CSE 421
PROJECT SUBMISSION

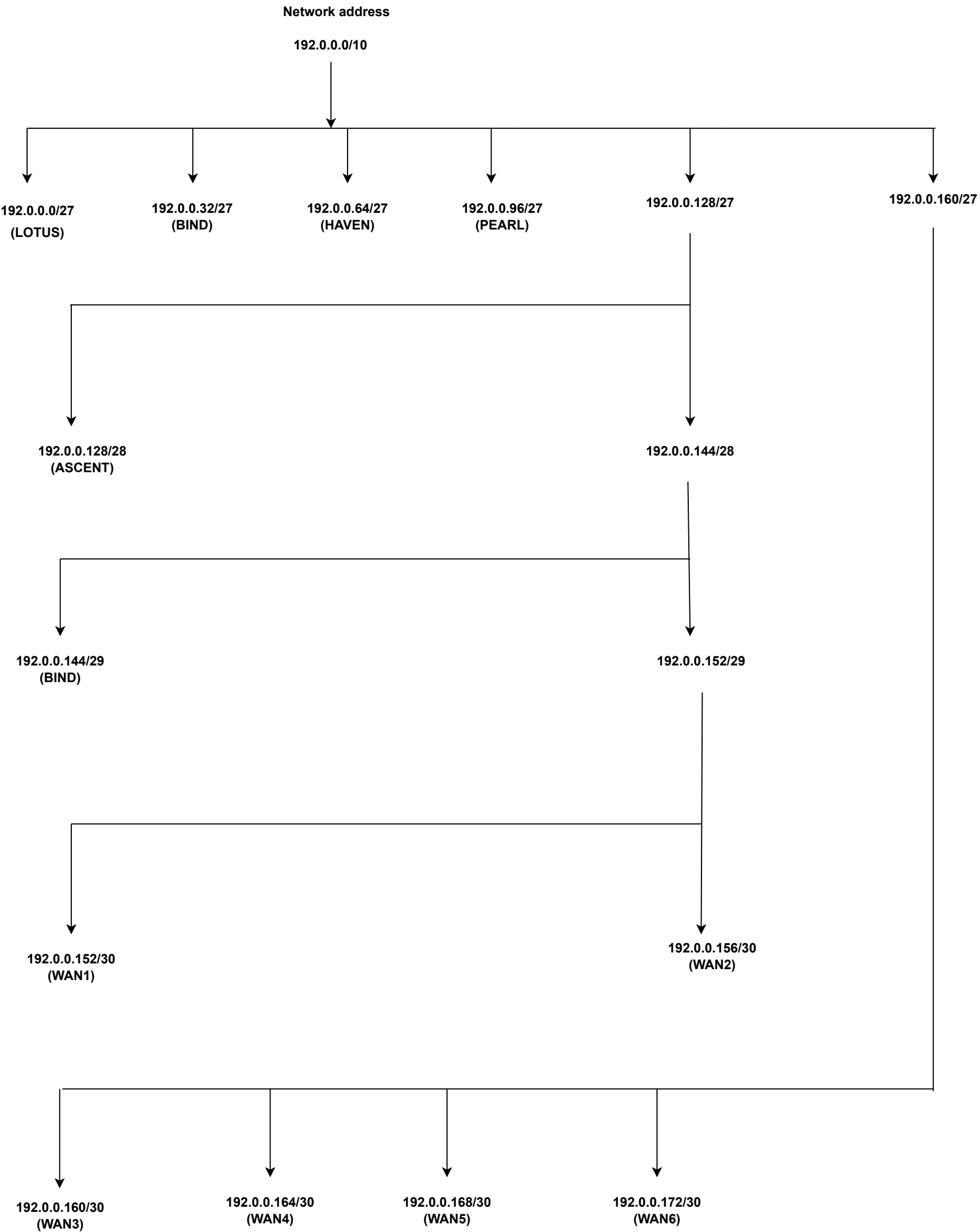| NAME	ID
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Shortest Path found after applying Dijkstra algorithm:

HAVEN

BIND

5

SPLIT

5

3

ASCENT

7

LOTUS

6

PEARL
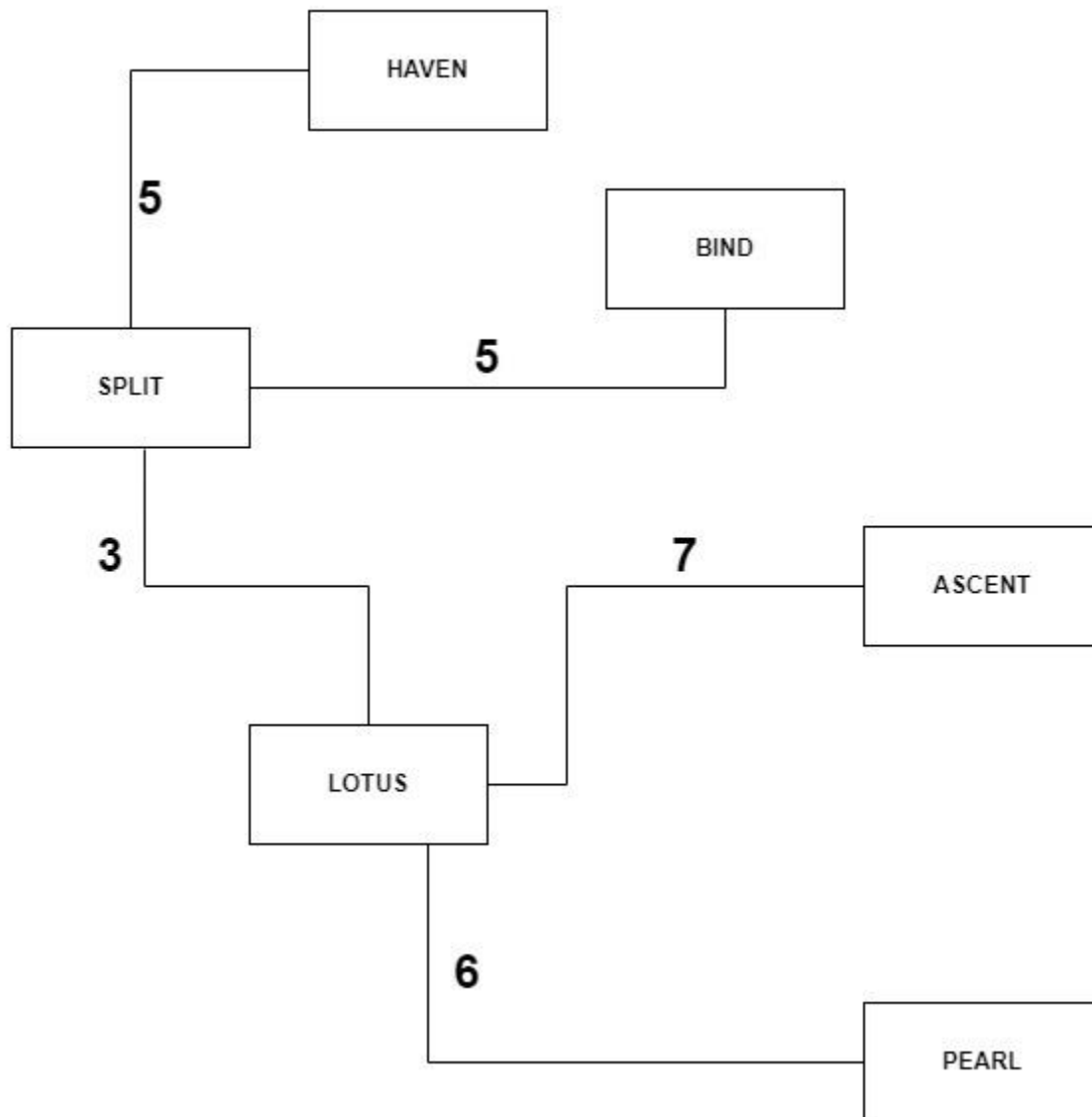
LABEL	HOST REQUIREMENT	HOST +2	IP	HOST BIT	NETWORK BIT
A	30	32	32	5	27
B	25	27	32	5	27
C	20	22	32	5	27
D	15	17	32	5	27
E	10	12	16	4	28
F	5	7	8	3	29
G	2	4	4	2	30
H	2	4	4	2	30
I	2	4	4	2	30
J	2	4	4	2	30
K	2	4	4	2	30
L	2	4	4	2	30

VLSM TREE

Network address

192.0.0.0/10

192.0.0.0/27
(LOTUS)

192.0.0.32/27
(BIND)

192.0.0.64/27
(HAVEN)

192.0.0.96/27
(PEARL)

192.0.0.128/27

192.0.0.160/27

192.0.0.128/28
(ASCENT)

192.0.0.144/28

192.0.0.144/29
(BIND)

192.0.0.152/29

192.0.0.152/30
(WAN1)

192.0.0.156/30
(WAN2)

192.0.0.160/30
(WAN3)

192.0.0.164/30
(WAN4)

192.0.0.168/30
(WAN5)

192.0.0.172/30
(WAN6)

Router Port IP addresses and Subnet Mask:

ROUTER	PORT	IP Address	Subnet Mask	Default Gateway
LOTUS	S0/0/1(P)	192.0.0.154	255.255.255.252	N/A
	S0/1/0(S)	192.0.0.161	255.255.255.252	N/A
	S0/0/0(A)	192.0.0.157	255.255.255.252	N/A
	G0/0	192.0.0.1	255.255.255.224	N/A
SPLIT	S0/1/0(H)	192.0.0.173	255.255.255.252	N/A
	S0/0/0(L)	192.0.0.162	255.255.255.252	N/A
	S0/0/1(B)	192.0.0.170	255.255.255.252	N/A
	G0/0	192.0.0.33	255.255.255.224	N/A
ASCENT	S0/0/0(L)	192.0.0.158	255.255.255.252	N/A
	S0/0/1(B)	192.0.0.165	255.255.255.252	N/A
	G0/0	192.0.0.129	255.255.255.240	N/A
BIND	S0/0/0(S)	192.0.0.169	255.255.255.252	N/A
	S0/0/1(A)	192.0.0.166	255.255.255.252	N/A
	G0/0	192.0.0.145	255.255.255.248	N/A
HAVEN	S0/0/0(S)	192.0.0.174	255.255.255.252	N/A
	G0/0	192.0.0.65	255.255.255.224	N/A
PEARL	S0/0/0(L)	192.0.0.153	255.255.255.252	N/A
	G0/0	192.0.0.97	255.255.255.224	N/A

Router LAN Devices IP addresses and Default Gatways:

Router	Device	IP Address	Subnet Mask	Default Gateway
LOTUS	Laptop 0	192.0.0.5	255.255.255.224	192.0.0.1
	Laptop 1	192.0.0.6	255.255.255.224	192.0.0.1
	Laptop 2	192.0.0.7	255.255.255.224	192.0.0.1
	Laptop 3	192.0.0.8	255.255.255.224	192.0.0.1
	Laptop 4	192.0.0.9	255.255.255.224	192.0.0.1
	Laptop 5	192.0.0.10	255.255.255.224	192.0.0.1
	DNS Server	192.0.0.100	255.255.255.224	192.0.0.97
	Web Server	192.0.0.104	255.255.255.224	192.0.0.97
PEARL	PC0	DHCP Assigned	DHCP Assigned	DHCP Assigned
ASCENT	PC1	DHCP Assigned	DHCP Assigned	DHCP Assigned
	Email Server	192.0.0.132	255.255.255.240	192.0.0.129
BIND	PC11	DHCP Assigned	DHCP Assigned	DHCP Assigned
	Email Server	192.0.0.146	255.255.255.248	192.0.0.145
SPLIT	PC2	DHCP Assigned	DHCP Assigned	DHCP Assigned
	PC3	DHCP Assigned	DHCP Assigned	DHCP Assigned
	PC4	DHCP Assigned	DHCP Assigned	DHCP Assigned
	PC5	DHCP Assigned	DHCP Assigned	DHCP Assigned
	PC7	DHCP Assigned	DHCP Assigned	DHCP Assigned
HAVEN	PC6	DHCP Assigned	DHCP Assigned	DHCP Assigned
	PC8	DHCP Assigned	DHCP Assigned	DHCP Assigned
	PC9	DHCP Assigned	DHCP Assigned	DHCP Assigned
	PC10	DHCP Assigned	DHCP Assigned	DHCP Assigned

Assumptions:

1. We assumed the the prefix mask to be 10. That would give us 22 host bits, enough to satisfy the host requirements.
2. The first octet of our IP address is 192(in decimal) which means our IP address is a classfull IP address.
3. We assumed the dynamic routing to be in the network between Pearl and Lotus
4. We assumed the floating route to be from Bind to Split via the s0/0/1 port of Bind. The administrative distance we provided was 5

INSTRUCTIONS:

Router>enable
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#hostname Lotus
Lotus(config)#
Lotus(config)#

R1>enable
R1#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#hostname Bind
Bind(config)#
Bind(config)#

R1>enable
R1#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#hostname Split
Split(config)#

R1>enable
R1#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#hostname Haven
Haven(config)#

R1>enable
R1#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#hostname Pearl
Pearl(config)#
Pearl(config)#

R1>enable
R1#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
R1(config)#hostname Ascent
Ascent(config)#

Pearl(config)#interface Serial0/0/0
Pearl(config-if)#no ip address
Pearl(config-if)#no ip address

Pearl(config-if)#ip address 192.172.0.153 255.255.255.0
Pearl(config-if)#ip address 192.172.0.153 255.255.255.0
Pearl(config-if)#no ip address
Pearl(config-if)#no ip address
Pearl(config-if)#ip address 192.0.0.154 255.255.255.0
Pearl(config-if)#ip address 192.0.0.154 255.255.255.0
Pearl(config-if)#ip address
% Incomplete command.
Pearl(config-if)#ip address 192.0.0.153 255.255.255.0
Pearl(config-if)#ip address 192.0.0.153 255.255.255.252
Pearl(config-if)#
Pearl(config-if)#exit
Pearl(config)#interface GigabitEthernet0/0
Pearl(config-if)#ip address 192.0.0.97 255.255.255.252
Pearl(config-if)#ip address 192.0.0.97 255.255.255.224
Pearl(config-if)#

Lotus>enable
Lotus#
Lotus#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Lotus(config)#interface GigabitEthernet0/0
Lotus(config-if)#ip address 192.0.0.1 255.255.255.0
Lotus(config-if)#ip address 192.0.0.1 255.255.255.224
Lotus(config-if)#no shutdown
Lotus(config-if)#
Lotus(config-if)#exit
Lotus(config)#interface Serial0/0/0
Lotus(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up
ip address 192.0.0.157 255.255.255.224
Lotus(config-if)#ip address 192.0.0.157 255.255.255.252
Lotus(config-if)#
Lotus(config-if)#exit
Lotus(config)#interface Serial0/0/1
Lotus(config-if)#
Lotus(config-if)#exit
Lotus(config)#interface Serial0/0/0
Lotus(config-if)#no shutdown
Lotus(config-if)#
Lotus(config-if)#exit
Lotus(config)#interface Serial0/0/1
Lotus(config-if)#ip address 192.0.0.154 255.255.255.252

Lotus(config-if)#ip address 192.0.0.154 255.255.255.252
Lotus(config-if)#no shutdown
Lotus(config-if)#
Lotus(config-if)#exit
Lotus(config)#interface Serial0/1/0
Lotus(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, changed state to up
ip address 192.0.0.161 255.255.255.224
Lotus(config-if)#ip address 192.0.0.161 255.255.255.252
Lotus(config-if)#no shutdown
Lotus(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up
Lotus(config-if)#

Ascent>enable
Ascent#
Ascent#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Ascent(config)#interface GigabitEthernet0/0
Ascent(config-if)#ip address 192.0.0.129 255.255.255.0
Ascent(config-if)#ip address 192.0.0.129 255.255.255.240
Ascent(config-if)#no shutdown
Ascent(config-if)#
Ascent(config-if)#exit
Ascent(config)#interface Serial0/0/0
Ascent(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up
ip address 192.0.0.158 255.255.255.240
Ascent(config-if)#ip address 192.0.0.158 255.255.255.252
Ascent(config-if)#no shutdown
Ascent(config-if)#
Ascent(config-if)#exit
Ascent(config)#interface Serial0/0/1
Ascent(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up
ip address 192.0.0.165 255.255.255.240
Ascent(config-if)#ip address 192.0.0.165 255.255.255.252
Ascent(config-if)#no shutdown
Ascent(config-if)#

```
Bind>enable
Bind#
Bind#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Bind(config)#interface GigabitEthernet0/0
Bind(config-if)#no ip address
Bind(config-if)#ip address 192.0.0.148 255.255.255.0
Bind(config-if)#ip address 192.0.0.148 255.255.255.240
Bind(config-if)#ip address 192.0.0.145 255.255.255.240
Bind(config-if)#ip address 192.0.0.145 255.255.255.248
Bind(config-if)#no shutdown
Bind(config-if)#
Bind(config-if)#exit
Bind(config)#interface Serial0/0/0
Bind(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up
ip address 192.0.0.169 255.255.255.248
Bind(config-if)#ip address 192.0.0.169 255.255.255.252
Bind(config-if)#no shutdown
Bind(config-if)#
Bind(config-if)#exit
Bind(config)#interface Serial0/0/1
Bind(config-if)#ip address 192.0.0.166 255.255.255.248
Bind(config-if)#ip address 192.0.0.166 255.255.255.252
Bind(config-if)#ip address 192.0.0.166 255.255.255.252
Bind(config-if)#no shutdown
Bind(config-if)#


Split>enable
Split#
Split#configure terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Split(config)#interface GigabitEthernet0/0
Split(config-if)#ip address 192.0.0.33 255.255.255.0
Split(config-if)#ip address 192.0.0.33 255.255.255.224
Split(config-if)#no shutdown
Split(config-if)#
Split(config-if)#exit
Split(config)#interface Serial0/0/0
Split(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up
```

%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up
ip address 192.0.0.170 255.255.255.224
Split(config-if)#ip address 192.0.0.170 255.255.255.252
Split(config-if)#
Split(config-if)#exit
Split(config)#interface Serial0/0/1
Split(config-if)#
Split(config-if)#exit
Split(config)#interface Serial0/0/0
Split(config-if)#no shutdown
Split(config-if)#
Split(config-if)#exit
Split(config)#interface Serial0/0/1
Split(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up
ip address 192.0.0.162 255.255.255.252
Split(config-if)#ip address 192.0.0.162 255.255.255.252
Split(config-if)#no shutdown
Split(config-if)#
Split(config-if)#exit
Split(config)#interface Serial0/1/0
Split(config-if)#
%LINK-5-CHANGED: Interface Serial0/0/1, changed state to up

%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, changed state to up
ip address 192.0.0.173 255.255.255.252
Split(config-if)#ip address 192.0.0.173 255.255.255.252
Split(config-if)#no shutdown
Split(config-if)#

Haven>enable
Haven#
Haven#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Haven(config)#interface GigabitEthernet0/0
Haven(config-if)#ip address 192.0.0.65 255.255.255.0
Haven(config-if)#ip address 192.0.0.65 255.255.255.224
Haven(config-if)#no shutdown
Haven(config-if)#
Haven(config-if)#exit
Haven(config)#interface Serial0/0/0

```
Haven(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/0, changed state to up
ip address 192.0.0.174 255.255.255.224
Haven(config-if)#ip address 192.0.0.174 255.255.255.252
Haven(config-if)#no shutdown
Haven(config-if)#

Split>en
Split#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Split(config)#int g0/0
Split(config-if)#ip helper-address 192.0.0.34
Split(config-if)#exit
Split(config)#exit
Split#

Haven>en
Haven#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Haven(config)#interface g0/0
Haven(config-if)#ip helper-address 192.0.0.66
Haven(config-if)#exit
Haven(config)#exit
Haven#

Bind>en
Bind#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Bind(config)#int g0/0
Bind(config-if)#ip helper-address 192.0.0.146
Bind(config-if)#

Haven#
Haven#
Haven#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Haven(config)#ip dhcp excluded-address 192.0.0.65 192.0.0.74
Haven(config)#ip dhcp haven_pool
                    ^
% Invalid input detected at '^' marker.

Haven(config)#ip dhcp pool haven_pool
Haven(dhcp-config)#network 192.0.0.64 255.255.255.224
```

Haven(dhcp-config)#default-router 192.0.0.65
Haven(dhcp-config)#
Haven#

Split(config)#ip dhcp excluded-address 192.0.0.34 192.0.0.43
Split(config)#ip dhcp excluded-address 192.0.0.65 192.0.0.74
Split(config)#ip dhcp excluded-address 192.0.0.33 192.0.0.42
Split(config)#ip dhcp exluded-address 192.0.0.145 192.0.0.147
^
% Invalid input detected at '^' marker.

Split(config)#ip dhcp excluded-address 192.0.0.145 192.0.0.147
Split(config)#ip dhcp excluded-address 192.0.0.1 192.0.0.9
Split(config)#ip dhcp pool split_pool
Split(dhcp-config)#network 192.0.0.32 255.255.255.224
Split(dhcp-config)#deafult-router 192.0.0.33
^
% Invalid input detected at '^' marker.

Split(dhcp-config)#default-router 192.0.0.33
Split(dhcp-config)#exit
Split(config)#ip dhcp pool haven_pool
Split(dhcp-config)#network 192.0.0.64 255.255.255.224
Split(dhcp-config)#default-router 192.0.0.65
Split(dhcp-config)#

Bind>en
Bind#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Bind(config)#ip dhcp excluded-address 192.0.0.145 192.0.0.47
Bind(config)#ip dhcp pool bind_pool
Bind(dhcp-config)#network 192.0.0.144 255.255.255.248
Bind(dhcp-config)#default-router 192.0.0.145
Bind(dhcp-config)#

Pearl>en
Pearl#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Pearl(config)#ip route 192.0.0.0 255.225.255.224 s0/0/0
%Default route without gateway, if not a point-to-point interface, may impact performance
%Inconsistent address and mask
Pearl(config)#ip route 192.0.0.0 255.255.255.224 s0/0/0
%Default route without gateway, if not a point-to-point interface, may impact performance

Pearl(config)#ip route 192.0.0.128 255.255.255.240
% Incomplete command.
Pearl(config)#ip route 192.0.0.128 255.255.255.240 s0/0/0
%Default route without gateway, if not a point-to-point interface, may impact performance
Pearl(config)#ip route 192.0.0.32 255.255.255.224 s0/0/0
%Default route without gateway, if not a point-to-point interface, may impact performance
Pearl(config)#ip route 192.0.0.144 255.255.255.248 s0/0/0
%Default route without gateway, if not a point-to-point interface, may impact performance
Pearl(config)#ip route 192.0.0.64 255.255.255.224 s0/0/0
%Default route without gateway, if not a point-to-point interface, may impact performance
Pearl(config)#

Ascent>en
Ascent#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Ascent(config)#ip route 192.0.0.144 255.255.255.248 S0/0/1
%Default route without gateway, if not a point-to-point interface, may impact performance
Ascent(config)#ip route 192.0.0.32 255.255.255.224 S0/0/0/1
 ^
% Invalid input detected at '^' marker.

Ascent(config)#ip route 192.0.0.32 255.255.255.224 S0/0/1
%Default route without gateway, if not a point-to-point interface, may impact performance
Ascent(config)#ip route 192.0.0.0 255.255.255.224 S0/0/0
%Default route without gateway, if not a point-to-point interface, may impact performance
Ascent(config)#

Ascent>en
Ascent#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Ascent(config)#ip route 192.0.0.64 255.255.255.224
% Incomplete command.
Ascent(config)#ip route 192.0.0.64 255.255.255.224 s0/0/0
%Default route without gateway, if not a point-to-point interface, may impact performance
Ascent(config)#ip route 192.0.0.96 255.255.255.224 s0/0/0
%Default route without gateway, if not a point-to-point interface, may impact performance
Ascent(config)#

Bind>en
Bind#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Bind(config)#192.0.0.0 255.255.255.224 s0/0/0
 ^
% Invalid input detected at '^' marker.

```
Bind(config)#ip route 192.0.0.0 255.255.255.224 s0/0/0
%Default route without gateway, if not a point-to-point interface, may impact performance
Bind(config)#ip route 192.0.0.32 255.255.255.224 s0/0/0
%Default route without gateway, if not a point-to-point interface, may impact performance
Bind(config)#ip route 192.0.0.128 255.255.255.240 s0/0/1
%Default route without gateway, if not a point-to-point interface, may impact performance
Bind(config)#ip route 192.0.0.64 255.255.255.224 s0/0/0
%Default route without gateway, if not a point-to-point interface, may impact performance
Bind(config)#ip route 192.0.0.96 255.255.255.224 s0/0/0
%Default route without gateway, if not a point-to-point interface, may impact performance
Bind(config)#

Haven>en
Haven#conf t
Enter configuration commands, one per line. End with CNTL/Z.
Haven(config)#ip route 0.0.0.0 0.0.0.0 s0/0/0
%Default route without gateway, if not a point-to-point interface, may impact performance
Haven(config)#router rip
Haven(config-router)#version 2
Haven(config-router)#no auto-summary
Haven(config-router)#network 192.0.0.64
Haven(config-router)#network 192.0.0.172
Haven(config-router)#passive-interface g0/0
Haven(config-router)#default-information originate
Haven(config-router)#end
Haven#
%SYS-5-CONFIG_I: Configured from console by console
```