Network design

Design

In order to connect the computers and network devices to each other, we will be using ACTA CITE cables. ACTA cables provide faster speeds than ACTA or Catch cables and support distances up to 100 meters. The only exceptions will be the Admissions office and classroom #6 (above Admissions office), which are right outside the range of ACTA cable maximum lengths. For the classroom #6 and the admissions office we will use multi-mode fiber optic cables with an SC-type connector that will connect to a Starters 1000 Mbps Gigabit Multi Mode Fiber Ethernet converter.

The network will include a Cisco Small Business 200 Series Gigabit Switches in each of the instructional computer lab servers (six total). The switch contains 24 ports, 2 uplink ports, and supports speeds of 10/100/mobcaps. It also provides support for PLAN, which can be used to group instructors and/or staff together. For the student computer lab additional ports are required and therefore we will use a Cisco Catalyst 2960-48TH switch. The switch contains 48 ports and supports the same speeds of the switches that will be installed in the instructional computer lab servers.

One of the benefits of the Cisco catalyst is the network security through different methods such as Calls (access control lists) and admission controls based on users, ports, and MAC addresses. Lastly, the server on the first floor will have a Cisco Nexus TOQUE switch that can operate at speeds of Mbps, 1 Gaps, and gasps. The Cisco Nexus switch will be connected to the other servers and will support the connectivity for our fiber optic connection to the Admissions office and classroom #6. All of the computers connected to the switches will be using ACTA Ethernet cables.

The only wireless access point will be located in the student lobby on the second floor. The wireless service will be provided by a Cisco Orient 3700 Series Access Point that is connected to the server in the Student Computer Lab. The device supports the new IEEE 802. 1 lack standard which provides speed rates of up to 1. 3 Gaps. The device will be setup to use WPAD (Wife Protected Access) and AES (Advanced Encryption Standards) for security purposes. In the main server on the first floor we will install a Cisco IEEE Integrated Services Router.

The router provides many security features such as zone based really, 'AS, VPN encryption, etc. Many of the features will assist in protecting the network from intruders and/or attacks. The servers installed will be Leno Thinkers TESTS running Windows Server 2012 RE SO. The hardware includes standard interfaces and devices such as HAD interface SAT and DVD-R. Windows Server 2012 RE maintains the same features of Windows Server 2008 that will assist the administrator in managing the network in the office. In the new building the administrator will configure and manage 802. X Authenticated Wireless Access for the wireless access point in the student lobby. Also, they administrators will manage the Active Directory and enable users to sign on from devices associated with the University Active Directory. The Group Policy configured. Windows Server provides many other services such as DDCD and DNS servers that will also need to be configured and managed in the network at the new Delphi location. The workstations provided for the students, staff, and instructors will be Dell optimize 462-3585 Desktop PC with an Intel core 15 3. GHZ processor, BIB DRY STREAM, and a 1 TAB HAD.

It will come installed with Windows 7 Pro and Microsoft Office 365 for students, instructors, and staff. Also, there will be 9 printers installed which will be installed as follows: each computer lab and the student computer lab will have one printer; the library will have one printer; and the admissions office will have one printer. Instructors will be given access to use printers at all locations. The printers will be Brother MFC Series All-Len-one Laser printers that will be connected thru Ethernet to the network servers but will have the wireless print feature disabled due to security concerns.