

# Network Operations Centers

The Lee College network (LEEnet) is composed of a 10-gigabit backbone from the MDF to the server farm, 1-gigabit backbone network with campus buildings connected via single- and multi-mode fiber to the network operations centers (NOC). The NOC provides Ethernet connectivity between buildings and its associated switching site. The campus LAN connects routers and Palo Alto firewalls to the Internet. Category 5e/6a UTP is installed which supports Ethernet and high-speed data networking to the desktop.

Data communications is provided to over 5,000 users located in student computing laboratories, classrooms, faculty, administrative and staff offices. The network backbone supports Ethernet, TCP/IP protocols.

## Chambers County Community Wireless Network (CCCnet)

Located in East Texas between the Houston and Beaumont metropolitan areas, Chambers County is a large county with limited resources to serve its citizens. The county is composed of 614 square miles of land and 295 square miles of water. For a county this large, the population is small, only 25,028. It has grown from 17 percent to 29 percent of the population since 1990.

A broadband wireless network located in Chambers County provides high speed IP connectivity to the county. The network is the key element upon which to provide immediate results from the TIF grant as well as the component from which all other services and solutions can be provided. The network solution is a combination of Axxcelera Broadband 5 GHz along with Western Mux gear deployed to obtain a high quality, commercial grade network.

Axxcelera Broadband Wireless is the preferred solution provider for high-speed Internet services based on Axxcelera's point-to-multipoint AB-Access fixed broadband wireless platform.

The AB-Access solution consists of both wireless access points (WAPs) and subscriber units (SUs), purpose-built for WAN deployment. Towers were constructed at some locations to insure Line of Sight (LOS). CCCnet will have 10 public access points mostly located in community buildings in Chambers County. The locations contain computers, printers and required software. Most of the locations are community centers used by the neighborhoods for a variety of activities, from neighborhood meetings to family reunions. The others are county libraries located in Winnie, Mont Belvieu and Anahuac. Future plans are to select commercial providers to connect residential and business locations to the wireless network including centralized Technical Help Desk support. The sites were chosen by community surveys and a study of county building availability. The planning committee identified locations in neighborhoods with under-served and/or isolated populations. Several additional opportunities for future growth are being explored which could further optimize the design metrics of the network.

## Cisco Academy Network Classrooms

The Cisco Networking Academy Program is a comprehensive e-learning program, which provides Lee College students with the Internet technology skills essential in

a global economy. The Networking Academy program delivers Web-based content, online assessment, student performance tracking, hands-on-labs, instructor training and support, and preparation for industry standard certifications such as CCNA and CCNP. The Cisco Networking Academy was created for individuals that are seeking entry level positions into the Computer Networking and Design Industry. The program centers on teaching students to design, build, and maintain computer networks. Using Web technologies, the Cisco Networking Academy Program prepares students for the 21st century workplace and serves as a valuable model for successful learning. Students learn how to connect together multiple computers and sites using routers, switches, network monitoring tools and fiber optics.

Cisco Academy students learn how to interconnect computer resources such as: printers, file storage, file sharing, email and interoffice messaging. Students also learn to determine the resources any given company has and design their networking system to meet the resources available, as well as options for expansion. Students learn how to determine the costs of installation and application of networking for any company. Students learn the physical medium for networking, such as wires and interconnections in a state-of-the-art hands-on networking facility. Students learn the actual wiring for all connections within a building.

## **National Science Foundation Fieldbus Classrooms**

Provides regional direction to the technical education needed for networking, instrumentation, and electrical technologies impacted by the advent of fieldbus networks. The Fieldbus Center provides the following services: (1) Designing systems for teaching fieldbus and process control networks, (2) Creating and maintaining an applied research facility and (3) Developing multi-craft curriculum for fieldbus and industrial networking technologies. All certified fieldbus training courses emphasize hands-on design, installation and maintenance instruction in a realistic industrial environment.

## **PeopleSoft Enterprise Administrative Database Support Systems**

Our staff of 2 DBAs creates and maintains the Lee College District Microsoft SQL databases ensuring reliable, efficient, and timely access to database information across the college district. Lee College suite of applications includes PeopleSoft Financials Supply Chain Management 9.2 that includes Asset Management, Budgets, General Ledger, Payables and Purchasing. The PeopleSoft Campus Solutions 9.0 modules include Academic Advising, Benefits, Campus Community, Financial Aid, Human Resources, Payroll for North America, Student Financials, Student Records and Self-Service for Faculty and Students running Microsoft Clustered SQL Servers. We currently support over 40 SQL Server Database Instances.

The Database Servers are configured with Microsoft Windows Server 2012 R2 Enterprise Edition and Microsoft SQL Server installed on a Microsoft Cluster Service. Database Security, confidentiality, integrity and data backups

The college uses SSL (Secure Socket Layers) digital certificates as the industry recommended standard of 128-bit encryption to access PeopleSoft student academic records. In addition, each user on the system has a unique PeopleSoft user ID and password to access student data. Passwords on the Lee College Network Domain and PeopleSoft Enterprise System expire on a regular basis at ninety (90) days with

notification prior to expiration. The performance is achieved through disk mirroring to ensure data reliability through a redundant RAID 0+1 solution from EMC disk subsystem. This solution allows us to maintain better fault tolerance against hard drive failures. Database backups are redundant through tape media and external storage hardware. Database backups are done nightly, but some critical systems (i.e. Student Information System, HRMS, Payroll and Financials) get three full database backups daily, first one done at 5:00 AM, the second one at 12:00 Noon and the third one at 9:00 PM. In addition, the backup recovery procedures are for weekly differentials and weekends for full tape backups; we also have these tape backups in place off-site at the SJ Mall locations and Huntsville administrative office locations for disaster recovery.

## **Science Building Classrooms**

The Science Building consists of several wireless and wired networks. The Computer Science Lab consists of 24 locked-down Macintosh computers that are hardwired to printers in the lab as well as the Internet. The Macintosh computers in the microbiology lab and both general biology labs are also hardwired as requested by the instructors. The three Anatomy and Physiology Labs, the two Chemistry Labs, Environmental Lab, and the two Physics Labs consist of laboratory Macintosh computers that are on a secured wireless network and connected to both printers and the Internet. The wireless and wired networks are also extended to the lecture rooms in the building. Also requested by the instructors, some of the lecture rooms have a ceiling suspended computer projection system with audio and video accessibility.

## **Blackboard Course Delivery System**

Lee College selected Blackboard in 1999 as one of the best systems to support a full range of teaching and learning styles, while making the most intelligent and efficient use of the college's intellectual and technical resources. Blackboard provides students the flexibility to learn when and where they want. The number of online course offerings in the Distance Education Program has increased dramatically, due to the ease with which instructors can customize Blackboard to fit their own needs.

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