Interface Processors and Port Adapters for the Cisco 7000 Family

This chapter provides information about the interface processors and port adapters common to Cisco 7000 series, Cisco 7200 series, and Cisco 7500 series routers. The information is organized into the following sections:

- Product Overview
- Interface Processor Design
- AIP
- CIP2
- EIP
- FEIP
- FIP
- FSIP
- HIP
- MIP
- SMIP
- SSIP
- TRIP
- VIP2
- Port Adapters
- Interface Processor Cables
- Investment Protection Program

Product Overview

The Cisco 7000 series and Cisco 7500 series support any combination of Ethernet, Fast Ethernet, Token Ring, FDDI, serial, multichannel channel attachment, and HSSI interfaces. These interfaces are contained on modular interface processor boards, which provide a direct connection between Cisco's high-speed bus (or buses) and external networks. All interface processors are modular, self-contained 11 x 14-inch boards with one or more network interface connectors. All interface processors support online insertion and removal, which allows you to add, replace, or remove interface processors without interrupting the system power or entering any console commands.

Upgradeable microcode on each interface processor contains board-specific software instructions. These microcode images come bundled with Cisco IOS software, and the images load automatically when a new software image is installed. (New microcode provides additional features and enhancements to interface processors). Cisco optimizes each release of Cisco IOS software to work with the bundled microcode images.

Table 105 summarizes the interface processors described in this chapter.

Table 105 Cisco 7000 Series and Cisco 7500 Series Interface Processors

Interface Processor	Ports/Description
ATM	
CX-AIP-E3	1 E3 coaxial
CX-AIP-DS3	1 DS3 coaxial
CX-AIP-TM[1]	1 TAXI multimode
CX-AIP-SM[1]	1 SONET multimode
CX-AIP-SS[1]	1 SONET single-mode
Ethernet[1]	
CX-EIP2	2 10-Mbps
CX-EIP4	4 10-Mbps
CX-EIP6	6 10-Mbps
Fast Ethernet[2]	
CX-FEIP-1FX	1 100-Mbps
CX-FEIP-2FX	2 100-Mbps
CX-FEIP-1TX	1 100-Mbps
CX-FEIP-2TX	1 100-Mbps
FDDI[1]	
CX-FIP-MM[3]	1 multimode to multimode
CX-FIP-SS	1 single-mode to single-mode
CX-FIP-MS	1 multimode to single-mode
CX-FIP-SM	1 single-mode to multimode
HSSI[4]	
CX-HIP	1 52-Mbps
IBM Channel	
CX-CIP2-PCA1[5]	Single parallel (bus and tag) second-generation channel interface
CX-CIP2-PCA2[5]	Dual parallel (bus and tag) second-generation channel interface
CX-CIP2-ECA1	Single ESCON second-generation channel interface
CX-CIP2-ECA2	Dual ESCON second-generation channel interface
CX-CIP2-ECAP1[5]	Single ESCON second-generation channel interface and parallel channel interface

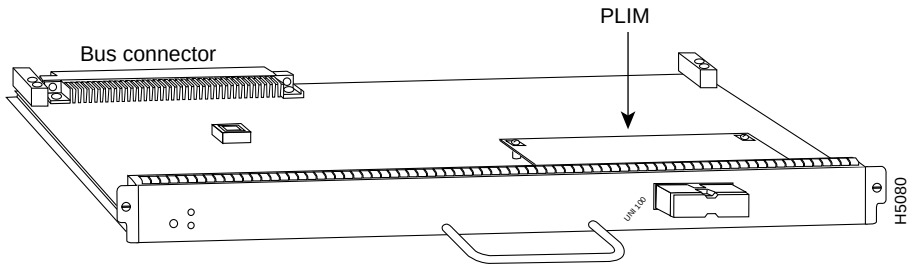
Interface Processor	Ports/Description
MultiChannel[6]	
CX-MIP-1CT1	1 channelized T1 or ISDN PRI
CX-MIP-2CT1	2 channelized T1 or ISDN PRI
CX-MIP-1CE1/75	1 channelized E1 or ISDN PRI, 75 ohm unbalanced
CX-MIP-1CE1/120	1 channelized E1 or ISDN PRI, 120 ohm balanced
CX-MIP-75/120	1 channelized E1, 75 ohm unbalanced or 120 ohm balanced
CX-MIP-2CE1/75	2 channelized E1 or ISDN PRI, 75 ohm unbalanced
CX-MIP-2CE1/120	2 channelized E1 or ISDN PRI, 120 ohm balanced
CX-SMIP-2CT1	2 channelized T1 or ISDN PRI
CX-SMIP-2CE1/75	2 channelized E1 or ISDN PRI, 75 ohm unbalanced
CX-SMIP-2CE1/120	2 channelized E1 or ISDN PRI, 120 ohm balanced
Serial [1, 7]	
CX-FSIP4	4 EIA-232, EIA-449, EIA-530, V.35, G.703/G.704
CX-FSIP8	8 EIA-232, EIA-449, EIA-530, V.35, G.703/G.704
CX-SSIP8	8 EIA-232, EIA-449, EIA-530, V.35, G.703/G.704
Token Ring	
CX-TRIP2	2 16-Mbps
CX-TRIP4	4 16-Mbps
VIP2[8]	**Using the following port adapters**
VIP2-10(=)	PA4-E (4 Ethernet 10BaseT ports)
VIP2-20(=)	PA8-E (8 Ethernet 10BaseT ports)
VIP2-40(=)	PA-FE-TX (1 100-Mbps Fast Ethernet)
VIP2-10/20-UPG	PA-FE-FX (1 100-Mbps Fast Ethernet)
VIP2-20/40-UPG	PA-4T (4 EIA-232, EIA-449, EIA-530, V.35, X.21, G.703/G.704
	PA-4R (4 Token Ring)
	PA-5EFL (5 Ethernet 10BaseFL)
	PA-F-MM (1 FDDI multimode)
	PA-F/FD-MM (1 full-duplex FDDI multimode)
	PA-F-SM (1 FDDI single-mode)
	PA-F/FD-SM (1 full-duplex FDDI single-mode)
	PA-H (1 HSSI port)
	PA-2H (2 HSSI ports)

1. For installation in a Cisco 7500 series or RSP7000 router, the board may be eligible for the "Investment Protection Program" described later in this chapter.
2. Requires Cisco IOS Release 11.0 or later.
3. Includes a mini-DIN-to-DIN transition cable (CAB-FMDD=).
4. HSSI cable required.
5. CX-CIP2-PCA1, CX-CIP2-PCA2, and CX-CIP2-ECAP1 ship with a cable that connects the CIP2 to cable CAB-PCA-VA. Cable CAB-PCA-VA provides the physical connection to the IBM bus and tag cable. Cable CAB-PCA-VA is required and is a standard IBM cable.
6. MultiChannel cables required.
7. Serial cables required.
8. Requires Cisco IOS release 11.1(472) or later.

Interface Processor Design

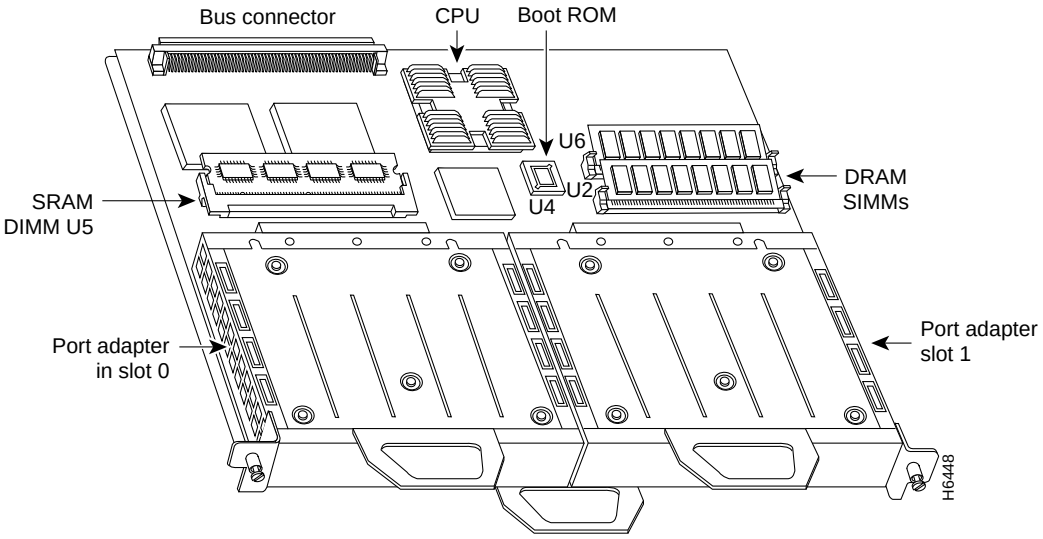
Some interface processors consist of a single motherboard, while others consist of a motherboard with a companion board such as a physical layer interface module (PLIM) or a port adapter. For example, the AIP shown in Figure 17 contains a PLIM, which determines the type of ATM connection.

Figure 17 AIP with PLIM



Interface processors such as the FSIP, FEIP, or VIP2 contain port adapters that attach to the motherboard. Figure 18 shows a VIP with two different port adapters (note that each port adapter contains a handle, which is omitted for clarity of the illustration).

Figure 18 Port Adapters on the VIP2 (Horizontal Orientation Shown)



The factory installs PLIM and port adapter configurations according to the interface processor ordered.

AIP

The AIP provides a native ATM interface for the Cisco 7000. The AIP is available with one port, and it can be ordered to support one of the following media:

- CX-AIP-TM—Transparent Asynchronous Transmitter/Receiver Interface (TAXI) multimode fiber-optic
- CX-AIP-SM—Synchronous Optical Network (SONET) multimode fiber-optic
- CX-AIP-SS—SONET single-mode fiber-optic
- CX-AIP-E3—E3 coaxial
- CX-AIP-DS3—DS3 coaxial

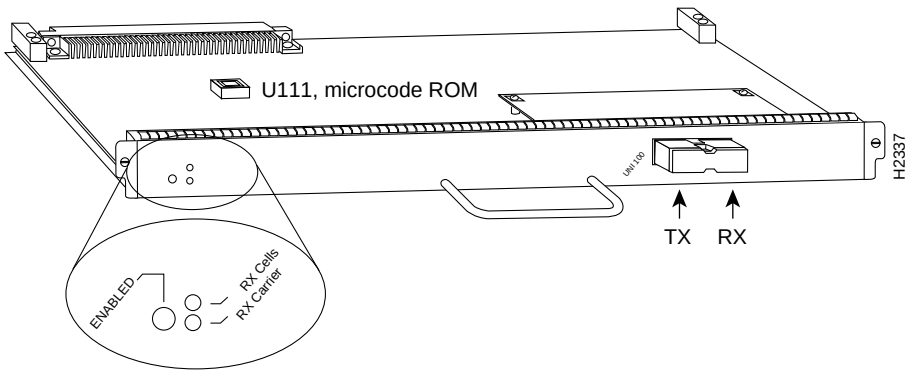
The ATM cable connects to a PLIM on the AIP card (see Figure 17). The module supplies the interface type and can be ordered as a spare.

The AIP is compatible with a wide range of ATM devices, for example, the LightStream 100 ATM switch, the LightStream 1010 ATM switch, the LightStream 2020 ATM switch, the Catalyst 5000 LAN switch equipped with an ATM LAN emulation module, Cisco 4000 series routers (models 4500, and 4500-M) with an ATM Network Processor module, ATM SBus adapter, and ATM switches from other vendors.

Note The AIP requires cable CAB-ATM-DS3/E3, which provides special alterations to comply with EMI standards.

For cable and connector information about the AIP, see the section “ATM Cable Specifications” in the chapter “Cables and Transceivers.”

Figure 19 ATM Interface Processor



CIP2

The second-generation CIP2 provides a connection to IBM or IBM-compatible mainframes. It supports both IBM mainframe cabling standards: parallel channel (also called bus and tag), and ESCON architecture. To operate with the CIP2, the Cisco 7000 series systems require Cisco IOS Release 10.2(13), or later, Release 10.3(13), or later, Release 11.0(10) or later, or Release 11.1(5) or later. The Cisco 7500 series systems require Cisco IOS Release 10.3(13), or later, Release 11.0(10), or later, or Release 11.1(5) or later. By default, the CIP2 ships with 32 MB of memory; additional memory is available in 64- and 128-MB sizes. To calculate CIP2 memory requirements, see the section "CIP2 Memory Guidelines" in the chapter "Configuration Guidelines for the Cisco 7000 Family."

Each CIP2 can support up to two IBM mainframe channel connections, which can be one of the following:

- CX-CIP2-PCA1—single parallel channel
- CX-CIP2-PCA2—dual parallel channel
- CX-CIP2-ECA1—single ESCON channel
- CX-CIP2-ECA2—dual ESCON channel
- CX-CIP2-ECAP1—single ESCON channel and single parallel channel

Three software features are available for the CIP2: a TCP/IP datagram feature, a TCP/IP offload feature, and an SNA support feature. TPC/IP datagram is a standard feature for the CIP2. TCP/IP offload and SNA support are licensed features and must be ordered separately.

The TCP/IP offload feature places TCP/IP protocols onto the CIP2, where they assume the responsibility of processing TCP/IP frames, calculating the checksum, and retransmitting bad frames. The mainframe TCP/IP stack is still required for the server applications (FTP, Telnet, TN3270, NFS, LPd), but TCP/IP processing is removed from the mainframe and performed on the CIP2. TCP/IP offload is supported only with IBM mainframes.

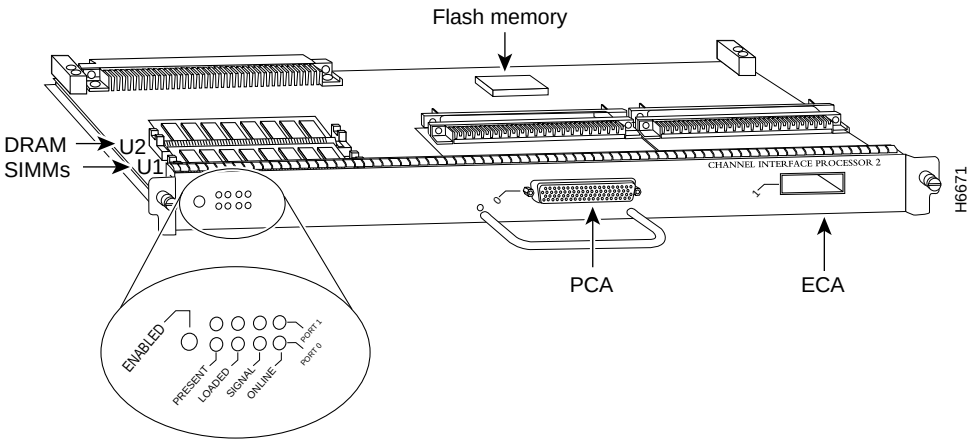
The SNA support feature delivers SNA traffic to ACF/VTAM using the External Communications Adapter (XCA) major node support provided in ACF/VTAM. CSNA on the CIP2 delivers SNA traffic to and from the mainframe from a variety of sources. Local LANs using SRB, remote LANs using RSRB or DLSw+, APPN, downstream physical unit concentration (DSPU), qualified logical link control (QLLC), source-route translational bridge (SR/TLB), and SDLLC all deliver SNA traffic to the CSNA on the CIP2. Options for the CIP2 are listed in Table 106.

Table 106 CIP2 Options

Description	Product Number
32-MB memory (default CIP2 memory)	MEM-CIP-32M
64-MB memory (replaces existing CIP2 memory)	MEM-CIP-64M(=)
128-MB memory (replaces existing CIP2 memory)	MEM-CIP-128M(=)
TCP/IP offload feature for CIP2 (ordered with CIP2)[1]	FR-CIP-TCPOFF
TCP/IP offload feature for CIP2 (spare)[1]	FR-CIP-TCPOFF=
SNA support feature for CIP2 SNA (ordered with CIP2)[1]	FR-CIP-CSNA
SNA support feature for CIP2 SNA (spare)[1]	FR-CIP-CSNA=
Downstream bus and tag connection with bus and tag termination	CAB-PCA-VB
Upstream bus and tag connection with bus and tag termination[2]	CAB-PCA-VA
Spare 78-pin D-shell cable for CIP2	CAB-PCA-Y=
Additional ESCON channel adapter for CX-CIP2-PCA1 or CX-CIP2-ECA1	CX-ECA1-U[3]

1. For CIP2 memory guidelines, see "CIP2 Memory Guidelines" in the chapter "Configuration Guidelines for the Cisco 7000 Family."
2. This cable, either from Cisco or IBM, is mandatory for CIP2 bus and tag channel connection to CX-CIP2-PCA1, CX-CIP2 -PCA2, or CX-CIP2-ECAP1.
3. Upgrades CX-CIP2-PCA1 to CX-CIP2-ECAP1, or upgrades CX-CIP2-ECA1 to CX-CIP2-ECA2.

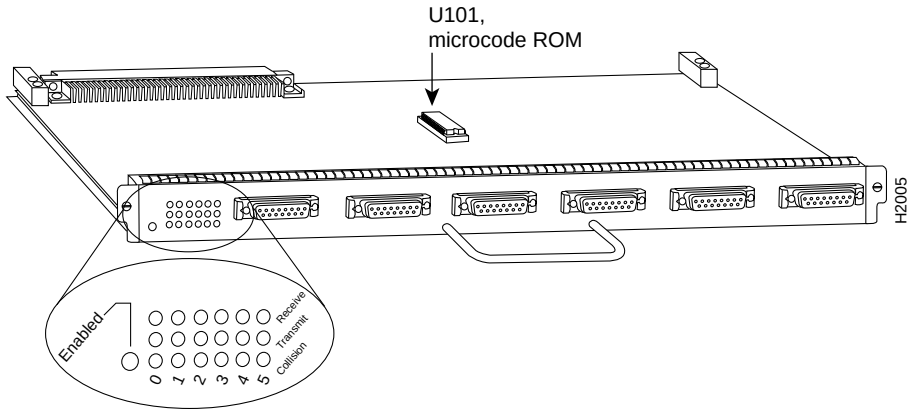
Figure 20 Second-Generation Channel Interface Processor (CIP2)



EIP

The EIP provides two, four, or six high-speed (10-Mbps) Ethernet ports. Each port requires a user-supplied 802.3 media attachment unit (MAU) and an AUI cable.

Figure 21 Ethernet Interface Processor



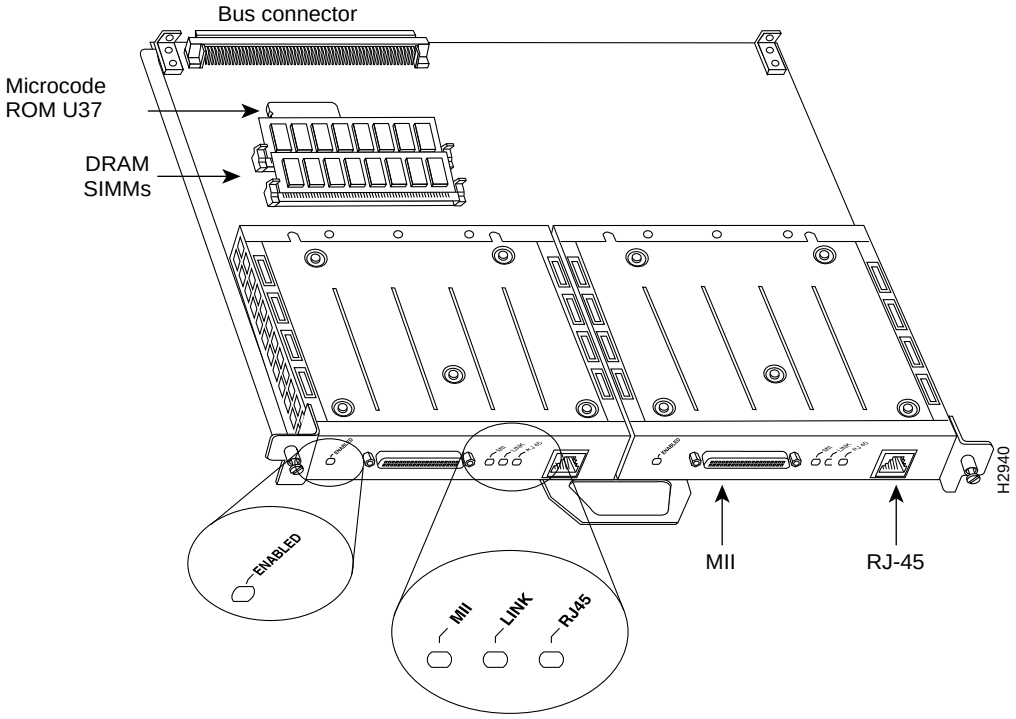
FEIP

The FEIP provides one or two Fast Ethernet (100-Mbps) port(s), which support twisted pair or fiber optic cable. The 100BaseT interfaces are mounted on port adapters that attach to the FEIP motherboard. Each port adapter has two 100BaseT interfaces: one RJ-45 and one MII connection. Only one connection can be used per port adapter.

Each 100BaseT port on the FEIP has an RJ-45 connector to attach to Category 5 UTP for 100BaseTX, and an MII connector that permits, through user-provided transceivers, connection to other physical layers. Only one connector on a 1FE port adapter can be used at one time. Both full-duplex and half-duplex operations are supported.

The FEIP can operate with a variety of 100BaseFX or 100BaseTX devices, for example, the Catalyst 5000 Token Ring switch. The Cisco 7000 series router must be running either Cisco IOS Release 10.3(6) or later or Cisco IOS Release 11.0(2) or later.

Figure 22 Fast Ethernet Interface Processor

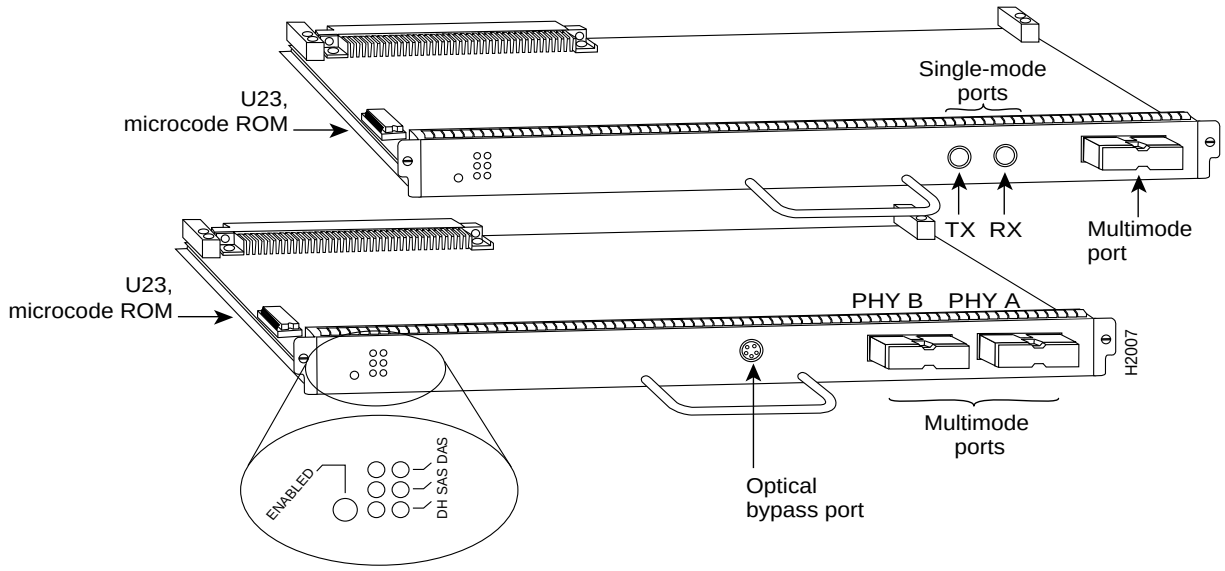


FIP

The FIP provides one high-speed (100-Mbps) FDDI port. Four types of FIPs are available:

- CX-FIP-MM—multimode to multimode with optical bypass
- CX-FIP-MS—multimode to single-mode
- CX-FIP-SM—single-mode to multimode
- CX-FIP-SS—single-mode to single-mode with optical bypass

Figure 23 Fiber Distributed Data Interface Processor



FSIP

The FSIP provides four or eight high-speed serial ports (up to 8 Mbps). Each FSIP comes with a default dual-port port adapter, PA-7KF-SPA, as follows:

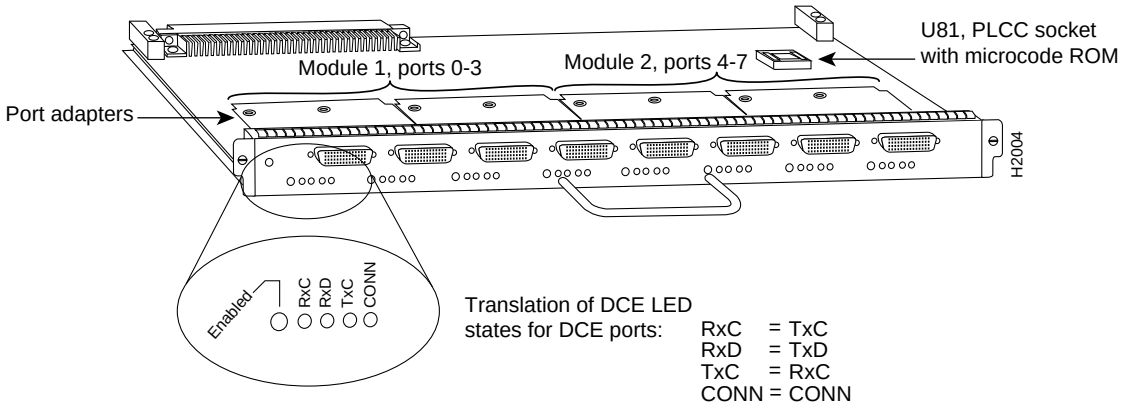
- The four-port FSIP (CX-FSIP4) comes with two dual-port port adapters, which can support X.21, EIA/TIA-449, EIA/TIA-232, V.35, or EIA-530.
- The eight-port FSIP (CX-FSIP8) comes with four dual-port port adapters, which can support X.21, EIA/TIA-449, EIA/TIA-232, V.35, or EIA-530.

For G.703/G.704 support, you must order port adapters PA-7KF-E1/120= or PA-7KF-E1/75=. The G.703/G.704 cables must match the ohm rating for the port adapters. For example, PA-7KF-EI/75, the 75-ohm port adapter, uses the G.703/G.704 75-ohm cable, CAB-E1-BNC.

Except for G.703/G.704 port adapters, the cable connected to the port determines the interface type and mode. Table 109 lists Cisco 7000 series serial cables supported by the FSIP. These cables must be ordered with the FSIP.

Note Because the FSIP uses a special high-density port that requires special adapter cables for each electrical interface type, we recommend that you obtain serial interface cables from Cisco.

Figure 24 Fast Serial Interface Processor

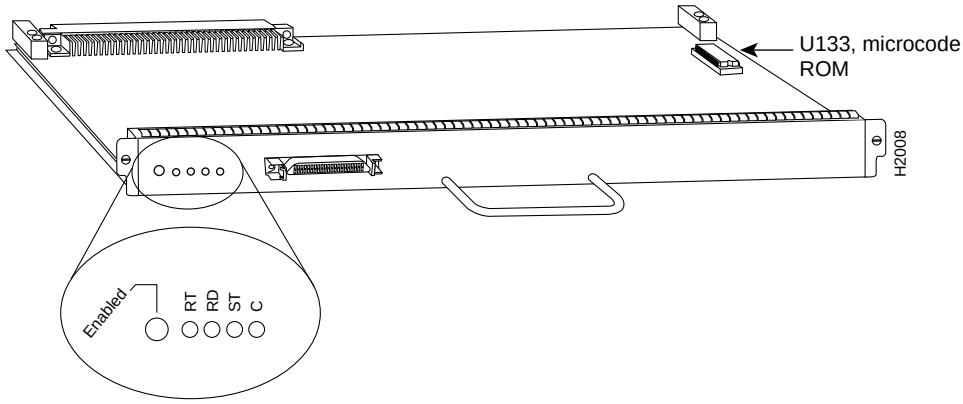


HIP

The HIP provides one HSSI (up to 52-Mbps) port. This port allows you to choose from a range of connectivity options, including ATM, SMDS, Frame Relay, or private lines—all at speeds up to DS3 or E3 (45 Mbps and 34 Mbps, respectively). Only a software configuration is necessary to accommodate these different network connections.

An HSSI cable is required for each HIP. All cables are 10 feet (3 meters) long and must be ordered with the HIP. For cable part numbers, see the section “Interface Processor Cables” at the end of this chapter.

Figure 25 HSSI Interface Processor

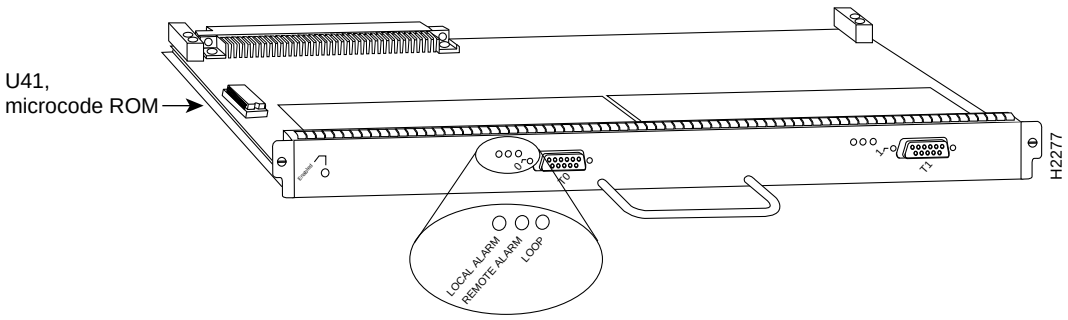


MIP

Seven models of the MIP provide a multichannel multiplexer that allows aggregate multiple channels at Nx64 and/or Nx56 on the same 1.5-Mbps T1 or 2-Mbps E1 line. Models CX-MIP-1CE1/75 and CX-MIP-2CE1/75 provide one or two E1/PRI ports 75-ohm unbalanced; models CX-MIP-1CE1/120 and CX-MIP-2CE1/120 provide one or two E1/PRI 120-ohm balanced ports; model CX-MP-75/120 provides one channelized E1 75-ohm unbalanced or 120-ohm balanced port; and models CX-MIP-1CT1 and CX-MIP-2CT1 provide one or two T1/PRI ports. Cables must be ordered with the MIP. See Table 109 for cable product numbers.

When used with Cisco IOS dial-on-demand routing software, the MIP can operate as a single- or dual-port ISDN PRI device. A dual-port MIP card can be configured to allow one port to operate as an ISDN PRI while the other performs a multichannel multiplexer role.

Figure 26 Multichannel Interface Processor



SMIP

The Service Provider MultiChannel Interface Processor (SMIP) has two channelized T1 or two channelized E1 connections via serial cables to a CSU. Two controllers can each provide up to 24 T1 channel-groups or 30 E1 channel-groups. Each channel-group is presented to the system as a serial interface that can be configured individually.

Three models of the SMIP provide a multichannel multiplexer that allows aggregate multiple channels at Nx64 and/or Nx56 on the same 1.5-Mbps T1 or 2-Mbps E1 line. Model CX-SMIP-2CT1 provides two T1 ports, and models CX-SMIP-1CE1/120 and CX-SMIP-2CE1/75 provide two E1 ports with 120 ohms and 75 ohms, respectively. Cables must be ordered with the SMIP. See Table 109 for cable product numbers.

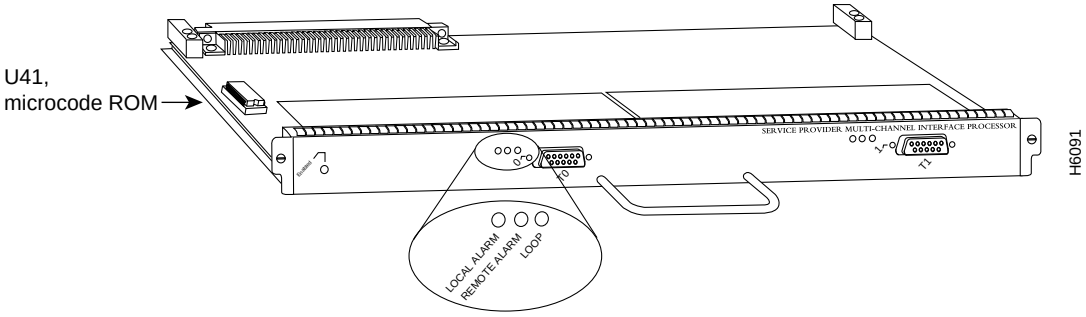
The SMIP has one or two controllers for transmitting and receiving data bidirectionally at the T1 rate of 1.544 Mbps, or at the E1 rate of 2.048 Mbps. For wide-area networking, the SMIP can function as a concentrator for a remote site.

Cisco IOS Release 10.3(6) or later supports the SMIP, which is licensed to support the following:

- Internet Protocol (IP) routing using Point-to-Point Protocol (PPP) or High-Level Data Link Control (HDLC)
- Integrated Services Digital Network (ISDN) primary rate interface (PRI) connectivity

The SMIP does not support multiprotocol routing at data transmission rates greater than 64 kbps.

Figure 27 Service Provider MultiChannel Interface Processor, Dual-Port Module



SSIP

The Standard Serial Interface Processor (SSIP) provides eight high-speed serial ports (up to 8 Mbps).

The CX-SSIP8 comes with four dual-port port adapters (PA-7KF-SPA), which can support X.21, EIA/TIA-449, EIA/TIA-232, V.35, or EIA-530.

For G.703/G.704 support, you must order port adapters PA-7KF-E1/120= or PA-7KF-E1/75=. The G.703/G.704 cables must match the ohm rating for the port adapters. For example, PA-7KF-EI/75, the 75-ohm port adapter, uses the G.703/G.704 75-ohm cable, CAB-E1-BNC.

Except for G.703/G.704 port adapters, the cable connected to the port determines the interface type and mode. Table 109 lists Cisco 7000 series serial cables supported by the SSIP. These cables must be ordered with the SSIP.

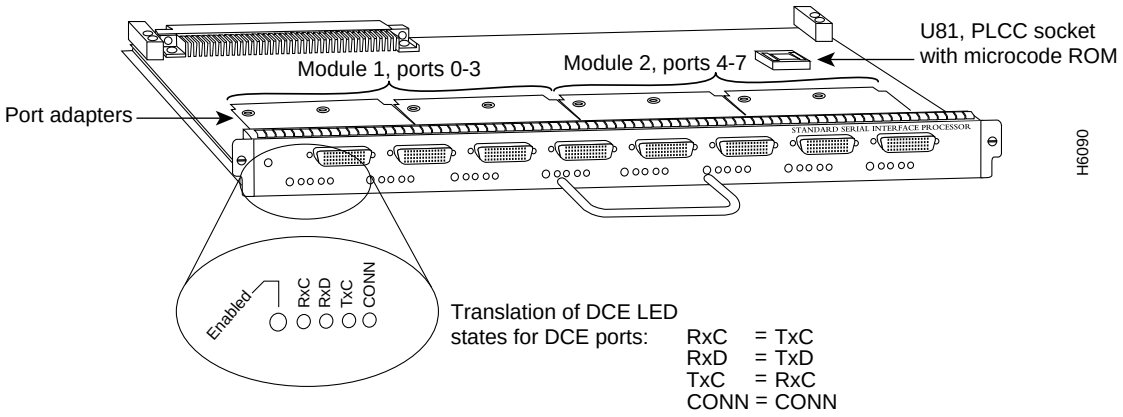
Note Because the SSIP uses a special high-density port that requires special adapter cables for each electrical interface type, we recommend that you obtain serial interface cables from Cisco.

Cisco IOS Release 10.3(6) or later supports the SSIP. The SSIP is licensed to support the following:

- Internet Protocol (IP) routing using Point-to-Point Protocol (PPP) or High-Level Data Link Control (HDLC)
- Multiprotocol routing by using PPP or HDLC at data transmission rates no greater than 64 kbps.

Note The SSIP is licensed for multiprotocol routing at data rates no greater than 64 kbps. For single protocol IP routing, the SSIP supports appropriate data transmission rates for all SSIP interfaces, including T1 and E1 interfaces.

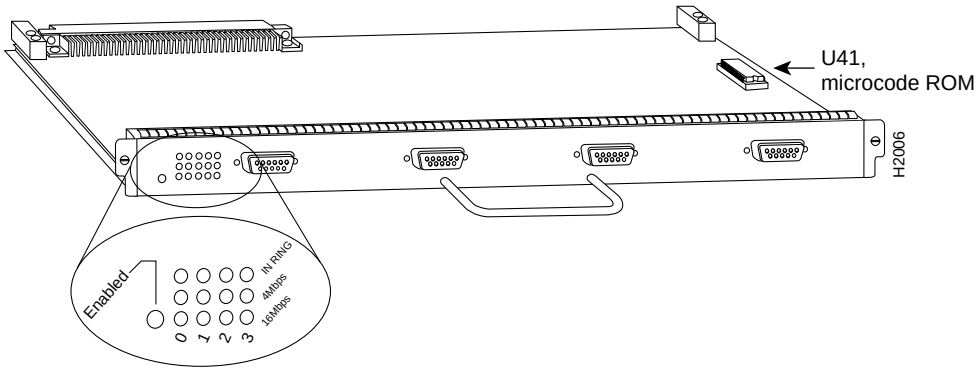
Figure 28 Standard Serial Interface Processor



TRIP

The TRIP provides two or four high-speed (4-Mbps or 16-Mbps) Token Ring ports. Each port requires a MAU to connect the DB-9 connector to the external Token Ring networks.

Figure 29 Token Ring Interface Processor



VIP2

The second-generation Versatile Interface Processor (VIP2) is a new interface processor for use with the Cisco 7000 series routers using the RSP7000, and the Cisco 7500 series routers.

Note The Cisco 7200 series routers use the same port adapters as the VIP2 interface processors.

The VIP2 installs in the interface processor slots in your Cisco 7000 series or Cisco 7500 series router. The VIP2 uses a single motherboard with up to two port adapters. The VIP2 port adapters provide the individual LAN, WAN, or LAN/WAN interface ports. The VIP2 can be removed from a chassis while power is on and the system is operating. There are no restrictions on the chassis interface processor slots in which the VIP2 can be installed.

The VIP2 CPU is a RISC, Mips 4700 processor that has an internal operating frequency of 100 megahertz (MHz) and a 50-MHz system bus interface. The VIP2 has 128 KB of nonvolatile random-access memory (NVRAM).

Table 107 shows the DRAM, SRAM, and software capabilities of the current VIP2 products.

Note Certain port adapter combinations require a specific minimum VIP2 model. Refer to Table 113 in the section "Configuration Guidelines for the Cisco 7000 Family."

Table 107 VIP2 Capabilities

	Distributed Switching (DSW)	Distributed Services (DS)	DRAM	SRAM
VIP2-10	–	–	8 MB	512 KB
VIP2-20	Y	–	16 MB	1 MB
VIP2-40[1]	Y	Y	32 MB	2 MB

1. Not orderable until Q4 1996.

The VIP2-10 and VIP2-20 can support the following SRAM, DRAM, and software memory-configuration upgrades:

- VIP2-10/20-UPG—upgrades the VIP2-10 to a VIP2-20
- VIP2-10/40-UPG and VIP2-20/40-UPG—upgrade the VIP2-10 or VIP2-20 to a VIP2-40

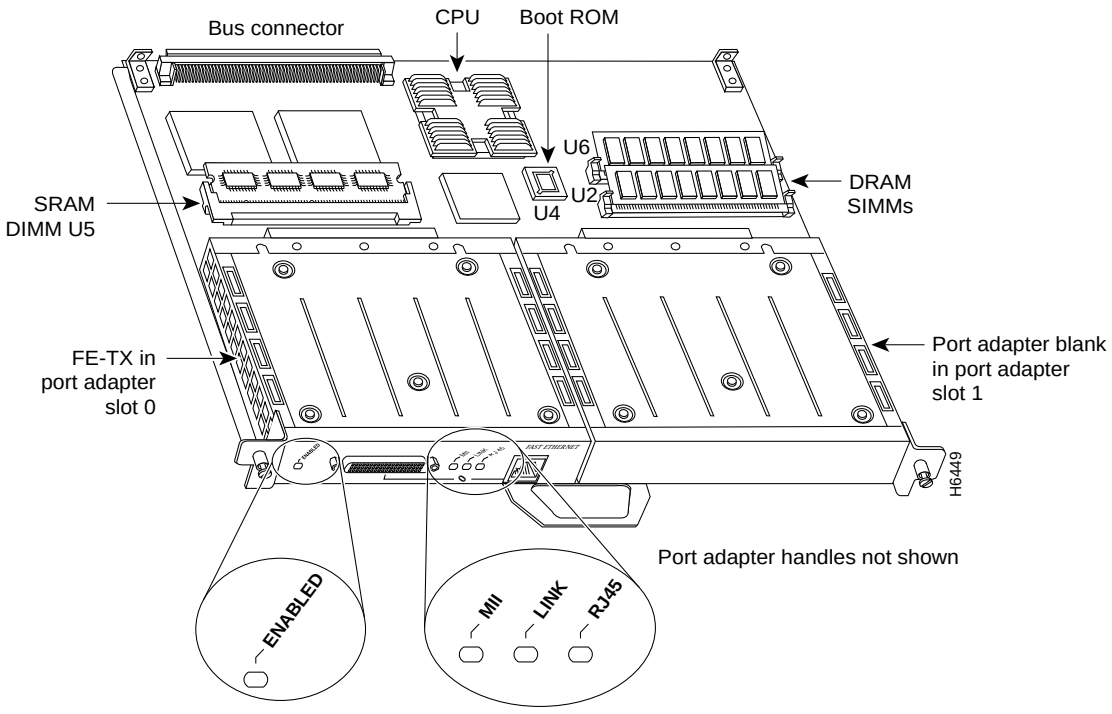
The VIP2 provides suport for any two port adapters as listed in Table 108.

Table 108 VIP2 Port Adapters

Description	Product Number
4 Ethernet 10BaseT ports	PA-4E
8 Ethernet 10BaseT ports	PA-8E
5 Ethernet 10BaseFL ports	PA-5EFL
1 Fast Ethernet 100BaseT port	PA-FE-TX PA-FE-FX
4 synchronous serial ports supporting EIA/TIA-232, EIA/TIA-449, EIA-530, X.21, and V.35	PA-4T
4 Token Ring ports	PA-4R
1 FDDI multimode 1 full-duplex FDDI multimode	PA-F-MM PA-F/FD-MM
1 FDDI single-mode 1 full-duplex FDDI single-mode	PA-F-SM PA-F/FD-SM
1 HSSI port 2 HSSI ports	PA-H PA-2H

Figure 29 shows a VIP2 board with one PA-FE-TX port adapter and a blank port adapter installed. The port adapter handles have been omitted for clarity.

Figure 30 Second-Generation Versatile Interface Processor (VIP2)



When you order a VIP2, memory and software are important considerations. Use the following information when ordering a VIP2:

- Order Cisco IOS Release 11.1(472) or later, which enables the VIP2 to run the Cisco IOS kernel and DSW.
- Use VIP2-specific software product numbers from Table 69 (Cisco 7500 series) or Table 85 (Cisco 7000 series).
- The RSP7000 upgrade enables Cisco 7000 and 7010 systems to take advantage of advanced VIP2 features.

Port Adapters

The Cisco 7200 series routers and the VIP2 interface processors use port adapters to provide flexible configuration options. Table 108 lists the available port adapters.

Port adapters can be installed in an interface processor card (VIP2) or directly into an appropriate chassis (Cisco 7200 series).

Interface Processor Cables

Table 109 lists interface processor cables and provides ordering information. For more information about these cables, refer to the chapter "Cables and Transceivers."

Table 109 Cisco 7000 Series and Cisco 7500 Series Interface Processor Cables

Interface Processor	Description	Product Numbers
AIP	–	For DS3/E3, use CAB-ATM-DS3/E3 Other are User supplied
CIP2[1,2]	Y cable that comes with CIP2 PCA V cable A PCA V cable B	CAB-PCA-Y[3] CAB-PCA-VA[4] CAB-PC-VB
EIP	–	User supplied
FEIP	–	User supplied
FIP[2]	Mini-DIN-to-DIN transition	CAB-FMDD=
FSIP[2] SSIP[2] VIP-4E/4T[2] VIP-4R/4T[2]	X.21 high-density male DTE X.21 high-density female DCE EIA/TIA-449 high-density male DTE EIA/TIA-449 high-density female DCE V.35 high-density male DTE V.35 high-density female DCE EIA/TIA-232 high-density male DTE EIA/TIA-232 high-density female DCE EIA-530 high-density male DTE E1-G.703/G.704 twinax 120 ohm balanced, 5 m E1-G.703/G.704 DB-15 120 ohm balanced, 5 m E1-G.703/G.704 BNC 75 ohm unbalanced, 5 m	CAB-X21MT CAB-X21FC CAB-449MT CAB-449FC CAB-V35MT CAB-V35FC CAB-232MT CAB-232FC CAB-530MT CAB-EI-TWINAX CAB-EI-DB15 CAB-EI-BNC
HIP or PA-H and PA-2H[2]	Null modem, DTE, HSSI, 10' male to male, 10'	CAB-HNUL= CAB-HSI1=

Interface Processor	Description	Product Numbers
MIP or SMIP[2]	DSX1 to CSU DB-15 thru	CAB-7KCT1DB15
	DSX1 to CSU DB-15 null	CAB-7KCT1NULL
	E1 ISDN PRI, 10'	CAB-E1-PRI
	E1 BNC 75 ohm unbalanced, 5 m	CAB-E1-BNC
	E1 DB15 120 ohm balanced, 5 m	CAB-E1-DB15
	E1 TWINAX 120 ohm balanced, 5 m	CAB-E1-TWINAX
TRIP	–	User supplied
VIP2	–	User supplied—except for PA-4T
PA-4T	X.21 high-density male DTE	CAB-X21MT
	X.21 high-density female DCE	CAB-X21FC
	EIA/TIA-449 high-density male DTE	CAB-449MT
	EIA/TIA-449 high-density female DCE	CAB-449FC
	V.35 high-density male DTE	CAB-V35MT
	V.35 high-density female DCE	CAB-V35FC
	EIA/TIA-232 high-density male DTE	CAB-232MT
	EIA/TIA-232 high-density female DCE	CAB-232FC
	EIA-530 high-density male DTE	CAB-530MT

1. CIP2 models CX-CIP2-PCA1, CX-CIP2-PCA2, and CX-CIP2-ECAP1 ship with a cable that connects the CIP2 to cable CAB-PCA-VA.
2. Cables must be ordered with interface processor.
3. CAB-PCA-Y ships with CIP2.
4. This cable, either from Cisco or IBM, is mandatory for CIP2 bus and tag channel connection to CX-CIP2-PCA1, CX-CIP2-PCA2, or CX-CIP2-ECAP1.

Investment Protection Program

Cisco is committed to protecting your investment in its products. To achieve that, the Cisco 7500 was designed as an extension of the Cisco 7000 platform, enabling you to move existing interface processors between the Cisco 7000 and Cisco 7500 series platforms. However, to ensure forward compatibility with the Cisco 7500 series or the RSP7000 (a Cisco 7000 series router with an RSP upgrade), some interface processors may need to be modified. The Investment Protection Program (IPP) provides you with a low- or no-cost migration path for upgrading interface processors.

The IPP is intended for the following situations:

- When you have invested in the Cisco 7500 or the RSP7000 and want to maintain common sparing between existing Cisco 7000 series routers and the newer products (Cisco 7500 or the RSP7000).
- When you have invested in the Cisco 7500 or the RSP7000 and want to install existing base of interface processors in the newer products.

The only interface processor types that may require modification are the CX-AIP, CX-EIP, CX-FIP, and CX-FSIP. To verify if one of these processors requires modification, follow the instructions in “Verifying Interface Processor Compatibility” in the chapter “Configuration Guidelines for the Cisco 7000 Family.”

Note If an interface processor requires modification, the board must be returned to Cisco for the modification.

Cisco provides two options for the return and upgrade process:

- Repair and Return

  Return the used interface processors to a Cisco designated location for repair and return. Cycle time for repair and return is approximately 10 working days from receipt through shipment.

- IPP Replacements

  Order the board types needed to modify your existing inventory. Lead times may vary, but the IPP replacement should be shipped within four weeks of placing the order. After receiving the IPP replacement boards, you must return the used interface processors to a Cisco designated location within 30 days. Failure to return the used boards within 30 days will result in being invoiced at full list price.

If you determine that your CX-AIP, CX-EIP, CX-FIP, or CX-FSIP needs to be modified, use the product numbers in Table 110 and the order form that follows.

Note If you are ordering an RSP7000, please try to keep your IPP cards with your RSP7000 order. If you have independent orders, use the fax order form.

Table 110 Investment Protection Program Product List

Description	Product Number
IPP Upgrade ATM Interface Processor with SONET/Multimode	CX-AIP-SM-IPP=
IPP Upgrade ATM Interface Processor with SONET/Single-mode	CX-AIP-SS-IPP=
IPP Upgrade ATM Interface Processor with TAXI/Multimode	CX-AIP-TM-IPP=
IPP Upgrade 2-port Ethernet Interface Processor	CX-EIP2-IPP=
IPP Upgrade 4-port Ethernet Interface Processor	CX-EIP4-IPP=
IPP Upgrade 6-port Ethernet Interface Processor	CX-EIP6-IPP=
IPP Upgrade FDDI Multimode Interface Processor	CX-FIP-MM-IPP=
IPP Upgrade FDDI Single-mode Interface Processor	CX-FIP-SS-IPP=
IPP Upgrade FDDI Multimode/Single-mode Interface Processor	CX-FIP-MS-IPP=
IPP Upgrade FDDI Single/Multimode Interface Processor	CX-FIP-SM-IPP=
IPP Upgrade 4-port Fast Serial Interface Processor	CX-FSIP4-IPP=
IPP Upgrade 8-port Fast Serial Interface Processor	CX-FSIP8-IPP=

Note The Investment Protection Program will end on June 30, 1997.

CISCO SYSTEMS

INVESTMENT PROTECTION PROGRAM ORDER FORM

Company Name		Date	
Bill to Address			
Company Name			
Ship to Address			
Contact Name		Fax	
		Phone	

Company Purchase Order	
Taxable	Yes ☐ No ☐ Exempt No.
Sales Order No.	
RMA No.	
Maintenance Contract No.	

PLEASE ATTACH PURCHASE ORDER TO THIS SHEET.

Print Your Name	
Signature	
Title/Position	

Cisco 7500 Board Description		Current Bd. Rev. Level	Quantity	List Price Each	Extended Price
CX-AIP-SM-IPP=	73-1188-02 (Board rev D0 or later)				
CX-AIP-SS-IPP=	73-1188-02 (Board rev D0 or later)				
CX-AIP-TM-IPP=	73-1188-02 (Board rev D0 or later)				
CX-EIP2-IPP=	73-1129-02 (Board rev N0 or later)				
CX-EIP4-IPP=	73-1132-02 (Board rev N0 or later)				
CX-EIP6-IPP=	73-0906-02 (Board rev N0 or later)				
CX-FIP-MM-IPP=	73-0892-03 (Board rev M0 or later)				
CX-FIP-SS-IPP=	73-1087-03 (Board rev M0 or later)				
CX-FIP-SM-IPP=	73-1090-03 (Board rev M0 or later)				
CX-FIP-MS-IPP=	73-1093-03 (Board rev M0 or later)				
CX-FSIP4-IPP=	73-1187-05 (Board rev A0 or later)				
CX-FSIP8-IPP=	73-1126-05 (Board rev A0 or later)				

Cisco Internal Only

Cisco Sales No.

Oracle RMA No.

Metrix RMA No.

Subtotal	
Tax	
Shipping/Handling	
Total	

Failure to return used boards within 30 days will result in customer being invoiced at full list price.