FULLERTON COLLEGE ELEVATING. EXCELLENCE.

Administrative & Operational Services

2012-2013 Self-Study

Two-Year Program Review Template
Systems Technologies Group
Academic Computing Technologies

Statement of Collaboration

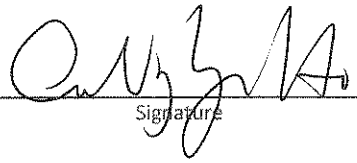
The department/office staff listed below collaborated in an open and forthright dialogue to prepare this Self Study. Statements included herein accurately reflect the conclusions and opinions of the department/office staff.

Participants in the review

Co Ho
Starla C. Battiest
Dawnmarie Neate
Tessa Renison
Gabriel Rodriguez
Michael Cortez
Mike Neate
Hai Nguyen
Tony Pham

Authorization

After the document is complete, it must be signed by the Principal Author, the Department Manager, and (when appropriate) the Dean or appropriate Immediate Management Supervisor (IMS) prior to submission to the Program Review Committee.

Printed name of Principal Author	Signature	Title	Date
Co Ho		Mgr, Systems Technology	11/14/12
Printed name of Department Manager	Signature	Title	Date
Terry Giugni		VPI	
Printed name of Dean or Immediate Management Supervisor (IMS)	Signature	Title	Date

1.0 Mission and Goals

Mission, Vision, Core Values and College Goals drive all college activities. Describe how your department/office supports each of these.

In step with the North Orange Community College District's missions and strategic directions, Fullerton College set its goals on

- promoting excellence in learning,
- reducing the existing achievement gap and addressing the needs of underprepared students,
- and strengthening connections with its local community

The services provided by Academic Computing Technologies (ACT) align directly with these goals. Technology is the fuel that drives the engines of both instruction and administration and allows the campus to provide students with access to needed applications around the clock. With thousands of computing devices, VoIP telephones and wireless access points located in faculty and staff offices, student labs, and over 100 smart classrooms, technology complements and enhances the students' educational experience. Robust network access and direct access from the computer labs provide resources for student instruction and support.

Technology resources allow more efficient organizational structure through networked energy management and security systems, as well as access to financial, purchasing and human resource systems (Banner), enrollment management, scheduling, and reporting. Essentially every function from class scheduling to ordering textbooks is enabled and supported by our Systems Technologies Group (STG) within ACT.

Through open access student labs, Help Desk assistance, and training materials, students who would not otherwise have access to technology are provided with the hardware, software and assistance needed to register for classes, and be successful students. Currently enrolled students are our priority, but alumni and members of the community often use the computer labs to access technology and sharpen their computer skills. This has been particularly true during the economic downturn.

2.0 Department/office Description/Data & Trends Analysis

2.1 Describe the purpose, components, and staffing of this office/unit.

In 1997 at Fullerton College, there were three offices that were connected to the Internet and two small local room networks. The campus had a handful of desktop systems. In the 1998 timeframe, the campus installed a copper based phone system and an Avaya phone switch to support the campus. In 2000, a District wide effort started to wire the campuses for data and video. By the middle of 2001, the Fullerton campus' buildings were connected by optical fiber with data drops in essentially every room on campus.

In the intervening years, the campus has evolved to support copper and fiber cables that allow gigabit backbone speeds, and the ability to deliver 100 Mb/s to the desktop. This is supplemented with a broadband coax capability that provides a mechanism to deliver video to and from classrooms as well as to most other major locations within buildings. Students, faculty, and staff are served by over 2400 workstations. Of these, about 900 occupy over 40 student accessible locations around the campus. All full-time faculty (345) have an assigned desktop as do most fulltime staff members (360). Remaining systems

exist in a shared environment (including about 100 laptops) and support a variety of faculty/staff instructional and administrative uses.

The campus has over 100 "smart" classrooms outfitted with a workstation, ceiling mounted projector, document camera, and DVD/VCR/VHS/sound system capability. There are 160 networked staff/faculty printers, 30 multi-functional printers, and 35 networked student printers on campus. Students print about half a million pages per year in classes and open labs, while faculty/staff printing comprises from 2.5 to 3 times that volume in support of the instructional and administrative functions.

The communications infrastructure is supported by over 140 switches located in 20 buildings connected through three hub buildings that provide redundant pathways for additional reliability. The campus network is structured into over 150 VLANs that provide security and specialized access capabilities. Applications and services are handled by 144 physical and virtual servers, the majority of which run a Windows-based operating system. Email capability is centered on an Exchange server providing all staff, faculty, and students with campus email addresses. The conversion of the campus telephone system to voice over IP (VoIP) has added to the critical nature of the communications infrastructure.

The campus network is extended to and supports the School of Continuing Education Wilshire campus with its associated classrooms, workstations, and staff; the Franklin House in support of the CalWORKs program and the Fullerton College Foundation; and the La Habra site to support the Technology and Engineering Programs. The campus Internet Service is provided by CENIC with a ring of GigaMAN (1 Gbps) links from CENIC-Fullerton College-Anaheim Site-Cypress College-CENIC. This ring provides redundancy and direct access to the District administrative systems (Banner and MyGateway).

All funding for new equipment/software has come from one time allocation dollars. **There have been no funds added to the budget for repairing, upgrading or supporting the new additions to the technology base.** The President's Council in 2004 agreed to a $155 ACT budget addition the following year for every new desktop added to the campus the previous year to help support the repair of those added systems. In 2007, this repair allocation was stopped by the budget office with no explanation. The allocation of one time funds was traditionally discussed at the Deans Council where campus wide needs were discussed along with Division needs and allocation recommendations made to the President's Council. This process stopped in 2007 with the net result that in the next three years less than $12000 was allocated to support non-construction related campus-wide instructional and infrastructure technology needs. In 2011, the campus spent $100,000 to upgrade aging computers in student labs. This one time purchase resulted in used computers from the student labs being available to replace some faculty computers. An additional $100,000 was promised to provide necessary upgrades to the data infrastructure, but this was never funded.

ACT Budget submissions have indicated an unallocated need of over $1M per year to support campus technology needs. Additionally, state TCO guidelines and industry standards indicate a significant shortage in technical staff to support the existing campus technology.

The CCC Technology II Plan establishes guidelines to effectively support information systems delivery to the campus environment. The following model represents where Fullerton's IS support is in comparison to the goals of the Technology II Plan.

There has been a great deal of research done on the optimum ratio of support personnel to the end user community. The reality is there can be significant variation in support levels between organizations due to

factors such as the complexity of the applications and the stability of the platforms running the applications.

A recent study indicated that for private industry the average Tier 1 support ratio is approximately 80 to 1. Or stated in other terms, for every eighty desktop systems (usually referred to as "seats") there should be at least one help desk representative providing Tier 1 support.

In an academic environment, the ratios are generally much higher. One of the major reasons for this is that a single PC in a classroom may be less of a problem than a PC that is on the desk of a business or administrative user or even in a PC lab. One PC out of service awaiting repairs does not severely limit the mission of the lab. The information provided below is based on our own research into the appropriate Tier 1 – Tier 3 support levels to seats ratio for academic and administrative users.

Please note that these numbers reflect the entire ACT organization.

Systems Management				
Support Category	**Technology II Assumptions**	**Fullerton College Campus Statistics**	**Current Staffing**	**GAP Additional Staff needed**
Network and Systems Administration	1 staff/300 PCs	2,400/300 = **8**	3	5
Technical Management	1 staff/500 PCs	2,400/500 = **4.8**	2	2.8
Web Administration	1 staff/12,000 FTES.	16,483/12,000 = **1.4**	0	1.4
Administrative Systems Support (Web, User development) Applications	1 staff/12,000 FTES	16,483/12,000 = **1.4**	0	1.4
Support				
Level 1 support	1 staff /150 PCs	2,400/ 150 = **16**	7.75	8.25
Development Support				
Application development	**2** staff/12,000 FTES	16,483/6,000 = **2.7**	1.0	1.7
Communications Support				
Network	1 staff/ 12,000-18,000 FTES	16,483/12,000 = **1.4**	0	1.4
Media Support				
Media	1 staff/	16,483/12,000 = **1.4**	1	0.4

	12,000-18,000 FTES			
Lab Support				
Labs	1 staff/ 12,000-18,000 FTES	16,483/12,000 = **1.4**	1	0.4
Phone Support				
Phones	1 staff/ 12,000-18,000 FTES	16,483/12,000 = **1.4**	.25	1.15
Planning and Administration Support				
Admin	1 staff/ 12,000-18,000 FTES	16,483/12,000 = **1.4**	1	0.4
Total Staffing			**17**	24.3

The GAP analysis shows that the current direct technical ACT staff at Fullerton College needs to be expanded from 17 to 41.3 people to meet the goals of the CCC Technology II Plan.

Existing processes have not been able to address the demands placed on technology resources. A comprehensive review and discussion occurred in 2011, and the resulting document summarizing the findings is attached for reference (PlanNet, appendix A).

The Systems Technology Group (STG) is a part of Academic Computing Technologies (ACT), a service and support organization consisting of 21 full-time technical and administrative staff and adult/student hourly employees whose primary mission is to provide and maintain computing technologies which support the college's academic programs. Functionally, ACT is comprised of three major components: FCNet Support Services, System Technology Services, and Instructional Technology Services. For purposes of this self-study, ACT was asked to report as two separate entities: Instructional Technology Services (Desktop technicians reporting to Robert Morison), and Systems Technologies (FCNet Support and Systems Technologies reporting to Co Ho). Following are job descriptions of STG staff.

Director, Academic Computing Technologies (Vacant)

- Provides leadership in the planning, development and implementation of campus technology; anticipates trends in technology; assists in development of technology plans for individual departments; coordinates and communicates campus technology needs.
- Plans, Implements and manages the campus-wide network; works with administration, faculty, staff and students to represent network needs and encourage technological advancement on campus.
- Coordinates campus technology needs with District Information Services.
- Develops and prepares the annual preliminary budget for campus information technology and systems programs and activities; monitors and controls budget expenditures; directs the preparation and maintenance of detailed and comprehensive reports, records and files regarding operations and activities.

- Provides leadership in motivating students, staff, faculty, and administration to learn, use and excel in the available technology in the academic environment.

Manager, Systems Technologies

- Fulfills Director's duties as indicated in above position description
- Manages the day-to-day operations of the campus network environment including switches, routers, firewalls, fiber and copper cabling, servers, databases, storage arrays and related software applications;
- Manages technical equipment and software to production quality standards;
- Manages the design, development, implementation and support of integrated technical software solutions for approved designs;
- Coordinates problem determination and resolution for complex network systems;

Administrative Assistant

- Assists faculty, staff and management regarding campus equipment needs;
- Corresponds with vendors to determine equipment that will meet the campus needs and obtains district-required quotes;
- Submits and tracks all campus computing and media related equipment and maintenance/licensing requisitions;
- Follows up with NOCCCD Purchasing and Accounting departments to complete the order receipt and payment process;
- Coordinates with department management and campus Business Office in creation and maintenance of annual spending plan;
- Manages spending, tracks and submits budget transfers and charges as needed;
- Provides support and direction to campus students, staff, faculty and management regarding computing, media and telephone issues as required;

Network Services consists of three full-time personnel whose goal is to provide a stable 7x24 network (FCNET) to provide students with the tools needed to achieve academic and professional success. Network Services enables faculty and staff to effectively support the student educational programs. Their responsibilities include, but are not limited to design, installation, maintenance and operation of automated systems including LAN/WAN, Data Communications Networks (Voice, data, video, Fax), maintenance and operation of Data Center, Enterprise Servers and Enterprise Storage Area Networks. The group researches and tests new technologies that show a potential benefit and monitor their performance. They are responsible for ensuring data integrity and security (firewalls, monitors, anti-virus protection, automated security updates). While each of the group members are cross trained to provide coverage during vacations or illness and to assist in large projects, each has their primary areas of responsibility:

IT Specialist – Network 1

- Messaging System
- Wireless
- Network Security
- Bring Your Own Devices (BYOD)

IT Specialist – Network 2

- Active Directory (provides a central location for network administration and security; authenticates and authorizes all users and computers.)

- Systems Security
- Remote Access System
- Security Surveillance System
- Uninterrupted Power System

IT Specialist – Network 3

- Storage Area Network
- Printing
- Virtual Operating Systems
- Voice Over IP Telephone System

Network Assistant – (Hourly Employee)

- Assists the Network IT Specialists in the day-to-day operations of the enterprise data communications network;
- Performs a variety of technical tasks servicing the campus in the installation and troubleshooting of network devices and testing and installing data cables and network devices;
- Processes inventory, shipping/receiving, and surplus.

IT Specialist, Systems Applications (2 Positions, 1 remains unfilled)

- Works with campus constituents to clearly define technical needs and identify problem areas and recommends, develops or supports applications and systems to meet those needs;
- Implements and maintains the necessary infrastructure for supported systems, including enterprise database systems, web server platforms and related systems.
- Provide system administration and support for hosted applications in support of Faculty and Staff to support student learning
- Tasked with following emerging technologies and advances to provide the best recommendations and custom developed applications possible
- Some of the systems developed or supported include, but are not limited to:
    - Emergency Announcement System;
    - Web Site hosting for all campus departments, employees and students including support for content management systems used for the main campus website and Hornet/Torch publications;
    - TimeKeeper attendance tracking utilized by all Computer Labs, DSPS, Student Services, Academic Support Center and Fine Arts, Humanities, Math and Physical Education divisions;
    - SARs scheduling system for Assessment, Counselling and DSPS centers;
    - Theatre Operations Schedule System for employee scheduling and event billing;
    - Theatre Festival registration and scoring;
    - Service Request System;
    - SharePoint intranet services for campus collaboration.

  Note: One IT Specialist position is currently unfilled.

IT Services Coordinator I -

- Liaison between STG and customer base;
- Develops solutions based on customer requests for collaboration, communication, and access;

- Oversees Help Desk, and provides next level troubleshooting;
- Develops training materials for Help Desk personnel and end users;
- Administers all FCNet accounts including account creation, and space allocation quotas;
- Administers the VoIP telephone system to include physical telephones, voice mail, call handlers, call centers, and switchboard.

User Support Analyst –

- Administers, plans, and coordinates support for campus networked security devices and cameras;
- Recommends technical enhancements to security systems and serves as technical liaison with related vendors;
- Coordinates and monitors campus instructional software licenses to ensure all legal requirements for use are met;
- Coordinates institutional and instructional software license compliance with Divisions, Departments and online delivery organizations;
- Ensures security and licensing requirements are coordinated between requestors, users and technical installation

Instructional Assistant –

- Assists students, faculty and staff in the labs and at the Help Desk;
- Recruits and manages Help Desk/Lab Technicians, and Lab Aides;
- Resolves and reports student disturbances issues in the labs;
- Completes TEA (Temporary Employment Applications)/Human Resources paperwork and payroll for all department hourly employees;
- Generates financial reports and projections based on payroll, paper and toner costs;
- Generates Help Desk log reports;
- Troubleshoots errors for workstations and printers in the labs and submits service requests when needed;
- Coordinates printer maintenance with vendor;
- Purchases paper and toner for the labs and various other departments on campus;
- Delivers paper and replaces toner for the labs and various other campus departments;
- Assists in special projects such as database management, inventory and relocating campus computing equipment as required

Help Desk/Lab Technician - (Hourly Employees)

- Assists students, faculty and staff in the labs and at the Help Desk;
- Assists in management of Lab Aide hourly staff;
- Resolves and reports student disturbance issues in the labs;
- Troubleshoots errors for workstations and printers in the labs and submits service requests when needed;
- Provides quality assurance follow up on completed service requests;
- Maintains Help Desk database;
- Delivers paper and replaces toner for the labs and various other campus departments
- Assists in special projects such as database management, inventory and relocating campus computing equipment as required

Lab Aide – (Hourly Employees)

- Assists students with account generation, account reset and print account deposits;
- Keeps the lab clean and secure;
- Delivers and replenishes printer paper in the labs and logs and reports paper usage;
- Notifies management staff when anything is needed in the labs;
- Maintains lab policies;
- Alerts management staff of student disturbances in the labs

Clerical Assistant – (Hourly Employee)

- Assists department Administrative Assistant with mail pick up, sorting and delivering;
- Maintains and organizes department supplies and notifies Administrative Assistant when supplies need to be re-ordered;
- Monitors department printers for toner and paper needs;
- Files, duplicates, compiles and collates various materials

2.2 Staffing – complete the table below:

CURRENT STAFF				
Please list each position by classification in the department/program	**Percent of employment time**	**Months per year of employment**	**Source of funding (General / Categorical)**	**FTE**
Managers	100	12	General	1
Classified	800	12	General	8
Hourly Support Staff				
Lab Tech./Help Desk	Varies	Varies	General	1.61
Lab Aide	Varies	Varies	General	4.60
Network Assistant	Varies	Varies	General	.40
Clerical Assistant	Varies	Varies	General	.10
			Total FTE of Classified Support Staff	8
			Total FTE	15.71

2.3 Other Resources:

Our department does not employ any Independent Contractors, Volunteers, or Interns.

2.4 Utilize the data provided in the tables above in a discussion of the appropriateness of the staffing level of this department/office:

The Director of ACT retired in June 2010 and has not been replaced. Some duties of the Director were assigned to the Manager of Systems Technologies as an addition to his regular duties. Specifically, coordination of technology needs with District Information Services; and budget development, monitoring and reporting. Personnel who reported to the Director were reassigned to this Manager. As the Director position remains vacant, several key duties are left uncovered: Leadership in the planning, development and implementation of campus technology, representation of STG at campus venues to

represent network needs and encourage technological advancement, and leadership in advising the campus of available technologies, and providing leadership for the campus to learn, use and excel in the available technology. Although other members of STG serve on various campus committees, the lack of a Director deprives the campus of a leader for technology vision casting, and results in ACT not being represented effectively during the technology decision making process.

One of the two IT Specialist positions responsible for Web-related requests remains unfilled since September 2010 resulting in insufficient resources to cover all web-related technology and services. The systems and services previously supported by the vacated IT Specialist position have been discontinued or reassigned to the remaining IT Specialist. The result is discontinued or reduced support for a number of systems causing delays in support requests and resulting in the postponing or canceling of scheduled maintenance and upgrades to existing systems. Filling the vacant IT Specialist position will allow STG to reduce support delays and assist campus constituents in supporting student instruction. Until the vacant IT Specialist position is filled, STG will have difficulty supporting new requests.

Although a web presence for the campus as a whole as well as individual departments and faculty has been identified as a priority by the campus, no resources have been allocated toward this goal. As a result, neither templates nor assistance are available to assist users in establishing and maintaining web sites with a professional, consistent look and feel. The position of Web Content Specialist was created to address the gap between resources available in ACT, and the growing Web-related requests of the campus. The position was retracted and was not hired when we entered the economic downturn. Campus governing committees still believe that these positions are necessary.

The Director of ACT, in response to an identified need of the college, worked with a vendor to program and implement an Access Control and Video security system. Once implementation and training were complete, the system was handed over to the appropriate campus department to administer. That department has not been able to take ownership of the system, and the Director continued to administer it until his retirement. Upon the Director's retirement, these duties were added to one classified staff in the department.

A vital resource for the entire campus, the ACT Help Desk, continues to be staffed exclusively by hourly employees. Although questions beyond their expertise can be escalated to permanent personnel within the department, this practice results in a delay in providing assistance to our customers especially during the evening and weekend hours.

2.5 How does this department/office serve the population of the college?

- provides, supports and maintains state-of-the-art technologies in support of instruction 7x24;
- supports student access by staffing and supporting open labs in a safe environment with the Security Surveillance System and physical access controls and alerting;
- provides a method for student lab use by generating FC accounts, and printing accounts;
- provides paper and toner in computer labs and classrooms enabling students to complete their school work;
- advises on campus technology standards and is the liaison with vendors;
- orders all campus computing, media and telephone equipment;

- provides infrastructure and support for secure web collaboration tools, corporate email, and secure access to network resources from on and off campus;
- The ACT Help Desk is available during all open campus hours via telephone, email and in person to assist faculty, staff and students with all questions regarding computing, media and telephone resources;
- provides a self-help portal and information web site for 7x24 access;
- provides every FCNet account (students, faculty, staff, departments, organizations, clubs, committees, etc.) with email, network file storage space, web space, data backup and recovery, and managed printing and fax services;
- provides 7/24 remote access with campus VPN;
- provides telecommunication services to include mass alert system, VOIP phones, emergency phones;
- provides wireless access to campus resources and internet access via campus or BYOD (Bring Your Own Device);
- provides support for vendor provided solutions:
    - Financial Aid – Qless
    - Counseling – SARS
    - A&R – Hershey
    - Bookstore – Commerce
    - Child Development – Reader Ware
    - Distance Education - Campus Media Broadcasting Services
    - Physical Education – Coaching video
    - Sodexo – Point of Sale system
    - Fine Arts – Theatre Festival, Jazz Festival
    - Public Safety – Ticketing system

Resources purchased, serviced and maintained as of July 1, 2012 are as follows:

1125 VoIP Telephones
162 Instructional Demo Stations
525 Instructional Lab Computers
454 Classroom Computers
183 Other Student-Use Computers in areas:
- Career & Life Planning Center
- Workforce Center
- Cadena Transfer Center
- Admissions and Records
- Assessment Center
- Library
- Wireless Laptop Carts

367 Faculty Computers
501 Staff Computers
300 Apple Computers
12 iPads
225 Networked and Multi-function Printers
9 LNVR (Lenel Network Video Recorder)

2 DVR (Digital Video Recorder for the analog cameras)
13 LNL Intelligent Controllers
36 Physical Servers (campus-wide and departmental)
108 Virtual Servers
254 Network Devices (routers; core, distribution and access switches; wireless access points; firewalls; and VPN concentrators)
21 Storage Area Network Devices
92+ TB total Storage Capacity
1 Enterprise 80KVA Uninterrupted Power System
50+ Network wiring closet Uninterrupted Power Devices

The Fullerton College Access Control and Video System supports the safeguard and security of the college's students, as well as its academic mission, and board policy BP 3720 Computer and Electronic Communication, by controlling and monitoring access to technology equipment and providing students, faculty, and staff scheduled access to needed facilities. This ensures technology and physical facilities are controlled and monitored by authorized individuals and that a historical record of related events is maintained.

Summary of assets and components for the campus security system include:

- Buildings; 200, 300, 400, 500, 700, 800, 900, 1000, 1200, T7 (2200) Equipment;
  - Closed circuit TV system
  - 861 - Cardholders
  - 95 - Cameras
  - 71 - Magnetic stripe swipe readers
  - Motion sensors
  - 2 - Network servers for central administration
  - 10 - Network servers for video capture & storage

2.6 Since the previous Program Review Self-Study what significant changes have occurred that impact the service of this department/office?

1. Computers continue to be added. Each device requires an associated data jack, switch port, software set and support.
2. Additional services continue to be provided.
   a. 2011: The new 400 building was completely reconfigured for the security system access controls and all staff, faculty and student desktops, internet access and WiFi.
   b. 2011: 700 and 900 buildings were demolished and classes moved to the La Habra site.
   c. 2012: 4 card readers were added to the 500 bldg.
   d. 2012: 11 cameras were added to the SCE Wilshire site.

3. New software continues to be implemented.
   a. New versions of instructional software applications are updated annually:
      i. Minitab (statistics application)
      ii. SPSS (statistics application)
      iii. AutoCad (drafting design application)

4. The Director position has been vacant since June 2010. The IT Specialist position has been vacant since Sept. 2010.
5. With the move of Technology and Engineering programs to the La Habra site, additional site services such as network access, computer installation, telephone service, computer lab set up and support for all of the equipment required ACT staffing and ongoing support.
6. Infrastructure equipment continues to age and there is no campus budgeting mechanism for replacement.
7. A new operating system has been installed campus wide as well as a new Microsoft Office version implemented creating ACT support burden with no funding for training.
8. Changes to the policies and rules governing student attendance tracking and reporting for Credit and Non-Credit use of student support centers and labs mandates upgrades to the TimeKeeper tracking system.
9. New system applications that SGT is now providing support for include:
    a. E-Sars – expanded online appointment scheduling system allowing students to schedule online appointments for Assessment, Counseling and DSPS.
    b. SharePoint 2010 – This updated version was deployed alongside the existing SharePoint 2007 server to provide expanded features and ease of use for web-based collaboration.
    c. VMware View – Virtual Desktop Infrastructure was deployed to support student instruction in the Business/Computer Information Systems Division.

2.7 A. What methods are used to evaluate the department/office effectiveness to the population that interact with this department/office?

Service Request System receipt, response time, resolution and closure, annual survey conducted by the Campus Computing Project; a District-wide technology survey; ACT Help Desk call log, and weekly service request follow up calls; participation in technology discussions at campus and district levels; major systems monitoring using software that sends real-time alarms to appropriate SGT technical staff.

B. What do the results of the above methods of evaluation indicate about the effectiveness of the department/office?

Service request response times vary slightly depending on workload, but generally customers are pleased with the service they receive. Implementation of new services such as email archiving, SharePoint, and Expression Web has been significantly delayed due to lack of staffing. Faculty and students would like to see some technology initiative move forward more quickly. Wireless access, for example is consistently identified as a top priority by students. Training for web site design and management, and a revitalized self-help portal are key requests from faculty and staff. With current staff covering for vacant positions, our ability to provide new services and training is limited. Lack of funding for a campus technology replacement plan creates frustration campus wide. As use of technology has become a vital part of classroom instruction, faculty and staff need assistance during all open campus hours. Response to after-hours access to the Help Desk, especially for students and adjunct faculty, has been very positive.

C. How have the result of this analysis been used to make improvement to services provided by this department/office?

- The ACT Help Desk has expanded hours to accommodate requests for assistance during all open campus hours;
- Additional hourly staff has been hired to cover expanded Help Desk hours;
- A one-time budget allocation was used to replace some aging desktop computers;
- Additional tutorials and self-help videos were added to the website.

2.8 Describe any laws, regulations, trends, policies and procedures or other influences that have an impact on the effectiveness of your department/office?

Trends in campus computing are assessed by The Campus Computing Project, the largest continuing study of the role of information technology in American higher education. The annual Campus Computing Survey conducted in collaboration with Inside Higher Ed and other research activities draw on qualitative and quantitative data to aid and inform faculty, campus administrators, and others interested in critical planning and policy issues that affect American colleges and universities. www.campuscomputing.net.

In addition to providing a reliable, robust network for faculty, staff and students at Fullerton College, ACT must provide a platform for departments offering courses in cutting edge applications. We must be able to learn, design, implement, administer and support new technology almost as soon as it is past Beta testing, often before it has aged enough to be considered stable and deployment ready. The result of this is a hybrid network of standard operating systems and software, and new, untested programs requiring close monitoring and subject to constant change.

2.9 Provide any other relevant data that support your self-study.

PlanNet was engaged in September 2011 to assist Fullerton College by conducting a network infrastructure assessment for the campus. The College determined to engage the services of an independent consultant to help identify potential issues in the overall design of the network that has grown to support a move of the data center, addition of a voice-over-IP phone system, and expanded use of wireless. Additionally, the college has been evaluating expansion of virtual desktop infrastructure (VDI) and desires to understand the impact of such expansion on its existing backbone design and overall network architecture. Due to limited funds and competing priorities for how those funds should be allocated, the College determined to bring in PlanNet to help establish a roadmap for upgrade or expansion of the network infrastructure.

Strengths, Weaknesses, Opportunities, Challenges (SWOC)

2.10 Based on your analysis in 2.1 through 2.9, what are the strengths of your department/office?

- Ability to adapt to the changing technology needs of the campus
- Ability to function with dwindling resources
- Levelling the field by providing access to technology free of charge to all faculty, staff and students

As the technology customer base has grown, STG has responded by implementing a Help Desk. The Help Desk is crucial to making the organization function in a productive, vital way. As demands on the time of STG classified staff continues to increase, the Help Desk allows for the optimization of available staff hours by being the initial point of contact for callers, providing assistance with and answers for common technology questions, and providing system status overviews to ACT technical staff thus allowing classified staff to focus on their core duties.

2.11 Based on your analysis in 2.1 through 2.9, what are the weaknesses of your department/office?

As the Director position has been vacant since June of 2010, the campus Vice President of Instruction has been directing the department, and the Systems Technology Manager now has the additional responsibility of handling the workload of Director for the department. The campus has not authorized the filling of the open Director and IT Specialist positions.

The department is unable to manage campus expectations regarding service levels. The campus has an expectation of receiving a level of service impossible to maintain with understaffing. For example, the Help Desk is staffed by hourly employees, resulting in uneven levels of service as customers receive assistance from students with varying levels of experience. The turnover in hourly personnel means that, although every effort is made to document their knowledge, the experience needed to handle help desk calls is lost when they leave.

Currently, while expectations for service delivery exist, these services are covered by informal service level agreements or not at all. In attempting to maintain the highest levels of functionality and the best response times possible, training opportunities, regular maintenance and scheduled upgrades have been delayed or cancelled. Delayed training opportunities deprive the campus of the latest possible technologies and decreases department effectiveness. Campus constituents are dissatisfied due to the lack of new features and fixes to existing systems that have resulted from the increased backlog of delayed maintenance and upgrades.

In attempting to maintain the highest levels of functionality and the best response times possible, training opportunities, regular maintenance and scheduled upgrades have been delayed or cancelled. Delayed training opportunities deprive the campus of the latest possible technologies and decreases department effectiveness. Campus constituents are dissatisfied due to the lack of new features and fixes for existing systems that have resulted from the increased backlog of delayed maintenance and upgrades.

2.12 Based on your analysis in 2.1 through 2.9, what opportunities exist for your department/office?

We have the opportunity to offer web collaboration enabling people to work together from on and off campus. Deployment of new and updated web server infrastructures will enable campus departments to utilize mature, proven technologies to increase their web presence and outreach to students and the community.

We have the opportunity to provide additional self-help services by utilizing SharePoint to deliver portal services (password change, email forwarding, profile editing), as well as access to training materials and FCNet services (email, service request system, and other SharePoint sites).

2.13 Based on your analysis in 2.1 through 2.9, what challenges exist for your department/office?

- There is no consistent budget for infrastructure maintenance/replacement.
- Staff is running cutting edge programs and offering cutting edge technology without access to formal training.
- There is a loss of staff and increase in responsibilities.
- The ability for STG to continue to support campus constituents with existing and new technology systems is greatly reduced due to unfilled positions and the redistribution of job duties. Prior to the last program review, ACT, campus and district identified the growing need to hire a third additional IT Specialist who would focus on support of web-related activities and development freeing the existing two IT Specialists to concentrate on internal applications, intranet web services and infrastructure support. The economic downturn resulted in that position not being hired. With the additional loss of and the continued vacancy of one of the existing IT Specialist positions, the STG has had to significantly reduce the support provided to departments for their web activities. This has resulted in significantly increased response time to support requests on existing systems, discontinuing of services and delays in maintenance of remaining applications.
- Duties of the IT Specialist (Webmaster) position were added to one classified staff including
  - Web development training
  - Web development for campus departments
  - Technical support for campus websites
- The ability for STG to continue to support campus constituents with existing and new technology systems is greatly reduced due to unfilled positions and redistribution of job duties. Prior to the last program review, the department, campus and district identified the growing need to hire a third IT Specialist who would focus on support of web-related activities and development freeing the existing two IT Specialists to concentrate on internal applications, intranet web services and infrastructure support. The economic downturn resulted in the position not being hired. With the additional loss of and the continued vacancy of one of the existing IT Specialist positions, the STG has had to significantly reduce the support provided to departments for their web activities, significantly increased the response time for support requests of existing systems, and discontinued services and created delays in maintenance of remaining applications.

- There is an inability of campus departments to assume the responsibility for handoff of technology once initial implementation, stabilization and training are done by STG.

3.0 Evaluation of Process used by Department/Office or Services

3.1 Describe any ongoing or systematic method used to evaluate the efficacy of processes used by your department/office.

Weekly service request follow up calls are placed each week by the ACT Help Desk. Every service request that was completed in the prior week is compiled, and each customer is contacted to ensure that their service requests were completed to the customer's satisfaction. Any issues reported as unresolved are referred to the IT Services Coordinator.

Lab scheduling is done on a semester by semester basis after receiving input from Divisions that are heavy users of the student labs. One student lab (611) is available for reservation by instructors, and this lab is also coordinated by STG.

Each contact made by the Help Desk (calls, email, walk-ins) is documented in a SharePoint database.

3.2 Provide example(s) of how this self-analysis has led to continuous quality improvement.

Service request follow-up calls revealed that customers were often unclear as to what had caused the need for the requested service, and what was done to resolve the issue. As a result, STG customized the Service Request software to include comments from the technician that are part of the customer view and are emailed to the requestor when the ticket is closed.

Scheduling for the computer labs is a stable process. However, the mechanism for reserving the 611 lab resulted in instructors not being able to view the schedule in real time or know what hours were still available. Subsequently, the calendar was moved to the Outlook Public Folders allowing instructors to access and view the schedule and streamlining the reservation request process.

Keeping a Help Desk database has allowed us to catch issues early on. After reviewing notes from Help Desk calls, it was discovered that users moving between versions of Outlook were experiencing profile corruption. This was discussed with Desktop technicians. A fix was discovered, documented, and added to the knowledge base.

As a result of the data, we have offered training to faculty and staff in several different ways. Instead of a multi-hour, software specific workshop, the information was broken down and offered as a shorter, more specific workshop, allowing end users to focus on learning the specific features of the software applicable to their tasks. In addition, "Office Hours" are offered by STG twice a month for users who do not require training, but have a specific technology question or issue. Classified staff and adjunct faculty who are not available to attend training have requested web training with short videos. This is in development.

4.0 Service Area Outcomes (SAO) Assessment

4.1 List your SAOs and complete the expandable table below.

	Service Area Outcomes (SAO)	Date Assessment Completed	Date(s) Data Analyzed	Date(s) Data Used For Improvement	Number of Cycles Completed
1.	Provide design, implementation and support of infrastructure to support campus state-of-the-art computing and media technology	Annually	July 2012	Ongoing	20
2.	Provide applications, services and support to assist campus departments and organizations in	Weekly	Weekly	Ongoing	15 year

	achieving their technology goals which support SLOs.				
3.	Support student access by staffing and supporting open labs and classrooms.	End of semesters	Every semester	Following semester	40
4.	Provide infrastructure to support a safe campus environment with appropriate security control and monitoring.	Annually.	Annually	30 days post update	3
5.	Provide telecommunication services.	Ongoing	Monthly	Each semester	8 semester cycles
6.	Provide assistance to faculty, staff and students through both a staffed help desk and a self-help portal.	Weekly	Weekly	Between semesters	6
7.	Provide design, implementation, maintenance and support of the campus computing and storage infrastructure.	Annually	July 2012	Ongoing	20

4.2 Assessment: Complete the table below.

Service Area Outcomes Assessment for the Administrative/Operations Division of Fullerton College				
SAO Number	**Intended Outcomes**	**Means of Assessment & Criteria for Success**	**Summary of Data Collected**	**Use of Results**
SAO #1	Campus constituents will receive infrastructure, application and custom software development support for their server based system applications so that they may more effectively support the campus and student learning. This includes evaluation, recommendation and support of new systems in addition to many existing systems such as: o TimeKeeper, o SingleWire Emergency Alert System, o SARs Appointment Scheduling, o TOSS Employee Scheduling &	These systems will be electronically monitored to ensure 99% availability during campus business hours. System users will be surveyed to determine that infrastructure and application support levels meet their expectations and that	System monitoring indicates all systems exceed 99% availability. System users indicate they require a wider variety of server side development platforms and upgraded web and database services. Changes to the student attendance, tracking and reporting requirements for credit and non-credit programs require that the TimeKeeper system be upgraded.	Developed plans and set a goal to upgrade the Windows hosting environment to support the full range of DotNET 4.0 languages and add Linux-based PHP/MySQL hosting; Started requirements gathering and set a goal to update and upgrade the TimeKeeper system

	Billing, o TechExcel Service Request System, o Theatre Festival Registration & Scoring, o VMWare based virtual servers and virtual desktop infrastructures, o FcNet Account Management utilities, o Banner System Integration, o Campus Call Reporting, o Student Print System accounting & reporting, o Assessment Testing Server, o GLPI Campus Inventory System, o Library ContentDM archival system, o Campus Callbox/Emergency Phone Support, o Cloud based services support o web based Content Management Systems and applications.	custom applications continue to satisfy their needs and requirements.		
SAO #1	A stable, robust network	Outage reports with minimum 99.99% uptime.	Data collected shows network uptime is less than 99.9% over a 12 months period due to a core switch failure and spanning tree reconvergence.	Determined the need to upgrade and replace network hardware and software.
SAO #1	Complete campus wireless coverage with	Wireless coverage	Report of campus Wi-fi coverage map	Determined need to

	additional support for BYOD	survey; complete coverage with support for BYOD	shows approximately 45% coverage See appendix B.1	upgrade hardware and software in order to achieve 100% wireless coverage (See appendix A, page 7 & 11, section 3.4 & 4.2 respectively)
SAO #2	Adequate, robust, reliable, and secure computing platforms	Documented product requirements; Operating systems should be up to date and meet application requirements	Reports indicate that the operating systems and applications are not current and need to be upgraded to meet manufacturer's requirements. A total of 35 "out of support" server operating systems need to be upgraded.	Defined a process and scheduled upgrade and migration to newer operating systems and applications
SAO #2	Dedicated application hosting and knowledge sharing collaboration	Customer feedback	Implementations met customer criteria	Make changes as needed
SAO #3	Faculty and students will have adequate classroom and open computer labs equipped with the latest technologies required by curriculum and sufficient support staff to support student instruction available to them.	Faculty feedback and service requests	Faculty has indicated that they need additional support to be available for classroom labs on an as-needed basis to address issues encountered while teaching. Faculty requests that staff be made available on call during regular business and evening hours. Students have indicated that there are not enough open labs available, and that there is a lack of BYOD space, additional space to connect personal laptops and devices.	Staff of the ACT Help desk and Lab Aides in the open labs have been adjusted as to provide as much coverage as possible within the limits of our current budget. We have established a goal to create an improved customer assistance web presence where faculty and students may acquire on-line training and self-help.

SAO #4	Provide safe, reliable, efficient services for security monitoring	Daily system management, faculty and staff feedback and service requests	System scheduling & user errors, room security compromised, increased demands on existing staff due to loss of staff.	Determined need to minimize alarm and scheduling errors, increase response and repair time for malfunctioning doors and establish more efficient use and management of the security system (requires replacing of lost staff)
SAO #4	Provide clearly identifiable facial images on security monitoring equipment	Real-time visual assessment with ability to positively identify an individual	Law enforcement and Campus Safety officers are unable to identify perpetrators from aging and obsolete camera images.	Established need to acquire new security surveillance equipment
SAO #5	Campus constituents will be able to utilize web based collaboration and knowledge sharing systems from both on and off-campus enabling them to more effectively achieve their goals and outcomes.	The system will be electronically monitored to ensure 99% availability during campus business hours. System users will be surveyed to determine that the systems meet	System monitoring indicates availability exceeds 99%. System users indicate that the SharePoint 2007 system meets basic needs but they would prefer to system to be upgraded to SharePoint 2010 for additional features and ease of use.	Defined a process and created a goal to migrate existing SharePoint sites to new SharePoint 2010 system.

		their collaboration requirements.		
SAO #5	Reliable voice mail; more efficient call handling and switchboard capabilities.	Ease of use for both FC staff and callers. Service requests. Interviews with customers.	Voice mail system is at end of support, not reliable; there is a need for additional call handling capabilities and an updated switchboard solution	Established need to upgrade the system to provide increased reliability and required functionalities
SAO #6	Students and Campus Employees will have available to them a technology help desk during all open campus hours of operation, and self-help services via the web 24 hours a day. The technology help desk will be able to assist all FCNet account holders with basic access issues and standard software, or document the caller's issue so that it may be escalated to the appropriate STG staff member.	Call log, knowledge base, # of calls that can be resolved without escalation	Customers have indicated that there are not enough self-help and knowledge-base articles available, and that the current online resources are scattered across too many sites. Customers also want Help Desk personnel that are more highly trained and can assist with the use of specific applications.	Redesign of FCNet web page and self-help portal. Update training for Help Desk staff.
SAO #7	Provide adequate, safe, reliable and efficient storage resources.	Monitor and report on availability, performance and capacity; Read/Write sustained latency measured at less than 10ms; maintain 15% available storage	Report indicates latency on data accessing; users are requesting additional space for email, file, multimedia and webspace. See appendix B.2	Determined the need to upgrade storage hardware to decrease latency and add needed storage capacity

		capacity;		
SAO#7	Provide safe, reliable and efficient computing resources	Maintain an average CPU utilization less than 50% and an average memory utilization less than 65%	Results show steady growth in campus computing resources usage due to an additional 400 workstations, multifunctional printers and BYOD; additional and upgraded services provided include SharePoint, Fax over IP, Mail system, VDI, and Emergency Mass Alert system See appendix B.3	Determined a need for additional memory and CPUs to increase availability and performance to the campus computing resources pool

4.3 How has assessment of SAOs led to improvements in services provided to the consumer by this department/office?

Based on calls and emails received by the Help Desk throughout each semester, changes are made to the FCNet web site and knowledge base. Brief instructions are written for frequently asked questions, instructions from previous semesters are clarified, and training for Help Desk staff conducted.

Call routing and call handler programming are changed to accommodate changes in campus departments.

Increased access for personal devices is implemented. Additional services are planned pending funding.

4.4 What challenges remain to make your department/office SAOs more effective?

STG measures the services it provides through systems monitoring, service response times and customer feedback. It is important to communicate to customers exactly what they can expect in the way of services, assistance and innovation. Unfortunately, existing workloads mean that this often falls to the bottom of the priority list, resulting in frustration for both STG, and our customers. Conflicting information about STG, given out by various campus entities, adds to this frustration, and makes it difficult to accurately measure customer response. STG must make communication a priority.

4.5 Describe how the department/office's SAOs are linked to the college's goals.

Goal 1. Fullerton College will promote excellence in learning.
Goal 2. Fullerton College will reduce the existing achievement gap and address the needs of underprepared students.
Goal 3. Fullerton College will strengthen connections with its local community.

Academic Computing Technologies' Systems Technologies Group is at the forefront of providing design, implementation and support of the campus infrastructure, ubiquitous access to campus computing resources, student access in open labs and classrooms, infrastructure to support a safe campus environment, infrastructure, services and support to assist campus departments and organizations in achieving their technology goals, telecommunication services, and assistance to faculty, staff and students through a staffed help desk and a self-help portal.

All services provided directly promote excellence in learning, reduce the existing achievement gap, address the needs of underprepared students, and strengthen connections with Fullerton College's local community. Computers are available to all students during all campus hours free of charge providing equality of technology across all social strata.

5.0 Evaluation of Progress Toward Previous Goals

5.1 List the goals from your last self-study/program review.

1. Transition to Single-Sign-On for student population using satellite Active Directory from the District's central Banner ID/password database.
2. Remove roaming profile support from all staff to prepare for migration to Virtual Desktop Infrastructure (VDI).
3. Upgrade VmWare server cluster (circa 2007).
4. Pilot and deploy VDI in a lab.
5. Migrate Distance Education technical infrastructure to the District IS.
6. Adopt, implement and administer campus technology replacement plan.
7. Upgrade email server to Exchange 2010.
8. Beta test LiveEDU and Gmail to replace existing student emails with one of these cloud-email providers.
9. Upgrade SAN to support SAS technology.
10. Assist construction-related projects for La Habra swing space, building 900 reconstruction and building 700 remodeling.

5.2 Describe the level of success achieved in the goals listed above.

1. In progress – Collaborating with District on policies and implementation
2. The Virtual Desktop Infrastructure roadmap was refocused to provide VDI for students in the CIS Department as a pilot project
3. Upgrade was completed. Software was covered under existing maintenance contracts from 3X to 4X.
4. Complete
5. Complete
6. Complete
7. Complete
8. Complete

9. Complete
10. Complete

5.3 In cases where resources were allocated toward goals, evaluate the efficacy of that spending.

1. No funding resources
2. No funding resources
3. Funding for maintenance contracts
4. No funding resources
5. No funding resources
6. Funding resources spent according to criteria in the technology replacement plan
7. Funding for software and hardware upgrade
8. No funding resources
9. Funding for hardware, software and services
10. No funding resources

6.0 Goals

Using the table below, list the short and long term goals (a minimum of two of each) for your program. These goals should follow logically from the information provided in the self-study. Use a separate table for each additional goal.

6.1 Short-*term* Goals (for this two year cycle)

SHORT TERM - GOAL #1	
Identify Goal:	Replace 95 end-of-life access switches
Describe the plan to achieve the Goal (Action-Plan):	Replace 48 switches per year over two-year period in order to replace all switches before the End-of-Support deadline of July 31, 2015.
What *Measurable Outcome* is anticipated for this goal?	Replacement of the 95 end-of-support switches over the next four years
What specific aspects of this goal can be accomplished without additional financial resources?	This cannot be accomplished without additional financial resources.
SHORT TERM - GOAL #2	
Identify Goal:	Provide a better collaboration platform by upgrading and expanding SharePoint services and migrating existing sites to newer platforms.
Describe the plan to achieve the Goal (Action-Plan):	Identify active SharePoint sites and evaluate for migration to SharePoint 2010 Migrate sites from SharePoint 2007 to 2010 Expand and deploy SharePoint 2010 for Internet Purchase professional services to design a Fullerton College theme for SharePoint to provide a consistent look and feel. Expand and deploy SharePoint Enterprise features

	Evaluate SharePoint 2012 for future deployment
What *Measurable Outcome* is anticipated for this goal?	A number of active sites on SharePoint 2010 and SharePoint 2012 using Intranet, Internet and Enterprise Features.
What specific aspects of this goal can be accomplished without additional financial resources?	Migration to SharePoint 2010 for both Intranet and Internet use.
SHORT TERM - GOAL #3	
Identify Goal:	Upgrade the positive attendance tracking software utilized by student support labs and facilities for tracking and reporting required weekly lab attendance, non-credit hour reporting and facility/lab usage.
Describe the plan to achieve the Goal (Action-Plan):	Migrate sites utilizing the TimeKeeper applet to the TK2010 application Migrate existing reporting systems to SharePoint reporting platform Expand reporting capabilities address specific Program Review requirements as provided by campus organizations including Fine Arts, Humanities, Math, P.E. and Academic Support Centers Implement additional reports as requested by campus organizations
What *Measurable Outcome* is anticipated for this goal?	All sites running new TK2010 application All existing reports available in SharePoint Creation of reports to address Program Review requirements Creation of additional reports as requested
What specific aspects of this goal can be accomplished without additional financial resources?	All aspects can be implemented to a base level with existing personnel assuming no additional work loads. Additional features and capabilities would be made available with Enterprise Licensing for SharePoint.
SHORT TERM - GOAL #4	
Identify Goal:	Upgrade Account Management and Provisioning systems to support on-going upgrades throughout the FCNet system
Describe the plan to achieve the Goal (Action-Plan):	Upgrade automated student account provisioning system to support new Exchange Server Upgrade employee account to support new exchange server Implement mechanisms to provision local resources
What *Measurable Outcome* is anticipated for this goal?	All account provisioning systems transitioned to support new Exchange Server Baseline set of PowerShell scripts to accomplish account provisioning

	requirements including Mailbox, Web Hosting and Network Storage
What specific aspects of this goal can be accomplished without additional financial resources?	All aspects can be implemented with existing personnel assuming no additional work loads.
SHORT TERM - GOAL #5	
Identify Goal:	Transition campus to new Service Request System to improve response time and level of service provided by campus support organizations
Describe the plan to achieve the Goal (Action-Plan):	Analyze current SRS to determine what works and what doesn't; Re-evaluate FCNet Login integration to eliminate the need to create and administer local SRS accounts and passwords; Design new system to utilizing the most recent version of TechExcel ServiceWise Deploy new system to production environment and direct all incoming Service Requests to the new system Sunset the old system, maintaining it until all outstanding requests are closed or migrated to the new system
What *Measurable Outcome* is anticipated for this goal?	Service Request system running the latest version of TechExcel ServiceWise
What specific aspects of this goal can be accomplished without additional financial resources?	All aspects other than FCNet Login integration can be implemented under existing vendor service and support contract
SHORT TERM - GOAL #6	
Identify Goal:	Create improved customer assistance web presence
Describe the plan to achieve the Goal (Action-Plan):	Merge the FCNet web site and myFC self-help portal into a SharePoint site Expand on-line training Add short video tutorials
What *Measurable Outcome* is anticipated for this goal?	Questions most frequently received by the Help Desk will be answered by web site content
What specific aspects of this goal can be accomplished without additional financial resources?	This can be accomplished with no additional financial resources.
SHORT TERM - GOAL #7	
Identify Goal:	Provide updated call handling capabilities and switchboard solution
Describe the plan to achieve the Goal (Action-Plan):	Replace end of life call handling system Work with appropriate switchboard personnel to implement switchboard features Provide training and support
What *Measurable Outcome* is anticipated for this goal?	Reliable voice mail, call handling, and switchboard capabilities. No data corruption.

What specific aspects of this goal can be accomplished without additional resources?	This cannot be accomplished without additional financial resources.
SHORT TERM - GOAL #8	
Identify Goal:	Increase user H: and I: drives, email, and website quotas. Decrease resource access time (See appendix B.2)
Describe the plan to achieve the Goal (Action Plan):	Add additional hard drives and Solid State Disk (SSD)
What Measurable Outcome is anticipated for this goal?	Increased usage storage quotas; storage volume latency is measured less than 10ms.
What specific aspects of this goal can be accomplished without additional financial resources?	This cannot be accomplished without additional financial resources.
SHORT TERM - GOAL #9	
Identify Goal:	Provide a stable and secure platform to support campus applications and services.
Describe the plan to achieve the Goal (Action Plan):	Acquire additional CPUs and memory. Upgrade Operating System (OS) and Virtualization Operating System.
What Measurable Outcome is anticipated for this goal?	Maintain less than 50% CPU and 65% memory utilization. All operating systems will meet both the campus application requirements, and the OS versions are currently supported by the manufacturer.
What specific aspects of this goal can be accomplished without additional financial resources?	The Microsoft Licensing Agreement allows for some OS upgrades. Memory and CPU upgrades cannot be accomplished without additional financial resources.
SHORT TERM - GOAL #10	
Identify Goal:	Provide leadership in the planning, development and implementation of campus technology; provide representation of STG at campus venues to represent network needs and encourage technological advancement and leadership in advising the campus of available technologies; provide leadership for the campus to learn, use and excel in the available technology
Describe the plan to achieve the Goal (Action-Plan):	Fill the vacant position for Director, Academic Computing Technologies
What *Measurable Outcome* is anticipated for this goal?	Leadership in planning, development and implementation of campus technology will be provided; department representation will be restored at campus and district levels; leadership in advising and educating the campus of new technologies will be provided.
What specific aspects of this goal can be accomplished without additional financial	This cannot be accomplished without additional financial resources.

resources?	

6.2 Long-*term* Goals (three to six year cycle)

LONG TERM - GOAL #1	
Identify Goal:	Expand and enhance the wireless network (WLAN)
Describe the plan to achieve the Goal (Action-Plan):	Ensure redundancy of controllers, including licensing to support failover of all WAPs. Maintain appropriate emphasis on WLAN security due to history of rogue behaviour and corresponding network faults. Use governance structure to issue policies about which devices are permitted to be used in the campus environment. Use features of Cisco wireless network and NAC to provision more bandwidth to registered users. Address continued growth and support of BYOD. Add addition Wireless Access Points to expanded coverage.
What *Measurable Outcome* is anticipated for this goal?	The campus is currently underserved in its wireless coverage. Expanding and enhancing the wireless network will eliminate the use of rogue WAPs that have been installed in various locations to support the level of access presently unavailable. Wireless coverage is increased.
What specific aspects of this goal can be accomplished without additional financial resources?	This cannot be accomplished without additional financial resources.

LONG TERM - GOAL #2	
Identify Goal:	Prepare backbone architecture for VDI infrastructure PlanNet recommendation: See appendix A, page 13, section 4.5
Describe the plan to achieve the Goal (Action-Plan):	Upgrade to Cisco's next generation of Data Center switch which is the Nexus 7000 platform to accomplish both objectives of replacing the aging core switches while introducing a 10Gb backbone and Data Center subnet capability to support the higher throughput required in an increasingly virtualized environment. Implement core upgrades. Extend 10Gb backbone to buildings with significant deployment of VDI clients. Identify small strand-count fiber cable in the air-blown fiber cells feeding Berkeley Center Data Center and replace it with high strand-count fiber.
What *Measurable Outcome* is anticipated for this goal?	Core upgrade to the Nexus 7000 will create a more robust resiliency in the failover of the cores by allowing both redundant uplinks to be fully available for traffic load and avoids spanning tree blocked ports and reconvergence times. Implementing 10Gb will provide the capability of 1Gb to the desktops to improve access to data resources and internet. It will also provide 1 Gb links to Wireless Access Points to support BYOD and faster internet access.
What specific aspects of this goal can be accomplished without additional financial	This cannot be accomplished without additional financial resources.

resources?	
LONG TERM - GOAL #3	
Identify Goal:	Implement end-to-end application performance monitoring.
Describe the plan to achieve the Goal (Action-Plan):	Evaluate and purchase an enterprise-class monitoring platform such as SolarWinds Orion, HP OpenView, EMC Ionix (Smarts). Include associated training and specifically address roles and responsibilities for leveraging the tool for regular operational use. Upgrade NAM blade in the Catalyst 6500 to a stand-alone NAM 2200 appliance that PlanNet recommendation: See Appendix A, page 14, section 4.7.
What *Measurable Outcome* is anticipated for this goal?	Improved network and application performance. Improved customer experience based on surveys and help desk calls. Uptime and performance reporting.
What specific aspects of this goal can be accomplished without additional financial resources?	This cannot be accomplished without additional financial resources.
LONG TERM - GOAL #4	
Identify Goal:	Re-establish perpetual funding mechanism commitment for network infrastructure.
Describe the plan to achieve the Goal (Action-Plan):	PlanNet recommendation: Use 5-7 year amortized repurchase allocation for switching infrastructure as opposed to a likely smaller interval such as 3-4 years for servers. PlanNet recommendation: See appendix A, page 14, section 4.8
What *Measurable Outcome* is anticipated for this goal?	A perpetual funding mechanism is in place.
What specific aspects of this goal can be accomplished without additional financial resources?	The plan can be developed and submitted waiting for funding.
LONG TERM - GOAL #5	
Identify Goal:	Create and implement SLAs and service catalog
Describe the plan to achieve the Goal (Action-Plan):	Leverage governance systems to create a plan, foundation, structure to develop SLAs and the service catalog.
What *Measurable Outcome* is anticipated for this goal?	Enhance standard operating principles and service levels to provide sound, measurable support practices. Have better communication to staff about methods and techniques.
What specific aspects of this goal can be accomplished without additional financial resources?	This can be achieved without additional funding.

LONG TERM - GOAL #6	
Identify Goal:	Upgrade and expanded capabilities for hosting organizational web sites and applications
Describe the plan to achieve the Goal (Action-Plan):	Upgrade or transition away from all End-of-Support servers (Windows 2000 to Windows 2012) Create policies and procedures to govern access to expanded server side programming languages (dotNet, ASPX, PHP) Standardize support for enterprise data storage and access including both local databases and Banner data requests (MS-SQL/MySQL/NOCCCD Banner API) Provide additional platforms for hosting (Windows/Linux/SharePoint) Create support framework for high availability, security and ease of maintenance
What *Measurable Outcome* is anticipated for this goal?	Number of programming languages available for hosted applications Years of Life Cycle Support available for platforms Number of platform types available for hosting Response time for provisioning and support of sites
What specific aspects of this goal can be accomplished without additional financial resources?	Migration to newer versions of existing platforms and adding some additional server side programming languages can be accomplished under existing Microsoft Campus Agreement licensing.

LONG TERM - GOAL #7	
Identify Goal:	Security Surveillance Camera Replacement
Describe the plan to achieve the Goal (Action-Plan):	Replace the 50 cameras with poor picture quality over the next four years.
What *Measurable Outcome* is anticipated for this goal?	Public Safety Department personnel will be able to accurately identify the person in the image. This will provide improved security and safety service to students and staff.
What specific aspects of this goal can be accomplished without additional financial resources?	This cannot be accomplished without additional financial resources.

7.0 Requests for Resources

Complete a new table for *each* goal listed in 6.0 that would require additional financial resources. These requests for resources must follow logically from the information provided in this self-study.

7.1

Short Term Goal X❑	Long Term Goal ❑	
GOAL NUMBER 1		
Type of Resource	**Requested Dollar Amount**	**Potential Funding Source**
Personnel	$0	
Facilities	$0	
Equipment	$570,000	
Supplies	$0	
Computer Hardware	$0	
Computer Software	$0	
Training	$0	
Other	$0	
Total Requested Amount	$570,000	
Describe how this resource request supports your ability to achieve your stated goal: Provide the funding to replace the end-of-life switches.		
What measurable program outcome(s) does the resource request address? Replacement of the 95 end-of-life switches by July 31, 2015 will achieve the goal.		

Short Term Goal ❑X	Long Term Goal ❑	
GOAL NUMBER 2 & 3		
Type of Resource	**Requested Dollar Amount**	**Potential Funding Source**
Personnel		
Facilities		
Equipment		
Supplies		
Computer Hardware		
Computer Software	$20,000	
Training	$10,000	
Other	$10,000	
Total Requested Amount	$40,000	
Describe how this resource request supports your ability to achieve your stated goal: SharePoint Enterprise features provide a significant number of additional features including paperless online electronic forms processing with InfoPath, Integrated Access & Excel Services and extended data integration features which can benefit campus Collaboration, Student & Faculty support web sites and TimeKeeper attendance system. SharePoint Enterprise Features are enabled by upgrading the Microsoft Campus		

Agreement from Standard to Enterprise Client Access Licenses. This expansion of licensing provide additional Microsoft Enterprise features for both SharePoint and other services used throughout the campus including Enterprise Features and anti-virus for Exchange and Client Management features for System Center including self-service helpdesk, back-up restore services and PC Monitoring. Purchasing professional services for the creation of a Fullerton College theme for SharePoint use will provide a more professional, unified look and feel then can be developed in house with existing personnel. Training for new features and attendance at related conferences will allow staff to better support SharePoint and provide guidance for future expansion and migration.
What measurable program outcome(s) does the resource request address? SharePoint Enterprise features will enabled significantly more departments to take advantage of SharePoint thus increasing the number of sites on the new system. Some TimeKeeper reports require Enterprise data integration and reporting features and cannot be transitioned without Enterprise CALs for TimeKeeper users.

Short Term Goal X❑	**Long Term Goal ❑**	
GOAL NUMBER 7		
Type of Resource	**Requested Dollar Amount**	**Potential Funding Source**
Personnel	$0	
Facilities	$0	
Equipment	$53,000	
Supplies	$0	
Computer Hardware	$0	
Computer Software	$0	
Training	$0	
Other – Vendor provided Professional Installation Services	$5,000	
Total Requested Amount	$58,000	
Describe how this resource request supports your ability to achieve your stated goal: Provide updated telephone system.		
What measurable program outcome(s) does the resource request address? Reliable voice mail, call handling and switchboard capabilities. No data corruption.		

Short Term Goal ❑X	**Long Term Goal ❑**	
GOAL NUMBER 5		
Type of Resource	**Requested Dollar Amount**	**Potential Funding Source**
Personnel		
Facilities		

Equipment		
Supplies		
Computer Hardware		
Computer Software	$10,000	
Training		
Other		
Total Requested Amount	$10,000	
Describe how this resource request supports your ability to achieve your stated goal: Additional service modules need to be purchased for TechExcel ServiceWise for integrated FCNet capability and improved reporting.		
What measurable program outcome(s) does the resource request address? Integrated FCNet logins and improved reporting		

Short Term Goal ☐X Long Term Goal ☐

GOAL NUMBER 8

Type of Resource	Requested Dollar Amount	Potential Funding Source
Personnel	$0	
Facilities	$0	
Equipment	$28,000	
Supplies	$0	
Computer Hardware	$0	
Computer Software	$0	
Training	$0	
Other	$0	
Total Requested Amount	$28,000	
Describe how this resource request supports your ability to achieve your stated goal: It provides the funding required to acquire the hardware needed.		
That measurable program outcome(s) does the resource request address: Increased usage storage quotas; storage volume latency is measured less than 10ms.		

Short Term Goal ☐X Long Term Goal ☐

GOAL NUMBER 9

Type of Resource	Requested Dollar Amount	Potential Funding Source
Personnel	$0	
Facilities	$0	
Equipment	$32,000	
Supplies	$0	
Computer Hardware	$0	
Computer Software	$0	
Training	$0	
Other	$0	

Total Requested Amount	$32,000	
Describe how this resource request supports your ability to achieve your stated goal: This will provide additional CPUs and memory.		
What measurable program outcome(s) does the resource request address? Maintain less than 50% CPU and 65% Memory Utilization. All Operating systems will meet both the campus application requirements and the OS versions currently supported by the manufacturer.		

Short Term Goal ❑X		Long Term Goal ❑X
GOAL NUMBER 10		
Personnel	$133,340	
Facilities	$0	
Equipment	$0	
Supplies	$0	
Computer Hardware	$0	
Computer Software	$0	
Training	$0	
Other: Vendor provided professional installation services.	$0	
Total Requested Amount	$133,340	
Describe how this resource request supports your ability to achieve your stated goal: Fullerton College is provided with the technology leadership, vision casting and direction.		
What measurable program outcome(s) does the resource request address? Increased productivity and efficiency of ACT organization		

Short Term Goal ❑		Long Term Goal ❑X
GOAL NUMBER 1		
Personnel	$0	
Facilities	$0	
Equipment	$210,000	
Supplies	$0	
Computer Hardware	$0	

Computer Software	$0	
Training	$0	
Other: Vendor provided professional installation services.	$12,000	
Total Requested Amount	$222,000	
Describe how this resource request supports your ability to achieve your stated goal: Provide equipment, software, and services to expand campus wireless coverage. Support BYOD and multi-media student learning.		
What measurable program outcome(s) does the resource request address? Complete campus wireless coverage.		

Short Term Goal ❑	Long Term Goal ❑X	
GOAL NUMBER 2		
Personnel	$0	
Facilities	$0	
Equipment	$320,000	
Supplies	$0	
Computer Hardware	$0	
Computer Software	$0	
Training	$5,000	
Other: Vendor provided professional installation services.	$16,000	
Total Requested Amount	$341,000	
Describe how this resource request supports your ability to achieve your stated goal: Provide the Network Core Switch Upgrade hardware, installation, and training.		
What measurable program outcome(s) does the resource request address? Upgrading the Core Switching Platform will create a more robust resiliency in the failover of the cores by allowing both redundant uplinks to be fully available for traffic load and avoids spanning-tree blocked ports and reconvergence times providing a . Implementing 10Gb will provide the additional capacity and the capability of 1Gb to the desktops to improve access to data resources and internet. It will also provide 1 Gb links to Wireless Access Points to support BYOT (Bring Your Own Technology E.g. Various smart learning devices including Laptops, Tablets, iPads, eBook Readers, and Smartphones) with adequate network bandwidth. This will accommodate increasing bandwidth utilization driven by the proliferation of both the devices and the increased use of multi-media and specifically video in the learning process.		

Short Term Goal ❑	Long Term Goal ❑X

GOAL NUMBER 3		
Personnel	$0	
Facilities	$0	
Equipment	$92,000	
Supplies	$0	
Computer Hardware	$0	
Computer Software	$0	
Training	$4,000	
Other: Vendor provided professional installation services.	$14,000	
Total Requested Amount	$110,000	
Describe how this resource request supports your ability to achieve your stated goal: Provides software and services to monitor and analyse campus network and applications to proactively prevent both network and end-to-end application performance issues and failures.		
What measurable program outcome(s) does the resource request address? Improved network and application performance. Improved customer experience based on surveys and help desk calls. Uptime and performance reporting.		

Short Term Goal ❑	Long Term Goal ❑X	
GOAL NUMBER 6		
Type of Resource	**Requested Dollar Amount**	**Potential Funding Source**
Personnel		
Facilities		
Equipment		
Supplies		
Computer Hardware	$5,000	
Computer Software	$10,000	
Training	$10,000	
Other		
Total Requested Amount	$25,000	
Describe how this resource request supports your ability to achieve your stated goal: We would like to purchase additional software to automate the provisioning, monitoring and maintaining hosting resources to significantly reduce the amount of manual labour that is required to support hosting. Newer versions of all existing software have higher recommended hardware requirements, necessitating the purchase of additional storage, memory and CPU resources. Training for new platforms and attendance at related conferences will allow staff to better		

support and administer the upgraded and expanded capabilities.
What measurable program outcome(s) does the resource request address? These resources will significantly increase the efficacy of upgraded hosting capabilities. At our current staffing levels without these resources SGT will not be able to effectively support as many hosting platforms & languages and response times will be longer. This funding will increase usage storage quotas. Storage volume latency is measured less than 10ms.

7.2

Short Term Goal ❑	Long Term Goal ❑x	
GOAL NUMBER 7		
Type of Resource	**Requested Dollar Amount**	**Potential Funding Source**
Personnel	$0	
Facilities	$0	
Equipment	$60,000	
Supplies	$0	
Computer Hardware	$0	
Computer Software	$0	
Training	$0	
Other	$0	
Total Requested Amount	$60,000	
Describe how this resource request supports your ability to achieve your stated goal: Provides the funding to replace the 50 aging and obsolete cameras over a four-year period.		
What measurable program outcome(s) does the resource request address? Public Safety Department personnel will be able to accurately identify the person in the camera image. This will provide improved security and safety service to students and staff.		

8.0 Self-Study Summary

This section provides the reader with an overview of the highlights, themes, and key segments of the self-study. It should not include new information that is not mentioned in other sections of this document.

Fullerton College continues to expand and upgrade its robust technology environment. With over 2400 campus desktop systems, 144 physical and virtual servers, and a pervasive network infrastructure, it supports current classroom and distance learning courses. In recent years, the upgrading of 100 classrooms to smart classroom status with installed LCD projectors, DVD/VCR combos, sound capability

and connected instructor computers has enhanced classroom instruction. These are complemented by installed video distribution capabilities. Wireless capabilities are available in new buildings, and are being expanded across the existing campus. While much has been accomplished, the increasing role of technology in our daily lives as well as in instructional programs, together with the increasing complexities of new technologies, leaves the campus with significant challenges.

A survey of faculty, as well as feedback from other constituent groups indicates the need to plan and budget for technology in a more formal and comprehensive way. While technology has exploded, support staff has remained stagnant, and budgets and financial processes do not support the systematic support and upgrading of faculty, staff, and student systems. This self study reflects the tremendous work the STG has accomplished in providing technology to all faculty, staff and students at Fullerton College as well as some challenges we face in continuing to support the rapid changes and growth that are the hallmark of technology.

Recommendations include:

- Budgets for regular upgrades of faculty, student, staff, and infrastructure systems;
- Additional staffing to support adequate service levels;
- Financial processes that support the 12-month instructional and support needs.

In summary, technology has become a critical component in generating FTES, supporting faculty in the classroom, allowing staff to operate effectively, and providing the level of support and access expected by society and our students. It remains our challenge to adopt budgets and processes to meet and exceed these expectations.

Division Deans' or appropriate Immediate Management Supervisor (IMS) Response Page

☐ *I concur with the findings contained in this Program Review.*

☐ *I concur with the findings contained in this Program Review with the following exceptions (include a narrative explaining the basis for each exception):*

Area of exception:

_____

_____

_____

_____

☐ *I do not concur with the findings contained in this Program Review (include a narrative exception):*

_____

_____

_____

_____

Appendix A (Double Click to open)

Fullerton College

Network Infrastructure Assessment

Report on Findings, Recommendations and Roadmap

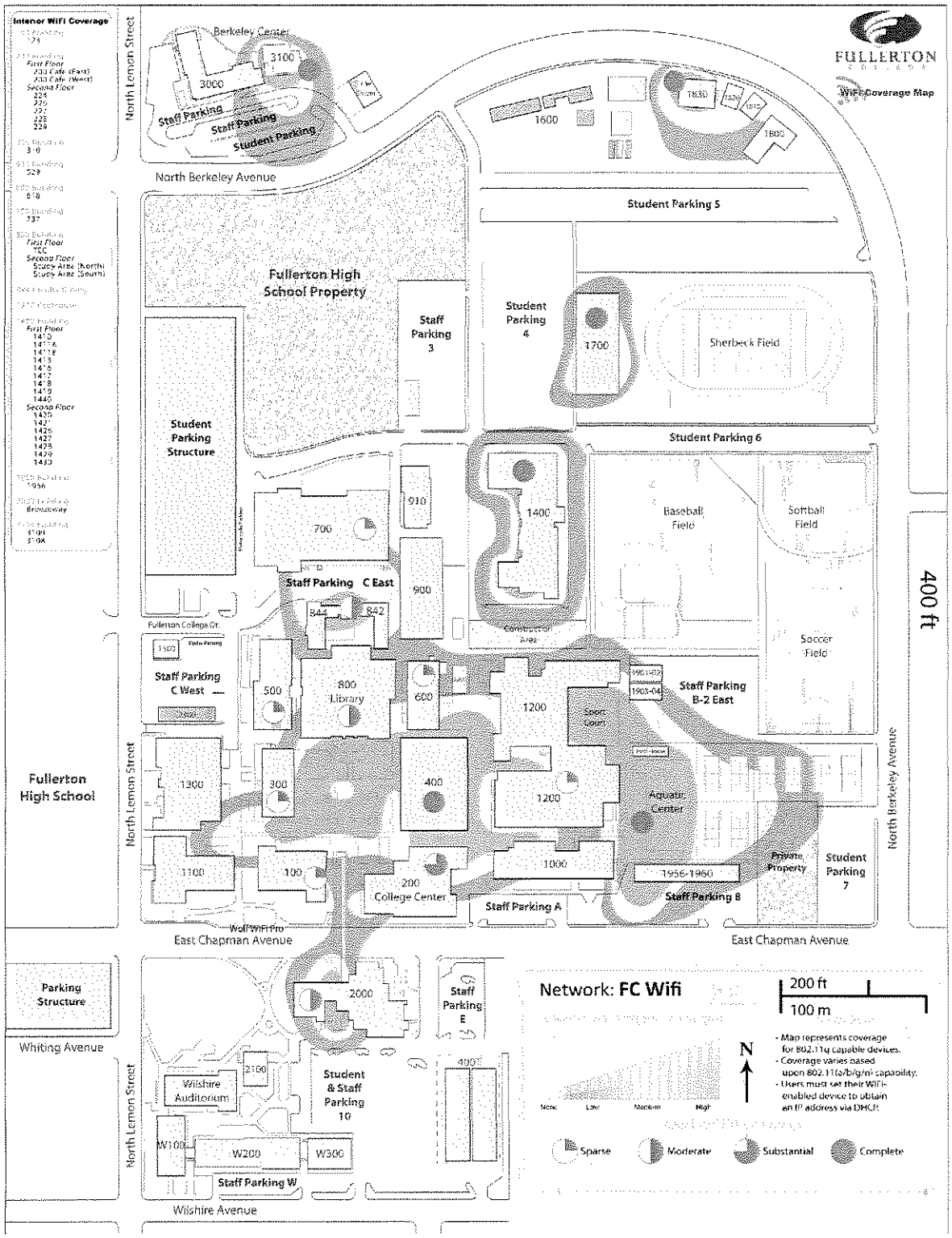
v 1.1

June 28, 2012

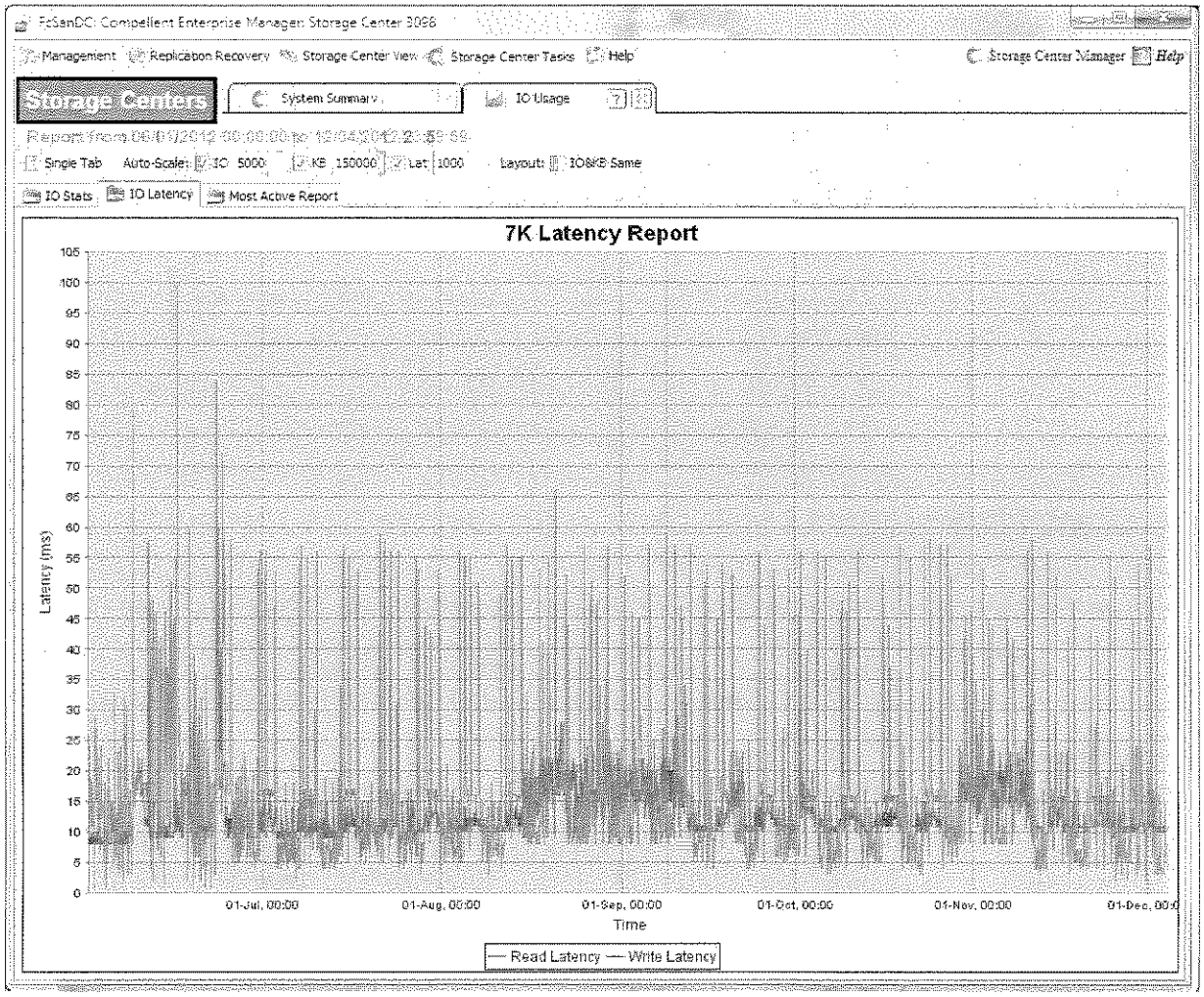
Prepared by:

PlanNet Consulting, LLC
2850 Saturn Street, Suite 100
Brea, California 92821
Voice: (714) 982.5800
http://www.plannet.net

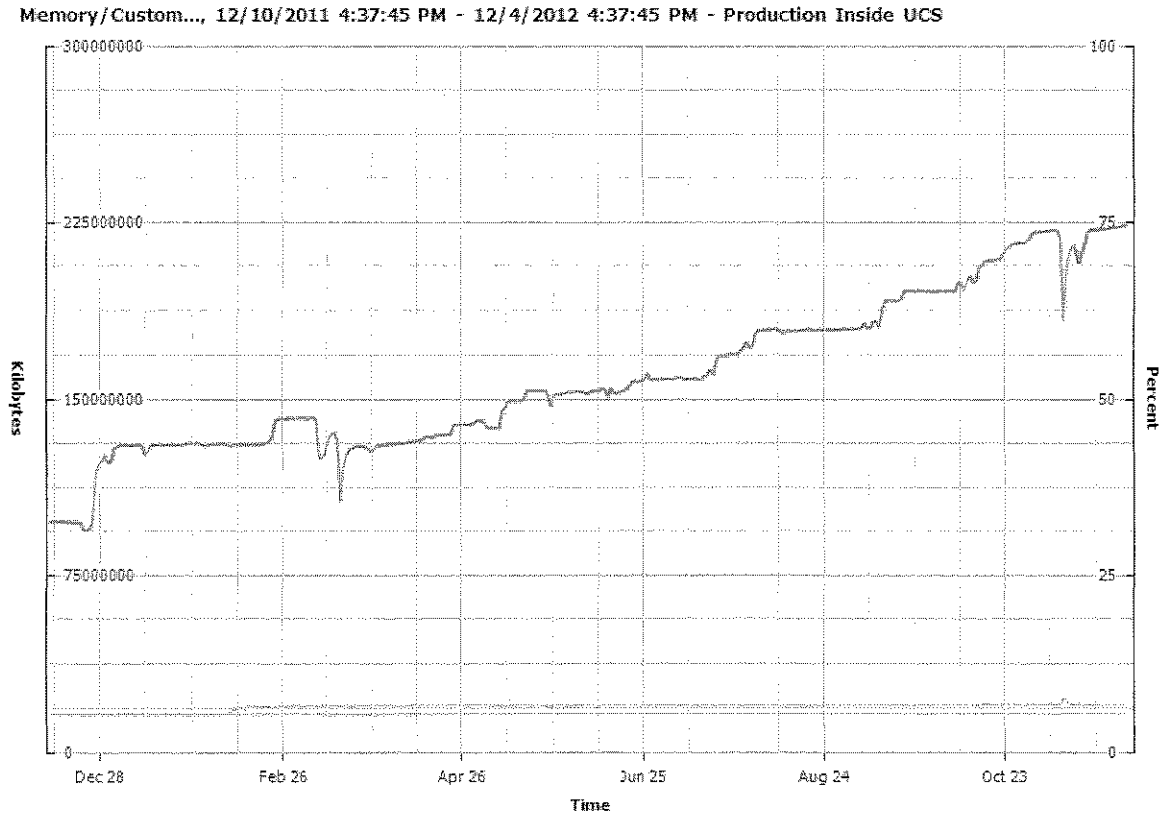
Appendix B.1


Interior WiFi Coverage
FULLERTON COLLEGE
WiFi Coverage Map
North Lemon Street
Berkeley Center
3100
3000
Staff Parking
Staff Parking
Student Parking
North Berkeley Avenue
1600
1830
1826
1822
1800
Student Parking 5
Fullerton High School Property
Staff Parking 3
Student Parking 4
1700
Sherbeck Field
Student Parking Structure
Student Parking 6
910
700
1400
Baseball Field
Softball Field
Staff Parking C East
900
842
844
Fullerton College Dr.
Construction Area
Soccer Field
400 ft
Staff Parking C West
500
800 Library
600
1200
1903-02
1903-04
Staff Parking B-2 East
Sport Court
Fullerton High School
North Lemon Street
1300
300
400
1200
Aquatic Center
1100
100
200 College Center
1000
1956-1960
Staff Parking B
Private Property
Student Parking 7
Staff Parking A
North Berkeley Avenue
East Chapman Avenue
East Chapman Avenue
Parking Structure
Whiting Avenue
2000
Staff Parking E
2100
Wilshire Auditorium
Student & Staff Parking 10
400
W100
W200
W300
Staff Parking W
North Lemon Street
Wilshire Avenue
Network: FC Wifi
200 ft
100 m
N
- Map represents coverage for 802.11g capable devices.
- Coverage varies based upon 802.11(a/b/g/n) capability.
- Users must set their WiFi-enabled device to obtain an IP address via DHCP.
None
Low
Medium
High
Sparse
Moderate
Substantial
Complete

Appendix B.2


FcSanDC: Compellent Enterprise Manager: Storage Center 3066
Management
Replication Recovery
Storage Center View
Storage Center Tasks
Help
Storage Center Manager
Help
Storage Centers
System Summary
IO Usage
Single Tab
Auto-Scale:
IO 5000
KB 150000
Lat 1000
Layout:
IO&KB Same
IO Stats
IO Latency
Most Active Report
7K Latency Report
Latency (ms)
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
01-Jul, 00:00
01-Aug, 00:00
01-Sep, 00:00
01-Oct, 00:00
01-Nov, 00:00
01-Dec, 00:0
Time
Read Latency
Write Latency

Appendix B.3



Performance Chart Legend

Key	Object	Measurement	Rollup	Units
	Production Inside UCS	Balloon	average	Kilobytes
	Production Inside UCS	Consumed	average	Kilobytes
	Production Inside UCS	Usage	average	Percent