

CISCO ROUTER BOOT PROCESS

Memory Types: Generally Cisco routers & switches contain four types of memory

1.Read-Only Memory (ROM): ROM stores the router's bootstrap startup program, operating system software, and power-on diagnostic test programs (POST).

2.Flash Memory: "flash", the IOS images are held here. Flash is erasable and reprogrammable ROM. Flash memory content is retained by the router on reload.

3.Random-Access Memory (RAM): Stores operational information such as routing tables and the running configuration file. RAM contents are lost when the router is powered down or reloaded.

4.Non-volatile RAM (NVRAM): NVRAM holds the router's startup configuration file. NVRAM contents are not lost when the router is powered down or reloaded.

Shortcut remember:

1. ROM contains POST, basic program.
2. Flash contains IOS (contents do not lost in power off)
3. RAM holds the running configuration file.
4. NVRAM holds the startup configuration file.

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Note : Cisco IOS (originally **Internetwork Operating System**) is a family of software used on most Cisco Systems routers and current Cisco network switches.

Router boot process:

1. The router is powered on.
2. The router first runs Power-On Self Test (POST)
3. The bootstrap checks the Configuration Register value to specify where to load the IOS. By default (the default value of Configuration Register is 2102, in hexadecimal).
 - A) The router first looks for "boot system" commands in startup-config file. If it finds these commands, it will run boot system commands in order they appear in startup-config to locate the IOS.
 - B) If not, the IOS image is loaded from Flash . If the IOS is not found in Flash, the bootstrap can try to load the IOS from TFTP server or from ROM (mini-IOS).
4. After the IOS is found, it is loaded into RAM.
5. The IOS attempts to load the configuration file (startup-config) from NVRAM to RAM. If the startup-config is not found in NVRAM, the IOS attempts to load a configuration file from TFTP. If no TFTP server responds, the router enters Setup Mode (Initial Configuration Mode).

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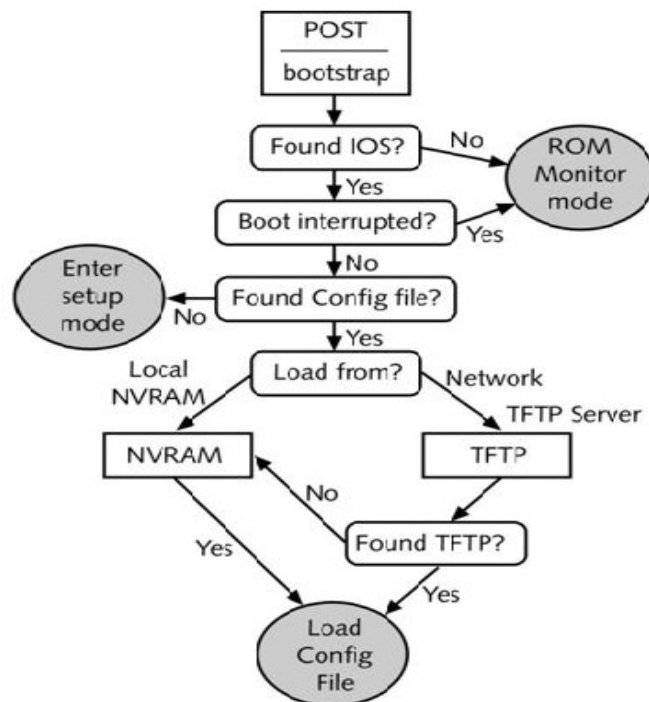
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Bringing up a Router

- Boot-up process:



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