Cisco Channel Port Adapter for Cisco 7200 Series Routers

Cisco Systems expands its industry-leading mainframe channel connect family with the introduction of the Channel Port Adapter (CPA). The CPA increases the versatility of the Cisco mainframe channel connectivity solution by including support for the Cisco 7200 series router. Cisco provides three version of the CPA: the parallel CPA, the ESCON CPA (ECPA), and the new high-performance ESCON CPA (ECPA4).

Cisco has been a leader in mainframe internetworking since the introduction of the revolutionary Channel Interface Processor (CIP), combining channel-attachment capabilities with advanced routing and LAN/WAN connectivity in a high-performance, high-density platform. The CPA module builds upon the success of the CIP module, offering identical features and application support on a smaller scale. It gives direct channel attachment to midrange router customers who do not need the performance of a high-end Cisco 7500/CIP solution.

Key Benefits of Cisco Channel Port Adapter/Cisco 7200 Series Router Solution:

- *Cost-effective*—both the CPA module and Cisco 7200 series provide excellent performance at an affordable price
- Extends current product offering to customers that don't require a high-performance, high-end Cisco 7500/CIP solution
- *Simplified migration path*—the CPA and CIP modules support the same features and applications, enabling seamless migration for network expansion
- *Flexibility of Cisco 7200 platform is 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

Full Application Software Interoperability Ensures Channel Product Compatibility

The CPA module is fully compatible with existing CIP hardware and software applications, including IP Datagram (included with the CPA) and other applications available separately:

- TCP/IP Offload
- TN3270 Server
- Cisco SNA
- TCP Assist

The compatibility between the CIP and CPA modules provides a straightforward interoperability and migration path between the Cisco 7200/CPA and Cisco 7500/CIP solutions. Distributed networks can simultaneously use both solutions with seamless interoperation. As smaller mainframe environments grow, administrators can upgrade from a Cisco 7200/CPA solution to a Cisco 7500/CIP solution with minimal changes in application configurations. They can also redeploy the Cisco 7200/CPA solution elsewhere, such as in remote offices. Customers gain unprecedented flexibility in their mainframe integration and consolidation strategies.

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Table 1 lists the CPA's features and benefits.

Table 1 Channel Port Adapter Features and Benefits

Feature	Description	Benefit
Single-Width Port Adapter Module	Uses only one of the four or six slots available in the 7200 platform	Enhances scalability of the Cisco 7200 platform, lowering costs while increasing platform flexibility
Up to Five CPA Modules Supported per Cisco 7200 Chassis	Cisco 7200 platforms support four or six slots per chassis	Provides scalability for channel attachment
Onboard 100- or 266-MHz RISC Processor	All channel attachment processing takes place on the CPA module	Preserves main route processor for other duties; improves overall performance
512-KB Cache Memory	Stores application software instructions	Fast application execution; supports overall system performance
32-MB Packet Memory	Stores channel data for processing	Memory increases the supportable number of sessions or connections
ESCON or Parallel (Bus and Tag) Channel Interfaces	ESCON provides up to 17-MBps performance; parallel supports either 3.0- or 4.5-MBps performance	Ensures full compatibility with a wide range of mainframes; supports standard channel interfaces for connectivity into IBM and plug-compatible mainframe computers
Cisco IOS® Software Release 11.3.3 (T) for the CPA, Release 12.1(4)T for the ECPA4	Enables integration into Cisco 7200 platform	Fully interoperable with Cisco IOS software features on the network
IP Datagram Software (Included with CPA)	Supports channel access for IP applications on the mainframe	Supports IP traffic on ESCON or Parallel channel connections
Multiple Applications	Supports one to five CPA software applications simultaneously	Accommodates various channel attachment application requirements

Performance

The CPA expands Cisco's channel connect product line and adds depth to Cisco networking solutions for virtually all standard mainframe environments. Tests indicate that the CPA delivers between 60 and 70 percent of the CIP performance (see Table 2) and outperforms competitors' products in the midrange market. The CIP remains the solution of choice for high-end, high-performance channel connections, while the CPA is an excellent option for customers that don't require high-end CIP performance levels.

Table 2 CPA and CIP Performance

	CPA (ESCON)[1]	ECPA4	CIP (Single ESCON)[1]
IP Datagram • MBps throughput	 9 MBps	 9 MBps	 9 MBps
TCP/IP Offload • Number of users • MBps throughput	 5000 6 MBps	 10,000 9 MBps	 10,000 9 MBps
CSNA • Number of LLC2 sessions • Transactions per second	 3000 2000	 8000 3100	 8000 3100
TN3270 Server • Number of sessions • Transactions per second	 2000–5000 480	 2000–16,000 1000	 2000–16,000 850
[1] Individual applications tested separately. Performance of two or more applications running simultaneously not tested; actual performance may vary from these results depending on the network configuration.			

Replacing Existing Channel Devices

The CPA is ideally targeted at customers that have an installed base of front-end processors (FEPs), gateway PCs, or cluster controllers. Not only does the Cisco 7200/CPA solution offer better performance than these alternatives, it simplifies network design considerations by providing routing and channel connectivity all in one box. A single-box solution saves money, increases reliability, and provides direct connections to modern LAN and WAN networks (see Table 3).

As with the Cisco 7500 series router, the Cisco 7200 series router also brings new functionality to the data center over FEPs, providing complete Cisco IOS multiprotocol routing and other Cisco IOS network services.

Table 3 Comparison of CPA and FEP Features

CPA	FEP
Choice of ESCON and parallel interface support	Typically supports only ESCON channel interfaces
Full range of networking and routing protocols	Limited IP and APPN routing support
Many options for direct LAN and WAN interfaces via Cisco 7200 platform	Few connectivity options (also applies to cluster controllers or gateways)

Choosing a CIP or a CPA

- The CIP module for the Cisco 7000/7500 series is designed for high-end network environments that demand very high-performance, high-port-density, high-capacity solutions. It will continue to support the premier Cisco multiservice router platform with the latest in mainframe networking technology.
- The CPA is available for the Cisco 7200 series router platform only. It provides the same application support and features as the CIP module, yet as a midrange sized solution. Now customers that do not require full-scale Cisco 7500/CIP performance can deploy a more cost-effective channel connectivity solution with the CPA.
- The CPA is available in three versions. The PCPA and ECPA support the same applications as the CIP, at a lower level of performance. The ECPA4 provides channel performance similar to the CIP.

Network Applications

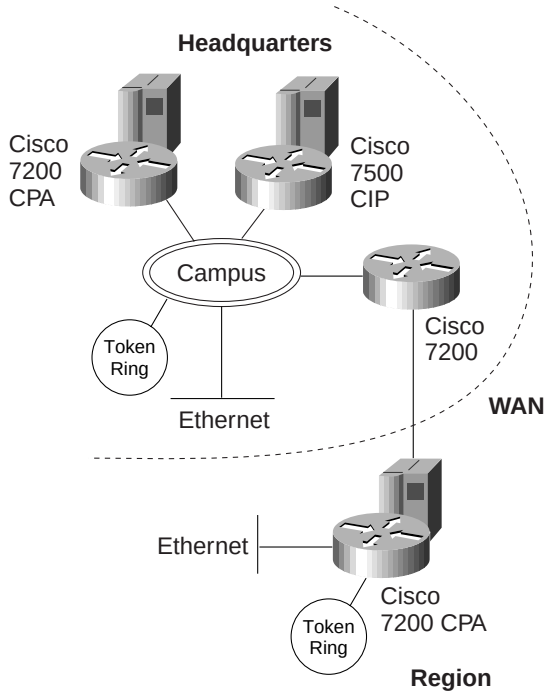
The CPA module presents customers with connectivity options and enables them to fully leverage the integration of channel connections with routed LANs and WANs supported by advanced network services in Cisco IOS software.

Distributed Mainframe Channel Attachment in Branch Offices

The Cisco 7200/CPA solution is the perfect size and price for new server-sized mainframe systems now available for branch offices. Customers can enjoy the price/performance benefits of Cisco 7200/CPA solutions to support new "distributed mainframe" applications. The CPA module supports mainframe SNA and IP applications in branch offices.

As Figure 1 illustrates, a Cisco 7200/CPA solution provides direct channel connections to smaller mainframes in each remote office, while the Cisco 7500/CIP solution at corporate headquarters connects large mainframes to remote sites over the WAN.

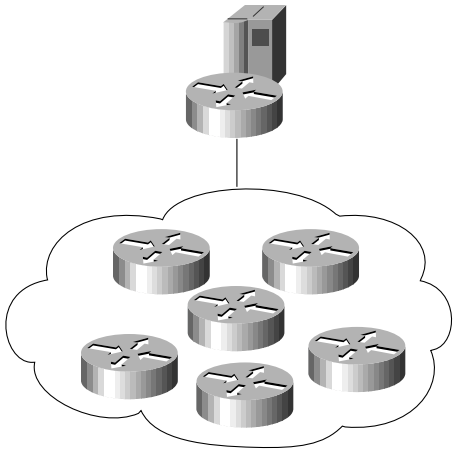
Figure 1 Distributed Mainframe Channel Connectivity



Dedicated Mainframe Channel Connection

The Cisco CPA/7200 solution offers a cost-effective, higher-performance alternative to conventional mainframe channel attachment devices when connecting users to the mainframe. Replacing antiquated FEPs, cluster controllers, and gateway products with the high-performance Cisco CPA/7200 solution allows data center administrators to fully leverage powerful legacy applications with more powerful delivery to more users—all at a lower cost than other solutions.

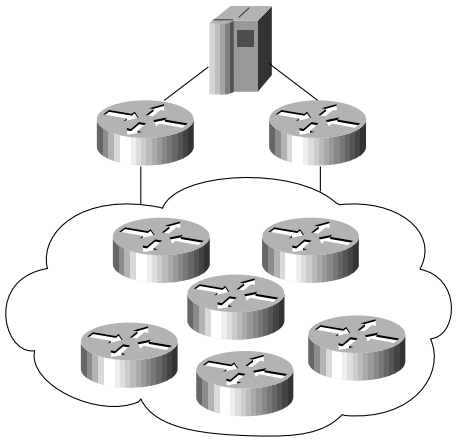
Figure 2 Dedicated Mainframe Channel Connection



Redundant Channel Connection

For many companies, a mainframe houses mission-critical applications and data. Reliability is essential. When two Cisco CPA/7200 solutions are deployed in a fully redundant architecture, the mainframe is always available to users, with redundant links, multiple channel connections, online insertion and removal (OIR) of components, and Cisco IOS software features such as Hot Standby Router Protocol (HSRP) and Enhanced Interior Gateway Routing Protocol (IGRP). For ultimate flexibility, a Cisco DistributedDirector appliance supports high availability and redundancy in TN3270 Server environments.

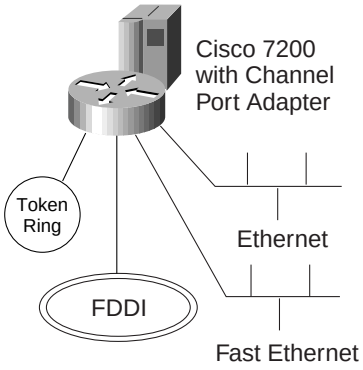
Figure 3 Redundant Channel Connection



LAN-Mainframe Traffic Consolidation

The highly scalable connectivity options of the Cisco CPA/7200 solution enable seamless traffic transport among all major LAN technologies and the channel. In this scenario, the Cisco CPA/7200 can provide either ESCON or Parallel channel interfaces and can route to the LAN, be it Ethernet, Fast Ethernet, Token Ring, Fiber Distributed Data Interface (FDDI), or 100VG media. The high port density of the Cisco 7200 platform ensures cost-effective, highly scalable LAN-mainframe consolidation.

Figure 4 LAN-Mainframe Traffic Consolidation

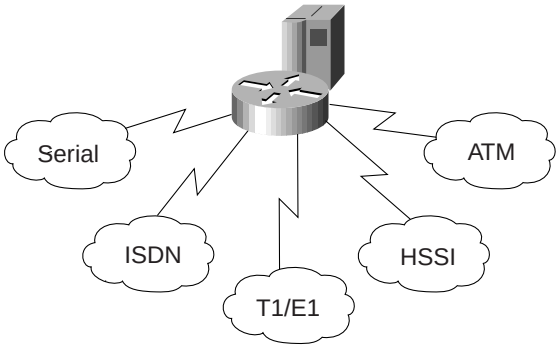


WAN-Mainframe Traffic Consolidation

This configuration is ideal for companies with users in remote offices who need mainframe application access. Like the previous example, customers can take advantage of a huge selection of WAN connectivity options to the mainframe. One to three CPA modules in a Cisco 7200 platform easily

communicate with users in remote offices over the WAN. The Cisco 7200 router also supports high-density WAN interfaces for serial, Integrated Services Digital Interface (ISDN), Basic Route Interface (BRI), channelized T1/E1 for ISDN Primary Rate Interface (PRI), High-Speed Serial Interface (HSSI), and Asynchronous Transfer Mode (ATM).

Figure 5 LAN-Mainframe Traffic Consolidation



Mainframe SNA and TCP/IP Applications

Cisco supplements basic mainframe connectivity with advanced software applications designed to improve mainframe performance in a variety of application environments.

Applications on a Cisco 7200 system with CPA are fully compatible with applications on a Cisco 7500 with a CIP module. The difference is scale. The CIP module in a 7500 series router has higher performance and capacity to run more applications faster for more users.

The CPA module is shipped with IP Datagram. The other four applications are available separately from Cisco and can be deployed individually or simultaneously on the same CPA module:

IP Datagram

IP Datagram supports high-performance passthrough of IP packets to the mainframe. Support for IP passthrough is becoming an important market requirement as more customers install TCP/IP applications on their mainframes.

TCP/IP Offload

TCP/IP Offload transfers some TCP/IP functions from the mainframe to the CPA module and is a critical competitive advantage for the CPA module. Removing some IP processing from the mainframe frees valuable mainframe cycles for use by other applications.

TN3270 Server

TN3270 Server software enables TCP/IP clients to access 3270 applications on the mainframe. Customers eliminate parallel SNA-IP networks, saving money by carrying SNA data over the IP network.

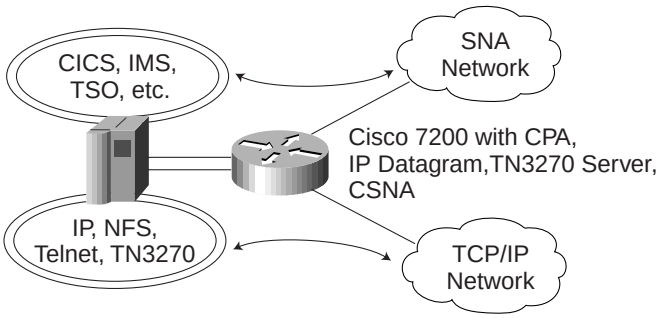
Cisco SNA

Cisco SNA provides channel access for mainframe SNA applications, supporting transport of SNA traffic over the channel to the mainframe. The SNA support found in Cisco SNA can be used simultaneously with CPA/CIP TCP/IP applications such as IP Datagram, IP Offload, and TN3270 Server.

TCP Assist

TCP Assist frees valuable mainframe processing cycles by offloading TCP checksum processing from the Interlink TCP/IP stack on the mainframe to the CPA module on the Cisco 7200 platform.

Figure 6 Mainframe SNA and TCP Applications



Cisco Service and Support

Leading-edge technology deserves leading-edge support. Service and support for the CPA module are available on a one-time or annual contract basis. Support options range from help desk assistance to proactive, onsite consultation. All support contracts include:

- Major Cisco IOS software updates in protocol, security, bandwidth, and feature improvements
- Full access rights to Cisco Connection Online for technical assistance, electronic commerce, and product information
- 24-hour-a-day access to the industry's largest dedicated technical support staff

A support contract maximizes the value of your technology investment throughout its life cycle, ensuring optimum performance and availability. Augment your internal staff's capabilities by leveraging Cisco's expertise. Contact your local sales office for further information.

Summary

The Cisco 7200 Series router extends its industry-leading price/performance through the mainframe channel connectivity enabled by the CPA module. Supporting either ESCON or parallel channel interfaces, the CPA module offers price-sensitive customers a high-performance, economical alternative to expensive, low-performance front-end processors in environments that do not require the high-end performance of a Cisco CIP/7500 router solution.

Orderability and Availability

CPAs are available with a choice of ESCON or parallel interfaces.

For More Information

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