



Configuration Register

This chapter describes the 16-bit configuration register in NVRAM in the Cisco 4000 series integrated services routers (ISRs).

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Information About Configuration Register

The Cisco 4000 Series ISR platforms have a 16-bit configuration register in NVRAM. Each bit has value 1 (on or set) or value 0 (off or clear), and each bit setting affects the router behavior upon the next reload power cycle.

You can use the configuration register to:

- Force the router to boot into the ROMMON (bootstrap program)
- Select a boot source and default boot filename
- Recover a lost password
- Change the console line speed

Table 1 describes the configuration register bits.

Table 1: Configuration Register Bit Descriptions

Bit Number	Hexadecimal	Description
00–03	0x0000–0x000F	Boot field. The boot field setting determines whether the router loads an operating system. See table for more information.
06	0x0040	Causes the system software to ignore the contents of NVRAM.

Bit Number	Hexadecimal	Description
07	0x0080	This bit is defined as OEM ¹ enabled. Note This bit is deprecated on the Cisco 4000 Series ISR platforms.
08	0x0100	This bit controls the console break key. Note This bit is deprecated on the Cisco 4000 Series ISR platforms.
09	0x0200	This bit controls the system boot. Note This bit is deprecated on the Cisco 4000 Series ISR platforms.
10	0x0400	This bit controls the host portion of the IP broadcast address. Note This bit is deprecated on the Cisco 4000 Series ISR platforms.
05, 11, 12	0x0020, 0x0800, 0x1000	This bit controls the console line speed. See Table 3 for the eight available bit combinations and console line speeds. Factory default is 9600 baud, where bits 5, 11, and 12 are all zero (clear). Note You cannot change the console line speed configuration register bits from the Cisco IOS CLI. You can, however, change these bits from the ROM monitor. Or, instead of changing the configuration register settings, you can set the console line speed through other Cisco IOS commands.
13	0x0200	This bit determines how the router responds to a network boot failure. Note This bit is deprecated on the Cisco 4000 Series ISR platforms.

Bit Number	Hexadecimal	Description
14	0x0400	This bit controls the network and subnet portions of the IP broadcast address. Note This bit is deprecated on the Cisco 4000 Series ISR platforms.
15	0x0800	This bit enables diagnostic messages and ignores the contents of NVRAM.

¹ Original Equipment Manufacturer



Note Deprecated bits will not take effect, regardless of the value.

Table 2 describes the boot field, which is the lowest four bits of the configuration register (bits 3, 2, 1, and 0). The boot field setting determines whether the router loads an operating system and where the router obtains the system image.

Table 2: Boot Field Configuration Register Bit Descriptions

Boot Field (Bits 3, 2, 1, and 0)	Description
0000 (0x0)	At the next power cycle or reload, the router boots to the ROMmon (bootstrap program). To use the ROMmon, you must use a terminal or PC that is connected to the router console port. For information about connecting the router to a PC or terminal, see the hardware installation guide for your router. In ROMmon mode, you must manually boot the system image or any other image by using the boot ROMmon command.
0001 - 1111 (0x01- 0xF)	At the next power cycle or reload, the router sequentially processes each boot system command in global configuration mode that is stored in the configuration file until the system boots successfully. If no boot system commands are stored in the configuration file, or if execution of these commands is unsuccessful, the router attempts to boot the first image file in flash memory.

Table 3 shows the console line speed for each setting combination of bits 5, 11, and 12.

Table 3: Console Line Speed Configuration Register Bit Combinations

Bit 5	Bit 11	Bit 12	Console Line Speed (baud)
1	1	1	115200
1	0	1	57600
1	1	0	38400
1	0	0	19200
0	0	0	9600
0	1	0	4800
0	1	1	2400
0	0	1	1200

Changing the Configuration Register Settings

This section describes how to modify the configuration register settings from the Cisco IOS CLI.

To change the configuration register settings from the Cisco IOS CLI, complete the following steps:

Procedure

-
- Step 1** Connect a terminal or PC to the router console port. If you need help, see the hardware installation guide for your router.
- Step 2** Configure your terminal or terminal emulation software for 9600 baud (default), 8 data bits, no parity, and 2 stop bits.
- Step 3** Power on the router.
- Step 4** If you are asked whether you would like to enter the initial dialog, answer **no**:
- ```
Would you like to enter the initial dialog? [yes]: no
```
- After a few seconds, the user EXEC prompt (`Router>`) appears.
- Step 5** Enter privileged EXEC mode by typing **enable** and, if prompted, enter your password:
- ```
Router> enable
Password: password
Router#
```
- Step 6** Enter global configuration mode:
- ```
Router# configure terminal
```
- Enter configuration commands, one per line.  
Edit with DELETE, CTRL/W, and CTRL/U; end with CTRL/Z
- Step 7** To change the configuration register settings, enter the **config-register value** command, where *value* is a hexadecimal number preceded by **0x**:

```
Router(config)# config-register 0x1
```

**Note**

The Cisco IOS software does not allow you to change the console speed bits directly with the **config-register** command. To change the console speed from the Cisco IOS CLI, see the Configuring the Console Line Speed section.

**Step 8** Exit global configuration mode:

```
Router(config)# end
Router#
```

**Step 9** Save the configuration changes to NVRAM:

```
Router# copy run start
```

**What to do next**

The new configuration register settings are saved to NVRAM, but they do not take effect until the next router reload or power cycle. Reload or power-cycle your device for the new configuration register settings to take effect.

## Configuring the Console Line Speed

The combined setting of bits 5, 11, and 12 determines the console line speed. You can modify these particular configuration register bits only from the ROM monitor.

To configure the console line speed from the Cisco IOS command-line interface, complete the following steps:

**SUMMARY STEPS**

1. **enable**
2. **configure terminal**
3. **line console 0**
4. **speed baud**

**DETAILED STEPS****Procedure**

|               | Command or Action                                                                                     | Purpose                                                        |
|---------------|-------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|
| <b>Step 1</b> | <b>enable</b><br><br><b>Example:</b><br>Router> <b>enable</b><br>Password: <b>password</b><br>Router# | Enables privileged EXEC mode. Enter your password if prompted. |
| <b>Step 2</b> | <b>configure terminal</b><br><br><b>Example:</b>                                                      | Enters global configuration mode.                              |

|               | Command or Action                                                                                             | Purpose                                                                                                                                                                                                                                        |
|---------------|---------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|               | Router# <b>configure terminal</b><br>Router(config)#                                                          |                                                                                                                                                                                                                                                |
| <b>Step 3</b> | <b>line console 0</b><br><br><b>Example:</b><br>Router(config)# <b>line console 0</b><br>Router(config-line)# | Specifies the console line and enters line configuration mode.                                                                                                                                                                                 |
| <b>Step 4</b> | <b>speed baud</b><br><br><b>Example:</b><br>Router(config-line)# <b>speed baud</b>                            | Specifies the console line speed. Possible values (in baud) are: <ul style="list-style-type: none"> <li>• 1200</li> <li>• 2400</li> <li>• 4800</li> <li>• 9600</li> <li>• 19200</li> <li>• 38400</li> <li>• 57600</li> <li>• 115200</li> </ul> |

## Verifying the Configuration Register Settings

To display the configuration register settings that are currently in effect and the settings that will be used at the next router reload, enter the **show version** command in privileged EXEC mode.

The configuration register settings are displayed in the last line of the **show version** command output:

```
Configuration register is 0x142 (will be 0x142 at next reload)
```