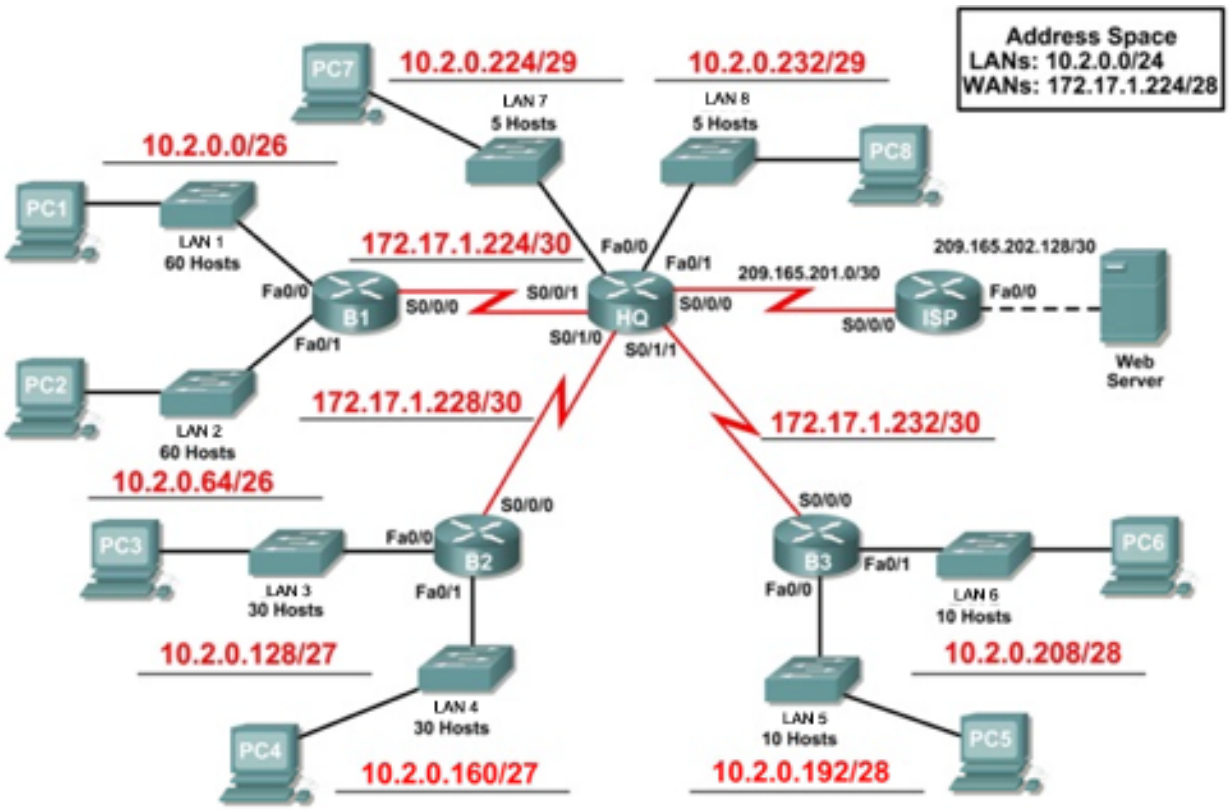
Ch7 - Packet Tracer Skills Integration Challenge (Instructor Version)

Topology Diagram



Addressing Table

Device	Interface	IP Address	Subnet Mask	Default Gateway
HQ	Fa0/0	10.2.0.225	255.255.255.248	N/A
	Fa0/1	10.2.0.233	255.255.255.248	N/A
	S0/0/0	209.165.201.2	255.255.255.252	N/A
	S0/0/1	172.17.1.225	255.255.255.252	N/A
	S0/1/0	172.17.1.229	255.255.255.252	N/A
	S0/1/1	172.17.1.233	255.255.255.252	N/A
B1	Fa0/0	10.2.0.1	255.255.255.192	N/A
	Fa0/1	10.2.0.65	255.255.255.192	N/A
	S0/0/0	172.17.1.226	255.255.255.252	N/A
B2	Fa0/0	10.2.0.129	255.255.255.224	N/A
	Fa0/1	10.2.0.161	255.255.255.224	N/A
	S0/0/0	172.17.1.230	255.255.255.252	N/A
B3	Fa0/0	10.2.0.193	255.255.255.240	N/A
	Fa0/1	10.2.0.209	255.255.255.240	N/A
	S0/0/0	172.17.1.234	255.255.255.252	N/A
ISP	Fa0/0	209.165.202.129	255.255.255.252	N/A
	S0/0/0	209.165.201.1	255.255.255.252	N/A
Web Server	NIC	209.165.202.130	255.255.255.252	209.165.202.129
PC1	NIC	10.2.0.62	255.255.255.192	10.2.0.1
PC2	NIC	10.2.0.126	255.255.255.192	10.2.0.65
PC3	NIC	10.2.0.158	255.255.255.224	10.2.0.129
PC4	NIC	10.2.0.190	255.255.255.224	10.2.0.161
PC5	NIC	10.2.0.206	255.255.255.240	10.2.0.193
PC6	NIC	10.2.0.222	255.255.255.240	10.2.0.209
PC7	NIC	10.2.0.230	255.255.255.248	10.2.0.225
PC8	NIC	10.2.0.238	255.255.255.248	10.2.0.233

Introduction:

This Packet Tracer Skills Integration Challenge Activity is very similar to the activities you have created in prior chapters. To allow you to better practice your skills, the scenario is slightly different. In this activity, you build a network from the ground up. Starting with a given address space and network requirements, you must implement a network design that satisfies the specifications. Next, you implement an effective RIPv2 routing configuration with static and default routing for Internet access.

Objectives

- Design and document an addressing scheme based on requirements.
- Select appropriate equipment and cable the devices.
- Apply a basic configuration to the devices.
- Test connectivity between directly connected devices.
- Configure RIPv2 routing.
- Configure static and default routing for Internet access.
- Verify full connectivity between all devices in the topology.

Task 1: Design and document an addressing scheme.

Step 1: Design an addressing scheme.

Based on the network requirements shown in the topology, design an appropriate addressing scheme.

- Address the LANs in order starting with LAN 1, then LAN 2, etc. Use the first address for the router interface and the last address for the PC.
- The addressing requirements for the LANs are:
    - Router B1 interface Fa0/0 supports 60 hosts.
    - Router B1 interface Fa0/1 supports 60 hosts.
    - Router B2 interface Fa0/0 supports 30 hosts.
    - Router B2 interface Fa0/1 supports 30 hosts.
    - Router B3 interface Fa0/0 supports 10 hosts.
    - Router B3 interface Fa0/1 supports 10 hosts.
    - Router HQ interface Fa0/0 supports 5 hosts.
    - Router HQ interface Fa0/1 supports 5 hosts.
- Address the WANs in order starting with WAN 1, then WAN 2, etc. HQ is the first usable address in all WAN links, with the exception of the link to ISP. For the ISP link, HQ uses the second usable address.
    - WAN 1 is the link between HQ and B1.
    - WAN 2 is the link between HQ and B2.
    - WAN 3 is the link between HQ and B3.

Step 2: Document the addressing scheme.

- Record the network addresses in dotted-decimal/slash format.
- Document the IP addresses, subnet masks and default gateway addresses.

Task 2: Apply a basic configuration.

Step 1: Configure the routers.

Using your documentation, configure the routers with basic configurations, including addressing and hostnames. Use **cisco** as the line passwords (console and Telnet). Use **class** as the enable secret password.

Step 2: Configure the PCs.

Using your documentation, configure the PCs with an IP address, subnet mask, and default gateway.

Task 3: Test connectivity.

Before continuing, make sure that each device can ping its directly connected neighbor.

Task 4: Configure and verify RIPv2 routing.

Step 1: Configure RIPv2.

Configure all devices with RIPv2 routing. In your configuration, make sure you include the following:

- Disable automatic summarization.
- Stop routing updates on interfaces that are not connected to RIP neighbors.
- Set a default route from HQ to ISP using the next-hop IP address.
- Configure static routes on the ISP using the outbound interface.
- Redistribute default route from HQ.

Step 2: Verify RIPv2.

Use verification commands to check your configuration. All routers should be converged on all the 10.2.0.0/24 and 172.17.1.224/28 subnets.

Task 5: Test connectivity and examine the configuration.

Test connectivity and examine the configuration.

Final Configuration for HQ:

```
HQ#show run
Building configuration...
Current configuration : 1379 bytes
!
version 12.3
no service password-encryption
!
hostname HQ
!
enable secret 5 $1$wHm1$CfZzOswRtiki8NOWUMQ491
!
```



```
ip ssh version 1
no ip domain-lookup
!
interface FastEthernet0/0
 description HQ LAN1
 ip address 10.2.0.225 255.255.255.248
 duplex auto
 speed auto
!
interface FastEthernet0/1
 description HQ LAN2
 ip address 10.2.0.233 255.255.255.248
 duplex auto
 speed auto
!
interface Serial0/0/0
 description Link to ISP
 ip address 209.165.201.2 255.255.255.252
!
interface Serial0/0/1
 description Link to B1
 ip address 172.17.1.225 255.255.255.252
 clock rate 64000
!
interface Serial0/1/0
 description Link to B2
 ip address 172.17.1.229 255.255.255.252
 clock rate 64000
!
interface Serial0/1/1
 description Link to B3
 ip address 172.17.1.233 255.255.255.252
 clock rate 64000
!
interface Ethernet1/0
 no ip address
 duplex auto
 speed auto
```



```
 shutdown
!
interface Vlan1
 no ip address
 shutdown
!
router rip
 version 2
 passive-interface FastEthernet0/0
 passive-interface FastEthernet0/1
 passive-interface Serial0/0/0
 network 10.0.0.0
 network 172.17.0.0
 default-information originate
 no auto-summary
!
ip classless
ip route 0.0.0.0 0.0.0.0 Serial0/0/0
!
banner motd ^C
********************************
  !!!AUTHORIZED ACCESS ONLY!!!
********************************
^C
line con 0
 password cisco
 login
line vty 0 4
 password cisco
 login
!
end
```

Final Configuration for B1:

```
B1#show run
Building configuration...
Current configuration : 928 bytes
!
```



```
version 12.3
no service password-encryption
!
hostname B1
!
enable secret 5 $1$46Cv$jh0/hzODP9gCdtE1vm0yy0
!
ip ssh version 1
no ip domain-lookup
!
interface FastEthernet0/0
 description B1 LAN1
 ip address 10.2.0.1 255.255.255.192
 duplex auto
 speed auto
!
interface FastEthernet0/1
 description B1 LAN2
 ip address 10.2.0.65 255.255.255.192
 duplex auto
 speed auto
!
interface Serial0/0/0
 description Link to HQ
 ip address 172.17.1.226 255.255.255.252
!
interface Serial0/0/1
 no ip address
 shutdown
!
interface Vlan1
 no ip address
 shutdown
!
router rip
 version 2
 passive-interface FastEthernet0/0
 passive-interface FastEthernet0/1
```



```
 network 10.0.0.0
 network 172.17.0.0
 no auto-summary
!
ip classless
!
banner motd ^C
*********************************
  !!!AUTHORIZED ACCESS ONLY!!!
*********************************
^C
line con 0
 password cisco
 login
line vty 0 4
 password cisco
 login
!
end
```

Final Configuration for B2:

```
B2#show run
Building configuration...
Current configuration : 947 bytes
!
version 12.3
no service password-encryption
!
hostname B2
!
enable secret 5 $1$fBxd$FiVHgJMH1xOINpRCQx/JG1
!
ip ssh version 1
no ip domain-lookup
!
interface FastEthernet0/0
 description Link to B2 LAN1
 ip address 10.2.0.129 255.255.255.224
```



```
 duplex auto
 speed auto
!
interface FastEthernet0/1
 description Link to B2 LAN2
 ip address 10.2.0.161 255.255.255.224
 duplex auto
 speed auto
!
interface Serial0/0/0
 description Link to HQ
 ip address 172.17.1.230 255.255.255.252
!
interface Serial0/0/1
 no ip address
 shutdown
!
interface Vlan1
 no ip address
 shutdown
!
router rip
 version 2
 passive-interface FastEthernet0/0
 passive-interface FastEthernet0/1
 network 10.0.0.0
 network 172.17.0.0
 no auto-summary
!
ip classless
!
banner motd ^C
*********************************
  !!!AUTHORIZED ACCESS ONLY!!!
*********************************
^C
line con 0
 password cisco
```



```
 login
line vty 0 4
 password cisco
 login
!
end
```

Final Configuration for B3:

```
B3#show run
Building configuration...
Current configuration : 931 bytes
!
version 12.3
no service password-encryption
!
hostname B3
!
enable secret 5 $1$59uL$EREhV4wcr3zky.jAIjfmP0
!
ip ssh version 1
no ip domain-lookup
!
interface FastEthernet0/0
 description B3 LAN1
 ip address 10.2.0.193 255.255.255.240
 duplex auto
 speed auto
!
interface FastEthernet0/1
 description B3 LAN2
 ip address 10.2.0.209 255.255.255.240
 duplex auto
 speed auto
!
interface Serial0/0/0
 description Link to HQ
 ip address 172.17.1.234 255.255.255.252
!
```



```
interface Serial0/0/1
 no ip address
 shutdown
!
interface Vlan1
 no ip address
 shutdown
!
router rip
 version 2
 passive-interface FastEthernet0/0
 passive-interface FastEthernet0/1
 network 10.0.0.0
 network 172.17.0.0
 no auto-summary
!
ip classless
!
banner motd ^C
********************************
  !!!AUTHORIZED ACCESS ONLY!!!
********************************
^C
line con 0
 password cisco
 login
line vty 0 4
 password cisco
 login
!
end
```

