



Pitt Information Technology

IT SERVICES CATALOG

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Computing Services and Systems Development
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technology.pitt.edu

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ENTERPRISE APPLICATIONS AND SERVICES

Enterprise Applications and Services by the Numbers

70	Supported integrations and interfaces
891,312	Pitt PS Mobile logins
2,274,412	Student Information System (PeopleSoft) logins
9,862,028	CourseWeb (Blackboard Learn) logins
16.5 million	Number of logins to my.pitt.edu from 83,000 unique users

A key component of our mission statement is to enhance the lives of students, faculty, and staff through reliable, innovative, and effective use of technology. One way we accomplish this goal is through the development and continuous improvement of enterprise systems and applications. We constantly strive to meet and anticipate the technology needs of the University community—from services like Pitt Email and My Pitt, which have become staples of day-to-day life at the University, to cloud storage and collaboration tools, web conferencing and desktop sharing, and on-demand software downloads used by students, faculty, and staff. The University Data Warehouse serves as the authoritative source of University data; powerful business intelligence tools enable that raw data to be transformed into meaningful information used to guide strategic institutional decisions.

Cloud Storage / Collaboration (Box and OneDrive)

All students, faculty, and staff have access to unlimited secure cloud storage through Box and Microsoft OneDrive. This service also provides numerous collaboration features. Users can invite others to collaborate on group projects, share files with a simple web link, add comments alongside documents, and assign tasks with due dates. Box and OneDrive can be used with almost any smartphone or tablet, archive all the revisions made to a file, and enable users to sync files to their desktop.

Communication Systems

Broadcast Email (Campaign Monitor)

Featuring robust analytics and customizable email template options, the new tool is currently being piloted as a replacement for **Read Green** within Information Technology, as well as by the Office of the Chancellor, Office of the Provost, and the Office of University Communications.

Emergency Notification Service (ENS) and NotifyU Text Messaging

In the event of an emergency on or in proximity of the Pittsburgh campus, ENS provides critical information using voice, text, and email channels. Though not mandatory, University students, faculty, and staff are strongly encouraged to subscribe to the service at **My Pitt and AskCathy Service Discovery** or by texting *pitt sub yourusername ens* to **41411** from their smartphone. Students, faculty, and staff are automatically subscribed to email alerts upon creation of their **University Computing Account**.



CSSD provides support and guidance for the usage of this service and Pitt Police handle delivery of alerts under direction of the Chief of Police. However, this is not the sole means of communicating with the University community in the event of an emergency.

The NotifyU Text Messaging Service allows University students, faculty, and staff to subscribe—through their profile page at My Pitt—to news, updates, and other information provided by University departments in text and and/or email format. University departments may use this service to share short, 140-character text updates. Departments can request the creation of their own text message list by contacting the **24/7 IT Help Desk**.

Enterprise Digital Signage (Four Winds)

University departments create and manage content for display on Enterprise Digital Signage around the Pittsburgh campus. The software enables content administrators to publish almost any type of content: video, websites, PowerPoint slides, maps, Twitter feeds, live data, PDFs, and more. Signs located in different buildings can be managed from one location, and one department can easily share and display its content on another department's sign to facilitate collaboration and communication across the University. Alerts can also be displayed on digital signs by the Pitt Police in the event of a campus emergency.

CSSD also provides consulting to help departments determine what hardware will best meet their signage needs, as well as provides training to individuals who will be managing their department's signs.

Mailing List Manager (Mailman)

CSSD provides Mailman software to manage electronic mailing lists comprised of addresses to which the same information is sent. Two popular types of mailing lists are announcements and discussions. Announcement lists enable one person or group to send announcements to an assigned group, whereas discussion lists allow a group to discuss topics amongst themselves.

Departments can also create Exchange groups that can be used for mailing lists. Only individuals with a **University Computing Account** can be members of an Exchange group.

Read Green

Faculty and staff at all campuses are automatically subscribed to Read Green, which delivers many University paper-based mailings electronically to their University **Email** address. The service ensures timely delivery of important information while helping to conserve paper and other University resources. Short text-only mailings are included in the body of the email message. If the paper mailing includes graphics or special formatting, a link to a PDF version of the mailing is included in the email. Faculty and staff who wish to receive paper mailings can opt out of Read Green from their **My Pitt** profile page.

Document Management (ImageNow)

This document imaging and workflow management tool helps University units capture, organize, and manage data. All types of documents—paper forms, faxes, emails, and more—can be placed into a central repository accessed from anywhere, at any time.

Digital workflows allow departments to optimize their business processes, ensuring that documents are routed to the right people at the right time. Multiple people can collaborate by reviewing documents from different locations and digitally annotating them.

The Document Management service provides greater security for documents by enabling different people to have various levels of access to individual documents and notes. The service also eliminates the cost and space issues associated with maintaining a paper-based process.

Electronic Research Notebooks (LabArchives)

Electronic Research Notebooks through LabArchives provide a secure online location to store, manage, and share lab data. The service can be used to store documents, text, images, spreadsheets, PDFs, sample collections, or any other type of data. ERN enables researchers to share data with colleagues in their laboratory or around the globe. Researchers can control who can view, comment on, and record lab notebook entries. The service protects data by storing every version of every file. ERN also ensures the preservation of notebook data after a researcher leaves the University. Instructors may also choose to use Electronic Research Notebooks as a collaboration and instruction platform where students can submit course work for review. Access to the Electronic Research Notebooks is available through **My Pitt and AskCathy Service Discovery** or labarchives.com.

Email and Calendar (Outlook)

Students, faculty, and staff have access to Pitt Email and Calendar, a cloud-based email service provided through the **Microsoft Office 365** platform. Pitt Email provides 100 GB of email storage. An online calendar can be used to create appointments, view free/busy time, and schedule meetings with others. The online address book can be used to look up anyone at Pitt. A full-featured web interface is available by clicking the Pitt Email link at the top of any page within **My Pitt** or as a task in **AskCathy Service Discovery**.



All students, faculty, and staff have the option to personalize their Pitt Email address by adding an additional email address known as an alias. Students, faculty, and staff may also choose to have email messages that are sent to their University email address forwarded to another email address.

Graduating students can keep their Pitt Email mailbox, including all of the contents within it, for as long as they like after graduation. Alumni may send and receive messages from their Pitt Email address and any aliases they created while they were a student at Pitt.

The **Enterprise Spam and Virus Filter** protects University email addresses against harmful viruses and unwanted junk messages. Students, faculty, and staff can also approve or block specific senders and customize how aggressively their email is filtered for bulk mail.

Enterprise Relationship Management

ERM Knowledge (Salesforce Knowledge)

ERM Knowledge consists of two different areas: Knowledge and Manage Knowledge. The Knowledge area allows users to search existing knowledge base articles. The Manage Knowledge area allows authorized users to draft articles and enables authorized reviewers to approve and publish those articles. Individual CSSD teams are able to create and manage their own knowledge bases. Several CSSD teams are in the process of migrating their existing knowledge base articles to ERM Knowledge, but it is not yet being widely used in the department.

ERM Recruiting (Salesforce Marketing Cloud)

Used by undergraduate recruiting offices at each campus, as well as for recruiting graduate students in each school.

ERM Service Desk (Salesforce Service Cloud)

Used by CSSD and seven other groups (Dietrich School of Arts and Sciences IT, Financial Information Systems' PRISM, Learning and Research Development Center IT, Office of Research, School of Law IT, Swanson School of Engineering, and the University Center for Teaching and Learning) to track service requests, feature requests, and change management—includes integrated email, live agent, and web-to-case functionality, as well as improved reporting.

eSignature Service (DocuSign)

Electronic signature service through DocuSign allows faculty and staff to send, sign, and manage documents electronically. The service reduces paper clutter and makes it simpler to manage workflows and improve turnaround time. All documents are stored securely in the cloud. The service can be used to sign virtually any type of document file format, including doc, .docx, .pdf, .xls, .xlsx, .txt, and more. Access to eSignature Signature service is available through **My Pitt** and **AskCathy Service Discovery**.

Faculty Information System (Elements)

The University's Faculty Information System provides faculty with a secure, web-based resource for creating CVs, annual reviews, online profiles, and other documents important to academic careers. Faculty can also search the system by research interests and/or publication topics to identify faculty with particular expertise and interests.

Find People

Find People (**find.pitt.edu**) is a searchable online directory containing the campus addresses, telephone numbers, and email addresses of Pitt students, faculty, and staff. Contact information is regularly updated via the **Account Administration** service.

Departmental Listings are also available in a PDF file that can be searched, downloaded, or printed. The file contains a table of contents and bookmarks to enable users to quickly scroll through alphabetized listings.

Learning Management System

Canvas

A new Learning Management System (Canvas) replaces CourseWeb (Blackboard Learn) starting with the 2020 summer term. To support and facilitate the transition to the new system, the Center for Teaching and Learning and Pitt Information Technology are working with a small group of teachers to create an Early Adopters Program for 2019 fall term 2019 (2201).

CourseWeb (Blackboard Learn)

Simplify your academic life with the Blackboard app, a mobile teaching experience tailored to meet the needs of educators. Send announcements, quickly check your courses, and monitor discussions on the go. What's more, make sure your course materials, content, and assessments are mobile-friendly for students using the Blackboard app.

Microsoft Office 365 (Word, Excel, PowerPoint, and more)

CSSD provides Microsoft Office 365, a powerful set of online services that encompasses **Email and Calendar (Outlook)**, file sharing, video, collaboration tools, and more. Pitt Email for students is part of the Microsoft Office 365 platform. **My Sites (SharePoint Online)**, also included with Microsoft Office 365, allows students, faculty, and staff to create collaborative websites that can be used to share files, assign tasks, start blogs, build workflows, and more. OneDrive for Business provides up to 1 TB of online cloud storage, as well as the ability to share files and work together on the same document at the same time. Office Online makes it possible to create and edit Office documents from anywhere on any device by providing access to cloud-based versions of Office products like Word, Excel, and PowerPoint. In addition, Office ProPlus provides mobile versions of Word, Excel, and PowerPoint for Apple and Android devices. Office ProPlus is available to all students as well as to all faculty and staff in departments with Microsoft campus agreements. Microsoft Office 365 Video provides a convenient platform to upload, watch, and share videos anywhere, anytime, on any device. Delve is a unique visual search tool that makes it possible to find useful and interesting content anywhere in Microsoft Office 365, including documents that friends and colleagues have shared. Sway is a tool included with Microsoft Office 365 that can be used to create and share interactive reports, presentations, personal stories, and more.

My Pitt and AskCathy Service Discovery

My Pitt (my.pitt.edu) provides a central location for accessing University services such as the **Student Information System (PeopleSoft and PS Mobile)**, **Pitt Email and Calendar (Outlook)**, the **Software Download Service**, **CourseWeb (Blackboard Learn)**, PRISM, and other enterprise systems. In addition, departments and other University organizations can request a My Pitt community page in order to publish information and offer custom applications to a specific set of users. Targeted announcements on the My Pitt landing page keep students, faculty, and staff informed about University news, accomplishments, and events. AskCathy Service Discovery (askcathy.pitt.edu), connects you to familiar University services and helps you discover new ones, currently exists as a supplement to My Pitt. University services that are available through AskCathy display as rectangular icons called Tasks.

The Pitt App Center in AskCathy

The Pitt App Center consolidates Pitt-related mobile apps and delivers them from one convenient location. It includes apps for the University's web-based course management system, Lynda Online Learning videos, Box cloud storage and collaboration, **Microsoft Office**, campus news, Pitt athletics, career fair preparation, **Pitt PS Mobile**, and more. Users can browse all available apps or narrow the selection by mobile operating system (Android or iOS).



My Sites (SharePoint Online)

Create sites that you can use to store files, collaborate with others, create tasks, manage schedules, build workflows, or start a blog. You can share your site with others, even people outside Pitt. In addition to personal My Sites, faculty and staff can request SharePoint site collections to facilitate collaboration for their department, team, or project.

On-Demand Training (LinkedIn Learning)

Pitt students, faculty, and staff on all campuses have unlimited access to thousands of training videos on topics such as Excel, PowerPoint, Photoshop, digital photography, web design, animation, blogging, video editing, and more through a partnership with LinkedIn Learning. Users can create and share playlists, view videos on their mobile devices, bookmark helpful chapters in a video, keep track of their own personal course history, and earn certificates of completion upon finishing a course. The service is accessed through **My Pitt** (my.pitt.edu) or searching for the task in **AskCathy Service Discovery**. The service can also be accessed from any mobile device.



Online Survey System (Qualtrics)

Qualtrics is a web-based service that allows students, faculty, and staff to create surveys, collect and store data securely, analyze responses, and present results using professional-quality graphs. The University of Pittsburgh has a site license for the Online Survey System. It is available to Pitt students, faculty, and staff at all campuses at no cost.

The service can be used to support teaching, academic research, and institutional business. The University of Pittsburgh Institutional Review Board (Pitt IRB) requires that, with few exceptions, investigators involved in research with human subjects use Qualtrics for all web-based surveys.

The service can be accessed through the My Resources menu on **My Pitt** or by searching for the Task in **AskCathy Service Discovery**.

Pitt Mobile

Pitt Mobile (m.pitt.edu) is available as an app and mobile website that provides helpful University information in a format that is tailored to a variety of mobile devices. Pitt Mobile delivers an interactive campus map, an online directory, an events calendar, real-time data on the availability of computing labs and student laundry facilities, Pitt Shuttle maps and routes, dining locations and hours, parking maps and rates, and Arrival Survival information for new students at the start of each fall term. The Pitt Mobile app can be installed from the Apple App and Google Play stores, as well as the **Pitt App Center on AskCathy**.

Pitt Video (Panopto)

Pitt Video enables users to record and webcast presentations, lectures, and meetings. Recordings can be uploaded to a secure video portal for sharing with anyone inside or outside the University. The enterprise video platform also makes it possible to search across the video library and watch recordings on any device.

Faculty may use Pitt Video as a lecture capture tool to record their lectures and make them available to students for playback. Students can view recorded lectures on almost any device, and they can search and annotate the recordings to help enhance the learning experience.

Faculty and staff can use Pitt Video software to record multiple video sources in a classroom and then edit those sources into a single video that can be shared with students. Pitt Video also enables pre-recorded videos from previous lectures or terms to be uploaded. Faculty can also integrate recorded lectures with **CourseWeb (Blackboard Learn)**. In addition, faculty can grant their students access to record and upload their own video presentations and assignments through Pitt Video.

Pitt Video can also be used to live stream campus events and presentations. Live streams can be recorded and published for viewing later.

Students, faculty, and staff can view video content by accessing Pitt Video through **My Pitt and AskCathy Service Discovery**. Recording videos with Pitt Video requires the installation of Panopto recording software on a desktop or laptop computer.

Software Distribution Services

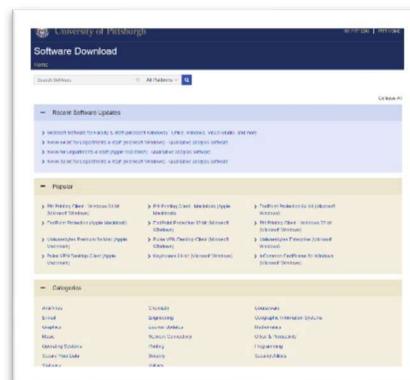
Software Distribution Services works with software companies to negotiate site license agreements and cost savings for University students, faculty, and staff. In addition, Software Distribution Services ensures that all software made available in the labs and classrooms is licensed appropriately for the intended use.

Site-licensed software is made available electronically through **My Pitt and AskCathy Service Discovery** with a valid **University Computing Account**. Students, faculty, and staff can download a wide variety of software titles at no cost through the **Software Download Service at My Pitt**. Students, faculty, and staff may also purchase select software at discount prices at the **Walk-In Support Desk** at the University Store on Fifth.

Software Download Service

The Software Download Service (software.pitt.edu) provides secure, electronic distribution of software that is licensed through University site license agreements. It is used by students, faculty, and staff on and off campus. This service is only available to computers that have authenticated through **My Pitt and AskCathy Service Discovery**.

University-licensed software is available to all members of the University community with a primary **University Computing Account**. Academic courseware for faculty is licensed and available only to eligible teaching faculty with a primary account.



Software Requests

Students, faculty, and staff may suggest new software titles to be considered for distribution by **Software Distribution Services**, for use in the campus computing labs, or as academic courseware that can be downloaded by eligible teaching faculty. Requests must be submitted using the New Software Title Request form available at technology.pitt.edu.

Student Information System (PeopleSoft and Pitt PS Mobile)

CSSD provides system administration and development support for the Student Information System (PeopleSoft). Authorized University staff use the system to manage the entire student lifecycle—from recruiting and admissions to student services through graduation—in a secure environment that provides web-based access from any location. Since the information contained in this system is critical to many departments at the University, it must be centrally maintained. In addition, the data is considered protected data and must meet specific security criteria for storage and access.



Faculty can use online tools to securely view their teaching schedule, check class rosters, record grades, and view course information. Students can use similar tools to securely register for classes, check their grades, view class schedules, and pay tuition.

PeopleSoft Mobile enables students, faculty, and advisors to access the most commonly used features of the Student Information System with their smartphone or tablet. Students, faculty, and staff can access the service through the PeopleSoft Mobile link on **My Pitt and AskCathy Service Discovery**, or by downloading from the **Pitt App Center in AskCathy**.

Technology Website

The **technology.pitt.edu** website is the central location for online information regarding computing services at the University. Procedures, policies, and guidelines along with new service announcements, security alerts, and system outage notifications are also available. A number of self-service online forms are available on the site. It is possible to request help with a computer problem or start a live chat with a **24/7 IT Help Desk** analyst. There are many self-help publications and videos under the help pages. Security standards are also outlined here.

INFORMATION SECURITY

Information Security by the Numbers

30%	Portion of 55,490,991 inbound @pitt.edu email that is malicious
800	Security reviews completed for the University's Institutional Review Board
36,500	Average number of wireless devices authenticated per day
2 million	Duo Mobile logins per month
20 million	Malicious attacks blocked at the University's network perimeter

CSSD is responsible for helping ensure that the University's computing environment is protected from cyber threats such as viruses, Trojan horses, hackers, and other security threats. In order to meet this goal, we have helped the University establish security policies that provide guidance on protecting computers as well as sensitive information from security threats. In addition, we assist University administration with adhering to state and federal regulations regarding technology.

Antivirus (Symantec Endpoint) and Anti-Malware (Malwarebytes) Protection

In addition to centralized security measures, CSSD also provides tools that help students, faculty, and staff protect computer workstations, laptops, and servers, including anti-virus software, encryption tools, and security assessment tools. Many of these tools are available through the **Software Download Service** or the Secure Your Data community for faculty and staff.

Copyright Infringement Management

CSSD provides support services to manage all notifications concerning copyright infringement at the University. Managing these notifications includes acknowledgement, tracking, notification, and remediation of the problem.

Cybersecurity Framework

Computing Services and System Development uses the National Institute of Standards and Technology's Cybersecurity Framework to



classify risk more effectively and set strategic security priorities at the University of Pittsburgh. To help protect the University, we utilize a robust and layered array of centralized security measures. These measures include application monitoring, **Enterprise Network Firewalls**, network monitoring, proactive auditing, secure remote access solutions, **Security Assessments** of third-party vendors, advanced detection and prevention tools, and more.

Database Security

CSSD is adding a new layer of security for vital University databases – specifically the Central Directory System (CDS), Student Information System (PeopleSoft), Data Warehouse, and CourseWeb (Blackboard Learn). McAfee Database Security is the activity monitoring application that has been successfully tested and is being implemented to provide an even greater level of security and threat protection.

Enterprise Spam and Virus Filter

CSSD provides a service to help alleviate the nuisance of spam and virus email. Security concerns caused by spam and viruses are one of the most common reasons for calls to the 24/7 IT Help Desk. All University accounts have spam and virus filtering enabled. Students, faculty, and staff can manage all of their spam right from their Pitt Email client (Outlook or Outlook for Mac) or from the Outlook Web App. A weekly email summarizing spam messages that have been quarantined allows students, faculty, and staff to quickly review messages that have been trapped by the filter.

Incident Response Services

CSSD also offers incident response services to help the University mitigate damage or losses that can be caused by security threats. We are responsible for authorizing administrative access to Student Record Systems, including the Student Information System (PeopleSoft).

Security Assessments

Pitt Information Technology uses the National Institute of Standards and Technology's Cybersecurity Framework as the superseding standard meeting the varying and complex information security requirements across the University. All schools and departments now have the tools needed to meet shared security goals—including demonstrating compliance related to competitive grants for faculty research, health information, payment processing, and more.

Security Awareness Education

Finally, CSSD provides security awareness materials, **Instructor Led Workshops**, and participates in student events throughout the year to help educate the University community on how to protect against security threats.

IT SUPPORT

IT Support by the Numbers

81%	Help Desk case resolved without escalation (worldwide average is 78%)
568	Technology classroom reservations
20,000	Increase in cases from two years ago
92,594	Requests responded to by the 24/7 IT Help Desk
323,960	Student Computing Lab logins

At the heart of our support services are a 24/7 IT Help Desk and a broad range of technical consulting options—including Walk-In Support Desks and dedicated on-site Consulting for Departments. The core of our philosophy is a belief that we support people—not just technology. To that end, we also provide an Expert Partners’ program that helps us foster collaborative, mutually beneficial relationships with technical analysts hired by University departments, specialized computing resources to facilitate collaboration among the University’s renowned research community, Student Computing Labs and Mobile Device Counters to support students in their studies. A comprehensive software distribution service ensures that all students, faculty, and staff have the technology tools they need to accomplish their academic goals.

24/7 IT Help Desk

The 24/7 IT Help Desk is the central point of contact for all CSSD services. Calls are answered 24 hours a day, seven days a week and tracked in a call tracking database. Requests to the Help Desk can also be made via an online form, email, or through a Live Chat feature available on technology.pitt.edu.

If the Help Desk cannot resolve a problem, it is handed off to the appropriate CSSD area for resolution based on routing rules. For students, resolution may take the form of a scheduled appointment at our **Walk-In Support Desks** at the University Store and Fifth or Litchfield Towers lobby—or an in-room appointment at a University residence hall. Faculty and staff may receive an on-site visit from a CSSD consultant. All requests that are passed off are reviewed by management once a week to ensure quality service.

Consulting Services

Consulting for Departments

On-site consulting delivers IT staffing as departments require it. CSSD works with departments to help determine the amount of time a consultant is contracted. A typical contract lasts one year and provides on-site support two to three days per week. Contracts are flexible, however, and can be customized to fit almost any staffing requirement.

On-site consulting allows departments to draw on CSSD's breadth of experience without necessarily having to managing their entire IT organization. It provides departments with the flexibility to start small and expand the contract later if support needs grow, or scale it back if less help is needed. All consultants are, at minimum, at the Systems/Programmer III job classification with extensive knowledge of Pitt's technology infrastructure and services.

On-site consultants provide desktop computer support, server support, mobile device support, project support, purchasing advice, IT liaison services, and installation of essential security patches and upgrades. Consultants also work with departments who are considering implementing new IT services to ensure that the service they select integrates well with the University's existing enterprise systems and services.

Consulting for Faculty and Staff

Walk-in support is available to faculty and staff at the **Walk-In Support Desk** at the University Store on Fifth. Consultants can help students, faculty, and staff connect to **PittNet Wi-Fi**, configure a smartphone or tablet to receive University **Email**, install **Microsoft Office**, or change passwords.

Consulting services are available to faculty and staff at their University office location between 8:30 a.m. and 5 p.m. on weekdays. All consulting services are provided through the **24/7 IT Help Desk** and tracked in the call tracking database. Assistance is provided for troubleshooting problems related to hardware, operating systems, supported software, and network connectivity.

Ongoing problems, special projects, and departmental requests are referred to the onsite consulting program for needs analysis and solution recommendations.

Consulting for Students

Student Technical Consultants are available to provide technical support to students living on and off campus. Service is provided by appointment or walk-in. Appointments can be scheduled by contacting the **24/7 IT Help Desk**. Students living in residence halls can receive in-room technical support from consultants. Walk-in service is available at the **Walk-In Support Desks** at the University Store on Fifth or Litchfield Towers lobby.

Device Management

The Device Management program enables departments to select just the specific devices in their area they would like CSSD to support. No on-site consulting staffing is required since CSSD can maintain and manage the computers remotely. However, up to ten hours of on-site support is guaranteed, if it should be needed.

As part of the Device Management contract, CSSD standardizes the computers in a department to ensure they are up-to-date, secure, and performing well. This includes configuring automatic security updates, scanning for security risks, installing anti-virus and anti-spyware software, optimizing speed and performance, upgrading existing Microsoft software, and enabling Remote Desktop so that the person who uses the computer can access it from off campus, if needed. Device Management is not limited to computer workstations; it can also be used to support services running on departmental servers.

Instructor-Led Workshops

CSSD provides a variety of training resources for students, faculty, and staff. Technology workshops are offered through the Human Resources Faculty and Staff Development Program, and business areas can also request technology workshops tailored to their specific departmental needs. Orientation sessions are provided to new **Enterprise Digital Signage** content administrators. Self-paced, online training videos are available for the **Student Information System (PeopleSoft)**. CSSD also provides an overview of computing resources at the University for students, faculty, and staff orientation sessions throughout the school year.

Technology Loaner Program

International travel poses security risks to data stored on computers and mobile devices. Taking a laptop or mobile device when traveling significantly increases the possibility of data and identity theft. The Technology Loaner Program for International Travel offers loaner laptops, iPads, and smartphones to individuals traveling abroad to lessen the associated security risks while allowing full use of required software applications.

Devices are available to faculty and staff for the purpose of conducting University business and program activities during international travel. Devices and a limited data plan are provided at no charge. Other costs are the responsibility of the borrower and his or her department. This includes data overage charges, international voice, text messaging, and lost, stolen, or damaged equipment.

Faculty and staff who would like to take advantage of the program should register their trip through the Travel Registry community at **My Pitt** and then submit the Technology Loaner Program Device Request form located on the community page.

Walk-In Support Desks

CSSD operates two Walk-In Support Desks at the University Store on Fifth and Litchfield Towers lobby. Students, faculty, and staff can stop by during normal business hours to meet with a CSSD technical consultant or call the **24/7 IT Help Desk** in advance to schedule an appointment.

Consultants at both locations can help students, faculty, and staff connect to **PittNet Wi-Fi**, configure a smartphone or tablet to receive University **Email**, install **Microsoft Office**, or change passwords. Consultants at the University Store on Fifth location can also help students remove viruses, connect to **Pitt Print** stations, install or repair software, and fix or even rebuild operating systems. If repairs on a computer require more time than an in-person appointment allows, students may drop off their computers and pick them up once repairs have been completed.

Students, faculty, and staff may also purchase software titles at the Walk-In Support Desk at the University Store on Fifth.

The University's Walk-In Support Desks were honored by *University Business* magazine in its spring 2014 "Models of Efficiency" national recognition program, which recognizes innovative approaches for streamlining higher education operations through technology and/or business process improvements.



TECHNOLOGY INFRASTRUCTURE

Infrastructure by the Numbers

99%	Infrastructure uptime (enterprise services and network)
1,400	Websites hosted at the NOC
2,050	Physical and virtual servers at the NOC
5,824	Wi-Fi access points across the Pittsburgh campus
16,000	Telephones on the Pittsburgh campus

The technology infrastructure that supports the University is invisible to end users, even though the smooth operation of the University requires that this infrastructure be reliable, secure, and state-of-the-art. Our infrastructure services provide a reliable foundation upon which our enterprise systems and applications can be built. Examples of our infrastructure services include our PittNet Wi-Fi and Wired networks, our telecommunications system, and the Network Operations Center that provides around-the-clock monitoring of the University's entire computing environment.

Accounts and Access Management

Account Management System

In order to maintain a safe computing environment at the University, it is necessary for every user to have an account with an associated username and password. The Account Management System is the technical infrastructure that provides this functionality. Once users access the system with their University username and password, they are considered to be authenticated, which means it is possible to use the information collected by servers in conjunction with information collected by network equipment to determine who is responsible for computing activity and where the computing activity is taking place at the University.

Accounts are automatically created for students, faculty, and staff. New students activate their University Computing Accounts through an online account activation tool at **My Pitt**. In addition to automatically created accounts, each responsibility center has a designated administrator with rights to create sponsored accounts for their specific area. The system follows approved rules for the deletion of accounts; however, sponsored accounts expire annually, unless renewed.

Users manage their account through their profile page at **My Pitt**. From this website, users can update personal information associated with their account, change their password, set their email preferences, and review their print quota in addition to other account-related tasks. Information from the Payroll system or **Student Information System (PeopleSoft)** cannot be changed in the Account Management System.

Account usernames are used as University email addresses. A University username with the @pitt.edu designation is the official email address for University students and employees.

Central Directory Service (CDS)

The Central Directory Service (CDS) is one of the most critical systems in place at the University today. It is a key part of the overall technical infrastructure. CDS provides a unified directory of all known individuals affiliated with the University and is the authoritative source for determining access to enterprise systems. CDS, along with the **Account Management System**, provides accountability to help ensure a secure computing environment while providing the flexibility to meet the diverse technology demands across the University environment.

Enterprise Active Directory (AD)

Enterprise Active Directory (AD) is a tool used to authenticate and authorize users who connect to the University of Pittsburgh network with their University Computing Account username and password. It is available for all units, schools, and departments.

Enterprise Active Directory also provides a centralized, authoritative repository of information about network-based resources (such as computers, printers, applications, and file shares). It simplifies the management of these resources while controlling who can access them.

The Enterprise Active Directory is part of the **Central Directory Service (CDS)** and user accounts are automatically provisioned and de-provisioned within the directory. CSSD is working to move all University departments to the Enterprise Active Directory environment, so they will leverage the automatic accounts management provided by CDS.

Pitt Passport

Pitt Passport is a collection of related services designed to verify your identity and protect access to services accessed with your University Computing Account.

Single Sign-On

Pitt Passport is the University's secure, single sign-on service for accessing web-based services—such as **My Pitt and AskCathy Service Discovery**, PRISM, **Online Survey System (Qualtrics)**, and many others—using your University Computing Account login credentials. Pitt Passport incorporates multifactor authentication, provided by Duo Security, an extra layer of security to prevent unauthorized access to your information and University data. This works by requiring two “factors” to verify your identity when you log in to a service—something you know, such as your password, and something only you have, such as your mobile phone—on which you will receive a login confirmation notice.

Multifactor Authentication (Duo Mobile)

Multifactor authentication protects all services that use the University’s single sign-on service, Pitt Passport. Provided by Duo Security, multifactor authentication is designed to prevent unauthorized access to an individual’s information and University data. The service provides users with several options for their second authentication factor, including options that enable them to use multifactor authentication when they are in an area without wireless access or cell phone service.



Password Manager (LastPass)

Pitt Password Manager (LastPass) enables individuals to save passwords and other information in a secure online vault that they can access from any device using a single, strong master password. In addition, Password Manager makes it easy to generate strong, unique passwords for different sites, helping to protect both Pitt-related services and personal services. University students, faculty, and staff can enroll in an Enterprise account, create a Premium account, or both. Enterprise accounts are recommended for storing and sharing University-related passwords. Premium accounts are recommended for storing personal passwords.

Business Intelligence and University Data Warehouse (UDW)

Business Intelligence describes the technologies and processes that transform raw data into meaningful information that can support data-driven decision-making. CSSD supports Tableau for dashboards, data discovery, and analytics; and IBM Cognos for reporting. Reporting, analytics, and data science consulting are available for the campus community.

The University Data Warehouse is the central authoritative data source for the University, providing support for reporting, ad-hoc data queries, and analytics. The University Data Warehouse is an Oracle-based database that is comprised of data originating in multiple University systems, including **Student Information System (PeopleSoft)**, PRISM, and **CourseWeb (Blackboard Learn)**. The data is extracted from those systems, then optimized for speed and ease of use, and placed into data marts. A data mart is a subset of the University Data Warehouse and is oriented toward a particular type of data or a particular function.

Core Services

Time Servers

Time servers have been established to ensure that all enterprise systems and other University computers are synchronized.

University Domain Name Management

Network services include IP Address Management, Domain Name Services (DNS), and Dynamic Host Configuration Protocol (DHCP) Services. The University manages the IP addresses and name services for the pitt.edu domain. DNS and DHCP services provide for provisioning of IP addresses and name resolution for PittNet users.

CSSD manages and maintains the primary and secondary domain name servers (DNS) for the University of Pittsburgh, the range of IP addresses assigned to the University through Internet Assigned Number Authority (IANA), and non-routable IP addresses used internally. CSSD is the sole coordinating department receiving and reviewing requests for registration of hostnames and IP addresses associated with the University and its networks both physical and virtual.

Enterprise Desktop Management (EDM)

Enterprise Desktop Management (EDM) is a CSSD service that supports departments in the standardization of computer images and installations, remote administration, and dynamic reporting of physical Windows computers. Additionally, EDM allows for some automation of computer administration without the need for scripting. Each department remains an independent and individualized unit, while taking advantage of enterprise-level supports and features. Departments are not able to see or access each other's machines or users. EDM is available to departments who participate in the campus Microsoft license agreement.

CSSD offers two tiers of EDM features. In general, Tier 1 support is for departments that do not have a dedicated technology administrator who is familiar with Microsoft System Center Configuration Manager (SCCM). As such, the EDM team supports Tier 1 customers to manage departmental machines. Conversely, Tier 2 customers are expected to have a dedicated technology administrator who is familiar with SCCM. Tier 2 departments can manage departmental machines independently through expanded features in the SCCM console and are required to pay for a distribution point server at the **Network Operations Center (NOC)** to host created applications and images. EDM Tier 2 customer support is more limited and focused on infrastructure.

Enterprise Network Firewalls

The Enterprise Security Controls policy requires all University departments and units to use Enterprise Network Firewalls. Firewalls help protect against a wide range of security threats, including unauthorized remote logins, denial of service attacks, and viruses that are spread over a network. CSSD manages Enterprise Network Firewalls and helps protect sensitive information, research data, and support critical University operations. Departments may request changes to firewall rules in order to provide access to departmental resources or new systems. All network ports at the Pittsburgh and four regional campuses are protected behind Enterprise Network Firewalls.

Enterprise Systems Management

CSSD provides departments who maintain enterprise systems with the option of locating their servers at the **Network Operations Center (NOC)**. The NOC is a state-of-the-art technical facility that is staffed 24x7. Also available to departments as part of this service is CSSD assistance with maintaining the hardware, operating system, and application software running on these servers. Currently there are more than 50 departmental servers located at the NOC as part of this service, including InfoEd, Resource25, RMS, Ticket Return, Webridge, and others.

Enterprise Web Infrastructure (EWI)

The Enterprise Web Infrastructure (EWI) consists of the hardware and software that is central to the University's presence on the internet. This architecture offers a robust foundation for University websites. All University websites must be hosted on the Enterprise Web Infrastructure. CSSD also provides support to departments in order to meet preliminary requirements that are necessary to host sites properly and securely within the EWI, including identifying security vulnerabilities that need to be remediated. There is optional hosting for web databases (SQL server). The Enterprise Web Infrastructure is located in CSSD's **Network Operations Center (NOC)**, which manages the service 24 hours a day and provides exceptional bandwidth, redundancy, and security.

Managed Server Hosting

The **Network Operations Center (NOC)** provides both physical and virtual managed server hosting for departmental technology services that require a high level of availability and security. With physical server hosting, the servers themselves reside at the NOC. The NOC monitors the servers around the clock, performs all backups, manages upgrades to operating systems, and coordinates the resolution of hardware problems. The department's IT professionals retain support of application systems and databases. Virtual server hosting enables CSSD to consolidate multiple physical servers onto a VMware cluster made up of fewer computers. Virtual server hosting can help departments pay only for the hardware resources they need—saving money and resources. More than 50 University departments are currently utilizing virtual server hosting at the NOC. The NOC hosts 68 percent of all servers virtually. The power consumption saved through the virtualization of servers—coupled with the NOC's adherence to industry best practices for optimizing energy efficiency—contribute to the University's sustainability initiatives.

Network Operations Center (NOC)

The Network Operations Center (NOC) is a state-of-the-art technical facility that houses servers and network equipment to ensure stable and reliable service for University enterprise systems. It is a centralized management center that is capable of identifying, notifying, and repairing problems when they occur and projecting when and where they might occur. The NOC is staffed 24x7 and systems are constantly monitored for problems. The Enterprise Monitoring (Netcool) and Enterprise Backup (NetBackup) services are provided via this facility. The NOC hosts the Center for Simulation and Modeling's high-performance computing cluster, which helps to facilitate computational-based research across the University, as well as several departmental high-performance computing clusters. NOC engineers provide support for the research network and server infrastructure. The NOC also hosts all websites in the University's **Enterprise Web Infrastructure (EWI)** and provides managed server hosting (both physical and virtual) for University departments. The NOC provides a FISMA-compliant environment to researchers working on projects that require special handling of sensitive data. The NOC has redundant power sources along with uninterruptable power supplies and backup generators to prevent widespread system failure due to electrical outages.

PittNet

The University participates in the Internet2 and Energy Sciences Network (ESnet) initiatives. The University is a charter member of KINBER, the Keystone Initiative for Network-Based Education and Research, and is actively engaged in the establishment of the Pennsylvania Research and Education Network (PennREN).

PittNet Wired

PittNet Wired is a high-speed, multi-service network that provides access to University computing resources, the internet, and external research networks. In order to support an ever-increasing number of large bandwidth applications, PittNet is evaluated continually for updates and maintenance requirements.

PittNet Wi-Fi and Guest Wi-Fi

PittNet Wi-Fi provides fast, secure, and easy-to-use internet access from academic buildings and residence halls across campus. PITTNET-WIRELESS provides radio frequency service in the 2.4GHz bands to augment the PittNet Wired network. The wireless system is integrated with authentication services via the 802.1x protocol and can be used by any user with a University Computing Account. A companion network, WIRELESS-PITTNET-FAST, allows students, faculty, and staff with newer laptops, smartphones, and tablets to take advantage of faster wireless speeds. WIRELESS-PITTNET-FAST operates in the 5 GHz spectrum and is available anywhere PittNet Wi-Fi is available.



The majority of the network infrastructure is targeted at in-building coverage with outdoor coverage also provided in several key locations. The service provides for connections to the internet and requires the use of the **Pitt VPN** service to access resources that are protected by **Enterprise Network Firewalls**.

Guest access is provided by a self-service sign-up page that requires a guest to be “hosted” by a University student, faculty, or staff member with a primary University Computing Account. PittNet Guest Wi-Fi is available in all campus locations where WIRELESS-PITTNET and WIRELESS-PITTNET-FAST are available.

PittNet Gaming Network

The PittNet Gaming Network provides regional campuses with wired and Wi-Fi access needed for online gameplay in residence halls, along with network access for other devices that cannot store a username and password. Students can register a device in advance, then connect using the method that is most convenient for them: plug into the wired network in residence hall rooms on the Johnstown campus or choose the convenience of the PITT-GAMING Wi-Fi connection available at all other regional campuses.

PittNet VPN (Pulse Secure)

Pitt’s Virtual Private Network provides students, faculty, and staff with the ability to connect to restricted University resources while off campus or using **PittNet Wi-Fi**. The service encrypts traffic between a user’s computer and the University’s network. PittNet VPN is also used to create SSL-based VPN connections to access information sources that reside behind **Enterprise Network Firewalls**. The service includes a security check or “health check” to help ensure that remote computers accessing University machines do not pass on viruses and other security threats. The Pulse client can be used to enable the PittNet VPN through desktop and laptop computers, and the Pulse app can be used to enable PittNet VPN through mobile devices. **Multifactor Authentication (Duo Mobile)** is required for those using the PittNet VPN service to connect to University resources from an off-campus location.

A separate, supplemental VPN service known as IPsec is also available to meet more specialized needs. It provides the same functionality as the PittNet VPN service but requires installation of the Cisco IPsec VPN client.

Eduroam

CSSD participates in Eduroam (short for education roaming), which enables students, faculty, and staff to use their University email address and password to obtain wireless internet access when visiting more than 2,000 participating institutions around the world. Visitors from participating institutions can also use their institution’s login credentials to access Eduroam while visiting Pitt.



Research Computing (Science DMZ)

Access to specialized, high-speed research networks permit faculty at the University to collaborate with colleagues and work on advanced projects. Researchers at the University have access to the Internet2 network and Energy Sciences Network.

The University is also a charter member of KINBER, the Keystone Initiative for Network-Based Education and Research, and is actively engaged in the establishment of the Pennsylvania Research and Education Network (PennREN).

CSSD has designed a special research firewall zone to meet the advanced collaboration requirements of the University's research community. Its purpose is to support collaboration with external parties while protecting the University's computing environment.

Supported by a grant from the National Science Foundation, the University has developed a Science DMZ that is optimized for high-performance scientific applications and the transfer of large research data sets over high-speed wide area networks.

CSSD's **Network Operations Center (NOC)** hosts the Center for Simulation and Modeling's high-performance computing cluster, which helps to facilitate computational-based research across the University. CSSD has also built an Enterprise Data Transfer Node that leverages the Science DMZ to enable Pitt researchers to securely transfer large data files between the Center for Simulation and Modeling's high-performance computing cluster and other locations, including other research computing facilities and national supercomputing facilities.

The University's membership in the InCommon Federation enables anyone at Pitt to use their University Computing Account username and password to access resources from the National Institutes of Health, EDUCAUSE, and other national organizations.

Residence Hall Wi-Fi (MyResNet)

MyResNet is the free high-speed Wi-Fi network in residence halls on the Pittsburgh campus—capable of accommodating up to seven devices per student—for streaming music and video, as well as online gaming, at 50 Mbps download and 20 Mbps upload speed. Students can upgrade to 100 Mbps download and 50 Mbps upload speed on up to 10 devices for \$69 per semester. CSSD has partnered with Apogee to deliver this service and provide 24/7 support.

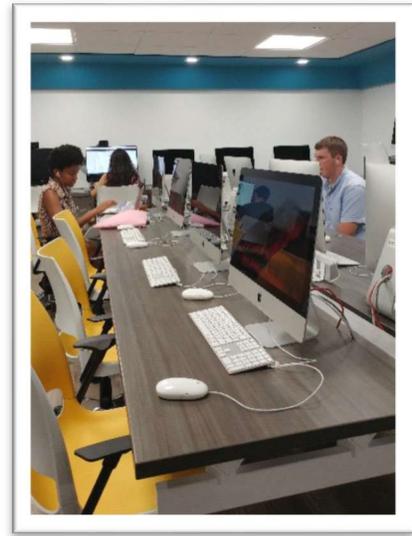
Student Computing Labs and Classrooms

Eight Student Computing Labs, staffed with student employees under the supervision of full-time Student Computing Services staff, are conveniently located throughout the Pittsburgh campus. The David Lawrence Hall lab is open and staffed 24/7 and the Hillman Library lab is open 24 hours a day on weekdays.

Three collaborative team rooms in the B-40 Alumni Hall lab enable students to display presentations on a large, centrally located monitor and work together on markerboards that line the walls of each room. Each room has a sliding door to provide privacy for groups, while maintaining a quiet working environment for individuals using computers in the lab. These rooms can be reserved through the University Library System at pitt.libcal.com.

A service called Lab Line provides details regarding workstation availability within each of the Student Computing Labs. Students can check lab availability on technology.pitt.edu, **Pitt Mobile**, or by texting a keyword to 41411.

The Student Computing Labs received a 2015 Pitt Sustainability Award.



Mobile Computing Counters

Mobile Computing Counters are installed in four Student Computing Labs on the Pittsburgh campus and in G-25 Cathedral of Learning to enable students to work and study using their own laptop computers, tablets, and mobile devices. Wireless service is available at all locations and special wall outlets provide power for USB devices so that they can remain plugged in and charging while students work.

Mobile Device Charging Stations

Mobile device charging stations are available in high-traffic areas around the Pittsburgh campus to enable students to charge their smartphones and tablets. Charging stations are in all Student Computing Labs and at the Walk-In Support Desks at the University Store on Fifth, Litchfield Towers lobby, and other locations. Each charging station is equipped with three Apple Lightning cables, three USB Type-C cables, and two Micro USB cables.

Pitt Print and MobilePrint

Pitt Print enables students, faculty, and staff to send print jobs from any location to print stations located in all Student Computing Labs, many residence halls, and other high-traffic locations across the Pittsburgh campus. To use Pitt Print, customers must first download and install the Pitt Print client from the Software Download Service at My Pitt. After installing the client, Pitt Print B&W Station and Pitt Print Color Station appear on their computer, just like a local printer. To submit a print job, the customer must be connected to the internet and select the desired printer type. The customer will then be prompted to enter their University username and password. After sending a print job, the customer can release the document to print by swiping their University ID card or entering their University username and password at any Pitt Print Station.

MobilePrint is an extension of the Pitt Print service that makes it simple to print from devices that do not support the Pitt Print client, such as smartphones and tablets. Customers can send an email message with an attachment of the file they would like to print to mobileprint@pitt.edu or colorprint@pitt.edu. Customers may then release the print job at any Pitt Print Station.

Registered students and faculty receive a \$63.00 print quota each semester. This equals 900 black and white sheets or about 128 color sheets. Students and faculty can purchase additional quota if needed. Staff does not receive a print quota, but are able to purchase quota if desired.

Computer Kiosks

Computer Kiosks are located throughout the Pittsburgh campus for University students and employees to quickly check email, browse the internet, and work on documents or projects. Print jobs can be sent to Pitt Print Stations throughout campus. These kiosks are a convenient alternative to using the Student Computing Labs or going back to residence halls between classes. All kiosks include headphone jacks to enable students to listen to multimedia content and USB ports that make it possible for users to work on files they have brought with them on a flash drive.

Computing Lab Classrooms

In order to facilitate technology in teaching, Pitt IT provides two computing classrooms at the Pittsburgh campus to reserve for instructional use. These classroom reservations are made by completing the Computing Lab Classroom Reservation form on technology.pitt.edu.

Telecommunications

CSSD provides all telephone and voice messaging services for the Pittsburgh campus. Services include the following: voice mail, local calling plans, on-campus phone lines, off-campus business lines, fax and pager lines, authorization codes for phones with calling restrictions, automated call distribution (ACD), automated attendant, calling restrictions, conference room service, personal call routing, toll-free numbers, additions or changes to existing phone numbers, emergency phones, toll fraud monitoring, and other advanced telephony services. CSSD also works closely with departments and Facilities Management during the planning and construction process to provide the infrastructure needed for high-quality data and voice services.



All equipment is evaluated for upgrades on an annual basis. Maintenance is performed during established change windows and downtimes to ensure stable and reliable service.

Digital Voice / Unified Communications (Skype for Business)

Microsoft Skype for Business is a unified communication tool that enables students, faculty, and staff to conduct Web Meetings, share applications or their desktop, send instant messages, work together on online whiteboards, view real-time presence indicators for colleagues, and more. Skype for Business can be used to instantly start a one-to-one video conference with audio, make a phone call, or it can be used to schedule in advance a full web conference with up to 250 participants. During a Skype for Business meeting, the host can pass control to any of the participants and allow them to conduct the meeting or even use applications on the host's workstation. Skype for Business integrates with mobile devices and can be used to collaborate with individuals outside the University. Files can be transferred between Skype for Business collaborators with a simple drag-and-drop into the Skype chat window. Skype for Business meetings can be recorded and shared with participants. The Skype for Business client can be downloaded from the **Software Download Service at My Pitt and AskCathy Service Discovery** or through the Software page within **Microsoft Office 365**.

SendToMobile

SendToMobile is a service for University faculty and staff that extends calls from an individual's University telephone to their mobile phone. All desk phone functionality—such as three-way calling and conferencing—is available seamlessly. If faculty members are away from their desks when someone calls their office phone, they can answer the call on their mobile phone. When they return to their offices, they can simply pick up their desk phone and hang up their cell phone to continue the call. SendToMobile requires a University-provided Avaya phone. Faculty and staff can submit a request for the service using the University Telephone Services request form at technology.pitt.edu.

Telecom / IT Billing System (PCR-360)

CSSD provides an online billing system for telecommunication and IT services. This system provides a convenient way to track charges for telecommunications and network services used by University departments. Call detail reports are available for the auditing and management of telecommunications expenses.

Telephone Conferencing and Web Meetings (Skype For Business)

The University's Telephone Conferencing service provides a secure, on-demand service that can join up to 300 parties across campus or around the globe in a voice conference. It is an on-demand service, so conference calls can be held at any time, day or night, with no advance notice required. Participants call the number and enter the access code to be connected to the conference call.



Alternately, **Digital Voice / Unified Communications (Skype for Business)** makes it easy to connect for free via high-definition web conferencing. Conduct online meetings with up to 250 people, transfer files, share desktops, send instant messages, and use online whiteboards. Skype for Business is mobile-ready and can accommodate individuals outside the University.

Telephone Operators

The main University number is 412-624-4141. The University provides telephone operators who are available during business hours to help direct calls and respond to requests for assistance.

Video Bridge Service (BlueJeans)

CSSD offers a Video Bridge Service that enables departments with specialized video conferencing equipment (e.g., room systems such as Polycom and Cisco/Tandberg) to join or “bridge” their systems with other conferencing services, including Microsoft Skype for Business. Licenses for the BlueJeans video bridge solution are available to departments at reduced cost through **Software Distribution Services**. BlueJeans brings major hardware and software video platforms together into a uniform conferencing experience. BlueJeans also supports screen sharing and recording.

Voicemail to Email

The Voicemail to Email service delivers voicemail messages to a faculty or staff member's University email address as an audio file attachment. Faculty and staff can listen to voice messages on a desktop computer, laptop, or smartphone using an application capable of playing .wav files (such as Windows Media player or iTunes). Once read, you can delete, reply to, or forward the message, just as you do with a standard email message. Faculty and staff can request the service by submitting a help request online at technology.pitt.edu. This service is only available at the Pittsburgh campus.

Unix File Storage and Timesharing

CSSD provides a Unix system for use by the University community. This system is available to all users with a valid University Computing Account. The most popular uses are programming, personal website hosting, and statistical software.

A Unix file storage system known as Andrew File System (AFS) provides disk space to store files and documents. This file storage system was specifically designed for Unix users.

Students, faculty, and staff can access the University's AFS space by logging into Unix Timesharing or by using an AFS client on their personal computer.

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