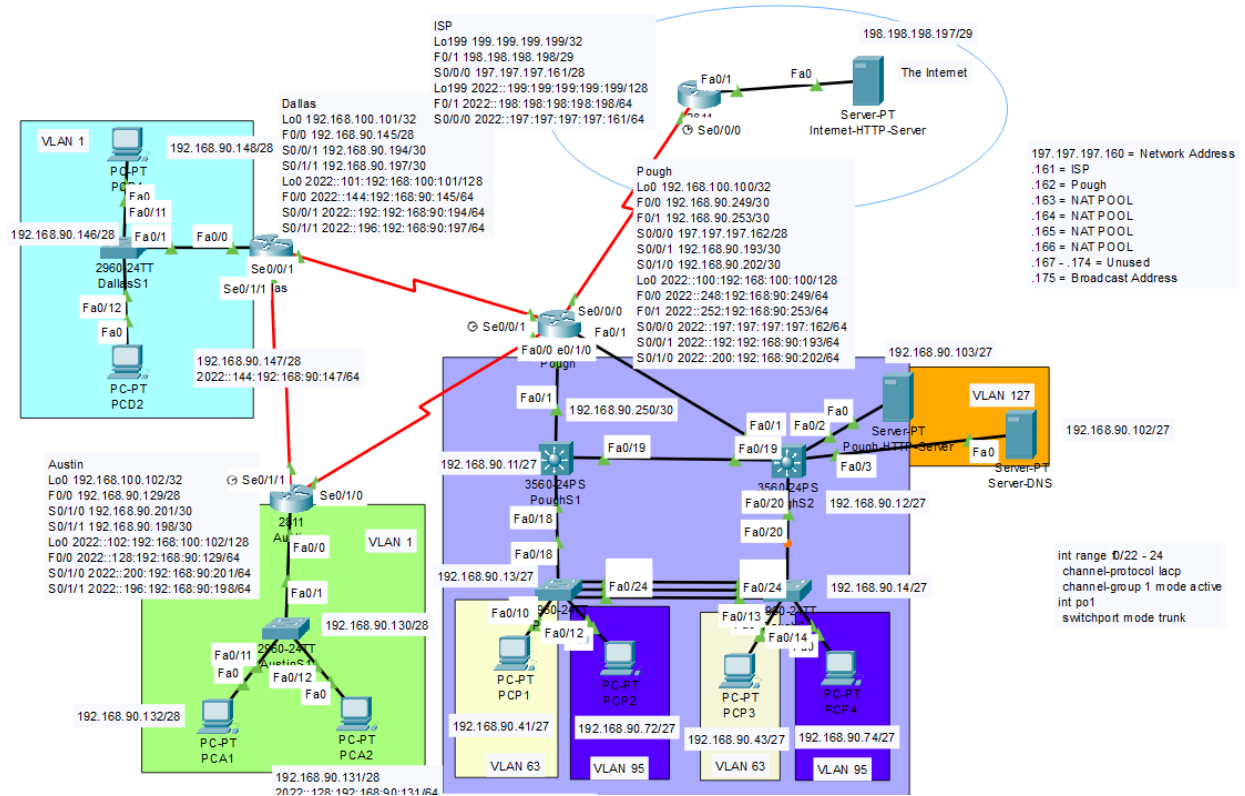


Nicholas Suchy – CMPT 307 Section 111 – Challenge Lab

A screenshot of the topology of the document (several notes are left out as including them would make the topology very difficult to see.



1. VLANs

1. A screenshot showing the created VLANs for the lab

```
PoughS1#show vlan brief
```

VLAN Name	Status	Ports
1 default	active	Fa0/2, Fa0/3, Fa0/4, Fa0/5 Fa0/6, Fa0/7, Fa0/8, Fa0/9 Fa0/10, Fa0/11, Fa0/12, Fa0/13 Fa0/14, Fa0/15, Fa0/16, Fa0/17 Fa0/20, Fa0/21, Fa0/22, Fa0/23 Fa0/24, Gig0/1, Gig0/2
63 VLAN63	active	
95 VLAN95	active	
127 VLAN127	active	

2. A screenshot demonstrating proper attribution of VLANs to interfaces along with the proper mode of operation for each switch interface. All non-connected interfaces are set to 1 by default. Interface F0/10 and F0/12 are set to access VLAN 63 and 95 respectively as they connect to the PCs on those VLANs. This signifies the ports are in access mode. All other active interfaces are set to trunk show that any VLAN can pass through them.

```
PoughS3#show int status
```

Port	Name	Status	Vlan	Duplex	Speed	Type
Pol		connected	trunk	auto	auto	
Fa0/1		notconnect	1	auto	auto	10/100BaseTX
Fa0/2		notconnect	1	auto	auto	10/100BaseTX
Fa0/3		notconnect	1	auto	auto	10/100BaseTX
Fa0/4		notconnect	1	auto	auto	10/100BaseTX
Fa0/5		notconnect	1	auto	auto	10/100BaseTX
Fa0/6		notconnect	1	auto	auto	10/100BaseTX
Fa0/7		notconnect	1	auto	auto	10/100BaseTX
Fa0/8		notconnect	1	auto	auto	10/100BaseTX
Fa0/9		notconnect	1	auto	auto	10/100BaseTX
Fa0/10		connected	63	auto	auto	10/100BaseTX
Fa0/11		notconnect	1	auto	auto	10/100BaseTX
Fa0/12		connected	95	auto	auto	10/100BaseTX
Fa0/13		notconnect	1	auto	auto	10/100BaseTX
Fa0/14		notconnect	1	auto	auto	10/100BaseTX
Fa0/15		notconnect	1	auto	auto	10/100BaseTX
Fa0/16		notconnect	1	auto	auto	10/100BaseTX
Fa0/17		notconnect	1	auto	auto	10/100BaseTX
Fa0/18		connected	trunk	auto	auto	10/100BaseTX
Fa0/19		notconnect	1	auto	auto	10/100BaseTX
Fa0/20		notconnect	1	auto	auto	10/100BaseTX
Fa0/21		notconnect	1	auto	auto	10/100BaseTX
Fa0/22		connected	trunk	auto	auto	10/100BaseTX
Fa0/23		connected	trunk	auto	auto	10/100BaseTX
Fa0/24		connected	trunk	auto	auto	10/100BaseTX
Gig0/1		notconnect	1	auto	auto	10/100BaseTX
Gig0/2		notconnect	1	auto	auto	10/100BaseTX

2. STP

1. A screenshot showing a summary of STP on PoughS1

```
PoughS1# show spanning-tree summary
Switch is in pvst mode
Root bridge for: default VLAN63 VLAN95 VLAN127
Extended system ID      is enabled
Portfast Default        is disabled
PortFast BPDU Guard Default is disabled
Portfast BPDU Filter Default is disabled
Loopguard Default       is disabled
EtherChannel misconfig guard is disabled
UplinkFast              is disabled
BackboneFast            is disabled
Configured Pathcost method used is short
```

Name	Blocking	Listening	Learning	Forwarding	STP Active
VLAN0001	0	0	0	2	2
VLAN0063	0	0	0	2	2
VLAN0095	0	0	0	2	2
VLAN0127	0	0	0	2	2
<hr/>					
4 vlans	0	0	0	8	8

2. Screenshots demonstrating that PoughS2 is the secondary root for STP. Both PoughS1 and PoughS2 have the same root priority, meaning if one goes down the other will take control as the primary root. PoughS1 however has a lower bridge priority making it the primary root and PoughS2 the secondary (backup root).

```
PoughS1#show spanning-tree
VLAN0001
Spanning tree enabled protocol ieee
Root ID    Priority    24577
           Address    0050.0FA2.98BE
           This bridge is the root
           Hello Time 2 sec  Max Age 20 sec  Forward Delay 15 sec

Bridge ID  Priority    24577 (priority 24576 sys-id-ext 1)
           Address    0050.0FA2.98BE
           Hello Time 2 sec  Max Age 20 sec  Forward Delay 15 sec
           Aging Time 20
```

```
PoughS2#show spanning-tree
VLAN0001
Spanning tree enabled protocol ieee
Root ID    Priority    24577
           Address    0050.0FA2.98BE
           Cost        19
           Port        19(FastEthernet0/19)
           Hello Time 2 sec  Max Age 20 sec  Forward Delay 15 sec

Bridge ID  Priority    28673 (priority 28672 sys-id-ext 1)
           Address    0001.C9BB.1856
           Hello Time 2 sec  Max Age 20 sec  Forward Delay 15 sec
           Aging Time 20
```

3. EtherChannel

1. A screenshot showing the summary of the EtherChannel created. The ports in the EtherChannel are listed along with the protocol it is using.

```
PoughS3#show ether summary
Flags:  D - down          P - in port-channel
        I - stand-alone  S - suspended
        H - Hot-standby (LACP only)
        R - Layer3       S - Layer2
        U - in use       f - failed to allocate aggregator
        u - unsuitable for bundling
        w - waiting to be aggregated
        d - default port

Number of channel-groups in use: 1
Number of aggregators:          1

Group  Port-channel  Protocol    Ports
-----+-----+-----+-----
1      Po1(SU)          LACP       Fa0/22(P) Fa0/23(P) Fa0/24(P)
```

2. A screenshot showing that the EtherChannel allows all vlans to traverse it.

```
PoughS3#show int trunk
Port      Mode      Encapsulation  Status      Native vlan
Po1       on        802.1q         trunking    1
Fa0/18    on        802.1q         trunking    1

Port      Vlans allowed on trunk
Po1       1-1005
Fa0/18    1-1005

Port      Vlans allowed and active in management domain
Po1       1,63,95,127
Fa0/18    1,63,95,127

Port      Vlans in spanning tree forwarding state and not pruned
Po1       1,63,95,127
Fa0/18    1,63,95,127
```

4. InterVLAN Routing with SVIs

1. A screenshot of PCP2 (VLAN 95) pinging PCP1 (VLAN 63) showing interVLAN routing.

```
C:\>ping 192.168.90.41

Pinging 192.168.90.41 with 32 bytes of data:

Reply from 192.168.90.41: bytes=32 time=15ms TTL=127
Reply from 192.168.90.41: bytes=32 time<1ms TTL=127
Reply from 192.168.90.41: bytes=32 time<1ms TTL=127
Reply from 192.168.90.41: bytes=32 time<1ms TTL=127

Ping statistics for 192.168.90.41:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 15ms, Average = 3ms
```

2. A screenshot showing PCP1 (VLAN 63) pinging the DNS server (VLAN 127).

```
C:\>ping dns

Pinging 192.168.90.102 with 32 bytes of data:

Reply from 192.168.90.102: bytes=32 time=1ms TTL=127
Reply from 192.168.90.102: bytes=32 time<1ms TTL=127
Reply from 192.168.90.102: bytes=32 time<1ms TTL=127
Reply from 192.168.90.102: bytes=32 time<1ms TTL=127

Ping statistics for 192.168.90.102:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 1ms, Average = 0ms
```

3. A screenshot showing PCP2 (VLAN 95) pinging the DNS server (VLAN 127)

```
C:\>ping dns

Pinging 192.168.90.102 with 32 bytes of data:

Reply from 192.168.90.102: bytes=32 time<1ms TTL=127
Reply from 192.168.90.102: bytes=32 time<1ms TTL=127
Reply from 192.168.90.102: bytes=32 time<1ms TTL=127
Reply from 192.168.90.102: bytes=32 time<1ms TTL=127

Ping statistics for 192.168.90.102:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

5. Default Static Routing:

1. A screenshot of Pough's routing table showing that a default static route has been successfully created.

```
Pough#sh ip route | exclude L
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, E - EGP
* - candidate default, U - per-user static route, o - ODR
P - periodic downloaded static route

Gateway of last resort is 197.197.197.161 to network 0.0.0.0

    192.168.90.0/24 is variably subnetted, 6 subnets, 2 masks
C       192.168.90.192/30 is directly connected, Serial0/0/1
C       192.168.90.200/30 is directly connected, Serial0/1/0
C       192.168.90.248/30 is directly connected, FastEthernet0/0
    192.168.100.0/32 is subnetted, 1 subnets
    197.197.197.0/24 is variably subnetted, 2 subnets, 2 masks
C       197.197.197.160/28 is directly connected, Serial0/0/0
S*    0.0.0.0/0 [1/0] via 197.197.197.161
```

2. A screenshot of ISP's routing table showing that a default static route has been successfully created.

```
ISP#sh ip route | exclude L
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, E - EGP
* - candidate default, U - per-user static route, o - ODR
P - periodic downloaded static route

Gateway of last resort is 197.197.197.162 to network 0.0.0.0

    197.197.197.0/24 is variably subnetted, 2 subnets, 2 masks
C       197.197.197.160/28 is directly connected, Serial0/0/0
    198.198.198.0/24 is variably subnetted, 2 subnets, 2 masks
C       198.198.198.192/29 is directly connected, FastEthernet0/1
    199.199.199.0/32 is subnetted, 1 subnets
S*    0.0.0.0/0 [1/0] via 197.197.197.162
```

6. Dynamic Routing

1. A screenshot of Austin's routing table demonstrating learned routes from OSPF.

```
Austin#show ip route | exclude L
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, E - EGP
* - candidate default, U - per-user static route, o - ODR
P - periodic downloaded static route

Gateway of last resort is 192.168.90.202 to network 0.0.0.0

192.168.90.0/24 is variably subnetted, 9 subnets, 3 masks
C    192.168.90.128/28 is directly connected, FastEthernet0/0
O    192.168.90.144/28 [110/65] via 192.168.90.197, 00:24:14, Serial0/1/1
O    192.168.90.192/30 [110/128] via 192.168.90.197, 00:24:14, Serial0/1/1
    [110/128] via 192.168.90.202, 00:24:14, Serial0/1/0
C    192.168.90.196/30 is directly connected, Serial0/1/1
C    192.168.90.200/30 is directly connected, Serial0/1/0
O    192.168.90.248/30 [110/65] via 192.168.90.202, 00:24:14, Serial0/1/0
192.168.100.0/32 is subnetted, 2 subnets
O    192.168.100.100/32 [110/65] via 192.168.90.202, 00:24:14, Serial0/1/0
O*E2 0.0.0.0/0 [110/1] via 192.168.90.202, 00:24:14, Serial0/1/0
```

2. A screenshot of Dallas' routing table demonstrating learned routes from OSPF.

```
Dallas#sho ip route | exclude L
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, E - EGP
* - candidate default, U - per-user static route, o - ODR
P - periodic downloaded static route

Gateway of last resort is 192.168.90.193 to network 0.0.0.0

192.168.90.0/24 is variably subnetted, 9 subnets, 3 masks
O    192.168.90.128/28 [110/65] via 192.168.90.198, 00:23:10, Serial0/1/1
C    192.168.90.144/28 is directly connected, FastEthernet0/0
C    192.168.90.192/30 is directly connected, Serial0/0/1
C    192.168.90.196/30 is directly connected, Serial0/1/1
O    192.168.90.200/30 [110/128] via 192.168.90.198, 00:23:10, Serial0/1/1
    [110/128] via 192.168.90.193, 00:23:10, Serial0/0/1
O    192.168.90.248/30 [110/65] via 192.168.90.193, 00:23:10, Serial0/0/1
192.168.100.0/32 is subnetted, 3 subnets
O    192.168.100.100/32 [110/65] via 192.168.90.193, 00:23:10, Serial0/0/1
O    192.168.100.102/32 [110/65] via 192.168.90.198, 00:23:10, Serial0/1/1
O*E2 0.0.0.0/0 [110/1] via 192.168.90.193, 00:23:10, Serial0/0/1
```

3. A screenshot from Pough showing the current routing protocol in place.

```
Pough#show ip protocol

Routing Protocol is "ospf 1"
  Outgoing update filter list for all interfaces is not set
  Incoming update filter list for all interfaces is not set
  Router ID 192.168.100.100
  It is an autonomous system boundary router
  Redistributing External Routes from,
  Number of areas in this router is 1. 1 normal 0 stub 0 nssa
  Maximum path: 4
  Routing for Networks:
    192.168.100.100 0.0.0.0 area 0
    192.168.90.192 0.0.0.3 area 0
    192.168.90.200 0.0.0.3 area 0
    192.168.90.248 0.0.0.3 area 0
  Routing Information Sources:
    Gateway         Distance      Last Update
    192.168.100.100    110         00:06:14
    192.168.100.101    110         00:06:14
    192.168.100.102    110         00:06:14
    192.168.100.103    110         00:06:19
  Distance: (default is 110)
```

7. Default Route Injection

1. A screenshot of the default static route learned from Pough and passed to Dallas.

```
Dallas#show ip route | include O*E2
      E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
O*E2 0.0.0.0/0 [110/1] via 192.168.90.193, 00:28:28, Serial0/0/1
```

2. A screenshot of the default static route learned from Pough and passed to Austin.

```
Austin#show ip route | include O*E2
      E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
O*E2 0.0.0.0/0 [110/1] via 192.168.90.202, 00:30:06, Serial0/1/0
```

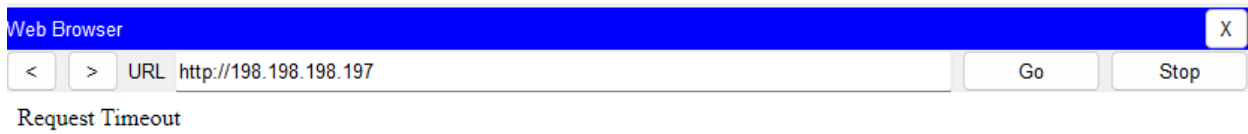
Note Default Route Injection for ipv6 is noted in the ipv6 section

8. Access Control Lists

1. A screenshot of the implemented extended ACL. HTTP connection from PCA1 to the Internet-HTTP-Server is denied while all other traffic is permitted.

```
Austin#show ip access-list 100
Extended IP access list 100
    deny tcp host 192.168.90.132 host 198.198.198.197 eq www
    permit ip any any
```

2. A screenshot of PCA1 being unable to connect to Internet-HTTP-Server via an HTTP connection.



3. A screenshot of PCA1 being able to ping Internet-HTTP-Server showing that only HTTP access is restricted. Additionally, pings to PCD2 are shown to demonstrate that PCA1 can still access other devices.

```
Pinging 198.198.198.197 with 32 bytes of data:
Reply from 198.198.198.197: bytes=32 time=2ms TTL=125
Reply from 198.198.198.197: bytes=32 time=3ms TTL=125
Reply from 198.198.198.197: bytes=32 time=3ms TTL=125
Reply from 198.198.198.197: bytes=32 time=40ms TTL=125

Ping statistics for 198.198.198.197:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 2ms, Maximum = 40ms, Average = 12ms

C:\>ping 192.168.90.147

Pinging 192.168.90.147 with 32 bytes of data:

Request timed out.
Reply from 192.168.90.147: bytes=32 time=1ms TTL=126
Reply from 192.168.90.147: bytes=32 time=1ms TTL=126
Reply from 192.168.90.147: bytes=32 time=1ms TTL=126

Ping statistics for 192.168.90.147:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 1ms, Average = 1ms
```

9. SSH

1. A screenshot demonstrating that SSH has been enabled on the Pough Router.

```
Pough#show ip ssh
SSH Enabled - version 1.99
Authentication timeout: 120 secs; Authentication retries: 3
```

2. A screenshot of PCA2 being unable to access the Pough Router through telnet. Additionally, it is shown that it cannot access the Pough Router through SSH either as SSH access is only allowed for PCP2.

```
C:\>telnet 192.168.100.100
Trying 192.168.100.100 ...
% Connection refused by remote host
C:\>ssh -l cisco 192.168.100.100
% Connection refused by remote host
```

3. A screenshot of PCP2 being unable to access the Pough router through telnet but being able to access the router through SSH.

```
C:\>telnet Pough

Trying 192.168.100.100 ...Open

[Connection to 192.168.100.100 closed by foreign host]
C:\>ssh -l cisco pough

Trying 192.168.100.100 ...
Password:

Pough>
```

10. DHCP

1. A screenshot showing that PCA1 has acquired a proper IP address, subnet mask, default gateway, DNS server, and DNS suffix through DHCP from Pough.

```
C:\>ipconfig /release

IP Address.....: 0.0.0.0
Subnet Mask.....: 0.0.0.0
Default Gateway...: 0.0.0.0
DNS Server.....: 0.0.0.0

C:\>ipconfig /renew

IP Address.....: 192.168.90.132
Subnet Mask.....: 255.255.255.240
Default Gateway...: 192.168.90.129
DNS Server.....: 192.168.90.102
```

2. A screenshot showing the 3 different DHCP pools in use. Summaries of each are shown.

```
Pough(config)#do show ip dhcp pool
```

```
Pool DALLAS-DHCP-POOL :
```

```
Utilization mark (high/low)      : 100 / 0
Subnet size (first/next)          : 0 / 0
Total addresses                   : 14
Leased addresses                  : 1
Excluded addresses                : 4
Pending event                    : none
```

```
1 subnet is currently in the pool
```

Current index	IP address range	Leased/Excluded/Total
192.168.90.145	192.168.90.145 - 192.168.90.158	1 / 4 / 14

```
Pool AUSTIN-DHCP-POOL :
```

```
Utilization mark (high/low)      : 100 / 0
Subnet size (first/next)          : 0 / 0
Total addresses                   : 14
Leased addresses                  : 1
Excluded addresses                : 4
Pending event                    : none
```

```
1 subnet is currently in the pool
```

Current index	IP address range	Leased/Excluded/Total
192.168.90.129	192.168.90.129 - 192.168.90.142	1 / 4 / 14

```
Pool POUGHSL-DHCP-POOL :
```

```
Utilization mark (high/low)      : 100 / 0
Subnet size (first/next)          : 0 / 0
Total addresses                   : 30
Leased addresses                  : 2
Excluded addresses                : 4
Pending event                    : none
```

```
1 subnet is currently in the pool
```

Current index	IP address range	Leased/Excluded/Total
192.168.90.33	192.168.90.33 - 192.168.90.62	2 / 4 / 30

11. DNS

1. A screenshot of PCD2 using PCP2's ARecord to ping it.

```
C:\>ping pcp2

Pinging 192.168.90.72 with 32 bytes of data:

Reply from 192.168.90.72: bytes=32 time=2ms TTL=125
Reply from 192.168.90.72: bytes=32 time<1ms TTL=125
Reply from 192.168.90.72: bytes=32 time=1ms TTL=125
Reply from 192.168.90.72: bytes=32 time=15ms TTL=125

Ping statistics for 192.168.90.72:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 15ms, Average = 4ms
```

2. A screenshot of PCP2 pinging PoughAdmin which resolves to PCP1 address.

```
C:\>ping poughadmin

Pinging 192.168.90.41 with 32 bytes of data:

Reply from 192.168.90.41: bytes=32 time<1ms TTL=127
Reply from 192.168.90.41: bytes=32 time<1ms TTL=127
Reply from 192.168.90.41: bytes=32 time<1ms TTL=127
Reply from 192.168.90.41: bytes=32 time=1ms TTL=127

Ping statistics for 192.168.90.41:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 1ms, Average = 0ms
```

12. PAT

1. A screenshot of the ACL that the implementation of PAT within the topology uses. Only subnets present in the current topology are allowed.

```
Standard IP access list 1
  permit 192.168.90.0 0.0.0.31
  permit 192.168.90.32 0.0.0.31
  permit 192.168.90.64 0.0.0.31
  permit 192.168.90.96 0.0.0.31
  permit 192.168.90.128 0.0.0.15 (16 match(es))
  permit 192.168.90.144 0.0.0.15
  permit 192.168.90.192 0.0.0.3
  permit 192.168.90.196 0.0.0.3
  permit 192.168.90.200 0.0.0.3
  permit 192.168.90.248 0.0.0.3
  deny any
```

2. A screenshot of PAT translation table as PCA2 pings Internet-HTTP-Server.

```
Pough#sh ip nat translations
Pro  Inside global      Inside local          Outside local          Outside global
icmp 197.197.197.163:17 192.168.90.131:17    198.198.198.197:17    198.198.198.197:17
icmp 197.197.197.163:18 192.168.90.131:18    198.198.198.197:18    198.198.198.197:18
icmp 197.197.197.163:19 192.168.90.131:19    198.198.198.197:19    198.198.198.197:19
icmp 197.197.197.163:20 192.168.90.131:20    198.198.198.197:20    198.198.198.197:20
```

13. HSRP

1. A screenshot showing a summary of the HSRP configuration on PoughS1.

```
PoughS1#show standby brief
                P indicates configured to preempt.
                |
Interface    Grp  Pri  P State      Active        Standby        Virtual IP
Vl1          1    150 P Active     local         192.168.90.12  192.168.90.1
Vl63         63    150 P Active     local         192.168.90.35  192.168.90.33
Vl95         95    100 P Standby    192.168.90.67 local          192.168.90.65
Vl127        127   100 P Standby    192.168.90.99 local          192.168.90.97
```

2. A screenshot showing a summary of the HSRP configuration on PoughS2.

```
PoughS2#show standby brief
                P indicates configured to preempt.
                |
Interface    Grp  Pri  P State      Active        Standby        Virtual IP
Vl1          1    100 P Standby    192.168.90.11 local          192.168.90.1
Vl63         63    100 P Standby    192.168.90.34 local          192.168.90.33
Vl95         95    150 P Active     local         192.168.90.66  192.168.90.65
Vl127        127   150 P Active     local         192.168.90.98  192.168.90.97
```

14. Routed Switch Interfaces

1. A screenshot showing the status of F0/1 on PoughS1 as a routing interface as denoted by “routed” under the VLAN column.

```
PoughS1#show int f0/1 status
Port      Name      Status      Vlan      Duplex  Speed Type
Fa0/1     Fa0/1     connected   routed    auto    auto  10/100BaseTX
```

2. A screenshot showing the status of F0/1 on PoughS2. This routing interface was added to the topology so that VLAN95 and VLAN127, which both take an active path through PoughS2 can reach outside networks.

```
PoughS2#show int f0/1 status
Port      Name      Status      Vlan      Duplex  Speed Type
Fa0/1     Fa0/1     connected   routed    auto    auto  10/100BaseTX
```

Note I am unsure if adding this new cabling to the topology was correct. Although several hints within the lab have supported this.

1. The topology states “you may need something more here”. As we had to add a DNS server I had believed that adding another switch interface would be alright.

2. When creating the VLSM tree for the topology, the .252/30 network was left out while the PoughS1 used .248/30 to connect with Pough

3. Finally, as all traffic on VLAN 95 and VLAN 127 are directed to PoughS2 as it is the active path there was no way for them to connect to other subnets. Including this additional cabling allowed for interVLAN routing in addition to other subnets outside of the Poughkeepsie area to have connectivity with devices within VLAN 95 and VLAN127

15. VTP

1. A screenshot of the VTP status from PoughS1

```
PoughS1#show vtp password
VTP Password: cisco
PoughS1#show vtp status
VTP Version capable      : 1 to 2
VTP version running      : 1
VTP Domain Name          : INETLABCHALLENGE
VTP Pruning Mode         : Disabled
VTP Traps Generation     : Disabled
Device ID                : 0001.9695.62C0
Configuration last modified by 192.168.90.11 at 3-2-93 11:01:52
Local updater ID is 192.168.90.11 on interface Vll (lowest numbered VLAN interface found)

Feature VLAN :
-----
VTP Operating Mode       : Server
Maximum VLANs supported locally : 1005
Number of existing VLANs : 8
Configuration Revision   : 72
MD5 digest               : 0x0C 0x02 0x42 0x51 0xD4 0x01 0xD3 0x3E
                        : 0x32 0xD0 0x57 0xFC 0x75 0x09 0x21 0x11
```

2. A screenshot of the VLANs on PoughS3. No VLANs have been created locally, they have been learned from the VTP servers.

```
PoughS3#show vlan brief
```

VLAN Name	Status	Ports
1 default	active	Fa0/1, Fa0/2, Fa0/3, Fa0/4 Fa0/5, Fa0/6, Fa0/7, Fa0/8 Fa0/9, Fa0/11, Fa0/13, Fa0/14 Fa0/15, Fa0/16, Fa0/17, Fa0/19 Fa0/20, Fa0/21, Gig0/1, Gig0/2
63 VLAN63	active	Fa0/10
95 VLAN95	active	Fa0/12
127 VLAN127	active	
1002 fddi-default	active	
1003 token-ring-default	active	
1004 fddinet-default	active	
1005 trnet-default	active	

16. IPv6

1. A screenshot of PCA2 pinging PCD2 using ipv6 addressing demonstrating connectivity.

```
C:\>ping 2022::144:192:168:90:147

Pinging 2022::144:192:168:90:147 with 32 bytes of data:

Reply from 2022::144:192:168:90:147: bytes=32 time=2ms TTL=126
Reply from 2022::144:192:168:90:147: bytes=32 time=1ms TTL=126
Reply from 2022::144:192:168:90:147: bytes=32 time=2ms TTL=126
Reply from 2022::144:192:168:90:147: bytes=32 time=1ms TTL=126

Ping statistics for 2022::144:192:168:90:147:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 1ms, Maximum = 2ms, Average = 1ms
```

2. Austin router's ipv6 routing table. Note that the default static route is learned from Pough router. Additionally, the ipv6 routing protocol enable on Pough router is shown in a separate screenshot.

```
Austin#sh ipv6 route
IPv6 Routing Table - 14 entries
Codes: C - Connected, L - Local, S - Static, R - RIP, B - BGP
        U - Per-user Static route, M - MIPv6
        I1 - ISIS L1, I2 - ISIS L2, IA - ISIS interarea, IS - ISIS summary
        ND - ND Default, NDp - ND Prefix, DCE - Destination, NDr - Redirect
        O - OSPF intra, OI - OSPF inter, OE1 - OSPF ext 1, OE2 - OSPF ext 2
        ON1 - OSPF NSSA ext 1, ON2 - OSPF NSSA ext 2
        D - EIGRP, EX - EIGRP external
OE2 ::/0 [110/1]
    via FE80::205:5EFF:FE25:9201, Serial0/1/0
O  2022::100:192:168:100:100/128 [110/64]
    via FE80::205:5EFF:FE25:9201, Serial0/1/0
O  2022::101:192:168:100:101/128 [110/64]
    via FE80::290:21FF:FE01:3701, Serial0/1/1
C  2022::102:192:168:100:102/128 [0/0]
    via Loopback0, directly connected
C  2022:0:0:128::/64 [0/0]
    via FastEthernet0/0, directly connected
L  2022::128:192:168:90:129/128 [0/0]
    via FastEthernet0/0, receive
O  2022:0:0:144::/64 [110/65]
    via FE80::290:21FF:FE01:3701, Serial0/1/1
O  2022:0:0:192::/64 [110/128]
    via FE80::205:5EFF:FE25:9201, Serial0/1/0
    via FE80::290:21FF:FE01:3701, Serial0/1/1
C  2022:0:0:196::/64 [0/0]
    via Serial0/1/1, directly connected
L  2022::196:192:168:90:198/128 [0/0]
    via Serial0/1/1, receive
C  2022:0:0:200::/64 [0/0]
    via Serial0/1/0, directly connected
L  2022::200:192:168:90:201/128 [0/0]
    via Serial0/1/0, receive
O  2022:0:0:252::/64 [110/65]
    via FE80::205:5EFF:FE25:9201, Serial0/1/0
L  FF00::/8 [0/0]
    via Null0, receive
```

```
Pough#show ipv6 protocol
IPv6 Routing Protocol is "connected"
IPv6 Routing Protocol is "ND"
IPv6 Routing Protocol is "ospf 1"
  Interfaces (Area 0)
    Loopback0
    FastEthernet0/0
    FastEthernet0/1
    Serial0/0/1
    Serial0/1/0
  Redistribution:
    None
```