CHAPTER 3

First-Time Configuration

This chapter describes the actions to take before turning on your router for the first time. This chapter includes the following sections:

Understanding the Cisco MWR 2941 Router Interface Numbering

Each network interface on a Cisco MWR 2941 router is identified by a slot number and a port number.

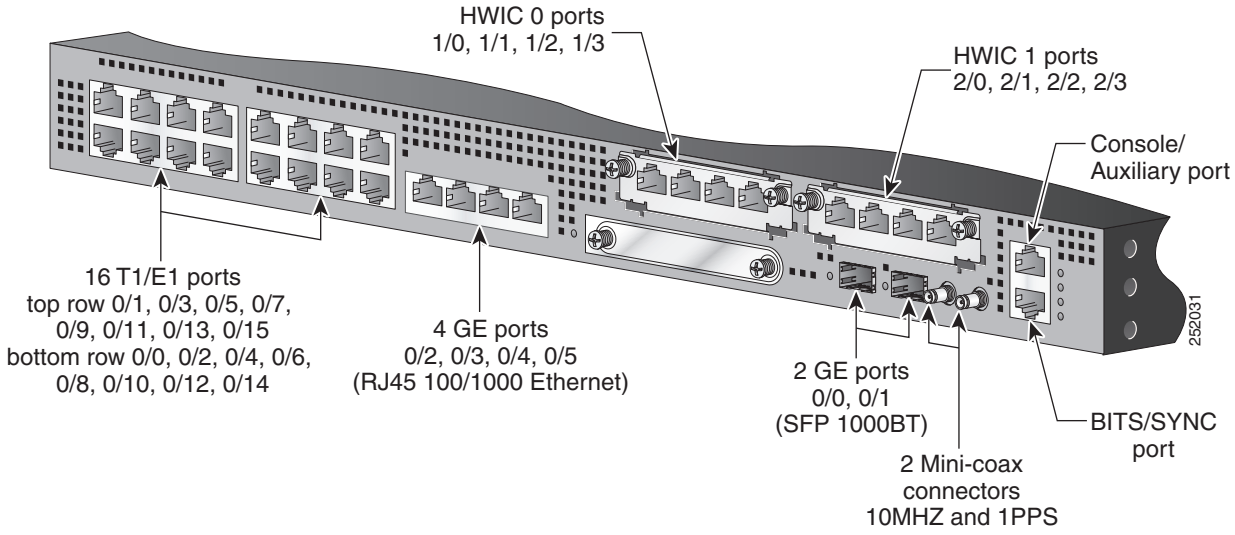
Figure 3-1 on page 3-2 shows an example of interface numbering on a Cisco MWR 2941 router:

- Two HWIC ports (HWICs are ordered separately)
- Two built-in Gigabit Ethernet small form-factor pluggable (SFP) interfaces (labeled GE0 and GE1)
- Four built-in Gigabit Ethernet interfaces (labeled L2–L5)
- 16 E1/T1 ports (labeled C1AL–C15AL)

Note The two HWIC cards shown in Figure 3-1 are not included with the Cisco MWR 2941 router; you must order them separately.

Note The mini-coax timing connectors shown in Figure 3-1 only apply to the Cisco MWR 2941-DC-A router; the Cisco MWR 2941-DC does not have these ports.

Figure 3-1 Cisco MWR 2941 Router Port Numbers



Slot and Port Numbering

The Cisco MWR 2941 router chassis contains the following interface types:

- 16 T1/E1 ports, labeled “T1/E1”
- 4 RJ-45 jacks for copper Ethernet ports, labeled “100/1000” Ethernet
- 2 HWIC slots, labeled “HWIC0” and “HWIC1”
- 1 compact FLASH Type-II connector, labeled “Compact Flash”
- 2 SFP connectors for optical GE ports, labeled “GE0” and “GE1”
- 2 miniature coaxial connectors for 10MHZ and 1PPS timing

Note Miniature coaxial timing connectors are not included on all versions of the Cisco MWR 2941. You can verify your hardware version with the VID label on the back of the router; routers labeled with a VID of V01 or V02 do not include the timing connectors, while routers with VID V03 and higher include the connectors.

- 1 RJ-45 connector for Console/Auxiliary, labeled “CON/AUX”
- 1 RJ-45 jack for BITS interface, labeled “BITS”

The logical slot numbers are 0 for all built-in interfaces.

The numbering format is:

```
Interface type Slot number/Interface number
```

Interface (port) numbers begin at logical 0 for each interface type.

Following is an explanation of the slot/port numbering:

- Logical interface numbering for the built-in T1/E1 ports runs from 0/0 through 0/15. Interfaces are hardwired; therefore, port 0 is always logical interface 0/0, port 1 is always logical interface 0/1, and so on. Built-in T1/E1 ports are numbered bottom to top, left to right (bottom row numbered 0-2-4-6-8-10-12-14, top row numbered 1-3-5-7-9-11-13-15).
- When the 2 HWIC slots are used to expand the T1/E1 port density to 20 or 24 ports, logical interface numbering continues from 1/0 through 1/3 and 2/0 through 2/3. Logical interfaces for HWIC0 are always 1/0 through 1/3 and logical interfaces for HWIC1 are always 2/0 through 2/3. Because the interfaces are hardwired, HWIC0 port 0 is always logical interface 1/0, HWIC0 port 1 is always logical interface 1/1, HWIC1 port 0 is always logical interface 2/0, HWIC1 port 1 is always logical interface 2/1, and so on. Ports are numbered left to right for each HWIC.
- Logical interface numbering for the built-in Ethernet ports runs from 0/0 through 0/5. Because the interfaces are hard-wired, ports correspond to logical interface numbers. For example, port 0 is always logical interface 0/0, and port 1 is always logical interface 0/1. SFP ports are numbered left to right, 0 and 1; 100/1000 Ethernet ports are numbered left to right, 2 through 5.
- Cisco IOS Setup Mode

Setup Mode

The **setup** mode guides you through creating a basic router configuration. If you prefer to configure the router manually or to configure a module or interface that is not included in **setup** mode, go to "Chapter 2, "Cisco IOS Software Basics" to familiarize yourself with the command-line interface (CLI).

Note Cisco Networking Services (CNS) is a collection of services that can provide remote configuration of Cisco IOS networking devices and remote execution of some command-line interface (CLI) commands. CNS allows a Cisco MWR 2941 deployed and powered on in the field to automatically download its configuration. For more information about CNS, see Cisco Networking Services (CNS), page 27-2.

Before Starting Your Router

Before you power on your router and begin using the **setup** mode, follow these steps:

Step 1 Set up the hardware and connect the console and network cables as described in the "Connecting Cables" section of the *Cisco MWR 2941-DC Router Hardware Installation Guide*.

Step 2 Configure your PC terminal emulation program for 9600 baud, 8 data bits, no parity, and 1 stop bit.

Using Setup Mode

The **setup** command facility appears in your PC terminal emulation program window. To create a basic configuration for your router, do the following:

- Complete the steps in the "Configuring Global Parameters" section on page 3-4
- Complete the steps in the "Completing the Configuration" section on page 3-6

Note If you make a mistake while using the setup command facility, you can exit the facility and run it again. Press **Ctrl-C**, and type **setup** at the enable mode prompt (`1900#`).

Configuring Global Parameters

Use the following procedure to configure global parameters.

Step 1 Power on the router. Messages appear in the terminal emulation program window.

Caution *Do not press any keys on the keyboard until the messages stop*. Any keys that you press during this time are interpreted as the first command entered after the messages stop, which might cause the router to power off and start over. Wait a few minutes. The messages stop automatically.

The messages look similar to the following:

Note The messages vary, depending on the Cisco IOS software image and interface modules in your router. This section is for reference only, and output might not match the messages on your console.

```
rommon 1 >boot
program load complete, entry point:0x80008000, size:0xc200

Initializing ATA monitor library.......
program load complete, entry point:0x80008000, size:0xc200

Initializing ATA monitor library.......
program load complete, entry point:0x80008000, size:0xc35eec
Self decompressing the image:
################################################################################
################################################################################
################################################################################
################################################################################
################################################################################
################################################################################
################################################################################
######################## [OK]

Smart Init is enabled
smart init is sizing iomem
    ID  MEMORY_REQTYPE
0035C   0X005F3C00 MWR2941 Mainboard
        0X000F3BB0 public buffer pools
        0X00843000 public particle pools
TOTAL:  0X06894CB0

If any of the above Memory requirements are "UNKNOWN", you may be using an
unsupported configuration or there is a software problem and system operation
may be compromised.
Rounded IOMEM up to: 104Mb.
Using 20 percent iomem. [104Mb/512Mb]

               Restricted Rights Legend

Use, duplication, or disclosure by the Government is
```

```
subject to restrictions as set forth in subparagraph
(c) of the Commercial Computer Software - Restricted
Rights clause at FAR sec. 52.227-19 and subparagraph
(c) (1) (ii) of the Rights in Technical Data and Computer
Software clause at DFARS sec. 252.227-7013.

           cisco Systems, Inc.
           170 West Tasman Drive
           San Jose, California 95134-1706

Cisco IOS Software, 2900 Software (MWR2900-IPRAN-M),
Experimental Version 12.4(20050412:070057),
Copyright (c) 1986-2009 by Cisco Systems, Inc.
Compiled Sat 10-Jan-09 03:19 by cbrezove
Image text-base:0x60008F60, data-base:0x6106A000

Cisco Systems, Inc. MWR-2941-DC (MPC8347E) processor (revision 0x400) with 41719
6K/107092K bytes of memory.
Processor board ID
MPC8347E CPU Rev: Part Number 0x8032, Revision ID 0x300
1 RTM Module: ASM-M2900-TOP daughter card
6 Gigabit Ethernet interfaces
1 terminal line
128K bytes of non-volatile configuration memory.
125440K bytes of ATA CompactFlash (Read/Write)

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

At any point you may enter a question mark '?' for help.
Use ctrl-c to abort configuration dialog at any prompt.
Default settings are in square brackets '[]'.
```

Step 2 To begin the initial configuration dialog, enter **yes** when the following message appears:

```
Basic management setup configures only enough connectivity
for management of the system, extended setup will ask you
to configure each interface on the system

Would you like to enter basic management setup? [yes/no]:yes
Configuring global parameters:
```

Step 3 Enter a hostname for the router (this example uses 2941-1).

```
Configuring global parameters:

 Enter host name [Router]: 2941-1
```

Step 4 Enter an enable secret password. This password is encrypted (more secure) and cannot be seen when viewing the configuration.

```
The enable secret is a password used to protect access to
privileged EXEC and configuration modes. This password, after
entered, becomes encrypted in the configuration.
Enter enable secret: ciscoenable
```

Note When you enter the enable secret password, the password is visible while you type the it. After you enter the password, it becomes encrypted in the configuration.

Step 5 Enter an enable password that is different from the enable secret password. This password is *not* encrypted (less secure) and can be seen when viewing the configuration.

```
The enable password is used when you do not specify an
enable secret password, with some older software versions, and
some boot images.
Enter enable password: ciscoenable
```

Step 6 To prevent unauthenticated access to the router through ports other than the console port, enter the virtual terminal password.

```
The virtual terminal password is used to protect
access to the router over a network interface.
Enter virtual terminal password: ciscoterminal
```

Step 7 Respond to the following prompts as appropriate for your network:

```
Configure SNMP Network Management? [yes]:
    Community string [public]: public
```

Step 8 The summary of interfaces appears. This list varies, depending on the network modules installed in your router.

```
Current interface summary

Any interface listed with OK? value "NO" does not have a valid configuration

Interface              IP-Address      OK? Method Status        Protocol
GigabitEthernet0/0 unassigned      NO unset up up
GigabitEthernet0/1 unassigned      NO unset up up
```

Step 9 Specify the interface to be used to connect to the network management system.

```
Enter interface name used to connect to the
management network from the above interface summary: GigabitEthernet0/0
```

Step 10 Configure the specified interface as prompted.

```
Configuring interface GigabitEthernet0/0:
    Configure IP on this interface? [no]:
```

Completing the Configuration

When you have provided all of the information prompted for by the setup command facility, the configuration appears. Messages similar to the following appear:

```
The following configuration command script was created:

!
hostname 2941-1
enable secret 5 $1$5fH0$Z6Pr5EgtR5iNJ2nBg3i6y1 enable password ciscoenable line vty 0 4
password ciscoenablesnmp-server community public !
no ip routing

!
interface GigabitEthernet0/1
shutdown
!
end
```

To complete your router configuration, do the following:

Step 1 The setup command facility displays the following prompt.

```
[0] Go to the IOS command prompt without saving this config.
[1] Return back to the setup without saving this config.
[2] Save this configuration to nvram and exit.

Enter your selection [2]: 2
Building configuration...
[OK]

Use the enabled mode 'configure' command to modify this configuration.


Press RETURN to get started!
```

If you answer:

- **no—**The configuration information that you entered is *not* saved, and you return to the router enable prompt. To return to the system configuration dialog, enter **setup**.
- **yes—**The configuration is saved, and you return to the EXEC prompt.

Step 2 When the messages stop displaying in your window, press **Return** to view the command line prompt.

The `2941-1>` prompt indicates that you are now at the CLI and you have just completed a basic router configuration.

Note The basic configuration is *not* a complete configuration.

Verifying the Cisco IOS Software Version

To verify the version of Cisco IOS software, use the **show version** command. The **show version** command displays the configuration of the system hardware, the software version, the names and sources of the configuration files, and the boot images.

Configuring the Hostname and Password

First configure the hostname and set an encrypted password. Configuring a hostname allows you to distinguish multiple Cisco routers from each other. Setting an encrypted password allows you to prevent unauthorized configuration changes.

Note In the following procedure, press the **Return** key after each step unless otherwise noted. At any time, you can exit the privileged level and return to the user level by entering **disable** at the `Router#` prompt.

To configure a hostname and to set an encrypted password, follow these steps:

Step 1 Enter enable mode.

```
Router> enable
```

The Password prompt appears. Enter your password.

```
Password: password
```

When the prompt changes to `Router`, you have entered enable mode.

Step 2 Enter global configuration mode.

```
Router# configure terminal

Enter configuration commands, one per line. End with CNTL/Z.
```

When the prompt changes to `Router(config)`, you have entered global configuration mode.

```
Router(config)#
```

Step 3 Change the name of the router to a meaningful name. Substitute your hostname for `Router`.

```
Router(config)# hostname Router

Router(config)#
```

Step 4 Enter an enable secret password. This password provides access to privileged EXEC mode. When you type **enable** at the EXEC prompt (`Router>`), you must enter the enable secret password to access configuration mode. Enter your secret password.

```
Router(config)# enable secret secret password
```

Step 5 Exit back to global configuration mode.

```
Router(config)# exit
```

Verifying the Hostname and Password

To verify that you have correctly configured the hostname and password, follow these steps.

Step 1 Enter the **show config** command:

```
Router# show config
Using 1888 out of 126968 bytes
!
version XX.X
.
.
.
!
hostname Router
!
enable secret 5 $1$60L4$X2JYOwoDc0.kqa1loO/w8/
.
.
.
```

Step 2 Check the hostname and encrypted password, which appear near the top of the command output.

Step 3 Exit global configuration mode and attempt to re-enter it using the new enable password:

```
Router# exit
.
.Router con0 is now available
Press RETURN to get started.
Router> enable
Password: password
Router#
```