Bank Network Design Project Report

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Project Title & Objective

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Design and Implementation of a Bank Network Using Cisco Packet Tracer

Objective

To design and implement a secure, scalable, and efficient computer network for a bank with a head office in Peshawar and five remote branches. The design ensures safe inter-branch communication, centralized management, and service availability.

Network Overview

The bank network comprises a main branch (Head Office in Peshawar) and five regional branches, all securely interconnected via routers.

Centralized Servers

The Head Office hosts centralized servers for Database, DNS, Web, and Backup.

DMZ Implementation

A Demilitarized Zone (DMZ) is implemented for public web services like online banking.

Secure Communication

Inter-branch communication is secured using dynamic routing protocols.

Network Design Components

Devices Used

- Routers (Cisco 2901) for each branch
- Switches for internal LAN segmentation
- End Devices: PCs, Servers, Printers
- Cable Types: Copper straight-through, serial for WAN

Addressing Scheme

Branch	IP Address	Subnet Mask
Peshawar	170.20.104.0/21	255.255.248.0
Panyala	172.20.120.0/21	255.255.248.0
Mansehra	172.20.32.0/21	255.255.248.0
Swabi	172.20.48.0/21	255.255.248.0
Karak	172.20.152.0/21	255.255.248.0
Di khan	172.20.16.0/21	255.255.248.0

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Security Implementation

DMZ at Main Branch

Implemented for hosting public-facing servers (web, DNS), enhancing external security.

Routing Protocols

Static Routing, RIP, and EIGRP are used to establish robust and controlled connectivity across the network.

Controlled Access

Static routes are applied where necessary to ensure precise control over network traffic flow and access.

Testing & Verification

Comprehensive testing was conducted to verify the network's functionality and security. All test cases yielded successful results, confirming the robust implementation.

| 100%	100%	100%
Ping from Branch to Main Server	**DNS Resolution from Branches**	**Web Access to Internal Site**
Successful connectivity confirmed across all branches to the main server.	DNS services are fully operational, allowing branches to resolve domain names correctly.	Internal web services are accessible from all branches, ensuring seamless operation.

Conclusion

This project successfully demonstrates a secure and organized bank network using Cisco Packet Tracer. The design ensures secure communication between branches and provides scalability for future expansion.
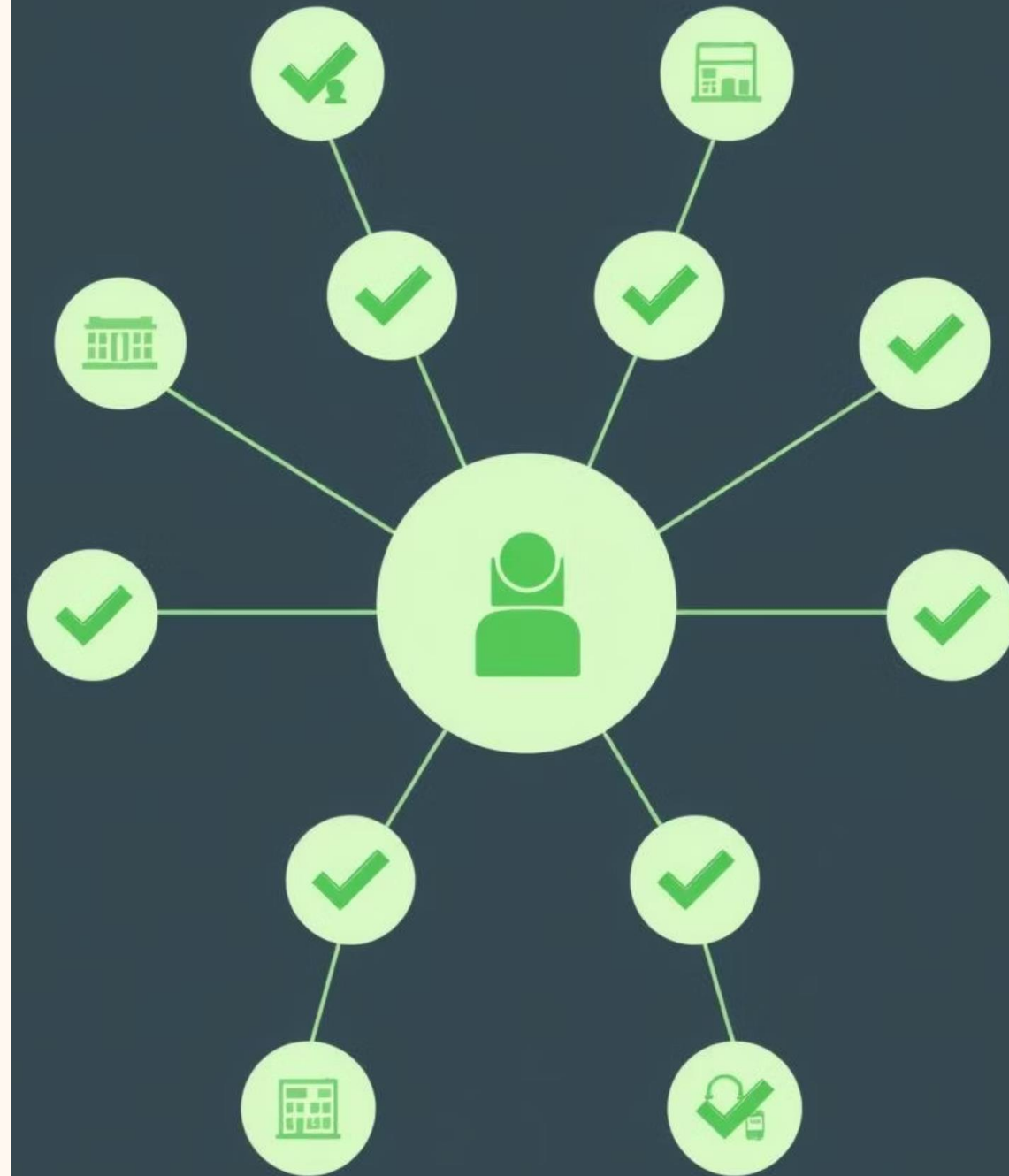
Screenshot

This screenshot illustrates the network configuration of the Peshawar Main Branch within Cisco Packet Tracer, showcasing the central hub of the bank's network.