Project Part 2: Network Topology, Addressing, and Application Delivery

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Introduction

The organization needs to come up with a new network design. The organization needs a simple design of the network that will give some ideas to the senior network architect and CIO for future use and implementation. The organization also needs to know what kind of addressing to use and a way to deliver applications to use This paper will provide a description of this simple network topology, the addressing scheme being used, and a description of the application architecture.

Network Topology

The network topology used for this design is a star topology, as shown in Appendix A at the bottom of the paper. The star topology is one of the most common topologies used today and has numerous advantages (Bose, 2021). These advantages include easy scalability and easy maintenance (Bose, 2021). If the central switch goes down in this topology, then the entire network will be down, but this can be easily fixed by adding a second central switch to the network (Davis, n.d.). After adding this second switch, this turns the original design into a dual star or dual-dual star topology (Davis, n.d.). This current design is only meant to be the basic design where improvements like this can be added when necessary in later phases.

Addressing

The addressing scheme that is being used for this network will be only IPv4. The reason for this is to support the basic design for this network, as IPv6 can be considered at a later stage. It’s good to start by taking things easy when coming up with a new, simple network design. To support this, there’s many reasons to still have IPv4 on a

network. One reason is that IPv6 is considered to be immature compared to IPv6, meaning it's harder to troubleshoot issues on an IPv6 network because it's a newer technology (Kaur et al., 2013). Another reason that IPv6 isn't used is because of a lack in vendor support for various technologies (Kaur et al., 2013). Starting off with IPv4 would make things easier and an upgrade to IPv6 can always be added later.

Application Architecture

The organization needs a reliable application architecture to deliver apps to users on the network. The application architecture that should be used is the microservices architecture. In a microservices architecture, applications are broken down into microservices, which are smaller components that are independent from each other (Red Hat, 2020). Our goal for applications in the organization is to deliver them as fast as possible to our users while providing greater scalability and increased fault tolerance. A microservices approach to applications will be able to do all of this while developing other microservices at the same time (Red Hat, 2020). Developers will be able to work on their own services without having to rebuild the entire app when changes are made (Red Hat, 2020). This makes the process of deployment and development a lot more efficient (Red Hat, 2020).

Conclusion

Our organization is looking for a new and simple network design that will be the framework for further improvements. This paper has discussed a basic network design that will be that framework. It introduces a star topology and how its advantages align with the goals of the organization, along with ways to improve the design. An IPv4

addressing scheme will be used for this current design, with rationale for using it, along with room for adding IPv6 later in the design. This paper also discussed an application architecture that aligns with company goals of providing quality services to users and efficient work processes for developers.

References

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Appendix A: Network Diagram