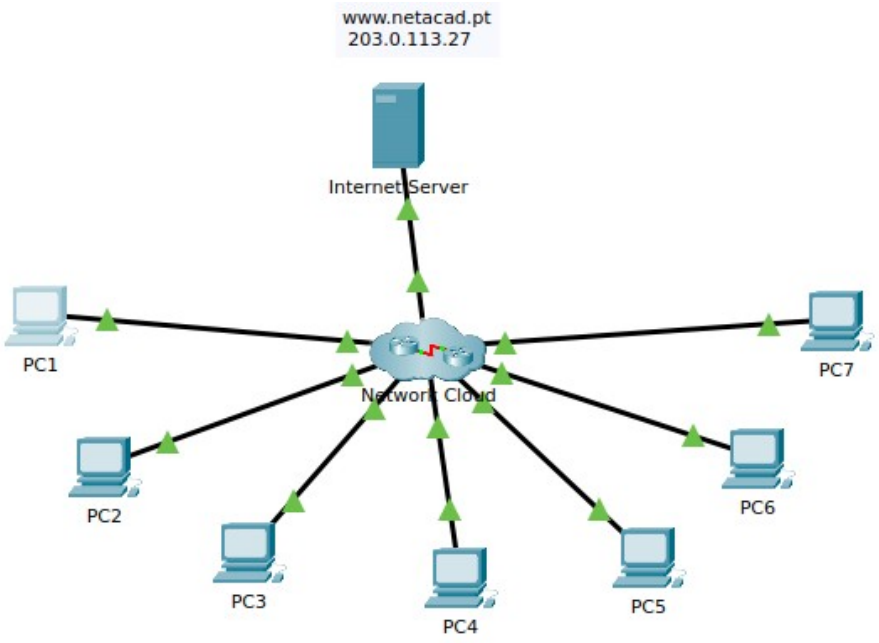
Packet Tracer - Troubleshooting Challenge - Use Documentation to Solve Issues (Activity 1.5.6)

Topology:



Its addressing table according to the previous activity: (all passwords are cisco and class)

Device	Interface	Device Type (router, switch, host)	IP Address	Subnet Mask	Default Gateway	Connected Neighbors
PC1	F0	Host	192.168.1.153	255.255.255.0	192.168.1.1	Branch-1
PC2	F0	Host	192.168.3.50	255.255.255.0	192.168.3.1	Factory
PC3	F0	Host	192.168.4.115	255.255.255.0	192.168.4.1	Factory
PC4	F0	Host	192.168.5.83	255.255.255.128	192.168.5.1	HQ
PC5	F0	Host	192.168.5.227	255.255.255.128	192.168.5.129	HQ
PC6	F0	Host	192.168.2.48	255.255.255.224	192.168.2.33	Branch-2
PC7	F0	Host	192.168.2.67	255.255.255.224	192.168.2.65	Branch-2
Branch-1	G0/0/0	Router	192.168.1.1	255.255.255.0		SW-B1
	S0/1/0		192.168.0.2	255.255.255.252		Hub
SW-B1	G0/1	Switch	192.168.1.252	255.255.255.0	192.168.1.1	Branch-1
Hub	S0/1/0	Router	192.168.0.1	255.255.255.252		Branch-1
	G0/0/0		192.0.2.1	255.255.255.252		ISP
	S0/1/1		192.168.0.5	255.255.255.252		Branch-2
	S0/2/0		192.168.0.9	255.255.255.252		HQ
	S0/2/1		192.168.0.13	255.255.255.252		Factory
ISP	G0/0/0	Router	192.0.2.2	255.255.255.252		Hub
	G0/0/1		203.0.113.1	255.255.255.0		No
Branch-2	S0/1/0	Router	192.168.0.6	255.255.255.252		Hub
	G0/0/0.1		192.168.2.1	255.255.255.224		SW-B2
	G0/0/0.32		192.168.2.33	255.255.255.224		SW-B2
	G0/0/0.64		192.168.2.65	255.255.255.224		SW-B2
Factory	S0/1/0	Router	192.168.0.14	255.255.255.252		Hub
	G0/0/0		192.168.3.1	255.255.255.0		SW-F1
	G0/0/1		192.168.4.1	255.255.255.0		SW-F2
HQ	S0/1/0	Router	192.168.0.10	255.255.255.252		Hub
	G0/0/0.1		192.168.6.1	255.255.255.0		SW-HQ1
	G0/0/0.5		192.168.5.1	255.255.255.128		SW-HQ1
	G0/0/0.10		192.168.5.129	255.255.255.128		SW-HQ1
SW-B2	G0/1	Switch	192.168.2.17	255.255.255.224	192.168.2.1	Branch-2
SW-F1	G0/1	Switch	192.168.3.252	255.255.255.0	192.168.3.1	Factory
SW-F2	G0/1	Switch	192.168.4.252	255.255.255.0	192.168.4.1	Factory
SW-HQ1	G0/1	Switch	192.168.6.252	255.255.255.0	192.168.6.1	HQ
	Por 3					SW-HQ3
	Por 1					SW-HQ2
SW-HQ3	Por 3	Switch	192.168.6.254	255.255.255.0	192.168.6.1	SW-HQ1
	Por 2					SW-HQ2
SW-HQ2	Por 1	Switch	192.168.6.253	255.255.255.0	192.168.6.1	SW-HQ1
	Por 2					SW-HQ3

- Ping the Pcs one by one

-- PC1: --- PC1 can ping PC2 and PC4

--- PC1 can't ping PC3, PC5, PC6, and PC7

-- Troubleshoot the issue between PC1 and PC3:

- See all PC3's configurations

```
C:\>ipconfig

FastEthernet0 Connection:(default port)

   Connection-specific DNS Suffix..:
   Link-local IPv6 Address.....: FE80::260:47FF:FE70:6D7C
   IPv6 Address.....: ::
   IPv4 Address.....: 192.168.4.115
   Subnet Mask.....: 255.255.255.0
   Default Gateway.....: ::
                                 192.168.4.1
```

- Everything is correct. Let's ping its default gateway.

```
C:\>ping 192.168.4.1

Pinging 192.168.4.1 with 32 bytes of data:

Request timed out.
Request timed out.
Request timed out.
Request timed out.

Ping statistics for 192.168.4.1:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

- PC3 cant's reach the default gateway, which is the Factory router. So, let's find another address of Factory from the addressing table and connect to it from PC1: telnet 192.168.3.1 from PC1 and show the interface configuration.

```
C:\>telnet 192.168.3.1
Trying 192.168.3.1 ...Open


User Access Verification

Password:
Factory>ena
Factory>enable
Password:
Factory#show ip interface brief
Interface              IP-Address      OK? Method Status                Protocol
GigabitEthernet0/0/0   192.168.3.1     YES manual up                    up
GigabitEthernet0/0/1   192.168.4.1     YES manual administratively down down
Serial0/1/0            192.168.0.14    YES manual up                    up
Serial0/1/1            unassigned      YES unset  administratively down down
Vlan1                  unassigned      YES unset  administratively down down
Factory#
```

- The interface is down, let's not shuting down.

```
Factory#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Factory(config)#interface g0/0/1
Factory(config-if)#no shutdown
```

- Let's see the interface again

```
Factory#show ip interface brief
Interface              IP-Address      OK? Method Status                Protocol
GigabitEthernet0/0/0   192.168.3.1     YES manual up                    up
GigabitEthernet0/0/1   192.168.4.1     YES manual up                    up
Serial0/1/0            192.168.0.14    YES manual up                    up
Serial0/1/1            unassigned      YES unset  administratively down down
Vlan1                  unassigned      YES unset  administratively down down
```

- Now, PC3 can ping its default gateway:

```
C:\>ping 192.168.4.1

Pinging 192.168.4.1 with 32 bytes of data:

Reply from 192.168.4.1: bytes=32 time<1ms TTL=255
Reply from 192.168.4.1: bytes=32 time<1ms TTL=255
Reply from 192.168.4.1: bytes=32 time<1ms TTL=255
Reply from 192.168.4.1: bytes=32 time<1ms TTL=255

Ping statistics for 192.168.4.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms
```

- After this, PC1 still can’t ping PC3. Let’s find the routing table of PC1’s default gateway which is Branch-1 or 192.168.1.1 with **show ip route.**

```
C:\>telnet 192.168.1.1
Trying 192.168.1.1 ...Open


User Access Verification

Password:
Branch-1>enable
Password:
Branch-1#sho
Branch-1#show ip route
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, E - EGP
       i - IS-IS, 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

Gateway of last resort is 192.168.0.1 to network 0.0.0.0

     192.168.0.0/24 is variably subnetted, 5 subnets, 2 masks
C       192.168.0.0/30 is directly connected, Serial0/1/0
L       192.168.0.2/32 is directly connected, Serial0/1/0
O       192.168.0.4/30 [110/128] via 192.168.0.1, 00:09:09, Serial0/1/0
O       192.168.0.8/30 [110/128] via 192.168.0.1, 00:09:09, Serial0/1/0
O       192.168.0.12/30 [110/128] via 192.168.0.1, 00:09:09, Serial0/1/0
     192.168.1.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.1.0/24 is directly connected, GigabitEthernet0/0/0
L       192.168.1.1/32 is directly connected, GigabitEthernet0/0/0
O    192.168.3.0/24 [110/129] via 192.168.0.1, 00:08:59, Serial0/1/0
     192.168.5.0/25 is subnetted, 2 subnets
O       192.168.5.0/25 [110/129] via 192.168.0.1, 00:08:59, Serial0/1/0
O       192.168.5.128/25 [110/129] via 192.168.0.1, 00:08:59, Serial0/1/0
O    192.168.6.0/24 [110/129] via 192.168.0.1, 00:08:59, Serial0/1/0
O*E2 0.0.0.0/0 [110/1] via 192.168.0.1, 00:09:09, Serial0/1/0

Branch-1#
```

- We can see that there is no route to 192.168.4.0/24.

- From Branch-1, let's make a route to 192.168.4.0/24 via the route Hub or 192.168.0.1 with **ip route 192.168.4.0 255.255.255.0 192.168.0.1**

```
Branch-1#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Branch-1(config)#ip route 192.168.4.0 255.255.255.0 192.168.0.1
```

- After this, PC1 still can't ping PC3.
- From Factory, let's find its routing table if 192.168.1.0/24 is amoung the networks. Connect through PC3.

```
C:\>telnet 192.168.4.1
Trying 192.168.4.1 ...Open


User Access Verification

Password:
Factory>enable
Password:
```

```
Factory#show ip route
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, E - EGP
       i - IS-IS, 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

Gateway of last resort is 192.168.0.13 to network 0.0.0.0

     192.168.0.0/24 is variably subnetted, 5 subnets, 2 masks
O       192.168.0.0/30 [110/128] via 192.168.0.13, 00:20:29, Serial0/1/0
O       192.168.0.4/30 [110/128] via 192.168.0.13, 00:20:29, Serial0/1/0
O       192.168.0.8/30 [110/128] via 192.168.0.13, 00:20:29, Serial0/1/0
C       192.168.0.12/30 is directly connected, Serial0/1/0
L       192.168.0.14/32 is directly connected, Serial0/1/0
O    192.168.1.0/24 [110/129] via 192.168.0.13, 00:20:29, Serial0/1/0
     192.168.3.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.3.0/24 is directly connected, GigabitEthernet0/0/0
L       192.168.3.1/32 is directly connected, GigabitEthernet0/0/0
     192.168.4.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.4.0/24 is directly connected, GigabitEthernet0/0/1
L       192.168.4.1/32 is directly connected, GigabitEthernet0/0/1
     192.168.5.0/25 is subnetted, 2 subnets
O       192.168.5.0/25 [110/129] via 192.168.0.13, 00:20:29, Serial0/1/0
O       192.168.5.128/25 [110/129] via 192.168.0.13, 00:20:29, Serial0/1/0
O    192.168.6.0/24 [110/129] via 192.168.0.13, 00:20:29, Serial0/1/0
O*E2 0.0.0.0/0 [110/1] via 192.168.0.13, 00:20:29, Serial0/1/0

Factory#
```

- We can see that there is a correct route to 192.168.1.0/24 via 192.168.0.13 (Hub). Let's find the routing table of Hub.

```
Factory#telnet 192.168.0.13
Trying 192.168.0.13 ...Open


User Access Verification

Password:
Hub>enable
Password:
```

```
Hub#show ip route
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, E - EGP
       i - IS-IS, 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

Gateway of last resort is 192.0.2.2 to network 0.0.0.0

     192.0.2.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.0.2.0/30 is directly connected, GigabitEthernet0/0/0
L       192.0.2.1/32 is directly connected, GigabitEthernet0/0/0
     192.168.0.0/24 is variably subnetted, 8 subnets, 2 masks
C       192.168.0.0/30 is directly connected, Serial0/1/0
L       192.168.0.1/32 is directly connected, Serial0/1/0
C       192.168.0.4/30 is directly connected, Serial0/1/1
L       192.168.0.5/32 is directly connected, Serial0/1/1
C       192.168.0.8/30 is directly connected, Serial0/2/0
L       192.168.0.9/32 is directly connected, Serial0/2/0
C       192.168.0.12/30 is directly connected, Serial0/2/1
L       192.168.0.13/32 is directly connected, Serial0/2/1
O    192.168.1.0/24 [110/65] via 192.168.0.2, 00:26:41, Serial0/1/0
O    192.168.3.0/24 [110/65] via 192.168.0.14, 00:26:41, Serial0/2/1
     192.168.5.0/25 is subnetted, 2 subnets
O       192.168.5.0/25 [110/65] via 192.168.0.10, 00:26:41, Serial0/2/0
O       192.168.5.128/25 [110/65] via 192.168.0.10, 00:26:41, Serial0/2/0
O    192.168.6.0/24 [110/65] via 192.168.0.10, 00:26:41, Serial0/2/0
S*   0.0.0.0/0 [1/0] via 192.0.2.2
```

- Hub doesn’t have a route to 192.168.4.0/24. So, let’s make one via the IP address of Factory connected to Hub : 192.168.0.14.

```
Hub#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Hub(config)#ip route 192.168.4.0 255.255.255.0 192.168.0.14
```

- Let’s now ping PC3 from PC1.

```
C:\>ping 192.168.4.115

Pinging 192.168.4.115 with 32 bytes of data:

Reply from 192.168.4.115: bytes=32 time=11ms TTL=125
Reply from 192.168.4.115: bytes=32 time=20ms TTL=125
Reply from 192.168.4.115: bytes=32 time=12ms TTL=125
Reply from 192.168.4.115: bytes=32 time=16ms TTL=125

Ping statistics for 192.168.4.115:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 11ms, Maximum = 20ms, Average = 14ms
```

- It is solved. PC1 can now ping PC3.

<u>-- Troubleshoot the issue between PC1 and PC5:</u>

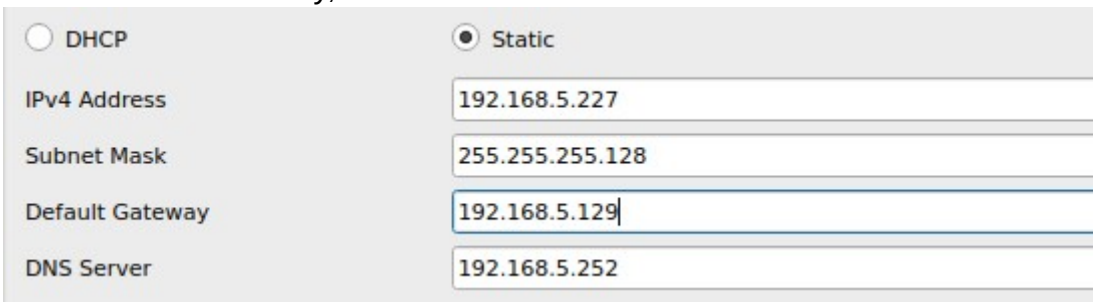
- See all PC5’s configurations

```
C:\>ipconfig

FastEthernet0 Connection:(default port)

   Connection-specific DNS Suffix..:
   Link-local IPv6 Address.........: FE80::200:CFF:FE1B:50E7
   IPv6 Address....................: ::
   IPv4 Address....................: 192.168.5.227
   Subnet Mask.....................: 255.255.255.128
   Default Gateway.................: ::
                                     0.0.0.0
```

- There is no Default Gateway, let's set it.



- Now let's ping PC5 from PC1

```
C:\>ping 192.168.5.227

Pinging 192.168.5.227 with 32 bytes of data:

Reply from 192.168.5.227: bytes=32 time=13ms TTL=125
Reply from 192.168.5.227: bytes=32 time=18ms TTL=125
Reply from 192.168.5.227: bytes=32 time=16ms TTL=125
Reply from 192.168.5.227: bytes=32 time=21ms TTL=125

Ping statistics for 192.168.5.227:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 13ms, Maximum = 21ms, Average = 17ms
```

- It is solved. PC1 can now ping PC5.

-- Troubleshoot the issue between PC1 and PC6:

- See all PC6's configurations

```
C:\>ipconfig

FastEthernet0 Connection:(default port)

   Connection-specific DNS Suffix..:
   Link-local IPv6 Address.........: FE80::206:2AFF:FEB8:5971
   IPv6 Address....................: ::
   IPv4 Address....................: 192.168.2.48
   Subnet Mask.....................: 255.255.255.224
   Default Gateway.................: ::
                                     192.168.2.33
```

Everything is OK. Let's ping its default gateway.

```
C:\>ping 192.168.2.33

Pinging 192.168.2.33 with 32 bytes of data:

Reply from 192.168.2.33: bytes=32 time<1ms TTL=255
Reply from 192.168.2.33: bytes=32 time<1ms TTL=255
Reply from 192.168.2.33: bytes=32 time<1ms TTL=255
Reply from 192.168.2.33: bytes=32 time<1ms TTL=255
```

- PC6 can ping its default gateway which is Branch-2. Let's see the IP address of Branch-2.

```
Branch-2#show ip interface brief
Interface              IP-Address      OK? Method Status                Protocol
GigabitEthernet0/0/0   unassigned      YES manual up                    up
GigabitEthernet0/0/0.1 192.168.2.1     YES manual up                    up
GigabitEthernet0/0/0.32192.168.2.33    YES manual up                    up
GigabitEthernet0/0/0.64192.168.2.65    YES manual up                    up
GigabitEthernet0/0/1   unassigned      YES unset  administratively down down
Serial0/1/0            192.168.0.17    YES manual up                    up
Serial0/1/1            unassigned      YES unset  administratively down down
Vlan1                  unassigned      YES unset  administratively down down
```

- The IP address at s0/1/0 should be 192.168.0.6

```
Branch-2#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Branch-2(config)#interface s0/1/0
Branch-2(config-if)#ip address 192.168.0.6 255.255.255.252
```

- Now let's ping PC6 from PC1.

```
C:\>ping 192.168.2.48

Pinging 192.168.2.48 with 32 bytes of data:

Reply from 192.168.2.48: bytes=32 time=11ms TTL=125
Reply from 192.168.2.48: bytes=32 time=16ms TTL=125
Reply from 192.168.2.48: bytes=32 time=16ms TTL=125
Reply from 192.168.2.48: bytes=32 time=19ms TTL=125
```

- It is solved. PC1 can now ping PC6.

-- The issue between PC1 and PC7 is also solved automatically:

```
C:\>ping 192.168.2.67

Pinging 192.168.2.67 with 32 bytes of data:

Request timed out.
Reply from 192.168.2.67: bytes=32 time=16ms TTL=125
Reply from 192.168.2.67: bytes=32 time=20ms TTL=125
Reply from 192.168.2.67: bytes=32 time=10ms TTL=125
```

Here is the recap

Device	IP Address	Default Gateway	Connected Neighbors	Issue	Action
PC3	192.168.4.115	192.168.4.1	Factory	1- PC1 can't ping PC3 2- PC3 can't ping Factory 192.168.4.1 cause interface is down 3- PC1 still can't ping PC3	2- Activate interface through Factory 192.168.3.1 3- Create a route to 192.168.4.0 at Branch-1 then Hub
PC5	192.168.5.227	192.168.5.129	HQ	- PC1 can't ping PC5	- Set the IP default gateway of PC5
PC6	192.168.2.48	192.168.2.33	Branch-2	- PC1 can't ping PC6	- Modify Branch-2's IP address to 192.168.0.6 on S0/1/0
PC7	192.168.2.67	192.168.2.65	Branch-2	- PC1 can't ping PC7	- Modify Branch-2's IP address to 192.168.0.6 on S0/1/0