Charting a course to the future

IBM 3172 Nways Interconnect Controller Model 3

Highlights

- ***Field-proven, host gateway transport of today's prevalent customer protocols including TCP/IP and SNA***
- ***Supports LAN andWAN connection to S/370™ and S/390® hosts***
- ***ESCON®and parallel channel adapters for connection to VM and MVS® hosts***
- ***WAN connection at line speeds up to 2 Mbps***
- ***Dedicated 155-MbpsATM and FDDI connections into today's high-speed LANs***
- ***Operates with a popular set of operating systems that includes Interconnect Controller Program and OS/2®Warp operating system***

The IBM 3172 Nways™ Interconnect Controller Model 3 helps you capitalize on today's investments in ATM, LAN, WAN and mainframe computers. The 3172 also supports your High-Performance Routing (HPR) network with Automatic Network Routing (ANR) and Rapid Transport Protocol (RTP) gateway support. It's easier than ever for local and remote workgroups to share your business information resources.

The 3172 gives you economical access to TCP/IP and VTAM®/SNA host applications from ATM, LANs, wide area Frame Relay, X.25 and SDLC links. The 3172 can also communicate with IBM's and other manufacturers' products supporting multiprotocol Frame Relay that adheres to RFC 1490.

Increased connectivity options let you access a range of business applications and yet manage costs aggressively. Plus the 3172 satisfies the needs of three major environments: TCP/IP, VTAM/SNA and client/server.

The multifaceted 3172 offers a selection of operating-system-specific solutions to help you consolidate your networks effectively.

Interconnect Controller Program Version 3.5

IBM created the Interconnect Controller Program (ICP) expressly for the 3172. The ICP provides host channel access for LAN devices. A 3172 running the ICP gives LAN devices concurrent access to VTAM/SNA and TCP/IP host applications. This program was developed with static routing to maximize throughput efficiency.



ICP includes the Operator Facility/2, which supports basic operator functions, manages up to sixteen 3172s including on-line loading of 3172 configurations and code updates, and creates diskettes for 3172 configuration and IPL. Also included is the Performance Monitor, which enables you to monitor 3172 CPU utilization and the performance of LANs and channels.

Enhancements to the ICP provide sharing of a 3172 LAN adapter by multiple TCP/IP hosts, support for two FDDI adapters and filtering to reduce the effect of broadcast storms.

The Interconnect Enhancement feature enables the 3172 to support:

- VTAM access for Token-Ring, Ethernet and FDDI networks
- SNA management services for a LAN gateway

OS/2 – extending 3172 connectivity options

Hardware performance enhancements allow the 3172 to readily utilize newer connectivity options provided by IBM's OS/2 operating system. Separate program products have been created to provide a range of functions that include routing of TCP/IP to multiple channel-attached hosts, wide area connectivity, ATM connection and HPR support.

IP Channel Communications

The 3172 IP Channel Communications Program, in conjunction with an OS/2 operating system, provides dynamic TCP/IP route access to as many as 16 channel-attached mainframes. TCP/IP routing across an ESCON channel or parallel channels provides increased application access for ATM- or LAN-attached workstations. IP Channel Communications can operate with other OS/2-based software to provide wide area connectivity.

IP Channel Communications also responds to ARP requests from TCP/IP workstations in the network. 3172 ARP response can, in larger TCP/IP networks, eliminate a significant amount of mainframe TCP/IP processing required for address resolution.

IP Channel Communications can be ordered as a preloaded, stand-alone program or with other OS/2-based, preloaded features.

TCP/IP Offload

A mainframe-based TCP/IP software feature operates with TCP/IP for OS/2 in the 3172 to offload cycles from the mainframe. With this TCP/IP offload software, you can reduce the impact of host TCP/IP file transfer by 30% to 60%. Actual reduction depends on the TCP/IP application, the mainframe MVS or VM software level, the data format and the 3172 processor.

This software, although a feature of TCP/IP for VM or MVS, is resident on the 3172 and can be ordered as a preloaded, stand-alone program or with other OS/2 preloaded features.

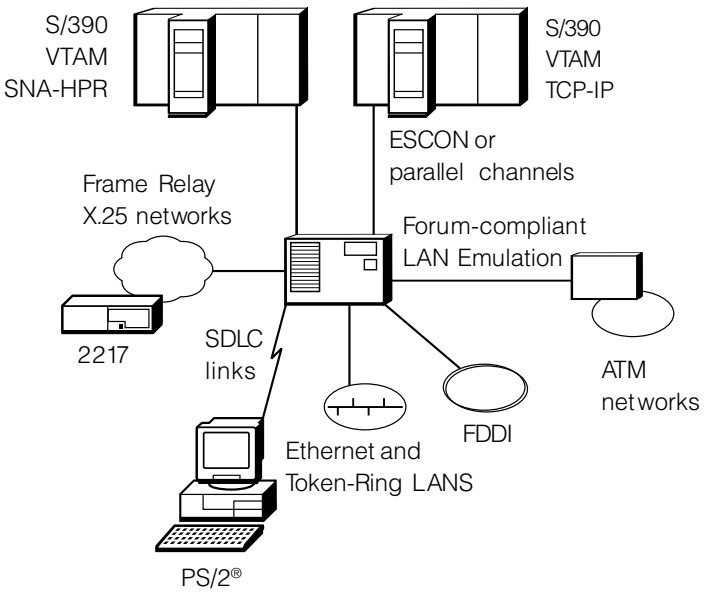
SNA Communications Program

The 3172 SNA Communications Program provides VTAM/SNA host access from ATM-, WAN- and LAN-attached networks. WAN connectivity includes support for up to 32 SDLC lines and up to 4 Frame-Relay connections operating at line speeds up to 2 Mbps.

The SNA Communications Program effectively maximizes host application access throughout your enterprise – whether across the street or across the country.

When combined with other OS/2 programs, RouteXpander/2 and RouteXpander X.25 Support/2, wide area connectivity is expanded to include X.25 networks.

SNA Communications can also be ordered preloaded on the 3172 as a stand-alone program or in combination with other OS/2 preloaded features.



HPR Channel Connectivity Program

The HPR Channel Connectivity Program, operating with Communications Server for OS/2, provides HPR functions for the S/390-attached 3172 gateway. HPR is an end-to-end, connection-oriented protocol that offers performance, availability and reduced bandwidth advantages. In addition to HPR, Dependent LU Requester (DLUR) functions are provided.

The 3172 with HPR provides RTP and ANR functions. As an RTP endpoint, the 3172 performs nondisruptive path switching, endpoint error recovery and selective packet retransmission. When providing the streamlined ANR processing, the 3172 continues to support all SNA traffic prioritization and allows specific priorities to be assigned.

IBM 3172 software compatibility summary

Software	ICP	ICP Enhanced	TCP/IP Offload	IP Channel	SNA Comm	HPR Channel	Comm Server	Route-Xpander/2	RXR/2X.25
Preload combinations			■						
				■					
					■				
						■	■		
			■		■				
				■	■				
				■		■	■		
Coexistence	■	■							
				■			■	■	■
					■		■	■	■
						■	■	■	
Protocol support connectivity	**TCP**	**SNA**	**TCP**	**TCP**	**SNA**	**SNA**	**SDLC**	**FR**	**X.25**
ESCON	2	2	1	1	1	1			
Parallel Channel	2	2	1	2	2	2			
Ethernet	4	4	4	4	4	4			
Token Ring	4	4	4	4	4	4			
FDDI	2	2	1	1	1	1			
ATM (155)			1	1	1				
WAC (1 or 2 ports)					2		2	4	4
8-port (Portmaster)					4		4		

Notes: All preloaded options include OS/2 Warp Connect V.3. (ICP is not available as a preloaded option.)
The preload combinations also can coexist.

DLUR support on the 3172 extends the dynamic routing benefits of APPN® to dependent displays. Dependent LU Server (DLUS) and DLUR calculate the best, rather than a predefined, route for a 3270 session. You can gain the advantages of HPR/APPN without having to change the existing 3270 applications or dependent displays.

Your ATM gateway connection

With the new TURBOWAYS™ 155 ATM Adapter providing ATM Forum-compliant LAN Emulation, the 3172 now offers cost-effective ATM-to-System/390® server connectivity. LAN Emulation allows you to run existing TCP/IP and SNA applications over ATM networks, preserving your investments while migrating to the latest available high-bandwidth technology. The 3172, operating with OS/2-based software, provides ATM network connectivity over multimode fiber as Ethernet or Token-Ring emulation to S/390 servers with ESCON or parallel channel attachments.

More computer power for LANs–the mainframe server

If you have a LAN you can benefit from the computing power of a LAN-based server. But as your network needs grow, a mainframe that transparently provides LAN server functions is an attractive alternative.

With a 3172 and a System/390 mainframe, you can supply all the functions of a dedicated LAN server. Plus you get functions that aren't usually found in smaller solutions: levels of file retention, security, management, efficiency and high performance. When you add up all the costs of operation, a 3172 solution is often the most economical.

When a 3172 works with one of two client/server programs, you get increased server functions without having to add more workstation code. These programs are described in the following sections.

LAN File Services/ESA and LAN Server

LAN File Services/ESA for VM and LAN Server for MVS use mainframe DASD to provide file-sharing services to workstation users on OS/2 LAN and TCP/IP workstations. These program products operate with an OS/2 operating system in the 3172 and companion code in the mainframe.

LAN Resource Extension and Services

LAN Resource Extension and Services (LANRES) for MVS and VM gives NetWare clients more disk space by making host DASD accessible. LANRES also makes host printers accessible to NetWare clients and provides facilities for LAN administration and data distribution. LANRES operates with a NetWare-based operating system in the 3172 and companion code in the mainframe.

Proven performance, not just promises

You can get the power and flexibility of choice with the 3172 today. The 3172 has a proven track record and a long list of satisfied customers. Continual hardware improvements increase the performance delivered by the 3172, but certain constants remain.

A 3172 running the ICP provides the highest attainable throughput. Actual throughput depends on many parameters, including the type of LAN and channel adapter, processor speed, number of sessions and protocol. Refer to MKTTOOLS for the most current published performance numbers.

TCP/IP Offload requires the most 3172 processor cycles (the result of reducing mainframe cycles up to 60%); normally throughput is less than when operating with ICP. Refer to MKTTOOLS for the most recent published results.

The wide area link support of the SNA Communications Program, the dynamic route selection provided by the IP

IBM 3172 Interconnect Controller Model 3 at a glance

Hardware platform	Ports: 4 LAN, up to 32 WAN, 2 channel Storage: 8-MB to 64-MB memory, 1.44-MB diskette drive, 2-GB fixed disk Operations panel: Integrated keyboard/display; mouse support	
Physical attributes and operating environment	Mounting: Rack-mounted in IBM 9309-002 or an EIA standard 19-inch rack with rear supports Height: 311.2 mm (12.25 in.) Width: 482.6 mm (19 in.) Depth: 482.6 mm (19 in.) Weight: 18.6 kg (41 lb) Power: 2.5 KVA Line voltage: 200 to 240 V ac Frequency: 50 to 60 Hz Relative humidity: 8% to 80% Maximum wet-bulb temperature: 27°C (80°F)	
	Feature Number	**Model/Feature**
Hardware feature	3172 Model 3	80486SX 25-MHz, 2-GB disk, 3172 Model 3 8-MB memory
	2855	Pentium 90-MHz upgrade
	2815	8-MB memory expansion
	2500	Rack-mount kit
	2700	OS/2 support feature: 8-MB memory expansion monitor/XGA adapter and keyboard
	2705	OS/2 mouse with extension
LAN and WAN adapters	2300	FDDI Adapter
	2315	TURBOWAYS 155 ATM Adapter
	2235	Auto LANStreamer® MC 32 Adapter
	2245	EtherStreamer® MC 32 Adapter
	2900, 2910, 2920	X.21, V.35 or RS-422/449 WAC
	2901, 2911, 2921, 2922	Second WAC port per adapter (above three interfaces plus EIA-232)
	2930	ARTIC Portmaster EIA 232 (8 ports)*
	2940	ARTIC Portmaster X.21 (6 ports)
	2950	ARTIC Portmaster V.35 (6 ports)
	2960	ARTIC Portmaster EIA 422 (8 ports)
Channel adapters	Parallel channel	2501
	ESCON channel	2801

* Connectivity provided by coresident RXR/2 software

IBM 3172 Interconnect Controller Model 3 at a glance (continued)

Applications	TCP/IP—MVS & VM	VTAM—SNA	Client/Server
3172 software requirements	ICP V 3.5 • Offload: -OS/2 V 2.1 or higher -TCP/IP-OS/2 V 2.0 • Offload feature: -MVS, VM	ICP V 3.5 with Interconnect Enhancement • NetWare for SAA® -NetWare V 3.11 or higher -NLM—3172-BT1 • SNA Communication -OS/2 V 2.1 or higher	• OS/2 LAN Server: -LAN File Services/ESA for VM -IBM LAN Server for MVS -OS/2 V 2.1 or higher • NetWare Server: -LANRES/MVS, VM -NetWare V 3.11 or higher
Host software requirements	-TCP/IP—VMS V 2.2.1 or higher -TCP/IP—VM V 2.2 or higher -AIX®/ESA V 2.1 (ICP)	• ICP: ACF/VTAM® V3.4 -MVS/ESA™*, VM/ESA® -VM/SP, VSE/ESA™ -ACF/VTAM 4.1 for MVS/ESA • NetWare for SAA: -ACF/VTAM V 3.2 • SNA Communications: -ACF/VTAM V 3.4	• LAN File Services/ESA: -MVS/ESA SP™ JES2/3 -VM/ESA • LANRES/MVS: -MVS/ESA SP JES2/3 • LANRES/VM: -VM/ESA, VM/SP, VM/XA, SP
Warranty and service	The IBM 3172 Interconnect Controller Model 3 is backed by a 1-year warranty. The warranty and subsequent IBM Maintenance Agreements include IBM Onsite Repair. The IBM Interconnect Controller Program is covered by a limited warranty. Media are covered by a 3-month warranty.		
Note	Refer to LAN File Services/ESA and LANRES product descriptions for complete requirements.		

Channel Communications Program and the connection-oriented message handling of the HPR Channel Connectivity Program all require additional 3172 processor cycles. Throughput results are typically better than with TCP/IP Offload but less than ICP's static routing.

ATM promises to be the next revolution in networking, providing the desktop-to-the-world information highway for the future. The TURBOWAYS 155 ATM Adapter provides ATM Forum-compliant LAN Emulation for host access for today's users. LAN Emulation will typically limit throughput to less than the adapter speed.

An accepted industry platform

The 3172 is designed to accept value-added software solutions. The 3172 Model 390 with preloaded software provides a new IBM product called *Network Control Program (NCP) Server*. NCP Server provides an economical set of mainframe functions to support the IBM 3745 Communication Controller family of products. The 3172 Model BT1 accepts software from Novell and Bus-Tech to allow workstations running IPX protocols to gain 3270-like access to SNA applications. Bus-Tech also markets the 3172 Model NT1 with Microsoft software to provide SNA access from Windows® NT®-based workstations.

A solution for now, a solution for later

IBM designed the 3172 with the future in mind. Since its introduction, IBM has continued to develop enhancements and applications to meet your growing needs.

As your network computing needs evolve, the 3172 is evolving with them. The 3172 has grown from processing simple gateway applications to handling TCP/IP offload applications, wide area connections, client/server applications and dedicated ATM connectivity.

Factors affecting network directions often change like the wind. If you invest in a 3172 today, you gain the power and versatility to safely carry your mission-critical data as you travel toward the future. The 3172's ability to respond to changes in network requirements provides prudent investment protection.

For more information

To find out more about the IBM 3172 Nways Interconnect Controller Model 3 and other high-performance IBM communications and networking products, contact your IBM representative or call IBM Direct at 1 800 IBM CALL (1 800 426-2255). You can also obtain information from the IBM Networking Home Page at http://www.networking.ibm.com.

Copies of this and other related product specification sheets can be obtained from the IBM FAX Information Service by dialing 1 800 IBM-4FAX (1 800 426-4329) in the U.S. or Canada or by dialing (415) 855-4329 outside the U.S. and Canada and requesting document number 6245.



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