

## ***RIP Routing***

### **Router 4**

```
Router(config)#router rip
Router(config-router)#ver 2
Router(config-router)#network 192.60.0.0
Router(config-router)#network 192.70.0.0
Router(config-router)#no au
Router(config-router)#no auto-summary
```

### **Router 7 – Frame Relay**

```
Router(config)#router rip
Router(config-router)#ver 2
Router(config-router)#network 10.0.0.0
Router(config-router)#network 172.60.0.0
Router(config-router)#no au
Router(config-router)#no auto-summary
Router(config-router)#exit
```

### **Router 6 – Frame Relay**

```
Router(config)#router rip
Router(config-router)#ver 2
Router(config-router)#network 172.50.0.0
Router(config-router)#network 10.0.0.0
Router(config-router)#no au
Router(config-router)#no auto-summary
Router(config-router)#
```

## ***OSPF Routing***

### **Router 3**

```
Router(config)#router ospf 10
```

```
Router(config-router)#network 172.16.0.0 0.0.255.255 area 0
```

```
Router(config-router)#network 172.15.0.0 0.0.255.255 area 0
```

```
Router(config-router)#
```

```
00:39:43: %OSPF-5-ADJCHG: Process 10, Nbr 192.168.0.2 on GigabitEthernet0/2 from LOADING to FULL, Loading Done
```

## ***EIGRP Routing***

### **Router 2**

```
Router(config)#router eigrp 10
```

```
Router(config-router)#network 192.168.0.0 0.0.0.255
```

```
Router(config-router)#
```

```
Router(config-router)#no aut
```

```
Router(config-router)#no auto-summary
```

```
Router(config-router)#
```

## ***Redistribution***

### **Router 5**

```
Router(config-router)#router rip
```

```
Router(config-router)#ver 2
```

```
Router(config-router)#network 192.60.0.0
```

```
Router(config-router)#network 192.70.0.0
```

```
Router(config-router)#no aut
```

```
Router(config-router)#no auto-summary
```

```
Router(config-router)#router rip
```

```
Router(config-router)#red
```

```
Router(config-router)#redistribute ospf 10 metric 1
```

```
Router(config-router)#redistribute eigrp 10 metric 1
```

```
Router(config-router)#router ospf 10
```

Router(config-router)#

Router(config-router)#red

Router(config-router)#redistribute rip subnets

Router(config-router)#redistribute eigrp 10 subnets

Router(config-router)#router eigrp 10

Router(config-router)#redis

Router(config-router)#redistribute ?

bgp Border Gateway Protocol (BGP)

connected Connected

eigrp Enhanced Interior Gateway Routing Protocol (EIGRP)

metric Metric for redistributed routes

ospf Open Shortest Path First (OSPF)

rip Routing Information Protocol (RIP)

static Static routes

Router(config-router)#redistribute metric ?

<1-4294967295> Bandwidth metric in Kbits per second

Router(config-router)#redistribute rip metric 10000 100 255 1 1500

Router(config-router)#redistribute ospf 10 metric 10000 100 255 1 1500

Router(config-router)#do 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

172.15.0.0/16 is variably subnetted, 2 subnets, 2 masks

C 172.15.0.0/16 is directly connected, GigabitEthernet0/2

L 172.15.0.2/32 is directly connected, GigabitEthernet0/2

O 172.16.0.0/16 [110/2] via 172.15.0.1, 00:09:29, GigabitEthernet0/2

R 192.60.0.0/24 [120/1] via 192.70.0.1, 00:00:03, GigabitEthernet0/1

192.70.0.0/24 is variably subnetted, 2 subnets, 2 masks

C 192.70.0.0/24 is directly connected, GigabitEthernet0/1

L 192.70.0.2/32 is directly connected, GigabitEthernet0/1

192.160.0.0/24 is variably subnetted, 2 subnets, 2 masks

C 192.160.0.0/24 is directly connected, GigabitEthernet0/0

L 192.160.0.2/32 is directly connected, GigabitEthernet0/0

D 192.168.0.0/24 [90/3072] via 192.160.0.1, 00:10:26, GigabitEthernet0/0

D 192.168.10.0/24 [90/28416] via 192.160.0.1, 00:10:26, GigabitEthernet0/0

D 192.168.20.0/24 [90/28416] via 192.160.0.1, 00:10:26, GigabitEthernet0/0

D 192.168.30.0/24 [90/28416] via 192.160.0.1, 00:10:26, GigabitEthernet0/0

Router(config-router)#

## ***VLANs***

### **Switch 7**

Switch>en

Switch#conf t

Enter configuration commands, one per line. End with CNTL/Z.

Switch(config)#vlan 10

Switch(config-vlan)#name it

Switch(config-vlan)#vlan 20

Switch(config-vlan)#name admin

Switch(config-vlan)#vlan 30

Switch(config-vlan)#name hr

```
Switch(config-vlan)#exit
```

```
Switch(config)#int range fa0/5-9
```

```
Switch(config-if-range)#switchport mode access
```

```
Switch(config-if-range)#switchport access vlan 10
```

```
Switch(config-if-range)#no shut
```

```
Switch(config-if-range)#int range fa0/10-14
```

```
Switch(config-if-range)#switchport mode access
```

```
Switch(config-if-range)#switchport access vlan 20
```

```
Switch(config-if-range)#no shut
```

```
Switch(config-if-range)#int range fa0/15-19
```

```
Switch(config-if-range)#switchport mode access
```

```
Switch(config-if-range)#switchport access vlan 30
```

```
Switch(config-if-range)#no shut
```

```
Switch(config-if-range)#exit
```

```
Switch(config)#int fa0/1
```

```
Switch(config-if)#switchport mode trunk
```

```
Switch(config-if)#
```

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to down
```

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface FastEthernet0/1, changed state to up
```

```
Switch(config-if)#switchport trunk native vlan 10
```

```
Switch(config-if)#switchport trunk allowed vlan 1-1005
```

```
Switch(config-if)#no shut
```

```
Switch(config-if)#
```

```
%CDP-4-NATIVE_VLAN_MISMATCH: Native VLAN mismatch discovered on FastEthernet0/1 (10),  
with Switch FastEthernet0/1 (1).
```

```
Switch(config-if)#do sh vlan brief
```

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

```
Switch(config-if)#
```

### Switch 8

```
Switch(config)#int fa0/1
```

```
Switch(config-if)#switchport mode trunk
```

```
Switch(config-if)#switchport trunk native vlan 10
```

```
Switch(config-if)#switchport trunk allowed vlan %SPANTREE-2-UNBLOCK_CONSIST_PORT:  
Unlocking FastEthernet0/1 on VLAN0010. Port consistency restored.
```

```
%SPANTREE-2-UNBLOCK_CONSIST_PORT: Unlocking FastEthernet0/1 on VLAN0001. Port  
consistency restored.
```

```
% Incomplete command.
```

```
Switch(config-if)#switchport trunk allowed vlan 1-1005
```

```
Switch(config-if)#no shut
```

```
Switch(config-if)#do sh vlan brief
```

VLAN Name	Status	Ports
-----		
1 default	active	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
10 it	active	
20 admin	active	
30 hr	active	
1002 fddi-default	active	
1003 token-ring-default	active	
1004 fddinet-default	active	
1005 trnet-default	active	

## Switch 6

```
Switch(config)#int fa0/1
```

```
Switch(config-if)#switchport mode trunk
```

```
Switch(config-if)#switchport trunk native vlan 10
```

```
Switch(config-if)#switchport trunk allowed vlan %SPANTREE-2-UNBLOCK_CONSIST_PORT:  
Unblocking FastEthernet0/1 on VLAN0010. Port consistency restored.
```

```
Switch(config-if)#switchport trunk allowed vlan 1-1005
```

```
Switch(config-if)#no shut
```

```
Switch(config-if)#do sh vlan brief
```

VLAN Name	Status	Ports
-----------	--------	-------

-----

1	default	active	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
10	it	active	
20	admin	active	
30	hr	active	
1002	fddi-default	active	
1003	token-ring-default	active	
1004	fddinet-default	active	
1005	trnet-default	active	

## ***Inter VLAN Routing***

### **Router 2**

Router(config)#int gig0/0.10

Router(config)#encapsulation dot1q 10

Router(config)#ip address 192.168.10.1 255.255.255.0

Router(config)#int gig0/0.20

Router(config)# encapsulation dot1q 20

Router(config)# ip address 192.168.20.1 255.255.255.0

Router(config)# int gig0/0.30

Router(config)# encapsulation dot1q 30

Router(config)# ip address 192.168.30.1 255.255.255.0



## **VTP**

### **Switch 7**

Switch(config)#vtp domain test

Changing VTP domain name from NULL to test

Switch(config)#do sh vlan brief

### **Switch 8**

Switch>en

Switch#conf t

Enter configuration commands, one per line. End with CNTL/Z.

Switch(config)#vtp mode client

Setting device to VTP CLIENT mode.

Switch(config)#vtp domain test

Changing VTP domain name from NULL to test

Switch(config)#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
10 it	active	
20 admin	active	
30 hr	active	
1002 fddi-default	active	
1003 token-ring-default	active	
1004 fddinet-default	active	

1005 trnet-default            active

## Switch 6

Switch>en

Switch#conf t

Enter configuration commands, one per line. End with CNTL/Z.

Switch(config)#vtp mode client

Setting device to VTP CLIENT mode.

Switch(config)#vtp domain test

Changing VTP domain name from NULL to test

Switch(config)#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
10 it	active	
20 admin	active	
30 hr	active	
1002 fddi-default	active	
1003 token-ring-default	active	
1004 fddinet-default	active	
1005 trnet-default	active	

## ***STP***

In Server Located area, we have used multiple connections throughout Core Router, Distribution Layer Switches & between Access Switches. STP, itself established the STP to prevent Loops among Network Devices.

## Frame Relay

### Cloud DLCI & Frame Relay Setting

The screenshot shows the Cloud0 configuration interface. The window title is "Cloud0" and it has two tabs: "Physical" and "Config". The "Config" tab is active. On the left, there is a navigation pane with the following sections:

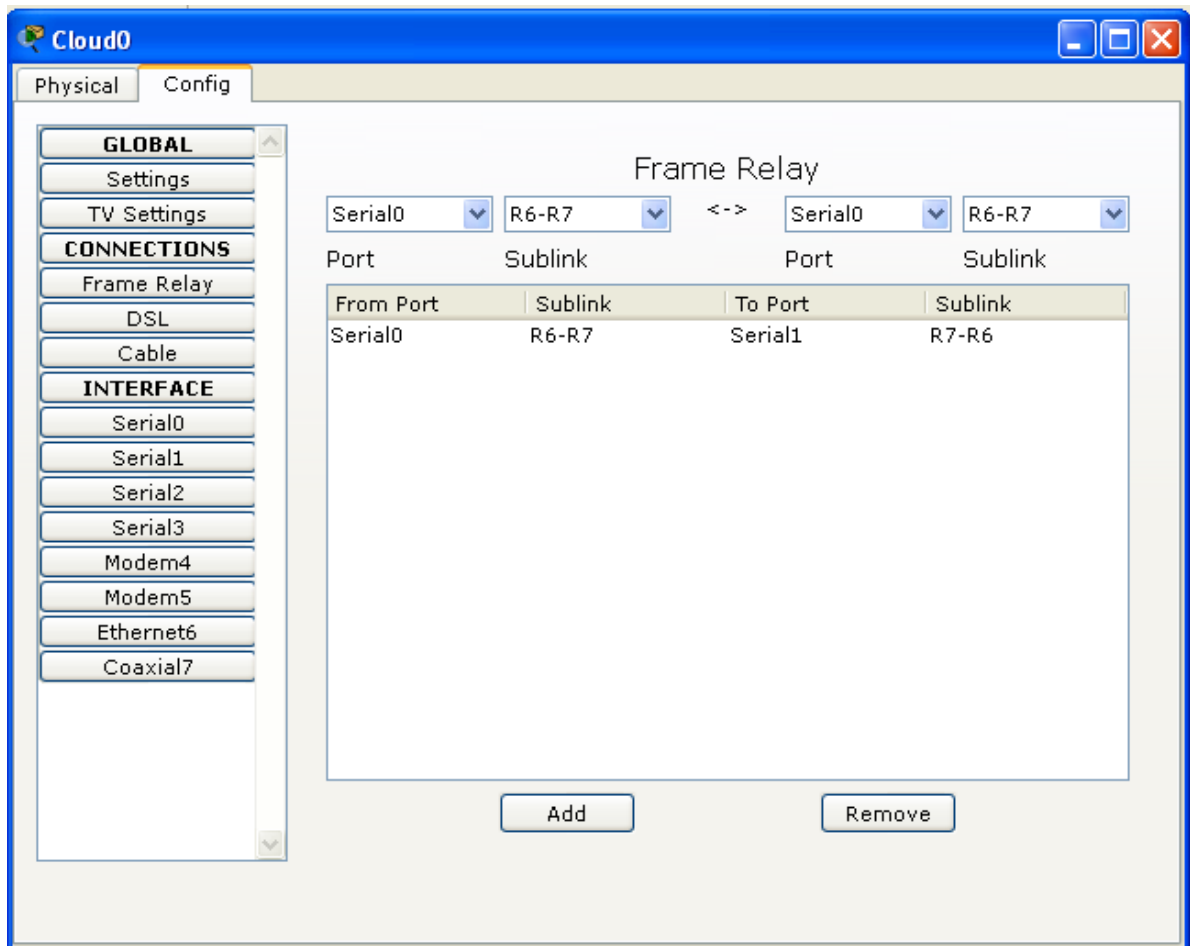
- GLOBAL**
  - Settings
  - TV Settings
- CONNECTIONS**
  - Frame Relay
  - DSL
  - Cable
- INTERFACE**
  - Serial0
  - Serial1
  - Serial2
  - Serial3
  - Modem4
  - Modem5
  - Ethernet6
  - Coaxial7

The main area is titled "Frame Relay: Serial0". It contains the following settings:

- Port Status:  On
- LMI: Cisco (dropdown menu)
- DLCI:  Name:
- Buttons: Add, Remove

Below these settings is a table showing the configured DLCI and Name:

DLCI	Name
607	R6-R7



## Router 6

```
Router(config-if)#int se0/0/0
```

```
Router(config-if)#ip address 10.0.0.1 255.0.0.0
```

```
Router(config-if)#no shut
```

```
Router(config-if)#
```

```
%LINK-5-CHANGED: Interface Serial0/0/0, changed state to up
```

```
Router(config-if)#int se0/0/0
```

```
Router(config-if)#encap
```

```
Router(config-if)#encapsulation fra
```

```
Router(config-if)#encapsulation frame-relay
```

```
Router(config-if)#
```

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up
```

```
Router(config-if)#band
```

```
Router(config-if)#bandwidth 64
```

```
Router(config-if)#fra
```

```
Router(config-if)#frame-relay map ip 10.0.0.2 ?
```

```
<16-1007> DLCI
```

```
Router(config-if)#frame-relay map ip 10.0.0.2 607 br
```

```
Router(config-if)#frame-relay map ip 10.0.0.2 607 broadcast ?
```

```
cisco Use CISCO Encapsulation
```

```
ietf Use RFC1490/RFC2427 Encapsulation
```

```
<cr>
```

```
Router(config-if)#frame-relay map ip 10.0.0.2 607 broadcast
```

```
Router(config-if)#exit
```

## **Router 7**

```
Router(config-if)#
```

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/1, changed state to up
```

```
Router(config-if)#int se0/0/0
```

```
Router(config-if)#encap
```

```
Router(config-if)#encapsulation fra
```

```
Router(config-if)#encapsulation frame-relay
```

```
Router(config-if)#
```

```
%LINEPROTO-5-UPDOWN: Line protocol on Interface Serial0/0/0, changed state to up
```

```
Router(config-if)#fra
```

```
Router(config-if)#frame-relay map ip 10.0.0.1 706 ?
```

```
broadcast Broadcasts should be forwarded to this address
```

```
cisco Use CISCO Encapsulation
```

```
ietf Use RFC1490/RFC2427 Encapsulation
```

```
<cr>
```

```
Router(config-if)#frame-relay map ip 10.0.0.1 706 bro
Router(config-if)#frame-relay map ip 10.0.0.1 706 broadcast
Router(config-if)#int se0/0/0
Router(config-if)#encapsulation frame-relay
Router(config-if)#band
Router(config-if)#bandwidth 64
Router(config-if)#frame-relay map ip 10.0.0.1 706 broadcast
%Address already in map
Router(config-if)#exit
```