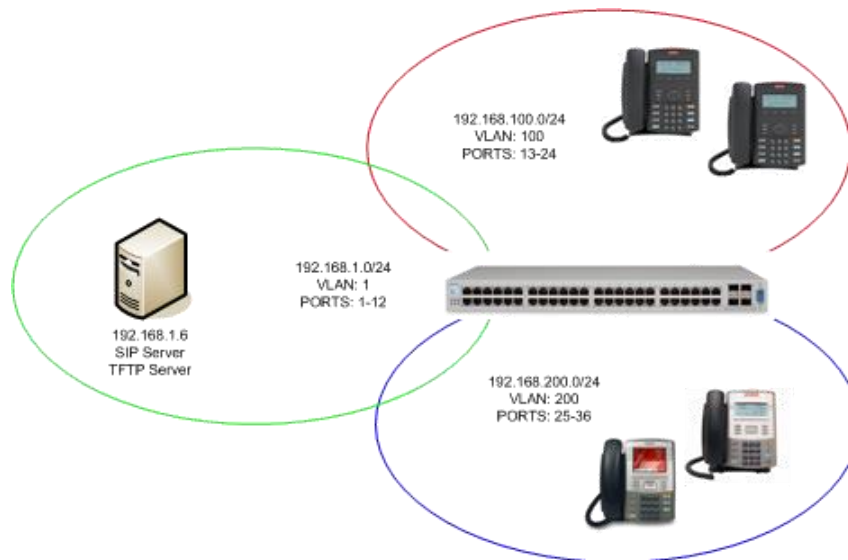# VLANS AND IP ROUTING ON AN ETHERNET ROUTING SWITCH



I've had a number of discussions recently with people asking how to configure VLANs and IP routing on the stackable Avaya Ethernet Routing Switches. I thought I would take a step back and document some basic configurations for those that might still have questions or for anyone that might be looking for some example configurations. In this post I specifically focus on how to configure multiple VLANs with IP routing on a single Ethernet Routing Switch 5520. (In a future post I'll examine how to tag VLANs between multiple switches.) The example configuration below should be applicable to any model of the Ethernet Routing Switch 4500 or Ethernet Routing Switch 5000 series switches. This example configuration matches a build I recently setup to test the compatibility of the Avaya 1100 and 1200 series IP phones to connect to an Asterisk IP PBX. You can review a diagram of the test network in the figure to the right.

We have a single Ethernet Routing Switch 5520 (running software 6.2) with 3 separate VLANs each with their own Layer 3 IP interface. We'll enable IP routing, configure DHCP forwarding (relay) and apply some basic best practices. The CentOS Linux sever at 192.168.1.6 will server multiple rolls; SIP server, DHCP server and TFTP server. In this example I'll assume that the switch has a factory default configuration.

Let's get started by entering configuration mode;

```
enable

config terminal
```

The "Default VLAN" already exists in the factory configuration so let's rename it and assign an IP address to the Layer 3 IP interface;

```
vlan name 1 "192-168-1-0/24"

interface vlan 1

ip address 192.168.1.50 255.255.255.0 1

exit
```

Let's create VLAN 100, assign ports 13-24 to that VLAN, set the PVID for each port to VLAN 100, create a Layer 3 IP interface and enable DHCP relay;

```
vlan create 100 name "192-168-100-0/24" type port

vlan members remove 1 13-24

vlan members add 100 13-24

vlan port 13-24 pvid 100

interface vlan 100

ip address 192.168.100.1 255.255.255.0 2

ip dhcp-relay

exit

ip dhcp-relay fwd-path 192.168.100.1 192.168.1.6 enable
```

Let's create VLAN 200, assign ports 25-36 to that VLAN, set the PVID for each port to VLAN 100, create a Layer 3 IP interface and enable DHCP relay;

```
vlan create 200 name "192-168-200-0/24" type port

vlan members remove 1 25-36

vlan members add 200 25-36

vlan port 25-36 pvid 200

interface vlan 200

ip address 192.168.200.1 255.255.255.0 3

ip dhcp-relay

exit

ip dhcp-relay fwd-path 192.168.200.1 192.168.1.6 enable
```

Let's make sure that IP routing is enabled globally;

```
ip routing
```

There's no need to add any additional IP static routes since this is a closed network. However, if there was an Internet router at 192.168.1.1 we would use the following command to create a default route to 192.168.1.1;

```
ip route 0.0.0.0 0.0.0.0 192.168.1.1 1
```

Whenever you remove a port from all VLANs it get's removed from the Spanning Tree Group so it's always a good idea to re-apply Spanning Tree to every port and set it to Fast

learning. It's also usually a very good idea to enable broadcast and Multicast rate-limiting (this is done in the hardware ASIC), setting it to 10% of the maximum port utilization;

```
interface fastEthenet All

spanning-tree learning fast

rate-limit both 10

exit
```

Source : http://blog.michaelfmcnamara.com/2011/01/vlans-ip-routing-ethernet-routing-switch/