**Chapter 8 Problems & Exercises Tips**

**1)** ***Carrier Network Maps***. Zayo (<https://www.zayo.com/>) is a carrier with an international customer base that has created extensive fiber optic WANs in North America, the EU, and elsewhere that are interconnected by subsea cables.

Explore the Zayo website and its network maps (<https://www.zayo.com/network/>). Use screen captures or snips of Zayo’s global core fiber, core wavelength, and dark fiber networks and the statistics associated with each network.

Include your screen captures/snips in a 3- to 5-page Word document that summarizes what you have learned about Zayo’s carrier network through your exploration of the company’s website. Cite the website and any other articles you find about Zayo as sources in a references section on the last page of your document.

**Tips for Success**: This exercise contributes to better understanding, and awareness and understanding of carrier networks and services. Be sure to include screenshots or snips to Zayo’s global core fiber, core wavelength, and dark fiber networks. Ideally, your screenshots or snips will also include each network’s statistics.

Your instructor may use a grading rubric like the following to evaluate your work.

|  |  |
| --- | --- |
| **Grading Dimension** | **Points** |
| Submitted on time | 10 |
| Includes screenshot of global network and statistics | 15 |
| Includes screenshot of core wavelength network with statistics | 15 |
| Includes screenshot of dark fiber network with statistics | 15 |
| Paper is at least three pages in length | 5 |
| Paper includes summary of Zayo’s carrier network(s) | 25 |
| Document is free of spelling, grammatical, and other shortcomings | 10 |
| Paper includes references section with citation for website and other sources | 5 |
| Total | 100 |

**2)** **Georgia Southern University Dedicated Circuit Options**. Georgia Southern University is considering investing in a backup dedicated circuit network to interconnect its three campuses (Statesboro, Savannah, and Hinesville). The network will have either a ring, hub-and-spoke, or full mesh topology. Although the three campuses differ in the sizes of their student populations, the IT Services department at the university has determined that a minimum connection speed of 50 Mbps is needed on the links connecting its campuses.

Use Visio or another network diagramming tool to create logical diagrams for each alternative topology. *Note*: The Statesboro campus would be the hub in the hub-and-spoke topology.

Identify feasible T-carrier and SONET dedicated circuit options for the university’s dedicated circuit WAN and use information from the chapter to provide a cost estimate for the total monthly costs of each alternative topology.

Document your work in a 3- to 5-page Word document that concludes with a dedicated circuit network topology recommendation, identifies the type of circuit that should be used, and estimates the monthly cost of the network.

**Tips for Success**: This exercise enables you to apply what you have learned in Chapter 8 about dedicated circuits and dedicated circuit network topologies to a case scenario. Sections 8.1 and 8.3 of the textbook and Figures 8-5a, 8-5b, and 8-7a and Tables 8-3 and 8-4 are especially relevant. The minimum connection speed requirement rules out T- and OC- carrier options below 50 Mbps identified in Tables 8-3 and 8-4.

Your instructor may use a grading rubric like the following to evaluate your work.

|  |  |
| --- | --- |
| **Grading Dimension** | **Points** |
| Submitted on time | 10 |
| Includes diagram of a ring topology | 10 |
| Includes diagram of a hub-and-spoke topology | 10 |
| Includes diagram of a full-mesh topology | 10 |
| Identifies feasible T-carrier and OC services using information in chapter tables | 15 |
| Paper is at least three pages in length | 5 |
| Paper includes topology recommendation | 10 |
| Paper includes cost estimates for each topology using information from chapter or other sources | 20 |
| Document is free of spelling, grammatical, and other shortcomings | 10 |
| Total | 100 |

**3)** **Georgia Southern University PSN Options**. Georgia Southern University has decided to investigate using a packet-switched service for backup connections among its three campuses (Statesboro, Savannah, and Hinesville). Although the three campuses differ in the sizes of their student populations, GSU's IT Services has determined that a minimum connection speed of 50 Mbps is needed at each location.

Use Visio or another network diagramming tool to create a logical diagram of a PSN connecting the three campuses. Be sure to include access links and PADs in the network diagram.

Because Ethernet is used at all three campuses, IT Services has decided to limit its packet-switching service options to Carrier Ethernet. Identify Ethernet services providers that serve southeast Georgia and their typical monthly charges for services with data rates of 50 Mbps or higher.

Document your work in a 3- to 5-page Word document that concludes with service provider recommendations and estimates for the monthly cost of the network.

**Tips for Success**: This exercise enables you to apply what you have learned in Chapter 8 about PSNs to a case scenario. Sections 8.4 and 8.4.2 and Figures 8-17 and 8-18 are especially relevant. Be sure to include a diagram of the PSN in your document the clearly identifies the three campus locations and includes a PAD and access link at each location. Give yourself sufficient time to research Carrier Ethernet service providers in southeast Georgia and their costs for 50+ Mbps connections.

Your instructor may use a grading rubric like the following to evaluate your work.

|  |  |
| --- | --- |
| **Grading Dimension** | **Points** |
| Submitted on time | 10 |
| Includes fully labeled PSN diagram with access links and PADs | 20 |
| Paper is at least three pages in length | 5 |
| Paper identifies Carrier Ethernet providers and their monthly costs for 50 Mbps+ connections | 45 |
| Document is free of spelling, grammatical, and other shortcomings | 10 |
| Paper includes citations for Carrier Ethernet providers and cost estimates | 10 |
| Total | 100 |

**4)** Do some research on business adoption of SD-WANs. Look for articles that focus on the rate of SD-WAN adoption, the types of businesses that are adopting SD-WANs, and the business factors that are driving adoption decisions. Summarize your findings in a 1000- to 1500-word document or five- to eight-slide PowerPoint presentation. Your paper or presentation should include tables or charts that visually summarize SD-WAN adoption rates and significant business drivers. It should also include a References page or slide that includes the titles and URLs for at least four sources. The source that you consider to be most informative should be highlighted.

**Tips for Success**: This exercise is designed to help you learn more about SD-WANs and why they are adopted by businesses. Look for four or more substantive online articles that focus on SD-WAN adoption by businesses. At least one of these should identify adoption rates/trends. Be sure that your document or presentation includes tables and charts for adoption rates and business drivers of adoption decisions. Make sure that the articles included in your references list conform to MLA or APA reference formats. Be sure to proofread your document or presentation to ensure that it is professionally formatted and is free spelling and grammatical errors.

Your instructor may use a grading rubric like the following to evaluate your work.

|  |  |
| --- | --- |
| **Grading Dimension** | **Points** |
| Submitted on time | 10 |
| Paper is at least 1000 words or presentation has at least five slides | 5 |
| Paper or presentation identifies types of businesses adopting SD-WANs | 15 |
| Paper or presentation identifies SD-WAN adoption rates | 15 |
| Paper or presentation identifies SD-WAN adoption drivers | 20 |
| Paper or presentation includes relevant tables or charts | 15 |
| Document is free of spelling, grammatical, and other shortcomings | 10 |
| Paper or Presentation includes references section with at least three sources and their URLs | 10 |
| Total | 100 |