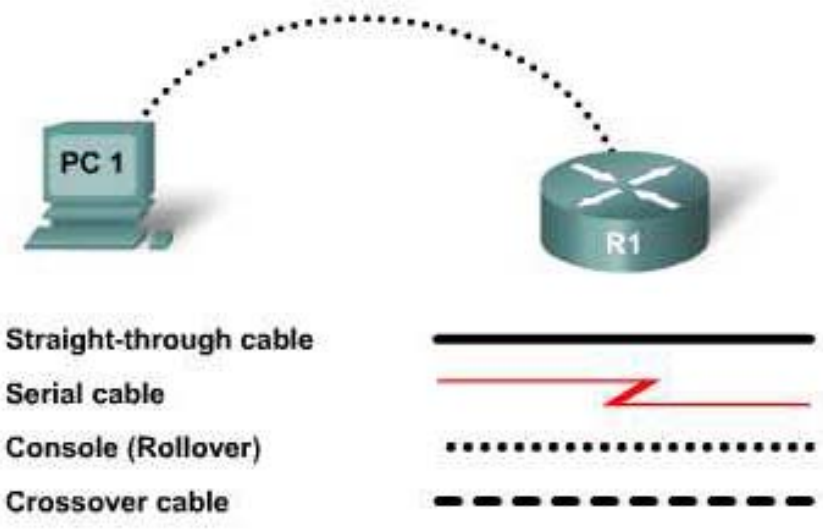
Lab 3.3.2 Determining the Router Hardware Options



Objectives

- Determine the correct hardware options available on a specific Cisco device.
- Determine which hardware options on a specific Cisco device are scalable.

Expected Results and Success Criteria

Before starting this lab, read through the tasks that you are expected to perform. What do you expect the result of performing these tasks will be?

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How is an understanding of networking device hardware capabilities useful in network administration?

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How does a network administrator know what hardware capabilities a networking device possesses?

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Background / Preparation

When considering expanding or upgrading a network, it is not always necessary to completely replace existing network devices. Some devices may be capable of being individually upgraded or expanded.

In this lab, you examine the hardware features of a Cisco 1841 Integrated Services Router and determine if it is suitable for upgrading to meet the potential requirements of a planned network expansion.

In the FilmCompany case study, there is a need to consider how the existing 1841 routers can be upgraded to reduce the cost of the network upgrade.

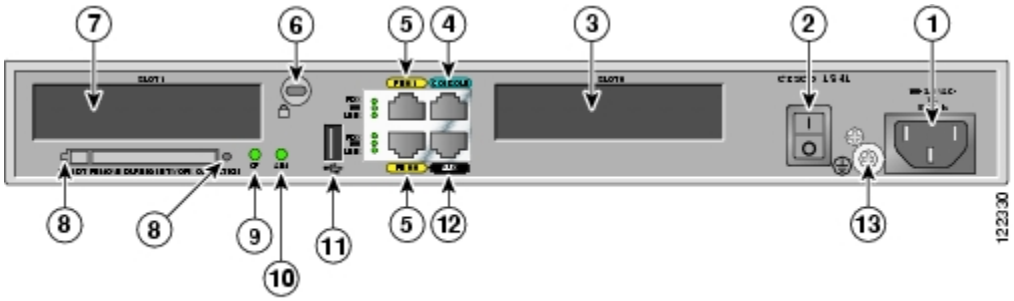
A physical examination of the router will be performed as well as an examination of its technical documentation. The examination details will be recorded for use in the planning and design of the network upgrade.

This lab is based on the 1841 ISR. Any router platform that supports adding hardware modules can be substituted for the 1841. The search criteria and results will vary accordingly.

Task 1: Inspect a Cisco 1841 ISR

Step 1: Physically inspect the external features of the router

Examine the router. In the table below, identify and match each item number in the figure with the description. In addition, record the number of each interface and port on the router with the description.



Item	Description	Item	Description
	CompactFlash (CF) LED		Chassis ground connection
	Kensington™ security slot		Input power connection
	Slot 0 (WIC, VWIC—data only, or HWIC)		Console port
	AIM LED		USB port
	Fast Ethernet interfaces and LEDs		Aux port
	On/Off switch		CompactFlash memory card slot
	Slot 1 (WIC, VWIC—data only, or HWIC)		

Is a module installed in Slot 0? _____

If yes, record the module and interface(s) type.

How many Fast Ethernet interfaces does the router have? _____

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Is a module installed in Slot 1? _____

If yes, record the module and interface(s) type.

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Which of the modules and ports have the potential to be upgraded to improve the router's capabilities?

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Step 2: Use IOS show commands to inspect the router

NOTE: If the PC used in this lab is also connected to your Academy LAN or to the Internet, ensure that you record the cable connections and TCP/IP settings so that these can be restored at the conclusion of the lab.

a. Referring to the topology diagram, connect the console (or rollover) cable to the console port on the router and the other cable end to the host computer with a DB-9 or DB-25 adapter to the COM 1 port. Ensure that power has been applied to both the host computer and router.

b. Establish a HyperTerminal or other terminal emulation program connection to the router.

c. From the privileged EXEC mode prompt of the terminal, issue **`show run`** and **`show flash:`** commands.

Record the number and type of interfaces.

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Record the details of the memory (DRAM, flash) modules.

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Step 3: Compare the physical and IOS inspections

Are there any differences between the physical and IOS inspections? _____

If yes, explain the reason for any differences and solutions.

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Task 2: Examine 1841 Router Hardware Options

After establishing the current hardware status of the router, examine the technical documentation to determine the potential for upgrading and growth.

Step 1: Access the Cisco.com documentation

a. Go to the website http://www.cisco.com.

b. In the Quick Links pane on the right, select **Documentation**.

c. Under **Select a category**, click **Routers**. Under **Select a product**, click the **Cisco 1800 Series Integrated Services Routers** link.

d. Review the documentation links displayed.

e. Under Product Literature, click the **Data Sheets** link. Note the range of data sheet documentation available.

f. Click **Cisco 1800 Series Integrated Services Routers: Cisco 1841 Router (Modular)**.

Step 2: Record the router hardware information

a. Read through the *Cisco 1800 Series Integrated Services Routers: Cisco 1841 Router (Modular)* document, noting the structure and format of the information.

b. From **Table 1, Architecture Features and Benefits of Cisco 1841 Router,** record the following information:

The number of different modules and interface cards that are supported:

Default memory capacity: _____ Cisco IOS versions supported: _____

c. From **Table 5, Product Specifications of Cisco 1841 Router**, locate and record the following specifications from the Architecture section.

DRAM Type	
DRAM capacity	
Flash memory	
Flash memory capacity	
Modular slots-total	
Modular slots for WAN access	
Modular slots for HWICs	
Modular slots for voice support	
Analog and digital voice support	
VoIP support	
Onboard Ethernet ports	
Onboard USB ports	

Console port	
Auxiliary port	
Onboard Advanced Integration Module (AIM) slots	

d. From the **Table 6, Modules and Interface Cards the Cisco 1841 Router Supports**, list the 10 different categories of interface card (WIC) supported by the 1841 platform.

e. From Table 6, what feature does the Advanced Integration Module (AIM) enable to be installed in an 1841 router? _____

Step 3: Consider possible hardware options

The 1841 ISR has removable and interchangeable modules. Various optional modules can be installed in the router to provide specific capabilities. These modules are installed either by inserting them into slots on the chassis, or by opening the chassis and plugging them into connectors inside.

Flash memory and interface cards fit into slots on the chassis and are installed and removed without opening the chassis.

There are three types of interface cards for the 1800 series modular routers:

- WAN interface cards (WICs)
- Voice WAN interface cards (VWICs – in data mode only on the Cisco 1841)
- High-speed WAN interface cards (HWICs)

The following components plug into connectors inside the chassis and are installed and removed only by opening the chassis:

- Advanced Integration Module (AIM)
- Synchronous dynamic RAM (SDRAM) small-outline dual in-line memory module (SODIMM)

Router Memory Specifications:

Description	Specification
SDRAM	128 MB, expandable to 384 MB; default is 128 MB
Flash memory	32, 64, or 128 MB; default is 32 MB
Boot/NVRAM	2/4 MB flash memory

Summarize the changes that are possible for this router. This information is important to have and consider when planning and designing the network upgrade.

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Step 4: Clean up

Erase any configurations and reload the router. Disconnect and store the cabling. For PC hosts that are normally connected to other networks (such as the school LAN or to the Internet), reconnect the appropriate cabling and restore the TCP/IP settings.

Task 3: Reflection

Network device capabilities are continuously developing. Consider the advantages of a modular platform over that of a device with a fixed hardware platform.

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