

Cables required

Copper cross over cable ------------------

Copper straight Through \_\_\_\_\_\_\_\_\_\_\_\_

Serial DTE / Serial DTC

R1 Commands

Router>en

Router#config t

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

Router(config)#hostname R1

R1(config)#line console 0

R1(config-line)#password cisco

R1(config-line)#login

R1(config-line)#exit

R1(config)#line vty 0 4

R1(config-line)#password cisco

R1(config-line)#login

R1(config-line)#exit

R1(config)#interface FastEthernet0/0

R1(config-if)#ip address 192.168.1.1 255.255.255.0

R1(config-if)#exit

R1(config)#interface Serial0/0/0

R1(config-if)#ip address 192.168.2.1 255.255.255.0

R1(config-if)#no sh

R1(config-if)#description R2 LAN

R1(config-if)#end

R1#copy running-config startup-config

R1#show running-config

R1# show interfaces fastEthernet 0/0

R1#show version

R1#show ip interface brief

\_\_\_\_\_\_\_\_\_\_\_\_

**R2 Commands**

Router>en

Router#config t

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

Router(config)#hostname R2

R2(config)#line console 0

R2(config-line)#password cisco

R2(config-line)#login

R2(config-line)#exit

R2(config)#line vty 0 4

R2(config-line)#password cisco

R2(config-line)#login

R2(config-line)#exit

R2(config)#interface FastEthernet0/0

R2(config-if)#ip address 192.168.3.1 255.255.255.0

R2(config-if)#exit

R2(config)#interface Serial0/0/0

R2(config-if)#ip address 192.168.2.2 255.255.255.0

R2(config-if)#clock rate 64000

R2(config-if)#no sh

R2(config-if)#description R2 LAN

R2(config-if)#end

R2#copy running-config startup-config

R2#show running-config

R2# show interfaces fastEthernet 0/0

R2#show version

R1#show ip interface brief

**Ping (Verify connection)**

Step 2: Repeat the ping from R1 to PC1.

R1#ping 192.168.1.10

Step 2: Use the tracert command at the Windows command prompt to discover the path that a packet will take from the R1 router to PC1.

C:\>tracert 192.168.1.1

Erasing Router settings

R1#erase startup-config

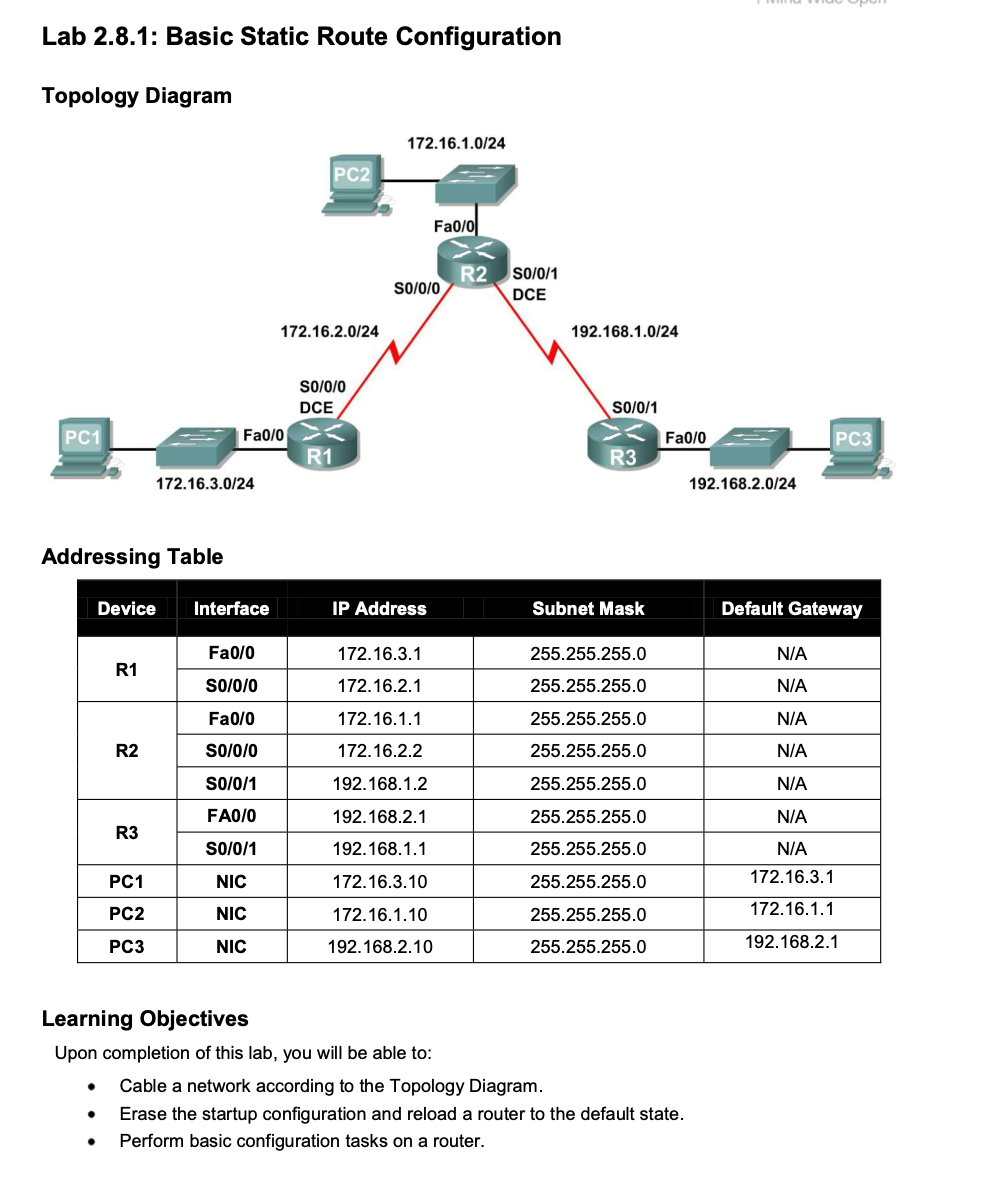
R1#copy running-config startup-config

Test connection

R1#show ip route

R1#show ip int brief

**LAB 3**



Router>en

Router>config t

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

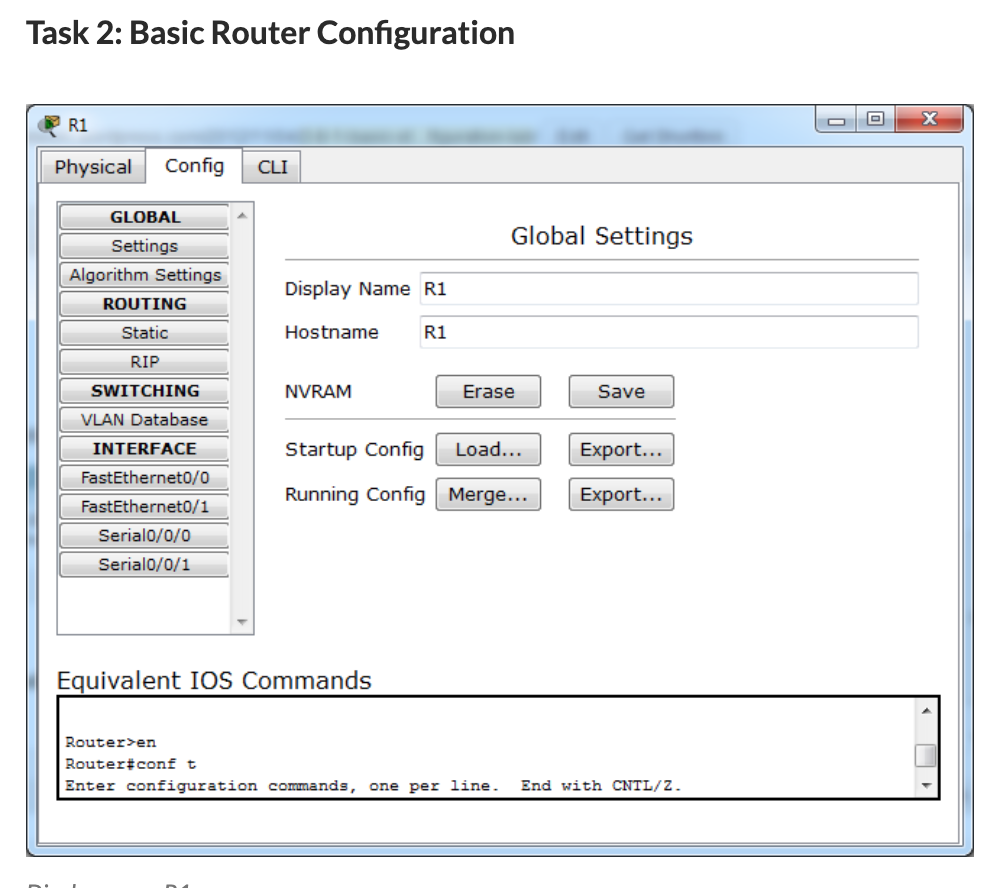
Router(config)#

**Task 1: Cable, Erase, and Reload the Routers.**

Router#erase startup-config

Router#reload

**Task 2: Perform Basic Router Configuration.**



**R1- R2 – R3 - Configuration**

**Step 1: Use global configuration commands.**

Router1(config)#hostname R1

R1(config)#no ip domain-lookup

R1(config)#enable secret class

**Step 2: Configure the console and virtual terminal line passwords on each of the routers.**

R1(config)#line console 0

R1(config-line)#password cisco

R1(config-line)#login

R1(config-line)#exec-timeout 0 0

R1(config-line)#line vty 0 4

R1(config-line)#password cisco

R1(config-line)#login

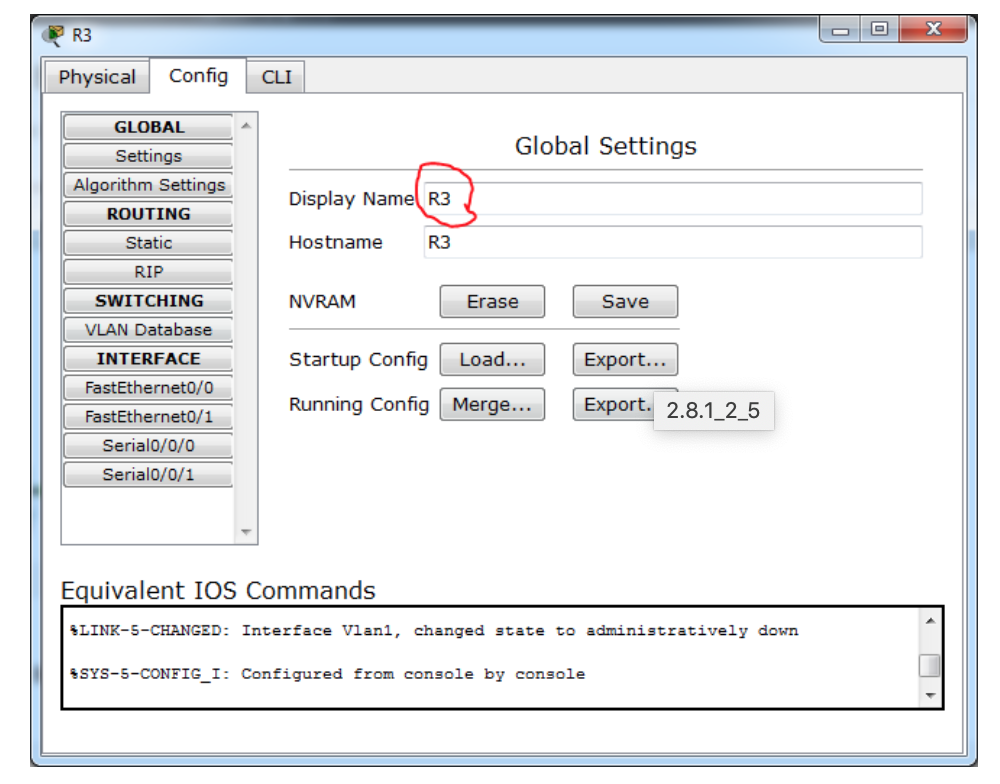
R1(config-line)#exec-timeout 0 0

R1(config-line)#logging synchronous

**Step 3: Add the logging synchronous command to the console and virtual terminal lines.**

**Repeat the same commands for R2 and R3**





**Task 3- configure interface router**

R1(config)#interface fa0/0

R1(config-if)#ip address 172.16.3.1 255.255.255.0

R1(config-if)#no sh

**Configure Serial port**

R1(config)#interface s0/0/0

R1(config-if)#ip address 172.16.2.1 255.255.255.0

R1(config-if)#clock rate 64000

R1(config-if)#no sh

R1(config-if)#description

***R2 Interface***

R2(config)#interface fa0/0

R2(config-if)#ip address 172.16.1.1 255.255.255.0

R2(config-if)#no sh

*Configure serial ports*

R2(config)#interface s0/0/0

R2(config-if)#ip address 172.16.2.2 255.255.255.0

R2(config-if)#no sh

Connecting DTE

R2(config)#interface s0/0/1

R2(config-if)#ip address 192.168.1.2 255.255.255.0

R2(config-if)#clock rate 64000

R2(config-if)#no sh

***R3 Interface***

R3(config)#interface fa0/0

R3(config-if)#ip address 192.168.2.1 255.255.255.0

R3(config-if)#no sh

R3(config)#interface s0/0/1

R3(config-if)#ip address 192.168.1.1 255.255.255.0

R2(config-if)#no sh

**The subnet mask of PC1 is wrong. In real world, should be 255.255.255.0**

**Pc 1**

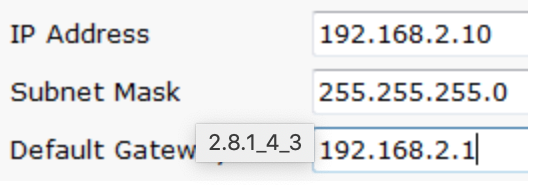
**

**The subnet mask of PC2 is wrong. In real world, should b 255.255.255.0**

**Pc2**

**

**Pc 3**

**

**Static Routing**

R1(config)#interface Serial0/0/0

R1(config-if)#ip route 0.0.0.0 0.0.0.0 172.16.2.2

R1 with default route

R2(config)#ip route 192.168.2.0 255.255.255.0 192.168.1.1

R2(config)#ip route 172.16.3.0 255.255.255.0 s0/0/0

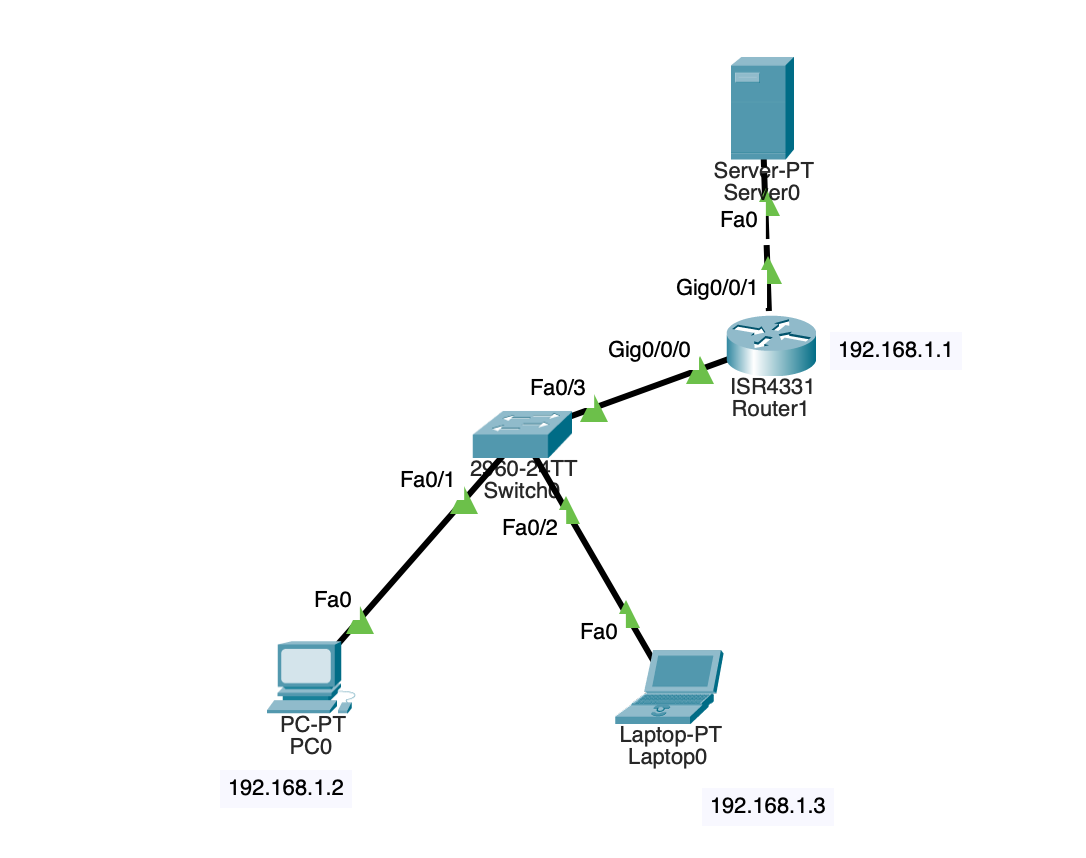
R2 with next hub and exit interface

R3(config)#ip route 172.16.0.0 255.255.255.0 192.168.1.2

R3(config)#ip route 172.16.1.0 255.255.255.0 192.168.1.2

R3(config)#ip route 172.16.2.0 255.255.255.0 Serial0/0/1

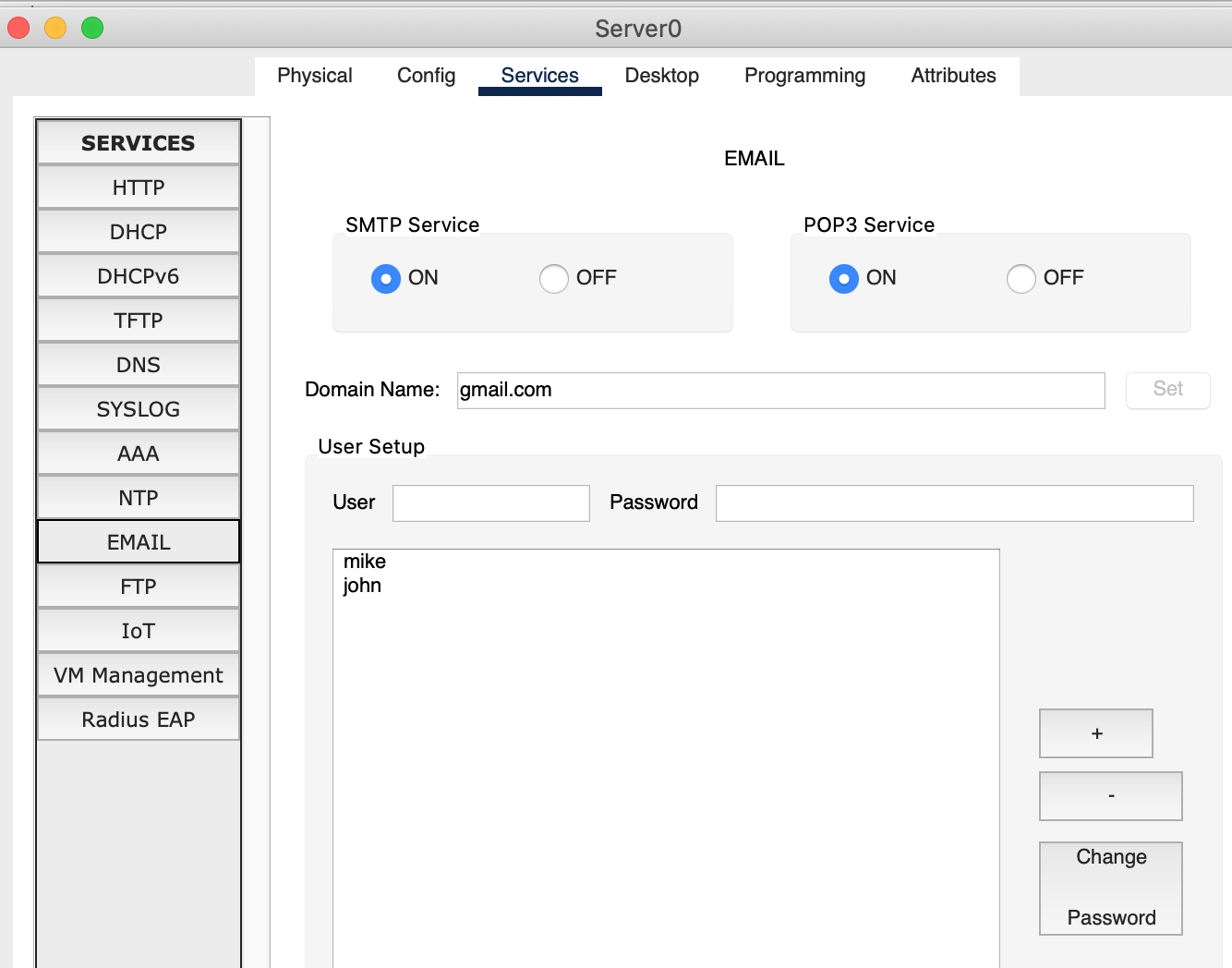
**Configuring simple E-Mail server. Automatic cable configuration**

****

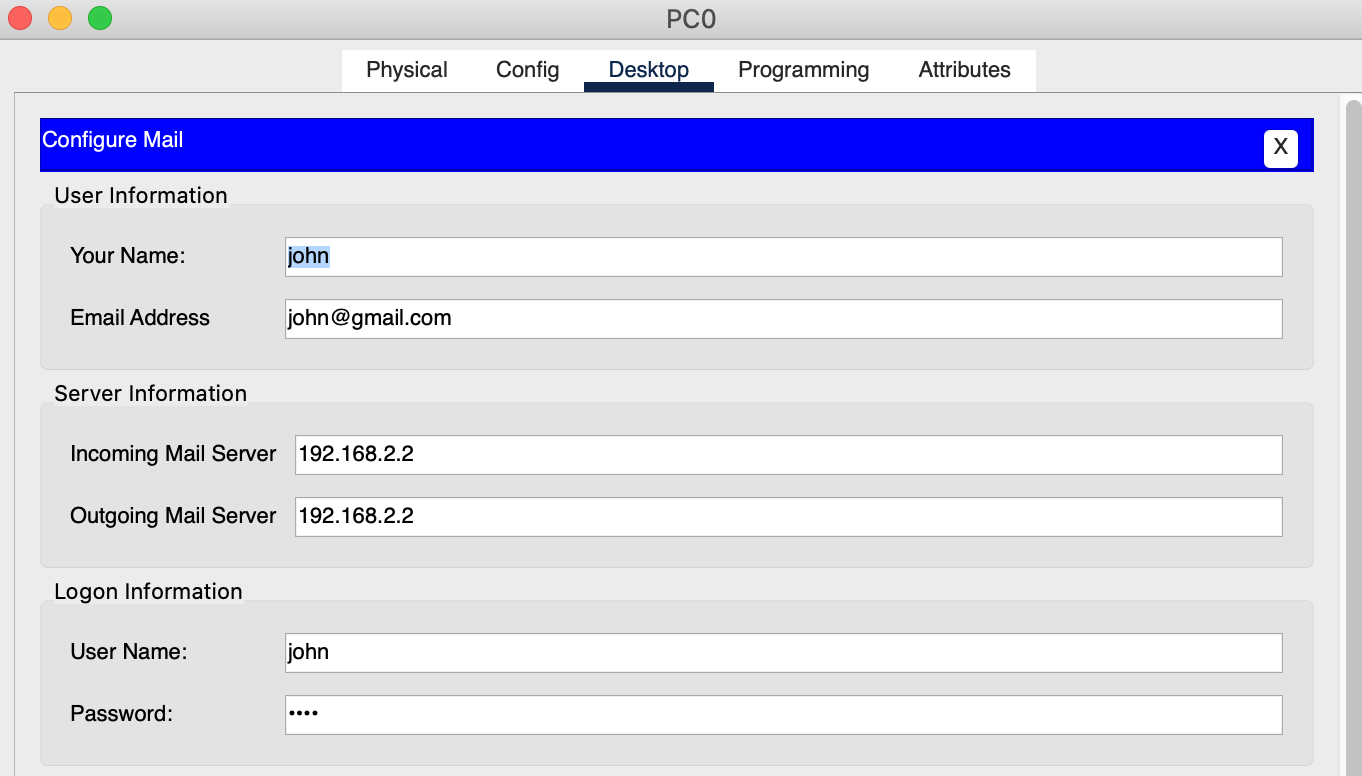
|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Device** | **Interface** | **IP Address** | **Subnet Mask** | **Default Gateway** |
| R1 | GigabitEthernet0/0/0 | 192.168.1.1 | 255.255.255.0 |  |
| GigabitEthernet0/0/1 | 192.168.2.1 | 255.255.255.0 |  |
| PC 1 | NIC | 192.168.1.2 | 255.255.255.0 | 192.168.1.1 |
| PC 2 | NIC | 192.168.1.3 | 255.255.255.0 | 192.168.1.1 |
| SW | FastEthernet0/1 | - | - | - |
| Sever0 | NIC | 192.168.2.2 | 255.255.255.0 | 192.168.2.1 |

**Email Server Configuration**

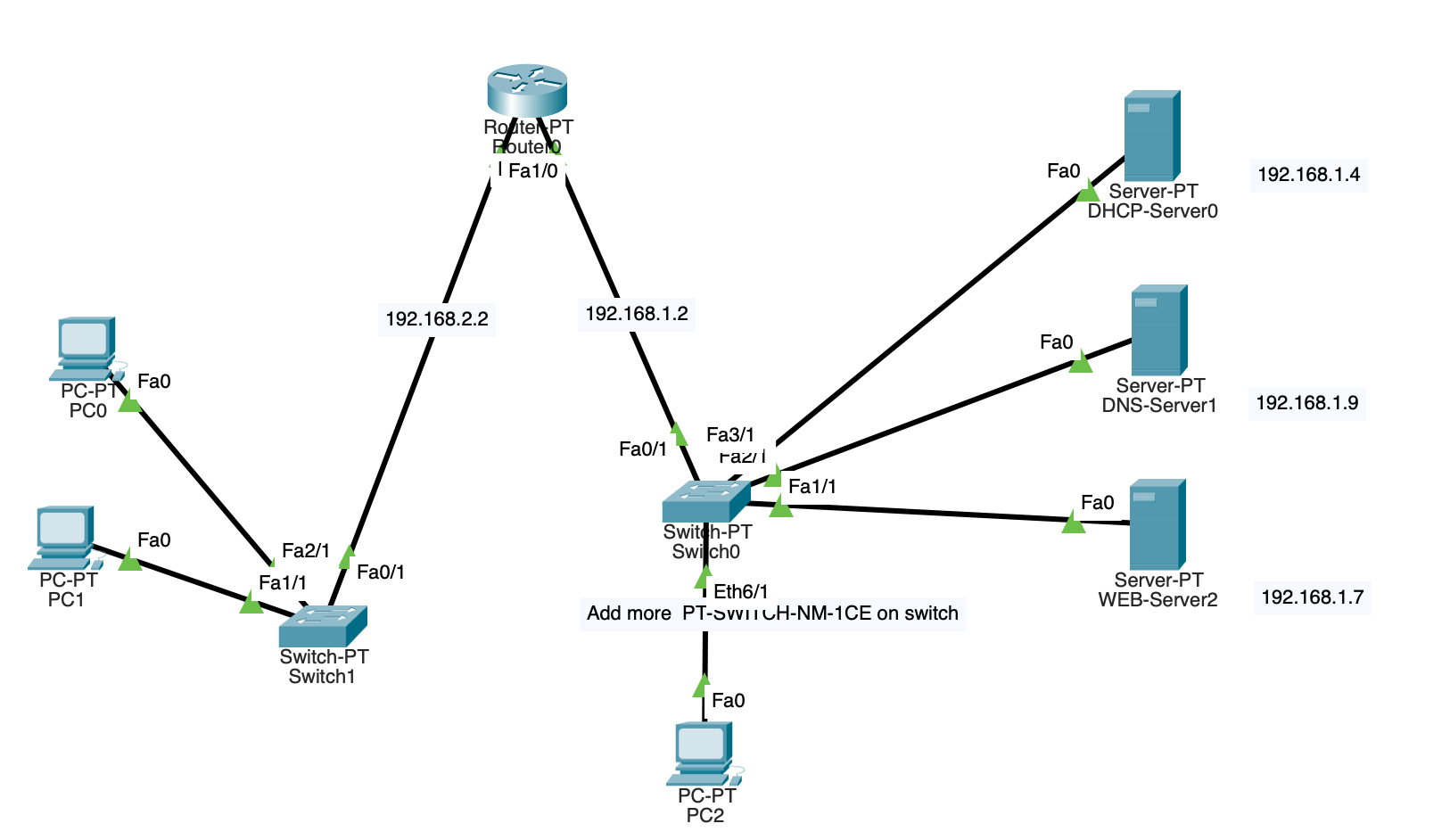
**Make sure you configure email for clients in the server and set the domain name.**



Client PC configuration



DHCP DNS and Web Server configuration in cisco packet tracer 1



|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Device** | **Interface** | **IP Address** | **Subnet Mask** | **Default Gateway** | **DNS Server** |
| PT-Router | FastEthernet0/0/0 | 192.168.2.2 | 255.255.255.0 |  |  |
| FastEthernet0/0/1 | 192.168.1.2 | 255.255.255.0 |  |  |
| DHCP | NIC | 192.168.1.4 | 255.255.255.0 | 192.168.1.2 | 192.168.1.9 |
| DNS | NIC | 192.168.1.9 | 255.255.255.0 | 192.168.1.2 | 192.168.1.9 |
| WEB | NIC | 192.168.1.7 | 255.255.255.0 | 192.168.1.2 | 192.168.1.9 |
|  |  |  |  |  |  |

**DHCP SETTINGS**

Router Settings

Router(config-if)# ip dhcp pool p1

Router(config)# network 192.168.1.0 255.255.255.0

Router(dhcp-config)# default-router 192.168.1.2

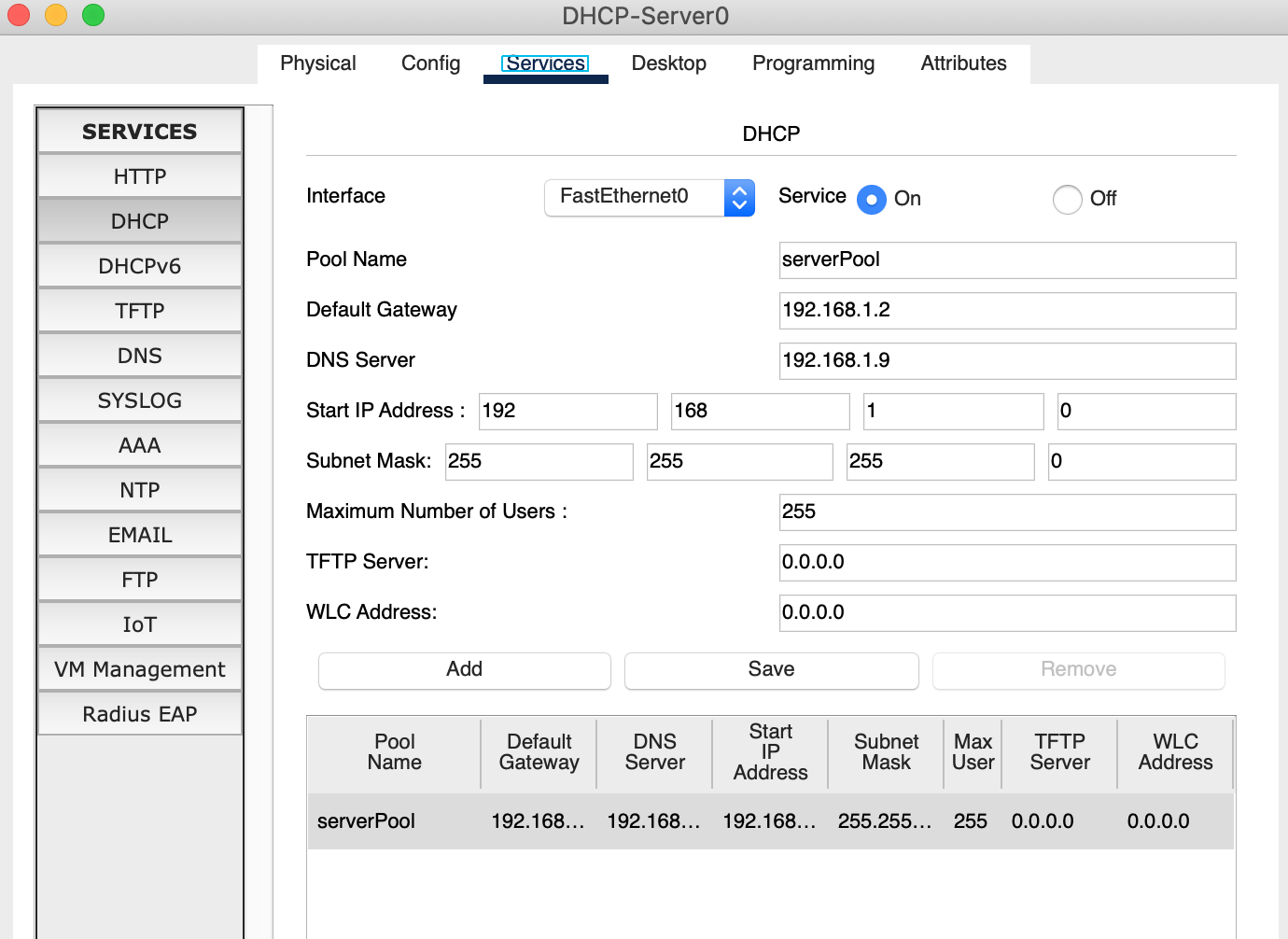
Router(dhcp-config)#exit

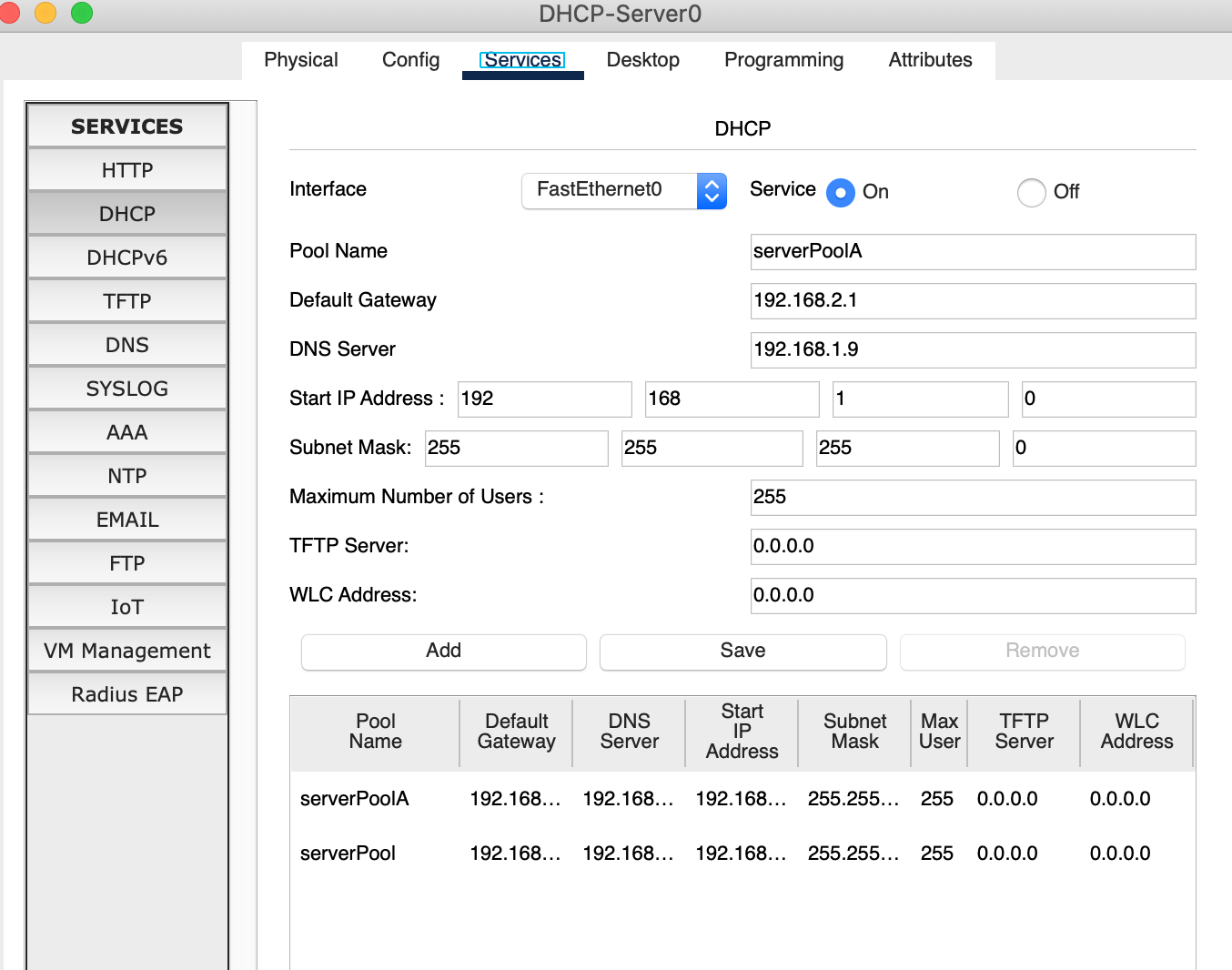
Router(config)# ip dhcp pool p2

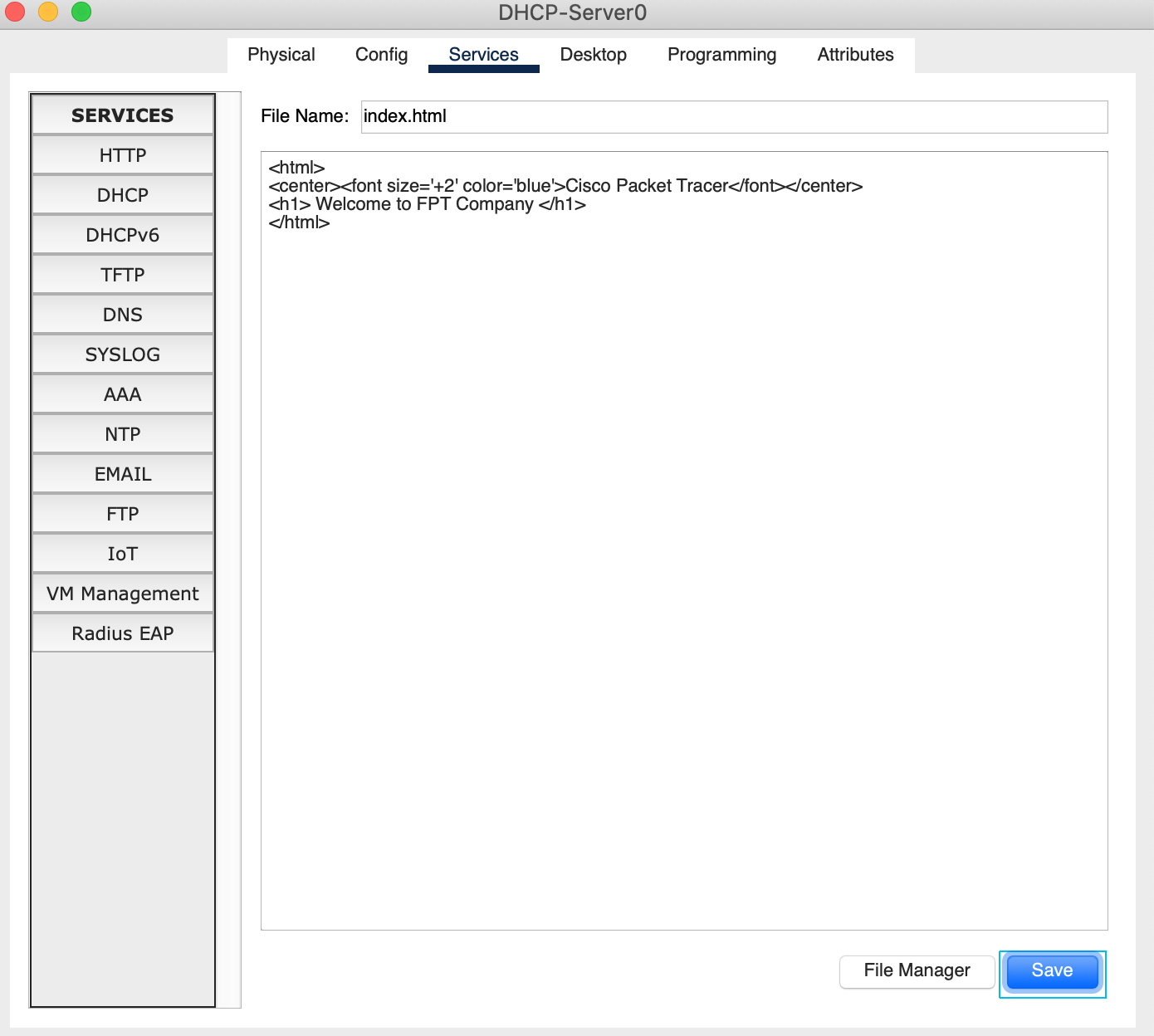
Router(config)# network 192.168.2.0 255.255.255.0

Router(dhcp-config)# default-router 192.168.2.2

Router(dhcp-config)#exit







Dual Server is Self Integrated DNS Server Open Source Freeware for Windows/Linux. It has build in Optional DHCP Server.

DHCP Server allots the IP addresses to computers, while DNS server resolves them. You need DHCP Server if you do not want to manually maintain IP Addresses or you have less IP Addresses than number of machines you have, as dynamic DHCP Server will recycle IP Addresses on machines.

DNS Server is needed for resolving hostnames to their IP addresses. Normally your ISP will provide you with DNS Service. You may have your own DNS Server, which will resolve hostnames by forwarding them to ISP's DNS Server and cache the addresses also.

If you have home/small office network with Unix/Linux machines, these machines will not be resolved from each other, as Unix/Linux machines do not support NBNS protocol and you need your own DNS Server. But how about resolving your local machines ?. Your ISP's DNS Server will not have this list and your own DNS Server wont have them either. Most DNS Servers cannot do this.(unless you configure dynamic updates, or use static IP addresses and manually enter them).

This server resolves dhcp alloted local machines automatically in addition to external hosts, with the added advantage being both dhcp and dns server are allways in sync. Also there is no need to create and maintain cumbersome zone files. Dual DHCP DNS Server is an Open-Source Freeware. In addition, this server is designed for Load Sharing Replicated Operation

DNS Features include Forward and Reverse Lookup, Zone Transfer, Primary/Secondary Mode of Operation, MX Records, Wildcard Records, Conditional and Default forwarding.

DHCP Fearures support Static and Dynamic 125 DHCP Ranges, Range Filters, Relay Agents and BOOT, Options can be specified for DHCP Ranges, Global or for Static Hosts.

Either DHCP or DNS Service can be used. If both services are used, DHCP allotted hosts are automatically added in DNS zones.

# DNS+DHCP+HTTP Server & DHCP Service 2

# 

# Add device to router fastEthernet to use with copper media

# DNS 192.168.30.10

# HTTP 192.168.40.10

# DHCP1 192.168.10.10

# DHCP2 192.168.20.10

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Device** | **Interface** | **IP Address** | **Subnet Mask** | **Default Gateway** | **DNS Server** |
| R1 | F/0 | 192.168.10.1 | 255.255.255.0 |  |  |
| Serial | 10.0.0.1 | 255.255.255.0 |  |  |
| R2 | F/0 | 192.168.20.1 | 255.255.255.0 |  |  |
| Serial | 10.0.0.2 | 255.255.255.0 |  |  |
| F1/0 | 192.168.40.1 |  |  |  |
| 6/0 | 192.168.30.1 |  |  |  |
| DNS | NIC | 192.168.30.10 | 255.255.255.0 | 192.168.20.1 | 0.0.0.0 |
| HTTP |  | 192.168.40.10 | 255.255.255.0 | 192.168.20.1 | 192.168.30.10 |
| DHCP1 | NIC | 192.168.10.10 | 255.255.255.0 | 192.168.10.1 | 192.168.30.10 |
| DHCP2 | NIC | 192.168.20.10 | 255.255.255.0 | 192.168.20.1 | 192.168.30.10 |

# CONFIGURE DHCP1 SERVICE

# Default gateway 192.168.10.1

# DNS Server 192.168.30.10

# Start IP address 192.168.10.3

# CONFIGURE DHCP2 SERVICE

# Default gateway 192.168.20.1

# DNS Server 192.168.30.10

# Start IP address 192.168.20.3

# CONFIGURE DNS SERVICE

# Default gateway 192.168.20.1

# DNS Server 192.168.30.10

# Start IP address 192.168.20.3

# CONFIGURE ROUTER 1 SERVICE

# Router>en

# Router# config t

# Router(config)#hostname R1

# R1(config)#enable secret class

# R1(config)#int f0/0

# R1(config-if)#ip address 192.168.10.1 255.255.255.0

# R1(config-if)#no shutdown

# R1(config)#int serial 2/0

# R1(config-if)#ip address 10.0.0.1 255.0.0.0

# R1(config-if)#no shutdown

# On R1 CONFIGURE RIP

# NETWORK 192.168.10.0 click on add

# 10.0.0.0 click on add

# 

# CONFIGURE ROUTER 2 SERVICE

# Router>en

# Router# config t

# Router(config)#hostname R2

# R2(config)#enable secret class

# R2(config)#int f0/0

# R2(config-if)#ip address 192.168.20.1 255.255.255.0

# R2(config-if)#no shutdown

# R2(config)#int serial 2/0

# R2(config-if)#ip address 10.0.0.2 255.0.0.0

# R2(config-if)#no shutdown

R2(config-if)#exit

# R2(config)#int f1/0

# R2(config-if)#ip address 192.168.40.1 255.255.255.0

# R2(config-if)#no shutdown

# R2(config)#int f6/0

# R2(config-if)#ip address 192.168.30.1 255.255.255.0

# R2(config-if)#no shutdown

# On R2 CONFIGURE RIP

# NETWORK 192.168.10.0 click on add

# 192.168.20.0 click on add

# 192.168.30.0 click on add

# 192.168.40.0 click on add

# 10.0.0.0 click on add

# 

**On PC 0**

C:\>ping 192.168.20.4