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TTSET Global University Networking Project Report

1. Project Aims

The main aims of this project are to:

1. Establish a robust and secure computer network that connects all staff and student PCs across the two campuses.

2. Ensure smooth communication between faculties and departments regardless of the physical campus location.

3. Facilitate access to shared resources, such as printers, databases, and the internet, for all students and staff.

4. Provide a scalable network infrastructure that can accommodate future growth in the number of users and devices.

5. Promote efficient management of network resources through proper configuration and security protocols.

2. Network Principles

The network design for TTSET Global University follows these key principles:

Scalability: The network should support additional devices without major restructuring.

Reliability: High uptime with redundant connections between campuses.

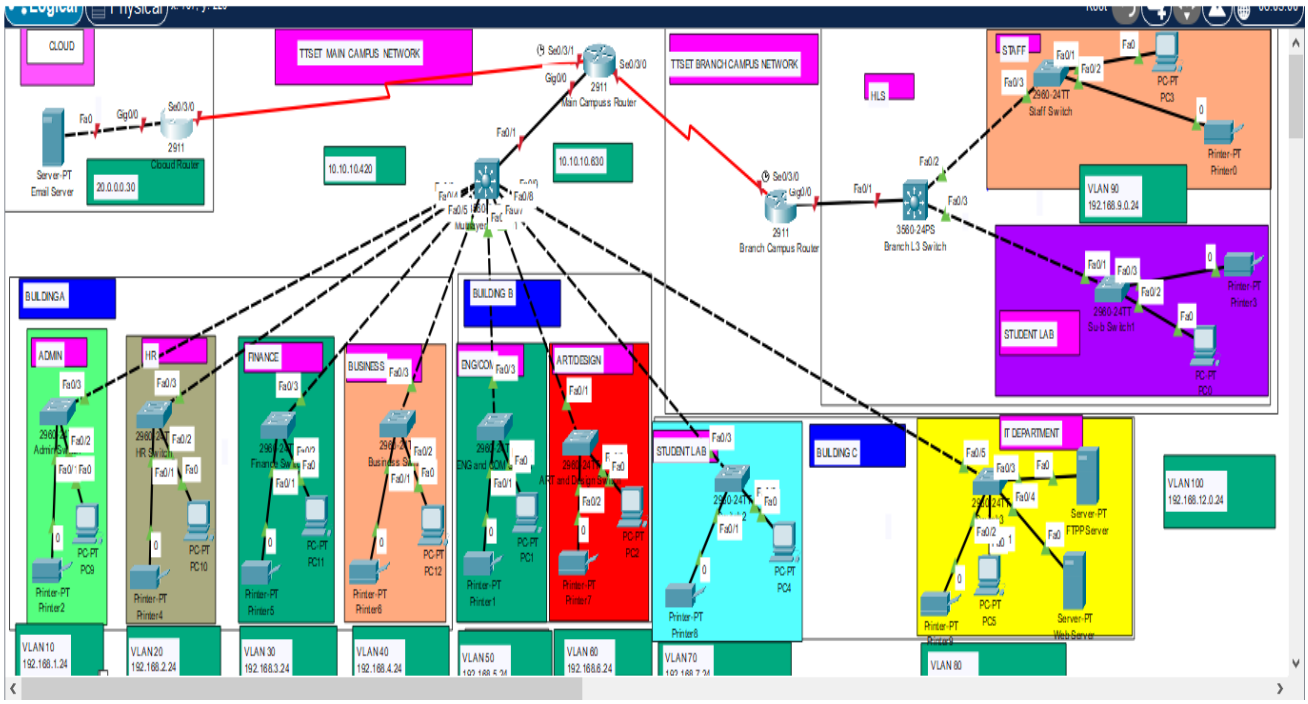
Security: Implement firewalls, antivirus, and user authentication to protect sensitive university data.

Segmentation: Each faculty network is segmented (VLANs) to improve performance and security.

Centralized Management: The network will be managed from a central server to monitor traffic and troubleshoot issues.

3. Network Diagram

Below is a simplified representation of the network connecting the two campuses and four faculties



Key Notes:

Routers connect both campuses via a secure leased line or fiber optic link (20 miles apart).

Switches are used to connect all PCs within each faculty.

Each faculty network is configured as a VLAN for security and efficient data flow.

Firewalls are installed at each campus to filter traffic and prevent unauthorized access.

4. List of Materials

2 × Routers (1 per campus)

2 × Firewalls

8 × Managed Switches (2 per faculty)

~100 × PCs for staff (distributed per faculty)

~200 × PCs in student labs (approx.)

Network cables (Cat6 Ethernet)

Fiber optic cable for inter-campus connection (20 miles)

Wireless Access Points (optional for Wi-Fi coverage)

Server for centralized management and shared resources

5. Network Configuration

IP Addressing:

Campus 1: 192.168.1.0/24

Campus 2: 192.168.2.0/24

Each faculty assigned a VLAN with separate subnet.

Routing:

Static routing or dynamic routing protocol (e.g., OSPF) for inter-campus communication.

Switch Configuration:

VLAN setup per faculty

Port security to limit unauthorized connections

Firewall Rules:

Allow access to university resources

Block unauthorized external access

Implement logging for security monitoring

Server Configuration:

Centralized file server for documents, lecture notes, and administrative data.

Authentication server for user logins (Active Directory or LDAP).

6. Conclusion

The proposed network for TTSET Global University ensures efficient communication and resource sharing across both campuses and all faculties. The design prioritizes security, scalability, and reliability, providing a foundation for current and future networking needs. With proper configuration and management, students and staff will have seamless access to resources, enhancing the overall learning and administrative experience.