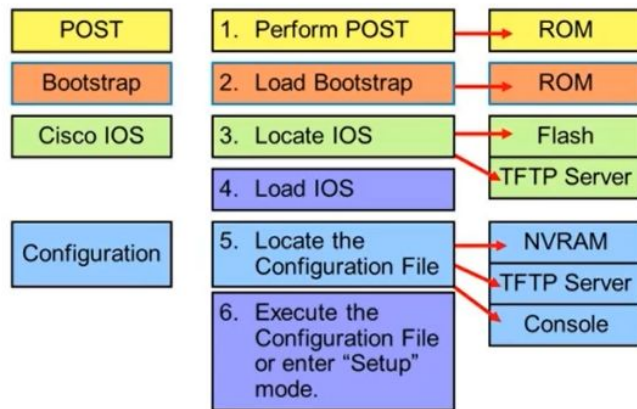week6

Packet Tracer 热身

# Bring Up a Device 启动设备

- Power-on Self-test (POST) 通电自检
- Load the Cisco IOS from flash memory (electronically erasable programmable read-only memory — an EEPROM) 从闪存（电子可擦可编程只读存储器-EEPROM）加载Cisco IOS
- Expand it into RAM 展开到RAM
- IOS locate and load a valid configuration known as the startup-config that will be stored in nonvolatile RAM (NVRAM) IOS定位并加载有效配置（这个配置被称为启动配置），该配置将存储在非易失性的RAM（NVRAM）中
- Startup-config will be copied from NVRAM into RAM and from then on referred to as the running-config 启动配置将从NVRAM复制到RAM，从此之后作为运行配置。
- If a valid startup-config isn't found in NVRAM, your switch will enter setup mode 如果在NVRAM中找不到有效的启动配置，你的交换机将进入设置模式
  - enter setup mode at any time by typing setup command from privileged mode 通过在特权模式下键入setup命令可以随时进入设置模式

**Router Bootup Process**

| POST | 1. Perform POST | → ROM |
| Bootstrap | 2. Load Bootstrap | → ROM |
| Cisco IOS | 3. Locate IOS | → Flash / TFTP Server |
| | 4. Load IOS | |
| Configuration | 5. Locate the Configuration File | → NVRAM / TFTP Server / Console |
| | 6. Execute the Configuration File or enter "Setup" mode. | |

# Different Modes 不同的模式



```
A summary of U.S. laws governing Cisco cryptographic products may
be found at:
http://www.cisco.com/wwl/export/crypto/tool/stqrg.html

If you require further assistance please contact us by sending
email to
export@cisco.com.

Cisco CISCO1941/K9 (revision 1.0) with 491520K/32768K bytes of
memory.
Processor board ID FTX152400KS
2 Gigabit Ethernet interfaces
DRAM configuration is 64 bits wide with parity disabled.
255K bytes of non-volatile configuration memory.
249856K bytes of ATA System CompactFlash 0 (Read/Write)


        --- System Configuration Dialog ---

Would you like to enter the initial configuration dialog? [yes/
no]: no


Press RETURN to get started!


Router>
```
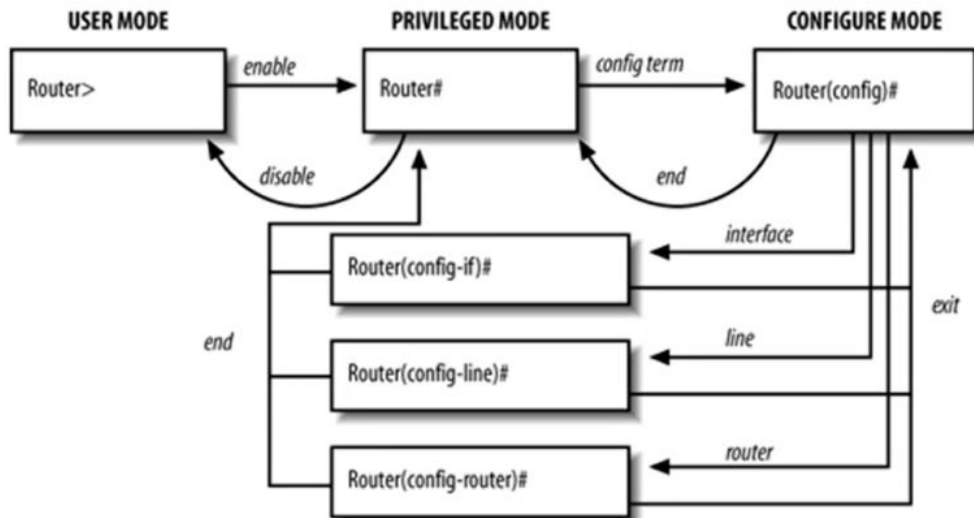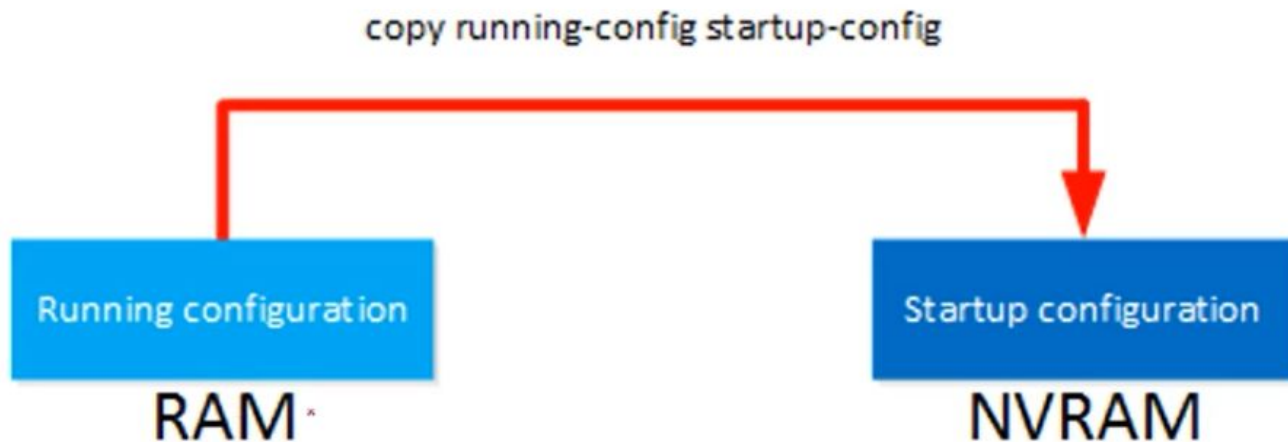
# Viewing, Saving, and Erasing Configurations 查看, 保存和删除配置

# Configuration Register 配置寄存器

All Cisco routers have a 16-bit software register that's written into NVRAM. By default, the configuration register is set to load the Cisco IOS from flash memory and to look for and load the startup-config file from NVRAM - 0x2102 所有思科路由器都有一个 16位软件寄存器（在NVRAM里）。默认情况下，配置寄存器 设置为从闪存加载Cisco IOS，并从NVRAM查找和加载启动配置文件-0x2102

| Configuration Register | 2 | | | | | 1 | | | | | 0 | | | 2 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bit number | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 | 0 |
| Binary | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |

Router(config)#config-register 0x2142
Router(config)#do sh ver
[output cut]
Configuration register is 0x2102 (will be 0x2142 at next reload)

# Boot System 启动系统

The **boot system** command will allow you to tell the router which system IOS file to boot from **boot system**命令将允许你告诉路由器从哪个系统IOS文件启动

Router#sh run | i boot

boot system tftp c2900-universalk9-mz.SPA.155-3.M4a.bin 2.2.2.2

Lab: Upgrade the Router IOS 实验：升级路由器IOS

- Copy latest IOS from TFTP server 从TFTP服务器复制最新的IOS
- Boot from the latest IOS 启动最新的IOS
- Copy the old IOS from Router to TFTP server 将旧的IOS从路由器复制到 TFTP服务器
- Delete the old IOS on Router 删除路由器上的旧IOS

# ROM Monitor (ROMMON)

During normal operation, users do not use ROM Monitor mode. ROM Monitor mode is used only in special circumstances, such as reinstalling the entire software set, resetting the router password, or specifying a configuration file to use at startup. It is sometimes called ROMMON because of the CLI prompt in ROM Monitor mode. The ROM Monitor software is also called the boot software, boot image, or boot helper. 在正常操作期间，用户不使用ROM Monitor模式。ROM Monitor模式仅在特殊情况下使用，例如重新安装整个软件集，重置路由器密码或指定要在以下位置使用的配置文件启动。由于ROM Monitor模式下的命令行提示符，有时将其称为ROMMON。ROM Monitor软件也称为启动软件，启动映像或启动帮助器。

rommon 1 > IP_ADDRESS=2.2.2.1                     //  use the first interface 使用第一个接口

rommon 2 > IP_SUBNET_MASK=255.255.255.0

rommon 3 > DEFAULT_GATEWAY=2.2.2.2

rommon 4 > TFTP_SERVER=2.2.2.2

rommon 5 > TFTP_FILE=c2900-universalk9-mz.SPA.155-3.M4a.bin

rommon 6 > tftpdnld

IP_ADDRESS: 2.2.2.1

IP_SUBNET_MASK: 255.255.255.0

DEFAULT_GATEWAY: 2.2.2.2

TFTP_SERVER: 2.2.2.2

TFTP_FILE: c2900-universalk9-mz.SPA.155-3.M4a.bin

Invoke this command for disaster recovery only.

WARNING: all existing data in all partitions on flash will be lost!

rommon 7 > reset

# Cisco IOS File System (IFS) 思科IOS文件系统

- dir
- copy
- show file
- delete
- erase
- cd/pwd
- mkdir/rmdir

# CLI Shortcut 命令行快捷键

- Google "Cisco CLI Shortcut"
- Ctrl + A
- Ctrl + E
- Ctrl + U
- Up Arrow
- Down Arrow