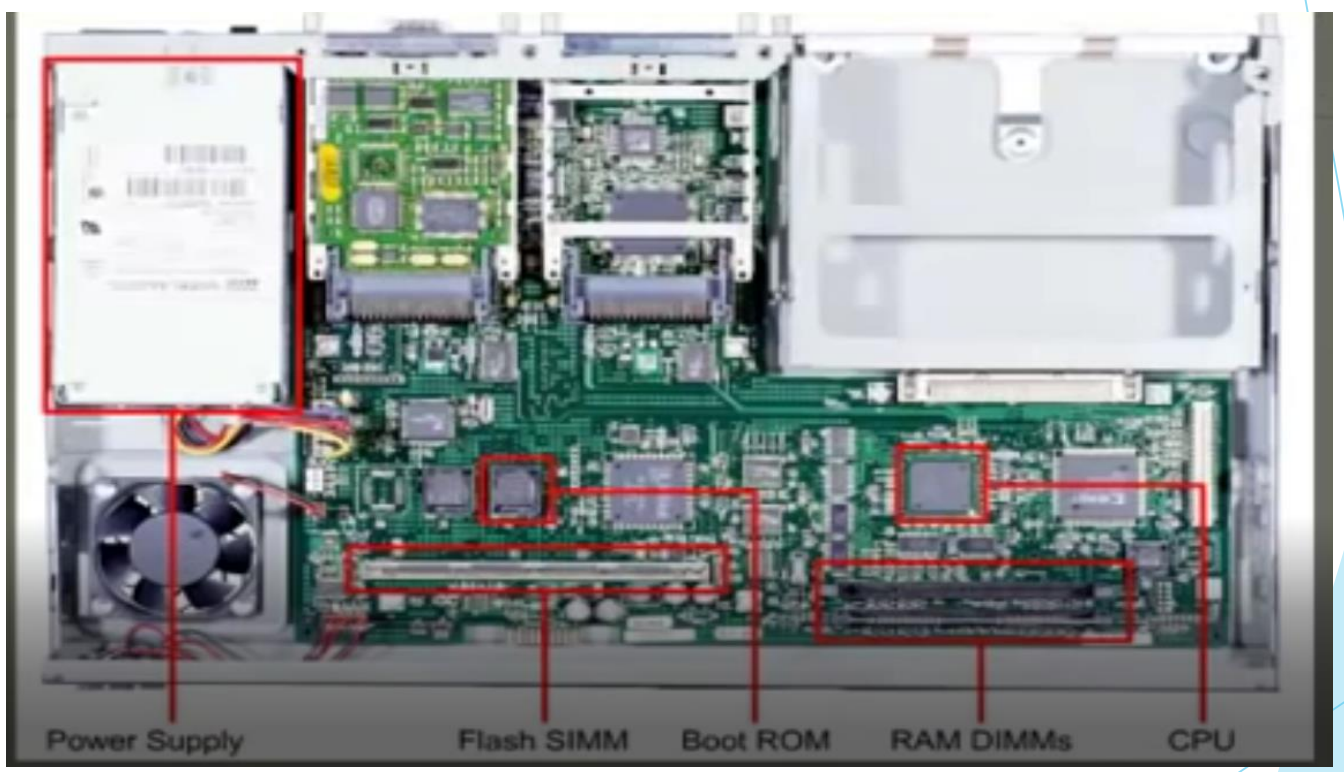
Router configuration

What is Router??

- A router is a device that connects two or more packet-switched networks or subnetworks.
- It serves two primary functions:
  1. managing traffic between these networks by forwarding data packets to their intended IP addresses,
  2. allowing multiple devices to use the same Internet connection.

Router internal component

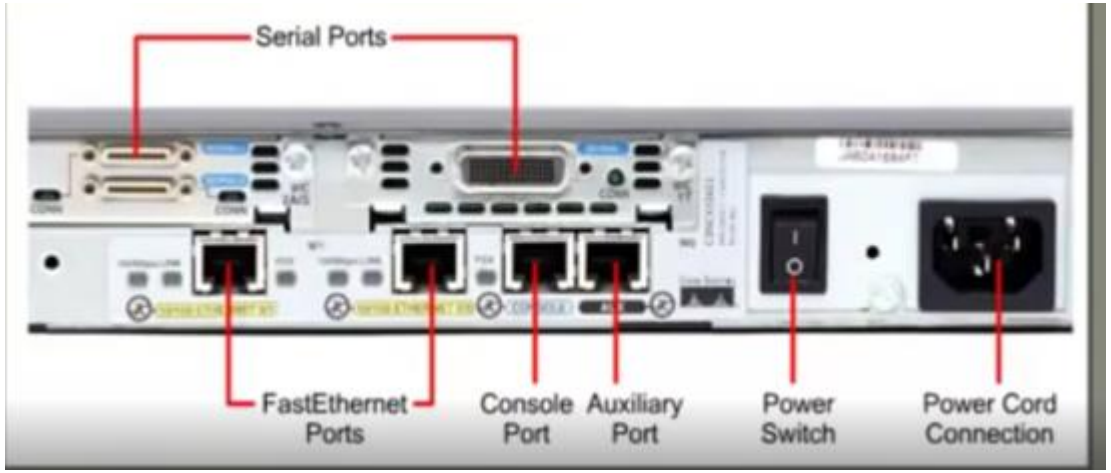
- Processor
- Interface
- Memory



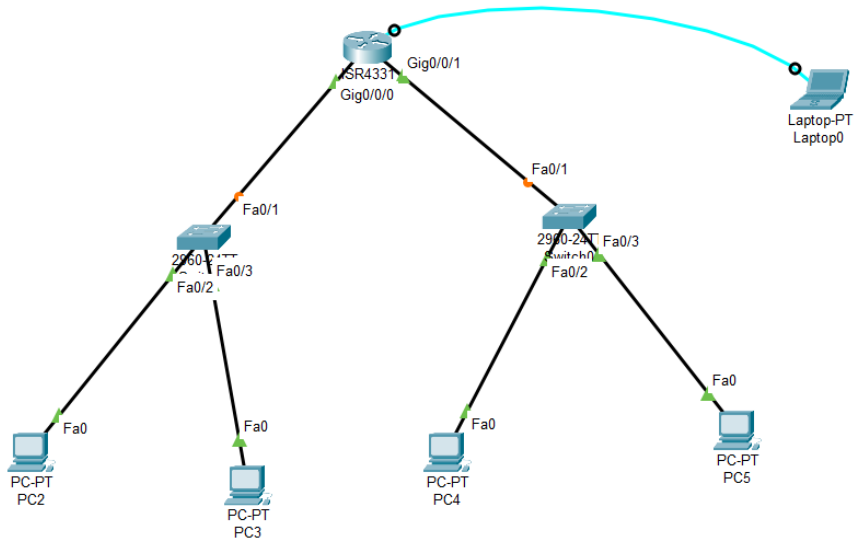
Memory

- RAM
- ROM:
  - POST ,
  - Bootstrap find the IOS and load it in RAM , find the configuration file and load it in the RAM
- Flash contain IOS of router
- NVRAM contain configuration file

Router External connection



Network structure

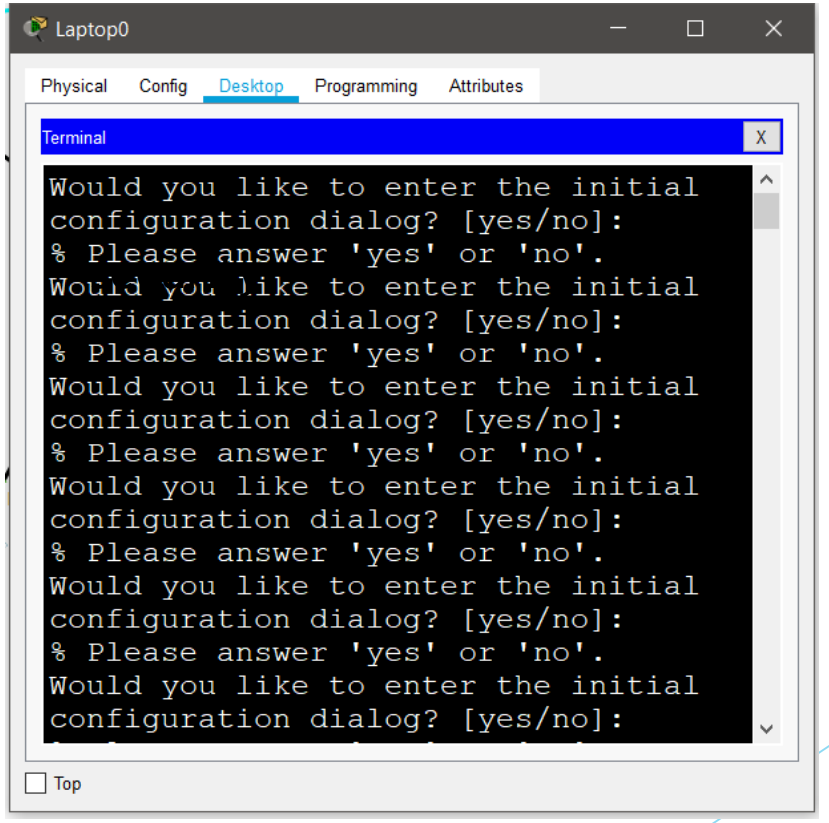


- We connect router to laptop or pc using console cable to access router
- Click on the laptop then desktop after that terminal then ok

Router Modes

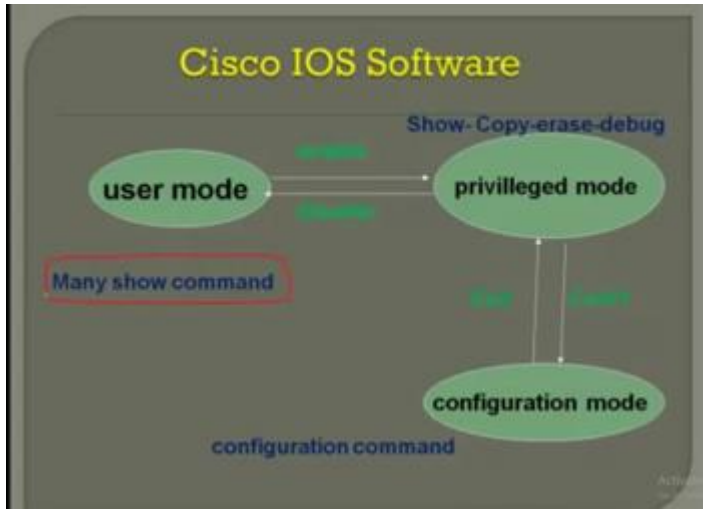
1. Setup mode(initial configuration)

To exit from setup press ctrl+C



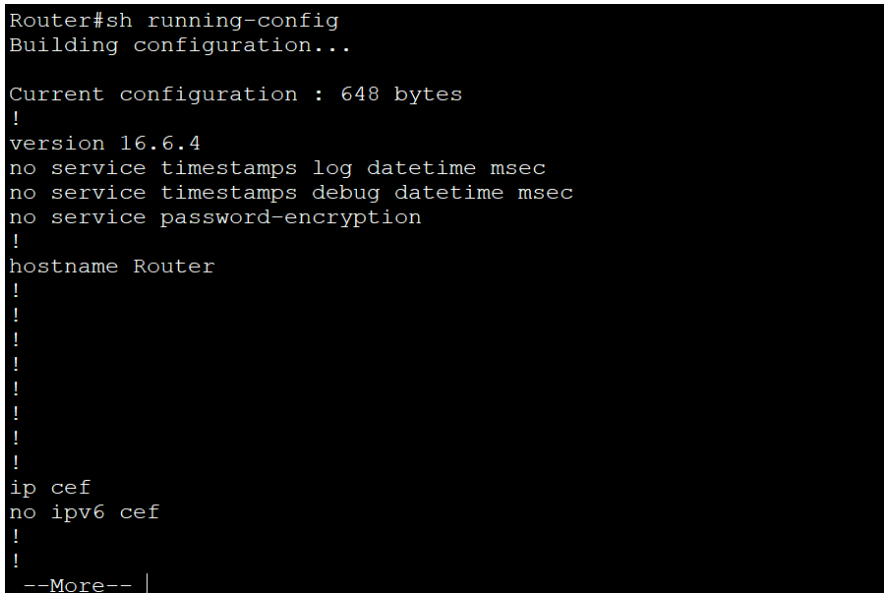
Router Modes

2. User mode > enable
3. Privileged mode # config t
   - Show , copy, erase, debug
4. Configuration mode



Show Default Router Configuration

- To get default configuration run **show running-config** command.
- What is hostname??
- How many Fast Ethernet interfaces does the Router have?
- 0
- How many Gigabit Ethernet interfaces does the Router have?
- 3
- What is the range of values shown for the vty lines?
- line vty 0 4



Show Default Router Configuration

- Display the current contents of NVRAM.
  - **show startup-config**

- **It displays this message because the configuration file was not saved to NVRAM. Currently it is only located in RAM.**

```
Router#show startup-config
startup-config is not present
Router#
```

Configure and Verify the Initial Router Configuration

- Change hostname for the router
  - Router#config t
  - Router(config)#hostname shkh
- Change enable password
  - shkh(config)#enable password 123
  - shkh(config)#exit
  - shkh#
  - shkh#exit
  - shkh>enable
- To remove password run
  - shkh(config)#no enable password

```
Router#config t
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)#hostname shkh
shkh(config)#
```

```
shkh>enable
Password:
shkh#
```

Configure and Verify the Initial Router Configuration

- Run
  - shkh#show running-config

```
shkh#show running-config
Building configuration...

Current configuration : 668 bytes
!
version 16.6.4
no service timestamps log datetime msec
no service timestamps debug datetime msec
no service password-encryption
!
hostname shkh
!
!
!
enable password 123
!
```

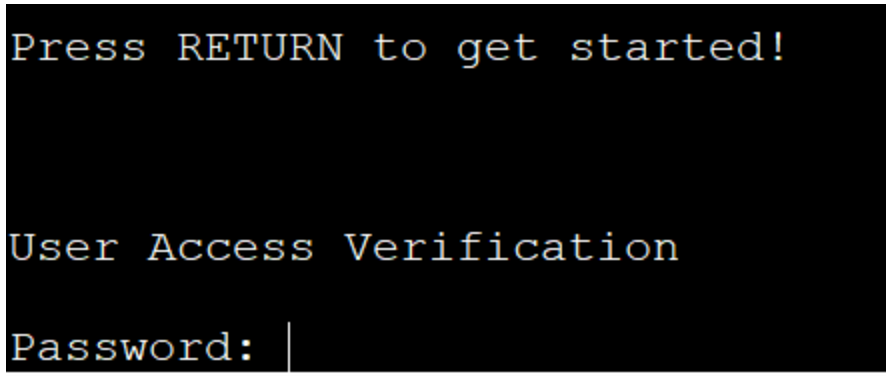
- Create encrypted password
  - shkh#config t
  - shkh(config)#enable secret 12345
- Encrypt all passwords
  - shkh(config)#service password-encryption
  - shkh#show running-config

```
shkh(config)#do sh run
Building configuration...

Current configuration : 719 bytes
!
version 16.6.4
no service timestamps log datetime msec
no service timestamps debug datetime msec
service password-encryption
!
hostname shkh
!
!
!
enable secret 5 $1$mERr$/Q/mbs3O9oHsKR7rNG4e81
enable password 7 08701E1D
!
!
!
!
```

Configure and Verify the Initial Router Configuration

- Console password
  - shkh(config)#line console 0
  - shkh(config-line)#password 123
  - shkh(config-line)#login
  - shkh(config-line)#exit
  - shkh(config)#exit
  - shkh#
  - %SYS-5-CONFIG_I: Configured from console by console
  -
  - shkh#exit



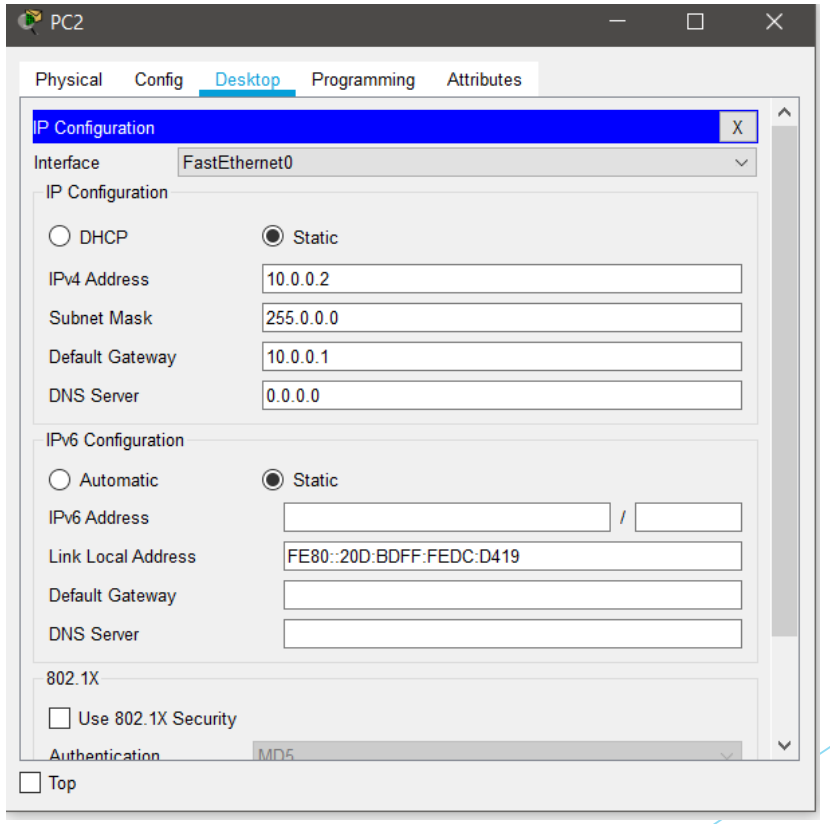
Save the Running Configuration File

- To save the current configuration run
  - shkh#copy running-config startup-config
- Run
  - shkh#show startup-config

```
shkh#show startup-config
Using 719 bytes
!
version 16.6.4
no service timestamps log datetime msec
no service timestamps debug datetime msec
service password-encryption
!
hostname shkh
!
!
!
enable secret 5 $1$mERr$/Q/mbs3O9oHsKR7rNG4e81
enable password 7 08701E1D
!
```

Add IP for devices

- For first LAN use
  - 10.0.0.2 and 10.0.0.3 for IP and 10.0.0.1 for default getaway
- For second LAN use:
  - 20.0.0.2 and 20.0.0.3 for IP and 20.0.0.1 fro default getaway

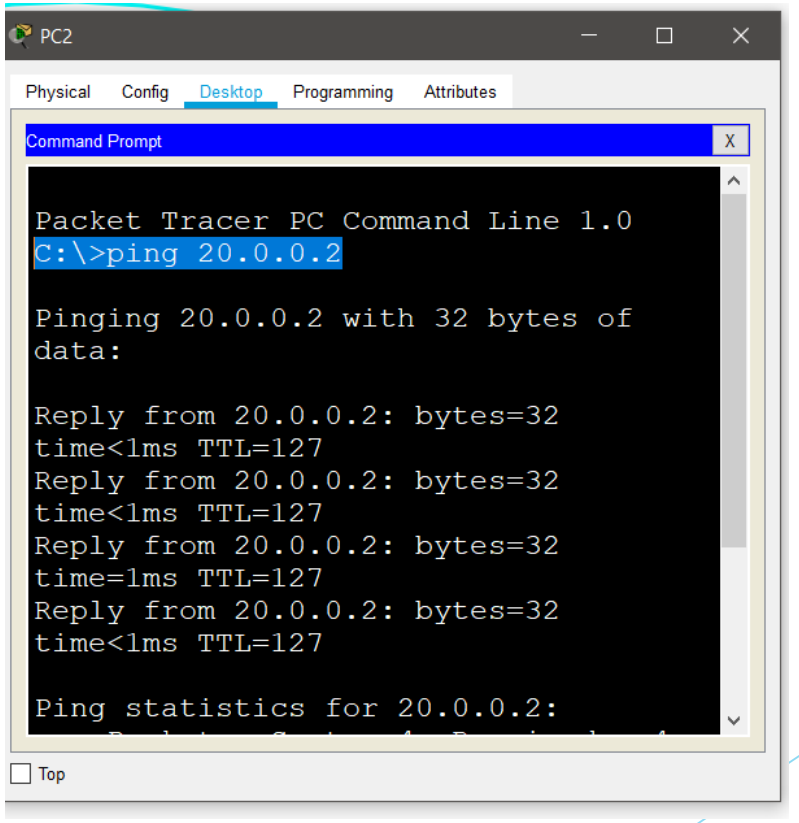


Add router IPs

- shkh(config)#int g0/0/0
- shkh(config-if)#no sh
- shkh(config-if)#no shutdown
- shkh(config-if)#ip address 10.0.0.1 255.0.0.0
- shkh(config-if)#int g0/0/1
- shkh(config-if)#no shutdown
- shkh(config-if)#ip address 20.0.0.1 255.0.0.0
- shkh(config-if)#

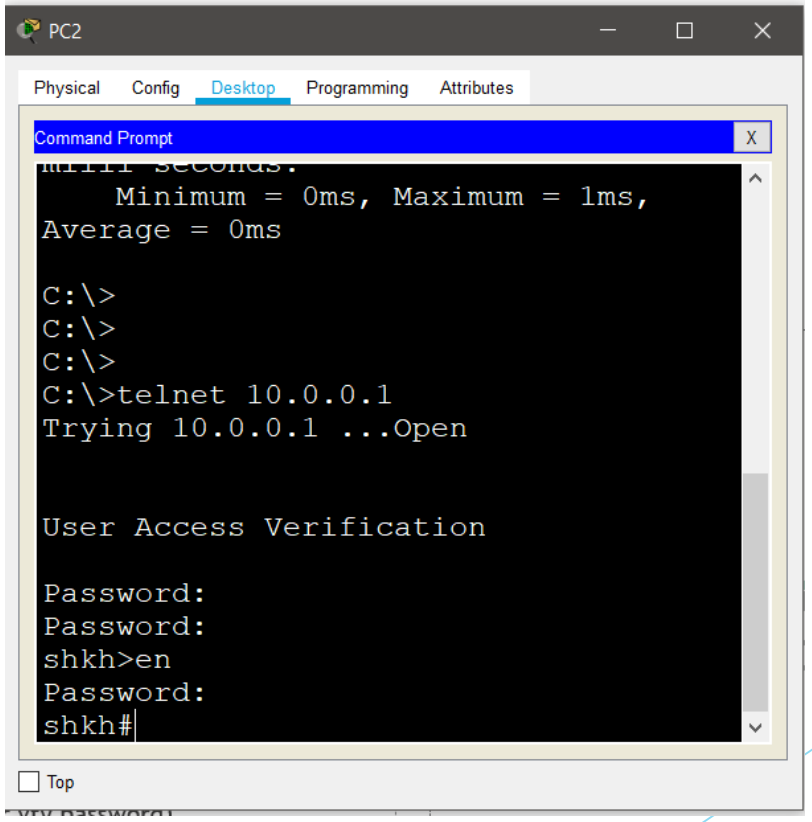
Test connection

- Using ping command to test connection
- From pc2 run C:\>ping 20.0.0.2
- From pc4 run C:\>ping 10.0.0.3



Access router remotely

- Add password to virtual terminal
- shkh(config-if)#line vty 0 4
- shkh(config-line)#password asd123
- shkh(config-line)#login
- shkh(config-line)#
- From any pc open desktop then terminal run command
- C:\>telnet 10.0.0.1
- Trying 10.0.0.1 ...Open
- User Access Verification
- Password: (enter vty password)
- shkh>en
- Password: (enter enable secret password)



Router Device Security

- **Password creation for privilege mode**
  - Router(config)#enable password 246
- **Create Encrypted password**
  - Router(config)#enable secret 579
- **Encrypt all passwords**
  - Switch(config)#service password-encryption

Router Device Security

- **Set password Minum length to 10**
  - Router(config)#security password min-length 10
- **Create a user with a strong encrypted password.**
- Router(config)#username shkh secret 1234567890
- **This user and password will be used we connect remotely**
- **Configure VTY lines to use the local user profiles for authentication.**
- Switch(config)#line vty 0 15
- Switch(config-line)#login local
- **When use telnet it need username(shkh) and password(**1234567890)

Thank You