Wireless area network

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WIRELESS AREA NETWORK by Haider Cheema Academia Research

INTRODUCTION Networking is the linking of computing devices together. Networks are defined by the area it covers. For a typical small company Local Area Network (LAN) is employed, whereas Wide Area Network (WAN) is used across cities or even across the continents. To network a company of 100 computers in close proximity, LAN is the best solution for sharing of data. It is defined as, " Network of personal computers in a small area (as an office) for sharing resources (as a printer) or exchanging data" (Merriam-Webster, 2011). The computers in a network can be connected by wires or much conveniently by wireless networking. Wireless network for a company of 100 employees for purpose of data sharing and printing is discussed in the paper.

2. BENEFITS OF WIRELESS AREA NETWROKING

In a company any employee can get connected with any other computer on the network to access data collectively. Printers can be shared and data sharing becomes extremely convenient. Hardware can be shared remotely without physical connection. Applications can be used for conferencing, messaging, screen sharing and file transfers. Besides these advantages of networking, wireless networks give mobility, flexibility, range and low equipment cost over conventional wired networks.

3. DOWNSIDES OF WIRELESS NETWORKING

The main downside of wireless networking includes limited or slow data transfer rates because of less bandwidth available as compared to wired network. Furthermore, security threats are more. Security features have evolved over time, making intrusion difficult.

4. TYPES OF WIRELESS NETWORKS

There are two types of networks. Server based or infrastructure and peer to peer. Server based networks utilize central servers. These servers store data and provide to clients (connected computers on network) on request (Mitchell, 2011). Peer to peer networks have no dedicated server, and computers can act as servers and clients (Allen, 2002). Server based networks offer more security and reliability of data as it is stored centrally and is typically used for large scale corporations. Peer to peer networks are more flexible and convenient for data sharing between computers and to incorporate flexible user base. Therefore, for the company with 100 computers a peer to peer network supported by infrastructure based wireless network is most suitable.

5. PROTOCOLS

Protocols are the standards used to operate a network. Most commonly used protocols for wireless network are 802. 11a/b/g and n. 802. 11n is suitable for the company as it offers greater range, increased bandwidth of over 150 Mbps, improved security and can even support voice calls (DeBeasi, 2009). For security, protocols include encryption and even hopping. Common security protocols in use today include WEP, WPA, WPA2 and AES. AES offer the strongest security protocol with 256 bit encryption. But, this encryption can affect the performance of the network as the bandwidth is already limited. Therefore, WPA2 having 128 bit encryption is much more suitable for the company network. For file sharing, TCP and IP4 can be used as the network proposed is a combination of infrastructure and peer to peer networks. Access point (AP) can be employed with infrastructure to allot IPs

and to manage the traffic. To extend the range of network, APs must be used to relay data.

6. TOPOLOGY

Topology refers to the layout of computers connected. Most common types used for wireless networks are star, line and mesh. The network proposed is for 100 employees; therefore the network has to be extended by using APs as repeaters or relay devices. The topology for this case must be star, supported by APs as repeaters and to connect all clients in smaller star infrastructures to cover the range.

7. HARDWARE

To create this network, APs are needed to connect the clients. For better performance the clients must be of the same wireless standard proposed i. e 802. 11n. Printers can be incorporated wirelessly, if they support wireless network connection. If not, they can be linked with wire connection to a PC, preferably a central PC connected by the AP.

8. CONCLUSION

Wireless networking can improve the efficiency of any company by a margin. Employees can share data and hardware can be used much more efficiently and collectively. The network provides mobility and flexibility as compared to wired networks. Wireless networking is the future and new standards keep evolving to take it to the next level of performance.

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