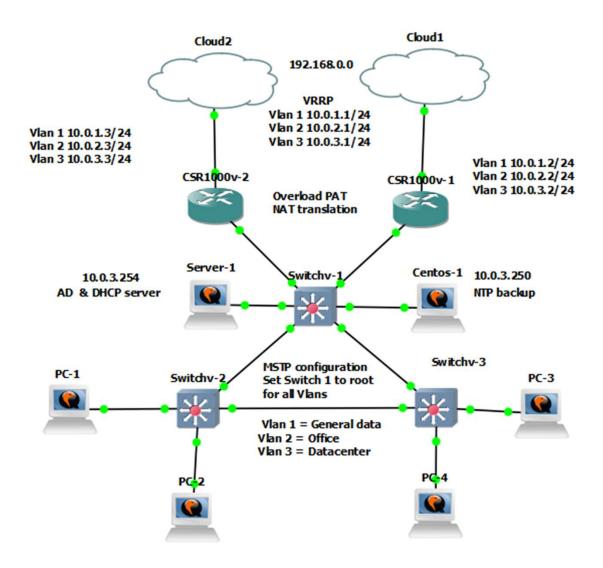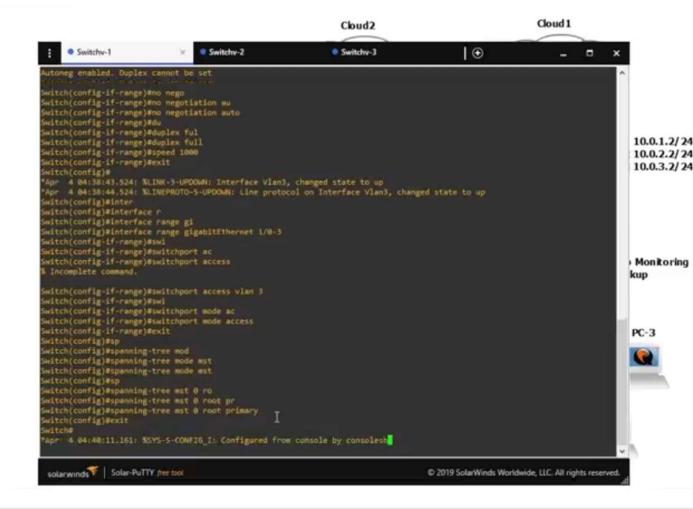## By Xaviar Cordova

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Network engineering Demonstration – New Office build

We've been tasked with setting up a brand-new office we want to keep online 24/7. First is Layer 2 management & network maintenance. Once we've enabled LLDP to help identify Devices' capabilities later, We then created vlans to segment how data is transferred so their fewer chances of it being eavesdropped & Vlan 3 itself has a management interface on each switch enabled so we remote into those later. since we're introducing Vlans, we implemented MSTP so each of them will have a better idea on what path to choose. Just to be safe no random switch overwrites all the others one day, we also set VTP to transparent mode. finally, it is only a matter of setting up the trunk and assigning ports to its intended segments.

Let's now began with IP routing & services. As a GNS3's VM, technically our gateway of last resort is our home network that act as a WAN as we'll enable NAT overload that'll keep our network separate. This site is one of many, which after setting up OSPF & assigning it under area 5 it'll allow all current and future locations to ability to learn & reach it later. Once we set the ACL rule & specify the in/outgress interfaces for NATing, We'll setup a standby router using VRRP so in case a router fails, the other one will take control. We want the OSPF to use router 1 as the default best path so we changed the metric for the standby (in this case since we're not connected to a ABR we're pretending it'll process on it). We wanted a Window server to hand out DHCP leases, so we set the Helper address to 10.0.3.254 right after enabling the sub-interfaces for the vlans

Cloud2

Routes to Area border

192.168.0.0

Cloud1

VRRP

Vlan 1 10.0.1.3/
Vlan 2 10.0.2.3/
Vlan 3 10.0.3.3/

10.0.3
AD & DHC

PC-1

PC-


```
Router#conf terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#inter
Router(config)#interface gi
Router(config)#interface gigabitEthernet 1
Router(config-if)#ip nat ins
Router(config-if)#ip nat inside
Router(config-if)#ip osp
Router(config-if)#ip ospf prio
Router(config-if)#ip ospf priority 250
Router(config-if)#ip help
Router(config-if)#ip helper-address 10.0.3.254
Router(config-if)#vrrp 1 pri
Router(config-if)#vrrp 1 priority 250
Router(config-if)#vrrp 1 ip 10.0.1.1
Router(config-if)#
*Apr 16 23:01:10.698: %VRRP-6-STATECHANGE: Gi1 Grp 1 state Init -> Backup
Router(config-if)#
*Apr 16 23:01:13.721: %VRRP-6-STATECHANGE: Gi1 Grp 1 state Backup -> Master
Router(config-if)#
Router(config-if)#exit
Router(config)#int gig 1.2
Router(config-subif)#ip nat insi
Router(config-subif)#ip nat inside
Router(config-subif)#enc
Router(config-subif)#encapsulation do
Router(config-subif)#encapsulation dot1Q 2
Router(config-subif)#ip help
Router(config-subif)#ip helper-address 10.0.3.254
Router(config-subif)#ip addres
Router(config-subif)#ip address 10.0.2.3 255.255.255.0
Router(config-subif)#vrrp 2 pri
Router(config-subif)#vrrp 2 priority 250
Router(config-subif)#vrrp 2 ip 10.0.2.1
Router(config-subif)#
*Apr 16 23:03:14.889: %VRRP-6-STATECHANGE: Gi1.2 Grp 2 state Init -> Backup
*Apr 16 23:03:17.913: %VRRP-6-STATECHANGE: Gi1.2 Grp 2 state Backup -> Master
Router(config-subif)#
```