

IOS Detection (Instructor Version)

Instructor Note: Red font color or Gray highlights indicate text that appears in the instructor copy only.

Objective

Manage IOS system image files to increase network reliability in a small- to medium-sized business network.

Students will compare and contrast different router and switch hardware capabilities and IOS software basics. Groups of two students will be created for this activity.

Scenario

Your school or university has just received a donation of Cisco routers and switches. You transport them from your shipping and receiving department to your Cisco networking lab and start sorting them into switch and router groups.

After all the equipment has been sorted, you cannot wait to turn them on to see if they really work. Once you do power them up, you find out that all of the equipment operating systems have been erased! Because computers use different operating systems, you think that routers and switches also use different internetworking operating systems (or IOS) as well.

One good thing you notice is that most of the routers are either models 1941 or 2911. The switch models are either 2960 or 3560. You have worked with this type of equipment in the past and know you can research which IOS is appropriate to purchase for each model. You also know that documenting hardware features, serial numbers, and MAC addresses is very important to do whenever you add networking equipment to any network topology.

Refer to the accompanying PDF for directions on how to proceed with this modeling activity. Save your work and share the data you found with another group or the entire class.

Resources

- Packet Tracer software
- Internet connectivity

Directions

Step 1: Create a switch and router matrix for documenting hardware and software information.

- a. Design a matrix to record information about your two router models, 1941 and 2911. Both models are included in your Packet Tracer software. Record the following information in your matrix:
 - 1) The system serial numbers of the equipment
 - 2) The Cisco IOS type and version shown for each model
 - 3) The name of the preferred system image file
 - 4) How much NVRAM is present on the routers
 - 5) How many and which types of interfaces are built in to the routers
- b. Design a matrix to record information about your two switch models, 2960 and 3560, from Packet Tracer. Record the following information in your matrix:
 - 1) The system serial number for this type of equipment

- 2) The Cisco IOS type and version shown for these models
- 3) The name of the preferred SW image
- 4) How much NVRAM is present on the models
- 5) How many and which types of interfaces are built in to the switches

Step 2: Open Packet Tracer.

- a. Place one router and switch for each router and switch model you will research on the desktop.
- b. Open the router or switch models on Packet Tracer and use the **show version** command to display operating system and other information about your equipment.
- c. Read and record the information found in Step 2b to your matrix designs.

Step 3: Visit <http://www.cisco.com> for further model research content.

- a. Sign in to your account at cisco.com. If you do not have an account, create one.
- b. Research your router and switch models for additional feature sets available for the models.
- c. Note the physical hardware designs of the devices. Check if additional network cards can be installed; if so, record what types of cards can be installed for your router and switch models.
- d. Mention some of these facts below in your two matrix designs.

Step 4: Document the information you found to share with the class or another group of students.

Instructor Resource Example

The information listed in this section is only one depiction of what students could see as a result of this activity. Other designs may vary per student groups.

Cisco 1941 Router	
System device serial number	FTX152433T9 (each unit will show a different serial number)
IOS type & version	C1900 Software (C1900-UNIVERSALK9-M), Version 15.1(4)M4
Preferred system image file	flash0:c1900-universalk9-mz.SPA.151-1.M4.bin
NVRAM default	255 (256)K preferred
Number and types of built-in router interfaces	2 Gigabit Ethernet interfaces, with expandability options via WIC cards

Cisco 2911 Router	
System device serial number	FTX1524MH47 (each unit will show a different serial number)
IOS type & version	C2900 Software (C2900-UNIVERSALK9-M), Version 15.1(4)M4
Preferred system image file	C2900 Software (C2900-UNIVERSALK9-M), Version 15.1(4)M4
NVRAM default	255 (256)K preferred
Number and types of built-in router interfaces	3 Gigabit Ethernet interfaces, with expandability options via WIC cards

Cisco 2960 Switch	
System device serial number	FOC1033Z1EY
IOS type & version	C2960 Boot Loader (C2960-HBOOT-M) Version 12.2(25r)FX
Preferred system image file	Version 12.2 C2960-LANBASE-M
NVRAM default	63488K
Number and types of built-in router interfaces	24 Fast Ethernet and 2 Gigabit Ethernet interfaces

Cisco 3560 Switch	
System device serial number	CAT1037RJF7
IOS type & version	C3560 Software (C3560-ADVIPSERVICESK9-M), Version 12.2(37)SE1
Preferred system image file	Version 12.2(37)SE1 C3560-ADVIPSERVICESK
NVRAM default	63488K
Number and types of built-in router interfaces	24 Fast Ethernet and 2 Gigabit Ethernet interfaces

Identify elements of the model that map to IT-related content:

- IOS types
- IOS names
- Show version
- NVRAM