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Since the installation of the wireless system, there has been increased use of the wireless system by faculty, staff, and students. Unique clients for June 2014 was 20,672 for students and 1,707 for faculty and staff. In June 2015, those numbers were 28,244 and 3,135 respectively. This increase is primarily attributed to the use of multiple devices by individual users. The campus anticipates wireless usage to continue to grow as additional wireless devices for instructional and administrative purposes are implemented.

### **Wired**

As of May 2015, the campus has completed the network switch upgrade from Cisco Systems to Juniper Networks. The campus has standardized on Juniper EX4200 and EX4300 for Distribution and Access layers and utilized an EX8206 as the campus core switch. The campus uses EX3200 and EX3300 switches for all VoIP devices and EX4500 series switches for the server and iSCSI switch infrastructure.

The campus has also increased connectivity between the Main Data Facility (MDF) and the Intermediary Data Facilities (IDFs) in each building, from a single one Gigabit connection to dual 10 Gigabit connections.

### **VDI**

As part of the Title V grant, approximately \$250,000 was budgeted for the implementation of Virtual Desktop Infrastructure (VDI), which allows the campus to push applications and desktops to students in cohorts through the campus Transfer Center. The campus has standardized on Citrix Xen products sitting on top of VMware hypervisors. This, in conjunction with the new Juniper switches providing 10 Gigabit connectivity to each building, will allow TSS to implement provisioning services to computer labs, extending the Total Cost of Ownership of computers, and allowing TSS staff to work more efficiently. As Power over Ethernet (PoE) thin clients become more prevalent and utilized on campus, energy consumption will be reduced, which will result in lower energy costs for the campus.

### ***HARDWARE PURCHASING***

Although standards for computer hardware have been established, the campuses have the ability to deviate from the standard when justified. Justification is made on a case-by-case basis by submitting a brief explanation to the Director of Technology's office.

The TRF process is used to request technology including computers, printers, multi-function devices, scanners, cameras, and other items related to both instructional and non-instructional technology. The TRF process is outlined in the appendix and shows the overall process from request through receipt and installation of the items. The TRF is not an approval/disapproval of the requested technology but rather a means of identifying support requirements for the technology, a preventative measure for making sure the request can be supported on the standard campus platforms, a means of standardizing hardware platforms for more efficient support, and identifying associated costs of the technology requested. Economies of scale have been achieved through standardization of hardware and centralization of purchasing.

### ***SOFTWARE PURCHASING***

Most instructional and non-instructional software is now requested through the TRF process and managed by the Technology Support Services office. The District Office, in conjunction with the campuses, has identified various enterprise wide software licenses and has been purchasing and aligning license renewals for more than five years now. Enterprise software purchases include the following titles: Sophos Anti-Virus, Deep-Freeze, Turnitin, Net Support, Blackboard, and the Microsoft Campus agreement. The cost of the titles is allocated in several ways, including FTES, number of users, and number of installed licenses. Campus-wide software for

FCC is primarily purchased through an annual decision package request and includes additional titles to those mentioned above. Titles not falling under the TRF process (publisher provided or donated titles) are captured through the lab setup form process and ensure license compliance and that appropriate technical support can be provided.

### ***SECURITY***

All computers on campus require password authentication for access. The campus has in most cases, not allowed end-users to have local administrator access to their computers. Anti-virus software is installed on all campus computers and automatic updates are used to keep Microsoft products current on the latest system patches and critical updates. The campus uses a password format that requires a minimum length of eight characters for network logon except in labs and special restricted access machines (such as the Web Room). The current password expiration policy is set for 180 days.

The campus is Active Directory-enabled for access to local area network (LAN) computers and wireless clients. Network access and bandwidth usage is monitored using Orion software. All switches on campus are monitored for bandwidth usage irregularities and thresholds are established to send alerts when triggered.

Physical security for campus server and network resources has been successful in limiting access to those resources. Door locks to server resources have been keyed to allow only TSS and Building Services staff access. Additionally, network cross-connect closets are monitored for entry, heat, and power fluctuations, and have motion activated cameras and two-way audio.

The district has standardized on Cisco surveillance cameras and media servers. Surveillance cameras are located in the Old Administration Building (OAB), Library, Child Development Center (CDC), T-600 buildings, the Art/Home Economics building entries, on top of the Bookstore/Student Center monitoring the Free Speech area, and the main fountain area.

In the summer 2014 a project began to review alternatives to the current CISCO surveillance system. The Chief of Police, District Operations, and the Campus and District IT directors have reviewed several vendors and a recommendation for replacement of the current system should be made in fall 2015.

### ***DATA STORAGE & RECOVERY***

Technology Support Services (TSS) does regular backups based upon a number of software methodologies. Fresno City College currently uses five backup solutions. Veeam Backup and Replication does a full backup of all virtual servers using reverse incremental technology by Veeam. Nimble Snapshot and Replication of the virtual servers in the Citrix virtual environment done hourly, daily and weekly. Symantec Backup provides a full backup of all physical servers every Friday with differential backups scheduled on Wednesdays. Windows Backup for full data-only backups on both physical and virtual servers on Sundays and differential backups on Wednesdays. The usage of scripts with the Windows built-in Task scheduler is used to perform daily backups on critical data and use Nimble Snapshot and Replication to store that information on a year-to-year basis locally and offsite storage arrays. The backup target for all applications are the two Nimble storage arrays located at Fresno City College and an off-site Nimble array at the District Office.

In addition, Fresno City College has also implemented the Microsoft Volume Shadow Copy Service (VSS) as another means to backup and then recover data from the servers. VSS has been enabled on the volumes that contain data in the open, private and division folders (the O, P, and N drives). A shadow copy is a snapshot in time of a volume that duplicates the data on the enabled volume daily. This allows end-users to recover data from a point back in time. How far back in time is determined by the amount of free space on the volume.



### ***REMOTE ACCESS***

The campus currently supports a limited number of remote connections to the campus network. These connections are restricted to select TSS staff members, senior administrators, and online counselors, select faculty, as well as a limited number of connections for off-site student registration activities (Reg-To-Go). The remote access server has been centralized at the District Office. Current policy requires that any employee connecting to the network remotely use district-owned equipment. Vendors' technical support personnel are given limited access to perform specific tasks and then access is revoked.

### ***LEARNING MANAGEMENT SYSTEM***

The campuses and district use Blackboard as the primary Learning Management System (LMS). The system is hosted with Blackboard's hosting service, ASP, and supported 24/7 by Blackboard's partner company, Presidium. The district is currently in a two-year contract with Blackboard that is set to expire in January 2017. Course and user information is automatically loaded into Blackboard every morning, Monday through Friday.

Support for instructors and students for simple issues such as passwords and course availability is handled by Presidium and then escalated to local support when necessary. Formal training on Blackboard is provided through one-on-one training with the Distance Education/Information Technology Support Technician in LI-141, flex day activities, and 24/7 online training through Atomic Learning.

The Director of Distance Education is leading a pilot with various faculty to consider the replacement of the Blackboard LMS with the Chancellors Office OEI project selected LMS, Canvas. A timeline and review process has been established. If the campus decides to move to the Canvas LMS it will do so at the end of the current contract with Blackboard set to expire in spring 2017.

### ***ASSISTIVE TECHNOLOGY***

Thirty percent of the computer labs on campus currently have assistive technology workstations. Assistive technology workstations are also provided in the Library. One of the goals of this plan is to outfit the remainder of the computer labs to comply with ADA standards. There is a dedicated Alternate Media Specialist to assist DSP&S students with adaptive technologies, including the conversion of instructional materials to large-print formats, braille, and electronic books.

### ***VIDEO CONFERENCING***

Fresno City College currently has three classrooms (HS-150, HS-200, HS-250) designated as distance learning classrooms with appropriate hardware and software to conduct two to four-way interactive meetings. Each classroom is equipped with the following items:

- Polycom 4000 or 8000 series video conferencing hardware
- Elmo document cameras
- Ceiling mounted projectors
- Screens and whiteboards
- LCD flat panel TV's or CRT TV's (two in the front of the room, one in the back of the room)
- Computer and monitor
- VCR/DVD players

The campus has additional video conferencing capabilities in four conference rooms on campus (HS-1, OAB-112, OAB-126, and OAB-226).

The district has standardized on the Avaya platform called Scopia for all future video conferencing systems. The Scopia platform allows for typical classroom and conference room video conferencing, as well as desktop

initiate web conferences. Additional conference rooms will be outfitted with the Scopia systems over the next 18-24 months.

### ***DOCUMENT IMAGING, MANAGEMENT & WORKFLOW***

The use of document imaging for archive and document version management does not occur within a formal process but instead is managed by individual groups on campus using a variety of hardware and software. Admissions and Records, both on campus and at the district level, use the Hyland Imaging system to capture and manage documents for imaging, archiving, and retrieval of student applications, transcripts, and other related admissions documents. In spring 2012, the TAC approved and forwarded an action plan to SPC to implement Hyland Imaging software throughout key areas of the campus for the purpose of decreasing the use of paper-based forms, physical storage requirements for paper documents, and increased efficiency of document processing through electronic form usage.

The District Information Technology department has secured funding to upgrade the current Hershey/Highland imaging software to OnBase. This upgrade will standardize the imaging process across the district and allow for electronic document management and workflow to be developed for various service areas on campus and at the District Office. The conversion project will begin in the summer of 2015 with a completion date of November 2015.

### ***PROFESSIONAL DEVELOPMENT***

Technology support staff receives onsite and offsite training by attending conferences and participating in intensive one-week training workshops. Every technician now has access to technical training through PluralSight and Atomic Learning. Technicians are encouraged to spend at least one hour every week updating their skills through either training website.

Classified staff technology training is offered throughout the year. This is addressed primarily by the Classified Professionals' Steering Committee. Classified Professionals' primary training focuses on the Microsoft Office Suite, although they do address other technology areas.

Faculty are offered training classes on flex day at the beginning of each semester. Flex day training consists of a series of workshops that concentrate on the most critical software used by instructors, namely MicroGrade and Blackboard. Innovative technology sessions and distance learning special interest group meetings are also held on this date. To see a list of Flex Day workshops that have been offered please visit the website <http://fresnocitycollege.edu/professionaldevelopment>.

Additionally, in the summer of 2011, 24/7 online self-paced technology training through Atomic Learning was made available to all Fresno City College personnel, in 2014 for all faculty/staff in the district and in 2015 for all students in the State Center Community College District.

## APPENDIX

## TAC STRUCTURE & CURRENT MEMBERSHIP

*As of August 2015:*

Director of Technology, Chair	Don Lopez
VP Administrative Services or designee	Cheryl Sullivan
Chair, Academic Senate Instructional Technology Committee	Brian Baker
1 DSP&S Representative	Leslie Silva
1 Dean of Student Services or designee (Appointed by VP of Student Services)	Kira Tippins
1 Dean of Instruction (Appointed by VP of Instruction)	Rojelio Vasquez
1 Faculty, Applied Technology	Craig Polanowski
1 Faculty, Business	Marc Haskell
1 Faculty, Fine, Performing & Communication Arts	Janine Christl
1 Faculty, Health Sciences	Sarah Edwards
1 Faculty, Humanities	Jeannie Santos
1 Faculty, Library and Student Learning Support Services	Donna Chandler
1 Faculty, Math, Science & Engineering	David Balogh
1 Faculty, Social Sciences	Nikolas Lucio
2 Faculty, Student Services	Stephanie Harris Michael Rodriguez
3 Classified Representatives (Appointed by CSEA/Classified Senate)	Chris Martin Keelin McCabe Susi Nitzel
1 Student Representative (Appointed by Associated Student Government)	TBD







































