



- **BUILDING AND SECURING A SMALL NETWORK**



Shielding Against Cyber Threats



OUR TEAMS



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PROJECT OVERVIEW



This project simulates a secure small business network with multiple departments segmented by VLANs, DHCP-based IP allocation, wireless access, internal email services, and essential security features like port security, DHCP snooping, and firewall protection.

Technologies used:

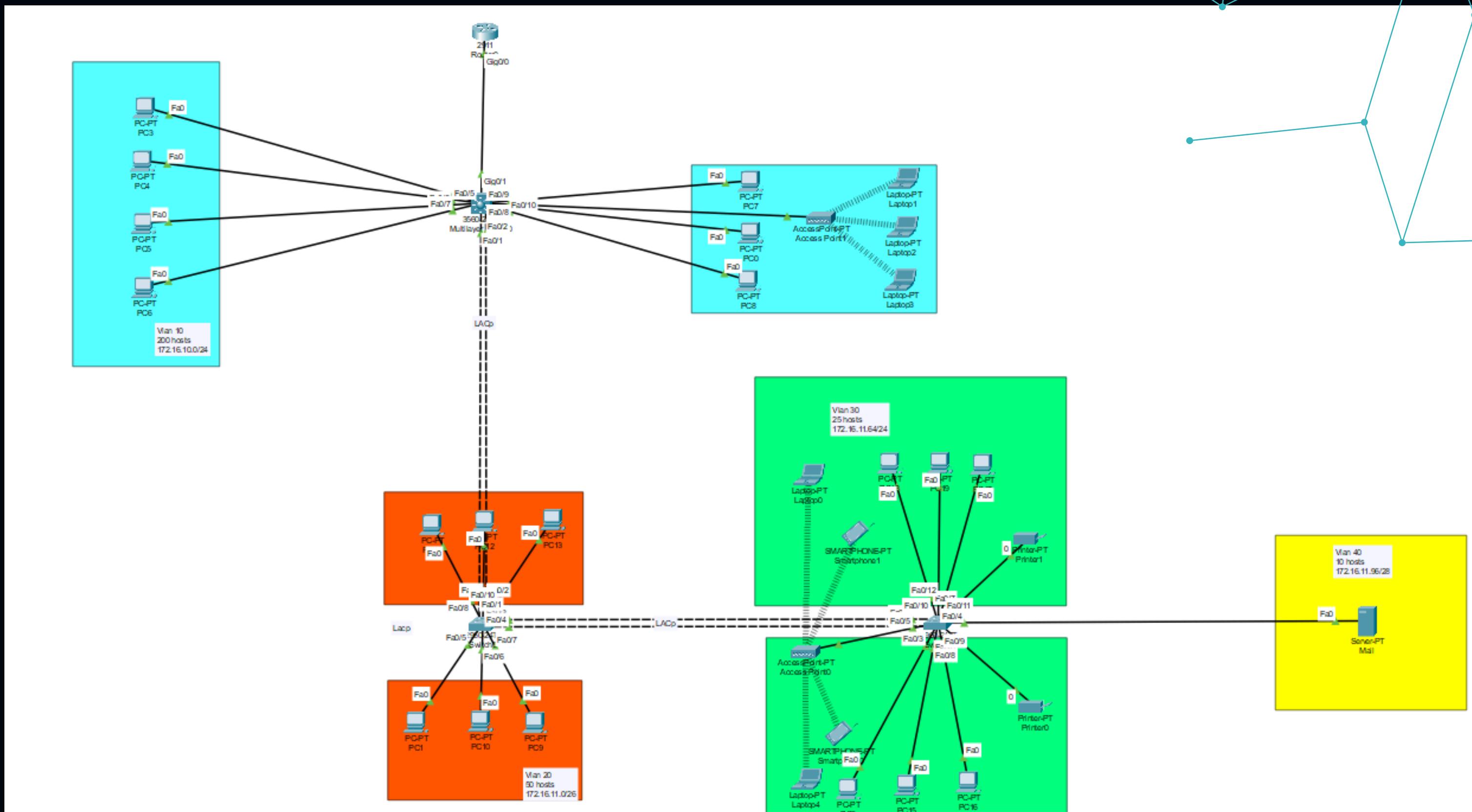
VLANs, VTP, DHCP, Port Security, Wireless, Firewall, Email Server

Design Security

90%



NETWORK TOPOLOGY





VLANS, DHCP, VTP, AND LACP CONFIGURATION



VLANs 10, 20, 30, 40

Separated by departments,
wireless clients, and reserved
zones



DHCP Pools

3 pools on the router
for (VLANs 10, 20, 30)



VTP

- Domain: departmnets
- Mode: 2 switches as client
- Password: 159



LACP (EtherChannel)

Link aggregation used
between switches for
redundancy and speed

SECURITY FEATURES

Implemented to prevent unauthorized access, spoofing, and attacks. Port security restricts device access, unused ports are disabled, DHCP snooping blocks rogue servers, and DAI stops ARP spoofing - ensuring a secure, trusted network.

Port Security

Sticky MAC Learning
Maximum Allowed Devices: 1
Violation Action: Shutdown



DHCP Snooping

Enabled on all VLANs to prevent rogue DHCP servers.



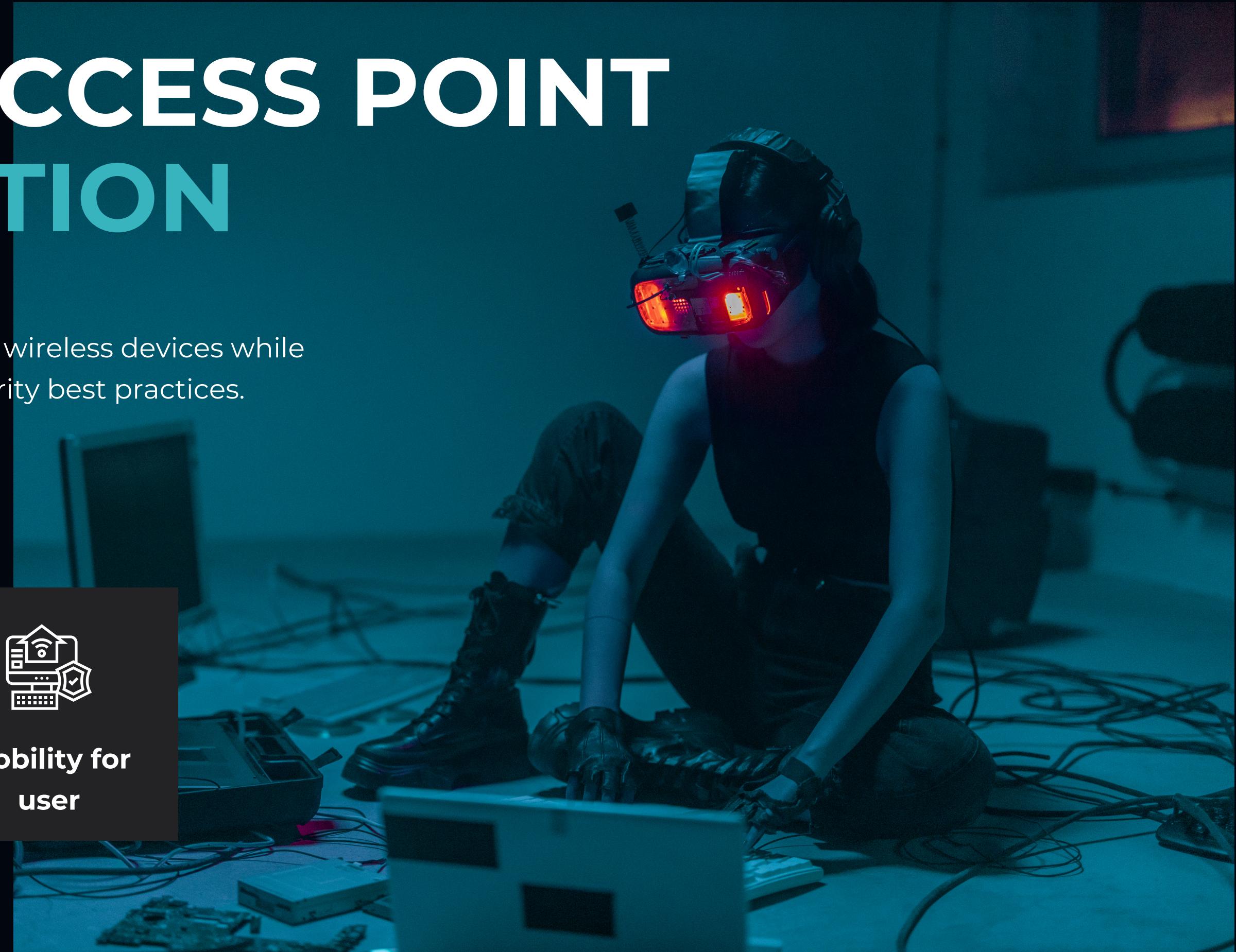
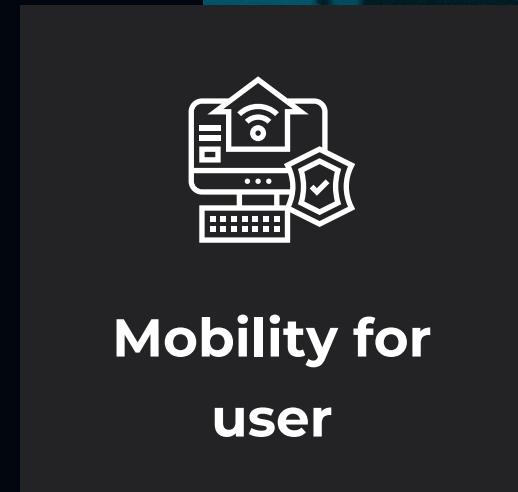
Dynamic ARP Inspection (DAI)

Enabled on all VLANs to block ARP spoofing attacks.



WIRELESS ACCESS POINT CONFIGURATION

Provides secure, high-performance access for wireless devices while maintaining network segmentation and security best practices.





EMAIL SERVER

PC13

Physical Config Desktop Programming Attributes

MAIL BROWSER

Mails

From	Subject	Received
mohammed@systememail.com	RE: Network Maintenance Tonight	Thu May 8 2025 22:04:33

Compose Reply Receive Delete Configure Mail

RE: Network Maintenance Tonight
mohammed@systememail.com
Sent : Thu May 8 2025 22:04:33

OK. Thanks for the heads up

Subject : Network Maintenance Tonight
From : omar@systememail.com
Sent : Thu May 8 2025 22:04:08

The IT department will perform routine network maintenance tonight from 11:00 PM to 2:00 AM. Please save your work and log off before this time.
Regards,
IT Admin

Receiving mail from POP3 Server 172.16.11.97
Receive Mail Success.

Cancel Send/Receive

Top

PC18

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FEATURES

- Domain: systememail.com
- Internal Communication Between VLANs



Q&A





**THANK
YOU**

