Small Office Network Design Final Report

1. Summary

This document outlines the network design for a small office, detailing the topology, device configurations, VLAN segmentation, IP addressing, and internet connectivity. The goal is to provide a scalable, secure, and efficient network solution for the office, supporting different departments with isolated traffic and access to shared resources.

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2. Network Requirements

2.1 Number of Users

The network is designed to support three primary departments:

- **Management**: 3 users (PCs, IP Phone, Printer)
- **IT**: 3 users (PCs, IP phones, Printer)
- **Sales**: 6 users (PCs, IP phones, Printer)

2.2 Devices

The following devices are deployed in the network:

- **Router**: 1 x Cisco 2811 for external internet access.
- **Switches**: 2 x Cisco 2960, Layer 2 switches.
- **PCs**: 12 workstations (PCs).
- **IP Phones**: 5 IP phones.
- **Printers**: 3 network printers, one for each department.
- **Server**: 1 server for internal services (file sharing).

2.3 Internet Connectivity

The Cisco 2811 Router provides internet access and serves as the gateway for all VLANs.

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3. Network Topology

The topology consists of three VLANs for traffic segmentation, connected through two 2960 switches. A 2811 router connects the network to the internet. The server is centrally accessible for all departments.

3.1 VLAN Configuration

- **VLAN 10 (Management)**: This VLAN is assigned to the Management department to ensure their traffic is isolated from other departments.
- **VLAN 20 (IT)**: The IT department has its own VLAN to handle sensitive tasks and access to the printer.
- **VLAN 30 (Sales)**: The Sales department has its own VLAN to manage their devices and network traffic.

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4. IP Addressing Scheme

Each VLAN is assigned its own subnet to simplify routing and traffic management.

4.1 Subnet Overview

VLAN	Department	Subnet	IP Range
VLAN 10	Management	192.168.1.0/24	192.168.1.1 – 192.168.1.254
VLAN 20	IT	192.168.2.0/24	192.168.2.1 – 192.168.2.254
VLAN 30	Sales	192.168.3.0/24	192.168.3.1 – 192.168.3.254

4.2 IP Assignment

- **Static IPs** will be assigned to critical devices (printers, servers, routers).
- **Dynamic IPs**: End-user devices (PCs, phones) will obtain IP addresses via DHCP from the server.

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5. Device List

Device Type	Device	Quantity
Router	Cisco 2811	1
Switch	Cisco 2960	2
PCs	Desktop PCs	11

Device Type	Device	Quantity
IP Phones	Cisco 7960	5
Printers	Network Printers	3
Server	Server PT	1

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6. Security Considerations

- **VLAN Segmentation**: Each department is assigned its own VLAN to reduce broadcast domains and enhance security.
- **SSH Access**: Secure Shell (SSH) will be enabled on the switches and routers for remote management.
- **Strong Passwords and Encryption**: Device logins will use strong passwords and encryption (e.g., for VTY lines).

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7. configurations:

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8. Conclusion

This network design ensures departmental separation using VLANs, efficient traffic management with IP subnets, and secure internet access through the Cisco 2811 Router. The design is scalable, allowing for future expansion if needed.