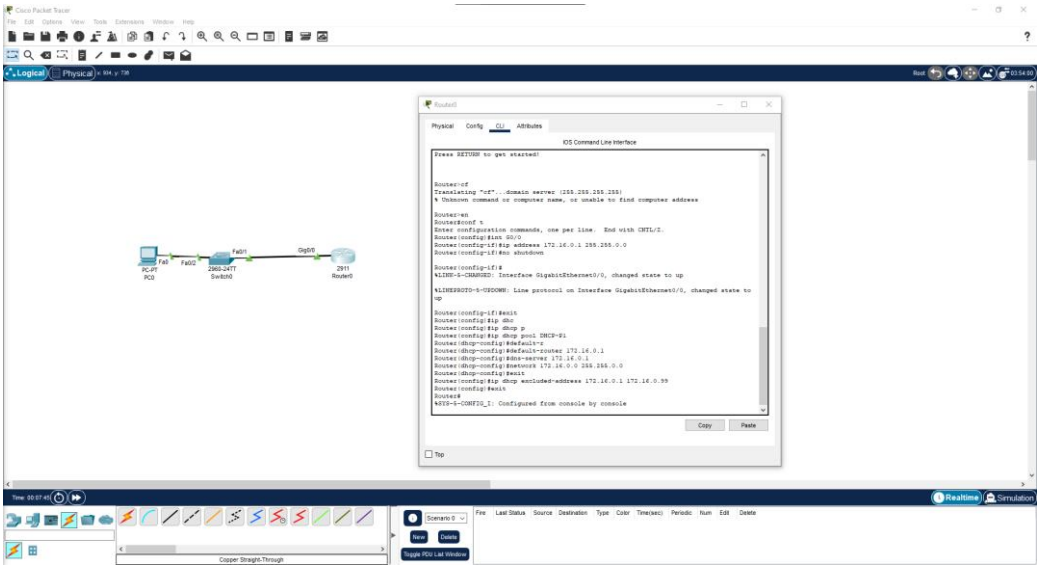
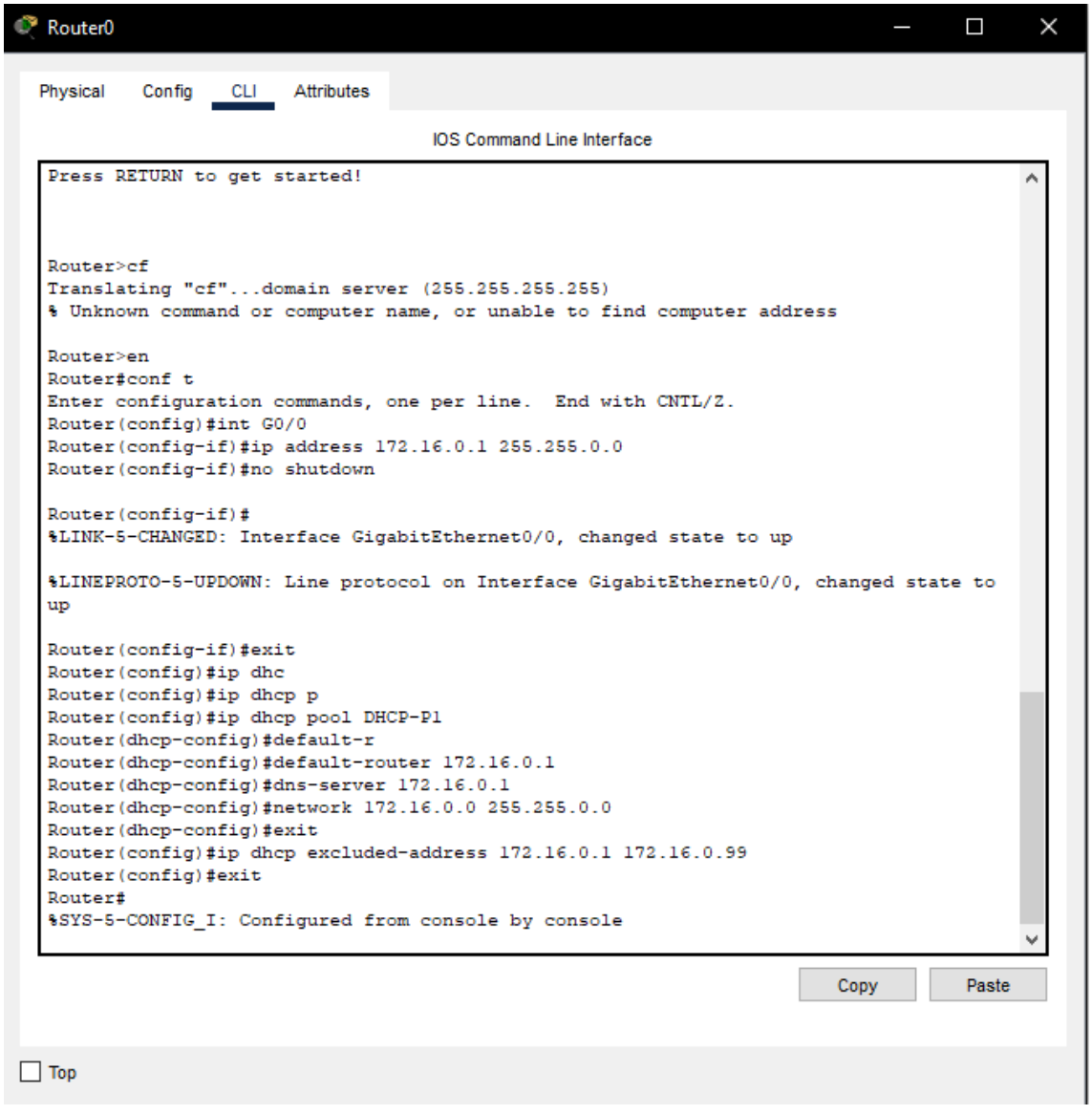
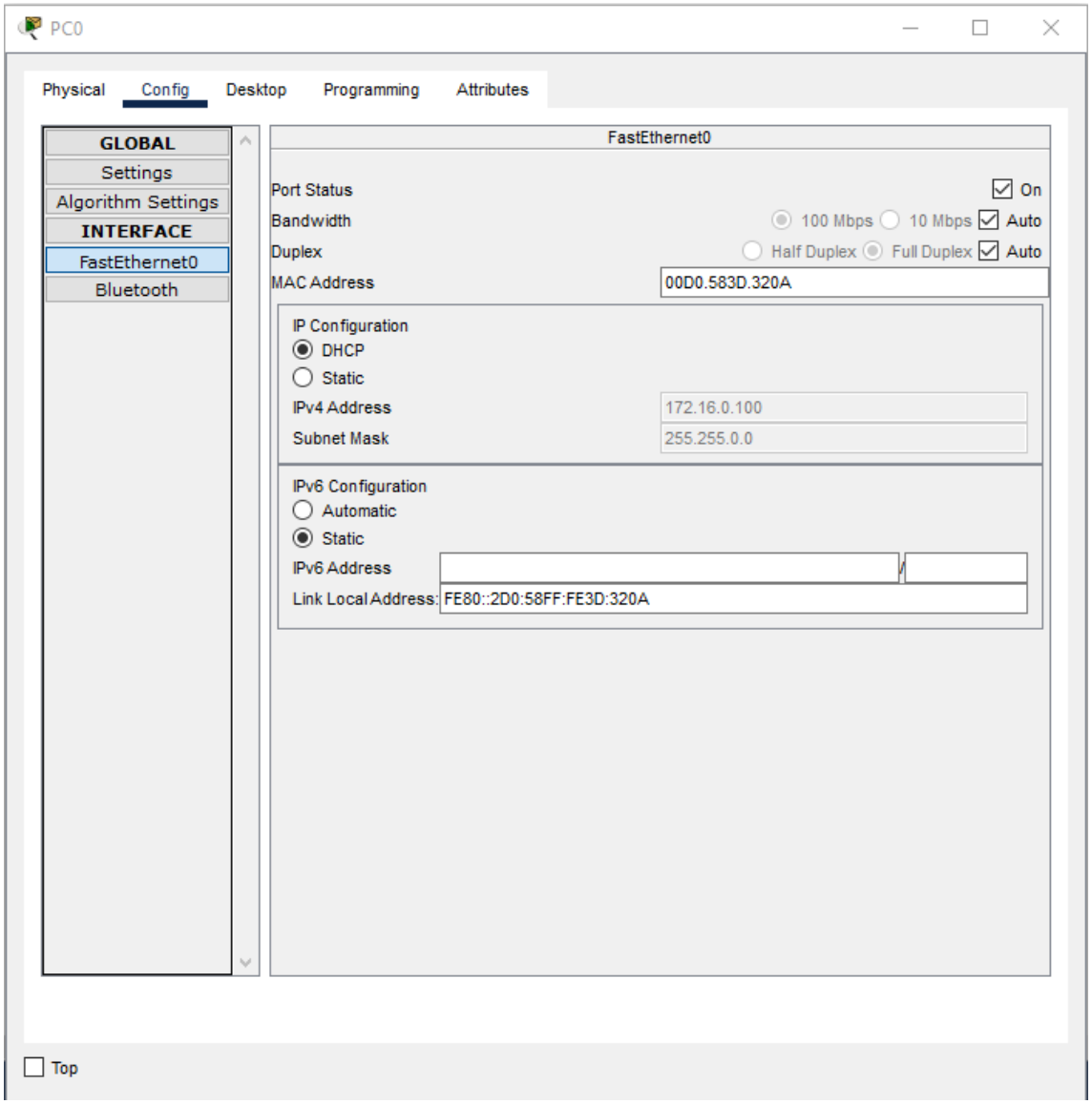
Ejercicio 1:

Configuramos todo en el router para el DHCP:

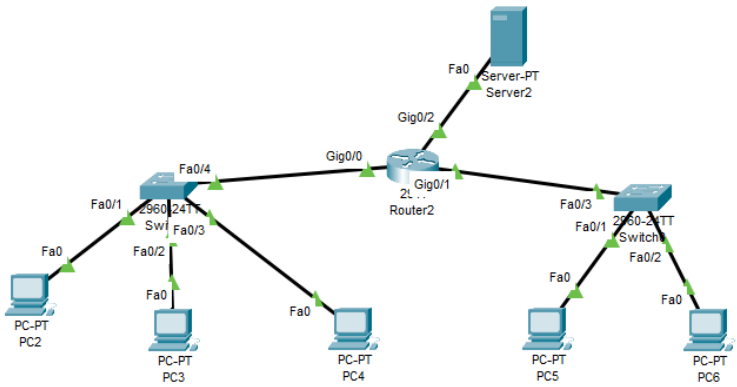




Y en el equipo cliente, vemos que se le ha asignado IP por DHCP:



Ejercicio 3:



Router 2:
sh run:

```
Router#sh run
Building configuration...

Current configuration : 892 bytes
!
version 15.1
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname Router
!
!
!
!
!
!
!
!
ip cef
no ipv6 cef
!
!
!
!
license udi pid CISCO2911/K9 sn FTX1524H1XA-
!
!
!
!
!
!
!
!
!
!
!
spanning-tree mode pvst
!
!
!
!
!
!
interface GigabitEthernet0/0
 ip address 192.168.1.1 255.255.255.0
 ip helper-address 172.168.0.2
 ip helper-address 192.16.0.2
 ip helper-address 172.16.0.2
 duplex auto
 speed auto
!
interface GigabitEthernet0/1
 ip address 192.168.2.1 255.255.255.0
 ip helper-address 172.168.0.2
 ip helper-address 172.16.0.2
 duplex auto
 speed auto
```

```
 ---- ----
!
interface GigabitEthernet0/2
 ip address 172.16.0.1 255.255.255.0
 duplex auto
 speed auto
!
interface Vlan1
 no ip address
 shutdown
!
router rip
!
ip classless
!
ip flow-export version 9
!
!
!
!
!
!
!
line con 0
!
line aux 0
!
line vty 0 4
 login
!
!
!
end
```

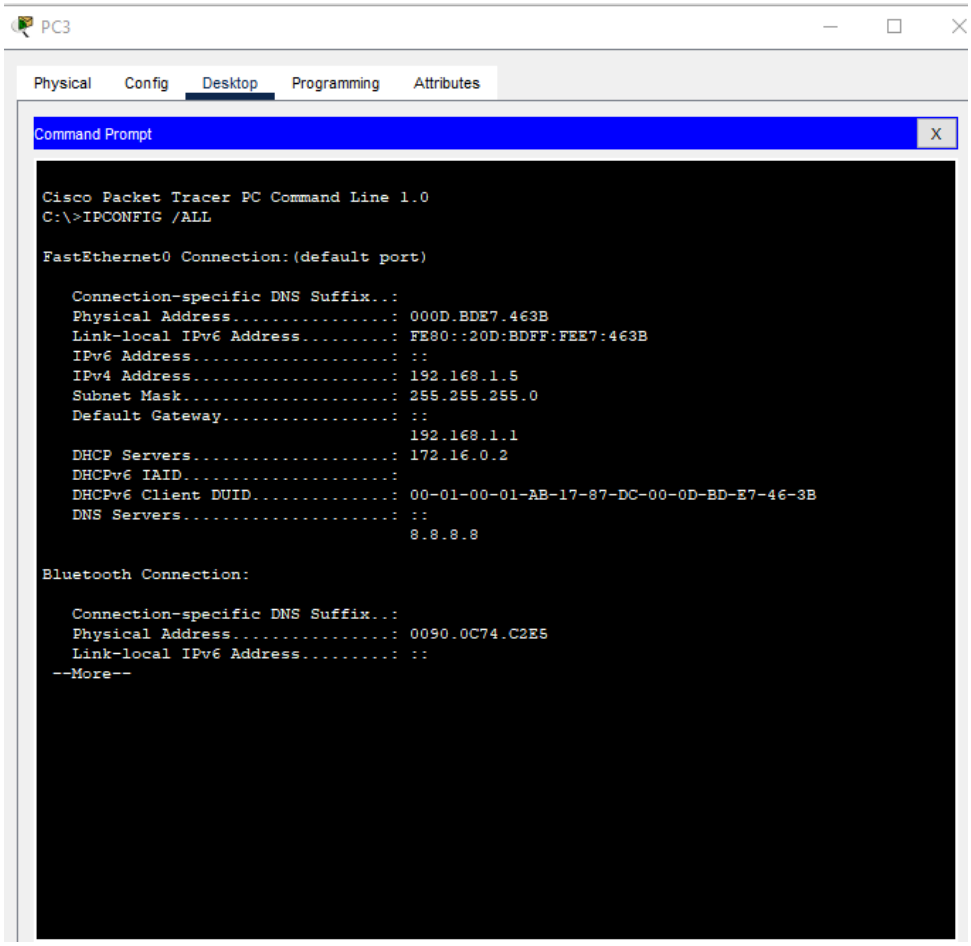
sh ip route:

```
Router#sh ip route
Codes: L - local, 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, E - EGP
       i - IS-IS, 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

     172.16.0.0/16 is variably subnetted, 2 subnets, 2 masks
C       172.16.0.0/24 is directly connected, GigabitEthernet0/2
L       172.16.0.1/32 is directly connected, GigabitEthernet0/2
     192.168.1.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.1.0/24 is directly connected, GigabitEthernet0/0
L       192.168.1.1/32 is directly connected, GigabitEthernet0/0
     192.168.2.0/24 is variably subnetted, 2 subnets, 2 masks
C       192.168.2.0/24 is directly connected, GigabitEthernet0/1
L       192.168.2.1/32 is directly connected, GigabitEthernet0/1
```

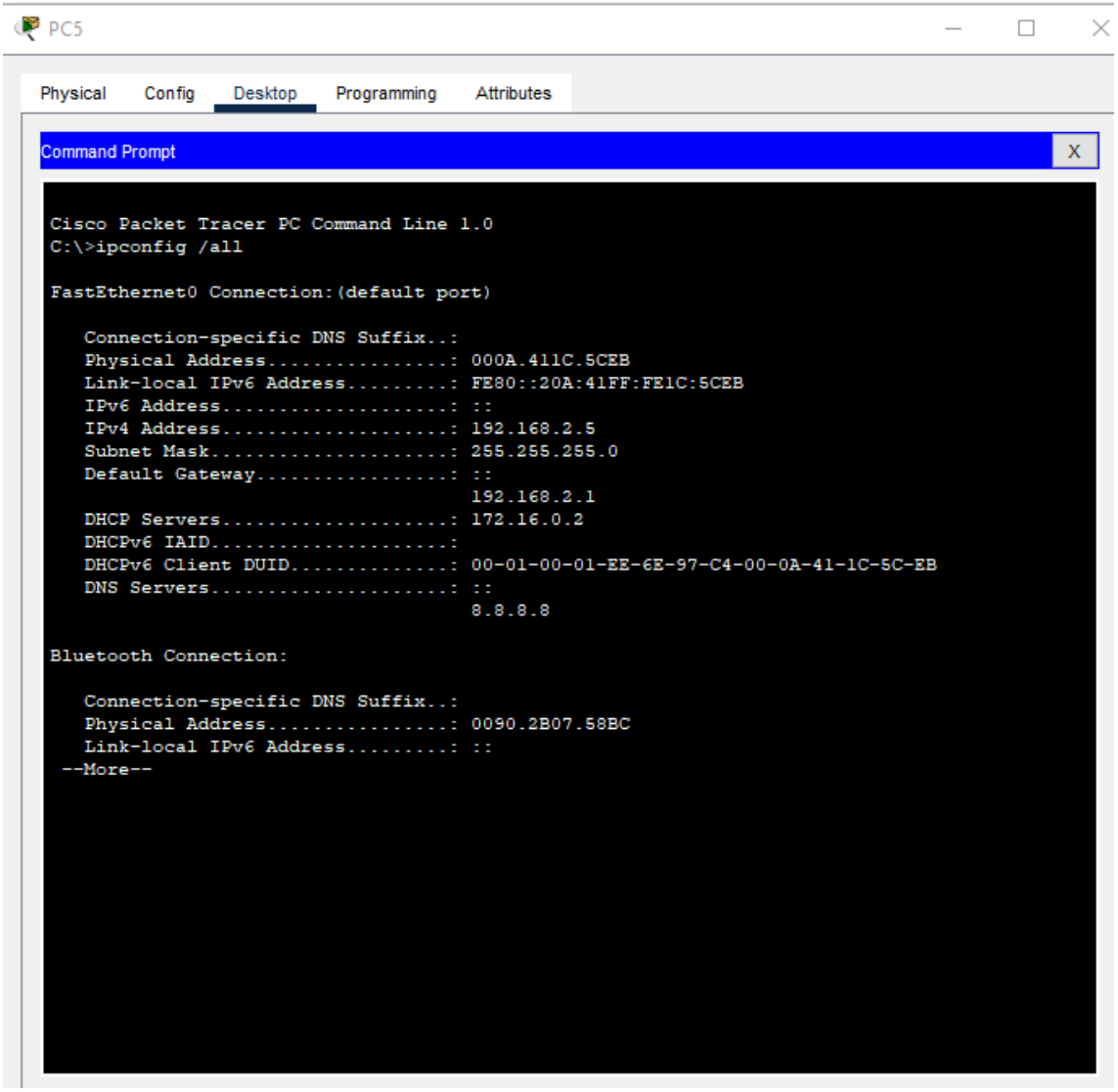
PC2:

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ipconfig /all

FastEthernet0 Connection:(default port)

   Connection-specific DNS Suffix..:
   Physical Address.................: 000C.CF95.0115
   Link-local IPv6 Address.........: FE80::20C:CFFF:FE95:115
   IPv6 Address....................: ::
   IPv4 Address....................: 192.168.1.7
   Subnet Mask.....................: 255.255.255.0
   Default Gateway.................: ::
                                     192.168.1.1
   DHCP Servers....................: 172.16.0.2
   DHCPv6 IAID.....................:
   DHCPv6 Client DUID..............: 00-01-00-01-C7-82-03-7D-00-0C-CF-95-01-15
   DNS Servers.....................: ::
                                     8.8.8.8

Bluetooth Connection:

   Connection-specific DNS Suffix..:
   Physical Address.................: 0060.4761.BBB1
   Link-local IPv6 Address.........: ::
 --More--
```

PC3:



PC5:



Switch 1:

```
Switch#sh vlan brief

VLAN Name                              Status    Ports
---- --------------------------------- --------- -------------------------------
1    default                           active    Fa0/1, Fa0/2, Fa0/3, Fa0/4
                                                 Fa0/5, Fa0/6, Fa0/7, Fa0/8
                                                 Fa0/9, Fa0/10, Fa0/11, Fa0/12
                                                 Fa0/13, Fa0/14, Fa0/15, Fa0/16
                                                 Fa0/17, Fa0/18, Fa0/19, Fa0/20
                                                 Fa0/21, Fa0/22, Fa0/23, Fa0/24
                                                 Gig0/1, Gig0/2
1002 fddi-default                      active
1003 token-ring-default                active
1004 fddinet-default                   active
1005 trnet-default                     active
```

Switch 0:

```
Switch>sh vlan brief

VLAN Name                              Status    Ports
---- --------------------------------- --------- -------------------------------
1    default                           active    Fa0/1, Fa0/2, Fa0/3, Fa0/4
                                                 Fa0/5, Fa0/6, Fa0/7, Fa0/8
                                                 Fa0/9, Fa0/10, Fa0/11, Fa0/12
                                                 Fa0/13, Fa0/14, Fa0/15, Fa0/16
                                                 Fa0/17, Fa0/18, Fa0/19, Fa0/20
                                                 Fa0/21, Fa0/22, Fa0/23, Fa0/24
                                                 Gig0/1, Gig0/2
1002 fddi-default                      active
1003 token-ring-default                active
1004 fddinet-default                   active
1005 trnet-default                     active
```

Para crear esta red, en el servidor he creado dos pool DHCP para dos subredes distintas, luego en el router he establecido la IP del servidor como DHCP helper, en los switch he establecido las VLAN y demás.

Pongo capturas de los comandos utilizados:

1		Switch1	Switch>	en	enable
2		Switch1	Switch#	conf t	configure terminal
3		Switch1	Switch(config)#	int range fa0/1-fa0/5	interface rangeFastEthernet0/1. 0 - FastEthernet0/5. 0
4		Switch1	Switch(config-if-range)#	switch port mode access	switchport port-security
5		Switch1	Switch(config-if-range)#	switchport mode access	switchport mode access
6		Switch0	Switch>	en	enable
7		Switch0	Switch#	conf t	configure terminal
8		Switch0	Switch(config)#	int range fa0/1-5	interface rangeFastEthernet0/1. 0 - 5
9		Switch0	Switch(config-if-range)#	switchport mode access	switchport mode access
10		Router2	Router>	en	enable
11		Router2	Router#	conf t	configure terminal
12		Router2	Router(config)#	int gig0/0	interface GigabitEthernet0/0
13		Router2	Router(config-if)#	ip address 192.168.1.1	ip address 192.168.1.1
14		Router2	Router(config-if)#	ip address 192.168.1.1 255.255.255.0	ip address 192.168.1.1 255.255.255.0
15		Router2	Router(config-if)#	exit	exit
16		Router2	Router(config)#	int gig0/1	interface GigabitEthernet0/1
17		Router2	Router(config-if)#	ip address 192.168.2.1 255.255.255.0	ip address 192.168.2.1 255.255.255.0
18		Router2	Router(config-if)#	exit	exit
19		Router2	Router(config)#	int gig0/0	interface GigabitEthernet0/0
20		Router2	Router(config-if)#	no shut	no shutdown
21		Router2	Router(config-if)#	exit	exit
22		Router2	Router(config)#	int gig0/1	interface GigabitEthernet0/1
23		Router2	Router(config-if)#	no shut	no shutdown
24		Router2	Router(config-if)#	exit	exit
25		Router2	Router(config)#	int gig0/2	interface GigabitEthernet0/2
26		Router2	Router(config-if)#	ip address 192.168.0.1 255.255.255.0	ip address 192.168.0.1 255.255.255.0
27		Router2	Router(config-if)#	no shut	no shutdown
28		Router2	Router(config-if)#	ip address 172.16.0.1 255.255.255.0	ip address 172.16.0.1 255.255.255.0
29		Router2	Router(config-if)#	no shut	no shutdown
30		Router2	Router(config-if)#	exit	exit
31		Router2	Router(config)#	interface GigabitEthernet0/0	interface GigabitEthernet0/0
32		Router2	Router(config-if)#	exit	exit

	Time	Device	Prompt	Command	Resolved Command
3		Router2	Router(config)#	interface GigabitEthernet0/1	interface GigabitEthernet0/1
4		Router2	Router(config-if)#	exit	exit
5		Router2	Router(config)#	interface GigabitEthernet0/2	interface GigabitEthernet0/2
6		Router2	Router(config-if)#	exit	exit
7		Router2	Router(config)#	interface GigabitEthernet0/0	interface GigabitEthernet0/0
8		Router2	Router(config-if)#	exit	exit
9		Router2	Router(config)#	interface GigabitEthernet0/1	interface GigabitEthernet0/1
0		Router2	Router(config-if)#	exit	exit
1		Router2	Router(config)#	interface GigabitEthernet0/2	interface GigabitEthernet0/2
2		Router2	Router(config-if)#	end	end
3		Router2	Router#	exit	exit
4		Router2	Router>	enable	enable
5		Router2	Router#	configure terminal	configure terminal
6		Router2	Router(config)#	interface GigabitEthernet0/0	interface GigabitEthernet0/0
7		Router2	Router(config-if)#	exit	exit
8		Router2	Router(config)#	interface GigabitEthernet0/1	interface GigabitEthernet0/1
9		Router2	Router(config-if)#	exit	exit
0		Router2	Router(config)#	interface GigabitEthernet0/2	interface GigabitEthernet0/2
1		Router2	Router(config-if)#	exit	exit
2		Router2	Router(config)#	interface GigabitEthernet0/1	interface GigabitEthernet0/1
3		Router2	Router(config-if)#	exit	exit
4		Router2	Router(config)#	interface GigabitEthernet0/0	interface GigabitEthernet0/0
5		Router2	Router(config-if)#	exit	exit
6		Router2	Router(config)#	interface GigabitEthernet0/1	interface GigabitEthernet0/1
7		Router2	Router(config-if)#	exit	exit
8		Router2	Router(config)#	interface GigabitEthernet0/2	interface GigabitEthernet0/2
9		Router2	Router>	en	enable
0		Router2	Router#	conf t	configure terminal
1		Router2	Router(config)#	int gig0/0	interface GigabitEthernet0/0
2		Router2	Router(config-if)#	ip helper-address 172.168.0.2	ip helper-address 172.168.0.2
3		Router2	Router(config-if)#	exit	exit
4		Router2	Router(config)#	int gig0/1	interface GigabitEthernet0/1

65		Router2	Router(config-if)#	ip helper-address 172.168.0.2	ip helper-address 172.168.0.2
66		Router2	Router(config-if)#	exit	exit
67		Router2	Router(config)#	interface GigabitEthernet0/2	interface GigabitEthernet0/2
68		Router2	Router(config-if)#	exit	exit
69		Router2	Router(config)#	interface GigabitEthernet0/1	interface GigabitEthernet0/1
70		Router2	Router(config-if)#	exit	exit
71		Router2	Router(config)#	interface GigabitEthernet0/0	interface GigabitEthernet0/0
72		Router2	Router(config-if)#	end	end
73		Router2	Router#	vlan database	vlan database
74		Router2	Router(vlan)#	exit	exit
75		Router2	Router#	configure terminal	configure terminal
76		Router2	Router(config)#	router rip	router rip
77		Router2	Router(config-router)#	end	end
78		Router2	Router#	configure terminal	configure terminal
79		Router2	Router(config)#	en	
80		Router2	Router(config)#	conf t	config-register t
81		Router2	Router(config)#	interface GigabitEthernet0/0	interface GigabitEthernet0/0
82		Router2	Router#	clear	clear
83		Router2	Router#	cls	cls
84		Router2	Router#	conf t	configure terminal
85		Router2	Router(config)#	interface GigabitEthernet0/0	interface GigabitEthernet0/0
86		Router2	Router(config-if)#	dhcp-helper 192.16.0.2	
87		Router2	Router(config-if)#	dhcp helper 192.16.0.2	
88		Router2	Router(config-if)#	ip helper-address 192.16.0.2	ip helper-address 192.16.0.2
89		Router2	Router(config-if)#	exit	exit
90		Router2	Router(config)#	interface GigabitEthernet0/1	interface GigabitEthernet0/1
91		Router2	Router(config-if)#	ip helper-address 172.16.0.2	ip helper-address 172.16.0.2
92		Router2	Router(config-if)#	exit	exit
93		Router2	Router(config)#	interface GigabitEthernet0/0	interface GigabitEthernet0/0
94		Router2	Router(config-if)#	ip helper-address 172.16.0.2	ip helper-address 172.16.0.2
95		Router2	Router(config-if)#	exit	exit
96		PC2	C:\>	ip /release	