In FY2010, TSD conducted an assessment and developed a four-year strategic plan which carried the division through this fiscal year (TSD Strategic Plan, FY2010-FY2014). This plan addressed four key ITU goals through associated division objectives and related performance indicators. Each year TSD conducts a division-focused assessment of these goals to ensure continued alignment with the strategic direction of the ITU and George Mason University.

This report provides an overview of TSD’s progress to date as well as a year-over-year summary of TSD’s efforts toward meeting the ITU goals and achieving the division’s objectives. The following four ITU goals were supported:

- **Goal 1**: Improve and expand technology infrastructure to meet new needs
- **Goal 2**: Improve efficiency of IT service management
- **Goal 3**: Ensure projects are completed on time, within budget
- **Goal 4**: Develop corporate partnerships

Fiscal year results are summarized by goal. The chart that follows frames the division’s accomplishments within its strategic plan and in relation to specific ITU goals. Of its 23 objectives, TSD completed ten, 12 are in progress or will remain on-going, and one is on hold pending further review.

This coming fiscal year TSD looks forward to supporting the strategic planning activities of the ITU presently underway and the development of implementation plans and roadmaps needed to achieve the University’s 12 new strategic goals. In concert, TSD will be creating a new strategic plan that aligns with the mission, goals, and vision set forth by the ITU and institution.
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## ITU Goal 1: Improve and Expand Technology Infrastructure to Meet New Needs

*(Supports GMU Strategic Goals 2,7)*

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<td>Objective 1.2</td>
<td>Employ network virtualization technology (MPLS) on campus, enabling TSD to overlay separate logical networks on one physical infrastructure for enhanced security and network performance</td>
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<tr>
<td>Objective 1.3</td>
<td>Upgrade the PBX system for increased reliability by installing redundant processors and physically diverse connections</td>
<td>(√ On Schedule)</td>
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<td>Objective 1.4</td>
<td>Partner with other Virginia institutions to obtain funds for and implement a high capacity research network</td>
<td>(X Completed)</td>
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<td>Objective 1.5</td>
<td>Implement power, temperature, performance, and leak detection monitoring in the new data center</td>
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<td>Objective 1.6</td>
<td>Continue to optimize server and storage area network environments though the use of contemporary and emerging virtualization and consolidation technologies</td>
<td>(= Ongoing)</td>
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<td>Objective 1.7</td>
<td>Expand the real-time performance monitoring of servers, storage, networks, and application systems</td>
<td>(= Ongoing)</td>
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### Summary of Results, Goal 1

**Objective 1.1: Expand student IT facilities, including more wireless coverage, wireless printing, etc., as a by-product of new construction**

- Since at least 2008, all new buildings and major renovations have included wireless network infrastructure
- FY2011-2012 (Summer): over 200 additional wireless access points were installed to boost network capacity in selected buildings
- FY2012: Analyzed wireless access to determine need by buildings for additional access points and documented in a wireless plan
FY2013: Initiated two major projects to expand wireless network capacity and capability, deployed new MASON-SECURE wireless network to simplify access and increase data transmission security, improved wireless data coverage in the buildings that follow:

- Housing VII complex
- President’s Park
- Student Apartments
- University Commons
- Enterprise Hall classrooms
- Innovation Hall classrooms
- Robinson Hall classrooms
- Other areas requiring wireless coverage improvements will be identified and addressed throughout the year

FY2014: To improve wireless performance, installed in-suite wireless access points in all rooms in the Student Apartments, and the Dominion and Commonwealth residence halls

FY2014: Completed connecting the Commerce building to the university’s network at the Fairfax campus—the Commerce building is now “natively” connected to the university network at 10Gbps

FY2014: Designed and installed a telecommunications network for the new Loudoun site at Signal Hill

FY2014: Designed and installed a new telecommunications network for the Mason Global Center

FY2014: Completed upgrades to the residence hall wired network in Student Apartments and the University Commons

Objective 1.2: Employ network virtualization technology (MPLS) on campus, enabling TSD to overlay separate logical networks on one physical infrastructure for enhanced security and network performance

- Completed
- December 2009: MPLS enabled in network core and extended to all three campuses
- June 2010: MPLS capability deployed to all buildings
- May 2011: Redundant Headend router/firewall system deployed at Mason’s DR site
- FY2012: Obtained new IPv6 address assignment for the university’s network, began drafting IPv6 deployment plan to prepare for production IPv6 services
- FY2013: Upgraded main “Head End” routers to accommodate anticipated capacity increases and doubled Internet capacity for a total of 8 Gigabits per second
- FY2014: To accommodate new demand, NET grew the number of virtual internetworks in use to 178

Objective 1.3: Upgrade the PBX system for increased reliability by installing redundant processors and physically diverse connections

- March 2009: New CS1000E Split-Core PBX call server installed on Fairfax campus
• Fall 2009: New Survivable Media Gateway installed in new Police & Public Safety Building
• November 2010: Upgraded Arlington PBX, adding new survivability and security features
• FY2011: Upgraded Fairfax PBX systems, migrated over 50% of the existing digital phones to VoIP, prepared plan to move campus to VoIP and eventual elimination of the analog/digital PBXs
• FY2012: Conducted additional upgrades to Fairfax PBX system with an accelerated move to VoIP
• FY2013: Decommissioned the Prince William PBX system and move that campus to the new VoIP system, continued to remove telephones and services from the original Fairfax PBX to simplify the voice system architecture, and enhanced system failover capability by adding redundant connections and High Availability features
• FY2014: Completed analog to VoIP conversion for all systems except those running out of Harris Theater core and the University Police department
• FY2014: Completed installation of new SIP and PRI trunks to a new VoIP telephony provider, Windstream; migrated the first 1500 numbers to Windstream (for incoming calls), including the main campus number, 703-993-1000

Objective 1.4: Partner with other Virginia institutions to obtain funds for and implement a high capacity research network
• Completed
• Fall 2003: Mason joined with other Virginia doctoral research institutions to create the MidAtlantic TeraScale Partnership (MATP)
• Fall 2005: Mason connected to MATP's National LambdaRail node, enabling campus access to a second high-capacity national research backbone
• FY2012: Worked with MATP membership to incorporate MATP as a 501(c)(3), now called the Mid-Atlantic Research Infrastructure Alliance (MARIA)
• FY2013: Solidified Mason's participation in MARIA, which provides affordable and reliable high speed access to the world's top research facilities, via Internet 2 and the National LambdaRail (NLR)

Objective 1.5: Implement power, temperature, performance, and leak detection monitoring in the new data center
• Completed
• TSD uses APC Netbotz software to monitor the power, temperature, humidity, and water leak detection beneath the data center floor.
• FY2013: TSD updated the APC Netbotz software and installed an additional server to run the applications. Additional sensors and devices were also placed in the main Aquia Data Center, Prince William data room site, and Harris Theatre Telecom Room for monitoring the environment. Smart PDUs were added to racks for real time monitoring of power in racks.
• FY2014: Installed additional cold aisle air containment systems over network infrastructure racks in the Aquia Data Center—management of air flow in the data center is providing estimated energy savings of $3,921 a year (based on a savings of 65,350 kilowatt-hours at a rate of 6 cents a kilowatt-hour)by improving the air management system in the Aquia Data Center

Objective 1.6: Continue to optimize server and storage area network environments though the use of contemporary and emerging virtualization and consolidation technologies
• Summer 2011/FY2012: deployed a VMware cluster using Dell servers and a NetApp NAS storage array for collocation client, configured “backup” for the system to minimize the number of “hard” servers for collocation, improved management, and reduced energy consumption
• FY2012: deploy multiple virtual servers for the portal tier of the Banner ERP system, replace the 3PAR SAN
• FY2013: 3PAR SAN replaced with a Compellent SAN at both Fairfax and the Disaster Recovery site and storage capacity increased 100%

Objective 1.7: Expand the real-time performance monitoring of servers, storage, networks, and application systems
• Continue to expand the use of SiteScope monitoring including the deployment of Web Script Monitor. Configure SiteScope monitoring to work with all “colo” virtual servers
  FY2008: 304 SiteScope monitoring ports deployed
  FY2008: 25,000 network ports monitored
  FY2012: 664 SiteScope monitoring ports deployed
  FY2012: 48,400 network ports monitored
• FY2014: Deployed and configured Opnet to provide troubleshooting and monitoring for infrastructure components for administrative systems, including Banner
**ITU GOAL 2: IMPROVE EFFICIENCY OF IT SERVICE MANAGEMENT**
*(Supports GMU Strategic Goals 2, 6 & 7)*

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<tr>
<td>Objective 2.7</td>
<td>Add new Unified Messaging features and expand the use of IP telephony</td>
<td>(No Progress)</td>
</tr>
<tr>
<td>Objective 2.8</td>
<td>Expand support for non-Windows systems and mobile devices</td>
<td>(X Completed)</td>
</tr>
<tr>
<td>Objective 2.9</td>
<td>Closeout the Password Identity Management project</td>
<td>(X Completed)</td>
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<td>Objective 2.10</td>
<td>Implement a Systems Status website to improve the management of information and inform users about system availability and performance</td>
<td>(X Completed)</td>
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<td>Objective 2.11</td>
<td>Provide improved desktop support services through the use of new processes and technology</td>
<td>(√ On Schedule)</td>
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<td>Objective 2.12</td>
<td>Working with the university community, select a new email and calendaring system for employees that will provide the university with improved tools to enhance collaboration</td>
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<td>Objective 2.13</td>
<td>Pilot mobile applications for the iPhone, iPad and Android devices. This includes a protocol for reviewing proposed applications through Architecture Standards Committee where appropriate and a proper division of responsibilities within ITU for licensing, procuring, testing, troubleshooting, and deploying applications.</td>
<td>(√ On Schedule)</td>
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Summary of Results, Goal 2

Objective 2.1: Migrate content from ITU Technology Gateway to more manageable repositories such as the ITU Support Center, ITU Service catalog, and other actively managed sites
- Completed
- In FY2012 content was migrated to managed sites and the ITU Gateway was taken offline

Objective 2.2: Continue to automate IT management processes
- FY2012: Began automating Banner Security Officer approval process and standardizing processes and ordering forms—to be completed in Spring 2014
- FY2013: Implemented the new process flows and ordering forms for all services in the IT Service Catalog
- FY2014: Completed Banner Security Officer approval process—automation of the process is pending the outcome of the ITSM selection process
- FY2014: Updated and expanded the Software Distribution and Imaging Architecture (SDIA) for management of Microsoft Windows devices—providing centralized imaging, software distribution, software updates, and security updates for MS Window devices.
- FY2014: Began piloting a self-service App Store concept using the centralized management solution ability through Apple’s JAMF—Casper and Microsoft’s System Center Configuration Manager (SCCM)
- FY2014: Implemented a process to manage communications about Planned and Unplanned IT Outages
- FY2014: Implemented standard ITU Policy, Service Level Agreement, Operational Level Agreement, and Memorandum of Understanding document formats and created processes, online and paper repositories and management tools
- FY2014: Complemented extensive knowledge sharing, awareness, and support campaign for the Office 365 and MasonLive email systems
- FY2014: Revamped the Continuity of Operations Plan (COOP) to more closely conform to the University COOP and enhance the department’s ability to respond in a range of situations
- FY2014: Assisted in the process of standardizing the format of online ordering forms for ITU services

Objective 2.3: Continue to move several departments up the process maturity scale by developing a service catalog for the top 20 services requested by ITU customers
- Completed
- In FY2012, the ITU Services Catalog became available online, populated with approximately 70 IT services
Objective 2.4: Continue ITIL deployment and prepare an ITIL implementation plan covering the next three years

- FY2013: An ITSM Gap Assessment was completed by Plexent in FY2013. The resulting report identified gaps in current IT service processes and outlined a three-year roadmap for improving these processes. The report also included a recommendation to create a position that would assist in this new initiative.
- FY2013: Created a project team to act on the recommendations in the report and a new position was secured to help lead the initiative
- FY2014: Filled the newly created position of Service Process Coordinator
- FY2014: Identified 107 processes, defined documentation standards, and identified and purchased process mapping software
- FY2014: Created ITSM Steering Committee to help guide the ITU’s service management improvement program
- FY2014: Launched the ITSM Roadmap project; started to create baselines for current roles, responsibilities and processes; have nearly 50 process maps underway

Objective 2.5: Provide a content management system that is generally available to academic and administrative departments for complex content management needs

- FY2014: Moved Commonspot CMS to Cloud services to improve service as a temporary measure until a replacement system is determined. ITU support for Wordpress continues. The objective of identifying, procuring, installing and deploying a CMS for Mason that will replace Commonspot and Wordpress is dependent on an RFP for as vendor that will (among other things) make a recommendation for an enterprise CMS.

Objective 2.6: Maintain current levels of SPAM control using security applications

- In 2008, Mason procured IronPort Anti-Spam appliances to prevent spam from entering Mason’s email system. Mail is first delivered to these appliances. Between 90% and 95% of all inbound mail is currently rejected by the appliances because it meets the criteria for SPAM. Prior to implementing the appliances, Mason saw in excess of 20% of email spam reaching member email accounts. With the move to Office365 for employees this year, TSD has retained use of the IronPort appliances given the effective performance to date.

Objective 2.7: Add new Unified Messaging features and expand the use of IP telephony

- FY2014: Objective is on hold

Objective 2.8: Expand support for non-Windows systems and mobile devices

- Completed
- FY2012: Partnered with DoIT to research and implement an expanded SCCM platform to provide additional support for Macintosh computers in both classroom, labs, and specialty labs
FY2012-FY2013: Completed and actively engaged in activities that expand wireless availability and capability across Mason campuses, including deployment of MASON-SECURE

FY2013: Launched a project to participate in the eduroam worldwide federated identity system that enables students, faculty, and staff to use wireless network services at participating institutions around the world

FY2013: Created a team to find a viable solution for securing and managing mobile devices. Factors were considered (e.g., ownership, mobile device management features, security features, pushing content and applications). Data was gathered from vendors on and demos were provided by Air-Watch, NotifyMDM and MaaS 360. Product trials were provided by Air-Watch and MaaS 360. After review of vendor capabilities and testing various solutions, the team concluded that it would not be in the best interest of the division or institution to purchase a management solution at this time.

FY2014: Implemented Apple’s JAMF—Casper management application for improved management of Apple devices—to provide centralized software distribution, software updates, and security updates to Apple devices

Objective 2.9: Closeout the Password Identity Management project

- Completed
- The project deliverables are serving as the basis for three new Accounts Management System (AMS) projects, which specify the components and integration necessary for implementing a new AMS for Mason

Objective 2.10: Implement a Systems Status website to improve the management of information and inform users about system availability and performance

- Completed
- TSD integrated the Systems Status page into the ITU Alerts process in FY2013

Objective 2.11: Provide improved desktop support services through the use of new processes and technology

- FY2013: Deployed Bomgar, a remote assistance tool—use increased over the fiscal year by technicians resolving technical issues for customers of the TSS groups as well as other ITU support teams
- FY2013: Upgraded the Bomgar systems to an enterprise level, allowing for future expansion and a more stable environment for supporting end users
- FY2013: Configured, tested, and deployed Microsoft SCCM software to support ITU customers by providing an efficient process to create and distribute desktop images—SCCM also provides an efficient way to distribute software, complete software updates, inventory software, and apply patches to one or many desktops across the network and eliminates the need for a desktop technician to physically touch desktops to complete these tasks
- FY2014: Performed an update and expansion of the Software Distribution and Imaging Architecture (SDIA) for management of Microsoft Windows devices; provided centralized
imaging, software distribution, software updates, and security updates for MS Window devices
- FY2014: Piloted a self-service App Store concept using the centralized management solution ability through Apple’s JAMF—Casper and Microsoft’s System Center Configuration Manager (SCCM)
- FY2014: Tested and deployed virtualized solutions for client devices using NComputing and Microsoft App-V to deliver desktop capabilities and software applications
- FY2014: Implemented Apple’s JAMF—Casper management application for improved management of Apple devices—to provide centralized software distribution, software updates, and security updates to Apple devices

Objective 2.12: Working with the university community, select a new email and calendaring system for employees that will provide the university with improved tools to enhance collaboration
- Completed
- FY2013: Microsoft Office 365 was selected as the new email and calendaring system for faculty and staff. The email portion of the system was implemented April 2013. Faculty and staff calendar account migration is scheduled to take place in October of FY2014.
- FY2014: Provided support services and technical assistance for faculty and staff during the email updates for Microsoft Office 365 and during the migration of the Oracle Corporate Calendar to the Microsoft Office 365 Calendar

Objective 2.13: Pilot mobile applications for the iPhone, iPad and Android devices. This includes a protocol for reviewing proposed applications through the Architecture Standards Committee where appropriate and a proper division of responsibilities within ITU for licensing, procuring, testing, troubleshooting, and deploying applications.
- FY2014: ASC review of mobile applications is in place along with delegation to appropriate group for assessment.
ITU GOAL 3: ENSURE PROJECTS ARE COMPLETED ON TIME AND WITHIN BUDGET
(Supports GMU Strategic Goals 2 & 7)

Objective 3.1: Work with the ITU Project Management Office to ensure that projects are completed on time and within budget

✓ Ongoing

Summary of Results, Goal 3

Objective 3.1: Work with the ITU Project Management Office to ensure that projects are completed on time and within budget

- TSD remains dedicated to employing effective project management practices and improving management of large-scale projects to ensure timeliness and efficient use of resources
- TSD staff and leadership to use resources available from the Project Management Office (PMO) and its EPMO website and collaborate on a regular basis with members of PMO—a representative from PMO participates in the TSD Directors meeting
- The TSD division participated in 10 key initiatives in FY2013. A description of its initiatives is available online in the TSD FY2013 Annual Report.
- FY2014: TSD inventoried its projects using a project portfolio methodology developed by the Project Management Office. The project portfolio enables TSD to monitor each project’s progress and hone its allocation of resources. The project portfolio methodology includes a categorization schema that empowers TSD to better prioritize projects and resources based on the types of projects that the division implements and estimated effort and resources required.
- FY2014: The TSD provided leadership for 90 projects, including its eight key initiatives. This year the division completed 59 of its 90 projects. A description of the key initiatives is available online in the TSD FY2014 Annual Report. Mason faculty and staff may find additional information on each project—including project descriptions, owners, start date, and end date—in Project Briefings on the Project Management Office website (http://pmo.gmu.edu).
ITU GOAL 4: DEVELOP CORPORATE PARTNERSHIPS
(Supports GMU Strategic Goals 1, 6 & 7)

**Objective 4.1**  Participate on corporate and non-profit advisory committees, task forces and academies  (✓ Ongoing)

**Objective 4.2**  Identify and select corporate partners to assist with the implementation of a new email and calendaring system for students, faculty, and staff  (X Complete)

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**Summary of Results, Goal 4**

**Objective 4.1: Participate on corporate and non-profit advisory committees, task forces and academies**

- TSD staff continues to participate actively in an advisory role with the following corporate and non-profit related entities:
  - 4-VA ([http://4-va.org/](http://4-va.org/))
  - E&I Cooperative Purchasing ([https://www.eandi.org/](https://www.eandi.org/))
  - EDUCASE Program Committee ([http://www.educause.edu/](http://www.educause.edu/))
  - Internet2 Identity and Access Management Group ([http://www.internet2.edu](http://www.internet2.edu))
  - Internet2 Net Plus ([http://www.internet2.edu](http://www.internet2.edu))
  - Internet2 Middleware Group ([http://www.internet2.edu](http://www.internet2.edu))
  - The Mid-Atlantic Research Infrastructure Alliance (MARIA, [http://www.marialliance.net/](http://www.marialliance.net/))
  - Virtual Computing Laboratory Services
  - Virginia Software Summit ([http://virginiasoftwaresummit.org](http://virginiasoftwaresummit.org))
  - Southeastern Universities Research Association IT Committee (SURA, [http://www.sura.org/](http://www.sura.org/))

- TSD staff maintains additional membership affiliations with the following corporate and non-profit related entities:
  - The Association for College and University Technology Advancement (ACUTA, [http://www.acuta.org/](http://www.acuta.org/))
  - Association of Writers & Writing Programs (AWP, [https://www.awpwriter.org/](https://www.awpwriter.org/))
  - Edu1World: Banner Large School Consortium (LSC, [http://www.edu1world.org/](http://www.edu1world.org/))
  - EDUCAUSE ([http://www.educause.edu/](http://www.educause.edu/))
  - The EDUCAUSE Center for Applied Research (ECAR, [http://www.educause.edu/ecar/](http://www.educause.edu/ecar/))
Objective 4.2: Identify and select corporate partners to assist with the implementation of a new email and calendaring system for students, faculty, and staff

- Completed
- FY2013: TSD partnered with CalMover to replace the calendar system used presently by Mason’s faculty and staff. The current Oracle system will be replaced by Microsoft Office 365. The calendar transition entails the successful migration of over 2,000 Oracle Corporate Time Calendar user accounts. TSD and CalMover developed a comprehensive plan for the migration, which is scheduled for October 2013, relying on the CalMover software and services.
- FY2013: TSD partnered with B2B Technologies and Microsoft this year to complete the deployment of a new email system for students, faculty, and staff. The partners were responsible for planning the implementation and ensuring a successful rollout for Mason faculty and staff in April 2013 of FY2013.