NTI Network Security Project Documentation

Project Overview

This project implements a multi-area network using OSPF with authentication, VLAN segmentation, AAA server authentication, NTP and Syslog servers, and basic device configuration including hostnames, user accounts, and interface IP assignments. The network design includes LAN segments, WAN links, VPN routers, and security zones.

Step 1: Subnetting and IP Assignment

Given Network: 192.168.1.0/24

We will subnet this /24 network into smaller subnets for different LANs and WAN links. Example plan:

Assign IPs to router interfaces accordingly:
interface Gig0/0
ip address
no shutdown

interface Gig0/1
ip address
no shutdown

Step 2: Basic Device Configuration

For each router and switch:

1. Set Hostname
enable
configure terminal
hostname <DeviceName>

2. Set Enable Secret
enable secret <YourSecret>

3. Create Local User Account

username <admin> privilege 15 secret <password>

4. Line Console and VTY Configuration
line console 0
password <consolepass>
login
exit

line vty 0 4
password <vtypass>
login local
transport input ssh
exit

5. Enable SSH
ip domain-name <yourdomain.com>
crypto key generate rsa
line vty 0 4
transport input ssh

Step 3: Configure OSPF Routing

Enable OSPF on all routers:
router ospf 1
router-id <unique-router-id>
network 192.168.1.0 0.0.0.255 area 0

Enable OSPF MD5 Authentication on each interface:
interface <interface>
ip ospf message-digest-key 1 md5 <password>
ip ospf authentication message-digest

Step 4: Verify Connectivity

Use ping and traceroute to test between LANs and across WAN links.

Step 5: Configure NTP and Syslog

On NTP Server:
On Routers and Switches:
ntp server <NTP_Server_IP>
clock set <hh:mm:ss> <day> <month> <year>
logging host <Syslog_Server_IP>

Step 6: Configure AAA Server

On Routers/Switches:

```
aaa new-model
aaa authentication login default group tacacs+ local
tacacs-server host <AAA_Server_IP> key <shared_key>
```

Configure TACACS+/RADIUS on the AAA server with user credentials.

Step 7: Final Testing

- Test AAA by logging in via SSH.
- Check Syslog messages.
- Verify NTP sync with show clock.
- Verify OSPF neighbors with show ip ospf neighbor.
- Verify routes with show ip route.

✅ Your network is now configured successfully!