**Document 3**

**Project Name:** Hospital Network Design

**Group:** 1

**Course:** DMT2d

**Team members:** Tshifhiwa Letlalo

Given Mogowe

Fahima Patel

Lebohang Marina Shai

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**Project planning:**

1. **Project Scope Definition:**

The goals and objectives of the network design project should be clearly defined of the. And the key stakeholders should be defined with their requirements gathered. The scope of the project should be determined, which includes the number of buildings, departments, and users to be covered (Joubert, 2019).

1. **Network Assessment:**

A thorough assessment should take place of the existing network infrastructure and identify current network components, including servers, switches, routers, and access points. The network performance, bandwidth requirements, and potential bottlenecks should be evaluated (Inabo, 2022).

1. **Capacity Planning:**

The expected network load in terms of data traffic, users, and devices should be determined and a plan for scalability and future growth by considering the hospital's expansion plans. We should assess the need for redundancy and failover mechanisms to ensure high availability (Inabo, 2022).

1. **Security Considerations:**

Security requirements and compliance standards should be identified. Measures to protect sensitive patient data and ensure network integrity should be implemented along with a plan for network segmentation to isolate different departments and control access (Inabo, 2022).

1. **Technology Selection:**

Appropriate networking hardware should be picked (routers, switches, firewalls, etc.) based on requirements. (2022) Consider wired and wireless networking solutions based on the hospital's needs. Evaluate the use of virtualization, cloud services, and other emerging technologies.

1. **Topology Design:**

A network topology that meets the hospital's requirements should be developed. Consider factors such as redundancy, fault tolerance, and ease of management. Plan for the integration of medical equipment and Internet of Things (IoT) devices.

1. **Wireless Network Design:**

Design the wireless network to provide adequate coverage and capacity. Consider the placement of access points, frequency channels, and security protocols. Ensure support for mobile devices used by healthcare professionals.

1. **Network Management and Monitoring:**

Implement network management tools for monitoring and troubleshooting. Define procedures for network maintenance, updates, and patches. Plan for 24/7 network monitoring and support.

1. **Training and Documentation:**

Develop training programs for IT staff and end-users. Create comprehensive documentation for network configurations, policies, and procedures. Ensure that there is a plan for ongoing training and updates as technology evolves (Inabo, 2022).

1. **Testing and Validation:**

Conduct thorough testing of the network design in a controlled environment. Validate the network's performance, security, and reliability. Address any issues identified during testing and make necessary adjustments (Joubert, 2019).

1. **Implementation Plan:**

Develop a detailed implementation plan with timelines and milestones. Coordinate with relevant departments to minimize disruptions during implementation. Have a rollback plan in case issues arise during the implementation phase (Joubert, 2019).

1. **Post-Implementation Review:**

Conduct a post-implementation review to assess the success of the project. Gather feedback from users and stakeholders to identify areas for improvement. Document lessons learned for future network design projects (Inabo, 2022).

**How we are planning on doing the project:**

1. **Needs Assessment:**

We are going to identify the specific requirements of the hospital, including the number of users, types of devices, and the nature of applications used which is discussed in the overview. We need to have an understanding of the criticality of various network services such as electronic health records (EHR), imaging systems, communication systems, and so on. By doing all of the, we need to also be in compliance with the healthcare regulations and standards to safeguard patient information (Skidmore, et al., 2022).

1. **Define Objectives:**

Objectives of the network design project should be clearly defined, such as improving efficiency, enhancing security, or supporting new technologies (Joubert, 2019).

1. **Scope Definition:**

We need to clearly define the scope of the project, which includes the areas of the hospital that will be covered, the number of users, and the types of devices to be supported (Joubert, 2019).

1. **Network Topology:**

The appropriate network topology should be determined, considering factors like scalability, redundancy, and fault tolerance. We are meant to choose between centralized or distributed architecture based on the hospital's specific needs.

1. **Bandwidth Requirements:**

Assess bandwidth requirements for different applications, especially bandwidth-intensive services like medical imaging and a plan for sufficient bandwidth to support real-time communication and data transfer.

1. **Security Considerations:**

Robust security measures will be implemented in order to protect patient data and ensure compliance with regulations, and measures like firewalls, intrusion detection systems, and secure access controls will be included.

1. **Wireless Networking:**

The need for a wireless network within the hospital should be considered to ensuring proper coverage for all critical areas and implement security protocols for the wireless network to prevent unauthorized access.

1. **Integration with Existing Systems:**

The integration of the new network with existing hospital systems will be considered, such as EHR, laboratory information systems, and medical devices.

1. **Scalability:**

The network will be designed to be scalable, allowing for future expansion and the addition of new devices and services.

1. **Redundancy and Disaster Recovery:**

We will implement redundancy to ensure continuous operation in case of hardware failures and develop a disaster recovery plan to quickly restore network functionality in case of unforeseen events.

1. **Implementation Plan:**

A phased implementation plan will be produced to minimize disruptions to hospital operations and the network will be tested thoroughly before full deployment to identify and resolve any issues.

1. **Training and Documentation:**

Training for hospital staff will be offered on the use of the new network and comprehensive documentation will be created to assist with ongoing maintenance and troubleshooting.

1. **Monitoring and Maintenance:**

We need to implement network monitoring tools to proactively identify and address issues and come up with a regular maintenance schedule to ensure the ongoing health and performance of the network.

1. **Feedback, optimization, and post-implementation support:**

Feedback from hospital staff should be gathered in order to identify areas for improvement. We should continue to continuously optimize the network based on feedback and changing technology requirements. Ongoing support should be provided to address any issues that arise after the initial implementation and consider implementing a helpdesk or support system for users to report and resolve network-related issues.

1. **Periodic Review:**

We should perform periodic reviews of the network design to make sure it continues to meet the hospital's evolving needs and update the design as necessary to incorporate new technologies and address emerging challenges. By following a systematic approach and considering the unique requirements of a hospital environment, we are able to effectively plan and execute a hospital network design project.

# Bibliography

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