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SCHOOL OF COMPUTER SCIENCE ENGINEERING AND INFORMATION SYSTEMS

WINTER SEMESTER 2024-25

VTOP Digital Assignment – IV (Lab) Mid - Term

Submission date: 11-03-2025

Marks: 20

Subject : CSE3502 - Information Security Management Lab

Slot : L41 + L42

Faculty : Dr. A. Anbarasa Kumar

- **Lab Digital Assignment Topics**

Output – Take Screenshot of all

SET – 1

1. Formulate a step-by-step procedure for configuring and verifying a firewall in Cisco Packet Tracer. Open the Cisco Packet Tracer and selecting the necessary network devices. Configure the PCs (hosts) and server with appropriate IPv4 addresses and subnet masks based on Class C addressing. Assign IP addresses accordingly. Access the command terminal of a PC to proceed with further configuration. Set up the firewall on the server and verify network connectivity by pinging the IP address of another PC.

2. Design and configure a network design in Cisco Packet Tracer with three distinct LANs—Network A, Network B, and Network C—each consisting of a switch and six PCs. Use a Router (1841) to interconnect these networks and facilitate packet transmission across the LAN. Assign IPv4 addresses based on Network A (Assign Class A IP Address), Network B (Assign Class B IP Address) and Network C (Assign Class C IP Address) addressing. Utilize the Simulation mode to analyze network communication and packet flow.

   Implement the following communication conditions:
   i) Network A communicate with Network B
   ii) Network B communicate with Network C.
   iii) Network C communicate with Network A.

Finally, verify data transfer between networks as per the defined conditions. Configure the entire scenario using Cisco Packet Tracer.

3. Utilize the Wireshark packet capturing tool to capture real-time network frames and analyze the header fields. Extract and display the following critical details from the captured frames:

i) Source address
ii) Destination address
iii) Timestamp of packet capture
iv) Type of protocol used in communication
v) Size of the frame in each transmission
vi) Additional information related to the captured packet

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SET – 2

1. Configure and implement the working process of the HyperText Transfer Protocol (HTTP) in Cisco Packet Tracer. HTTP enables data transmission over an IP network by assigning IP addresses to devices for communication. Configure 3 PCs and Server with IPv4 addresses and subnet masks according to the IP addressing table. Assign a Class C IP address by selecting the device, navigating to the Desktop tab, and accessing IP Configuration. Enter the appropriate IPv4 address, subnet mask, and other necessary inputs. Configure an HTTP server to ensure accessibility within the network. Verify HTTP functionality by testing data transmission between connected devices.

2. Implement and configure an email server in Cisco Packet Tracer to enable communication between network nodes via email. Network Setup: Deploy Two PCs and one mail server. Assign IPv4 addresses to all devices, ensuring they remain within the same network, as they are connected through a single switch. Configure the mail server with a Class C IP address and assign appropriate Class C IPs to the connected PCs. Mail Server Configuration: Set a domain name for the mail server (e.g., gmail.com, yahoo.com, rediffmail.com, or any custom domain). Create user accounts with usernames and passwords for email communication. Email Transmission: Test the functionality by sending an email from one PC (Sender) to another PC (Receiver).Verify if the recipient successfully receives the email.

3. Utilize the Wireshark packet capturing tool to capture real-time network frames and analyze their header fields. Extract and examine the following key details from the captured frames:
   i) Source Address – Identifies the sender of the packet.
   ii) Destination Address – Identifies the intended recipient of the packet.
   iii) Timestamp – Records the exact time of packet capture.
   iv) Protocol Type – Specifies the protocol used in the communication (e.g., TCP, UDP, ICMP).
   v) Frame Size – Indicates the size of each transmitted frame.
   vi) Additional Packet Information – Displays further relevant details extracted from the frame.

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SET – 3

1. Implement and configure a wireless network in Cisco Packet Tracer using one Wireless Router (WRT300N) and three PCs. Follow these steps to ensure successful network connectivity: Network Setup: Deploy a Wireless Router (WRT300N) and five PCs. Configure the wireless router to automatically assign IP addresses using DHCP. Wireless Router Configuration: Set up the wireless network by configuring security settings, and DHCP parameters. Ensure the PCs connect wirelessly to the router. Verification of Connectivity: Check the assigned IP addresses on each PC to confirm successful DHCP allocation. Test network connectivity by pinging the router from the PCs. Use Packet Tracer's simulation mode to analyze wireless communication.

2. Design and implement two separate Local Area Networks (LANs) in Cisco Packet Tracer and interconnect them using a Router (1841) to facilitate communication between them. Follow these steps: Network Setup: Create LAN1 with a switch and six PCs. Create LAN2 with a switch and six PCs. Interconnection: Use a Router (1841) to connect both LANs, ensuring proper network communication. Configuration and Testing: Assign Class C IP addresses to devices in each LAN. Configure the router interfaces to enable packet transmission between LAN1 and LAN2. Utilize Packet Tracer's simulation mode to analyze network behavior and data flow.

3. Use the Real-Time Packet Capture and Analysis Using Wireshark tool to monitor real-time network traffic and analyze captured frames. Extract and examine the following key details from the frame headers:
    a) Source Address
    b) Destination Address
    c) Timestamp
    d) Protocol Type
    e) Frame Size
    f) Additional Packet Information