Lab Assignment 5

DAT300 - Communication Technology II

Hands-On Network Design - Building Effective Communication Networks

Throughout the course, we have acquired the knowledge regarding various modules including switch, WLAN, IP static routing, single-area OSPF and ACLs. The concepts presented in these modules are essential building blocks for designing a communication network.

Table 1. summarizes the learnings in preparation for presenting lab assignment 5.

Sr#	Modules	Concepts
1	Switch	• Configuring basic switch settings • Configuring an EtherChannel with Cisco PAgP and IEEE 802.3ad LACP • Configuring a Redundant EtherChannel Link • Securing trunk, the unused switchports and implementing port security • Enabling DHCP Snooping and configuring Rapid PVST PortFast and BPDU Guard
2	WLAN	• Connecting and configuring the wireless router • Connecting a wired and wireless device to the wireless router and extending the wireless coverage • Connecting to a wireless LAN controller GUI and configuring a WLAN on a wireless LAN controller. • Configuring a new WLAN on a WLC. • Securing a WLAN with WPA2-Enterprise.
3	Single-area OSPF	• Configuring OSPF router ID and networks for OSPF routing with or without passive interfaces and verifying OSPF configuration. • Verifying the connectivity by modifying OSPF default settings and by propagating a default route. • Identifying and verifying the status of OSPF neighbors. • Adding a new LAN into an existing OSPF network and verifying connectivity. • Configuring IPv4 and IPv6 static and floating static default routes, host routes, and routes to the internal LANs.
4	ACLs	• Verifying and testing local connectivity with and without ACL. • Configuring, applying, verifying, and modifying a named and numbered standard ACL. • Configuring, applying, and verifying an extended named and numbered ACL.
Table 1. A summary of modules and learned concepts		

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In this lab assignment, you will use the skills and knowledge that you have acquired during the lab sessions to design a communication network on the Cisco Packet Tracer.

1. Considerations for the network design:
    - Your designed network should include a working implementation of any three modules in Cisco Packet Tracer, that are presented in Table 1.
    - There is no need to implement all concepts from these modules. However, you are free to choose from the concepts or go beyond.

2. The network's design is entirely up to you:
    - The network can have any topology.
    - Any number of devices can be connected to the network.
    - The network can contain any number of network elements.
    - The network can be wired, wireless, or a hybrid of the two.

Method for the Approval of The Assignment

1. Canvas Submission:
    - Complete the report using the "Lab Assignment 5 - Submission Template".
    - Create a zip file containing both the report and the Packet Tracer project file.
    - Upload this zip file to Canvas.
2. Cisco Packet Tracer implementation:
    - Working implementation of any three modules mentioned in Table 1.
3. Oral questions:
    - Oral questions about the modules and the learned concepts implemented.

Note

- The final assignment assessment will be Pass or Fail.
- The deadline for the assignment approval is in week 43 on October 23, 2024.