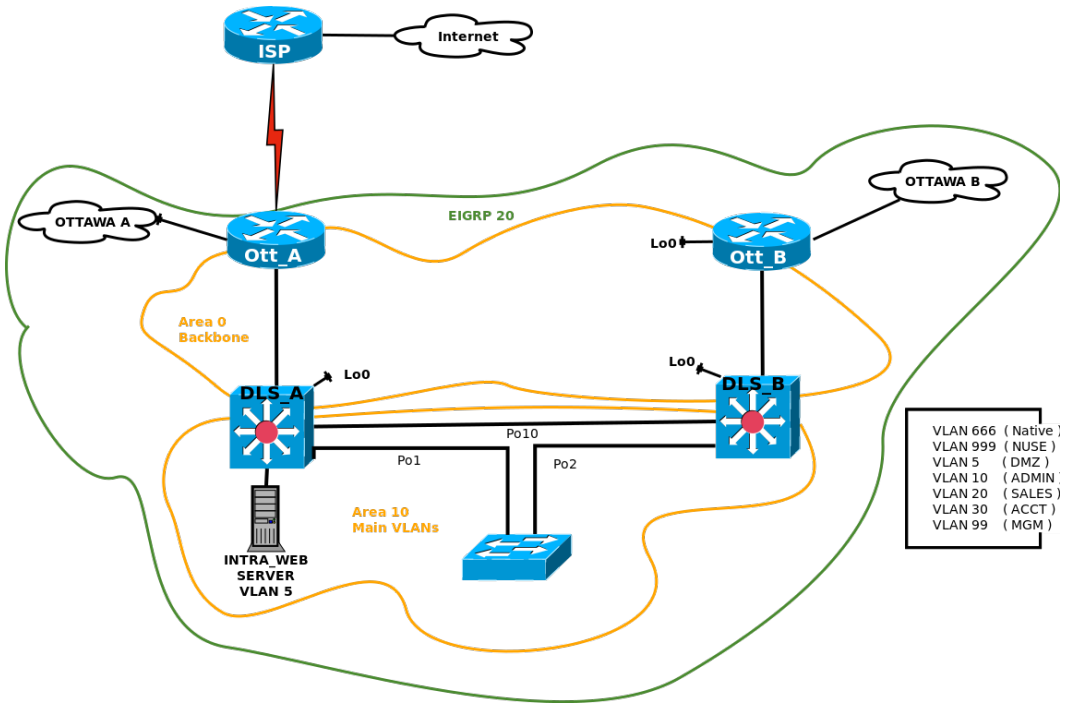
Topology



Objectives

- Plan, design and implement a network for **NET Ottawa**
- Implement the design on the lab equipment, net lab or packet tracer.
- Verify complete functionality and operation according to the specifications.

Address Requirements

- IPv4, use any **RFC 1918** Class **B** address that will accommodate all networks listed. Consider a 25% growth in the next years.
- Allow IPv4 addressing for easy scalability and the best possible summarization routes
- ISP router should use a distinct class **C** address
- Use IPv4 address **2.2.2.2** to simulate the Internet as a loopback interface in ISP router
- IPv6, use / 64 network address
- Use IPv6 address **2001:DBAA:AAAA::2/48** to simulate the Internet as a loopback interface in ISP router

Network	Hosts
Ottawa A	300
Ottawa B	120
DMZ	10

Network	Hosts
ADMIN	20
SALES	80
ACCT	15

EIGRP IPv4 Implementation

- Advertise directly connected networks using the interface IP
- Disable routing updates from being sent across unnecessary interfaces
- Selectively implement EIGRP summary routes
- Modify the hello and hold-down timers to ensure a fast network convergence
- Modify the interfaces bandwidth to ensure proper metric calculation
- Implement MD5 authentication in all EIGRP interfaces
- Carefully implement route summarization to reduce route tables

OSPFv3 IPv6 Implementation

- Enable OSPF v3 for all L3 interfaces
- Set areas as in network topology
- Ensure correct bandwidth reference for correct metric calculation
- Implement MD5 authentication in area 0
- Modify the hello and hold-down timers to ensure a fast network convergence
- Carefully implement route summarization to reduce route tables
- Strategically place the DR in each segment

Static Routes

- Decide an strategy to connect with ISP
- Implement a default route if necessary
- Propagate the default route in EIGRP and OSPF for complete connectivity

DHCP

- Configure redundant DHCP servers on L3 switches
- Reserve first 10% of IP address in all LANs
- Configure pools for all VLANs and Ottawa B office
- DLS_A pools should provide first half addresses, DLS_B should provide last half addresses
- DLS_B should be the DHCP server for Ottawa B
- Implement security measures to protect against rouge and malicious DHCP servers
- Implement security measures to protect against IP addressing spoofing

FHRP

- Configure redundant gateway for all VLANs for IPv4
- If using real equipment, configure HRSP version 2 to support IPv6
- Select different gateways for VLANs, ensuring a proper traffic balance

- Configure preemption and tracking interfaces

LAN redundancy and aggregation

- Configure spanning tree protocol per vlan in all switches
- Configure PortFast and BPDU guard on the appropriate interfaces
- Configure EtherChannel as in network topology with the appropriate native VLAN