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FACULTY OF COMPUTING

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*Discover Your Future*

# IT2050
# COMPUTER NETWORKS

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# Module Delivery

- Per Week
  - 2hr Lecture
  - 1hr Tutorial
  - 2hr Practical session
- Module delivery clarifications

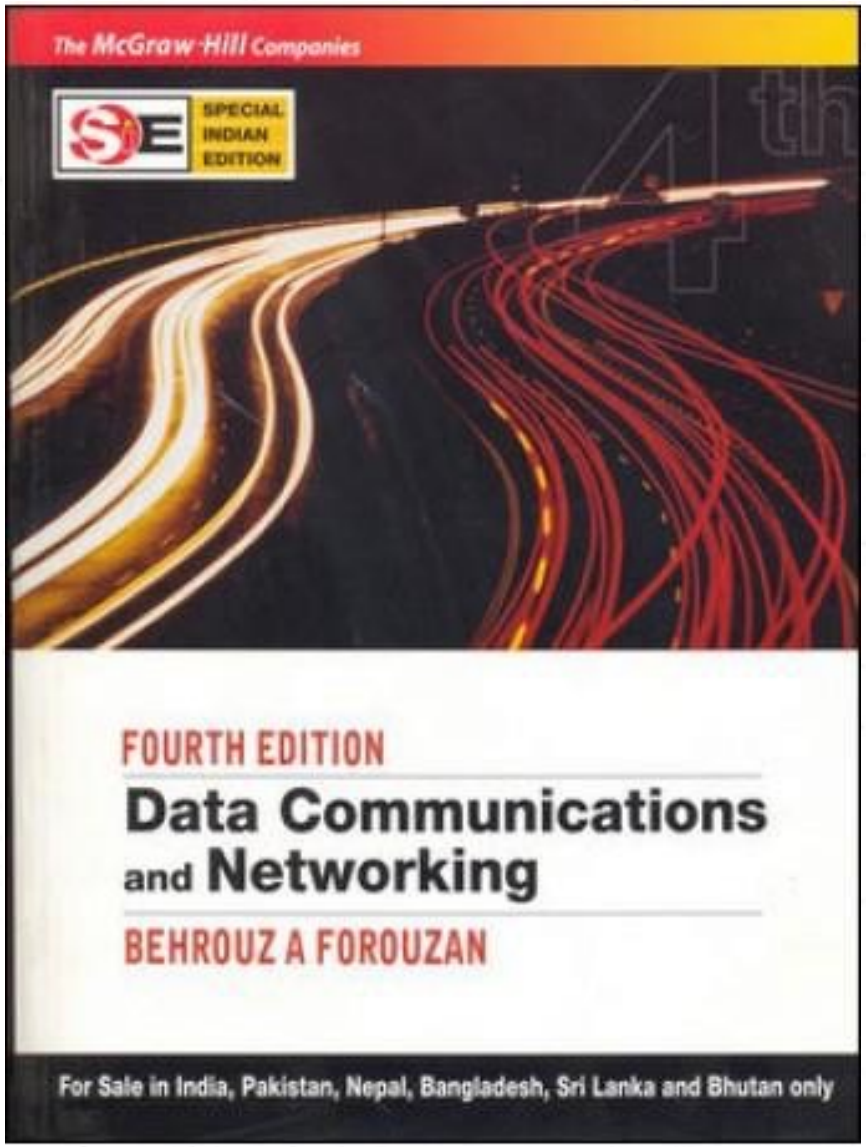
  Within the lecture, tutorial and lab sessions

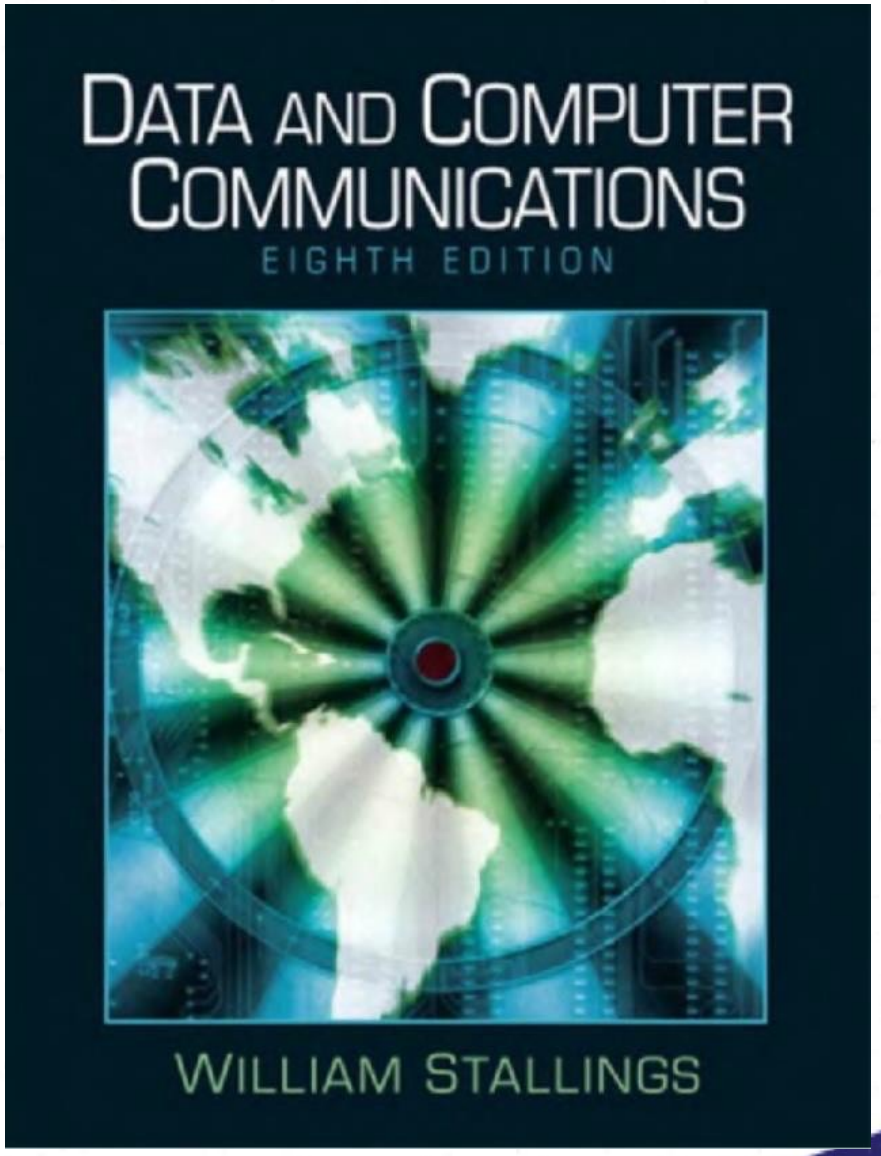
- Panel of Lecturers
  - Mr.Dhammika De Silva (LIC) – dhammika.d@sliit.lk - Metro
  - Ms.Hansika Mahaadikara – Hansika.m@sliit.lk – Malabe
  - Ms.Bhagyani chathurika – bhagyani.c@sliit.lk - Matara

# Module Assessment Criteria

- Continues Assessments – 40 %
  - Online quiz - 1 hr – 20 %
  - Mid Online - 1 hr - ( week 8) - 20 %
- Final Examination – 60%
  - Written – 2 hrs

# Recommended Books



# Lecture 1
# Overview of Configuration of Network Devices

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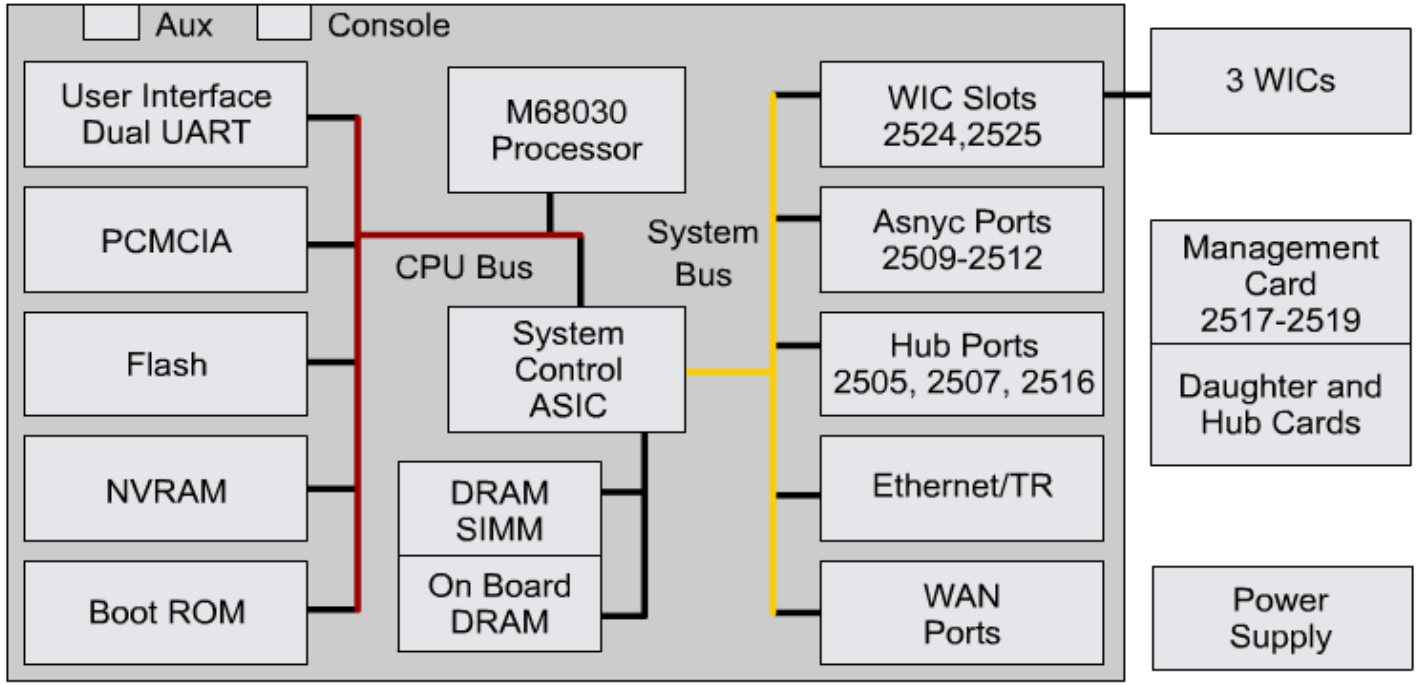
# Network Devices – Internal Components




- CPU
- RAM
- Flash
- NVRAM

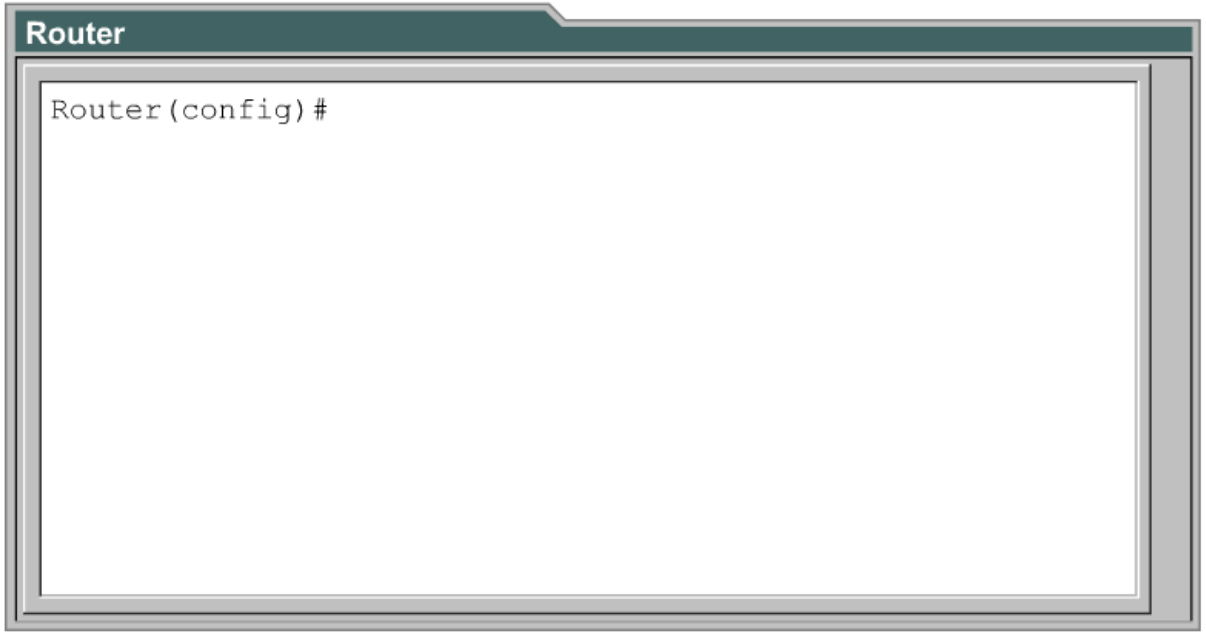
- Buses
- ROM
- Interfaces
- Power Supply

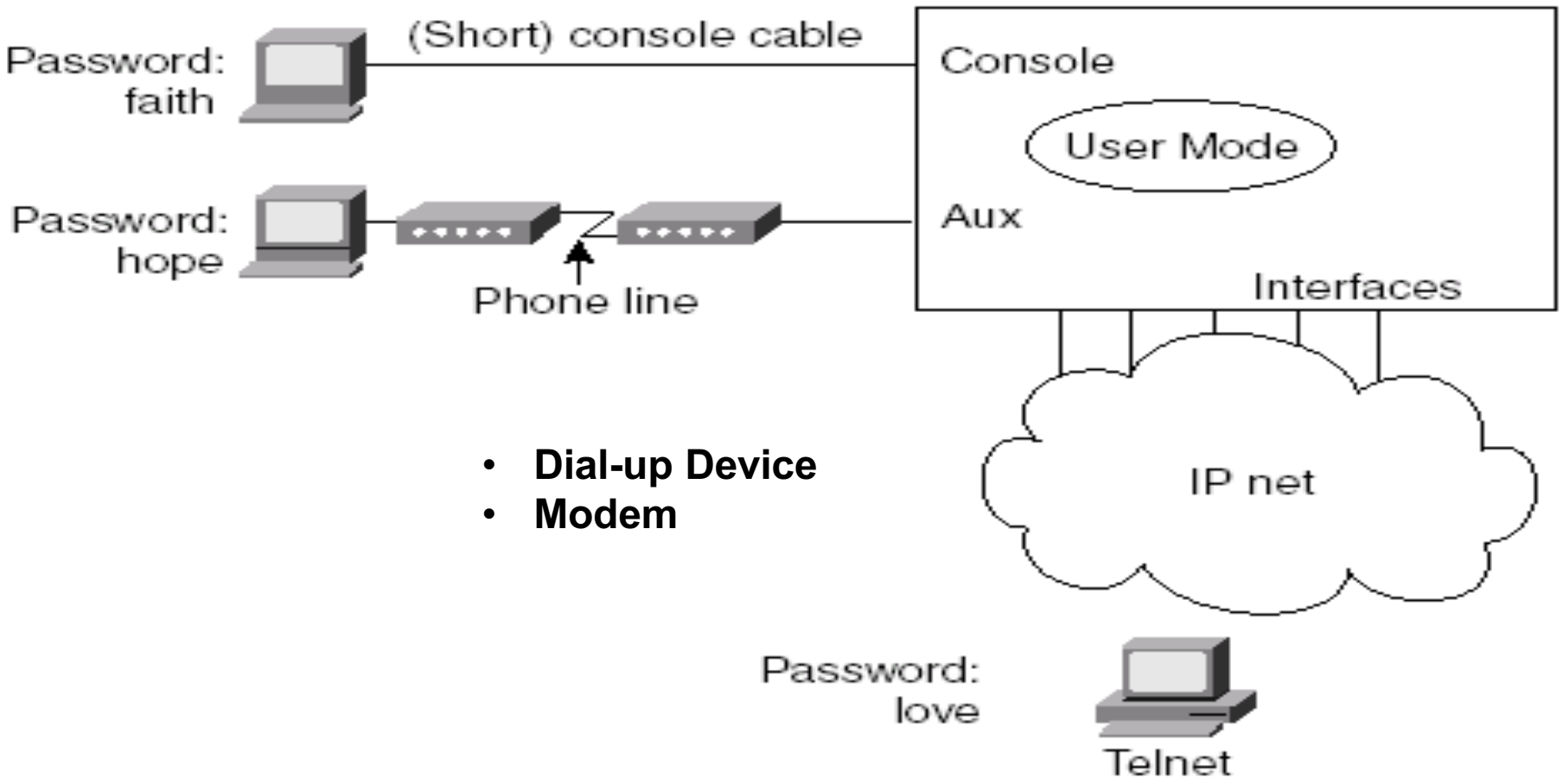
# Cisco IOS Software


- As with a computer, a network device cannot function without an operating system.
- Cisco calls its OS as the Cisco Internetwork Operating System or Cisco IOS.

# Command Line Interface (CLI)

- The Cisco IOS software uses a command-line interface (CLI) as the traditional console environment.
- This environment is accessible through several connection methods:
  - Console
  - AUX port
  - Telnet



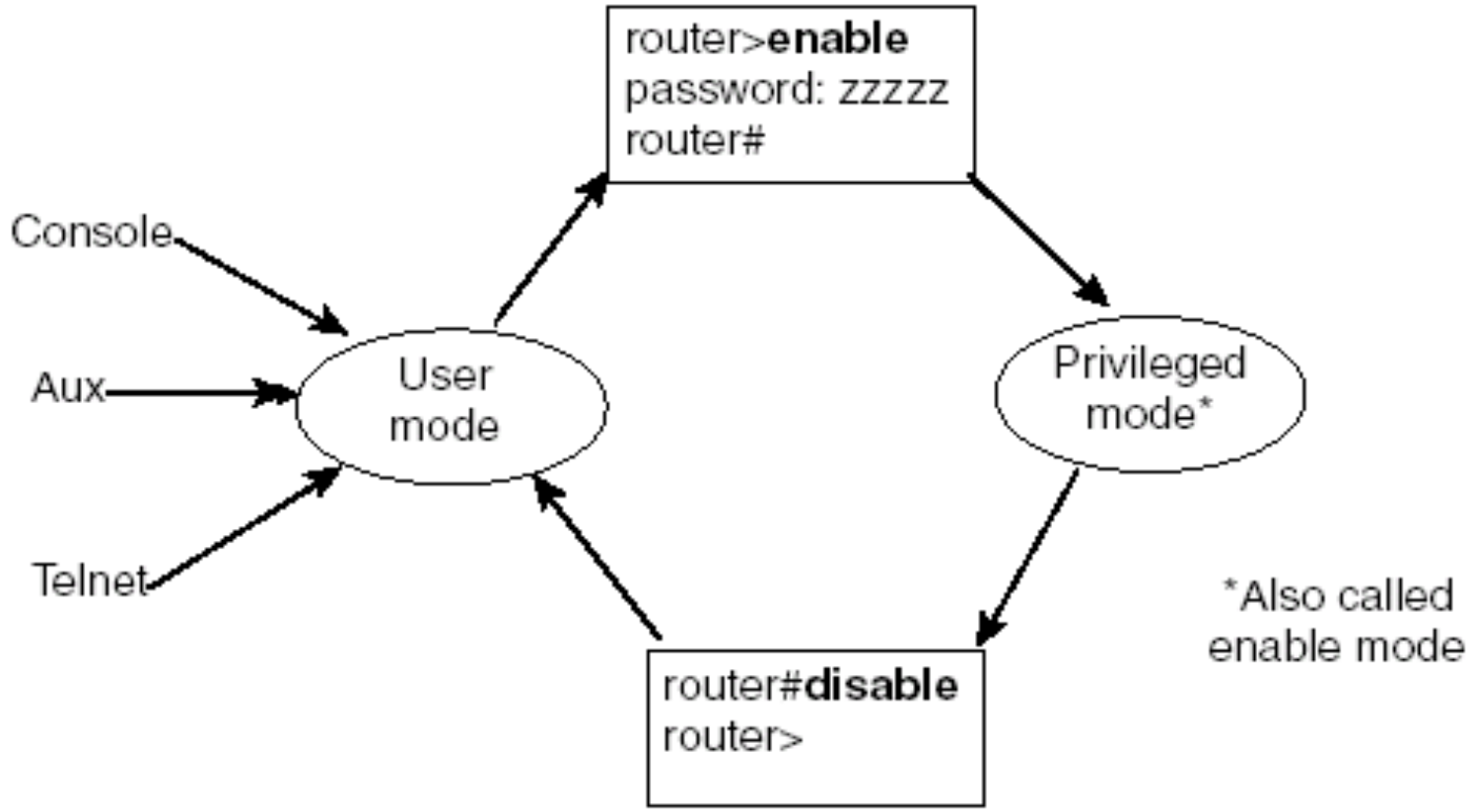



- **Dial-up Device**
- **Modem**

# User Level Passwords

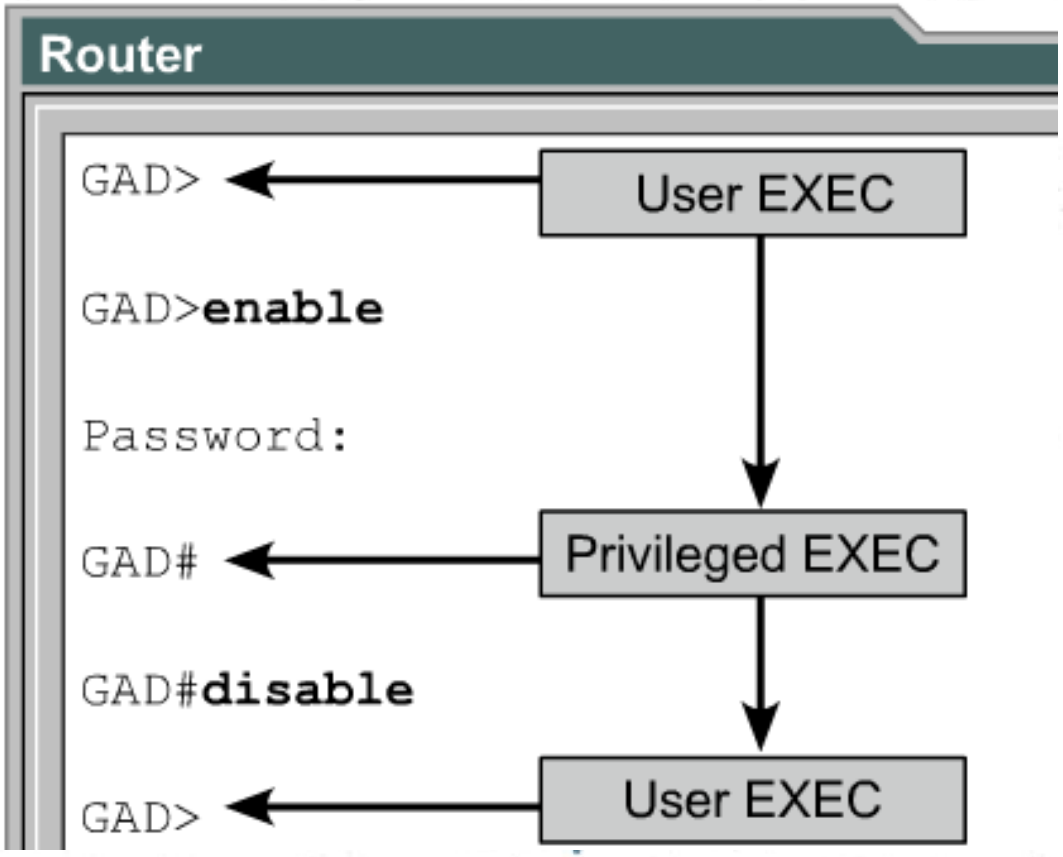
| Access from . . . | Password Type | Configuration |
|---|---|---|
| Console | Console password | **line console** *0*<br>**login**<br>**password** *faith* |
| Auxiliary | Auxiliary password | **line aux** *0*<br>**login**<br>**password** *hope* |
| Telnet | vty password | **line vty** *0 4*<br>**login**<br>**password** *love* |

# Router Modes

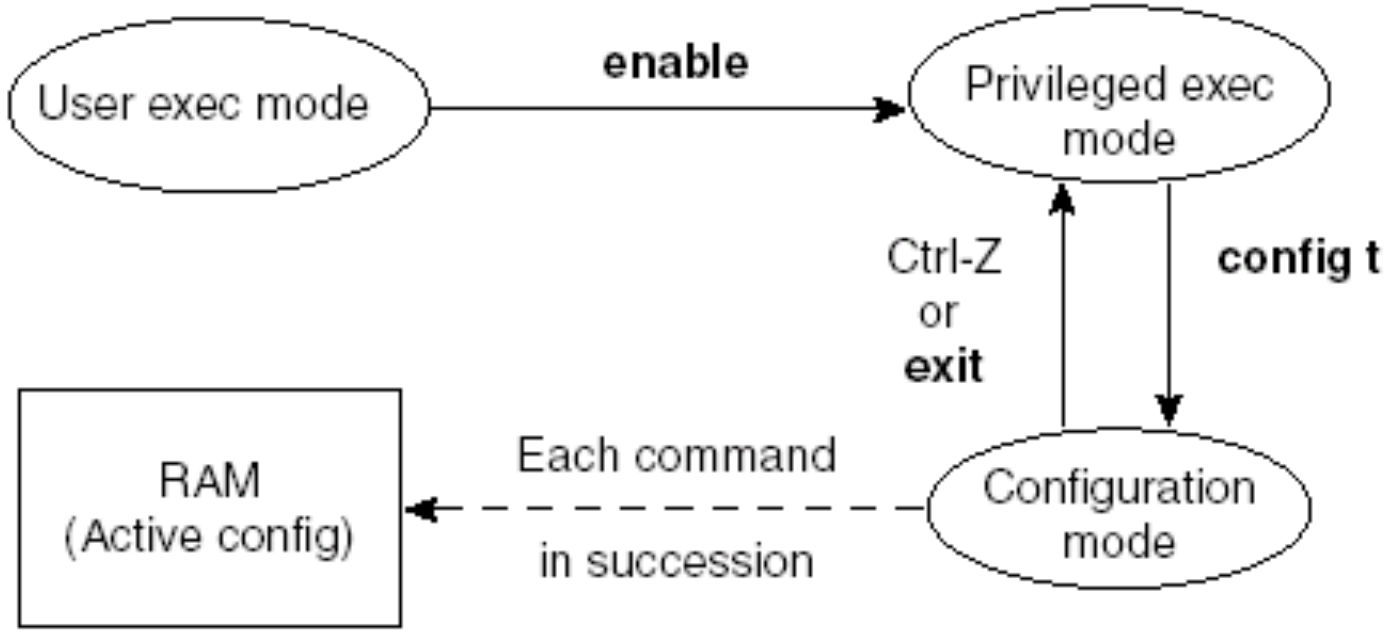


# Router Modes

| EXEC Mode | Prompt | Typical Use |
|---|---|---|
| User | **GAD>** | check the router status |
| Privileged | **GAD#** | accessing the router configuration modes |



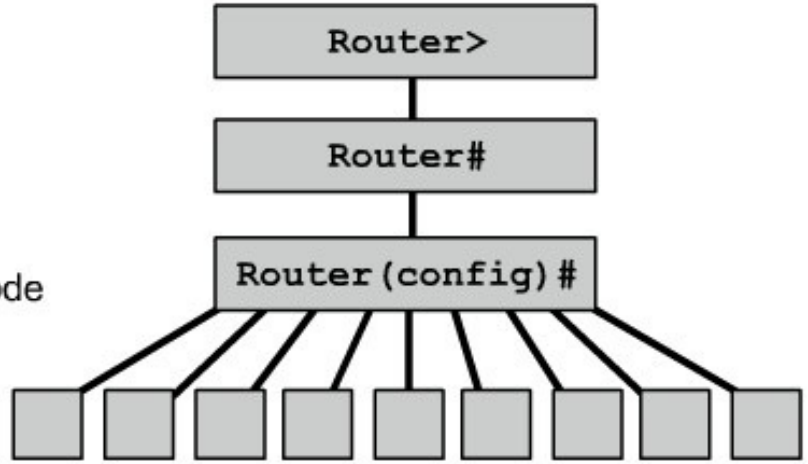
# Router Modes




```
Router>
Router>enable
Router#
Router#configure terminal
Router(config)#hostname AtlantaHQ
AtlantaHQ(config)#
```

# Router Modes

- User EXEC mode
- Privileged EXEC mode
- Global configuration mode
- Specific configuration modes




| Configuration Mode | Prompt |
|---|---|
| Interface | `Router(config-if)#` |
| Subinterface | `Router(config-subif)#` |
| Controller | `Router(config-controller)#` |
| Map-list | `Router(config-map-list)#` |
| Map-class | `Router(config-map-class)#` |
| Line | `Router(config-line)#` |
| Router | `Router(config-router)#` |
| IPX-router | `Router(config-ipx-router)#` |
| Route-map | `Router(config-route-map)#` |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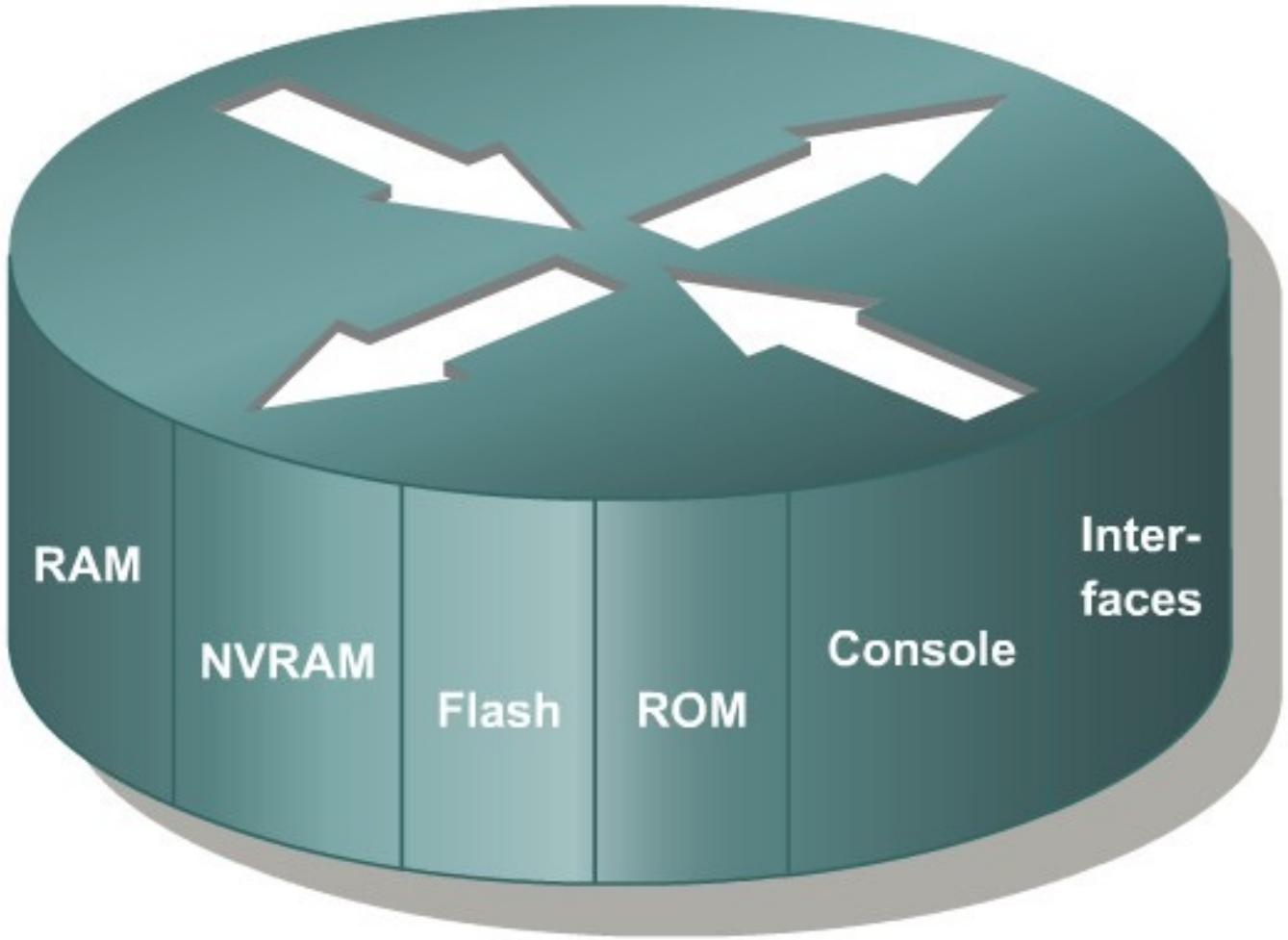
# Router Memory



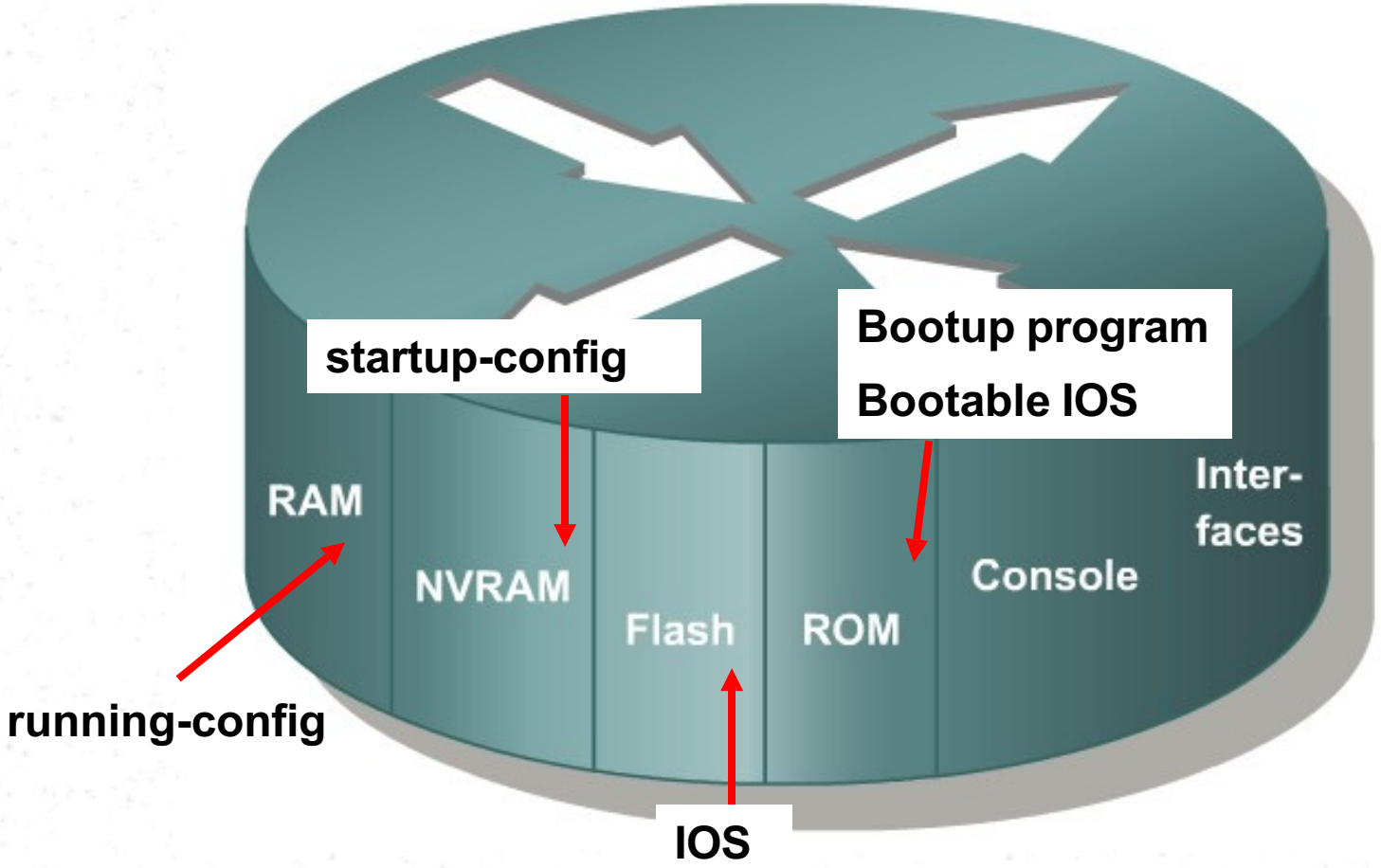
# Router Memory cont.

- RAM
  - Store *running* or *active configuration* file
  - Loses content when router is powered down
  - A working storage
- ROM
  - Read-Only Memory
  - Stores bootable IOS image and bootstrap program

# Router Memory cont.

- NVRAM
  - Provides storage for the startup configuration file
  - Retains content when router is powered down
- Flash memory
  - Holds the fully functional IOS image
  - Retains content when router is powered down
  - Is a type of electronically erasable, programmable ROM (EEPROM)

# Router Memory cont.



# Displaying configuration files

**show running-config**

Command Output

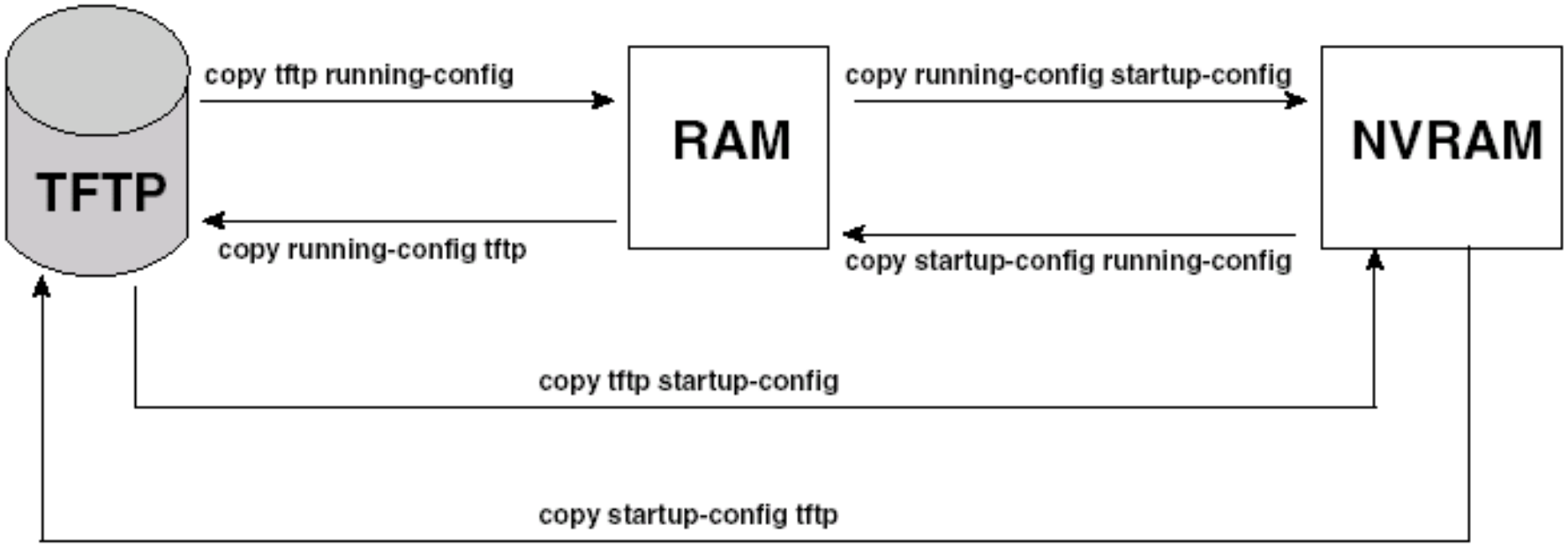
```
Router#show running-config
Building configuration...

Current configuration:
!
version 11.1
!
     -- More --
```

**show startup-config**

Command Output

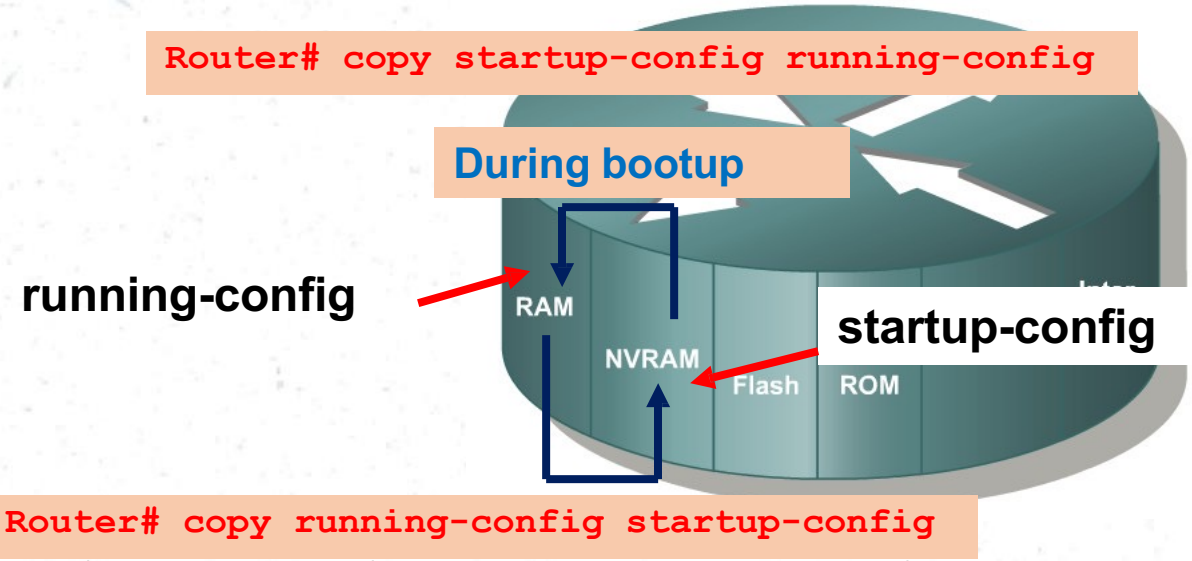
```
Router#show startup-config
Using 1108 out of 130048 bytes
!
version 11.2
!
hostname router

     -- More --
```

# Managing configuration files




- Copy Command
  - copy files in a router (configuration file, new version of the IOS Software)
  - Move configuration files among RAM, NVRAM, and TFTP server

# copy running-config startup-config



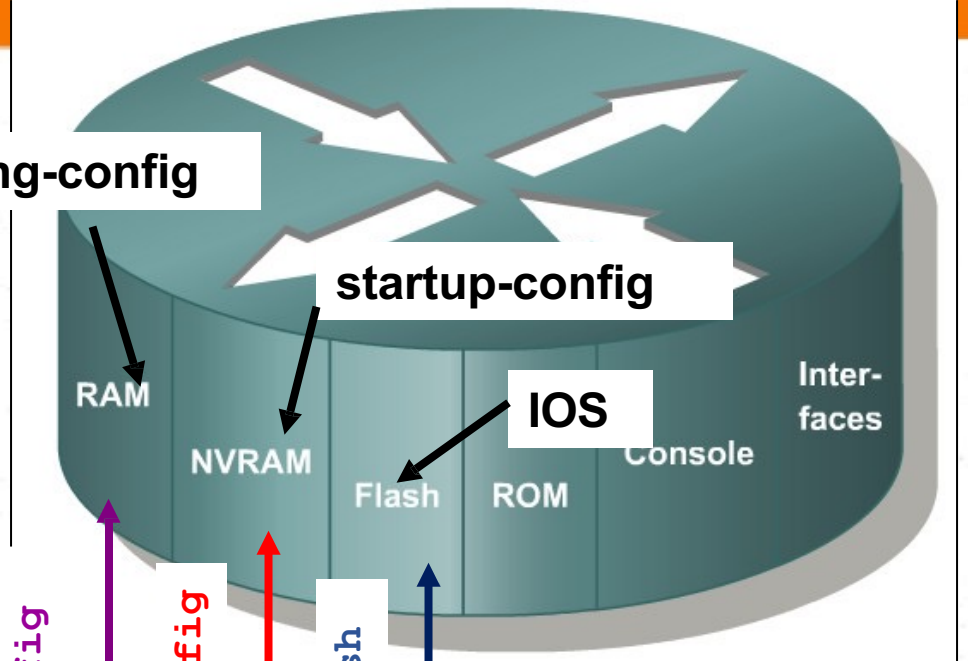

- Changes to the router are put in the running-config file.
- If the router loses power or reboots, everything in RAM is lost including the running-config file.
- To make sure the changes to the router's configuration remain saved, you must copy the running-config from RAM into the startup-config into NVRAM:

  Router# copy  running-config  startup-config

# copy running-config startup-config cont.

```
Router#copy running-config startup-config
Destination filename [startup-config]?
Building configuration...

Router#show startup-config
!
version 12.0
service timestamps debug uptime
service timestamps log uptime
no service password-encryption
!
hostname Router
!
!
ip subnet-zero
!
interface Ethernet0
 no ip address
 no ip directed-broadcast
 shutdown
!
```

The startup-config file now identical to running-config and the router will also have these changes if the router reboots.




copy tftp running-config

copy tftp startup-config

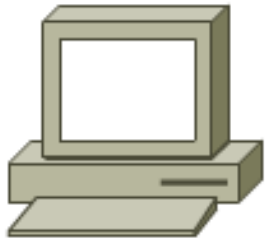
copy tftp flash

copy flash tftp

copy startup-config tftp

copy running-config tftp

TFTP Host



Router

```
Router#copy running-config tftp

Remote host []? 131.108.2.155

Name of configuration file to write[tokyo-config]?tokyo.2

Write file tokyo.2 to 131.108.2.155? [confirm] y

Writing tokyo.2 !!!!!! [OK]
```

Router

```
Router#copy tftp running-config

Host or network configuration file [host]?

IP address of remote host [255.255.255.255]? 131.108.2.155

Name of configuration file [Router-config]? tokyo.2

Configure using tokyo.2 from 131.108.2.155? [confirm] y

Booting tokyo.2 from 131.108.2.155:!! [OK-874/16000 bytes]
```