**Networking 1B – Alaska Cluster**

**167.X.0.0 /16**

Alaska is composed of nine WAN links and eight LANs. The topology is fairly simple, with the exception of the LAN off of Anchorage.

The Anchorage LAN is shown below. It has 4 switches, 13 PCs, and three servers



**Part I. IP Addressing Scheme**

This cluster has a more sophisticated IP Addressing scheme than the other clusters, primarily due to the VLANs that we will use. The Anchorage LAN will have five VLANs: Iditarod, Inuit, Pipeline, Palin and Devices. Here are the subnets:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **LAN** | **Size** |  | **LAN** | **Size** |
| Barrow | 4009 |  | Valdez | 3,996 |
| Bethel | 6,300 |  | Iditarod (Anchorage VLAN) | 55 |
| Cold Bay | 78 |  | Inuit (Anchorage VLAN) | 10 |
| Deadhorse | 305 |  | Pipeline (Anchorage VLAN) | 300 |
| Fairbanks | 31,142 |  | Palin (Anchorage VLAN) | 18 |
| Fort Yukon | 612 |  | Devices (Anchorage VLAN) | 6 |

Additionally, there are nine WAN Links to accommodate. Use this table at the end of this document to develop your IP scheme. You are given the following class B network for your topology, **167.X.0.0**

**Part II. IP Address Assignment**

The IP Scheme is straightforward, except for the Anchorage LAN, which is comprised of five VLANs: Palin, Pipeline, Inuit, Iditarod and Devices. Each of these VLANs will get their own IP addressing range (subnet)

Here's the rules for assigning the IP addresses:

**WAN Links** - First usable to clock rate side, second usable to non-clockrate side.

**Regular LAN (not Anchorage)** - First usable to F0/0, Last usable to PC

**VLANs** - First usable to router sub-interface, 2nd usable to PC1, 3rd usable to PC2, etc..., last usable to any servers.

Special rules:

1. On the Devices VLAN, assign the 2nd usable IP address to A-Switch1, 3rd usable to A-Switch2, etc...
2. The DNS server goes on the Devices VLAN with the four switches and gets the last usable IP address.
3. The Oil DHCP server should be given the last usable IP address from the Pipeline VLAN.
4. All of the Pipeline PCs will get their IP addresses from the Oil DHCP server, starting with second usable.
5. The palin.com web server goes on the Palin VLAN.
6. Every PC in Alaska should have their DNS server set to the IP address of the DNS server in the Anchorage LAN.

**Part III. VLAN Configuration**

The following VLAN numbers are to be used:

|  |  |  |
| --- | --- | --- |
| **VLAN Name** | **VLAN Number** | **Includes** |
| Devices | 1 | A-Switch1 through A-Switch4, DNS Server |
| Iditarod | 15 | Iditarod1 through Iditarod3 |
| Inuit | 8 | Inuit1, Inuit2 |
| Palin | 37 | Palin1 through Palin3, palin.com web server |
| Pipeline | 19 | Pipeline1 through Pipeline4, Oil DHCP server |

The switches in the topology are going to use VTP to distribute the VLAN database. A-Switch1 will be the VTP server and A-Switch2, A-Switch3 and A-Switch4 will be the VTP Clients. Use the domain name of *Anchorage* and a password of *Alaska* when distributing the database. The database should only be created on the VTP server (A-Switch1)

Set up your trunk and access ports as needed. Use 802.1Q encapsulation and sub-interfaces on the Anchorage router to establish connectivity between the various subnets.

**Part IV. DNS, DHCP and HTTP Configuration**

1. Add a DNS record on the DNS server for palin.com to match the IP address of that web server.
2. Change the HTTP settings on the palin.com web server to say "Welcome to palin.com", instead of packet tracer.
3. Create hyperlinks to Disney.com, google.com and nyse.com on the palin.com web server.
4. Configure the Oil DHCP server to distribute IP addressing information to the Pipeline PCs. The server should distribute IP Address, subnet mask, default gateway and DNS server information to those Pipeline PCs.
5. All PCs on VLANs, other than Pipeline, will get their IP addresses via DHCP set up on the Anchorage router.

**Part V. RIP**

Use RIP, version 2 to get all of the routers in the topology sharing route information. Use RIP also to share default route information from the appropriate router. Don't forget to build a default route on this router (pointing to Boise).

**Part VI. Housekeeping**

All of the routers in the topology need the following housekeeping tasks performed:

Hostname Enable secret password set to class

Banner MOTD with "Welcome to <city name>" LINE VTY and Console with password of cisco

Encryption of LINE VTY and Console passwords Save the configuration to the NVRAM.

\*Switches do not require housekeeping, but will require IP addresses (on VLAN 1), subnet masks and default gateways.

**Alaska IP Table**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **LAN Name** | **Subnet Size** | **Network Address** | **First Usable** | **Last Usable** | **Broadcast** | **Subnet Mask** |
| Fairbanks | 31,142 | 167.X.0.0  | 167.X.0.1 |  |  |  |
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