

Channel Port Adapter

Feature Summary

The Channel Port Adapter (CPA) expands the value of Cisco's Channel Interface Processor (CIP) solution. The CIP continues to be the industry's premier high-performance mainframe channel connect solution. The CPA extends the CIP architecture to customers requiring mid-range mainframe channel connectivity.

Note The Cisco Mainframe Channel Connection (CMCC) product family includes the CIP on the Cisco 7000 and Cisco 7500-series routers and the ESCON Channel Port Adapter (ECPA) and the Parallel Channel Port Adapter (PCPA) on the Cisco 7200-series routers. In this document, references to CPA correspond to both the ECPA and the PCPA.

The CPA is a standard single-width port adapter supporting ESCON or Parallel (also known as Bus-and-Tag) channel interfaces to IBM and IBM-compatible mainframes.

The CPA comes with a default of 16 MB of RAM. Customers may upgrade to 32 MB of RAM before the CPA is shipped from Cisco or as a field upgrade after the CPA has been installed.

Both the CPA and the CIP support the same set of channel features. The same source code is utilized by the CPA and CIP for software features which include CSNA, CLAW, Offload, CMPC, and the TN3270 Server.

The only difference between channel software applications running on the CIP and the CPA is performance and capacity. The CIP will typically have higher performance and capacity than the CPA because the CIP has more memory (128 MB of RAM compared to 32 MB for the CPA) and a faster internal bus. The CIP also supports two physical channel interfaces, providing a higher channel throughput than the CPA. The CPA has one physical channel interface.

Benefits

Each CPA provides a single channel interface and is supported on the Cisco 7200-series routers. In some situations, this eliminates the need for a separate front-end processor (FEP). The ESCON CPA contains a single ESCON I/O connector and the Parallel CPA (PCPA) contains a single ASIC Bob connector.

Note The Cisco 7200-series router supports online insertion and removal (OIR), which allows you to install or remove port adapters while the system is operating.

The key benefits of the Cisco CPA in a Cisco 7200-series router are as follows:

- Cost-effective—Both the CPA and Cisco 7200-series routers provide industry-leading price performance.
- Extends current product offering to mid-range—Offers a midrange alternative to the high-performance, high-end Cisco CIP and Cisco 7500-series router solution.
- Simplified migration path—CPA and CIP microcode support the same features and applications, enabling seamless migration for network expansion.
- Flexibility of Cisco 7200 platform available to channel—Extends capabilities of the popular router platform for distributed mainframe networks in branch offices, redundant channel connectivity, and LAN-WAN/mainframe traffic consolidation.

Restrictions

The ECPA is a high-speed port adapter. (A Fast Ethernet port adapter is an example of another type of high-speed port adapter.) A single Cisco 7200-series router can support up to three high-speed port adapters.

The CPA is supported in Cisco IOS Release 11.3T and later.

Platforms

This feature is supported on the following platform:

- Cisco 7200-series router

Supported MIBs and RFCs

Cisco IOS provides SNMP support for the CPA and the features supported on the CPA.

The CPA has SNMP MIBs and can be managed from the CiscoWorks suite of management applications. Also, NetView has access to the CPA with CiscoWorks Blue Maps.

For descriptions of supported MIBs and how to use MIBs, see Cisco's MIB website on CCO at <http://www.cisco.com/public/sw-center/netmgmt/cmtk/mibs.shtml>.

Configuration Tasks

Except for one task that enables the user to load a specific microcode onto the CPA, all the tasks and commands for configuring the CPA are the same as those for configuring the CIP.

To configure the CPA, perform the task described in the following section, then refer to the chapter “Configuring Cisco Mainframe Channel Connection Adapters” in the Cisco IOS Release 12.0 *Bridging and IBM Networking Configuration Guide*.

Note Some IBM channel attach software features are configured on a *virtual port*. On the CIP cards installed in a Cisco 7500-series router, there are up to two physical ports, numbered 0 and 1, and a virtual port, numbered 2. However, on the CPA installed in a Cisco 7200-series router, the single physical port and the virtual port are configured using the same port number identifier, number 0.

Load the Microcode Image

Note This task is similar to the task “Load the CIP Image” described in the “Configuring IBM Channel Attach” chapter in the Cisco IOS Release 11.3 *Bridging and IBM Networking Configuration Guide*, but applies specifically to the CPA rather than the CIP.

The CPA microcode image is preloaded on Flash memory cards for Cisco 7200-series routers for Cisco IOS Release 11.3(3)T and later. You may be required to copy a new image to Flash memory when a new microcode image becomes available. Perform tasks in this section if you are upgrading or loading a microcode image other than the default.

To prepare the CPA, perform the following tasks beginning in privileged EXEC command mode::

Step	Command	Purpose
1	enable	Enter the privileged EXEC mode command interpreter:
2	copy tftp:filename [bootflash slot0: slot1:]filename	Copy the CPA microcode image from a server to either of the Flash memory cards. The source of the file is tftp:filename .
3	configure terminal	In privileged command mode, enter router configuration mode and specify that the console terminal will be the source of the configuration subcommands.
4	microcode {ecpa pcpa} filename	To load the microcode from an individual microcode image that is stored as a file on a Flash memory card, enter the microcode command, the processor type, the specific memory location of the CPA microcode image, and the exact argument for <i>filename</i> .
5	microcode reload or microcode reload {all {{ ecpa pcpa} slot number}}	Load the specified CPA image from router configuration mode or Force a microcode reload in privileged EXEC mode, without entering global configuration mode.
6	end	Exit configuration mode.
7	copy running-config startup-config	Save the running configuration as the new startup configuration in NVRAM.
8	show controllers channel slotport	Verify that the correct microcode is loaded according to the new instructions. The display indicates the currently loaded and running microcode version for each CPA display software and hardware information for the CPAs in your router.
9	show running-config	Verify the contents of the configuration file.
10	show microcode	Show the microcode images for downloadable hardware.

Configuration Examples

The following example copies a new image to Flash memory:

```
router#copy tftp:xcpa26-2 slot0:xcpa26-2

Address or name of remote host []? neptune
Translating "neptune"...domain server (10.20.30.10) [OK]
Destination filename [xcpa26-2]?
Accessing tftp://neptune/xcpa26-2...
Loading motto/xcpa26-2 from 10.20.30.10 (via FastEthernet0/0): !
Expanding slot0:xcpa26-2_kernel_xcpa (343148 bytes):
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
Expanding slot0:xcpa26-2_seg_802 (237848 bytes):
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
Expanding slot0:xcpa26-2_seg_cmpc (319960 bytes):
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
Expanding slot0:xcpa26-2_seg_csna (89856 bytes): !!!!!!!!!!!!!!!!!!!!!!!
Expanding slot0:xcpa26-2_seg_eca (461424 bytes):
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!
Expanding slot0:xcpa26-2_seg_offload (80344 bytes): !!!!!!!!!!!!!!!!!!!!!!!
Expanding slot0:xcpa26-2_seg_pca (69376 bytes): !!!!!!!!!!!!!!!!!!!!!!!
Expanding slot0:xcpa26-2_pseg_push (15936 bytes): !!!
Expanding slot0:xcpa26-2_seg_tcpip (158896 bytes): !!!!!!!!!!!!!!!!!!!!!!!
Expanding slot0:xcpa26-2_seg_tn3270 (601784 bytes):
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!
[OK - 2387456/4774912 bytes]
2387456 bytes copied in 110.588 secs (21704 bytes/sec)
router#
```

After copying a CMCC ucode image to flash memory, a directory command of the flash device displays the following:

```
Router#dir slot0:

Directory of slot0:/
 1  -rw-          1   Aug 18 1998 12:29:12  xcpa26-2
 2  -rw-       344438  Aug 18 1998 12:29:12  xcpa26-2.kernel_xcpa
 3  -rw-       237848  Aug 18 1998 12:29:37  xcpa26-2.seg_802
 4  -rw-       319960  Aug 18 1998 12:29:56  xcpa26-2.seg_cmpc
 5  -rw-        89856  Aug 18 1998 12:30:15  xcpa26-2.seg_csna
 6  -rw-       461424  Aug 18 1998 12:30:20  xcpa26-2.seg_eca
 7  -rw-        80344  Aug 18 1998 12:31:03  xcpa26-2.seg_offload
 8  -rw-        69376  Aug 18 1998 12:31:07  xcpa26-2.seg_pca
 9  -rw-        15936  Aug 18 1998 12:31:11  xcpa26-2.seg_push
10  -rw-       158896  Aug 18 1998 12:31:12  xcpa26-2.seg_tcpip
11  -rw-       601784  Aug 18 1998 12:31:32  xcpa26-2.seg_tn3270
7995392 bytes total (5614116 bytes free)
```

The following example loads the microcode from an individual microcode image that is stored as a file in Flash memory:

```
Router(config)# microcode ecpa slot0:xcpa26-2
Router(config)# microcode reload
```

Note The **microcode reload** command is written automatically in the configuration file following the **microcode ecpa** or **microcode pcpa** command whenever you modify the system default to load a microcode image.

Command Reference

This section documents new or modified commands. All other commands used with this feature are documented in the Cisco IOS Release 11.3 command references.

- **microcode**
- **microcode reload**
- **show controllers channel**
- **show microcode**

microcode

Use the **microcode** global configuration command to configure a default override for the microcode that is downloaded to the hardware. Use the **no** form of this command to revert to the default microcode for the current running version of the Cisco IOS.

```
microcode {ecpa | pcpa} location  
no microcode {ecpa | pcpa}
```

Syntax Description

ecpa	ESCON CPA.
pcpa	Parallel CPA.
<i>location</i>	Location of microcode, including the device and filename.

Default

If the default or **no** form of the command is specified, the driver uses the default microcode for the current running version of the Cisco IOS.

Command Mode

Global configuration

Usage Guidelines

This command first appeared in Cisco IOS Release 11.3T.

If there are any default overrides when the configuration is written, then the **microcode reload** command will be written to the configuration automatically. This action enables the configured microcode to be downloaded at system startup.

Example

The following example instructs the IOS to load the microcode from an individual microcode image that is stored as a file on the flash card inserted in flash card slot0:

```
Router(config)# microcode ecpa slot0:xcpa26-1
```

Related Commands

```
microcode reload  
show microcode
```

microcode reload

Use the microcode reload privileged EXEC command to force a microcode reload.

```
microcode reload {all | ecpa [slot slot#] | pcpa [slot slot#]}
```

Syntax Description

all	Reset and reload all hardware types that support downloadable microcode.
ecpa	Reset and reload only those slots that contain hardware type ecpa .
pcpa	Reset and reload only those slots that contain hardware type pcpa .
slot <i>slot#</i>	(Optional) Reset and reload only the slot specified, and only if it contains the hardware specified.

Default

There is no default setting.

Command Mode

Privileged EXEC

Usage Guidelines

This command first appeared in Cisco IOS Release 11.3T.

Hardware types that do not support downloadable microcode are unaffected by the **microcode reload all** command.

You will be prompted for confirmation before the **microcode reload** command is executed.

Example

The following example reloads the ESCON CPA microcode in slot 5 with the currently configured microcode:

```
microcode reload ecpa slot 5
```

Related Commands

microcode
microcode reload (global)
show microcode

show controllers channel

Use the **show controllers channel EXEC** command to display CPA-specific information, including the currently loaded microcode.

```
show controllers channel [slot/port]
```

Syntax Description

slot (Optional) The specific slot number.

port The specific port number.

Command Mode

EXEC

Usage Guidelines

This command first appeared in Cisco IOS Release 11.3T.

Sample Display

The following display lists the output of the **show controllers channel** command:

```
Router> show controllers channel 5/0
ECPA 5, hardware version 1.0, microcode version 26.0
  Mailbox commands: 0 forevers, 0 max elapsed usecs
  Microcode loaded from flash slot0:xcpa26-0_kernel_xcpa
  Loaded:seg_eca      Rev. 0    Compiled by cip-release on 01-Apr-98
  EPROM version 1.0, VPLD version 1.1
  ECA0: hw version 255, microcode version C50602D1
  Load metrics:
    Memory      sram 2964552/4096K, dram 11552952/16M
    CPU         1m  0%, 5m  0%, 60m  0%
    DMA        1m  0%, 5m  0%, 60m  0%
    ECA0       1m  0%, 5m  0%, 60m  0%
Interface Channel5/0
Hardware is Escon Channel
HW Registers control status=0x0001EC07  LED control=0x00045DD5
HW Poll Register 4B05D4E0:[00000001]
Free buffer queues
  queue=0 max_entries=128 size=600 head=39 ring=4B095F00
  queue=1 max_entries=32 size=4520 head=31 ring=4B095E40
  queue=2 max_entries=64 size=4520 head=63 ring=4B096140
Tx Queues
  queue=0 head=0 tail=0 tx_cnt=0 tx_pakcnt=0
  max_entries=128 type=1 poll_index=0 ring=4B0963C0
  fspak buffers swapped out=0
  queue=1 head=31 tail=31 tx_cnt=0 tx_pakcnt=0
  max_entries=32 type=2 poll_index=1 ring=4B096280
  fspak buffers swapped out=0
Rx Queues
  max_entries=221 poll_index=3 head=57 ring=4B096800
  max packets per interrupt count = 0
```

show microcode

Use the show microcode EXEC command to show the default and configured microcode images for downloadable hardware.

show microcode

Syntax Description

This command has no arguments or keywords.

Command Mode

EXEC

Usage Guidelines

This command first appeared in Cisco IOS Release 10.0.

Sample Display

The output lists the hardware types that support microcode download. For each type, the default microcode image name is displayed. If there is a configured default override, that name is displayed as well.

```
router#show microcode
Microcode images for downloadable hardware
HW Type           Microcode image names
-----
ecpa      default   slot0:xcpa26-0
          configured slot0:xcpa26-2
pcpa      default   slot0:xcpa26-4
```

Related Commands

microcode

microcode reload

What to Do Next

Refer to the Cisco IOS Release 12.0 configuration and reference manuals for information on how to configure the various channel attach features.

