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* **Chapter 6: pg 174 - Question # 7 (was page#181 in 12th edition): How can a network design tool help in network design?**

Network modeling and design tools can perform a number of functions to help in the technology design process. With most tools, the first step is to enter a diagram or model of the existing network or proposed network design. Some modeling tools require the user to create the network components by hand, placing each server, client computer, and circuit on the diagram and defining what each is.

* **Chapter 6: pg 174 - Question # 13 (was page#181 in 12th edition): What issues are important to consider in explaining a network design to senior management?**

One of the main problems in network design is obtaining the support of senior management. To management, the network is simply a cost center, something on which the organization is spending a lot of money with little apparent change. The network keeps on running just as it did the year before.

The key to gaining the acceptance of senior management lies in speaking management’s language. It is pointless to talk about upgrades from 100 Mbps to 1 Gbps on the backbone because this terminology is meaningless from a business perspective. A more compelling argument is to discuss the growth in network use.

* **Chapter 7: pg 206 - Question # 4 (was page#213 in 12th edition): Describe the basic components of a wireless LAN.**

**Wireless LANs (WLANs)** use radio transmissions to send data between the NIC

and the access point (AP). Most countries (but not all) permit WLANs to operate in two frequency ranges: the 2.4 and 5 GHz range. These same frequency ranges can be used by cordless phones and baby monitors, which means that your WLAN and your cordless phone may interfere with each other. Under ideal conditions, the radio transmitters in the NICs and APs can transmit 100–150 meters (300–450 feet). In practice, the range is much shorter as walls absorb the radio waves. The other problem is that as the distance from the AP increases, the maximum speed drops,

often very dramatically. When we design a WLAN, it is important to ensure that the APs don’t interfere with each other. If all APs transmitted on the same frequency, the transmissions of one AP would interfere with another AP. Therefore, each AP is set to transmit on a different **channel**, very much like the different channels on your TV. Each channel uses a different part of the 2.4 or 5 GHz frequency range so that there is no interference among the different channels. When a computer first starts

using the WLAN, its NIC searches all available channels within the appropriate frequency range and then picks the channel that has the strongest signal.

* **Chapter 7: pg 207 - Question # 13 (was page#213 in 12th edition): How do Ethernet switches know where to send the frames they receive? Describe how switches gather and use this knowledge.**

A wireless **access point (AP)** is a radio transceiver that plays the same role as a hub or switch in wired Ethernet LANs. It enables the computers near it to communicate with each other, and it also connects them into wired LANs, typically using 100Base-T or 1000Base-T. All NICs in the WLAN transmit their frames to the AP, and then the AP retransmits the frames over the wireless network or over the wired network to their destination. Therefore, if a frame has to be transmitted from one wireless computer to another, it is transmitted twice, once from the sender to the AP and then from the AP to the destination. At first glance, this may seem a bit strange because it doubles the number of transmissions in the WLAN. However, very few frames are ever sent from client computer to client computer in aWLAN. Most frames are exchanged between client computers and a server of some kind. Therefore, a server should never be placed on a WLAN because client computers cannot reach it directly but have to communicate with it via the AP.

Even if they are intended to serve clients on a WLAN, they should always be placed on the wired portion of the LAN.

* **REFERENCES:**

Business Data Communications and Networking (13th Edition) [Fitzgerald, Dennis, Durcikova]

* **ASSIGNMENT GRADING RUBRIC:**

**\*\*\* DO NOT REMOVE BELOW GRADING RUBRIC FROM YOUR SUBMISSION \*\*\***

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|  | **Grade** | **Qualities Demonstrated by the Assignment Submission** | **Grade Assigned** |
| **Content (70%)**  **Measures the quality of the content in the assignment** | A+ 🡺 100 | The content demonstrates exceptional understanding of all relevant subject matter and its inter-relationships. All major relevant issues are thoroughly covered, and all content is very focused and on-topic. There is no known way to improve the content, and there are absolutely no technical or coverage errors present. |  |
| A 🡺 96 | The content demonstrates exceptional understanding of all relevant subject matter and its inter-relationships. All major relevant issues are thoroughly covered, and all content is very focused and on-topic. At most one insignificant technical or coverage error may be present |
| A- 🡺 92 | The content demonstrates deep understanding of all relevant subject matter and its inter-relationships. All major relevant issues are covered, and all content is on-topic. |
| B+ 🡺 88 | The content demonstrates understanding of all relevant subject matter and its inter-relationships. Almost all major relevant issues are covered, and the content is at least reasonably on-topic. |
| B 🡺 85 | The content demonstrates understanding of most relevant subject matter and its inter-relationships. Almost all major relevant issues are covered, and all content is at least reasonably on-topic. |
| B- 🡺 82 | The content demonstrates moderate understanding of much relevant subject matter and its inter-relationships. There is reasonable coverage of major relevant issues, and the content is at least reasonably on-topic. |
| C+ 🡺 78 | The content demonstrates some understanding of relevant subject matter and its inter-relationships. Some major relevant issues are covered, and at least some content is on-topic. |
| C 🡺 75 | The content demonstrates understanding of a small portion of the relevant subject matter and its inter-relationships. Some major relevant issues are covered, and at least a small portion of the content is on-topic. |
| C- 🡺 72 | The content demonstrates little understanding of and insight into the relevant subject matter and its inter-relationships. A small portion of the major relevant issues are covered. The focus of the content may be off topic or on insubstantial or secondary topics |
| D 🡺 67 | The content demonstrates almost no understanding of or insight into the relevant subject matter and its inter-relationships. Almost none of the major relevant issues are covered, and the content may be almost entirely off-topic. |
| F 🡺 0 | The content demonstrates no understanding of or insight into the relevant subject matter and its inter-relationships. No major relevant issues are covered, and the content is entirely off-topic. |
| **Exposition (30%)**  **Measures how well the content is expressed** | A+ 🡺 100 | The presentation of all ideas and designs is exceptionally clear and persuasive; the entire submission is exceptionally organized. There is no known way to improve the clarity or organization of the submission. |  |
| A 🡺 96 | The presentation of all ideas and designs is exceptionally clear and persuasive; the entire submission is exceptionally organized. There may be at most one insignificant way to improve the clarity or organization of the submission. |
| A- 🡺 92 | The presentation of all ideas and designs is very clear and persuasive; the entire submission is very organized. |
| B+ 🡺 88 | The presentation of all ideas and designs is clear and persuasive; the entire submission is organized. |
| B 🡺 85 | The presentation of most ideas and designs is clear and persuasive; most of the submission is organized. |
| B- 🡺 82 | The presentation of most ideas and designs is generally clear; most of the submission is reasonably organized. |
| C+ 🡺 78 | Some parts of the submission are hard to understand; some parts are disorganized. |
| C 🡺 75 | About half of the submission is hard to understand; about half is disorganized. |
| C- 🡺 72 | Most parts of the submission are hard to understand; most parts are disorganized. |
| D 🡺 67 | Almost all of the submission is hard to understand and disorganized. |
| F 🡺 0 | The entire submission is hard to understand and disorganized. |
| **OVERALL GRADE:** | | |  |