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VRRP – Definition:

VRRP, which stands for Virtual Router Redundancy Protocol, specifies an election system between different Layer 3 devices to represent a default gateway for the devices that will connect to them.

As an example, if three different Layer 3 devices are configured to use VRRP, all the hosts could have the same default gateway IP (In this document we'll refer to it as VRRP IP). Any of these three Layer 3 devices would be able to forward and respond to packets that come to this VRRP IP. However, at any given time, only one will be the master and the other two will be standing by as backup. Should the master unit fail, an election will occur to decide which of the two Switches will become master and forward packets destined to the VRRP IP.

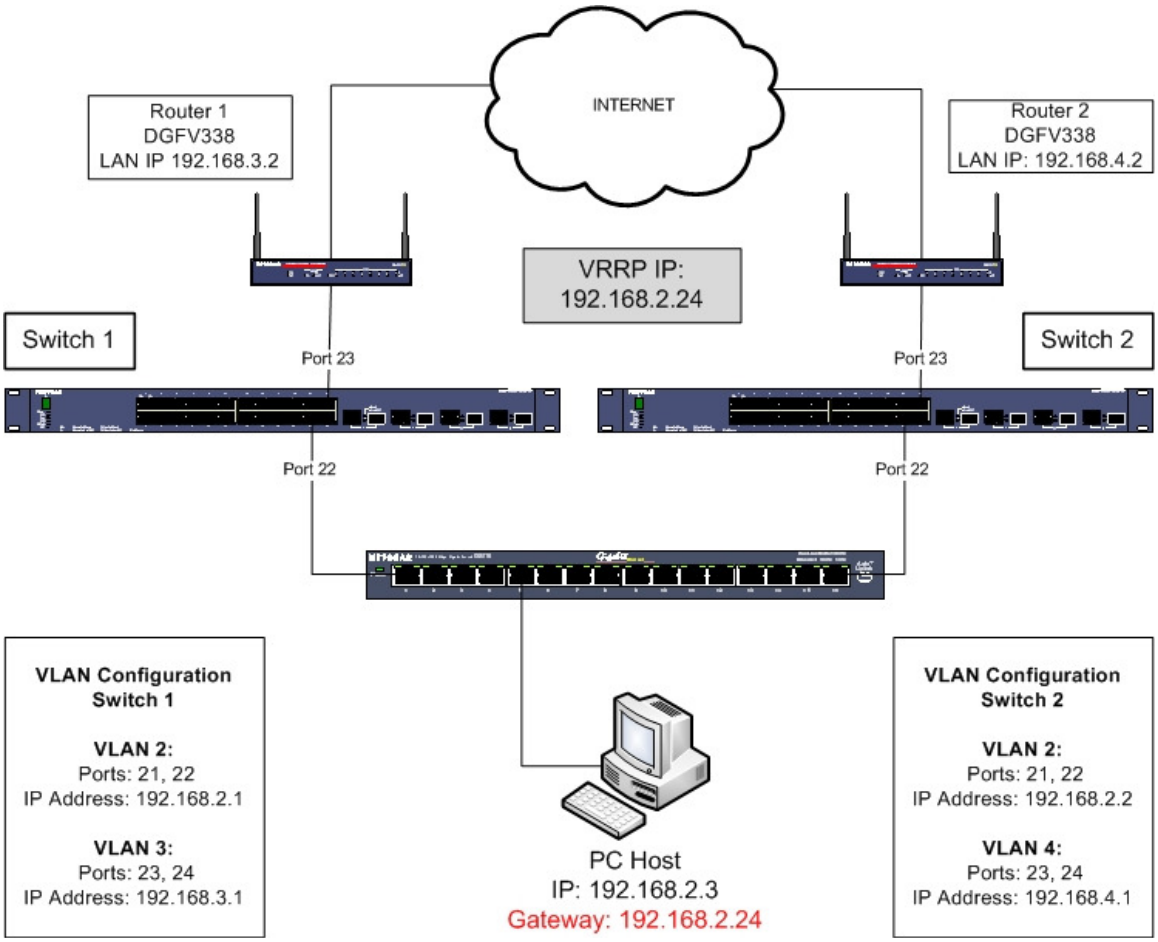
VRRP – GSM/FSM 7300 series:

Although there are many different scenarios where VRRP may be used to create redundancy in your network, this document will guide you on how to set up VRRP between two Layer 3 switches, so they may dynamically adapt to a loss of connectivity to one of the switches and seamlessly redirect host traffic towards another a backup router.

At the end of this document we will briefly describe some of the alternative deployment scenarios.

CASE 1 – Configuration

For this example, we have two Internet connections provided by DGFV338 modem/routers; Router 1 will be the default connection path, and Router 2 will offer connectivity in the event that Switch 1 is not accessible by the hosts of the network.



Each switch will use two different VLANs, one to communicate with the access layer switch, and one to communicate with their gateway.

All the hosts will be in the 192.168.2.0 network, the Virtual Router address will be configured to be 192.168.2.24

NOTE: VRRP can use the IP address of one of the physical interfaces as the Virtual Router IP. In this case, VRRP could use the IP address 192.168.2.1 instead of 192.168.2.24. Whether to use a third address for the virtual interface or not is down to personal preference – but please note that in this case the router with the IP address of the virtual interface would always be master as long as it is running.

SWITCH 1 - VLAN Configuration

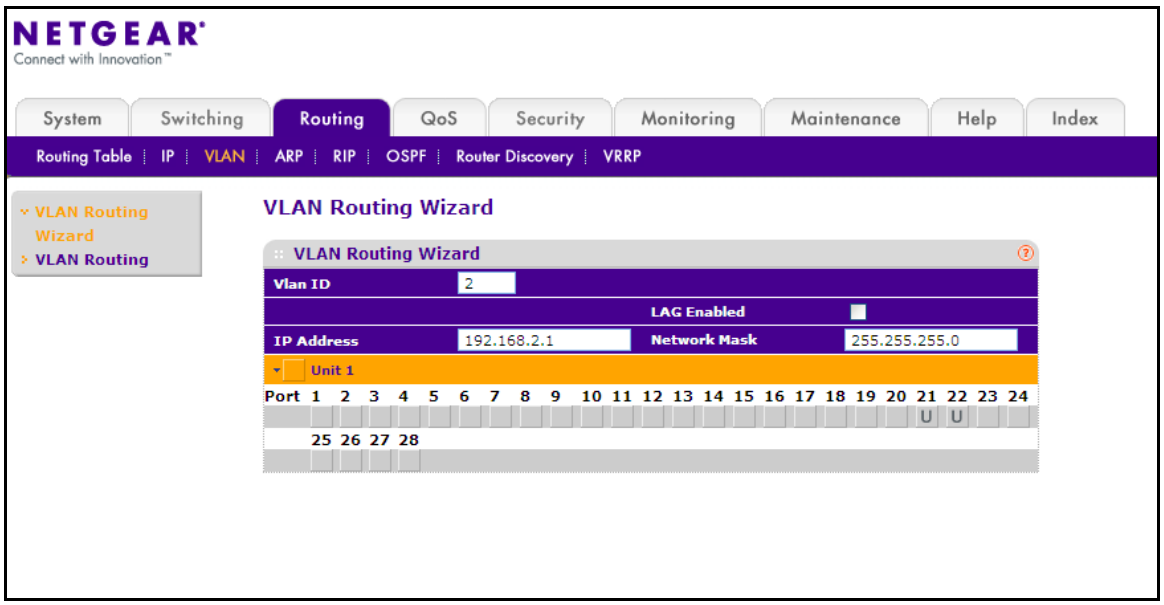
The switch has been configured with two VLANs; VLAN 2 will be the access VLAN, VLAN 3 will be the gateway VLAN

VLAN 2: 192.168.2.1/24
Ports in VLAN 2: 21 untagged, 22 untagged

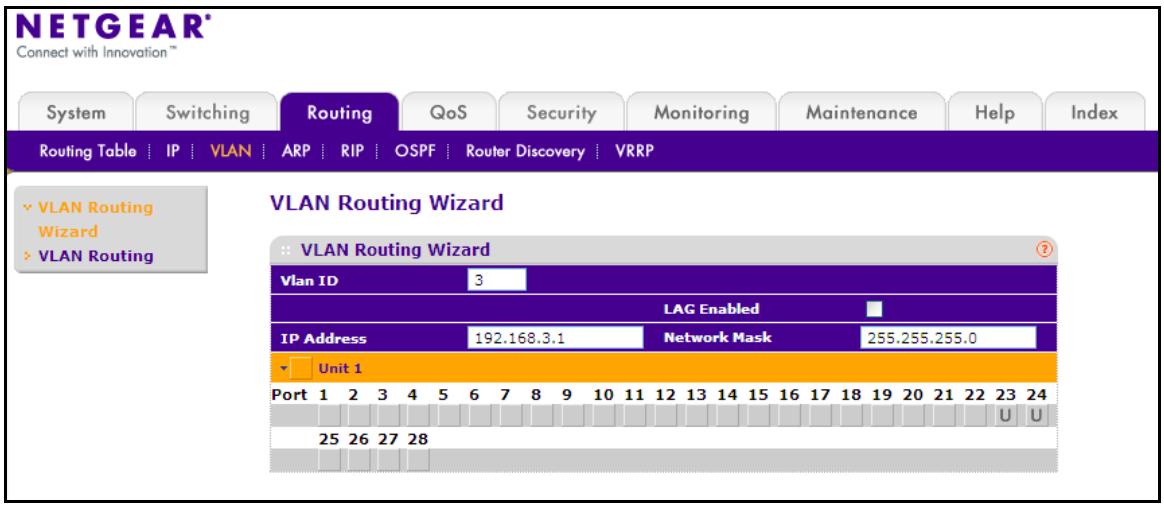
VLAN 3: 192.168.3.1/24
Ports in VLAN 3: 23 untagged, 24 untagged

NOTE: The VLAN configuration will be done through the VLAN routing wizard.

VLAN 2:

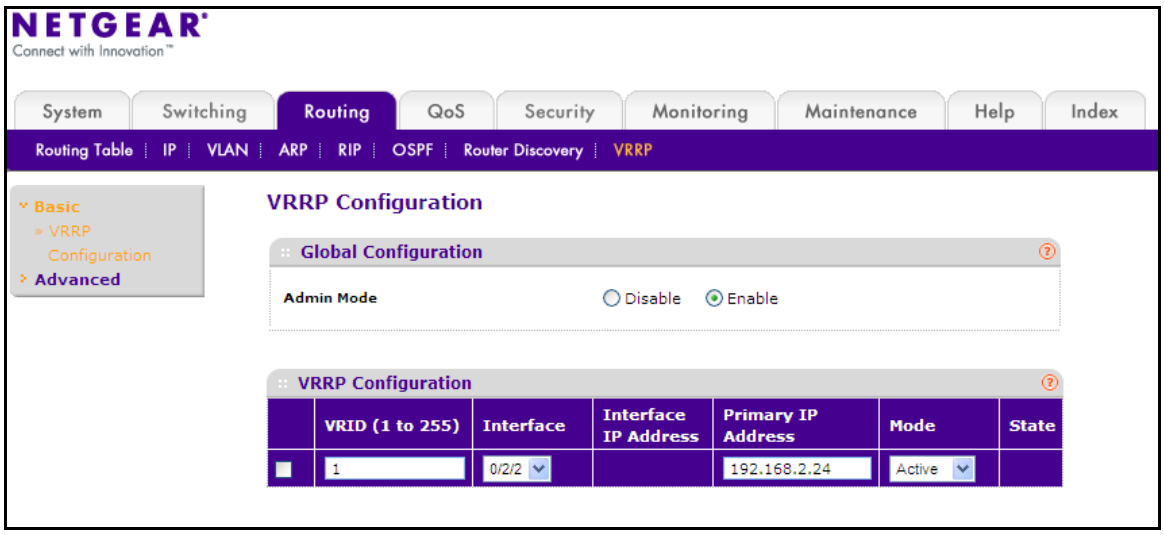


VLAN 3:



SWITCH 1 – VRRP Configuration

From the Routing -> VRRP Menu, configure Switch 1 in the following manner:



The interface will be the virtual VLAN interface. You can find out which VLAN interface belongs to each VLAN from the Routing -> VLAN -> VLAN Routing page.

NOTE: Be sure to enable Admin Mode, then click APPLY. To add VRRP configuration and click ADD.

SWITCH 2 - VLAN Configuration

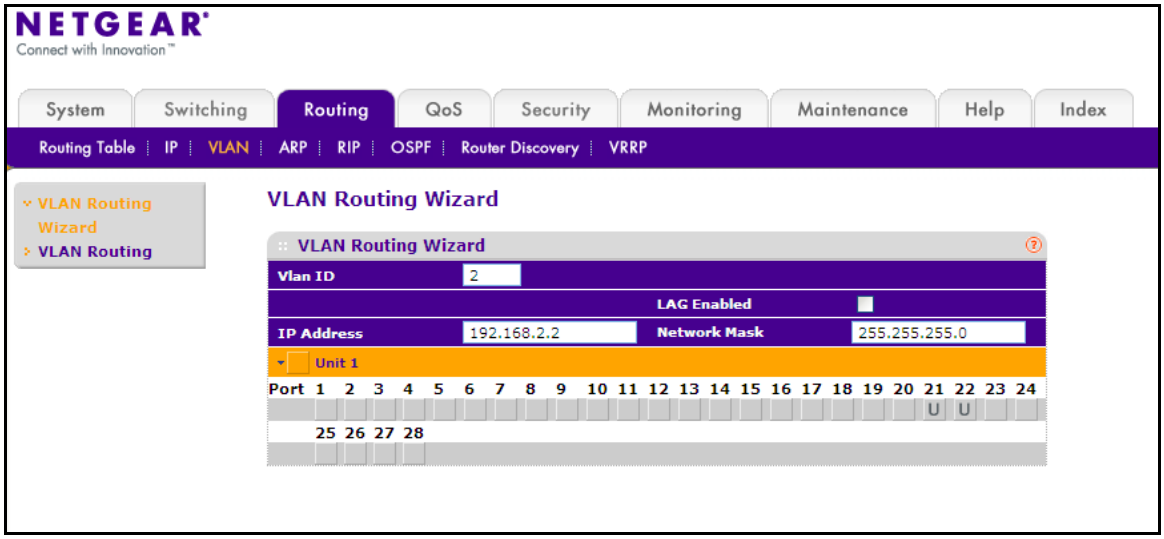
The switch has been configured with two VLANs; VLAN 2 will be the access VLAN, VLAN 4 will be the gateway VLAN

VLAN 2: 192.168.2.2/24
Ports in VLAN 2: 21, 22

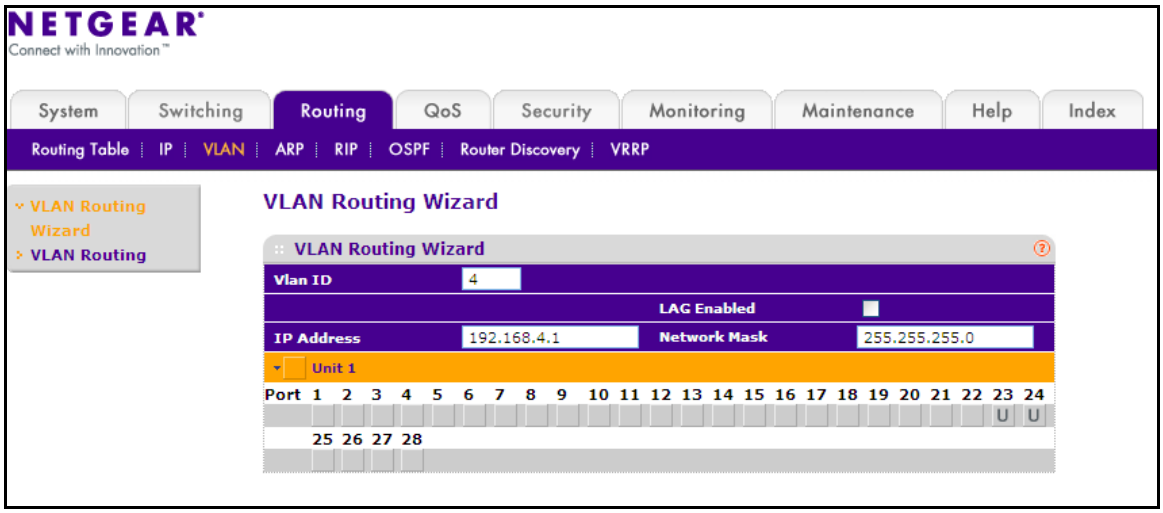
VLAN 4: 192.168.4.1/24
Ports in VLAN 3: 23, 24

NOTE: The VLAN configuration will be done through the VLAN routing wizard.

VLAN 2:

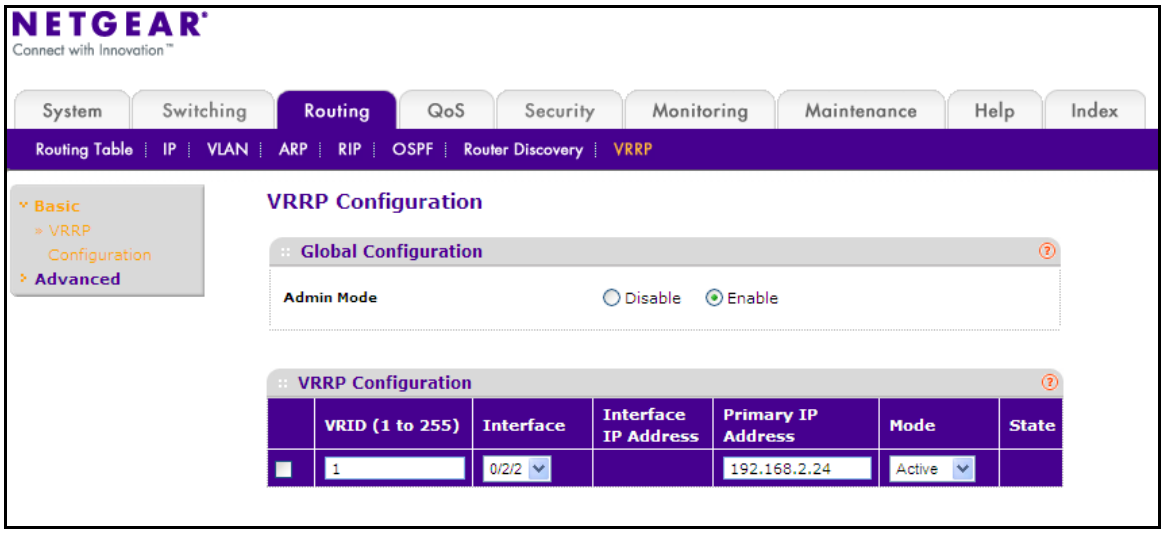


VLAN 4:



SWITCH 2 - VRRP Configuration

From the Routing -> VRRP Menu, configure Switch 2 in the following manner:



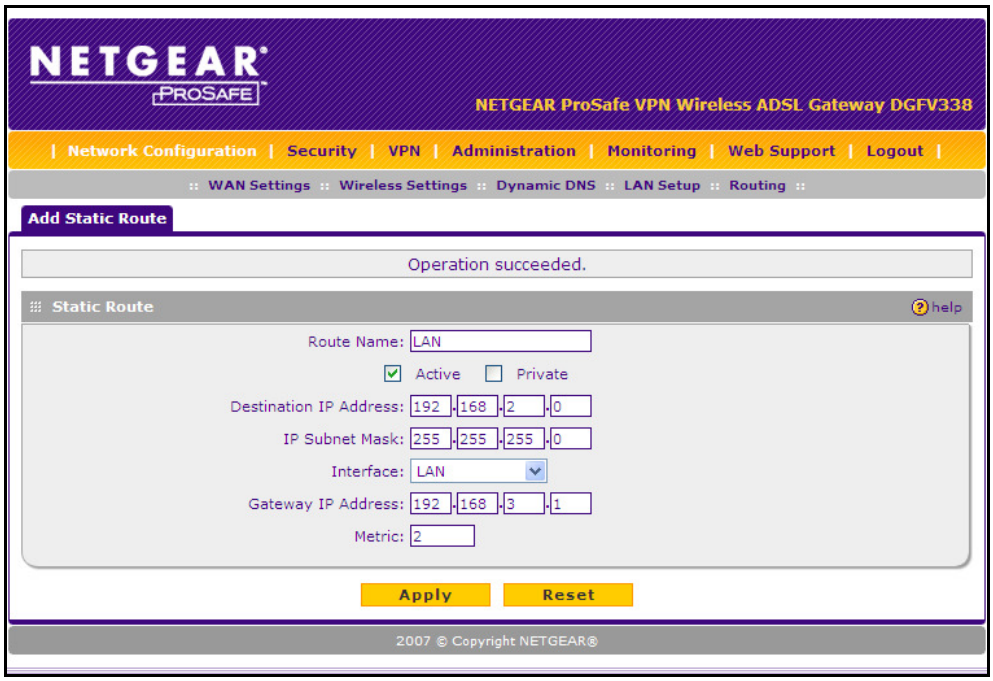
The interface will be the virtual VLAN interface. You can find out which VLAN interface belongs to each VLAN from the Routing -> VLAN -> VLAN Routing page.

NOTE: Be sure to enable Admin Mode, then click APPLY. To add VRRP configuration and click ADD.

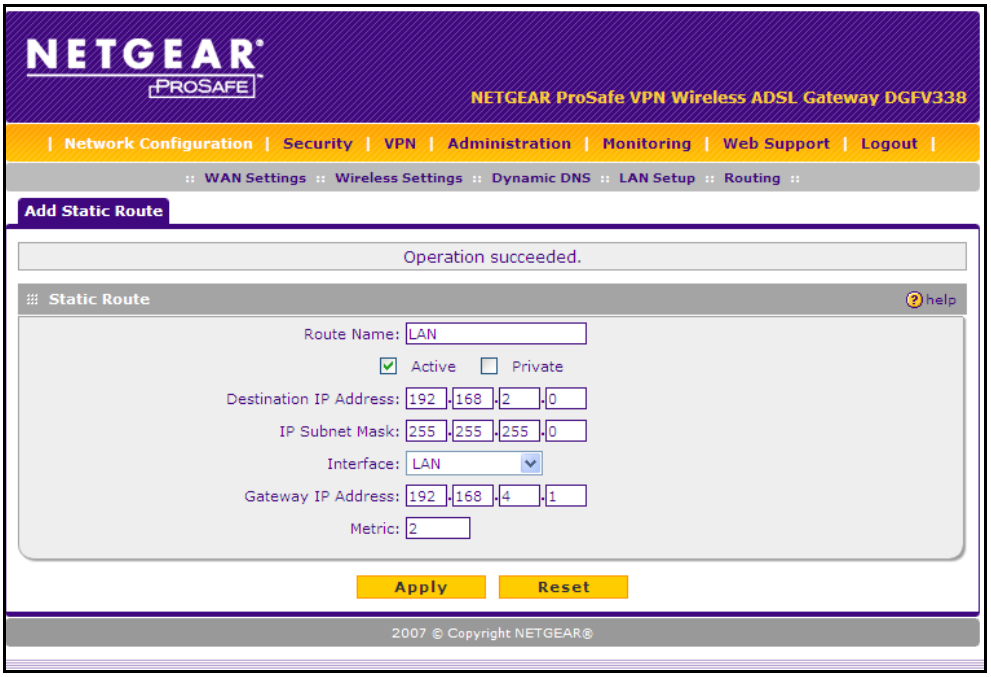
DGFV338 – Routing configuration

In each router, we will have to add a route that directs them back to the 192.168.2.0 LAN. Alternatively this could be done by configuring RIP on the Switches and Routers.

Router 1:



Router 2:

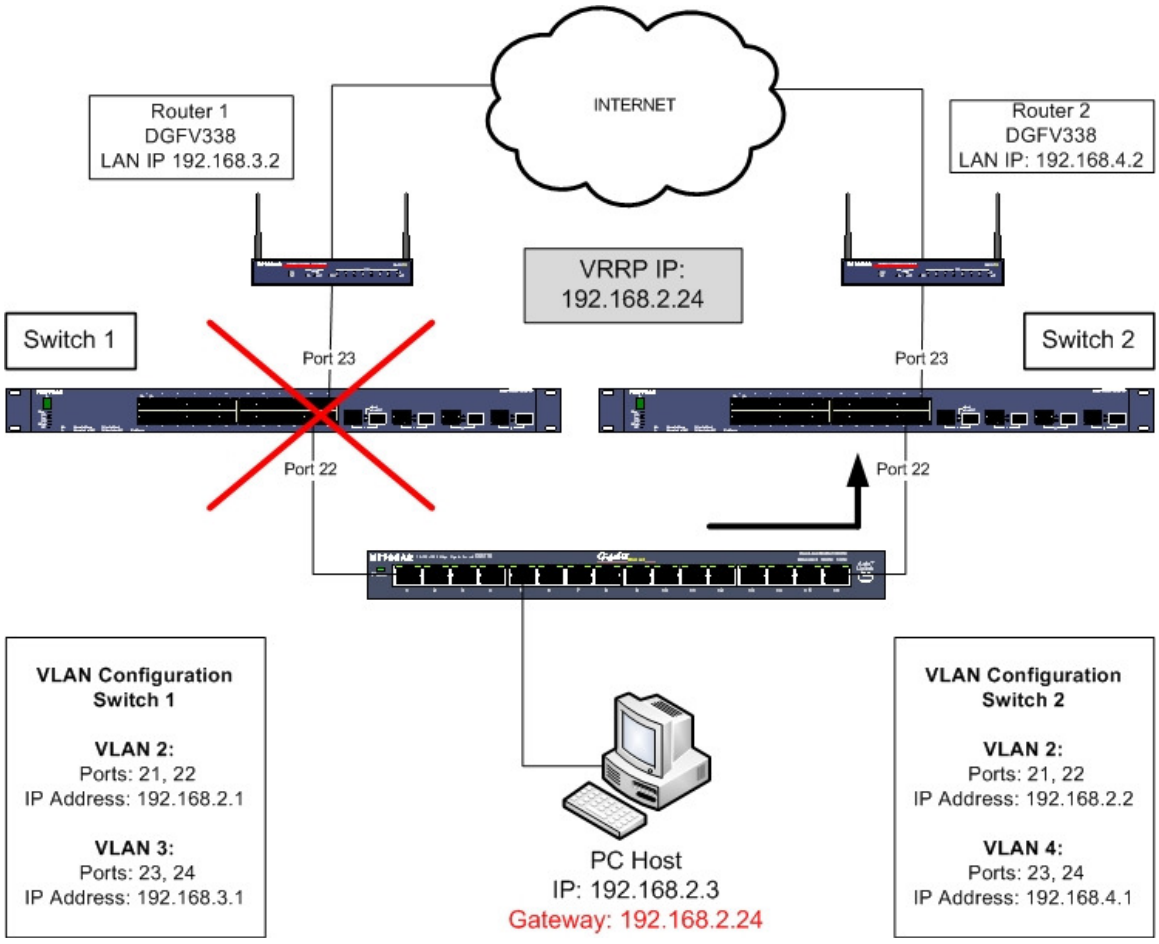


CASE 1 – Testing functionality

First, verify which switch is working as Master from the VRRP menu.

Once we know which of our switches is the primary, we will start a ping stream from our host to a public IP address. As an example, “ping 4.2.2.2 –t”

While the pings are responding, unplug the power of whichever switch is serving as the current VRRP master. You will notice a couple of packets will be lost and the reponses will shortly resume – this will indicate that the backup switch just assumed the role of master. You will be able to verify this by checking the VRRP settings on the switch.



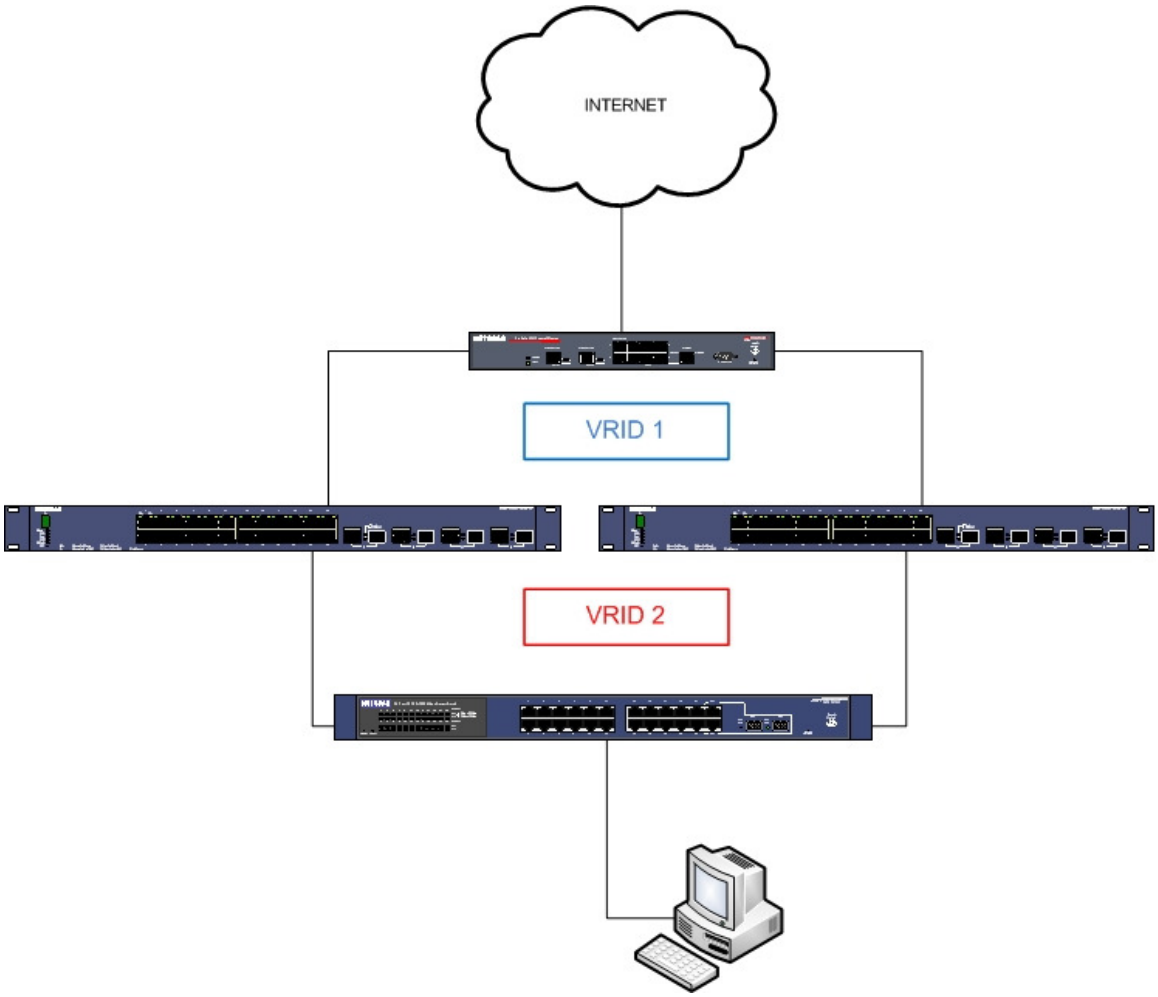
ANNEX – Alternative VRRP scenarios

Although the number of possible scenarios where VRRP may be used, we will expose two other possible deployments for this feature.

CASE 2 – Redundancy to a single connection

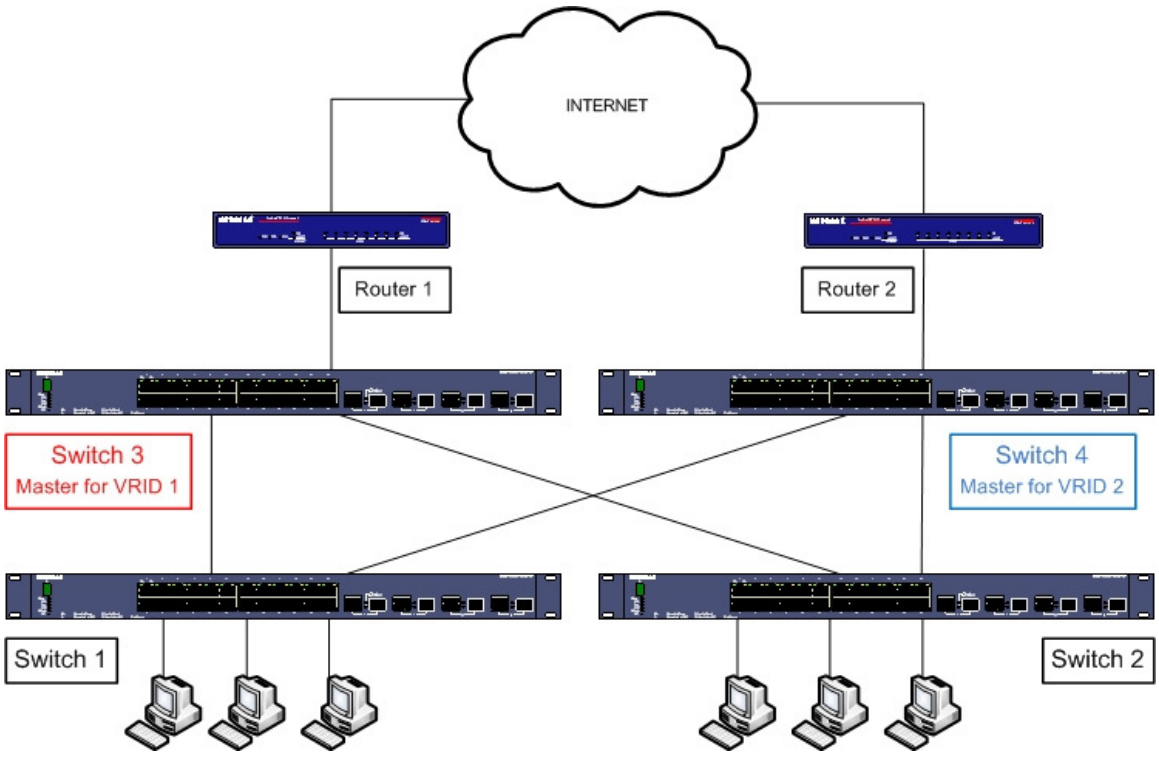
This example has a single internet connection, but will use two VRRP sessions. One between the hosts and the router, and one between the router and the hosts; that way, if the master switch fails, both the router and the hosts will be able to get to the other side of the network.

NOTE: Because there is a loop in this topology, a similar deployment will require proper configuration of STP.



CASE 3 – Load Balancing through VRRP

In this example we have two Internet connections provided by FVS338 routers; Router 1 will be the gateway for the hosts connected to Switch 1, and Router 2 will be the gateway for the hosts connected to Switch 2.

In the event communication breaking between one of the Access Switches (Switch 1 and 2) and one of the Core Switches (Switch 3 and 4), the other core switch will become master for both VRRP sessions and accordingly route the traffic to the correct router and to the internet.

NOTE: Because there is a loop in this topology, a similar deployment will require proper configuration of STP.