SPE and Firmware Download

This document contains the following sections:

Feature Overview

The **spe** configuration command enables you to download firmware into your modems. When the access server is booted, the **spe** command displays the location from where the firmware image is downloaded to the Service Processing Element (SPE). An SPE unit is defined as the smallest software downloadable unit. For Microcom, an SPE is an individual modem; for MICA an SPE is either 6 or 12 modems, depending on whether the MICA module is single or double density.

Benefits

The **spe** command provides the capability to download firmware into your modems. The current setting of the SPE "firmware location" value is visible through the normal running-config or startup-config.

Restrictions

This command is available in Cisco IOS Release 12.0(4)XI1 or later releases.

Related Features and Technologies

- SPE Manager

Related Documents

- *Cisco AS5200 Universal Access Server Software Configuration Guide*
  http://www.cisco.com/univercd/cc/td/doc/product/access/acs_serv/as5200/52swcfg2/index.htm
- *Cisco AS5300 Software Configuration Guide*
  http://www.cisco.com/univercd/cc/td/doc/product/access/acs_serv/5300/53swcf2/index.htm
- *Cisco AS5800 Access Server Software ICG*
  http://www.cisco.com/univercd/cc/td/doc/product/access/acs_serv/as5800/58sw_icg/index.htm
- *Dial Solutions Quick Configuration Guide (Cisco IOS Release 12.0)*
  http://www.cisco.com/univercd/cc/td/doc/product/software/ios120/12supdoc/dsqcg3/index.htm
- *Release Notes for Cisco MICA Portware on Cisco AS5200/AS5300/3600 Version 2.7.1.0 Cisco IOS 12.0/V.110 Support*
  http://www.cisco.com/univercd/cc/td/doc/product/access/acs_serv/5300/mod_info/53fw_pw/53micaa/rnv110bp.htm#xtocid214860
- *Firmware Release Notes Version 5.2.30 for Cisco Universal Access Server 56K 12-Port Modem Modules*
  http://www.cisco.com/univercd/cc/td/doc/product/access/acs_serv/5300/mod_info/53fw_pw/5356ka/mcv9_fw3.htm

Supported Platforms

These platforms support the **spe** command in Network Access Server (NAS) stand-alone and group scenarios for Cisco IOS Release 12.0(4)XI1:

- Cisco AS5200
- Cisco AS5300
- Cisco AS5800

Supported MIBs and RFCs

MIBs

- No MIBs supported for this feature.

RFCs

- No RFCs supported for this feature.

Prerequisites

- Cisco IOS Release 12.0(4)XI1 or later must be running on the NAS.

Configuration Tasks

Perform the following tasks to download your firmware.

Configuring for the spe Command

Step	Command	Purpose
1	Router# **configure terminal** Enter configuration commands, one per line. End with CNTL/Z.	Enter the global configuration mode.
2	Router(config)# **spe <slot>/<spe_begin> <slot>/<spe_end>**	Enter the spe configuration mode

MICA spe Command Portware Download for the Cisco AS5200 and AS5300

The **copy xxxx modem** command will no longer be available for MICA portware and 56K Microcom modem firmware download beginning with Cisco IOS Release 12.0(4)XI1 and later releases. An error message appears if you enter this command; you are prompted to use the new **spe** command.

To download modem portware/firmware by using the **spe** command, do the following steps:

Step 1 Download portware by using the following **spe** command format:

```
Router# configure terminal
Router(config)#spe <slot>/<spe_begin> <slot>/<spe_end>
Router(config-spe)#firmware location <the_filesystem:filename>
```

For example, the following example shows an SPE download loading Slot 1 SPE 5 with <variable>:

```
Router # configure terminal

Router (config)#spe 1/5 1/5
Router (config-spe)#firmware location flash:<variable>
```

Step 2 Press **CNTL Z** to complete the configuration.

The download occurs when the modems become available. The **spe** command generates NVRAM modem download and configuration file entries as well.

Note Microcom systems using V.34 and V.110 must continue using the **copy xxxx modem** command. Entering the **spe** command displays a message of it not being supported. On boot up, because these modems do not require download, the command displays the location of the firmware as “feature_card_flash”. For example:

```
spe 1/0 2/23
firmware location feature_card_flash
```

Note The **spe** command is a configuration command—save it by using the **write memory** command; otherwise, the configuration is not saved and the specified firmware will not download after the next reboot.

Microcom spe Command Portware Download for the Cisco AS5200 and AS5300

For 56K systems running Cisco IOS Release 12.0(4)XI1, 12.0(5)T, and later releases, the new **spe** command is available for firmware download.

Note If you enter the **copy xxxx modem** command on a 56K system, an error message appears, and you are prompted to use the new **spe** command.

To download modem portware/firmware by using the **spe** command, do the following steps:

Step 1 Enter the **spe** command, one configuration command per line, in the following format:

```
Router# configure terminal
Router(config)#spe <slot>/<spe_begin> <slot>/<spe_end>
Router(config-spe)#firmware location <the_filesystem:filename>
```

For example, the following example shows an SPE download loading Slot 1 (that is, all modems on the feature card). The modem code resides on the Flash memory, and the modem code filename is mcom-modem-code.5.2.30.bin.

```
Router (config)# spe 1/0 1/23
Router (config-spe)# firmware location flash:mcom-modem-code.5.2.30.bin
```

Step 2 Press **CNTL z** to complete the configuration and return to the router prompt:

```
Router (config-spe) # CNTL z
Router #
```

Step 3 Copy the configuration from NVRAM into running RAM:

```
Router # copy running-config startup-config
```

Download occurs when the modems become available.

Note The **spe** command is a configuration command—save it by using the **write memory** command; otherwise, the configuration is not saved and the specified firmware will not download after the next reboot.

SPE Range Description

- SPE ranges cannot span across the following parameters:
  - Empty slots.
  - Empty SPE units.
  - SPEs of different firmware attributes in adjacent slots.

Note The typical T1 system for the Cisco AS5300 uses only 8 MICA modules, so even adjacent slots having MICA modems appear with a 2 SPE range entry (they typically have 8 modules; slots 9 and 10 are empty).

- SPE ranges must represent the same hardware.

- New SPEs inserted in place of old ones with higher SPE capacity:
  - Break the SPE range if the original SPE is non-default.
  - Expand the range if the original SPE is the default.
- New SPEs inserted in place of old ones with lower SPE capacity shrink the SPE range.
- Entering “no firmware location” triggers a download of the default firmware.

Troubleshooting

To troubleshoot the spe function, use the following information:

Command Reference

This section documents new commands. All other commands used with this feature are documented in the Cisco IOS Release 12.0 command references.

- **spe**
- **firmware location**
- **show modem version**

spe

Use the **spe** configuration command to download firmware into the modems.

spe *shelf*/*slot*/*module shelf*/*slot*/*module*

Syntax Description

shelf/*slot*/*module*	Enter the shelf number, slot number, and module number separated by slashes as shown. For Cisco AS5200 and AS5300, enter only the slot/module number.

Default

None.

Command Mode

Global configuration

Command History

Release	Modification
12.0(4)XI1	This command was introduced.
12.0(5)T	This document changed to reflect new information on the command.

Usage Guidelines

The **spe** global configuration command enables the SPE configuration mode. Configure your SPE by specifying a slot and an SPE associated with the slot; or, you can configure a range of SPEs by specifying the first and last SPE in the range. On AS5800 platforms, you must also specify the shelf associated with the slot and SPE.

When the access server is booted, the **spe** global configuration command specifies the location from where the firmware image is downloaded to the SPE. If the **spe** configuration command is used to download the firmware from flash memory and then subsequently the **no** version of the exact command is entered, then the **spe** command downloads the embedded firmware.

The **spe** command was first supported in Cisco IOS Release 12.0(4)XI1 along with the Resource Pool Management feature (although it can be used independently). For earlier images, use the **copy** command on the Cisco AS5200 and Cisco AS5300, and the **modem-pool** command on the Cisco AS5800. For the Cisco IOS Release 12.0(5)T images, the **copy xxx modem** (where **xxx** can be **flash** or **tftp**) will be disabled for firmware and newer version of Microcom modems (i.e., 56Kbps). Old V.34 Microcom modems still use the **copy** command for downloading in Cisco IOS Release 12.0(5)T images. For Cisco AS5800, downloading firmware through the **modem-pool** command is disabled.

Note Use this command when traffic is low since the **spe** download does not begin until the modems have no active calls.

Note The **spe** command is a configuration command—save it using the **write memory** command, otherwise the configuration will not be saved. If the configuration is not saved, the downloading of the specified firmware will not occur after the next reboot.

Examples

```
Router #
Router # configuration terminal
Enter configuration commands, one per line.  End with CNTL/Z.
Router(config)# spe 1/2 1/4
Router(config-spe) #
```

Related Commands

Command	Description
request dialin	Specifies a dial-in L2F or L2TP tunnel to a remote peer if a dial-in request is received for a specified domain or Dialed Number Information Service (DNIS).
firmware location	Specifies the location the firmware is to be downloaded from.

firmware location

Use the **firmware location** spe configuration command to download firmware into the modems. The **no** form of the command reverts the router back to the system embedded image default.

firmware location {**system** | **flash**}**:***filename*

no firmware location {**system** | **flash**}**:***filename*

Syntax Description

system	If system is specified, the router loads the firmware from a built in file within the Cisco IOS image.
flash	If flash is specified, the router loads the firmware from the Flash NVRAM located within the router.
filename	The name of the desired firmware file.

Default

None.

Command Mode

spe configuration

Command History

Release	Modification
12.0(4)XI1	This command was introduced.
12.0(5)T	This document changed to reflect new information on the command.

Usage Guidelines

Use the **firmware location** spe configuration command to download firmware into your modems. The **no** form of the command reverts the router back to the system embedded default. When the access server is booted, the **firmware location** command displays the location for the firmware that is embedded in the IOS image. If the **firmware location** command was given to download a firmware image from flash and then the **no** version of the exact command is subsequently given, then the **firmware location** command will download the embedded firmware in the IOS.

The **firmware location** command was first supported in Cisco IOS Release 12.0(4)XI1 along with the Resource Pool Management feature (although it can be used independently). For earlier images, use the **copy** command. For the Cisco IOS Release 12.0(4)XI1 images, the **copy xxx modem** (where **xxx** can be **flash** or **tftp**) will be disabled for MICA modems and newer versions of Microcom modems (i.e., 56Kbps). Old V.34 Microcom modems still use the **copy** command for downloading in Cisco IOS Release 12.0(4)XI1 images.

Note Use of this command should be when traffic is low since the **firmware location** download will not begin until the modems have no active calls.

Note The **firmware location** command is a configuration command—if you do not save it using the **write memory** command, then the configuration will not be saved; hence, the downloading of the specified firmware will not occur after the next reboot.

Examples

Examples of **firmware location** spe configuration commands:

```
spe 1/0 1/1
 firmware location system:/ucode/mica_port_firmware
spe 1/2 1/4
 firmware location flash:portware.2620.ios
spe 1/5 1/7
 firmware location system:/ucode/mica_port_firmware
spe 2/0 2/1
 firmware location system:/ucode/microcom_firmware
spe 2/2 2/8
 firmware location flash:mcom-fw-dsp.5.1.9_47.22.bin
spe 2/9 2/9
 firmware location system:/ucode/microcom_firmware
spe 2/10 2/11
 firmware location flash:mcom-fw-dsp.5.1.9_47.22.bin
spe 2/12 2/23
 firmware location feature_card_flash
```

show modem version

To display version information about the modem firmware, controller, and DSP code (for 56K modems only), and boot code, enter the **show modem version** EXEC command. There is no **no** version of this command.

show modem version

Syntax

There are no keywords or variables for this command.

Default

This function is disabled as default.

Command History

Release	Modification
12.0(4)XI1	This command was modified to show spe features.
12.0(5)T	This document changed to reflect new information on the command.

Usage Guidelines

Examples

```
Router # show modem version

          Modem module     Firmware   Boot          DSP
  Mdm     Number           Rev        Rev           Rev
  1/0               0       2.6.1.0
  1/1               0       2.6.1.0
  1/2               0       2.6.1.0
  1/3               0       2.6.1.0
  1/4               0       2.6.1.0
  1/5               0       2.6.1.0
  1/6               1       2.6.1.0
  1/7               1       2.6.1.0
  1/8               1       2.6.1.0
  1/9               1       2.6.1.0
  1/10              1       2.6.1.0
  1/11              1       2.6.1.0
  1/12              2       2.6.1.0
  1/13              2       2.6.1.0
  1/14              2       2.6.1.0
  1/15              2       2.6.1.0
  1/16              2       2.6.1.0
  1/17              2       2.6.1.0
  1/18              3       2.6.1.0
  1/19              3       2.6.1.0
  1/20              3       2.6.1.0
  1/21              3       2.6.1.0
```

```
  1/22              3       2.6.1.0
  1/23              3       2.6.1.0
  1/24              4       2.6.1.0
  1/25              4       2.6.1.0
  1/26              4       2.6.1.0
  1/27              4       2.6.1.0
  1/28              4       2.6.1.0
  1/29              4       2.6.1.0
  1/30              5       2.6.1.0
  1/31              5       2.6.1.0
  1/32              5       2.6.1.0
  1/33              5       2.6.1.0
  1/34              5       2.6.1.0
  1/35              5       2.6.1.0
  1/36              6       2.6.1.0
  1/37              6       2.6.1.0
  1/38              6       2.6.1.0
  1/39              6       2.6.1.0
  1/40              6       2.6.1.0
  1/41              6       2.6.1.0
  1/42              7       2.6.1.0
  1/43              7       2.6.1.0
  1/44              7       2.6.1.0
  1/45              7       2.6.1.0
  1/46              7       2.6.1.0
  1/47              7       2.6.1.0
  2/0               0       5.0(40)  3.0(4)    22.0/47.0
  2/1               0       5.0(40)  3.0(4)    22.0/47.0
  2/2               0       5.1(9)   3.0(4)    22.0/47.0
  2/3               0       5.1(9)   3.0(4)    22.0/47.0
  2/4               0       5.1(9)   3.0(4)    22.0/47.0
  2/5               0       5.1(9)   3.0(4)    22.0/47.0
  2/6               0       5.1(9)   3.0(4)    22.0/47.0
  2/7               0       5.1(9)   3.0(4)    22.0/47.0
  2/8               0       5.1(9)   3.0(4)    22.0/47.0
  2/9               0       5.0(40)  3.0(4)    22.0/47.0
  2/10              0       5.1(9)   3.0(4)    22.0/47.0
  2/11              0       5.1(9)   3.0(4)    22.0/47.0
  2/12              1       2.3(6)   1.0(5)       -/-
  2/13              1       2.3(6)   1.0(5)       -/-
  2/14              1       2.3(6)   1.0(5)       -/-
  2/15              1       2.3(6)   1.0(5)       -/-
  2/16              1       2.3(6)   1.0(5)       -/-
  2/17              1       2.3(6)   1.0(5)       -/-
  2/18              1       2.3(6)   1.0(5)       -/-
  2/19              1       2.3(6)   1.0(5)       -/-
  2/20              1       2.3(6)   1.0(5)       -/-
  2/21              1       2.3(6)   1.0(5)       -/-
  2/22              1       2.3(6)   1.0(5)       -/-
  2/23              1       2.3(6)   1.0(5)       -/-

Modem board HW version info:

Slot 1:
Carrier card:
     number_of_ports= 48, max_modules= 10
Manufacture Cookie Info:
 EEPROM Type 0x0001, EEPROM Version 0x01, Board ID 0x47,
 Board Hardware Version 1.0, Item Number 73-2393-3,
 Board Revision A0, Serial Number 09361116,
 PLD/ISP Version 5.9, Manufacture Date 20-Jun-1998.

Modem Module 0
Manufacture Cookie Info:
 EEPROM Type 0x0101, EEPROM Version 0x01, Board ID 0x06,
```

```
 Board Hardware Version 1.0, Item Number 73-2522-2,
 Board Revision B48, Serial Number 06542204,
 PLD/ISP Version 255.255, Manufacture Date 23-Jun-1998.

Modem Module 1
Manufacture Cookie Info:
 EEPROM Type 0x0101, EEPROM Version 0x01, Board ID 0x06,
 Board Hardware Version 1.0, Item Number 73-2522-2,
 Board Revision B48, Serial Number 06478113,
 PLD/ISP Version 255.255, Manufacture Date 23-Jun-1998.

Modem Module 2
Manufacture Cookie Info:
 EEPROM Type 0x0101, EEPROM Version 0x01, Board ID 0x06,
 Board Hardware Version 1.0, Item Number 73-2522-2,
 Board Revision B48, Serial Number 06478079,
 PLD/ISP Version 255.255, Manufacture Date 23-Jun-1998.

Modem Module 3
Manufacture Cookie Info:
 EEPROM Type 0x0101, EEPROM Version 0x01, Board ID 0x06,
 Board Hardware Version 1.0, Item Number 73-2522-2,
 Board Revision B48, Serial Number 06429864,
 PLD/ISP Version 255.255, Manufacture Date 23-Jun-1998.

Modem Module 4
Manufacture Cookie Info:
 EEPROM Type 0x0101, EEPROM Version 0x01, Board ID 0x06,
 Board Hardware Version 1.0, Item Number 73-2522-2,
 Board Revision B48, Serial Number 06477882,
 PLD/ISP Version 255.255, Manufacture Date 23-Jun-1998.

Modem Module 5
Manufacture Cookie Info:
 EEPROM Type 0x0101, EEPROM Version 0x01, Board ID 0x06,
 Board Hardware Version 1.0, Item Number 73-2522-2,
 Board Revision B48, Serial Number 06543512,
 PLD/ISP Version 255.255, Manufacture Date 23-Jun-1998.

Modem Module 6
Manufacture Cookie Info:
 EEPROM Type 0x0101, EEPROM Version 0x01, Board ID 0x06,
 Board Hardware Version 1.0, Item Number 73-2522-2,
 Board Revision B48, Serial Number 05874553,
 PLD/ISP Version 255.255, Manufacture Date 23-Jun-1998.

Modem Module 7
Manufacture Cookie Info:
 EEPROM Type 0x0101, EEPROM Version 0x01, Board ID 0x06,
 Board Hardware Version 1.0, Item Number 73-2522-2,
 Board Revision B48, Serial Number 06478929,
 PLD/ISP Version 255.255, Manufacture Date 23-Jun-1998.

Modem Module 8

Modem Module 9

Slot 2:
   Carrier card:
     hw version= 2, pld= 0, number_of_ports= 24,
     max_modules= 2, max_oob_ports= 2
Manufacture Cookie Info:
 EEPROM Type 0x0001, EEPROM Version 0x01, Board ID 0x47,
 Board Hardware Version 1.0, Item Number 73-2522-2,
 Board Revision ^@2, Serial Number 05433763,
```

```
 PLD/ISP Version 255.255, Invalid Date code.

   Modem Module 0:
     number_of_modems= 12, option_bits= 1,
     rev_num= 03.30, vendor_model_number= 02,
     vendor_banner= Microcom MNP10 K56 Modem
   Modem Module 1:
     number_of_modems= 12, option_bits= 1,
     rev_num= 03.00, vendor_model_number= 01,
     vendor_banner= Microcom MNP10 V34 Modem
Router #
```

V.34 modems can only use the **copy** command and will not support the **spe** commands:

```
Router(config) # spe 2/12 2/14
Router(config-spe) # firmware location flash:mcom-fw-dsp.5.1.9_47.22.bin
Please use 'copy' command, firmware download not supported for this type of SPE 2/12
Please use 'copy' command, firmware download not supported for this type of SPE 2/13
Please use 'copy' command, firmware download not supported for this type of SPE 2/14
```

Example display where the **copy** command displays an error message on MICA modems and 56K Microcom modems:

```
Router # copy flash modem
Source filename [firmware]? flash:portware.2620.ios
Modem Numbers (<slot>/<port> | group <number> | all)? 1/14
'Copy' command is no longer valid for this type of port hardware, please use SPE
configuration command

Router # copy flash modem
Source filename [portware.2620.ios]? flash:mcom-fw-dsp.5.1.9_47.22.bin
Modem Numbers (<slot>/<port> | group <number> | all)? 2/7
'Copy' command is no longer valid for this type of port hardware, please use SPE
configuration command

!
resource-pool enable
!
resource-pool group resource rg_ss7_digital
 range limit 96
!
resource-pool group resource rg_ss7_v120
 range limit 96
!
resource-pool group resource rg_ss7_mica
 range port 1/0 1/47
!
resource-pool group resource rg_ss7_v24_analog
 range port 2/0 2/23
!
resource-pool group resource cisco_tac
 range limit 20
resource-pool aaa protocol group aaa-server
!
modem call-record terse
modem country mica usa
modem recovery action none

<snip config>
....
Router #
Router # conf t
Enter configuration commands, one per line.  End with CNTL/Z.
```

```
Router(config)# spe 1/2 1/4
Router(config-spe) # no firmware location flash:portware.2620.ios
Router(config-spe )#
*Jan  1 00:06:17.959:%MODEM-5-DL_START:Modem (1/12) started firmware download
*Jan  1 00:06:17.959:%MODEM-5-DL_START:Modem (1/13) started firmware download
*Jan  1 00:06:17.959:%MODEM-5-DL_START:Modem (1/14) started firmware download
*Jan  1 00:06:17.959:%MODEM-5-DL_START:Modem (1/15) started firmware download
*Jan  1 00:06:17.959:%MODEM-5-DL_START:Modem (1/16) started firmware download
*Jan  1 00:06:17.959:%MODEM-5-DL_START:Modem (1/17) started firmware download
Router(config-spe) # exit
Router(config) # exit
Router #
*Jan  1 00:06:22.995:%SYS-5-CONFIG_I:Configured from console by console
Router # wr t
Building configuration...

Current configuration:
!
version 12.0
service timestamps debug datetime msec
service timestamps log datetime msec
no service password-encryption
service internal
!
hostname Router
!
aaa new-model
aaa group server radius aaa-server
 server 1.2.3.4
!
enable secret 5 $1$Y9Xr$G1WXXBE3FwOesRb0/353XX
enable password xxx
!
spe 1/0 1/7
 firmware location system:/ucode/mica_port_firmwarespe 2/0 2/1
 firmware location system:/ucode/microcom_firmware
spe 2/2 2/8
 firmware location flash:mcom-fw-dsp.5.1.9_47.22.bin
spe 2/9 2/9
 firmware location system:/ucode/microcom_firmware
spe 2/10 2/11
 firmware location flash:mcom-fw-dsp.5.1.9_47.22.bin
spe 2/12 2/23
 firmware location feature_card_flash
!

Router # termination length 0
```

Glossary

NAS—Network access server, such as a Cisco AS5200, AS5300, or AS5800.

SPE—Service Processing Element.

Note For a list of other internetworking terms, see the Internetworking Terms and Acronyms document available on the Documentation CD-ROM and Cisco Connection Online (CCO) at the following URL: http://www.cisco.com/univercd/cc/td/doc/cisintwk/ita/index.htm.