

Project Name: Network Design and Configuration

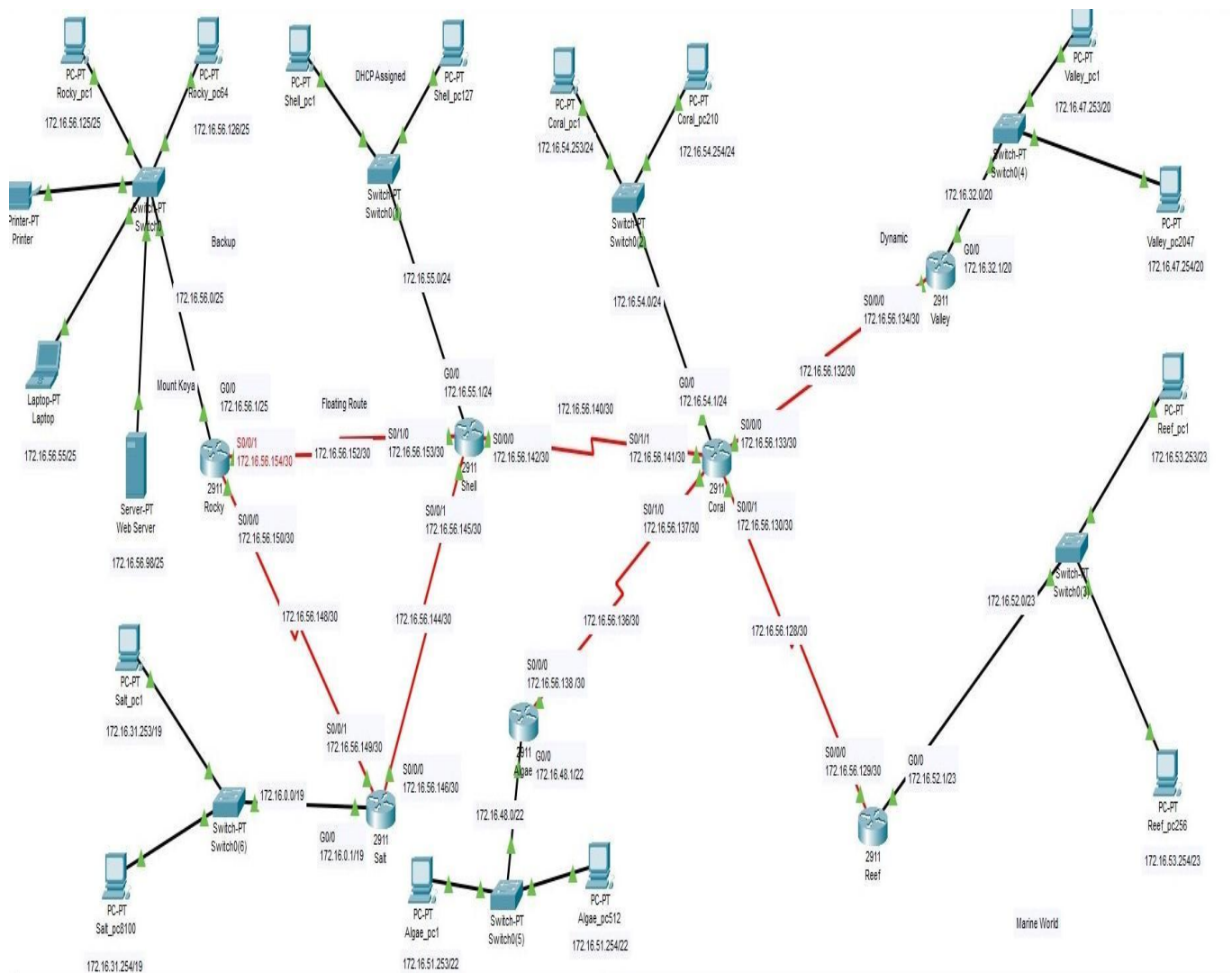
by

MD. Arman Islam

ID: 19101639

Report On Marine World Networking

Network Topology Diagram:



VLSM Table:

Network address --- 172.16.1.0/24

Name	Hosts Needed	Network Address	Mask	Usable Range
Salt	8100	172.16.0.0/19	255.255.224.0	172.16.0.1 - 172.16.31.254
Valley	2047	172.16.32.0/20	255.255.240.0	172.16.32.1 - 172.16.47.254
Algae	512	172.16.48.0/22	255.255.252.0	172.16.48.1 - 172.16.51.254
Reef	256	172.16.52.0/23	255.255.254.0	172.16.52.1 - 172.16.53.254
Coral	210	172.16.54.0/24	255.255.255.0	172.16.54.1 - 172.16.54.254
Shell	127	172.16.55.0/24	255.255.255.0	172.16.55.1 - 172.16.55.254
Rocky	64	172.16.56.0/25	255.255.255.128	172.16.56.1 - 172.16.56.126
CR	2	172.16.56.128/30	255.255.255.252	172.16.56.129 - 172.16.56.130
CV	2	172.16.56.132/30	255.255.255.252	172.16.56.133 - 172.16.56.134
CA	2	172.16.56.136/30	255.255.255.252	172.16.56.137 - 172.16.56.138
CSh	2	172.16.56.140/30	255.255.255.252	172.16.56.141 - 172.16.56.142
ShS	2	172.16.56.144/30	255.255.255.252	172.16.56.145 - 172.16.56.146
SRo	2	172.16.56.148/30	255.255.255.252	172.16.56.149 - 172.16.56.150
ShRo	2	172.16.56.152/30	255.255.255.252	172.16.56.153 - 172.16.56.154

IP TABLE DEVICE:

Device	IP address	Subnet mask	Default gateway
Coral_PC1	172.16.54.253/24	255.255.255.0	172.16.54.1
Coral_PC210	172.16.54.254/24	255.255.255.0	172.16.54.1
Valley_PC1	172.16.47.253/20	255.255.240.0	172.16.32.1
Valley_PC247	172.16.47.254/20	255.255.240.0	172.16.32.1
Reef_PC1	172.16.53.253/23	255.255.254.0	172.16.52.1
Reef_PC256	172.16.53.254/23	255.255.254.0	172.16.52.1
Algae_PC1	172.16.51.253/22	255.255.252.0	172.16.48.1
Algae_PC512	172.16.51.254/22	255.255.252.0	172.16.48.1
Shell_PC1	DHCP assigned	DHCP assigned	N/A
Shell_PC127	DHCP assigned	DHCP assigned	N/A
Salt_PC1	172.16.31.253/19	255.255.224.0	172.16.0.1
Salt_PC8100	172.16.31.254/19	255.255.224.0	172.16.0.1
Rockey_PC1	172.16.56.125/25	255.255.255.128	172.16.56.1
Rockey_PC64	172.16.56.126/25	255.255.255.128	172.16.56.1
Rockey_Laptop	172.16.56.55/25	255.255.255.128	172.16.56.1
Rockey_Printer	N/A	N/A	172.16.56.1
Rockey_WebServer	172.16.56.98/25	255.255.255.128	172.16.56.1

Routing Information table:

Device	Interface	IP address	Subnet mask
Coral	G0/0	172.16.54.1/24	255.255.255.0
	S0/0/0	172.16.56.133/30	255.255.255.252
	S0/0/1	172.16.56.130/30	255.255.255.252
	S0/1/0	172.16.56.137/30	255.255.255.252
	S0/1/1	172.16.56.141/30	255.255.255.252
Valley	G0/0	172.16.32.1/20	255.255.240.0
	S0/0/0	172.16.56.134/30	255.255.255.252
Reef	G0/0	172.16.52.1/23	255.255.254.0
	S0/0/0	172.16.56.129/30	255.255.255.252
Algae	G0/0	172.16.48.1/22	255.255.252.0
	S0/0/0	172.16.56.138 /30	255.255.255.252
Shell	G0/0	172.16.55.1/24	255.255.255.0
	S0/0/0	172.16.56.142/30	255.255.255.252
	S0/0/1	172.16.56.145/30	255.255.255.252
	S0/1/0	172.16.56.153/30	255.255.255.252
Salt	G0/0	172.16.0.1/19	255.255.224.0
	S0/0/0	172.16.56.146/30	255.255.255.252
	S0/0/1	172.16.56.149/30	255.255.255.252
Rocky	G0/0	172.16.56.1/25	255.255.255.128
	S0/0/0	172.16.56.150/30	255.255.255.252
	S0/0/1	172.16.56.154/30	255.255.255.252

Configuration:

PC ip address assigning :

Reef_pc1 -> Desktop -> ip configuration

Ipv4 Address-172.16.53.253

Subnet mask-255.255.254.0

Default gateway-172.16.52.1 //255.255.254.0

Reef_pc256 -> Desktop -> ip configuration

Ipv4 Address-172.16.53.254

Subnet mask-255.255.254.0

Default gateway-172.16.52.1 // 255.255.254.0

Coral_pc1 -> Desktop -> ip configuration

Ipv4 Address-172.16.54.253

Subnet mask-255.255.255.0

Default gateway-172.16.54.1 //255.255.255.0

Coral_pc210 -> Desktop -> ip configuration

Ipv4 Address-172.16.54.254

Subnet mask-255.255.255.0

Default gateway-172.16.54.1 //255.255.255.0

Valley_pc1 -> Desktop -> ip configuration

Ipv4 Address-172.16.47.253

Subnet mask-255.255.240.0

Default gateway- 172.16.32.1 //255.255.240.0

Valley_pc2047 -> Desktop -> ip configuration

Ipv4 Address-172.16.47.254

Subnet mask-255.255.240.0

Default gateway-172.16.32.1 //255.255.240.0

Algae_pc1 -> Desktop -> ip configuration

Ipv4 Address-172.16.51.253

Subnet mask-255.255.252.0

Default gateway-172.16.48.1 // 255.255.252.0

Algae_pc512 -> Desktop -> ip configuration

Ipv4 Address-172.16.51.254

Subnet mask-255.255.252.0
Default gateway-172.16.48.1 //255.255.252.0

Shell_pc1 -> Desktop -> ip configuration

Ipv4 Address-172.16.55.253
Subnet mask-255.255.255.0
Default gateway-172.16.55.1 //255.255.255.0

Shell_pc127 -> Desktop -> ip configuration

Ipv4 Address-172.16.55.254
Subnet mask-255.255.255.0
Default gateway-172.16.55.1 //255.255.255.0

Salt_pc1 -> Desktop -> ip configuration

Ipv4 Address-172.16.31.253
Subnet mask-255.255.224.0
Default gateway-172.16.0.1 //255.255.224.0

Salt_pc8100 -> Desktop -> ip configuration

Ipv4 Address-172.16.31.254
Subnet mask-255.255.224.0
Default gateway-172.16.0.1 //255.255.224.0

Rocky_pc1 -> Desktop -> ip configuration

Ipv4 Address-172.16.56.125
Subnet mask-255.255.255.128
Default gateway-172.16.56.1 //255.255.255.128

Rocky_pc64 -> Desktop -> ip configuration

Ipv4 Address-172.16.56.126
Subnet mask-255.255.255.128
Default gateway-172.16.56.1 //255.255.255.128

Laptop -> Desktop -> ip configuration

Ipv4 Address-172.16.56.55
Subnet mask-255.255.255.128
Default gateway-172.16.56.1 //255.255.255.128

Printer -> Desktop -> ip configuration

Default gateway-172.16.56.1 //255.255.255.128

Web Server -> Desktop -> ip configuration

Ipv4 Address-172.16.56.98
Subnet mask-255.255.255.128
Default gateway-172.16.56.1 //255.255.255.128

Router Ip Address Assigning:

Router : Reef -> CLI En Conf t Interface g0/0 Ip address 172.16.52.1 255.255.254.0 No shutdown Exit Interface s 0/0/0 Ip address 172.16.56.129 255.255.255.252 No shutdown Exit	Router : Valley-> CLI En Conf t Interface g0/0 Ip address 172.16.32.1 255.255.240.0 No shutdown Exit Interface s 0/0/0 Ip address 172.16.56.134 255.255.255.252 No shutdown Exit
-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Router : Salt>CLI En Conf t Interface g0/0 Ip address 172.16.0.1 255.255.224.0 No shutdown Exit Interface s0/0/0 Ip address 172.16.56.146 255.255.255.252 No shutdown Exit Interface s0/0/1 Ip address 172.16.56.149 255.255.255.252 No shutdown Exit	Router : Valley-> CLI En Conf t Interface g0/0 Ip address 172.16.32.1 255.255.240.0 No shutdown Exit Interface s 0/0/0 Ip address 172.16.56.134 255.255.255.252 No shutdown Exit
-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

<p>Router : Coral -> CLI</p> <p>En</p> <p>Conf t</p> <p>Interface g0/0</p> <p>Ip address 172.16.54.1 255.255.255.0</p> <p>No shutdown</p> <p>Exit</p> <p>Interface s 0/0/0</p> <p>Ip address 172.16.56.133 255.255.255.252</p> <p>No shutdown</p> <p>Exit</p> <p>Interface s 0/0/1</p> <p>Ip address 172.16.56.130 255.255.255.252</p> <p>No shutdown</p> <p>Exit</p> <p>Interface s 0/1/0</p> <p>Ip address 172.16.56.137 255.255.255.252</p> <p>No shutdown</p> <p>Exit</p> <p>Interface s 0/1/1</p> <p>Ip address 172.16.56.141 255.255.255.252</p> <p>No shutdown</p> <p>Exit</p>	<p>Router : Algae->CLI</p> <p>En</p> <p>Conf t</p> <p>Interface g0/0</p> <p>Ip address 172.16.48.1 255.255.252.0</p> <p>No shutdown</p> <p>Exit</p> <p>Interface s 0/0/0</p> <p>Ip address 172.16.56.138 255.255.255.252</p> <p>No shutdown</p> <p>Exit</p> <hr/> <p>Router : Shell>CLI</p> <p>En</p> <p>Conf t</p> <p>Interface g0/0</p> <p>Ip address 172.16.55.1 255.255.255.0</p> <p>No shutdown</p> <p>Exit</p> <p>Interface s0/0/0</p> <p>Ip address 172.16.56.142 255.255.255.252</p> <p>No shutdown</p> <p>Exit</p> <p>Interface s0/0/1</p> <p>Ip address 172.16.56.145 255.255.255.252</p> <p>No shutdown</p> <p>Exit</p> <p>Interface s0/1/0</p> <p>Ip address 172.16.56.153 255.255.255.252</p> <p>No shutdown</p> <p>Exit</p>
-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------	---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

Dynamic Routing:

Router Valley -> CLI	Router Coral -> CLI
En	En
conf t	conf t
ip route 0.0.0.0 0.0.0.0 s0/0/0	ip route 0.0.0.0 0.0.0.0 s0/0/0
router rip	router rip
version 2	version 2
no auto-summary	no auto-summary
network 172.16.56.132 (network address of CV)	network 172.16.56.132 (network address of CV)
network 172.16.32.0 (network address of Valley)	network 172.16.54.0 (network address of Coral)
default-information originate	default-information originate
End	End
copy run start	copy run start
Enter	Enter

Floating route in Shell:

Router Salt -> CLI

En

Conf t

Ip route 172.16.56.152 255.255.255.252 s0/1/0 5 (network address of shro shro mask
exit interface from shell distance)

Exit

Static routing in Coral:

Router Coral -> CLI

en

conf t

```
Ip route 172.16.52.0 255.255.254.0 172.16.56.129 // to reef s0/0/0 (Reef)
Ip route 172.16.48.0 255.255.252.0 172.16.56.138 // algae s0/0/0 (Algae)
Ip route 172.16.55.0 255.255.255.0 172.16.56.142 //to shell s0/0/0 (Shell)
Ip route 172.16.0.0 255.255.224.0 172.16.56.142 //to salt s0/0/0 (Shell)
Ip route 172.16.56.0 255.255.255.128 172.16.56.142 //to rocky s0/0/0 (Shell)
```

exit

Router Algae -> CLI

en

conf t

```
Ip route 172.16.54.0 255.255.255.0 172.16.56.137 // to coral s0/1/0 (Coral)
Ip route 172.16.52.0 255.255.254.0 172.16.56.137 // to reef s0/1/0 (Coral)
Ip route 172.16.32.0 255.255.240.0 172.16.56.137 // to valley s0/1/0 (Coral)
Ip route 172.16.55.0 255.255.255.0 172.16.56.137 // to shell s0/1/0 (Coral)
Ip route 172.16.0.0 255.255.224.0 172.16.56.137 // to salt s0/1/0 (Coral)
Ip route 172.16.56.0 255.255.255.128 172.16.56.137 // to rocky s0/1/0 (Coral)
```

Exit

Router Reef-> CLI

en

conf t

Ip route 172.16.54.0 255.255.255.0 172.16.56.130 // to coral s0/0/1(Coral)

Ip route 172.16.48.0 255.255.252.0 172.16.56.130 // to algae s0/0/1(Coral)

Ip route 172.16.32.0 255.255.240.0 172.16.56.130 // to valley s0/0/1(Coral)

Ip route 172.16.55.0 255.255.255.0 172.16.56.130 // to shell s0/0/1(Coral)

Ip route 172.16.0.0 255.255.224.0 172.16.56.130 // to salt s0/0/1(Coral)

Ip route 172.16.56.0 255.255.255.128 172.16.56.130 //to rocky s0/0/1(Coral)

exit

Router Shell-> CLI

-en

-conf t

Ip route 172.16.54.0 255.255.255.0 172.16.56.141 // to coral s0/1/1(Coral)

Ip route 172.16.48.0 255.255.252.0 172.16.56.141 // to algae s0/1/1(Coral)

Ip route 172.16.32.0 255.255.240.0 172.16.56.141 // to valley s0/1/1(Coral)

Ip route 172.16.52.0 255.255.254.0 172.16.56.141 // to reef s0/1/1(Coral)

Ip route 172.16.0.0 255.255.224.0 172.16.56.146 // to salt s0/0/0(Salt)

Ip route 172.16.56.0 255.255.255.128 172.16.56.154 / to rocky s0/0/1(Rocky)

exit

Router Salt-> CLI

-en

-conf t

Ip route 172.16.54.0 255.255.255.0 172.16.56.145 // to coral s0/0/1(Shell)

Ip route 172.16.48.0 255.255.252.0 172.16.56.145 // to algae s0/0/1(Shell)

Ip route 172.16.32.0 255.255.240.0 172.16.56.145 // to valley s0/0/1(Shell)

Ip route 172.16.52.0 255.255.254.0 172.16.56.145 // to reef s0/0/1(Shell)

Ip route 172.16.55.0 255.255.255.0 172.16.56.145 // to Shell s0/0/1(Shell)

Ip route 172.16.56.0 255.255.255.128 172.16.56.150 // to rocky s0/0/0(Rocky)

exit

Router Rocky-> CLI

-en

-conf t

Ip route 172.16.54.0 255.255.255.0 172.16.56.153 //to coral s0/1/0(Shell)

Ip route 172.16.48.0 255.255.252.0 172.16.56.153 // to algae s0/1/0(Shell)

Ip route 172.16.32.0 255.255.240.0 172.16.56.153 // to valley s0/1/0(Shell)

Ip route 172.16.52.0 255.255.254.0 172.16.56.153 //to reef s0/1/0(Shell)

Ip route 172.16.55.0 255.255.255.0 172.16.56.153 // to Shell s0/1/0(Shell)

Ip route 172.16.0.0 255.255.224.0 172.16.56.149 //to salt s0/0/1(Salt)

Exit

Backup Routing:

Router Valley -> CLI En conf t ip route 0.0.0.0 0.0.0.0 s0/0/0(exit interface of valley) Exit	Router Reef -> CLI En conf t ip route 0.0.0.0 0.0.0.0 s0/0/0(exit interface of Reef) Exit
Router Algae -> CLI En conf t ip route 0.0.0.0 0.0.0.0 s0/0/0(exit interface of Algae) Exit	Router Coral-> CLI En conf t ip route 0.0.0.0 0.0.0.0 s0/1/1(exit interface of Coral) Exit
Router Shell-> CLI En conf t ip route 0.0.0.0 0.0.0.0 s0/1/0(exit interface of Shell) Exit	Router Salt-> CLI En conf t ip route 0.0.0.0 0.0.0.0 s0/0/1(exit interface of Salt) Exit
Router Rocky> CLI En conf t ip route 0.0.0.0 0.0.0.0 g0/0(exit interface of Rocky) Exit	

DHCP configuration for shell

Router Shell -> CLI

en

conf t

ip dhcp pool Shell-LAN

network 172.16.55.0 255.255.255.0 (Shell network address shell subnet mask)

default-router 172.16.55.1 (Shell gigabyte interface ip address)

Exit

Shell_PC1->Config-> select DHCP

Shell_PC127->Config-> select DHCP

Testing Commands:

(The commands should be in enable mode)

- Ping (ip address)
- Show ip route
- Ipconfig /all //command for in pc
- Show run
- Show ip dhcp binding //To display the IP address bindings and their associated leases
- Show ip dhcp conflict //any IP address conflicts that the router has detected in the DHCP address pool
- Show Ip interface brief