# MIS 4123 - Design 2

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## Current System

The current system in place is one which was designed by our group in the first design assignment. This system works on a 1000Base-SX backbone that provides a Gigabit connection to the users. The fiber-optics backbone connects the current routers and switches. Workstations, printers and servers are connected to switches using an Ethernet connection. The required servers and POP connection for this project are already in place so they will not be included in this budget. See Design 1 for details.

## Recommendations

My recommendation to implement WLAN technology according to my budget plan is to install four wireless routers (one in each building. Each of these routers will connect to the current network routers in place. There will be sixteen wireless access points in total (four in each building). Each access point will be placed in the center of the four quadrants of each building. These four access points will be connected to the router for that particular building. The New Admin building will be connected to the network via a network bridge and high powered microwave antennas. The network in the New Admin building will be completely wireless.

## Explanation / Justification

The reason for choosing this product selection is the strong backbone that is provided for us to build on. With the high bandwidth that is provided to us by the 1000Base-SX backbone, it has allowed us to easily design and implement this addition of a wireless LAN system. I have chosen to use a bridge and a high-powered microwave to connect the new building. This was chosen due to the clear line of sight that is provided to us between the New Admin building and the Old Admin building. It was also a more cost effective option than running a fiber optics cable to the new building. To run a fiber optics cable that distance and over a public road service would not only be costly but it would require the use of a subcontractor. This would increase the scope of the project. Security will be provided by the use of WPA-PSK2. The use of this technology will provide industry standard wireless security.

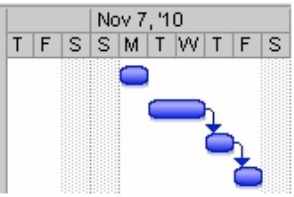
I have designed the Physical Layer of the OSI model to be one that uses Fiber-Optics and Ethernet to connect the routers, access points and switches to the ISP. The Data Link layer will be provided by IEEE 802.11 technology. This is an industry standard Wi-fi technology that will provide this company with the level of performance they require.  The Network layer performs routing functions that are required by the transportation layer. It will use the Sub-network access such as x.25 to provide connectionless transfer of data. This covers the Media Layers of the OSI Model. This design will not make any changes to the Host Layers, therefore I will not address these layers of the OSI model in this design.

## Budget

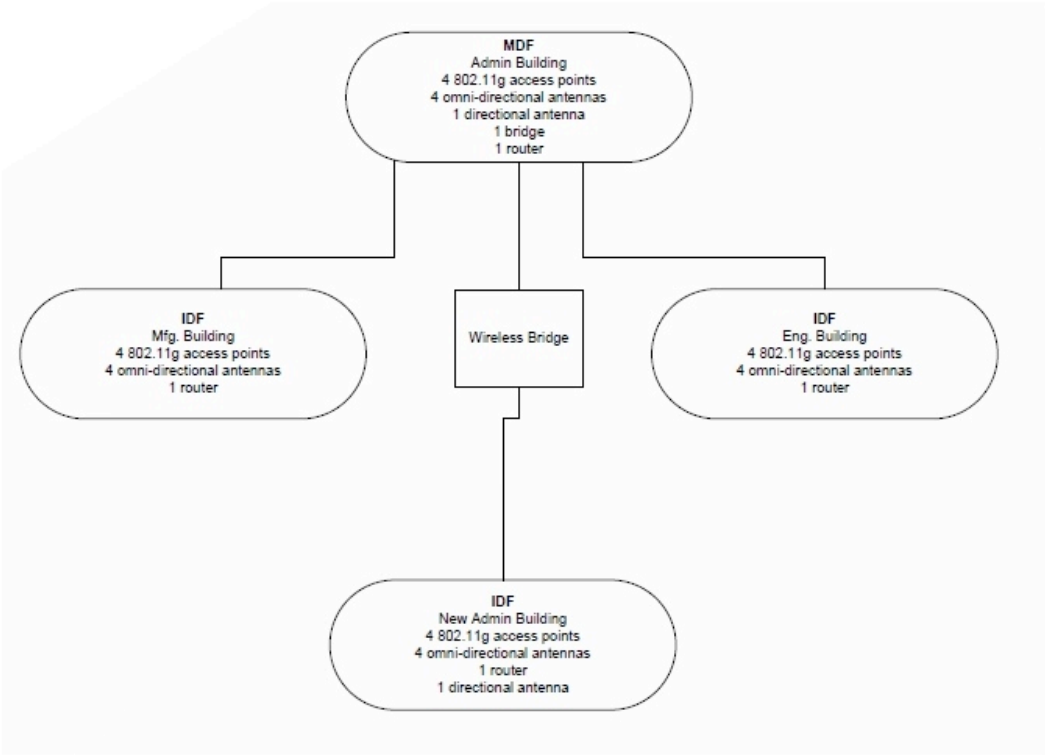
| Product | Qty | Price | Sub Total | URL |
|---|---|---|---|---|
| Wireless Router Nortel BSG12TW | 4 | $3,272.63 | $13,090.52 | http://www.memory4less.com/m4l_itemdetail.aspx?rid=fd_10&itemid=1441270373 |
| Access PointCISCO AIR-LAP1242G-A-K9 | 16 | 426.99 | 6831.84 | http://www.newegg.com/Product/Product.aspx?Item=N82E16833120234&nm_mc=OTC-Froogle&cm_mmc=OTC-Froogle-_-Network+-+Wireless+AP/Bridge-_-Cisco+Systems++Inc.-_-33120234 |
| Wireless Bridge Avalan AW5800xTP-PAIR | 1 | 1,943.50 | 1943.5 | http://www.a1securitycameras.com/Avalan-Wireless-Outdoor-Ethernet-Bridge-AW5800xTP-PAIR.html |
| HAWKING Wireless Antenna | 16 | 81.99 | 1311.84 | http://www.newegg.com/Product/Product.aspx?Item=N82E16833164135&nm_mc=OTC-Froogle&cm_mmc=OTC-Froogle-_-Accessories+-+Wireless-_-Hawking+Technology-_-33164135 |
| Monster Cable Cat. 5 UTP | 1 | 96.37 | 96.37 | http://www.buy.com/prod/monster-cable-cat-5-utp-bulk-cable-1000ft-monster-cable-cat-5-utp-bulk/q/loc/111/10391493.html |
| TRIPP LITE Cat5e Connector - 50 Pk | 1 | 15.99 | 15.99 | http://www.newegg.com/Product/Product.aspx?Item=N82E16812998079&nm_mc=OTC-Froogle&cm_mmc=OTC-Froogle-_-Accessories+-+Network+(Panels+-+Keystone+Jacks)-_-Tripp+Lite-_-12998079 |
| **Total** | | | **$23,290.06** | |
| Labor - 3 techs @ 40hrs each, $80/hr | 120 | 80 | 9600 | |
| **Grand Total** | | | **$32,890.06** | |

## Time Line

| | Task Name | Duration | Start | Finish | Predecessors |
|---|---|---|---|---|---|
| 1 | Pulling cable | 1 day | Mon 11/8/10 | Mon 11/8/10 | |
| 2 | Installation of Hardware | 2 days | Tue 11/9/10 | Wed 11/10/10 | |
| 3 | Set up Software | 1 day | Thu 11/11/10 | Thu 11/11/10 | 2 |
| 4 | Test system | 1 day? | Fri 11/12/10 | Fri 11/12/10 | 3 |



# Logical Design



# Physical Design – New Admin Building