Chapter 1
Protocol Translator Product Overview

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Cisco Systems designs and produces communications products to build multiprotocol, multimedia, multivendor networks, to solve the problems of complex internetworks and to help achieve interoperability. With Cisco Systems products, network managers can interconnect terminals, workstations, computer systems, and different networks to create networks of networks.

Even organizations that do not yet require a complex wide area network (WAN) can connect existing equipment with Cisco Systems products to form a network of any size. With Cisco Systems products, network growth plans need not depend on a single topology, protocol, transmission medium, or vendor.

Capabilities of the Protocol Translator

Complex internetworks have grown past the point where they can depend on equipment from a single vendor. Virtually all organizations connecting LANs and creating WANs today have major commitments to hardware and software from many different vendors. Therefore, current and future internetworking requires products that support multiprotocol, multimedia, and multivendor networks.

Cisco Systems protocol translators are high-performance application gateways that can provide connectivity among systems running differing protocols over a variety of communication media. Cisco protocol translators can support multiple protocols simultaneously, enabling communication among equipment and networks from different vendors.

All Cisco Systems products also give network managers several options for software configurations. In addition to configuration from the console terminal or a configuration file, the products can configure themselves automatically from non-volatile memory or from a server host on the network.

Protocol translators from Cisco Systems are designed to help LANs and WANs optimize connectivity. This section describes Cisco-supported transmission protocols and media, as well as the capabilities of Cisco Systems routers for routing, network management, and network security.

Protocol Translation Support

Cisco Systems protocol translators provide a flexible set of capabilities facilitating connection service using different media and between different hosts and resources running different protocols. The following descriptions briefly summarize Cisco's protocol translation options.

■ TCP/IP protocols, the most widely implemented protocol suite on networks of all media types. TCP/IP is today's standard for internetworking, and is supported by most computer vendors, including all UNIX-based workstation manufacturers.

■ DEC Local Area Transport (LAT) protocol, Digital Equipment's proprietary terminal connection protocol used with DEC minicomputers. Cisco products support bridging of LAT (router/bridges) and protocol translation of LAT (protocol translators) to X.25, Telnet, or TN3270.

■ X.25 protocols, which permit cost-effective, as-needed use of major public networks in the United States and Europe. Cisco Systems protocol translators support both the X.25 protocol and the X.3/X.28/X.29 specifications.

■ IBM 3278 terminal emulation, providing TN3270-based connectivity to IBM hosts over serial lines.

■ Network Computing Devices (NCD), Inc., XRemote terminal facility, allowing for remote X Window operation with compression.

Support for Media

In addition to support of Ethernet (IEEE 802.3), Cisco protocol translators support synchronous serial circuits at many speeds. Cisco's protocol translator serial interfaces are capable of transmitting and receiving data at up to 4 Mbps, and supports connectivity to WAN services such as SMDS, Frame Relay, and X.25.

For customer convenience, Cisco Systems markets a broad line of media adapters, including RS-232, V.35, X.21, and RS-449.

Network Management Software

Cisco Systems provides a full range of network management tools that network managers and system administrators will find invaluable in the day-to-day operations of their networks.

Diagnostic Tools

Protocol translators from Cisco Systems also provide detailed network management statistics, including traffic statistics, counts of messages transmitted and received, and many more. Remote echo and route tracing diagnostics help network managers isolate faults and refine network measurements. Cisco Systems also supports and provides the Simple Network Management Protocol (SNMP), the current standard for network management.

The NetCentral Station Software

Internetwork management can be as easy as clicking a mouse button with the Cisco Systems NetCentral Station™ software — a dynamic, user-configurable network map operating on a fully integrated relational database.

NetCentral Station is a high-performance software tool for management of multivendor internetworks. It is designed for network monitoring, and in-depth network planning and analysis through use of a dynamic visual network map and integrated relational databases.

The NetCentral Station network map provides network managers with an instant visual status check of the entire network. Pop-up windows and icons provide real-time statistics for remote networks and devices, so that network analysts and administrators can maintain an accurate picture of their internetwork topology.

NetCentral Station software operates on the Sun 3/xx series, the SPARC station workstations, and on the Solbourne workstation; contact Cisco Systems for more information.

Network Security

Network security is an increasingly important aspect of managing complex networks. Cisco Systems network servers enable network managers to implement several different security features. Optional passwords limit access to the privileged command set, as well as to console and terminal lines. Access lists restrict transmissions to only the specified addresses, whether identifying server ports, hosts, or protocol translators.

Network Consulting Services

Because of the explosive growth of corporate networks, many organizations are unable to find key personnel with the critical technical expertise needed to build and maintain large networks. To fill this gap, Cisco Systems offers Network Consulting, a custom consulting service for network planning, installation, and ongoing support.

Networking specialists from Cisco Systems can ensure the success and cost-effectiveness of a network. Whether for a few months or for decades, Cisco Systems is ready to plan network strategies, define and allocate resources, install and test equipment, implement a preventive maintenance program, monitor network performance, and troubleshoot problems.

Maintaining Networks

As people use networks more, they come to depend on their capabilities. Network users begin to take for granted that the network will always be available. Network managers face the challenge of meeting this expectation.

At Cisco Systems, hardware reliability is a top engineering priority. If problems do occur, Cisco Systems' inboard diagnostic software helps isolate them quickly, enabling customers to identify problems and arrange repairs without being familiar with the equipment. Cisco Systems engineers are always available to help with failure diagnosis, if necessary.

Cisco Systems standard service includes board exchange, with replacements delivered by next-day express service. A premium service contract provides 24-hour coverage throughout the continental United States. On-call, on-site service by Cisco Systems field engineers is available anywhere in the world. More information about Cisco's service and support is found in the *North American Customer Services Product Guide.*

Configuration Options

Part of the power and flexibility of Cisco Systems product components is derived from their physical configuration options. Customers can choose the chassis, processor, back panel connector mountings, and communications interfaces best suited to their network.

Chassis Options

Two models are available for protocol translation:

■ The CPT™ model is built on the C-chassis, a compact two-slot chassis. This model is best suited to acting as a central-site protocol translator.

■ The IGS™ model is a single-board router/bridge/protocol translator with two network interfaces. The IGS is designed for remote offices, or to interconnect PC LANs. Protocol translation is a software option with the remote Ethernet IGS.

Processor Options

For high-speed operation the IGS and CPT use processors based on the MC68020 micro-processor. The Cisco Systems processors contain onboard RAM, system ROM holding all operating system, bootstrap, and diagnostic software, and hardware and software support for a control console.

Cisco Systems also offers optional non-volatile memory that retains configuration information despite power losses or system reboots. With the non-volatile memory option, the terminal and network servers need not rely on other network servers for configuration and boot service information.

Connector Panel

The IGS and CPT each are provided with two network connectors. The IGS can be equipped with the following interface connectors:

■ One 25-pin RS-232C D connector (DTE only on IGS)

■ One or two 15-pin Ethernet connectors

■ One V.35 connector (DTE only on IGS)

- One RS-449 connector (DTE only on IGS)
- One X.21

The CPT supports two of the following connectors:

- One 15-pin Ethernet connector
- One V.35 connector (DTE and DCE)
- One RS-449 connector (DTE and DCE)
- One RS-232C D connector (DTE and DCE)