IBM
3172 Interconnect Controller

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Product Summary

Editor's Note
In 1989, IBM introduced the 3172 Interconnect Controller Model 1, to link local area networks to IBM mainframes. In its September 5, 1990 product announcements and enhancements, IBM released Model 2 of the 3172. The availability date for Model 2 is December 27, 1991.

Description
The 3172 Interconnect Controller is a microprocessor-based device that attaches LANs to the company's mainframes. Model 1 attaches to the System /370, and the as yet unreleased Model 2 will connect to the System/370 and the newly announced System/390. To accommodate IBM's new Enterprise Systems Connection (ESCON) architecture, the company currently offers an ESCON adapter for the Model 1 and plans to incorporate ESCON support into the Model 2.

Strengths
The Model 1 is already equipped with ESCON capabilities through the ESCON adapter.

Limitations
The Model 2, which supports LAN connections to the System /390, will not be available until December 27, 1991.

Competitors
IBM plug-compatible vendors.

Vendor
International Business Machines Corporation (IBM)
Old Orchard Road
Armonk, NY 10504
Contact your local IBM representative.

Price
Model 1—$15,450; Model 2—$48,500 plus $25,000 for FDDI adapter.

—*By Barbara Callahan*
Associate Editor

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Product Strategy

On September 5, 1990, IBM bombarded the media with announcements that will affect the computer industry for years to come. Gearing up for a future in which speed, volume, and communications capabilities will dictate the creation of product lines and the marketing of them, the company introduced ESCON, an architecture that makes use of wideband, high-speed fiber optic channels. In effect, ESCON extends the walls of the data center by allowing equipment to be located more than five miles away.

Thrust into the limelight of the announcements, the 3172 Interconnect Controller is assuming more responsibility in networks based on Systems Network Architecture (SNA) and expanding into fiber networks via the new Model 2. Equipped with an Intel 80486 microprocessor, the 3172 Model 2 can attach an FDDI LAN to an IBM System/370 or System/390 parallel channel.

IBM's new Remote Channel-to-Channel Feature software allows a Model 1 to support channel-to-channel communications via T1 links between remote hosts. The software enables users to configure up to four T1s as a unified transmission group. Plans for incorporating T3 and OSI support into the 3172 are under way.

Competitive Position

In the LAN market, in which the 3172 competes, IBM faces a long list of competitors. Although late in entering the heterogeneous communications market, IBM made up for lost time by developing the 8209 LAN bridge that supports token-ring and Ethernet. That approach continues and expands in the 3172, which supports token-ring, Ethernet, and MAP 3.0.

Competitors who had hoped that IBM's years of dominance were waning must have experienced an early frost from the September announcements.

The giant had not been sleeping, but had been merely honing its tools to capture more of the networking market. IBM has issued statements of direction for the 3172, thereby validating its importance as a tool in its LAN strategy.

Decision Points

Users can be sure that IBM will maintain its position as a LAN leader and a LAN trendsetter. If IBM believes in fiber and sets the stage for its widespread use through ESCON, users can bet that other vendors will follow. IBM will continue to support 3172, enhancing it for frontline service in the company's march toward T3, FDDI, and OSI. IBM plans to make its products talk to whatever is out there now and whatever will come along in the future.

Characteristics

Overview

The IBM 3172 Interconnect Controller Model 1 is a Micro Channel/80386-based intelligent device that supports channel attachment of local area networks to IBM System/370 host processors. Model 2, released in September 1990, is based on an Intel 80486 microprocessor. Model 2 can attach an FDDI LAN to an IBM System/370 or System/390 parallel channel. In multiple LAN attachments, the 3172 provides data transfer services and connections between LANs and host processors in Transmission Control Protocol/Internet Protocol (TCP/IP) and Manufacturing Automation Protocol (MAP) networks.

Configuration

The base unit of the 3172 consists of a cabinet with operations panel, system board with RAM and processor, diskette drive, hard disk, one channel adapter, and power supply.

LAN Support

The 3172 supports IEEE 802.5 (IBM Token-Ring) and IEEE 802.3 (CSMA/CD), which includes Ethernet via ▶

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Company Profile
IBM Corporation

Corporate Headquarters
Old Orchard Road
Armonk, NY 10504

In Canada
IBM Canada Ltd.,
Markham
3500 Steeles Avenue E.
Markham, ON L3R 2Z1
(416) 474-2111

Offices located in other
cities throughout Canada.

Officers
Chairman/CEO: John Akers
Vice Chairman: Jack D. Kuehler
Sr. VP/Gen. Mgr.: Terry Lautenbach

Company Background
Year Founded: 1914
No. Employees: 400,000 worldwide

IBM is one of the oldest manufacturers of computing equipment in the world. It started out in Poughkeepsie, NY as a small company manufacturing clocks for industrial use and later introduced punched card equipment for business accounting functions. According to *Business Week* and *Fortune*, IBM is among the top five industrial corporations by sales volume. It has dominated the mainframe market for over 30 years and has a strong hold on other industry sectors.

Business Overview
IBM designs, manufactures, markets, and services mainframe computer systems and associated peripherals; minicomputer systems and peripherals; microcomputer/personal computer systems; computer system software; data communications controllers and terminals; other communications products such as modems, voice response systems, and voice messaging systems; local area network communications products; and office equipment. In addition, IBM provides specialized products and services such as communications carrier and limited time-sharing services; the IBM Information Network, a communications facility with remote storage and computing services; OEM manufacturing of terminals, disk drives, and other products; maintenance service and system supplies; and financial services through its IBM Credit Corporation subsidiary.

Since it introduced its PC line of microcomputers, IBM has had several earning periods where the growth of the company was much less than anticipated. This reflects the competitive nature of the small systems market. To compete more effectively in this market, IBM has greatly expanded its software, as well as hardware, efforts and has entered into agreements with several independent software suppliers to provide tools for its entire line of computer products.

In September 1990, IBM sent shock waves through the industry, which are still being absorbed, by releasing a barrage of products in the mainframe and communications arenas that will shape the industry for many years. IBM introduced a new mainframe, the System/390, which, according to many analysts, represents the company's most significant announcement in 25 years. The System/390 is based on a comprehensive set of products, features, and functions that includes at its center the IBM Enterprise System/9000 family of processors—the most powerful ever offered by IBM. The company also introduced the Enterprise Systems Connection (ESCON) architecture, NetView Version 2, and a vast array of software. In addition, IBM enhanced many products, such as the 3172 and 3745 controllers.

Financial Profile
Operations results for 1989 showed that net profits fell 35 percent to $3.76 billion, or $6.47 per share. Revenues, however, increased 5.1 percent to $62.7 billion over 1988. Fourth-quarter earnings fell 75 percent to $591 million, or $1.04 per share, due to the $2.3 billion restructuring charge.

Management Statement
Moving more resources close to customers is a cornerstone of IBM's transformation in the computer industry. To that end, in 1988 IBM undertook the most significant restructuring of its business in more than 30 years, establishing seven lines of business and a new organization—IBM United States. This restructuring continued through 1989 and will continue to be dynamic in order to consistently meet the needs of its customers.

IBM notes that it is managing for the long term and, with the steps it has taken and continues to take, it remains confident about the future of its business.

To help its customers stay competitive, IBM announced its Computer-Integrated Manufacturing (CIM) Architecture. IBM claims its CIM Architecture gives customers a comprehensive strategy to help them integrate information in a consistent manner across the entire enterprise. It addresses the integration challenge in an environment characterized by a variety of computer system technologies, operating systems, and applications. The CIM Architecture focuses on the storage of shared information, its delivery throughout networks, and its presentation to a variety of devices and users. IBM says CIM functions will be implemented for its Systems Application Architecture operating environments and its Advanced Interactive Executive operating environments.

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▶ *(Characteristics continued)*

TCP/IP, and MAP Version 3.0. The datastream is transparent to the 3172, which supports up to four LAN attachments and two channel attachments. Since MAP 3.0 adapters require two feature slots, the maximum of four LAN adapters is reduced by one for each MAP 3.0 installed by the user. Each 3172 includes one channel adapter as a standard feature and four feature slots for the connection of a variety of LAN adapters as optional features. The controller supports a second channel adapter as an option.

Components
System/370 Channel Adapter: This feature, which supports speeds up to 4.5M bps, interfaces with the System/370 block multiplexer channel as if it were a System 3088.
    Interconnect Controller Token-Ring 16/4 Adapter: This device attaches to a 16M or 4M bps Token-Ring Network that conforms to the architecture specified by IEEE 802.5.
    Interconnect Controller Ethernet Adapter: This feature provides attachment capabilities to IEEE 802.3 thick or thin Ethernet LANs.
    Interconnect Controller MAP 3.0 Broadband Adapter: This adapter implements the connection to MAP Version 3.0 LANs and conforms to IEEE 802.4 10M bps Token-Bus architecture. An adapter controller and broadband modem come with the product.
    Interconnect Controller MAP 3.0 Carrierband Adapter: This device implements the connection to MAP Version 3.0 LANs and conforms to IEEE 802.4 5M bps Token-Bus architecture. An adapter controller and carrierband modem come with the product.
    ESCON Adapter: IBM enhanced the capabilities of the Model 1 with the ESCON adapter, which supports remote channel-to-channel attachment over wideband digital transmission links. The Model 2 will support ESCON in the future.

Workstation Support
Each IBM Personal Computer or PS/2 workstation communicating with the host via the 3172 can use one of the following:

- IBM TCP/IP for the Personal System/2
- IBM AIX Personal System/2 TCP/IP
- IBM AIX Access for DOS users
- IBM X Windows for IBM DOS
- IBM AIX/RT Version 2.2
- IBM OSI/Manufacturing Message Services for OS/2
- AS/400 TCP/IP Connectivity Utilities

Interconnect Controller Program
The IBM Interconnect Controller Program (5601-400) or equivalent controls the data flow from a LAN adapter to a channel adapter (subchannel) and/or from a channel adapter to a LAN adapter. Users can connect multiple LANs to a single subchannel or multiple subchannels. At IPL, a logical, permanent connection occurs between a LAN and a subchannel.
    IBM includes a standalone configuration utility with each Interconnect Control Program. This configuration aid functions offline in any PS/2 or equivalent with space for a 3.5-inch, 1.44M-byte diskette drive and a 5M-byte hard drive disk. The utility operates with PC-DOS Version 3.3 or 4.0 or the DOS partition in the OS/2 operating system. The utility prepares a configuration file on the diskette that is shipped with the Interconnect Controller Program. When the configuration is complete, the user loads the diskette into the 3172.

Remote Channel-to-Channel Feature
This software enables a Model 1 to support channel-to-channel communications between remote hosts via T1 links. Users can configure up to four T1s as a single transmission group. IBM announced the same capability as a statement of direction for Model 2.

Pricing
The 3172 Model 1 costs $15,450, with an annual maintenance charge of $832. The 3172 Model 2, scheduled for availability December 27, 1991, costs $48,500. An FDDI adapter for the Model 2 costs $25,000. ∎