LAB 6: SWITCH AND ROUTERS
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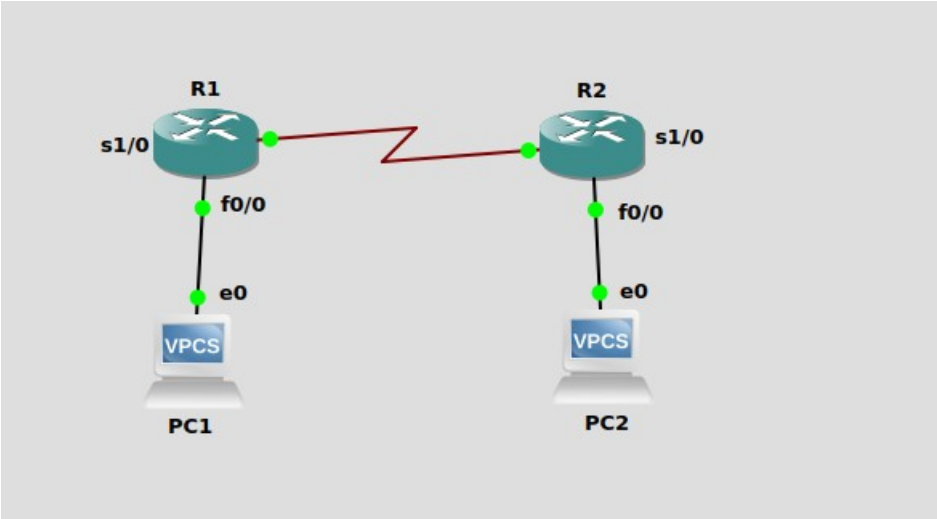
SECTION: D

QUESTION-1 DIAGRAM



Interface Fastethernet0/0 in global configuration mode

```
R1#config t
Enter configuration commands, one per line.  End with CNTL/Z.
R1(config)#inter f0/0
R1(config-if)#ip address 10.0.0.1 255.255.255.0
R1(config-if)#no shutdown
R1(config-if)#exit
R1(config)#
*Mar  1 00:07:49.783: %LINK-3-UPDOWN: Interface FastEthernet0/0, changed state
to up
*Mar  1 00:07:50.783: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEther
net0/0, changed state to up
R1(config)#
```

Interface Serial 1/0

```
R1(config)#inter s1/0
R1(config-if)#ip address 20.0.0.1 255.255.255.0
R1(config-if)#clock rate 64000
R1(config-if)#encapsulation ppp
R1(config-if)#no shutdown
R1(config-if)#exit
*Mar  1 00:17:00.795: %LINK-3-UPDOWN: Interface Serial1/0, changed state to up
R1(config-if)#exit
```

Interface Fastethernet 0/0

```
R2#config t
Enter configuration commands, one per line.  End with CNTL/Z.
R2(config)#inter f0/0
R2(config-if)#ip address 30.0.0.1 255.255.255.0
R2(config-if)#no shutdown
R2(config-if)#exit
R2(config)#
*Mar  1 00:21:30.819: %LINK-3-UPDOWN: Interface FastEthernet0/0, changed state t
o up
*Mar  1 00:21:31.819: %LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthern
et0/0, changed state to up
```

Interface Serial 1/0

```
R2(config)#inter s1/0
R2(config-if)#ip address 20.0.0.2 255.255.255.0
R2(config-if)#encapsulation ppp
R2(config-if)#no shutdown
R2(config-if)#exi
*Mar  1 00:23:38.219: %LINK-3-UPDOWN: Interface Serial1/0, changed state to up
R2(config-if)#exit
R2(config)#
*Mar  1 00:23:39.251: %LINEPROTO-5-UPDOWN: Line protocol on Interface Serial1/0,
 changed state to up
R2(config)#
```

R1# show interfaces

```
R1#show interfaces
FastEthernet0/0 is up, line protocol is up
  Hardware is Gt96k FE, address is c401.0a9d.0000 (bia c401.0a9d.0000)
  Internet address is 10.0.0.1/24
  MTU 1500 bytes, BW 10000 Kbit/sec, DLY 1000 usec,
     reliability 255/255, txload 1/255, rxload 1/255
  Encapsulation ARPA, loopback not set
  Keepalive set (10 sec)
  Half-duplex, 10Mb/s, 100BaseTX/FX
  ARP type: ARPA, ARP Timeout 04:00:00
  Last input never, output 00:00:01, output hang never
  Last clearing of "show interface" counters never
  Input queue: 0/75/0/0 (size/max/drops/flushes); Total output drops: 0
  Queueing strategy: fifo
  Output queue: 0/40 (size/max)
  5 minute input rate 0 bits/sec, 0 packets/sec
  5 minute output rate 0 bits/sec, 0 packets/sec
     0 packets input, 0 bytes
     Received 0 broadcasts, 0 runts, 0 giants, 0 throttles
     0 input errors, 0 CRC, 0 frame, 0 overrun, 0 ignored
     0 watchdog
     0 input packets with dribble condition detected
     129 packets output, 13592 bytes, 0 underruns
     0 output errors, 0 collisions, 1 interface resets
 --More--
```

R1#show running-config

```
R1#show running-config
Building configuration...

Current configuration : 1219 bytes
!
version 12.4
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
!
hostname R1
!
boot-start-marker
boot-end-marker
!
!
no aaa new-model
memory-size iomem 5
no ip icmp rate-limit unreachable
ip cef
!
!
!
```

Assign ip addresses for both PC's

```
PC1> ip 10.0.0.10 255.255.255.0 10.0.0.1
Checking for duplicate address...
PC1 : 10.0.0.10 255.255.255.0 gateway 10.0.0.1
```

```
PC2> ip 30.0.0.10 255.255.255.0 30.0.0.1
Checking for duplicate address...
PC2 : 30.0.0.10 255.255.255.0 gateway 30.0.0.1
```

Setting static routing table entries on a Cisco router

PRIVILIGED EXECUTION

```
R1#show ip route
Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
       D - EIGRP, EX - EIGRP external, O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2
       i - IS-IS, su - IS-IS summary, L1 - IS-IS level-1, L2 - IS-IS level-2
       ia - IS-IS inter area, * - candidate default, U - per-user static route
       o - ODR, P - periodic downloaded static route

Gateway of last resort is not set

     20.0.0.0/8 is variably subnetted, 2 subnets, 2 masks
C       20.0.0.0/24 is directly connected, Serial1/0
C       20.0.0.2/32 is directly connected, Serial1/0
     10.0.0.0/24 is subnetted, 1 subnets
C       10.0.0.0 is directly connected, FastEthernet0/0
R1#clear ip route *
R1#show ip cache
IP routing cache 0 entries, 0 bytes
   0 adds, 0 invalidates, 0 refcounts
Minimum invalidation interval 2 seconds, maximum interval 5 seconds,
   quiet interval 3 seconds, threshold 0 requests
Invalidation rate 0 in last second, 0 in last 3 seconds
Last full cache invalidation occurred 00:00:06 ago

Prefix/Length           Age       Interface       Next Hop
```

R1(config)#ip route 30.0.0.0 255.0.0.0 20.0.0.2
R2(config)#ip route 10.0.0.0 255.0.0.0 20.0.0.1

ping command from PC1 to PC2 (wireshark observation)

No.	Time	Source	Destination	Protocol	Length	Info
9	19.582955	30.0.0.1	10.0.0.10	ICMP	98	Echo (ping) reply id=0x62ae, seq=3/768, ttl=254 (request i…
10	20.005915	c4:01:0a:9d:00:00	c4:01:0a:9d:00:00	LOOP	60	Reply
11	20.583812	10.0.0.10	30.0.0.1	ICMP	98	Echo (ping) request id=0x63ae, seq=4/1024, ttl=64 (reply in …
12	20.601772	30.0.0.1	10.0.0.10	ICMP	98	Echo (ping) reply id=0x63ae, seq=4/1024, ttl=254 (request …
13	21.602931	10.0.0.10	30.0.0.1	ICMP	98	Echo (ping) request id=0x64ae, seq=5/1280, ttl=64 (reply in …
14	21.617877	30.0.0.1	10.0.0.10	ICMP	98	Echo (ping) reply id=0x64ae, seq=5/1280, ttl=254 (request …
15	30.001696	c4:01:0a:9d:00:00	c4:01:0a:9d:00:00	LOOP	60	Reply
16	40.007039	c4:01:0a:9d:00:00	c4:01:0a:9d:00:00	LOOP	60	Reply

```
▸ Frame 1: 60 bytes on wire (480 bits), 60 bytes captured (480 bits) on interface -, id 0
▸ Ethernet II, Src: c4:01:0a:9d:00:00 (c4:01:0a:9d:00:00), Dst: c4:01:0a:9d:00:00 (c4:01:0a:9d:00:00)
▸ Configuration Test Protocol (loopback)
▸ Data (40 bytes)
```

GLOBAL CONFIG MODE
ping command from R1 to PC2 (terminal observation)

```
R1(config)#ip route 30.0.0.0 255.255.255.0 20.0.0.2
R1(config)#
R1#
*Mar  1 00:54:59.739: %SYS-5-CONFIG_I: Configured from console by console
R1#ping 30.0.0.1

Type escape sequence to abort.
Sending 5, 100-byte ICMP Echos to 30.0.0.1, timeout is 2 seconds:
!!!!!
Success rate is 100 percent (5/5), round-trip min/avg/max = 8/10/16 ms
```

QUESTION-2 DIAGRAM