IS 435 Final Team Project
: Network Design

Problem Scenario
Matadors Shipping Inc. has recently contacted your data networking consulting firm for a design project. Matadors Shipping operates a large fleet of trucks that deliver shipments for the wholesaler/retailer industry, such as grocery stores, department stores, and home improvement stores.

Figure 1 is Matadors Shipping's primary and secondary building layout. The one-story main building is more than 30 years old, with outside dimensions of **350 feet × 150 feet (you can change it)**. The high-ceiling, one-story secondary building is about ten years old, with outside dimensions of **100 feet (you can change it)** on all sides.

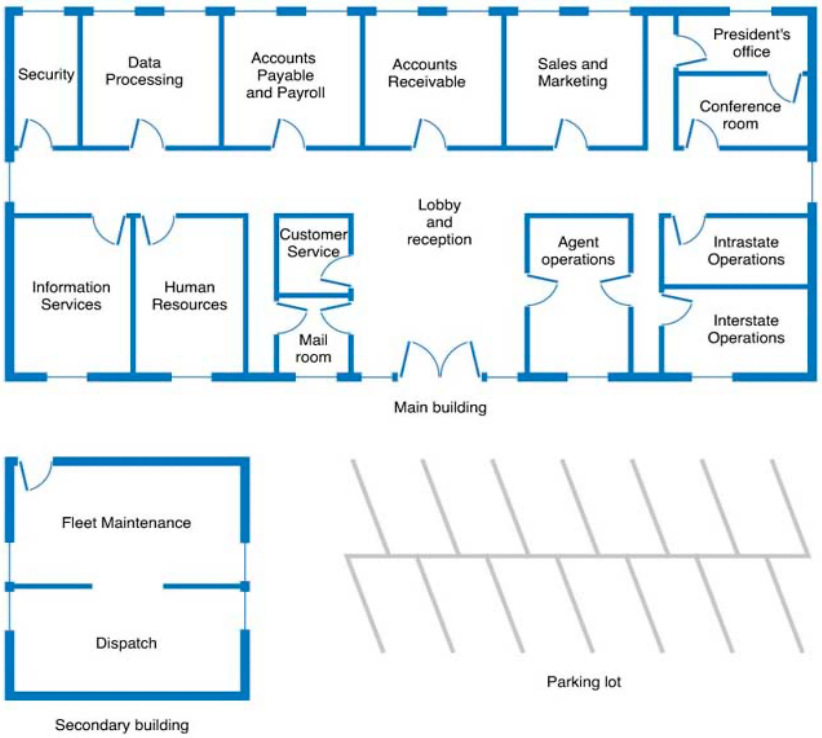

Figure 1: Facility Map of the Matadors Shipping Headquarters (not to scale)

Matadors Shipping has a mix of shared 10BaseT (using hubs) and switched 100BaseT LANs connected by a series of workgroup routers **(you may want to use new cables)**. Specifically, there is a LAN in each department office: Data Processing, Accounts Payable and Payroll, Accounts Receivable, Sales and Marketing, Information Services, Human Resources, Agent Operations, Intrastate Operations, and Interstate Operations. The Information Services Department maintains a corporate Web server and a mail server, while the following departments maintain their own database servers: Accounts Payable and Payroll, Accounts Receivable, Sales and Marketing, and Human Resources. Each LAN has its own networked printers. Fleet Maintenance and Dispatch operate several standalone computers in the secondary building.

Figure 2 shows the organization chart of Matadors Shipping. The Information Services Department includes all personnel from Data Processing, and Customer Service is under Marketing/Sales.

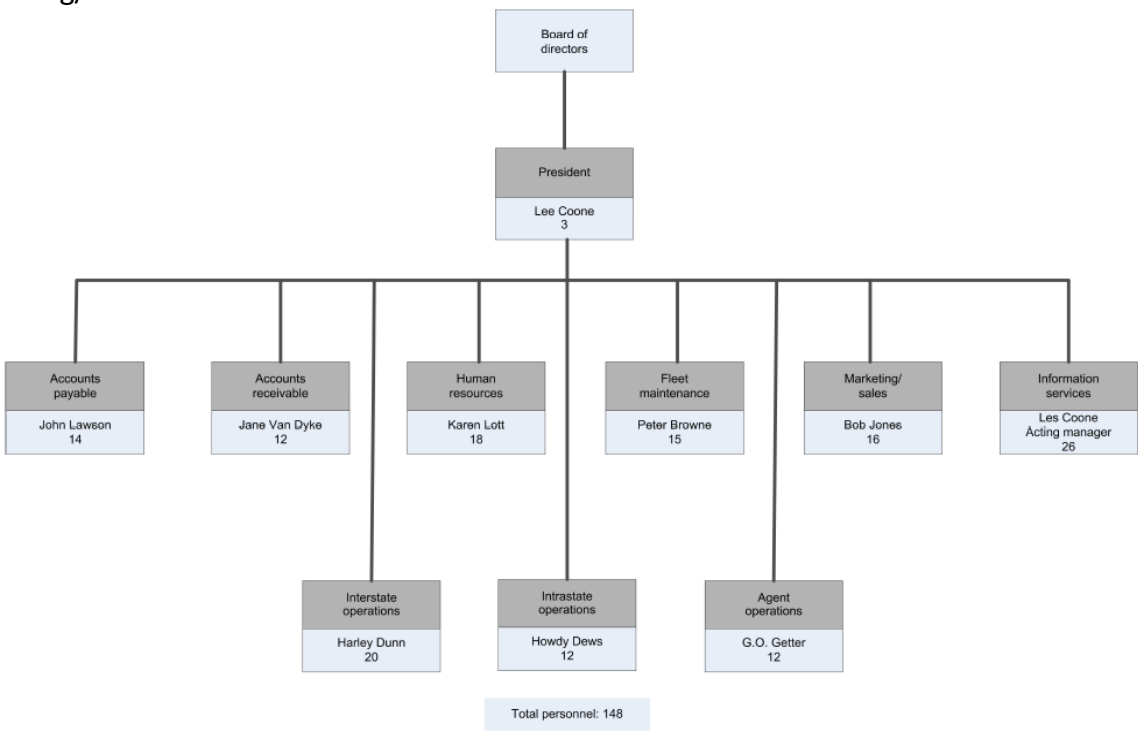

Figure 2: Matadors Shipping Organization Chart

Requirements

The rapid growth of Matadors Shipping's business volume has put considerable strain on its existing network resources. Consequently, management has authorized investments in faster corporate networking infrastructure. Given the latest advances in networking technologies, management would like you to **propose a design solution after considering alternative standards and products available**. Moreover, management wants to see the President's Office, Customer Service, and Fleet Maintenance and Dispatch in the secondary building networked and interconnected into the corporate backbone **(3-D design)**.

Design a new enterprise network for them, including the overall architecture and the specific backbone and LAN technologies. As with any real-life problem with ambiguities or unresolved considerations, **you must make assumptions**. Be sure to provide adequate justification for any recommendations you make and consider your client's future growth.

Project Deliverables (submit it on Canvas by 12/04/2022)

Your deliverables consist mainly of a project report that conforms to the following content and formatting guidelines:

1. **A cover sheet** includes the project title, course, date, instructor's name, team name, and team members' names (you may create specific job titles for each team member that reflects individual responsibilities).

2. A **one-page Executive Summary**. It usually uses one paragraph to summarize the **problems**. It then uses several sections to outline your proposed **technological solutions** plus your estimated **budget**. You need to provide enough detail about your solution, so the reader will have a general idea of your design without reading the report correctly.

3. A **table of contents** showing the organization of your report.

4. **Key assumptions** (facts not provided in the case but assumed to be confirmed)

5. **Project scope**, which states, in broad strokes, the project requirements and the tasks you will perform. The significance of this section is in stating, explicitly or implicitly, tasks that are within or outside of the project scope.

6. Network architecture design, including **network traffic demand analysis** (traffic type, volume, and pattern), **performance criteria**, and **network topology designs**. Essential diagrams (You may use "Cisco Packet Tracer") must be included, showing the **network layout** at different levels of detail. For example, suppose part of your solution is to use WLAN. In that case, you must decide the number of Access Points/Switches/Routers needed, their placement, and how they will be physically wired into the backbone network (**Note: You must provide support/justification for the specific design decisions you make**).

7. Networking hardware and software acquisition are needed to implement the new network. You can assume that your client's existing server hardware and end-user computer resources are adequate to meet all processing needs.

8. Management has allocated **$100,000** (you can suggest a different budget with reasons) for designing and implementing the new network. You should use online sources for price information (ex: www.cdw.com or www.amazon.com). Your budget must include design, equipment acquisition costs, installation labor costs, and training expenses. You need to show how you calculated them.

9. The report has a **10-page minimum and 30-page maximum** limit (a 12-point font, double-spaced text, and 1-inch margins), excluding references and appendices. A reference section lists all sources of information you used to complete this project (device price, average labor fee, etc.). More importantly, **it must include all the required components listed above**. All pages and diagrams/figures/tables must be numbered. No figure or table inserts should appear in your report without being mentioned in the report narrative.
Please, use prominent section headings and do not assume that readers know all the acronyms. Please, avoid using the pronoun *you*; always address **your client** by its corporate name.

10. Team report document submission by **12/04/2022** (NO late submission will be accepted).
Team presentation slide submission by 12/06/2022 (after your presentation).
You will have a 15-minute presentation (Week 15).