Addressing Table:

Device	Interface	IPv4 Address	Subnet Mask	Default gateway
Nasa_HQ (Router 1)	Fa0/0	10.10.8.129	255.255.255.192	NA/ 10.10.8.129
	se2/0/0	10.10.8.193	255.255.255.252	
	se3/0/0	10.10.8.197	255.255.255.252	
Johnson_SC (Router 2)	Fa0/0	10.10.0.1	255.255.252.0	NA/ 10.10.0.1
	Se3/0/0	10.10.8.194	255.255.255.252	
	Se2/0/0	10.10.8.201	255.255.255.252	
WH (Router 3)	Fa0/0	10.10.7.1	255.255.255.0	NA/ 10.10.7.1
	Se3/0/0	10.10.8.202	255.255.255.252	
	Se6/0/0	10.10.8.198	255.255.255.252	
	Se2/0/0	10.10.8.205	255.255.255.252	
SpaceX_HQ (Router 4)	Fa0/0	10.10.8.1	255.255.255.128	NA/ 10.10.8.1
	Se6/0/0	10.10.8.206	255.255.255.252	
	Se3/0/0	10.10.8.209	255.255.255.252	
	Se2/0/0	10.10.8.213	255.255.255.252	
SPX_Satellite (Router 5)	Fa0/0	10.10.6.1	255.255.255.0	NA/ 10.10.6.1
	Se2/0/0	10.10.8.210	255.255.255.252	
SPX_Rocket (Router 6)	Fa0/0	10.10.4.1	255.255.254.0	NA/ 10.10.4.1
	Se3/0/0	10.10.8.214	255.255.255.252	
PC1	NIC	10.10.8.130	255.255.255.192	10.10.8.129

PC2	NIC	DHCP Assigned	255.255.252.0	10.10.0.1
PC3	NIC	DHCP Assigned	255.255.252.0	10.10.0.1
PC4	NIC	DHCP Assigned	255.255.255.0	10.10.7.1
PC5	NIC	10.10.8.2	255.255.255.128	10.10.8.1
PC6	NIC	DHCP Assigned	255.255.255.0	10.10.6.1
PC7	NIC	DHCP Assigned	255.255.255.0	10.10.6.1
PC8	NIC	DHCP Assigned	255.255.254.0	10.10.4.1
PC9	NIC	DHCP Assigned	255.255.254.0	10.10.4.1
Printer1	NIC	10.10.8.131	255.255.255.192	10.10.8.129
Printer2	NIC	DHCP Assigned	255.255.255.0	10.10.7.1
Printer3	NIC	10.10.8.3	255.255.255.128	10.10.8.1
NASA WEB Server	NIC	10.10.8.132	255.255.255.192	10.10.8.129
SpaceX WEB Server	NIC	10.10.8.4	255.255.255.128	10.10.8.1
SpaceX Email Server	NIC	10.10.8.5	255.255.255.128	10.10.8.1
DHCP Server (nasa)	NIC	10.10.8.133	255.255.255.192	10.10.8.129

DNS Server (nasa)	NIC	10.10.8.134	255.255.255.192	10.10.8.129

VLSM Table:

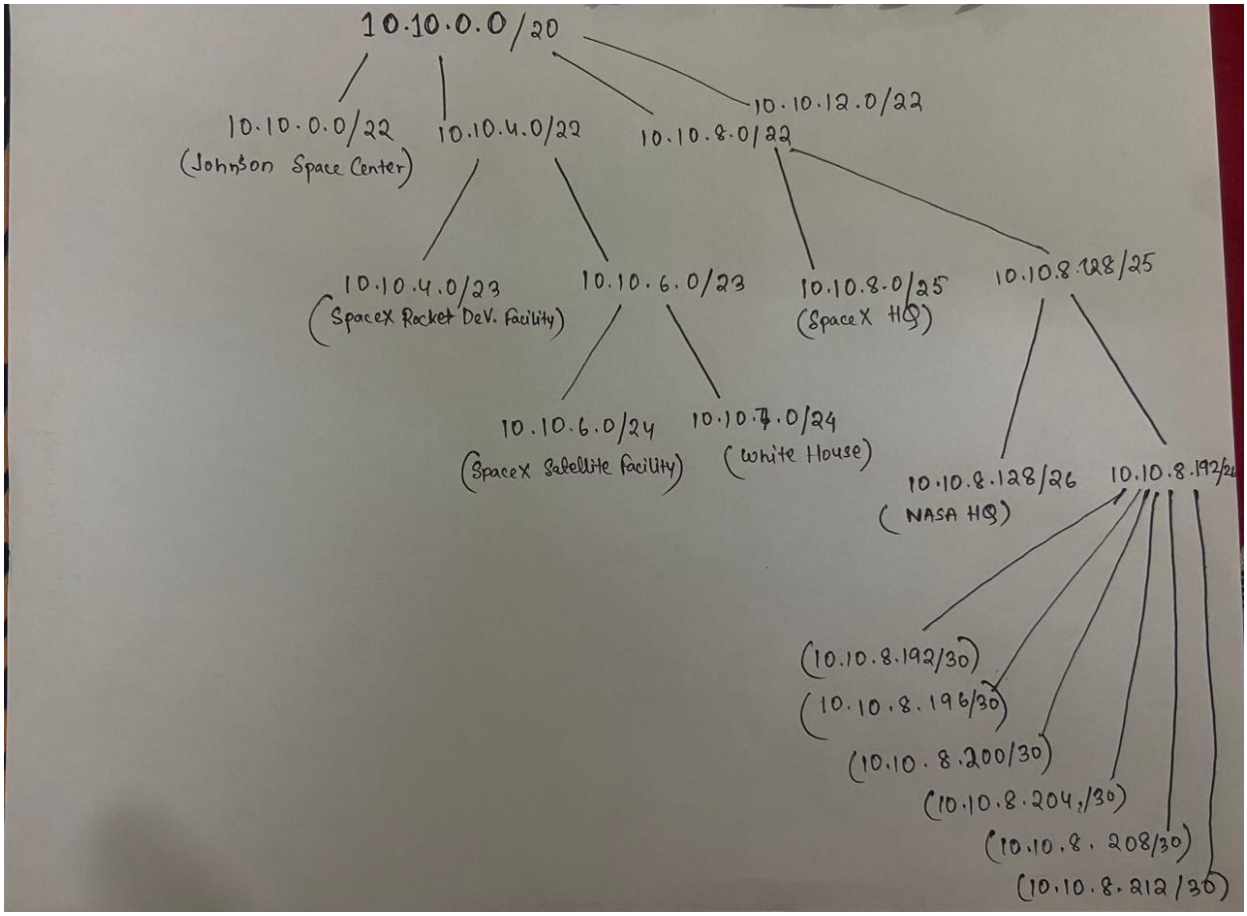
Subnetting Successful

Major Network: **10.10.0.0/20**
Available IP addresses in major network: **4094**
Number of IP addresses needed: **1380**
Available IP addresses in allocated subnets: **2240**
About **55%** of available major network address space is used
About **62%** of subnetted network address space is used

Subnet Name	Needed Size	Allocated Size	Address	Mask	Dec Mask	Assignable Range	Broadcast
A	560	1022	10.10.0.0	/22	255.255.252.0	10.10.0.1 - 10.10.3.254	10.10.3.255
B	350	510	10.10.4.0	/23	255.255.254.0	10.10.4.1 - 10.10.5.254	10.10.5.255
C	210	254	10.10.6.0	/24	255.255.255.0	10.10.6.1 - 10.10.6.254	10.10.6.255
D	128	254	10.10.7.0	/24	255.255.255.0	10.10.7.1 - 10.10.7.254	10.10.7.255
E	80	126	10.10.8.0	/25	255.255.255.128	10.10.8.1 - 10.10.8.126	10.10.8.127
F	40	62	10.10.8.128	/26	255.255.255.192	10.10.8.129 - 10.10.8.190	10.10.8.191
G	2	2	10.10.8.192	/30	255.255.255.252	10.10.8.193 - 10.10.8.194	10.10.8.195
H	2	2	10.10.8.196	/30	255.255.255.252	10.10.8.197 - 10.10.8.198	10.10.8.199
I	2	2	10.10.8.200	/30	255.255.255.252	10.10.8.201 - 10.10.8.202	10.10.8.203
J	2	2	10.10.8.204	/30	255.255.255.252	10.10.8.205 - 10.10.8.206	10.10.8.207
K	2	2	10.10.8.208	/30	255.255.255.252	10.10.8.209 - 10.10.8.210	10.10.8.211
L	2	2	10.10.8.212	/30	255.255.255.252	10.10.8.213 - 10.10.8.214	10.10.8.215

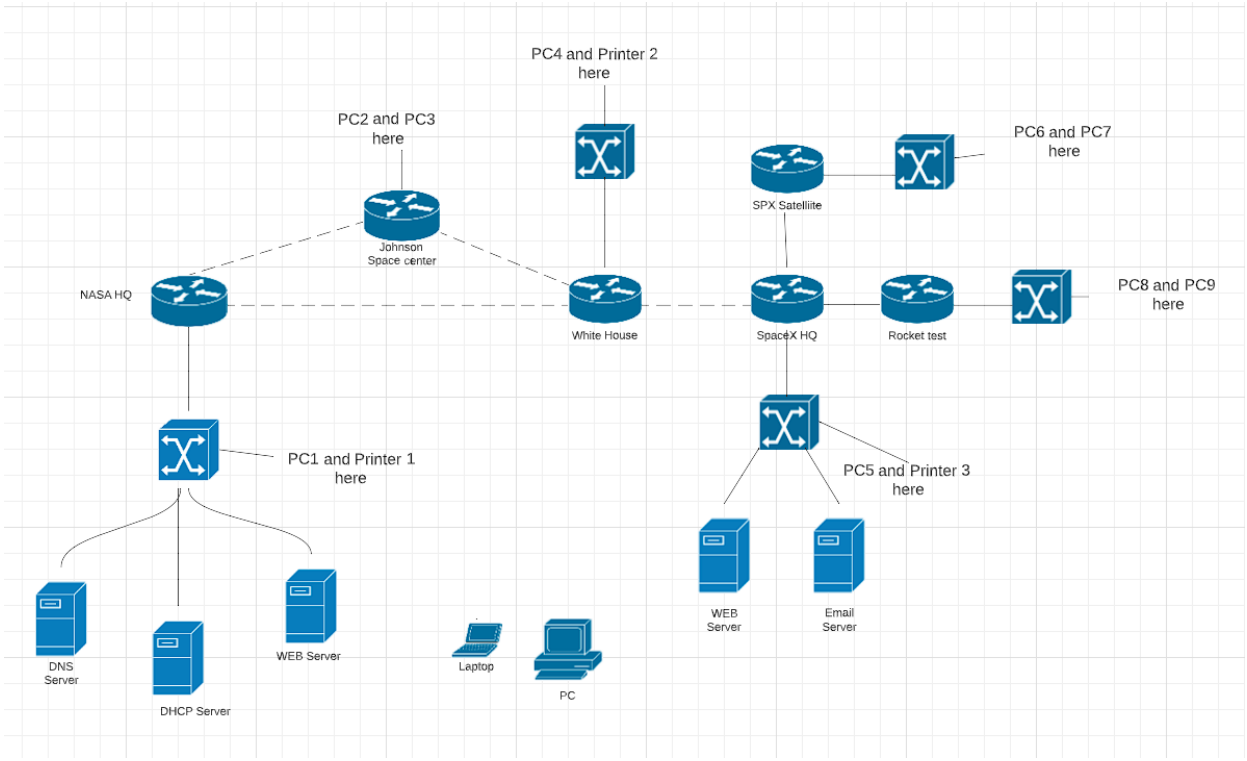
(subnet G-L→ WAN networks)

VLSM Tree:

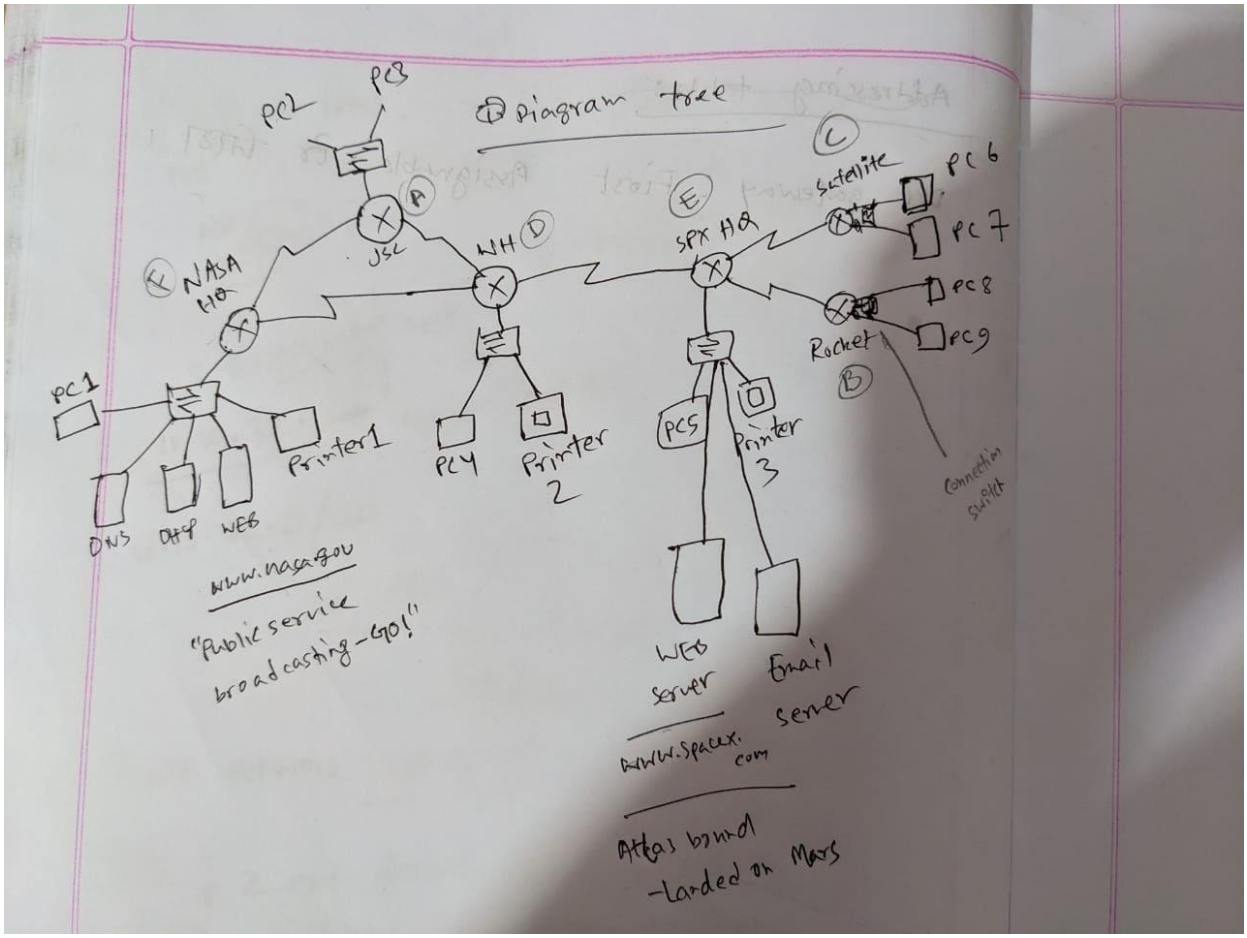


10.10.8.192/30 —---- WAN Network
10.10.8.196/30 —---- WAN Network
10.10.8.200/30 —---- WAN Network
10.10.8.204/30 —---- WAN Network
10.10.8.208/30 —---- WAN Network
10.10.8.212/30 —---- WAN Network

Network Topology:



Handwritten



CLI Commands:

```
nasa_hq>
nasa_hq>en
nasa_hq#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
nasa_hq(config)#interface fastethernet 0/0
nasa_hq(config-if)#ip address 10.10.8.129 255.255.255.192
nasa_hq(config-if)#no shut
nasa_hq(config-if)#exit
nasa_hq(config)#
nasa_hq(config)#interface serial 2/0
```

```
nasa_hq(config-if)#ip address 10.10.8.193 255.255.255.252
nasa_hq(config-if)#clock rate 64000
nasa_hq(config-if)#no shut
nasa_hq(config-if)#exit
nasa_hq(config)#
nasa_hq(config)#interface serial 3/0
nasa_hq(config-if)#ip address 10.10.8.197 255.255.255.252
nasa_hq(config-if)#clock
nasa_hq(config-if)#clock rate 64000
nasa_hq(config-if)#no shut
nasa_hq(config-if)#exit
nasa_hq(config)#

nasa_hq(config)#ip route 10.10.0.0 255.255.252.0 10.10.8.194
nasa_hq(config)#ip route 10.10.7.0 255.255.255.0 10.10.8.198
nasa_hq(config)#

nasa_hq>en
nasa_hq#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
nasa_hq(config)#router rip
nasa_hq(config-router)#version 2
nasa_hq(config-router)#network 10.0.0.0
nasa_hq(config-router)#no auto-summary
nasa_hq(config-router)#exit
nasa_hq(config)#exit
nasa_hq#
%SYS-5-CONFIG_I: Configured from console by console

nasa_hq#ping 10.10.8.1

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.10.8.1, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 2/40/64 ms

nasa_hq#ping 10.10.6.1
```

```
Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.10.6.1, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 53/67/77 ms

nasa_hq#ping 10.10.4.1

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.10.4.1, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 65/73/86 ms

nasa_hq#
nasa_hq#copy
% Incomplete command.
nasa_hq#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
nasa_hq#




jsc>
jsc>en
jsc#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
jsc(config)#
jsc(config)#int fastethernet 0/0
jsc(config-if)#ip address 10.10.0.1 255.255.252.0
jsc(config-if)#no shut
jsc(config-if)#exit
jsc(config)#
jsc(config)#int serial 3/0
```

```
jsc(config-if)#ip address 10.10.8.194 255.255.255.252
jsc(config-if)#no shut
jsc(config-if)#exit
jsc(config)#
jsc(config)#int serial 2/0
jsc(config-if)#ip address 10.10.8.201 255.255.255.252
jsc(config-if)#clock rate 64000
jsc(config-if)#no shut
jsc(config-if)#exit
jsc(config)#
jsc(config)#ip route 10.10.8.128 255.255.255.192 10.10.8.193
jsc(config)#ip route 10.10.7.0 255.255.255.0 10.10.8.202
jsc(config)#ip route 10.10.7.0 255.255.255.0 10.10.8.202 50
jsc(config)#

jsc>en
jsc#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
jsc(config)#router rip
jsc(config-router)#network 10.0.0.0
jsc(config-router)#no auto-summary
jsc(config-router)#router rip
jsc(config-router)#version 2
jsc(config-router)#network 10.0.0.0
jsc(config-router)#no auto-summary
jsc(config-router)#exit
jsc(config)#exit
jsc#
%SYS-5-CONFIG_I: Configured from console by console

jsc#ping 10.10.4.1

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.10.4.1, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 58/68/78 ms
```

```
jsc#ping 10.10.6.1

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.10.6.1, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 3/45/81 ms

jsc#
jsc#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
jsc#



wh>
wh>en
wh#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
wh(config)#int fastethernet 0/0
wh(config-if)#ip address 10.10.7.1 255.255.255.0
wh(config-if)#no shut
wh(config-if)#exit
wh(config)#
wh(config)#int serial 3/0
wh(config-if)#ip address 10.10.8.202 255.255.255.252
wh(config-if)#no shut
wh(config-if)#exit
wh(config)#

wh(config)#int serial 6/0
wh(config-if)#ip address 10.10.8.198 255.255.255.252
wh(config-if)#no shut
wh(config-if)#exit
wh(config)#
wh(config)#ip route 10.10.0.0 255.255.252.0 10.10.8.194
```

```
wh(config)#ip route 10.10.8.128 255.255.255.192 10.10.8.197
wh(config)#

wh(config)#int serial 2/0
wh(config-if)#ip address 10.10.8.205 255.255.255.252
wh(config-if)#clock rate 64000
wh(config-if)#no shut
wh(config-if)#exit
wh(config)#exit
wh#
%SYS-5-CONFIG_I: Configured from console by console

wh#en
wh#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
wh(config)#router rip
wh(config-router)#version 2
wh(config-router)#network 10.0.0.0
wh(config-router)#no auto-summary
wh(config-router)#exit
wh(config)#exit
wh#
%SYS-5-CONFIG_I: Configured from console by console

wh#ping 10.10.8.1

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.10.8.1, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 1/23/46 ms

wh#ping 10.10.4.1

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 10.10.4.1, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 35/51/77 ms
```

```
wh#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
wh#


spacex_hq>en
spacex_hq#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
spacex_hq(config)#int fastethernet 0/0
spacex_hq(config-if)#ip address 10.10.8.1 255.255.255.128
spacex_hq(config-if)#
spacex_hq(config-if)#no shut
spacex_hq(config-if)#exit
spacex_hq(config)#
spacex_hq(config)#int serial 6/0
spacex_hq(config-if)#ip address 10.10.8.206 255.255.255.252
spacex_hq(config-if)#no shut
spacex_hq(config-if)#exit
spacex_hq(config)#
spacex_hq(config)#int serial 3/0
spacex_hq(config-if)#ip address 10.10.8.209 255.255.255.252
spacex_hq(config-if)#clock rate 64000
spacex_hq(config-if)#no shut
spacex_hq(config-if)#exit
spacex_hq(config)#
spacex_hq(config)#int serial 2/0
spacex_hq(config-if)#ip address 10.10.8.213 255.255.255.252
spacex_hq(config-if)#clock rate 64000
spacex_hq(config-if)#no shut
spacex_hq(config-if)#exit
spacex_hq(config)#
spacex_hq(config)#router rip
spacex_hq(config-router)#version 2
spacex_hq(config-router)#network 10.0.0.0
```

```
spacex_hq(config-router)#no auto-summary
spacex_hq(config-router)#exit
spacex_hq(config)#exit
spacex_hq#
%SYS-5-CONFIG_I: Configured from console by console

spacex_hq#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
spacex_hq#
```

```
spx_satellite>en
spx_satellite#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
spx_satellite(config)#int fastethernet 0/0
spx_satellite(config-if)#ip address 10.10.6.1 255.255.255.0
spx_satellite(config-if)#no shut
spx_satellite(config-if)#exit
spx_satellite(config)#
spx_satellite(config)#int serial 2/0
spx_satellite(config-if)#ip address 10.10.8.210 255.255.255.252
spx_satellite(config-if)#no shut
spx_satellite(config-if)#exit
spx_satellite(config)#
spx_satellite(config)#router rip
spx_satellite(config-router)#version 2
spx_satellite(config-router)#network 10.0.0.0
spx_satellite(config-router)#no auto-summary
spx_satellite(config-router)#exit
spx_satellite(config)#exit
spx_satellite#
%SYS-5-CONFIG_I: Configured from console by console
```

```
spx_satellite#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
spx_satellite#
```

```
spx_rocket>en
spx_rocket#conf t
Enter configuration commands, one per line.  End with CNTL/Z.
spx_rocket(config)#int fastethernet 0/0
spx_rocket(config-if)#ip address 10.10.4.1 255.255.254.0
spx_rocket(config-if)#no shut
spx_rocket(config-if)#exit
spx_rocket(config)#
spx_rocket(config)#int serial 3/0
spx_rocket(config-if)#ip address 10.10.8.214 255.255.255.252
spx_rocket(config-if)#no shut
spx_rocket(config-if)#exit
spx_rocket(config)#
spx_rocket(config)#router rip
spx_rocket(config-router)#version 2
spx_rocket(config-router)#network 10.0.0.0
spx_rocket(config-router)#no auto-summary
spx_rocket(config-router)#exit
spx_rocket(config)#exit
spx_rocket#
%SYS-5-CONFIG_I: Configured from console by console

spx_rocket#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...
[OK]
spx_rocket#
```

Links:

1) Question PDF: Topic 6 - NASA_SpaceX.pdf