

Report 3

Testing and Troubleshooting:

Core_Switch Testing:

IPs on interfaces

```
Building configuration...
Compressed configuration from 1823 bytes to 1077 bytes[OK]
Core_Switch#
Core_Switch# ip int br
Core_Switch# ip int brief
Core_Switch#
Interface      IP-Address      OK? Method Status      Protocol
Ethernet0/0    unassigned      YES unset  up          up
Ethernet0/1    unassigned      YES unset  up          up
Ethernet0/2    10.10.10.2      YES NVRAM  up          up
Ethernet0/3    unassigned      YES unset  up          up
Ethernet1/0    unassigned      YES unset  up          up
Ethernet1/1    unassigned      YES unset  up          up
Ethernet1/2    unassigned      YES unset  up          up
Ethernet1/3    unassigned      YES unset  up          up
Ethernet2/0    unassigned      YES unset  up          up
Ethernet2/1    unassigned      YES unset  up          up
Ethernet2/2    unassigned      YES unset  up          up
Ethernet2/3    unassigned      YES unset  up          up
Ethernet3/0    unassigned      YES unset  up          up
Ethernet3/1    unassigned      YES unset  up          up
Ethernet3/2    unassigned      YES unset  up          up
Ethernet3/3    unassigned      YES unset  up          up
Vlan1          unassigned      YES unset  administratively down down
Vlan2          unassigned      YES unset  down        down
Vlan10         192.168.10.1    YES NVRAM  up          up
Vlan20         192.168.20.1    YES NVRAM  up          up
Core_Switch#
```

VLANs on Core_Switch

```
Vlan2          unassigned      YES unset  down        down
Vlan10         192.168.10.1    YES NVRAM  up          up
Vlan20         192.168.20.1    YES NVRAM  up          up
Core_Switch# vian
Core_Switch#
VLAN Name      Status      Ports
-----
1 default      active      Et0/2, Et1/0, Et1/1, Et3/2
                  Et1/3, Et2/0, Et2/1, Et2/2
                  Et2/3, Et3/0, Et3/1, Et3/2
                  Et3/3
10 HR          active
20 IT          active
1002 Fddi-default act/unsup
1003 token-ring-default act/unsup
1004 Fddinet-default act/unsup
1005 trnet-default act/unsup
Core_Switch#
VLAN Type SAID      MTU   Parent  RingNo BridgeNo Stp   BrdgMode Trans1 Trans2
-----
1 enet 100001 1500   -       -       -       -       0       0
10 enet 100010 1500   -       -       -       -       0       0
20 enet 100020 1500   -       -       -       -       0       0
1002 Fddi 101002 1500   -       -       -       -       0       0
1003 tr 101003 1500   -       -       -       -       0       0
1004 Fdnet 101004 1500   -       -       -       -       0       0
1005 trnet 101005 1500   -       -       -       -       0       0
Core_Switch#
```

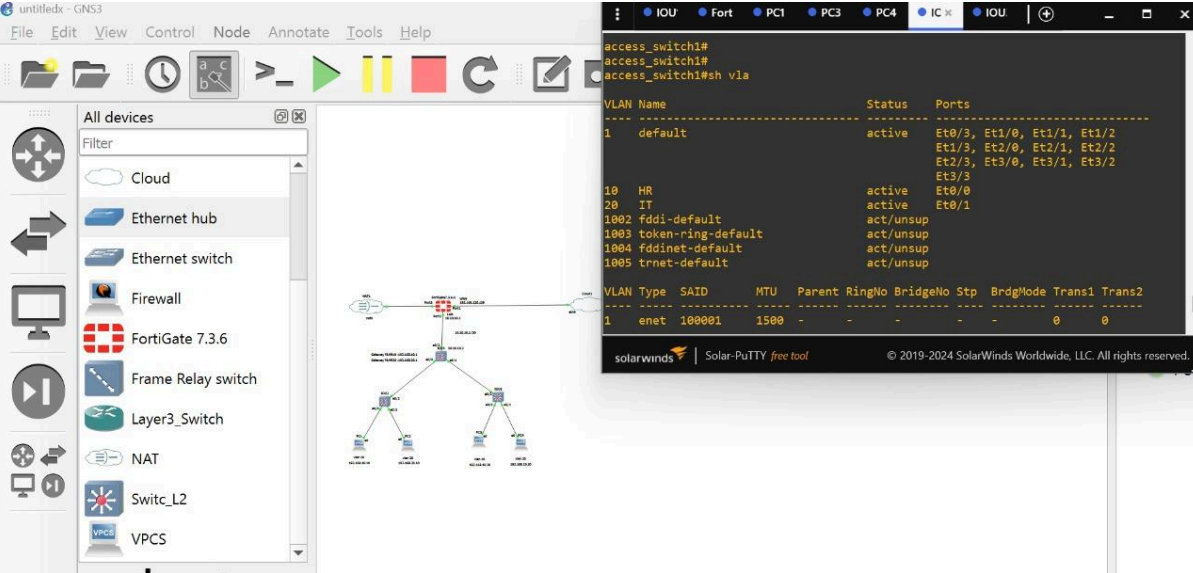
Routing Table

```
Core_Switch# sh ip rou
Core_Switch#
Codes: L - local, C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
       I - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
       ia - IS-IS inter area, * - candidate default, U - per-user static route
       o - ODR, P - periodic downloaded static route, H - NHRP, l - LISP
       a - application route
       * - replicated route, % - next hop override
Gateway of last resort is 10.10.10.1 to network 0.0.0.0

S*  0.0.0.0/0 [1/0] via 10.10.10.1
C*  10.0.0.0/8 [0/0] via 10.10.10.1
L   10.10.10.0/30 is variably subnetted, 2 subnets, 2 masks
C   10.10.10.2/30 is directly connected, Ethernet0/2
L   192.168.10.0/24 is variably subnetted, 2 subnets, 2 masks
C   192.168.10.0/24 is directly connected, Vlan10
L   192.168.10.1/32 is directly connected, Vlan10
C   192.168.20.0/24 is variably subnetted, 2 subnets, 2 masks
C   192.168.20.0/24 is directly connected, Vlan20
L   192.168.20.1/32 is directly connected, Vlan20
Core_Switch#
```

Switch_1:

VLANS on Switch1



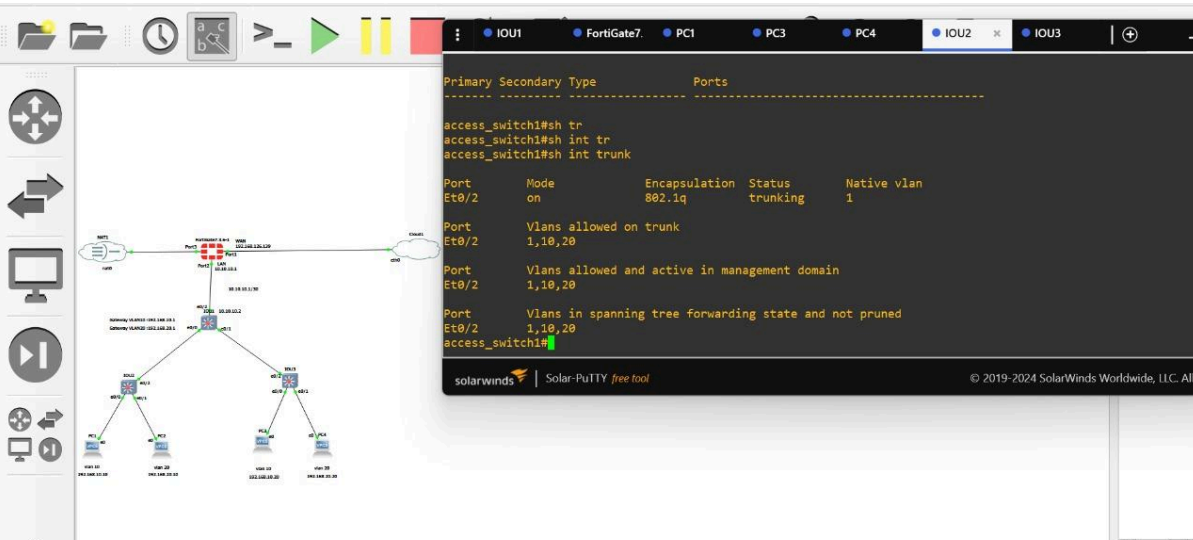
The screenshot shows the GNS3 interface with a network topology. A terminal window is open for 'access_switch1', displaying the output of the 'show vlan' command. The terminal output shows the following VLANs:

VLAN Name	Status	Ports
1 default	active	Et0/3, Et1/0, Et1/1, Et1/2, Et1/3, Et2/0, Et2/1, Et2/2, Et2/3, Et3/0, Et3/1, Et3/2, Et3/3
10 HR	active	Et0/0
20 IT	active	Et0/1
1002 fddi-default	act/unsup	
1003 token-ring-default	act/unsup	
1004 fddinet-default	act/unsup	
1005 trnet-default	act/unsup	

Below the terminal output, there is a table showing the details of the VLANs:

VLAN	Type	SAID	MTU	Parent	RingNo	BridgeNo	Stp	BrdgMode	Trans1	Trans2
1	enet	100001	1500	-	-	-	-	-	0	0

Trunk interfaces



The screenshot shows the GNS3 interface with a network topology. A terminal window is open for 'access_switch1', displaying the output of the 'show interfaces trunk' command. The terminal output shows the following information:

```
access_switch1#sh tr
access_switch1#sh int tr
access_switch1#sh int trunk
```

Port	Mode	Encapsulation	Status	Native vlan
Et0/2	on	802.1q	trunking	1

Below the table, there is a section titled 'Vlans allowed on trunk' and 'Vlans allowed and active in management domain'.

```
Port Et0/2
Vlans allowed on trunk
1,10,20

Port Et0/2
Vlans allowed and active in management domain
1,10,20

Port Et0/2
Vlans in spanning tree forwarding state and not pruned
1,10,20
access_switch1#
```

Switch_2:

VLANS on Switch

untitledx - GNS3

File Edit View Control Node Annotate Tools Help

Filter

Cloud

Ethernet hub

Ethernet switch

Firewall

FortiGate 7.3.6

Frame Relay switch

Layer3_Switch

NAT

Switc_L2

VPCS

New template

IOU Fort PC1 PC3 PC4 IOU IC

```
Et1/3, Et2/0, Et2/1, Et2/2
Et2/3, Et3/0, Et3/1, Et3/2
Et3/3
Et0/0
Et0/1

10 HR active
20 IT active
1002 fddi-default act/unsup
1003 token-ring-default act/unsup
1004 fddinet-default act/unsup
1005 trnet-default act/unsup

VLAN Type SAID MTU Parent RingNo BridgeNo Stp BrdgMode Trans1 Trans2
-----
1 enet 100001 1500 - - - - - 0 0
10 enet 100010 1500 - - - - - 0 0
20 enet 100020 1500 - - - - - 0 0
1002 fddi 101002 1500 - - - - - 0 0
1003 tr 101003 1500 - - - - - 0 0
1004 fdnet 101004 1500 - - - ieee - 0 0
1005 trnet 101005 1500 - - - ibm - 0 0
--More--
```

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Trunk Interfaces

untitledx - GNS3

File Edit View Control Node Annotate Tools Help

Filter

Cloud

Ethernet hub

Ethernet switch

Firewall

FortiGate 7.3.6

Frame Relay switch

Layer3_Switch

NAT

Switc_L2

VPCS

New template

IOU Fort PC1 PC3 PC4 IOU IC

```
Primary Secondary Type Ports
-----
access_switch2#sh int tr
access_switch2#sh int trunk

Port Mode Encapsulation Status Native vlan
Et0/2 on 802.1q trunking 1

Port Vlans allowed on trunk
Et0/2 1,10,20

Port Vlans allowed and active in management domain
Et0/2 1,10,20

Port Vlans in spanning tree forwarding state and not pruned
Et0/2 1,10,20
access_switch2#
```

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1-PC1 Testing:

The screenshot displays the GNS3 network simulation interface. On the left, a network diagram shows a central FortiGate 7.3 router connected to two switches (SW1 and SW2), which are in turn connected to multiple PCs. The main window shows a terminal for PC1 with the following output:

```
192.168.10.1 icmp_seq=4 timeout
192.168.10.1 icmp_seq=5 timeout
PC1> ping 192.168.126.139
84 bytes from 192.168.126.139 icmp_seq=1 ttl=254 time=2.824 ms
84 bytes from 192.168.126.139 icmp_seq=2 ttl=254 time=4.348 ms
84 bytes from 192.168.126.139 icmp_seq=3 ttl=254 time=1.486 ms
84 bytes from 192.168.126.139 icmp_seq=4 ttl=254 time=3.013 ms
84 bytes from 192.168.126.139 icmp_seq=5 ttl=254 time=4.970 ms
PC1> ping 192.168.10.1
84 bytes from 192.168.10.1 icmp_seq=1 ttl=255 time=0.508 ms
84 bytes from 192.168.10.1 icmp_seq=2 ttl=255 time=0.809 ms
84 bytes from 192.168.10.1 icmp_seq=3 ttl=255 time=0.910 ms
84 bytes from 192.168.10.1 icmp_seq=4 ttl=255 time=1.346 ms
84 bytes from 192.168.10.1 icmp_seq=5 ttl=255 time=0.396 ms
PC1>
```

2-PC2 Testing:

The screenshot displays the GNS3 network simulation interface. On the left, a network diagram shows a central FortiGate 7.3 router connected to two switches (SW1 and SW2), which are in turn connected to multiple PCs. The main window shows a terminal for PC2 with the following output:

```
Press '?' to get help.
Executing the startup file
Checking for duplicate address...
PC2 : 192.168.20.10 255.255.255.0 gateway 192.168.20.1
PC2> ping 192.168.126.139
84 bytes from 192.168.126.139 icmp_seq=1 ttl=254 time=3.070 ms
84 bytes from 192.168.126.139 icmp_seq=2 ttl=254 time=4.753 ms
84 bytes from 192.168.126.139 icmp_seq=3 ttl=254 time=4.257 ms
84 bytes from 192.168.126.139 icmp_seq=4 ttl=254 time=4.169 ms
84 bytes from 192.168.126.139 icmp_seq=5 ttl=254 time=2.532 ms
PC2> ping 192.168.10.10
84 bytes from 192.168.10.10 icmp_seq=1 ttl=63 time=8.576 ms
84 bytes from 192.168.10.10 icmp_seq=2 ttl=63 time=2.196 ms
84 bytes from 192.168.10.10 icmp_seq=3 ttl=63 time=1.438 ms
84 bytes from 192.168.10.10 icmp_seq=4 ttl=63 time=1.657 ms
84 bytes from 192.168.10.10 icmp_seq=5 ttl=63 time=0.736 ms
PC2>
```

3-PC3 Testing:

The screenshot displays a GNS3 network topology and a terminal window for PC3. The topology shows a FortiGate 7.3.6 router connected to a NAT1 cloud (nat0) and a WAN interface (192.168.126.1). The router has two LAN interfaces: Port1 (10.10.10.1) and Port2 (10.10.10.2). A central switch (IOU2) is connected to the router's Port1 and Port2. The switch has two VLANs: VLAN10 (192.168.10.1) and VLAN20 (192.168.20.1). PC1 and PC2 are connected to the switch's e0/0 and e0/1 ports, respectively. PC3 and PC4 are connected to the switch's e0/2 and e0/3 ports, respectively. The terminal window for PC3 shows the following commands and output:

```
PC3>
PC3>
PC3>
PC3> ping 192.168.126.139
84 bytes from 192.168.126.139 icmp_seq=1 ttl=254 time=2.601 ms
84 bytes from 192.168.126.139 icmp_seq=2 ttl=254 time=1.023 ms
84 bytes from 192.168.126.139 icmp_seq=3 ttl=254 time=1.483 ms
84 bytes from 192.168.126.139 icmp_seq=4 ttl=254 time=1.777 ms
84 bytes from 192.168.126.139 icmp_seq=5 ttl=254 time=1.430 ms

PC3> ping 10.10.10.1
84 bytes from 10.10.10.1 icmp_seq=1 ttl=254 time=5.646 ms
84 bytes from 10.10.10.1 icmp_seq=2 ttl=254 time=2.888 ms
84 bytes from 10.10.10.1 icmp_seq=3 ttl=254 time=2.726 ms
84 bytes from 10.10.10.1 icmp_seq=4 ttl=254 time=1.882 ms
84 bytes from 10.10.10.1 icmp_seq=5 ttl=254 time=1.672 ms

PC3>
```

4-PC4 Testing:

The screenshot displays a GNS3 network topology and a terminal window for PC4. The topology is similar to the one in the previous screenshot, but with PC4 instead of PC3. The terminal window for PC4 shows the following commands and output:

```
PC4> ping 10.10.10.1
84 bytes from 10.10.10.1 icmp_seq=1 ttl=254 time=4.728 ms
84 bytes from 10.10.10.1 icmp_seq=2 ttl=254 time=2.257 ms
84 bytes from 10.10.10.1 icmp_seq=3 ttl=254 time=2.092 ms
84 bytes from 10.10.10.1 icmp_seq=4 ttl=254 time=3.432 ms
84 bytes from 10.10.10.1 icmp_seq=5 ttl=254 time=1.226 ms

PC4> ping 192.168.126.139
84 bytes from 192.168.126.139 icmp_seq=1 ttl=254 time=6.036 ms
84 bytes from 192.168.126.139 icmp_seq=2 ttl=254 time=2.531 ms
84 bytes from 192.168.126.139 icmp_seq=3 ttl=254 time=2.299 ms
84 bytes from 192.168.126.139 icmp_seq=4 ttl=254 time=1.868 ms
84 bytes from 192.168.126.139 icmp_seq=5 ttl=254 time=3.097 ms

PC4> ping 192.168.10.10
84 bytes from 192.168.10.10 icmp_seq=1 ttl=63 time=2.115 ms
84 bytes from 192.168.10.10 icmp_seq=2 ttl=63 time=3.598 ms
84 bytes from 192.168.10.10 icmp_seq=3 ttl=63 time=1.291 ms
84 bytes from 192.168.10.10 icmp_seq=4 ttl=63 time=1.231 ms
84 bytes from 192.168.10.10 icmp_seq=5 ttl=63 time=1.240 ms

PC4>
```

Firewall Testing:

The screenshot displays the SolarWinds Solar-PuTTY interface. On the left, a network diagram shows a central FortiGate device (FGVMEVIBX-KJUQ32) connected to a Cloud1, NAT1, and NAT2. Below the FortiGate, two switches (SW1 and SW2) are connected to four PCs (PC1, PC2, PC3, PC4). The FortiGate has interfaces labeled 'Port1' and 'Port2'. The switches have interfaces labeled 'eth0/2' and 'eth0/1'. The PCs are labeled 'vlan 10'.

On the right, the terminal window shows the following output:

```
FGVMEVIBX-KJUQ32 # sh sys interface
FGVMEVIBX-KJUQ32 # execute ping 8.8.8.8
PING 8.8.8.8 (8.8.8.8): 56 data bytes
64 bytes from 8.8.8.8: icmp_seq=0 ttl=127 time=104.1 ms
64 bytes from 8.8.8.8: icmp_seq=1 ttl=127 time=50.7 ms
64 bytes from 8.8.8.8: icmp_seq=2 ttl=127 time=49.4 ms
64 bytes from 8.8.8.8: icmp_seq=3 ttl=127 time=47.2 ms
64 bytes from 8.8.8.8: icmp_seq=4 ttl=127 time=47.1 ms

--- 8.8.8.8 ping statistics ---
5 packets transmitted, 5 packets received, 0% packet loss
round-trip min/avg/max = 47.1/59.7/104.1 ms

FGVMEVIBX-KJUQ32 # execute ping 192.168.10.10
PING 192.168.10.10 (192.168.10.10): 56 data bytes
64 bytes from 192.168.10.10: icmp_seq=0 ttl=63 time=3.5 ms
64 bytes from 192.168.10.10: icmp_seq=1 ttl=63 time=2.8 ms
64 bytes from 192.168.10.10: icmp_seq=2 ttl=63 time=5.7 ms
64 bytes from 192.168.10.10: icmp_seq=3 ttl=63 time=2.7 ms
64 bytes from 192.168.10.10: icmp_seq=4 ttl=63 time=2.7 ms

--- 192.168.10.10 ping statistics ---
5 packets transmitted, 5 packets received, 0% packet loss
round-trip min/avg/max = 2.7/3.4/5.7 ms
```

The bottom of the terminal window shows the SolarWinds logo and the text "Solar-PuTTY free tool" and "© 2019-2024 SolarWinds Worldwide, LLC. All rights reserved."

Ping on Out of scope IP:

The GNS3 network diagram shows a central FortiGate 7.3.6-1 router connected to a NAT1 cloud (nat0) and a WAN interface (192.168.1.1). The FortiGate has two LAN interfaces: e0/2 (10.10.10.1) and e0/1 (10.10.10.2). It also has two e0/0 interfaces: e0/0 (192.168.30.10) and e0/3 (192.168.30.10). The FortiGate is connected to two IOU2 switches. The left IOU2 switch has two e0/0 interfaces: e0/0 (192.168.10.10) and e0/1 (192.168.20.10). The right IOU2 switch has two e0/0 interfaces: e0/0 (192.168.10.20) and e0/1 (192.168.20.20). The FortiGate is also connected to two PC5 nodes. The left PC5 node is connected to the FortiGate e0/2 interface and has a VPCS interface (192.168.10.10). The right PC5 node is connected to the FortiGate e0/1 interface and has a VPCS interface (192.168.20.10).

```
PC5>
PC5>
PC5> ping 10.10.10.1
10.10.10.1 icmp_seq=1 timeout
10.10.10.1 icmp_seq=2 timeout
10.10.10.1 icmp_seq=3 timeout
^[[A10.10.10.1 icmp_seq=4 timeout
10.10.10.1 icmp_seq=5 timeout
PC5>
PC5> ping 8.8.8.8
8.8.8.8 icmp_seq=1 timeout
8.8.8.8 icmp_seq=2 timeout
8.8.8.8 icmp_seq=3 timeout
8.8.8.8 icmp_seq=4 timeout
8.8.8.8 icmp_seq=5 timeout
PC5>
```

The GNS3 network diagram is identical to the one above, showing a central FortiGate 7.3.6-1 router connected to a NAT1 cloud (nat0) and a WAN interface (192.168.1.1). The FortiGate has two LAN interfaces: e0/2 (10.10.10.1) and e0/1 (10.10.10.2). It also has two e0/0 interfaces: e0/0 (192.168.30.10) and e0/3 (192.168.30.10). The FortiGate is connected to two IOU2 switches. The left IOU2 switch has two e0/0 interfaces: e0/0 (192.168.10.10) and e0/1 (192.168.20.10). The right IOU2 switch has two e0/0 interfaces: e0/0 (192.168.10.20) and e0/1 (192.168.20.20). The FortiGate is also connected to two PC5 nodes. The left PC5 node is connected to the FortiGate e0/2 interface and has a VPCS interface (192.168.10.10). The right PC5 node is connected to the FortiGate e0/1 interface and has a VPCS interface (192.168.20.10).

```
Welcome!
WARNING: File System Check Recommended! An unsafe reboot may have caused an inconsistency in the disk drive.
It is strongly recommended that you check the file system consistency before proceeding.
Please run 'execute disk list' and then 'execute disk scan <ref#>'.
Note: The device will reboot and scan the disk during startup. This may take up to an hour.
FGVMEVIBX-KJUQ32 # ping 192.168.30.10
Unknown action 0
FGVMEVIBX-KJUQ32 # execute ping 192.168.30.10
PING 192.168.30.10 (192.168.30.10): 56 data bytes
--- 192.168.30.10 ping statistics ---
5 packets transmitted, 0 packets received, 100% packet loss
FGVMEVIBX-KJUQ32 #
```