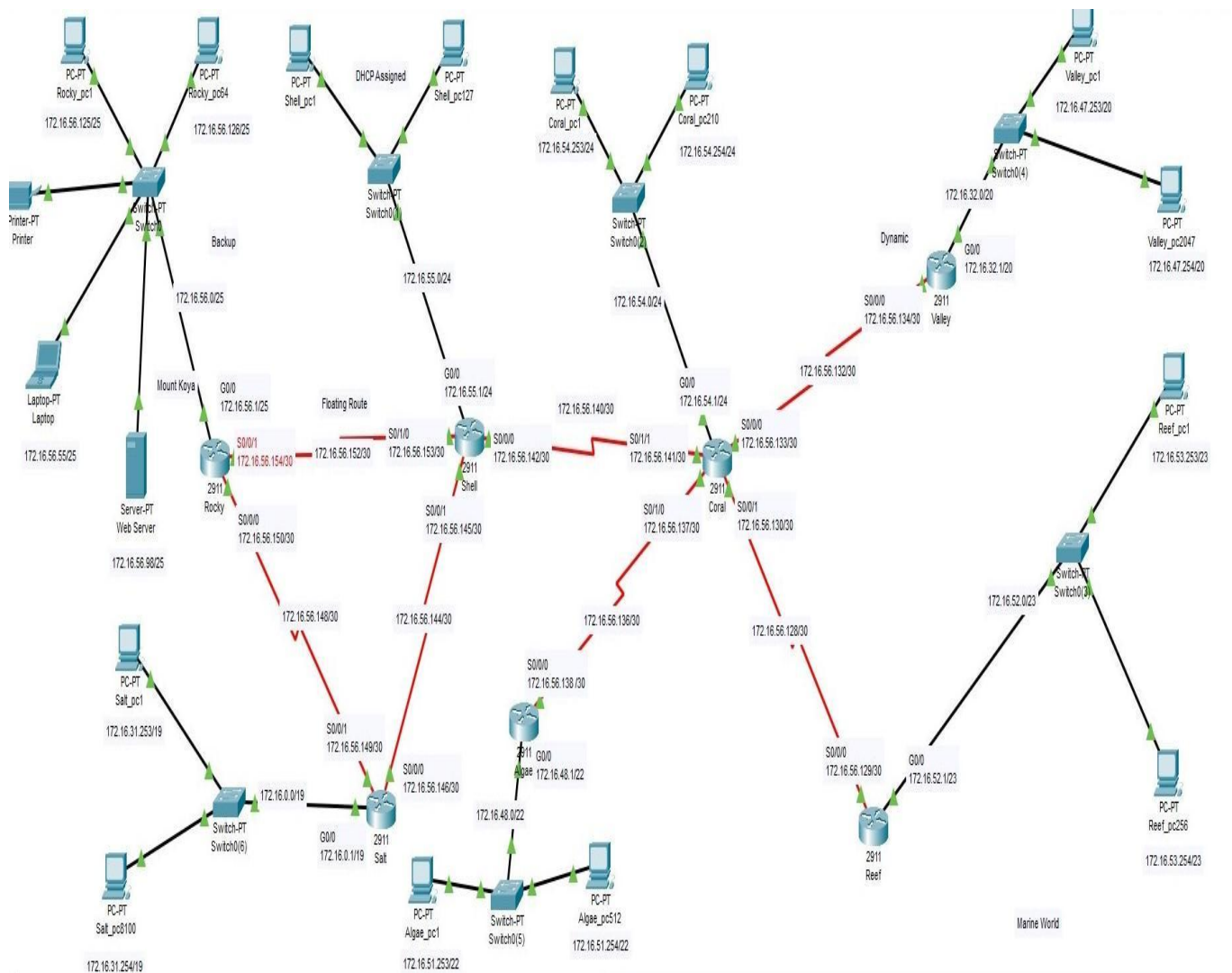




# Report On Marine World Networking

## Network Topology Diagram:



**VLSM Table:**

Network address --- 172.16.1.0/24

<b>Name</b>	<b>Hosts Needed</b>	<b>Network Address</b>	<b>Mask</b>	<b>Usable Range</b>
<b>Salt</b>	8100	172.16.0.0/19	255.255.224.0	172.16.0.1 - 172.16.31.254
<b>Valley</b>	2047	172.16.32.0/20	255.255.240.0	172.16.32.1 - 172.16.47.254
<b>Algae</b>	512	172.16.48.0/22	255.255.252.0	172.16.48.1 - 172.16.51.254
<b>Reef</b>	256	172.16.52.0/23	255.255.254.0	172.16.52.1 - 172.16.53.254
<b>Coral</b>	210	172.16.54.0/24	255.255.255.0	172.16.54.1 - 172.16.54.254
<b>Shell</b>	127	172.16.55.0/24	255.255.255.0	172.16.55.1 - 172.16.55.254
<b>Rocky</b>	64	172.16.56.0/25	255.255.255.128	172.16.56.1 - 172.16.56.126
<b>CR</b>	2	172.16.56.128/30	255.255.255.252	172.16.56.129 - 172.16.56.130
<b>CV</b>	2	172.16.56.132/30	255.255.255.252	172.16.56.133 - 172.16.56.134
<b>CA</b>	2	172.16.56.136/30	255.255.255.252	172.16.56.137 - 172.16.56.138
<b>CSh</b>	2	172.16.56.140/30	255.255.255.252	172.16.56.141 - 172.16.56.142
<b>ShS</b>	2	172.16.56.144/30	255.255.255.252	172.16.56.145 - 172.16.56.146
<b>SRo</b>	2	172.16.56.148/30	255.255.255.252	172.16.56.149 - 172.16.56.150
<b>ShRo</b>	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	<b>DHCP assigned</b>	<b>DHCP assigned</b>	N/A
Shell_PC127	<b>DHCP assigned</b>	<b>DHCP assigned</b>	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
<b>Coral</b>	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
<b>Valley</b>	G0/0	172.16.32.1/20	255.255.240.0
	S0/0/0	172.16.56.134/30	255.255.255.252
<b>Reef</b>	G0/0	172.16.52.1/23	255.255.254.0
	S0/0/0	172.16.56.129/30	255.255.255.252
<b>Algae</b>	G0/0	172.16.48.1/22	255.255.252.0
	S0/0/0	172.16.56.138 /30	255.255.255.252
<b>Shell</b>	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
<b>Salt</b>	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
<b>Rocky</b>	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:

<b>Router : Reef -&gt; CLI</b> 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	<b>Router : Valley-&gt; CLI</b> 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
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<b>Router : Salt&gt;CLI</b> 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	<b>Router : Valley-&gt; CLI</b> 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
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<p><b>Router : Coral -&gt; CLI</b></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><b>Router : Algae-&gt;CLI</b></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><b>Router : Shell&gt;CLI</b></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>
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## 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:**

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