



## STUDENT LAB GUIDE

CCNA (640-802)



Developed By,

**Router Infotech Career Academy.**

# LAB: 02

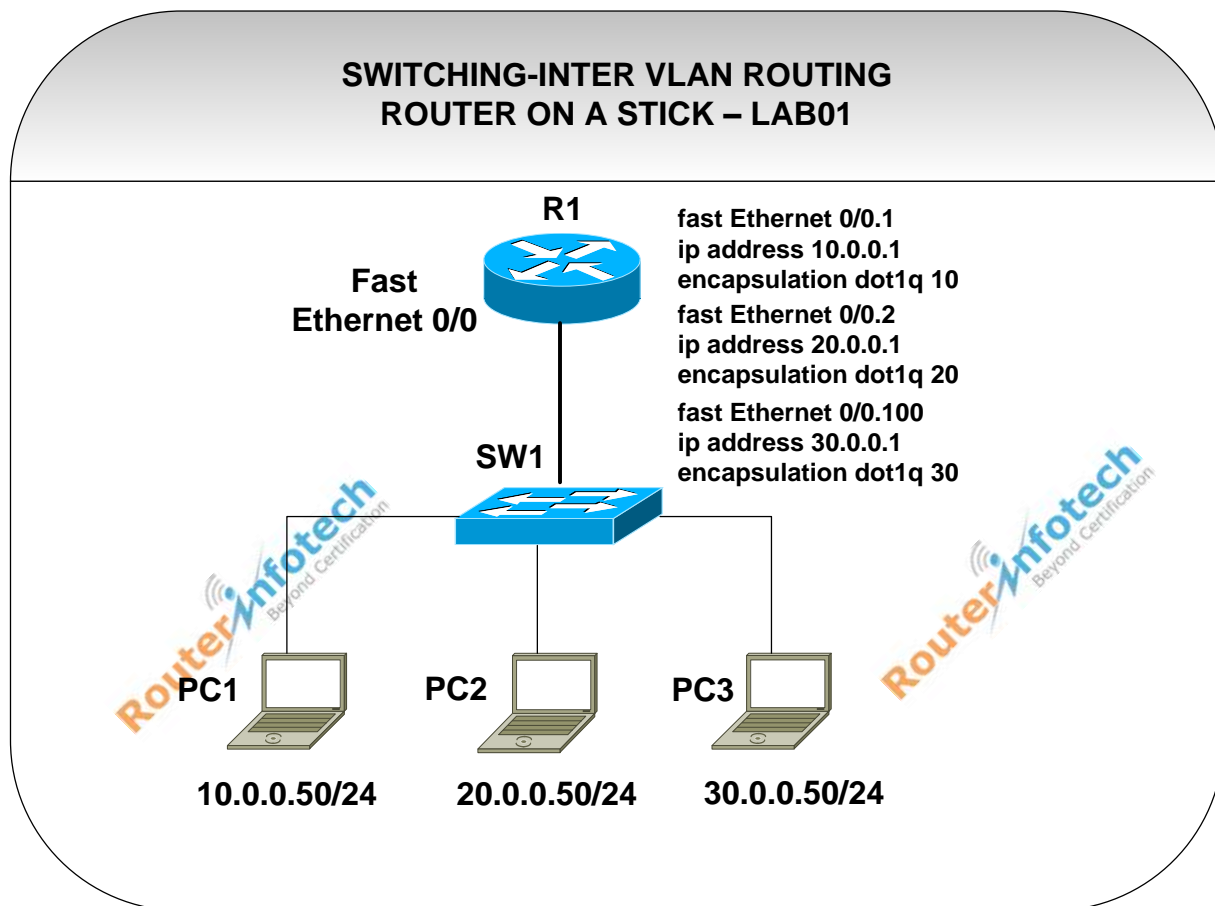
## Switching:

### Inter VLAN Routing - Router On Stick

#### Objective:

Understanding the Inter VLAN Routing using Router on Stick Method.

#### Topology:



## Procedure:

1. Configure VLAN 10, 20, & 30 on SW1.
2. Configure switch ports connected to PC to appropriate VLAN
3. Configure switch port FastEthernet0/24 as Trunk port.
4. Configure subinterfaces on Router as shown in topology.
5. Check Inter VLAN Routing.
6. Check the routing Check ping from PC1->PC2->PC3.

## Configuration:

### Step 1:

#### 1.1: Configure VLANs on Switch SW1

```

SW1(config)#vlan ?
  <1-1005> ISL VLAN IDs 1-1005
SW1(config)#vlan 10
SW1(config-vlan)#name RED
SW1(config-vlan)#vlan 20
SW1(config-vlan)#name BLUE
SW1(config-vlan)#vlan 30
SW1(config-vlan)#name BLACK
SW1(config-vlan)#^Z
SW1#
  
```

#### 1.2: Verify L2 Vlan just Created

```
SW1#sh vlan
```

VLAN Name	Status	Ports
1 default	active	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
10 RED	active	Fa0/1
20 BLUE	active	Fa0/2
30 BLACK	active	Fa0/3
1002 fddi-default	act/unsup	

## 2.1: Configure Switchports connected to PC with appropriate VLANs

```
SW1(config)#int fastEthernet 0/1
SW1(config-if)#switchport mode ?
    access    Set trunking mode to ACCESS unconditionally
    dynamic   Set trunking mode to dynamically negotiate access or trunk
mode
    trunk     Set trunking mode to TRUNK unconditionally
SW1(config-if)#switchport access ?
    vlan     Set VLAN when interface is in access mode
SW1(config-if)#switchport access vlan 10
SW1(config)#int fastEthernet 0/2
SW1(config-if)#switchport access vlan 20
SW1(config)#int fastEthernet 0/3
SW1(config-if)#switchport access vlan 30
```

## 3.1: Configure Switchport connected to Router as Trunk

```
SW1(config)#int fastEthernet 0/24
Switch(config-if)#switchport mode trunk
Switch(config-if)#switchport trunk encapsulation dot1q
```

## 4.1: Configure Router interface connected to Switch

### Create sub interfaces for Inter Vlan Routing

```
R1(config)#int fa0/0.10
R1(config-subif)#encapsulation dot1Q ?
    <1-1005>  IEEE 802.1Q VLAN ID
R1(config-subif)#encapsulation dot1Q 10
R1(config-subif)#ip address 10.0.0.1 255.255.255.0

R1(config)#int fa0/0.20
R1(config-subif)#encapsulation dot1Q 20
R1(config-subif)#ip address 20.0.0.1 255.255.255.0

R1(config)#int fa0/0.100 (Subinterface Number not required to
match Vlan No/Tag)
R1(config-subif)#encapsulation dot1Q 30 (This shud Match VLAN
NO/TAG)
```

```
R1(config-subif)#ip address 30.0.0.1 255.255.255.0
```

### 5.1: Check Inter VLAN Routing

```
R1#sho ip route
```

```
Codes: C - connected, S - static, I - IGRP, 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
```

```
10.0.0.0/24 is subnetted, 1 subnets
C    10.0.0.0 is directly connected, FastEthernet0/0.10
20.0.0.0/24 is subnetted, 1 subnets
C    20.0.0.0 is directly connected, FastEthernet0/0.20
30.0.0.0/24 is subnetted, 1 subnets
C    30.0.0.0 is directly connected, FastEthernet0/0.100
```

### 6.1: Check Ping from PC1 to PC2,PC3

```
PC1>ping 10.0.0.1
```

```
Pinging 10.0.0.1 with 32 bytes of data:
```

```
Reply from 10.0.0.1: bytes=32 time=8ms TTL=254
Reply from 10.0.0.1: bytes=32 time=9ms TTL=254
Reply from 10.0.0.1: bytes=32 time=11ms TTL=254
Reply from 10.0.0.1: bytes=32 time=13ms TTL=254
```

```
Ping statistics for 10.0.0.1:
```

```
Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 8ms, Maximum = 13ms, Average = 10ms
```

```
PC1>ping 20.0.0.1
```

```
Pinging 20.0.0.50 with 32 bytes of data:
```

```
Reply from 20.0.0.50: bytes=32 time=8ms TTL=254
Reply from 20.0.0.50: bytes=32 time=8ms TTL=254
```

Reply from 20.0.0.50: bytes=32 time=8ms TTL=254  
Reply from 20.0.0.50: bytes=32 time=8ms TTL=254

Ping statistics for 20.0.0.50:

Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),  
Approximate round trip times in milli-seconds:  
Minimum = 8ms, Maximum = 13ms, Average = 10ms

PC3>ping 30.0.0.50

Pinging 30.0.0.50 with 32 bytes of data:

Reply from 30.0.0.50: bytes=32 time=8ms TTL=254  
Reply from 30.0.0.50: bytes=32 time=8ms TTL=254  
Reply from 30.0.0.50: bytes=32 time=8ms TTL=254  
Reply from 30.0.0.50: bytes=32 time=8ms TTL=254

Ping statistics for 30.0.0.50:

Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),  
Approximate round trip times in milli-seconds:  
Minimum = 8ms, Maximum = 13ms, Average = 10ms

**COOL COOL**

