Staffing Initiatives

The most significant change in IT Services during the past year, providing the most important beneficial impact on services provided by the department, was the addition of five new staff positions, bringing the department to 35 full-time professionals. As with many areas of the College, ITS has been subject to limitations on staffing growth, even while the IT budget has been robust and being able to deploy many new computers and new services has made it possible to operate with a smaller staff than our peers. However, many aspects of a technology support organization are more dependent on staff time than the availability of hardware and software, and that is where our staffing leanness has been most evident.

The five new positions were approved within the context of a focused needs assessment, comparison with peer institutions, and a long-term vision associated with a more robust information technology agenda for the College. The positions were allocated to the highest priorities identified during the review and designed to provide flexibility to adjust to future changes in the organization. We have also made some additional reorganization that has improved our staff alignment with the operational requirements of the wide array of IT at Colby. The key changes include:

- The network and datacenter support group was reorganized and strengthened, with the promotion of Dan Siff to director. Dan has provided outstanding leadership for his group and in the department to accomplish an extraordinary set of changes in almost all aspects of the core infrastructure on which Colby's IT environment rests (described more fully below).

- A full-time Director of Information Security position was created and recently filled by Chad Tracey. (Dan Siff had previously dedicated about half his time to information security.) The position provides a focus on the security of data and systems throughout the College, from endpoints (computers and mobile devices) to server and network resources, assisting faculty, students and staff in following best practices for data protection and risk reduction, while preserving the rights to privacy held by all members of the Colby community.

- Tim Stonesifer joined the staff over the summer in Academic ITS to cover the blossoming demand for video production support. He is already extensively engaged with faculty and students in a wide variety of projects. This position is clearly aligned with significant priorities on the part of faculty, especially in the humanities but in the other academic divisions as well, for curricular applications of technology.

- One new position approved for Administrative IT Services remains unfilled, with a renewed search underway.

- PC Support Services was also reorganized, bolstered by the addition of two new positions. PCSS supports the installed base of College-owned desktop, notebook and mobile devices (over 2500 systems) across the campus, including distributing over 500 new computers each year. Accompanying the two new positions has been a reorganization and reclassification of some positions to create (1) an Advanced Services group for device deployment and proactive support to be out in front of issues that can interfere with the work of those using the technology we provide and (2) a better coordinated Faculty/Staff Support Center, with a manager to ensure responsiveness and review patterns of calls. With daily communication between the Support Center Manager and the Advanced Services Manager, there is the ability to address more proactively issues before members of the community experience them.
The following diagram is the new organizational structure in the ITS PC Support Services group:

The new positions in PC Support Services are the Advanced Services Manager and the Deployment Specialist, both filled by promotion of current staff members in ITS, bringing extensive experience with the faculty and staff in the community and with the technology we provide. The Support Center Manager position is a reclassification of a technician position and the promotion of its outstanding staff member, who likewise has extensive experience at Colby. Both Support Center Technicians are new employees.

The new staffing has enhanced the ability of ITS to provide expanded services to the campus. The growth has required reallocation of a training center and other support space to accommodate the new positions. ITS needs will be assessed as part of a broader campus review of space utilization.

Major Upgrades in the Network and Datacenters

During the past year, ITS has made transformative upgrades in the two campus datacenters (located in Miller and Lovejoy), the remote datacenter site located in a rack at the Oxford Networks advanced facility at Brunswick Landing and in the campus wired and wireless network infrastructure. The objective of this work has been to create a high reliability, flexible and cost effective environment for the full array of functions that the Colby community requires using devices of all kinds that are connected to the network.

The core of many of our services is in the datacenters, where for many years we have been using virtual machines running on standard hardware with an assortment of file storage systems. A profoundly new server architecture ("hyperconverged" fully integrated systems) became available a year ago, providing a fully self-contained environment with integrated server, storage and networking to run virtual machines with greatly reduced administrative overhead to make the components work together. (Virtual machines are the systems that run such services as the web, administrative system, building access control systems, print management, etc.) Our primary datacenter project this year has been to move our entire virtual machine environment to the Simplivity hyperconverged systems, including hardware at the Oxford Network site that contains backup images of our systems for data restoration and for system restoration in the event of a major disaster involving the campus datacenters. The move to hyperconverged hardware was less expensive than what would have been required to do the standard upgrades using the traditional architecture, has reduced the space requirements in the datacenters, has reduced the electrical power and cooling requirements, and earned the College a rebate from the State of Maine energy conservation initiative. These systems have met our expectations for performance and simplification of system administration.

High performance (large capacity with rapid data transfer) storage was the focus of a great deal of discussion and evaluation this past year, especially in support of academic coursework and faculty research. The hyperconverged systems are not well suited to deliver this kind of service. Instead, direct access to abundant, very fast storage systems is required, especially for data intensive computing. ITS worked with faculty on evaluation hardware and selected the EMC Isilon system, including a mirror array at the Oxford Networks site for backup and recovery operations for these critical data. Faculty response has been extremely positive.

Looking forward, we anticipate shifting some resources and adding Simplivity Omnicubes both in the Miller datacenter and at the Oxford Networks site. The Miller datacenter currently serves as the primary operations center and the
Lovejoy datacenter has been the disaster recovery site. Shifting the recovery/backup site to the Oxford site provides a better chance of carrying normal operations through a serious event at the core of the campus. The Lovejoy datacenter will continue to be used for systems that must remain redundant on campus and as a recovery site for an event that affects Miller. However, this plan will make the Oxford Networks datacenter our secondary operations center with enhanced network connectivity to campus. If necessary, production services would be run in the Oxford Networks datacenter while major software and system upgrades will be performed in the Miller datacenter.

The following diagram shows how the two campus datacenters and the Oxford Networks site fit in our current plan for the next phase and a photo of a datacenter rack with Simplivity Omnicubes and EMC Isilon storage systems:

The data communications network has undergone major upgrades and most of that work is now complete. We have completely replaced the wireless network with hardware from a new vendor, Aruba. We now have best-in-class service with all wireless protocols supported up through the newest, 802.11ac, in all buildings on campus. During the rest of this academic year, we will work with faculty, staff and students who encounter any locations in any building where the wireless signal seems inadequate and work to add additional access points where needed. We have also replaced the old network access control system with a new system from Aruba that provides a simplified process. We saw the benefits at the start of this academic year when new and returning students had far fewer difficulties registering on the network. Of great benefit in this effort has been the new IP address management system installed last year that enables a device to seamlessly move between buildings, retaining its network address and, thus, its connection to certain kinds of services. (Trustees should see this benefit in using BoardVantage when moving between buildings because the IP address of the iPad should persist and not require repeated login.)

The core of the campus network is in the final stages a significant upgrade. The core network locations in Miller, Lovejoy, Cotter Union and Keyes are now interconnected at 40 Gigabit/sec (upgraded from 10 Gigabit/sec). Network connections to the buildings on campus radiate from these cores locations, as do the datacenters and the multiply-redundant Internet connections. The immediate challenge is to complete the task of removing the old switches operating at the core of the network in the datacenters. This has been a very large, highly technical task that had to be carried out while maintaining full operation of the entire network. Preparations are underway to make the final changes during fall break so the old equipment and its legacy network architecture will be gone.

With these final network changes, we will be in a very good position in the core network. We have also implemented significant upgrades in the datacenter firewalls to improve protection from cyber attacks and have replaced the oldest network cable in academic buildings to improve high data transfer reliability.
Server Software Upgrades

There have been some significant decisions made during the past few months that have set the College on a new course in Admissions and Financial Aid. The workflow system implemented for Admissions during the 2013-14 academic year has been almost entirely replaced by Slate, an advanced admissions recruiting and application review system. The only remaining parts of the workflow system pertain to admissions documents used subsequent to matriculation by the Registrar, Student Affairs and advisors. Similarly, the financial aid workflow project that began in 2014 is, for the most part, being replaced by PowerFails, with some use of the local workflow system to allow access to students’ previous year’s financial documents. Slate is operational now for recruiting and admitting the Class of 2020 and PowerFails is on an accelerated schedule to be ready in late October. ITS worked closely with Vice President Proto, and others, to evaluate and ultimately select these two new technology solutions.

Part of the server software project has been migration to the Jenzabar JX version of the accounts receivable module (JX/AR). JX is the new generation architecture from Jenzabar to replace the current Jenzabar CX product (previously and often still called “CARS”) in use at Colby for financials, human resources and student information. JX/AR is the first JX module with which we have first-hand experience. We have been working with Jenzabar for many years to try to keep the product moving in a direction that will continue to meet our needs and provide the flexibility to add functionality for our unique requirements. Avoiding the necessity of a costly and time consuming migration to a different institutional information system has been a significant College goal for three decades.

We have discovered during the JX/AR implementation that there are some troubling restrictions in the functionality of the module and of the new architecture. Given the high priority assigned to implementation of the two admissions systems and the issues discovered in JX/AR, we have suspended that implementation until we can reassess our strategy regarding Jenzabar. Besides the issues we see with the JX product, the entire market is undergoing a major change with most customers of Jenzabar, Colleague and Banner, the three predominant ERP systems, now looking at alternatives (e.g., Workday). If the College needs to migrate from Jenzabar, we would much rather move from Jenzabar CX than from a partially migrated Jenzabar CX/JX system. We will evaluate options over the course of the year and develop a plan for the future. It is too early to predict the likely outcome or timing of such a significant change.

Implementation of the Cognos reporting tools for use with both the Jenzabar CX and Raiser’s Edge systems is moving forward and showing great promise. This will provide an important capability for Institutional Research, Advancement and others doing advanced data analysis of financial, HR and student information. We will be making the Cognos tools available in the coming months to those with authorization to access these sets of data.

We have implemented a device management system in our PC Support Services group to accompany the staffing and organization changes there. This system is well suited to properly configure newly deployed computers, keep their software up to date and provide an enhanced ticketing system for tracking support calls and actions taken. This system was used in the 2015 computer distribution.

ITS has also been working over the past year with Communications to identify and implement a digital asset management system to streamline their use of a large library of digital photographs, videos, and audio recordings. The Canto Cumulus system is being implemented now and may have application in other areas, such as Colby Libraries, the Art Museum, and some specialized faculty research.

Classroom Technology Upgrades

There were several components to this year’s classroom technology upgrades project. The largest part is the routine replacement of older projector and control systems needed to update the installed base of equipment in about 120 teaching spaces on campus. This requires a refresh in about 25 classrooms each year. We are continuing to move ahead with the deployment of High Definition projectors that began several years ago. The control systems are also being upgraded from mechanical push buttons to touch panel devices that have better communication with a management system. This provides enhanced ability to determine status and troubleshoot issues being experienced by an instructor in a classroom during those moments before a class begins.

We have also been experimenting with some associated new initiatives. We have implemented a “one button studio” in Miller that enables a faculty member or student to plug in a USB storage device and touch a button to make a video
recording of themselves, with or without display coming from a computer. Based on experience at other institutions, we expect this to be of interest to students preparing to make presentations in class or at the CLAS event in the spring and to faculty preparing material in a “flipped classroom” mode to assist students with content online before class so the class meeting can focus on discussion and other non-lecture interactions. A second one button studio will be installed in the Lovejoy Instructional Media Center in the coming weeks.

Following up on faculty experience in the Miller experimental classroom we are beginning to deploying “active learning classroom” technology. One regular classroom in Miller is being equipped with multiple large flat panel displays, each for use by a break out group of students showing screens from their own notebook computers or other mobile devices for collaboration. Although the room can be used in a conventional setting, this will allow further faculty experimentation with pedagogical methods. Students can also use these displays for group study after hours.

We are also seeing faculty interest in various digital audio projects, including creating voice-overs for videos and documentary radio assignments. We have installed a sound booth with a high quality microphone in the Instructional Media Center to improve the quality of audio recording in these kinds of projects.

The Davis Science Building provided an opportunity for faculty to test some options for resources at the instructor location and for displays in the room. Although most have worked out very well, this has been an opportunity for faculty to try new options and in some areas, faculty have chosen to revert to a more traditional layout of the room. We will continue to engage faculty interests in and experience with classroom technology and watch what is being done at our peer institutions to provide what is needed for content presentation, without being intrusive or creating an obstacle to the class dynamic. This will become a greater challenge as the diversity of pedagogical methods used in classrooms increases.