

Create a design for a wireless campus area network



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Full Paper Introduction Internet is the fastest rising technology and has produced endless opportunities. Consequently, at the same time serving enterprises and government organizations to navigate through the dominant and greatest growing world of information exchange is a challenge. Besides, assimilation of computer networks is valuable for the organization management. The city government offices for the City of Joshua Texas require a wireless computer network that will support the current requirements as well as abide with the future trends of emerging technologies. Lot of learning institutes has implemented a Campus area network. The campus area network connects to two or more local area networks of any two remote offices within limited geographical locations. The connectivity involves synchronization of data and applications such as intranet (Campus area network. 2007). The network devices and computing equipments have to be reliable and extendable, if the faculty staff increases. The network design for the CAM requires an expandable and efficient network that will fulfill the requirements of speed, distance and cost. Radio Frequency Solution The radio frequency solution is quite achievable in the current scenario. As the city government offices require wireless connectivity ' access points' are of major concern. ' Access points' are the deployed to connect devices equipped with wireless technology. ' Access points' transmits and receive radio signals adjacent to a network hub over a limited distance. However, distance varies from different model types and the technology adopted. An IEEE 802. 11n wireless network standard is recommended for connecting all the city government offices. 802. 11n supports transmission speeds up to 150 Mbps and beyond. 802. 11n works on 2. 4 GHz and 5 GHz frequency bands (802. 11n definition from PC <https://assignbuster.com/create-a-design-for-a-wireless-campus-area-network/>

magazine encyclopedia). Cisco is recommended for the Wi-Fi solution. Three major devices that are associated for implementing the wireless fidelity solution are: Cisco 4400 wireless LAN controller Cisco Aironet 1500 Series Access points Cisco 3300 Series Mobility Services Engine Aironet 1500 access points are mounted on the most adjacent spot of the other access point on the buildings or roofs. The hardware cost is around 2000 \$ for deploying 4 access points. However, there is no limitation of creating a line of sight as shown in Fig 1. 1. Radio Frequency Network Design Free Space Optics Network The other technology that can be deployed for achieving objective is a FSO (Free Space Optics) network. The hardware selection for FSO network is “ MRV TS800 /155” transceiver for supporting medium range connections. The “ MRV TS800 / 155” supports data rates up to 1 to 155 Mbps and can connect with the other transceiver up to around 600 meters (MRV laser links - free space optic laser links up to 10Gbps - FSO point to point laser links MRV TereScope). However, the most significant aspect for deploying FSO is the direction and height of FSO transceivers. Moreover, the transceivers must be installed adjacent to the other transceiver and in the line of sight for establishing connectivity. Cost for each transceiver varies by vendor name and model and is below 5000 \$ for each transceiver. Fig 1. 2 shows the placement and direction of FSO transceivers sending and receiving data on a 60 to 100 GHz frequency range. Free Space Optics Network Design Conclusion As compared to 802. 11n Wi-Fi solution, FSO networks are more efficient in terms of security, deployment and support for high data transfer rates. Although, the cost is high for FSO transceivers, there are some fundamentals that must be met for instance; the FSO transceivers must maintain a constant line of sight with the other transceiver

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at continuous basis. Furthermore, the communication is conducted in the form of red laser that can only be disrupted by weather, interference, trees, etc. On the other hand, 802. 11n broadcast signals everywhere in its limited spectrum. Moreover, as this technology is older, there are so many techniques available for breaching the network. Similarly, distance is also limited as compared to FSO networks. References Campus area network. (2007). Network Dictionary, , 85-85. 802. 11n definition from PC magazine encyclopedia Retrieved 1/30/2011, 2011, from http://www.pcmag.com/encyclopedia_term/0,2542,t=80211n&i=37213,00.asp MRV laser links - free space optic laser links up to 10Gbps - FSO point to point laser links MRV TereScope Retrieved 1/30/2011, 2011, from <http://www.digitalairwireless.com/mrv-terescope-fso.asp>