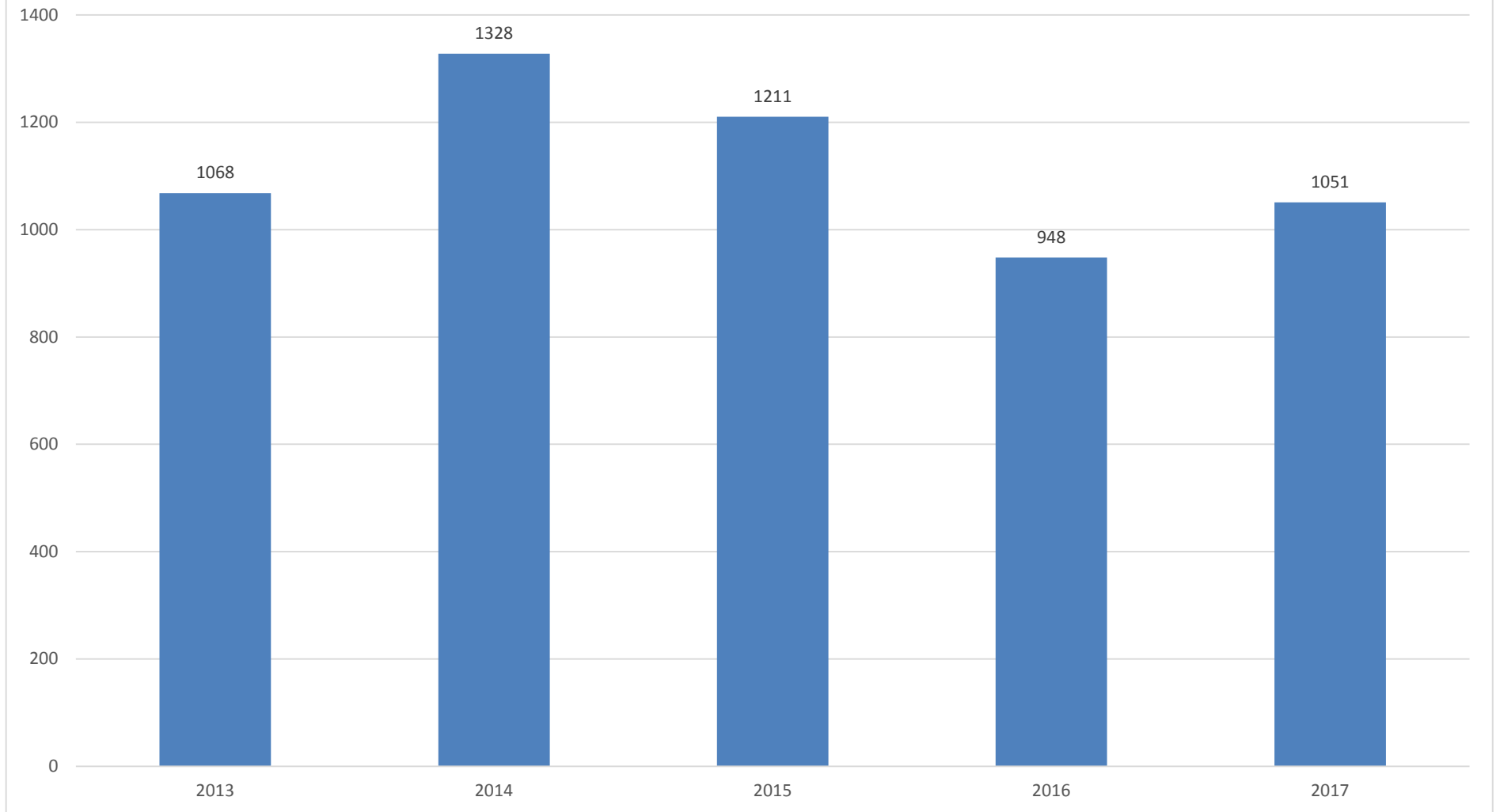
Appendix D - Metrics and Benchmarking

Metrics for the Help Desk

Total Help Desk Tickets

Year	Tickets
2013	64947
2014	72183
2015	72028
2016	59931
2017	53243

Password Reset Tickets

Year	Value
2013	29294
2014	34117
2015	38302
2016	36489
2017	34966

Ticket Average Turn Around Time (minutes)

Year	Value
2013	1068
2014	1328
2015	1211
2016	948
2017	1051

Metrics for Application Systems Services Support

Application System Services- Closed Tickets