Quiz# 3
Saad Ahmad
20P-0051

Question#2

1. Based on the topology, how many subnets are needed?

7

2. How many bits must be borrowed to support the number of subnets in the topology table?

4

3. How many subnets does this create?

16

4. Calculate the binary value for the first five subnets?

Net 0: 172 . 31 . 1 . **0 0 0 0 0 0 0 0**
Net 1: 172 . 31 . 1 . **0 0 0 1 0 0 0 0**
Net 2: 172 . 31 . 1 . **0 0 1 0 0 0 0 0**
Net 3: 172 . 31 . 1 . **0 0 1 1 0 0 0 0**
Net 4: 172 . 31 . 1 . **0 1 0 0 0 0 0 0**

5. Calculate the binary and decimal value of the new subnet mask

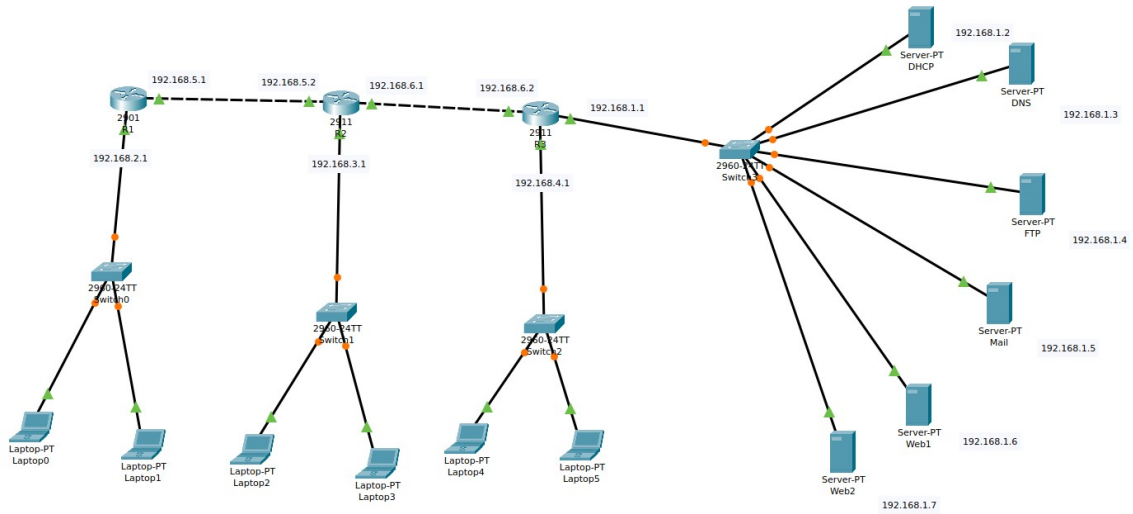
Binary value: 11111111.11111111.11111111. **1 1 1 1 0 0 0 0**
Decimal value: 255 . 255 . 255 . **240**

6. Complete the Subnet Table, listing all available subnets, the first and last usable host address, and the broadcast address.

Subnet number	Subnet IP	First Usable Host IP	Last Usable Host IP	Broadcast Address
0	172.31.1.0	172.31.1.1	172.31.1.14	172.31.1.15
1	172.31.1.16	172.31.1.17	172.31.1.30	172.31.1.31

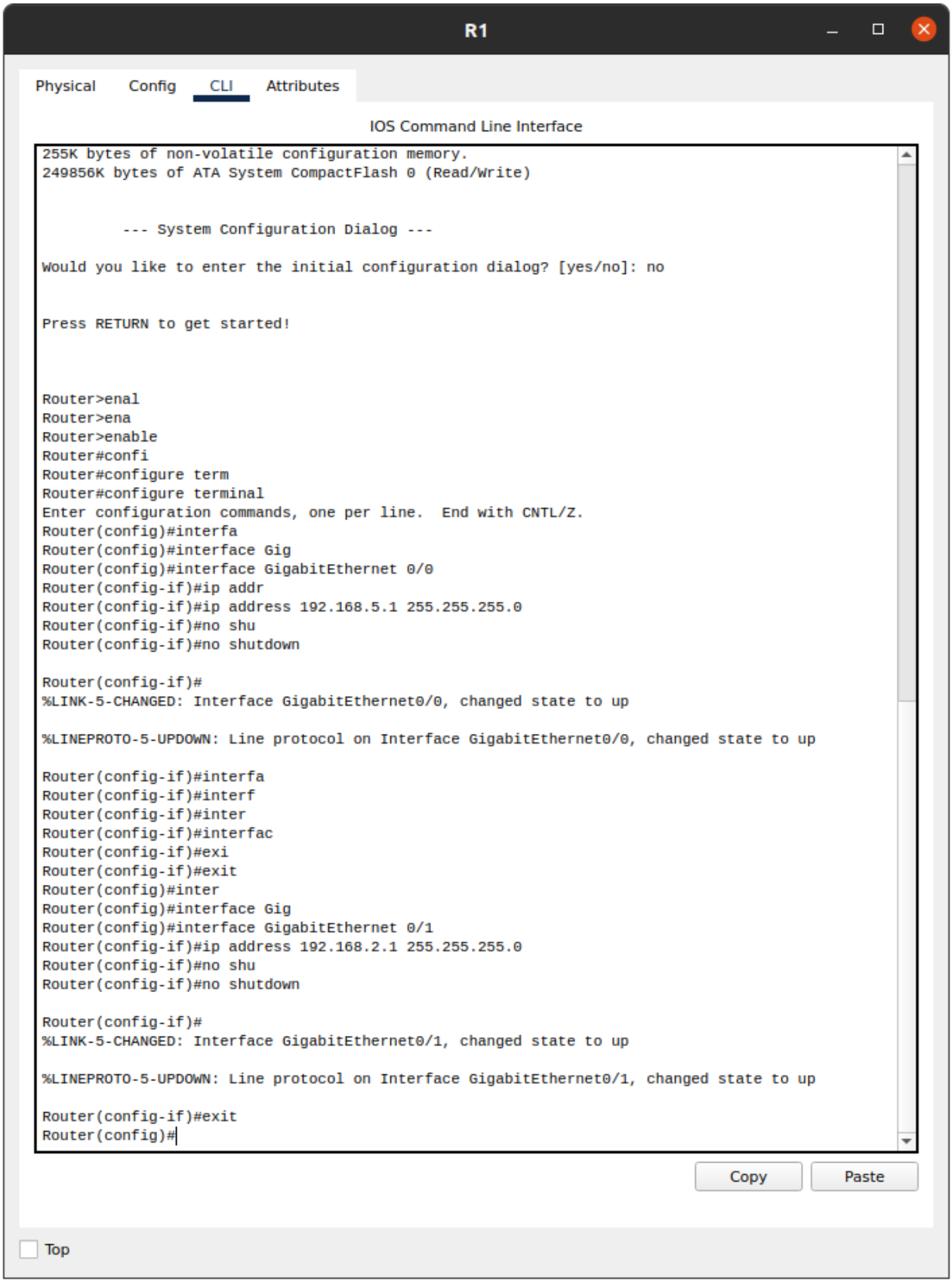
2	172.31.1.32	172.31.1.33	172.31.1.46	172.31.1.47
3	172.31.1.48	172.31.1.49	172.31.1.62	172.31.1.63
4	172.31.1.64	172.31.1.65	172.31.1.78	172.31.1.79
5	172.31.1.80	172.31.1.81	172.31.1.94	172.31.1.95
6	172.31.1.96	172.31.1.97	172.31.1.110	172.31.1.111
7	172.31.1.112	172.31.1.113	172.31.1.126	172.31.1.127
8	172.31.1.128	172.31.1.129	172.31.1.142	172.31.1.143
9	172.31.1.144	172.31.1.145	172.31.1.158	172.31.1.159
10	172.31.1.160	172.31.1.161	172.31.1.174	172.31.1.175
11	172.31.1.176	172.31.1.177	172.31.1.190	172.31.1.191
12	172.31.1.192	172.31.1.193	172.31.1.206	172.31.1.207
13	172.31.1.208	172.31.1.209	172.31.1.222	172.31.1.223
14	172.31.1.224	172.31.1.225	172.31.1.238	172.31.1.239
15	172.31.1.240	172.31.1.241	172.31.1.254	172.31.1.255

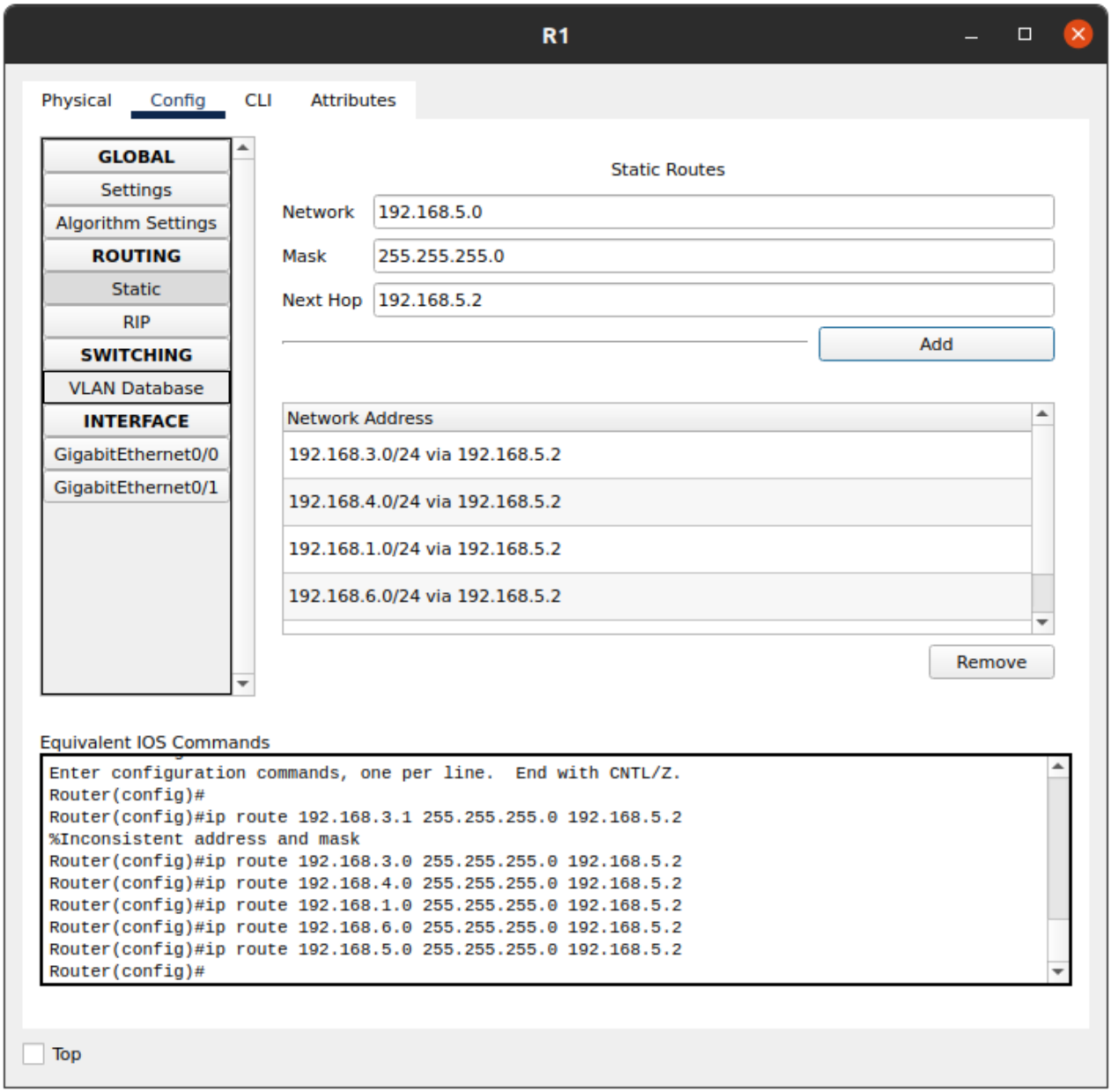
Question#1



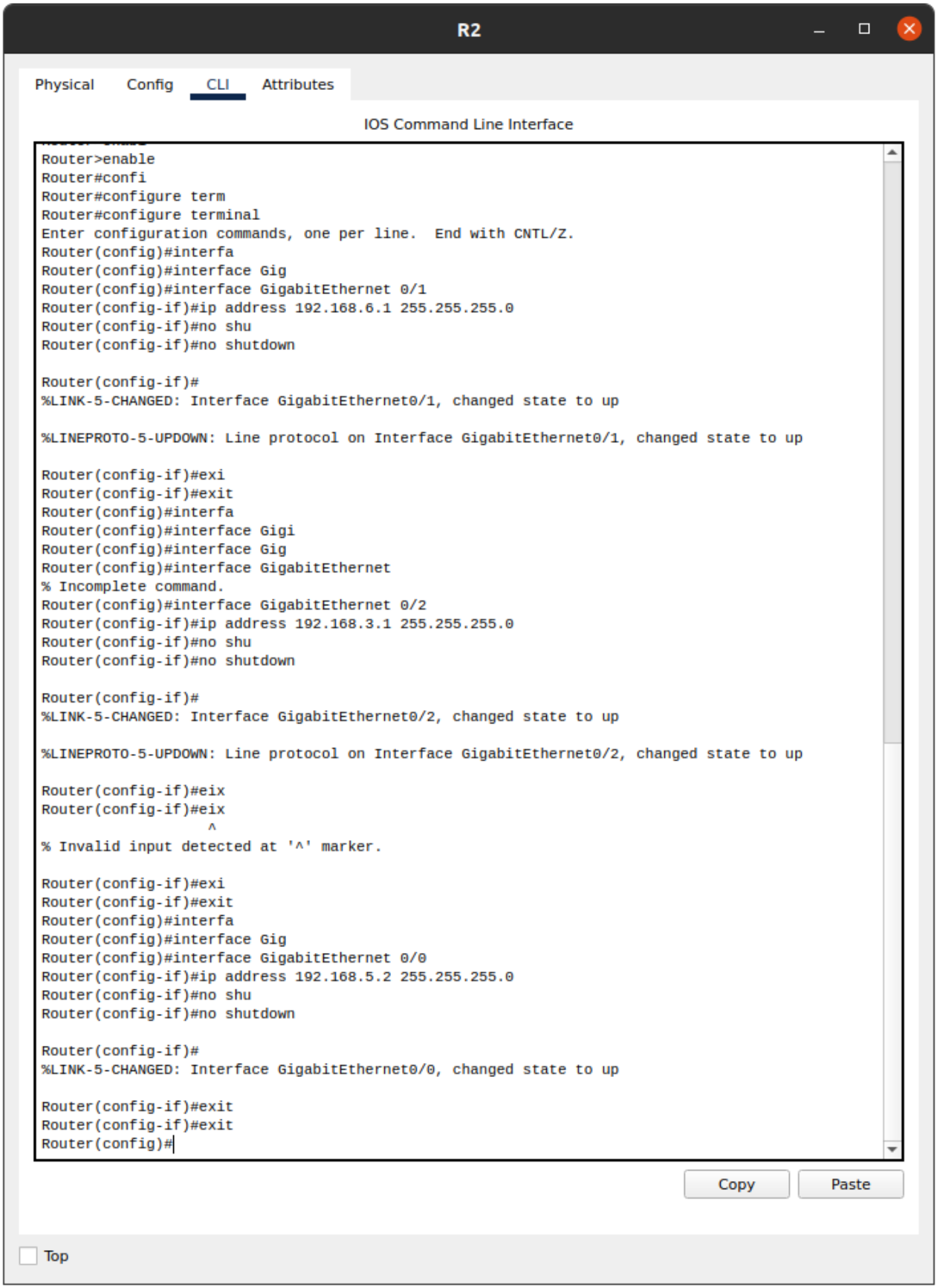
Configuring routers:

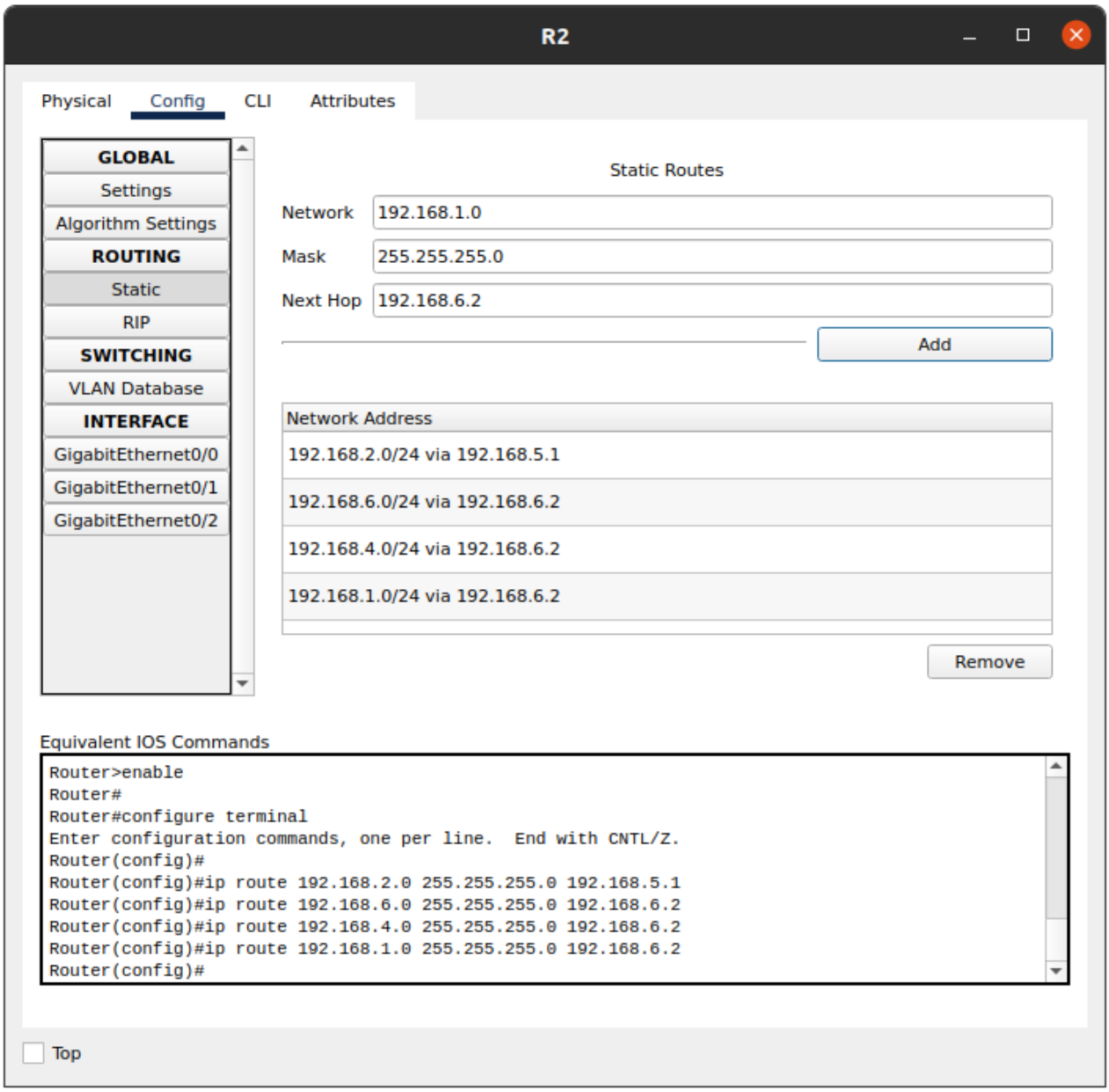
Router#1


R1
Physical
Config
CLI
Attributes
IOS Command Line Interface
255K bytes of non-volatile configuration memory.
249856K bytes of ATA System CompactFlash 0 (Read/Write)
--- System Configuration Dialog ---
Would you like to enter the initial configuration dialog? [yes/no]: no
Press RETURN to get started!
Router>enal
Router>ena
Router>enable
Router#confi
Router#configure term
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interfa
Router(config)#interface Gig
Router(config)#interface GigabitEthernet 0/0
Router(config-if)#ip addr
Router(config-if)#ip address 192.168.5.1 255.255.255.0
Router(config-if)#no shu
Router(config-if)#no shutdown
Router(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
Router(config-if)#interfa
Router(config-if)#interf
Router(config-if)#inter
Router(config-if)#interfac
Router(config-if)#exi
Router(config-if)#exit
Router(config)#inter
Router(config)#interface Gig
Router(config)#interface GigabitEthernet 0/1
Router(config-if)#ip address 192.168.2.1 255.255.255.0
Router(config-if)#no shu
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed state to up
Router(config-if)#exit
Router(config)#
Copy
Paste
Top


R1
Physical
Config
CLI
Attributes
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
GigabitEthernet0/0
GigabitEthernet0/1
Static Routes
Network 192.168.5.0
Mask 255.255.255.0
Next Hop 192.168.5.2
Add
Network Address
192.168.3.0/24 via 192.168.5.2
192.168.4.0/24 via 192.168.5.2
192.168.1.0/24 via 192.168.5.2
192.168.6.0/24 via 192.168.5.2
Remove
Equivalent IOS Commands
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#
Router(config)#ip route 192.168.3.1 255.255.255.0 192.168.5.2
%Inconsistent address and mask
Router(config)#ip route 192.168.3.0 255.255.255.0 192.168.5.2
Router(config)#ip route 192.168.4.0 255.255.255.0 192.168.5.2
Router(config)#ip route 192.168.1.0 255.255.255.0 192.168.5.2
Router(config)#ip route 192.168.6.0 255.255.255.0 192.168.5.2
Router(config)#ip route 192.168.5.0 255.255.255.0 192.168.5.2
Router(config)#
Top

Router#2


R2
Physical
Config
CLI
Attributes
IOS Command Line Interface
Router>enable
Router#confi
Router#configure term
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#interfa
Router(config)#interface Gig
Router(config)#interface GigabitEthernet 0/1
Router(config-if)#ip address 192.168.6.1 255.255.255.0
Router(config-if)#no shu
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/1, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/1, changed state to up
Router(config-if)#exi
Router(config-if)#exit
Router(config)#interfa
Router(config)#interface Gigi
Router(config)#interface Gig
Router(config)#interface GigabitEthernet
% Incomplete command.
Router(config)#interface GigabitEthernet 0/2
Router(config-if)#ip address 192.168.3.1 255.255.255.0
Router(config-if)#no shu
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/2, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/2, changed state to up
Router(config-if)#eix
Router(config-if)#eix
^
% Invalid input detected at '^' marker.
Router(config-if)#exi
Router(config-if)#exit
Router(config)#interfa
Router(config)#interface Gig
Router(config)#interface GigabitEthernet 0/0
Router(config-if)#ip address 192.168.5.2 255.255.255.0
Router(config-if)#no shu
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/0, changed state to up
Router(config-if)#exit
Router(config-if)#exit
Router(config)#
Copy
Paste
Top


R2
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GLOBAL
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Algorithm Settings
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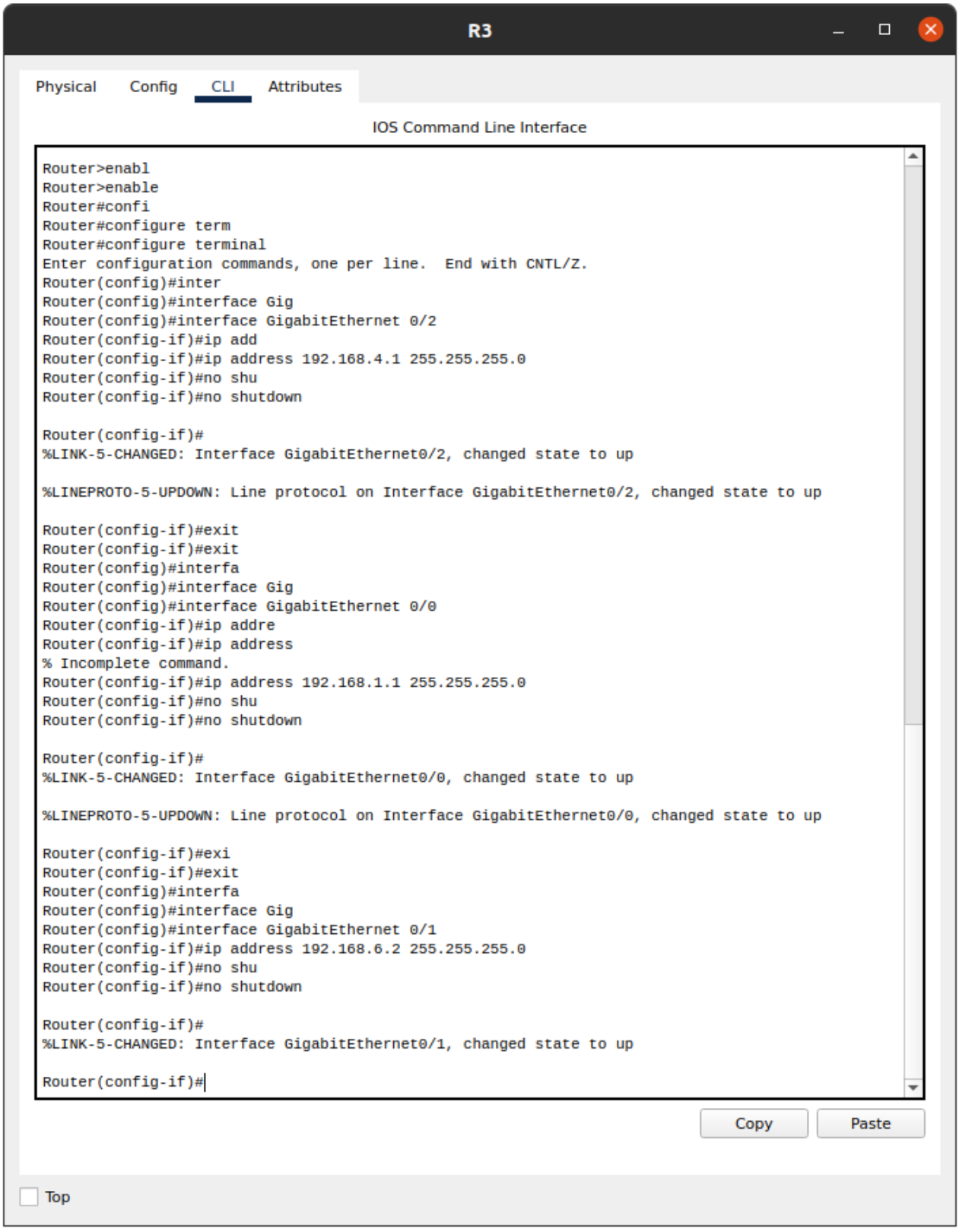
Static
RIP
SWITCHING
VLAN Database
INTERFACE
GigabitEthernet0/0
GigabitEthernet0/1
GigabitEthernet0/2
Static Routes
Network 192.168.1.0
Mask 255.255.255.0
Next Hop 192.168.6.2
Add
Network Address
192.168.2.0/24 via 192.168.5.1
192.168.6.0/24 via 192.168.6.2
192.168.4.0/24 via 192.168.6.2
192.168.1.0/24 via 192.168.6.2
Remove
Equivalent IOS Commands
Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#
Router(config)#ip route 192.168.2.0 255.255.255.0 192.168.5.1
Router(config)#ip route 192.168.6.0 255.255.255.0 192.168.6.2
Router(config)#ip route 192.168.4.0 255.255.255.0 192.168.6.2
Router(config)#ip route 192.168.1.0 255.255.255.0 192.168.6.2
Router(config)#
Top

Router#3


R3
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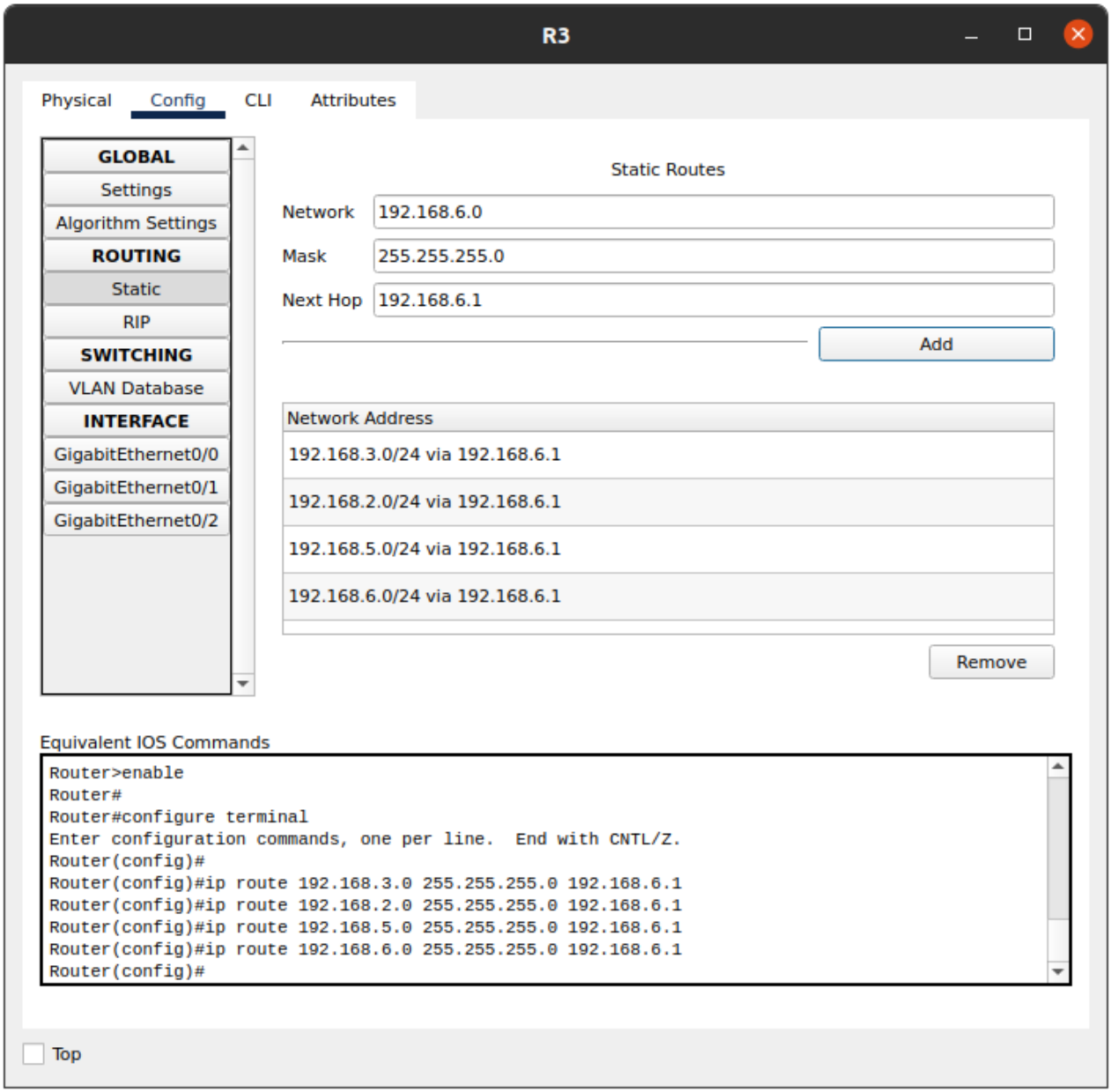
Config
CLI
Attributes
IOS Command Line Interface
Router>enabl
Router>enable
Router#confi
Router#configure term
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#inter
Router(config)#interface Gig
Router(config)#interface GigabitEthernet 0/2
Router(config-if)#ip add
Router(config-if)#ip address 192.168.4.1 255.255.255.0
Router(config-if)#no shu
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/2, changed state to up
%LINEPROTO-5-UPDOWN: Line protocol on Interface GigabitEthernet0/2, changed state to up
Router(config-if)#exit
Router(config-if)#exit
Router(config)#interfa
Router(config)#interface Gig
Router(config)#interface GigabitEthernet 0/0
Router(config-if)#ip addre
Router(config-if)#ip address
% Incomplete command.
Router(config-if)#ip address 192.168.1.1 255.255.255.0
Router(config-if)#no shu
Router(config-if)#no shutdown
Router(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
Router(config-if)#exi
Router(config-if)#exit
Router(config)#interfa
Router(config)#interface Gig
Router(config)#interface GigabitEthernet 0/1
Router(config-if)#ip address 192.168.6.2 255.255.255.0
Router(config-if)#no shu
Router(config-if)#no shutdown
Router(config-if)#
%LINK-5-CHANGED: Interface GigabitEthernet0/1, changed state to up
Router(config-if)#
Copy
Paste
Top


R3
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GLOBAL
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Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
GigabitEthernet0/0
GigabitEthernet0/1
GigabitEthernet0/2
Static Routes
Network 192.168.6.0
Mask 255.255.255.0
Next Hop 192.168.6.1
Add
Network Address
192.168.3.0/24 via 192.168.6.1
192.168.2.0/24 via 192.168.6.1
192.168.5.0/24 via 192.168.6.1
192.168.6.0/24 via 192.168.6.1
Remove
Equivalent IOS Commands
Router>enable
Router#
Router#configure terminal
Enter configuration commands, one per line. End with CNTL/Z.
Router(config)#
Router(config)#ip route 192.168.3.0 255.255.255.0 192.168.6.1
Router(config)#ip route 192.168.2.0 255.255.255.0 192.168.6.1
Router(config)#ip route 192.168.5.0 255.255.255.0 192.168.6.1
Router(config)#ip route 192.168.6.0 255.255.255.0 192.168.6.1
Router(config)#
Top