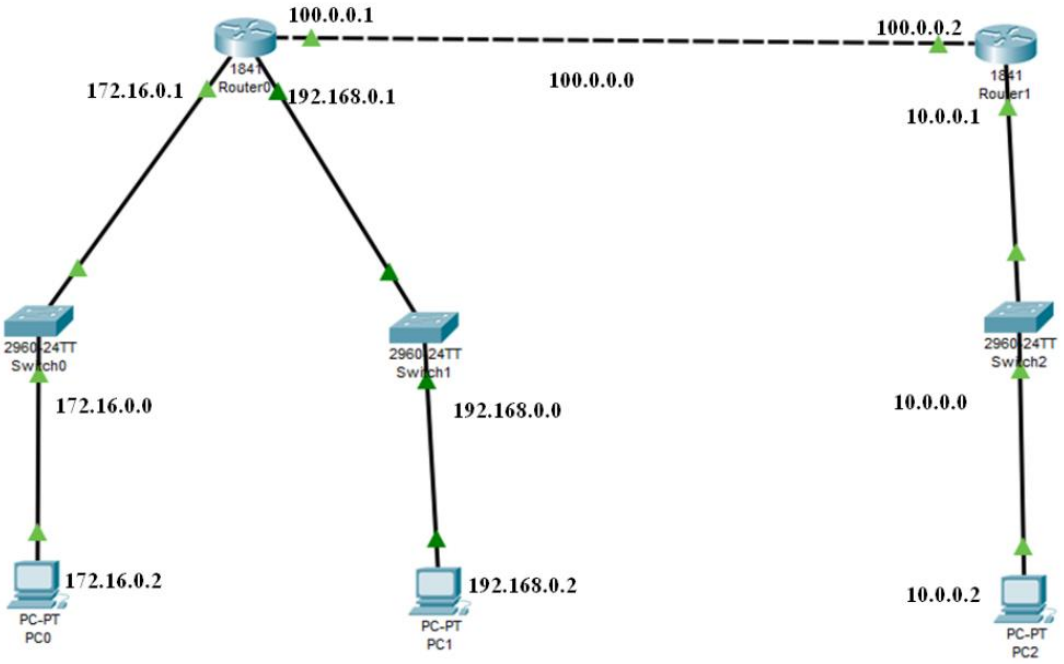
Practical 5
Configure IP routing using RIP

Aim: Configure IP routing using Routing Information Protocol (RIP)

Theory:
RIP (Routing Information Protocol) is a standardized Distance Vector protocol, designed for use on smaller networks. RIP was one of the first true Distance Vector routing protocols, and is supported on a wide variety of systems. RIP adheres to the following Distance Vector characteristics:
• RIP sends out periodic routing updates (every 30 seconds)
• RIP sends out the full routing table every periodic update
• RIP uses a form of distance as its metric (in this case, hopcount)
• RIP uses the Bellman-Ford Distance Vector algorithm to determine the best "path" to a particular destination Other characteristics of RIP include:
• RIP supports IP and IPX routing.
• RIP utilizes UDP port 520 • RIP routes have an administrative distance of 120.
• RIP has a maximum hopcount of 15 hops. Any network that is 16 hops away or more is considered unreachable to RIP, thus the maximum diameter of the network is 15 hops. A metric of 16 hops in RIP is considered a poison route or infinity metric.

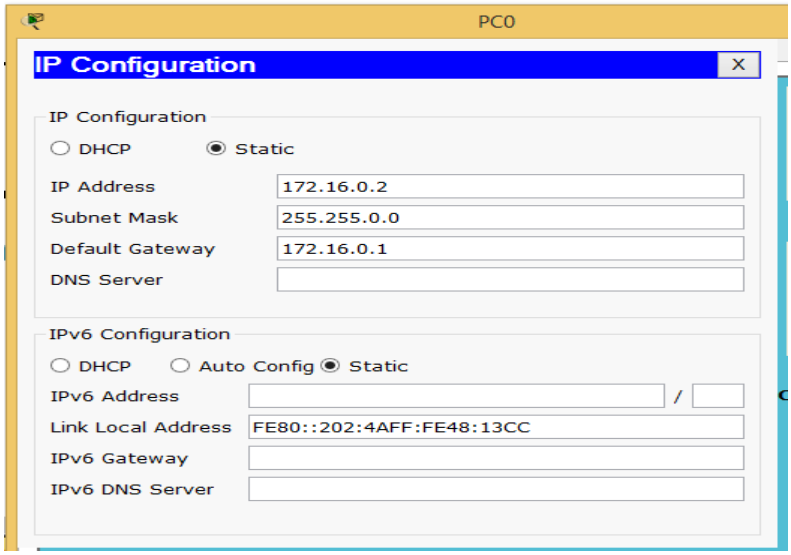
We study the RIP protocol using the following network



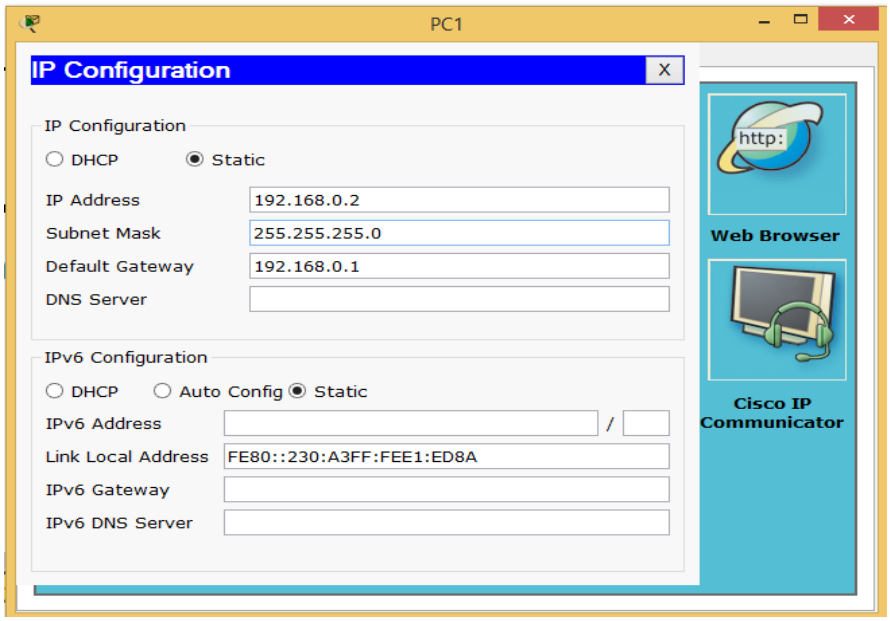
By Default Routers have 2-interfaces in most of the cases, but in our case we need 3-interfacces for Router 0, hence we need to add one interface in Router 0

Now we configure the PC's and Routers as follows

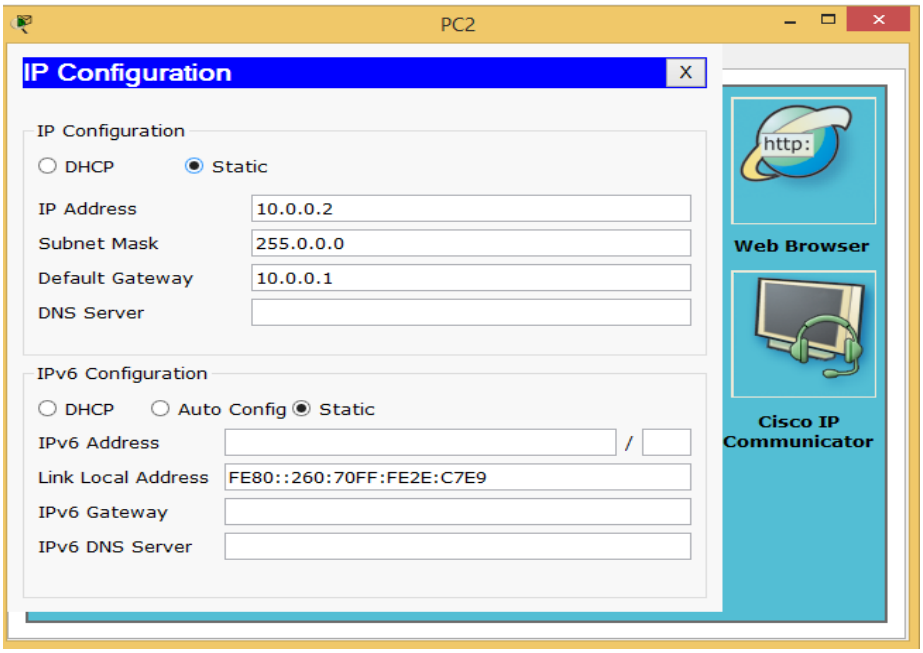
Step 1: Configuring PC0



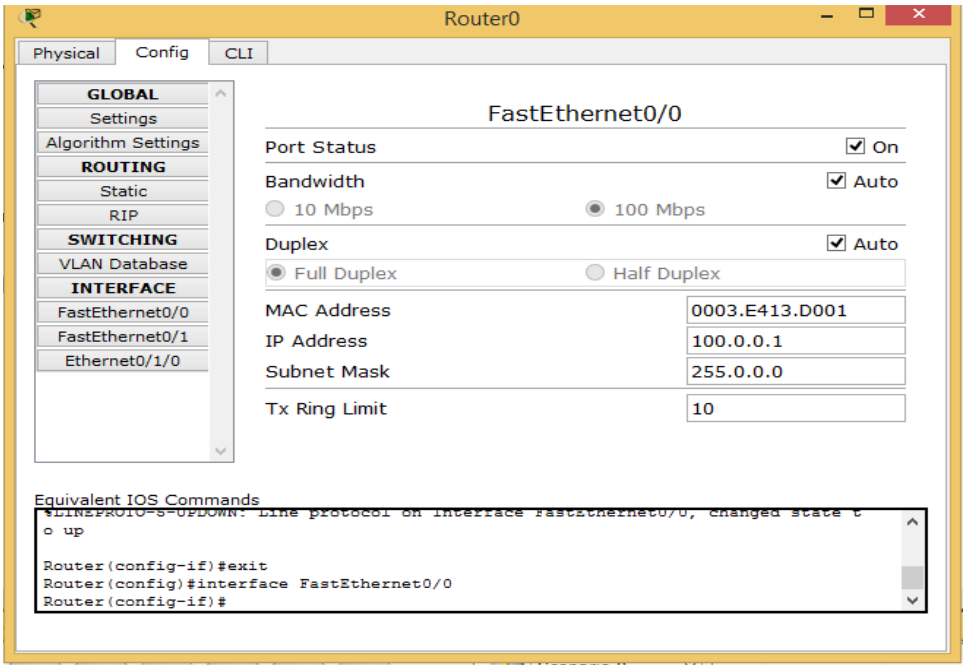
Step 2: Configuring PC1

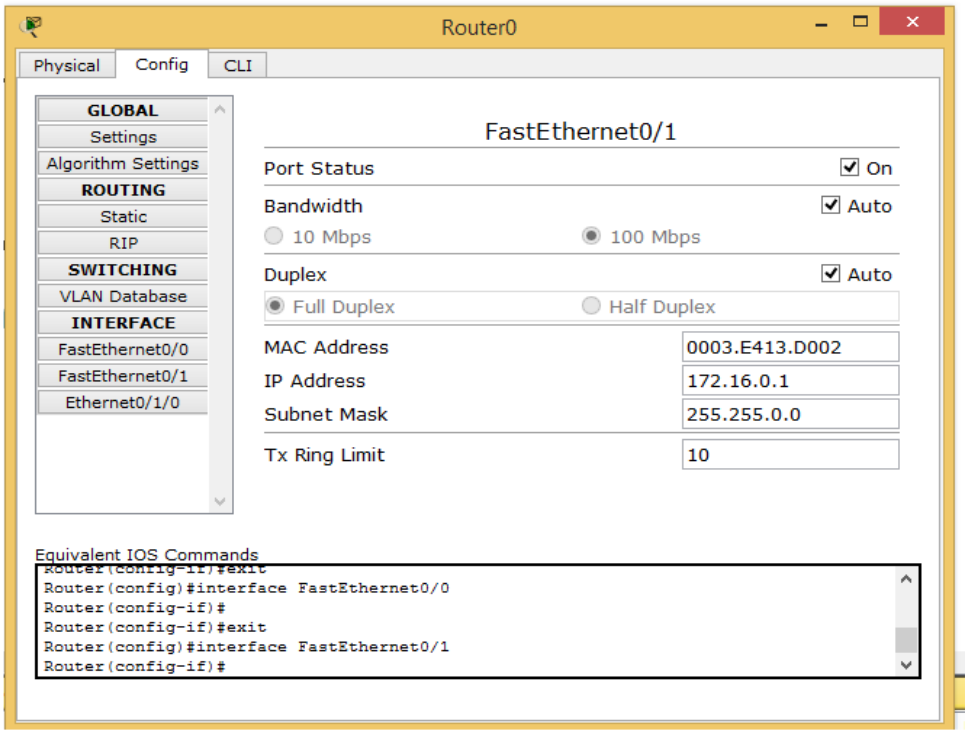


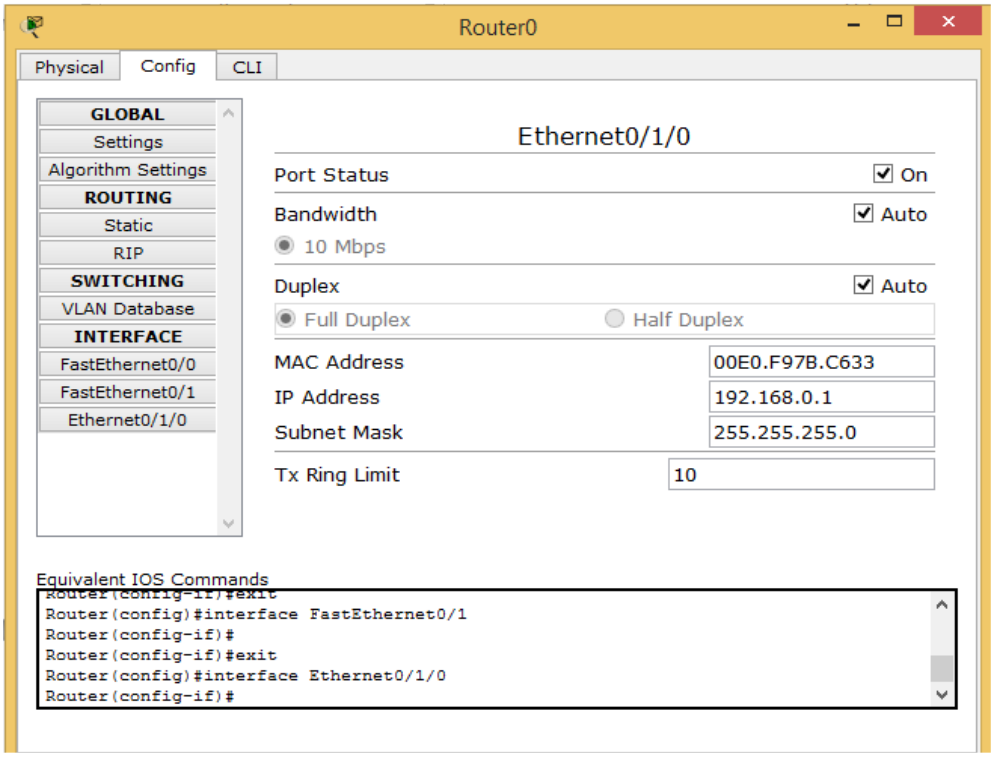
Step 3: Configuring PC0



Step 4: (configure Router 0)




Router0
Physical
Config
CLI
GLOBAL
Settings
Algorithm Settings
ROUTING
Static
RIP
SWITCHING
VLAN Database
INTERFACE
FastEthernet0/0
FastEthernet0/1
Ethernet0/1/0
FastEthernet0/1
Port Status
On
Bandwidth
Auto
10 Mbps
100 Mbps
Duplex
Auto
Full Duplex
Half Duplex
MAC Address
0003.E413.D002
IP Address
172.16.0.1
Subnet Mask
255.255.0.0
Tx Ring Limit
10
Equivalent IOS Commands
Router(config-if)#exit
Router(config)#interface FastEthernet0/0
Router(config-if)#
Router(config-if)#exit
Router(config)#interface FastEthernet0/1
Router(config-if)#


Router0
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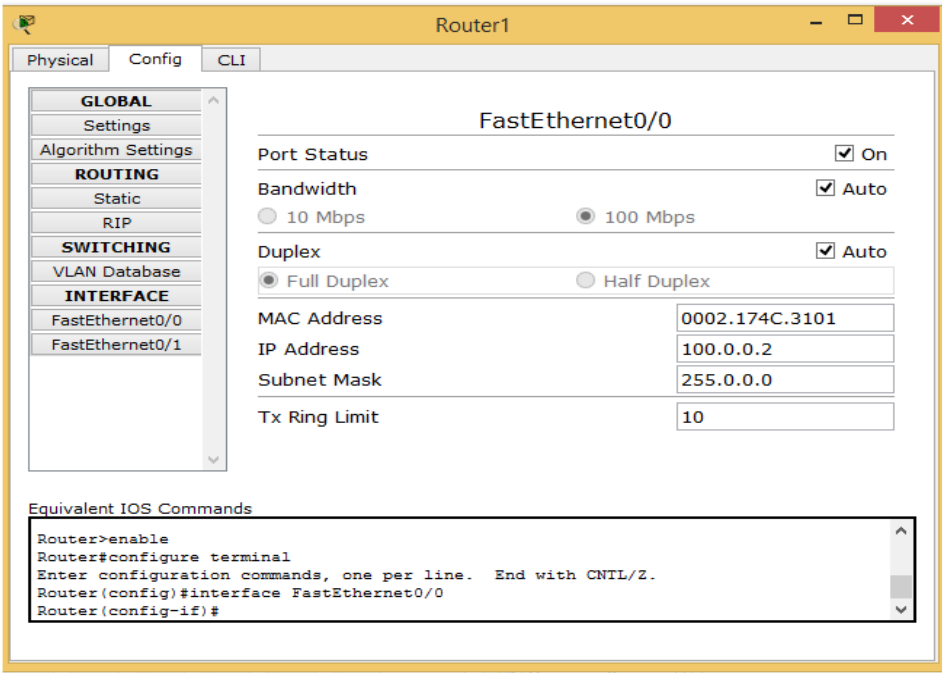
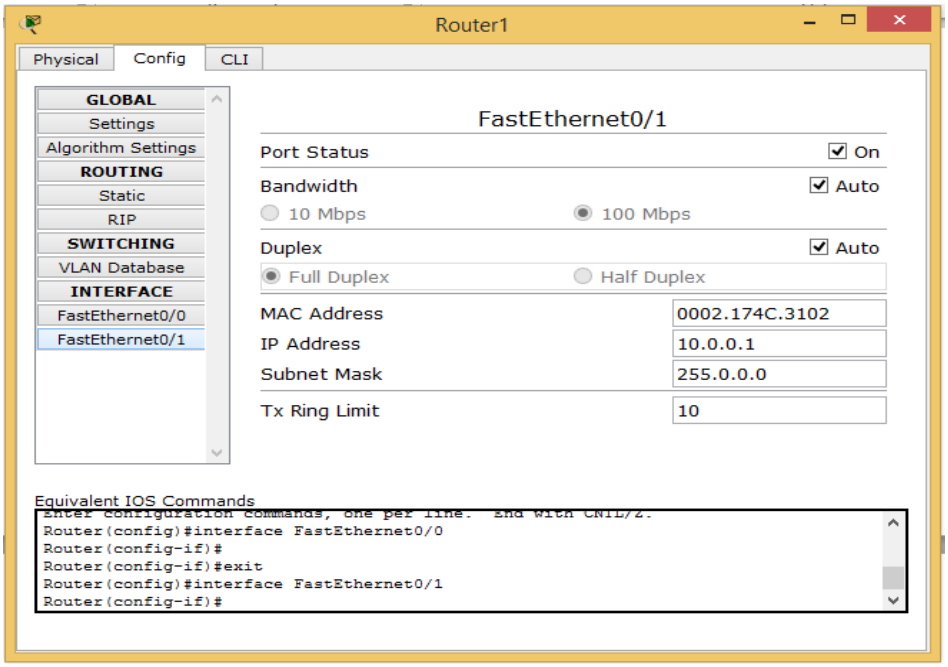
Port Status
On
Bandwidth
Auto
10 Mbps
Duplex
Auto
Full Duplex
Half Duplex
MAC Address
00E0.F97B.C633
IP Address
192.168.0.1
Subnet Mask
255.255.255.0
Tx Ring Limit
10
Equivalent IOS Commands
Router(config-if)#exit
Router(config)#interface FastEthernet0/1
Router(config-if)#
Router(config-if)#exit
Router(config)#interface Ethernet0/1/0
Router(config-if)#

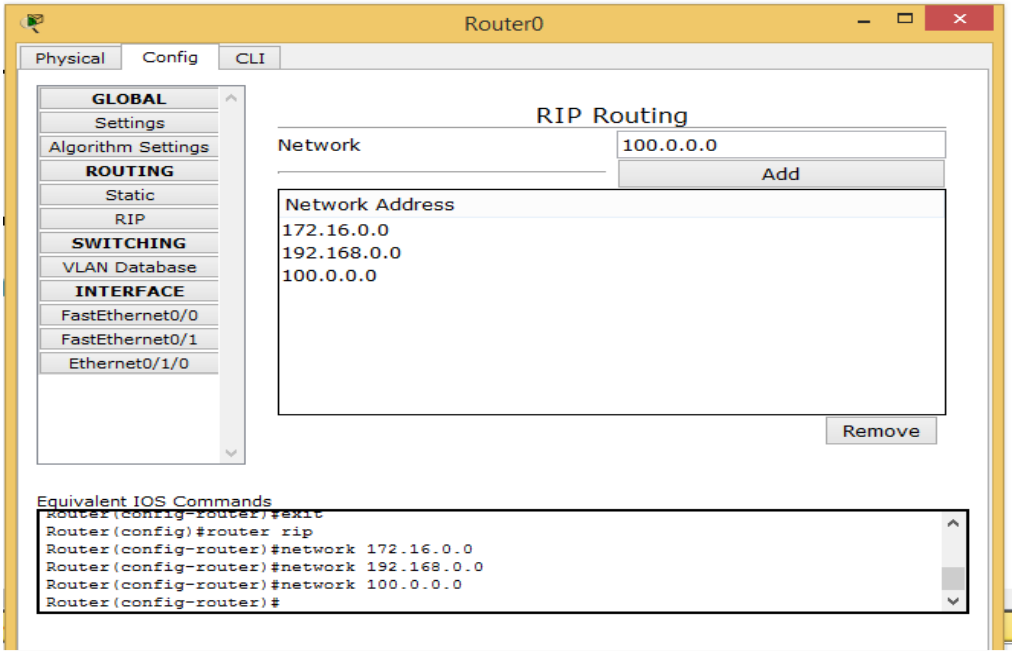
Step 5: (configure Router 1)



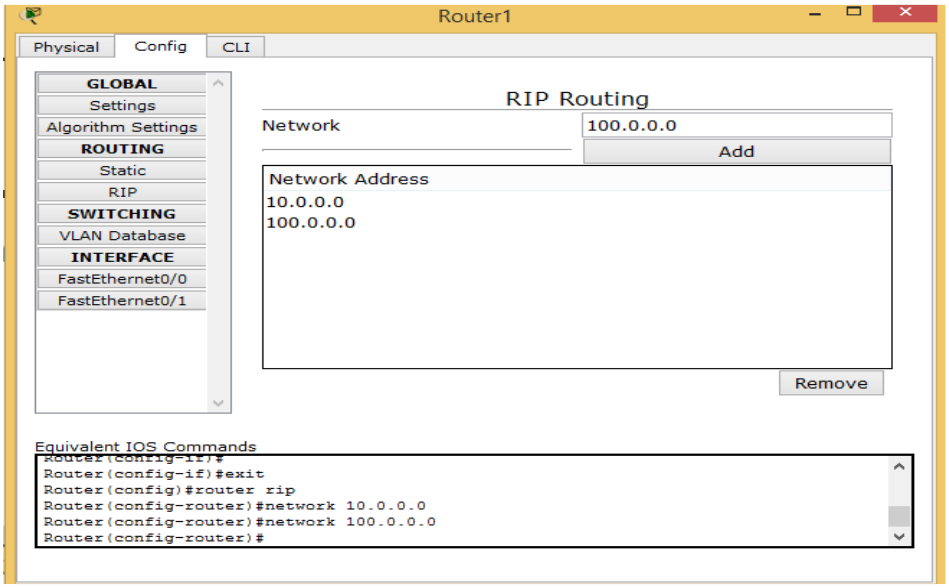


Now we configure the routing table for both the routers

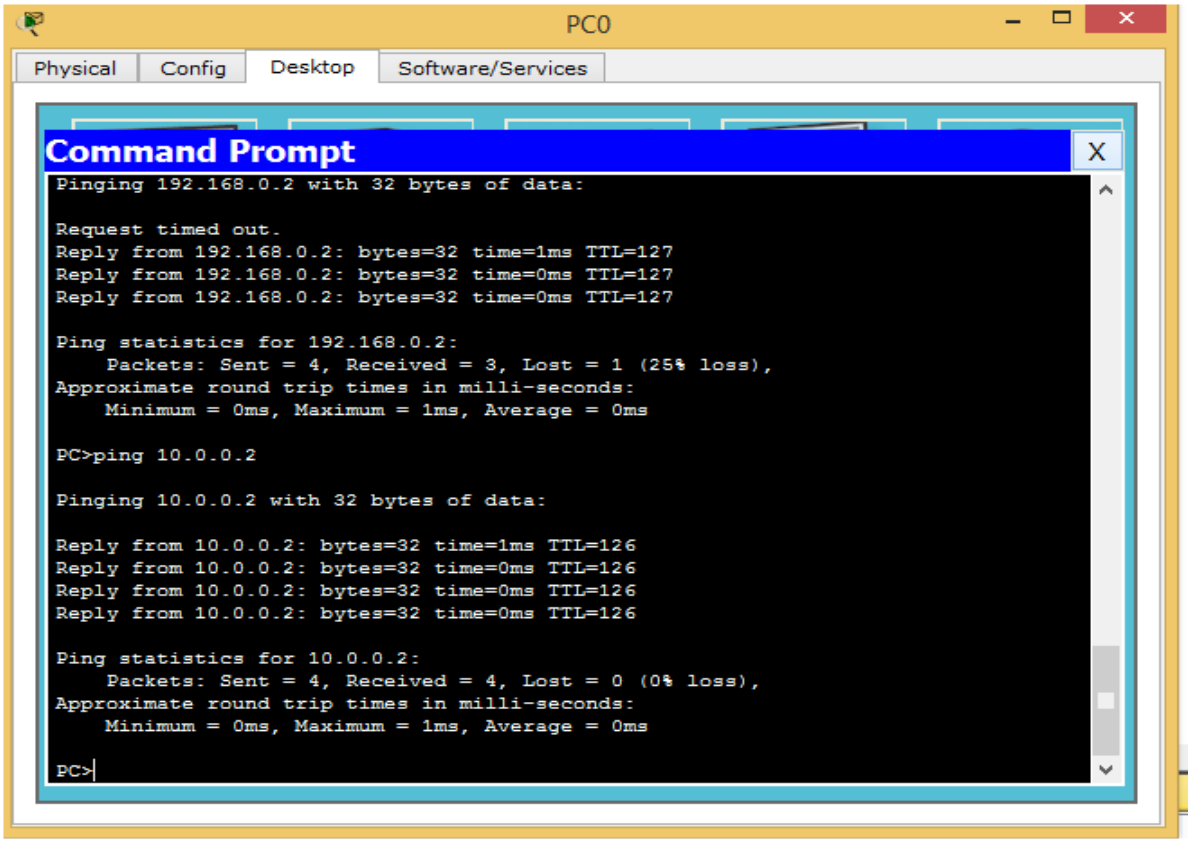
Routing table for Router 0



Routing table for Router 1



Now we use the ping command to check the working



Hence the RIP protocol has been studied

For Video demonstration of the given Practical, scan the QR code