

# Solutions

A Business-to-Business  
Newsletter From CompuServe

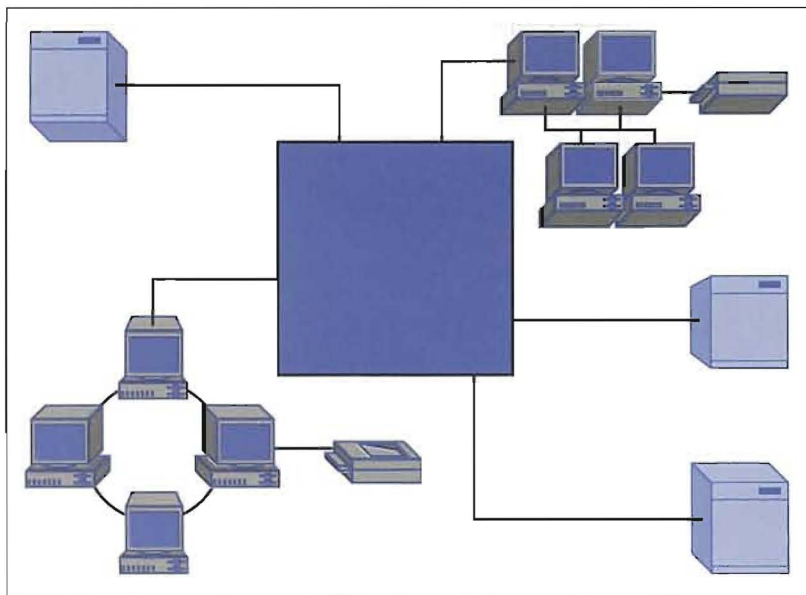
## Frame Relay.....The Next Generation of PDN Access

**P**ublic data networks (PDNs) such as the CompuServe Network have traditionally been utilized for relatively low speed access to centralized host computing resources. Today's data communications environment is changing, and a migration is being made from the use of generally "dumb" communication devices to the deployment of more distributed-intelligent communication devices, such as local area networks (LANs). Applications that were once available only on centralized host computers

The frame relay process is relatively simple. Intelligent communication endpoints, such as routers or front ends that support frame relay, are connected via dedicated links to a frame relay switching center in the network. High level protocols running on these endpoints are responsible for handling the error correction and retransmission functions traditionally done by the network. Due to the availability of highly reliable digital fiber circuits, error rates and line problems are low and retransmissions are nominal. If problems do occur, however, the intelligent endpoints

detect any lost frames and recover by retransmitting the appropriate frames. Further assurance of low retransmissions will likely be found in public data network implementations of frame relay in which enhanced features will provide congestion management. Frame relay also provides optimum bandwidth utilization. The frame relay network manages the distribution of bandwidth among many connections to enable full capacity to be used by all sites, but ensures no single endpoint alone exhausts the available bandwidth. Each endpoint is assigned a "Committed Information Rate" (CIR) which guarantees a certain level of transmission for that site. When the location needs to communicate through the network, frame relay ensures that the site is given bandwidth utilization up to its registered CIR. If further bandwidth is available, the network will transmit at a higher utilization up to a specified maximum rate, allowing "bursty" traffic to be efficiently transmitted at very high speeds.

Frame relay technology today and in the future will provide an efficient solution to communications environments requiring high speed bandwidth on demand connectivity between multiple endpoints via a single network connection. CompuServe is committed to offering services designed to meet your current and evolving communications needs. Read the following article to learn more about CompuServe's new frame relay offering, FRAME-Net.



are moving to LANs in distributed remote locations. These distributed computing centers are relatively self-contained, and require limited access to other computing resources.

In addition to the migration to intelligent communication devices, the nature of the applications being utilized has also changed. Emerging LAN-based applications, including distributed databases, image and graphics transmissions, software development and publishing are more prevalent. These LAN-based applications require "on demand" access to other remote computing resources, but also may require a significant amount of data to be transmitted. It is critical that these locations have high speed, high bandwidth on demand for efficient communications between remote computing centers, often referred to as "bursty" traffic. Speeds from 56kbps and higher are critical to ensure utmost performance and productivity.

The available access speeds and architecture in traditional X.25 packet switched networks are not sufficient for this changing data communications environment. Frame relay, a new "packet mode" technology, addresses the transmission requirements for more cost-effective and high connectivity communications. Frame relay is an interface standard, comparable in many respects to X.25; however, it uses only layers 1 and 2 of the OSI model (the physical and data link layers respectively). While layer 3 is used in X.25 (the network layer handling end-to-end data integrity), this layer is eliminated in frame relay. In X.25, the network performs error retransmission at every node hop in the network. In contrast, frame relay eliminates this overhead and relies on the intelligent communication devices to handle error retransmission and flow control.

► "Of the three VAN providers, CompuServe appears to be in the best position to rapidly deploy its services, according to Rick Malone, a principal at Vertical Systems Group, a Dedham, Mass.-based consulting firm."

*Communications Week*

April 15, 1991

## CompuServe's FRAME-Net Launching a High Speed Service

**C**ompuServe's FRAME-Net<sup>SM</sup> service will allow CompuServe network customers to connect LANs, hosts, PADs and other devices to the network at speeds of 56kbps, 256kbps and eventually T1.

Frame relay, a new high speed interface specification defined by ANSI and CCITT, is a signalling and data transfer mechanism between intelligent endpoints over very high quality telecommunications facilities. Higher transmission is achieved by elimination of the error correction and retransmission functions at each network node and relying on the intelligent endpoints to ensure that data reaches the correct destination.

CompuServe will offer FRAME-Net in partnership with StrataCom Inc. of Campbell, Calif., a leading fast packet and frame relay supplier. StrataCom manufactures the IPX fast packet networking system, a T1 multiplexor for frame relay, which is the platform utilized for CompuServe's FRAME-Net service. CompuServe will install 50 frame relay service centers throughout the U.S. in 1991 and early 1992. Customers with frame relay-supportive premise equipment will be capable of connecting to these frame relay service centers, providing a solution for applications requiring high speed bandwidth on demand communications.

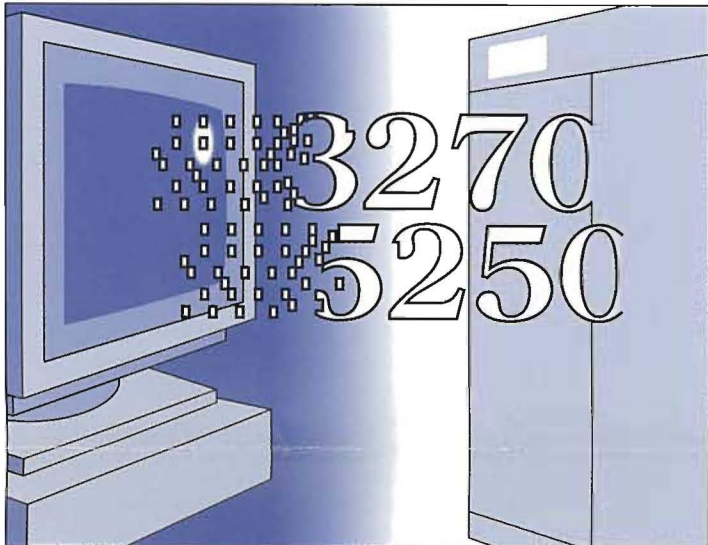
The decision to base the FRAME-Net service on the StrataCom platform is due to two key factors. First, is the performance advantages that StrataCom provides by their use of the FastPacket<sup>TM</sup> backbone switching technology. FastPacket is similar to cell relay and the emerging ATM (Asynchronous Transfer Mode) broadband interfaces. FastPacket allows for fixed size cell transmission between StrataCom network nodes, providing extremely low network latency compared to frame switches or packet switches. Second, StrataCom is a leader in frame relay technology and has been providing T1 switching equipment to CompuServe since 1988. Both companies are working closely together to ensure a timely release of FRAME-Net and are well positioned to pursue other key joint development projects in the future.

FRAME-Net is currently in beta testing and will be commercially available nationwide in the third quarter of 1991. If your organization has a need for high speed connectivity, please contact your CompuServe account team to find out more about frame relay.

## CompuMode, PACKET/PC Provide IBM-Related Connectivity

Over the past three decades, IBM has established itself as an undisputed leader in the general purpose mainframe and minicomputer industry. In doing so, IBM created a series of proprietary network protocols and network architectures. These configurations have proven very successful for organizations who can effectively follow specific IBM standards.

As technology made rapid advancement



through the 1980s and into the 1990s, progressive organizations increased their technical expertise and sought multi-vendor solutions to complex business problems. With the use of a wide variety of hardware and software came the need for transparent network interconnection and protocol conversion.

As a public data network provider, CompuServe recognizes the need for organizations to interconnect their IBM System Network Architecture (SNA) network to other proprietary and non-proprietary protocol systems. To address these communications needs, CompuServe offers a series of IBM

enhanced protocol services specifically for IBM mainframe and midrange data centers.

In developing its IBM connectivity services, CompuServe has forged strategic alliances with organizations specializing in IBM micro to mainframe/midrange connectivity. Under this strategy, third-parties are chosen for their technical and industry expertise as well as their ability to develop and maintain products which take advantage of CompuServe's sophisticated public data network.

CompuServe's newest IBM connectivity service is the CompuMode SDLC Protocol Interface. CompuMode allows organizations to connect virtually any remote dumb terminal or personal computer to their IBM mainframe or midrange system. This interface runs on a hardware and software platform developed and modified for CompuServe by the Renex Corporation of Woodbridge, Va. and appears to the IBM mainframe or midrange as a 3274/3174 or 5294/5394 cluster controller, respectively.

When the CompuMode SDLC Protocol Interface is implemented, the remote dumb terminals dialing into the CompuServe public data network appear to the IBM mainframe or midrange as an IBM workstation supporting either the 3270 or 5250 datastream. To provide enhanced terminal functions, CompuServe provides a compatible MS-DOS personal computer software package called CompuMode-PC. With CompuMode-PC the inherent intelligence of the personal computer is used to perform screen and printer management functions, resulting in full IBM terminal functionality on a common PC without the expense of synchronous cards and modems.

In addition to CompuMode, CompuServe markets a full line of micro to mainframe/midrange products developed by Telepartner International Inc. of Farmington, Conn. These products include PACKET/3270, which works

(continued on last page)

## Identifying X.25 LAN Interconnectivity Needs

More than ever before, local area network (LAN) users need to communicate beyond their local environment. Not only do they need to communicate with other remotely-distributed LANs, but users also need access to remote host computing resources. CompuServe is exploring the market potential for new X.25 services to provide an easy and economical way to meet these needs.

In conjunction with a new reseller agreement with Eicon Technology Corporation, a leading manufacturer of advanced data communication products, CompuServe is pursuing a line of FIXED-LAN services to deliver an end-to-end solution for both LAN-to-LAN and LAN-to-Host connectivity needs.

CompuServe anticipates market interest in X.25 services enabling remote LANs to communicate with centralized host computing resources as well as to communicate with other distributed LANs. The FIXED-LAN services are expected to provide all hardware and software necessary to connect remote LANs to the CompuServe Network, and are expected to feature the following:

- a dedicated X.25 network link to the CompuServe Packet Network at speeds up to 56kbps
- a dedicated communications workstation to serve as the gateway/router PC
- an EiconCard which manages the X.25 link
- a Network Interface Card to link the gateway/router PC to the LAN
- Eicon's Access/X.25 software providing LAN-to-Host communications
- Eicon's Bridge/X.25 or NetBIOS Bridge software enabling LAN-to-LAN connectivity.

Based on market opportunity, CompuServe's FIXED-LAN services will present a single source solution by providing the installation, configuration and ongoing maintenance of the gateway/router hardware and software, as well as the X.25 connection to the CompuServe Network. This value-added approach will make establishing LAN communications easy, and enable reliance on CompuServe's expertise in both wide area networking and LAN interconnectivity. If your organization is faced with the question of how to interconnect remotely-distributed LANs via X.25, contact your local CompuServe branch office.

## CompuServe Network Saves Mayflower Agents Time & Money

More than 300 Mayflower Transit agents worldwide have hung up their phones and turned to their personal computers and the CompuServe Network. Using the Indianapolis-based Mayflower's Customer and Agent Information Network System (CAINS), agents now spend more time serving customers and less time dealing with headquarters.



Simon Morse, Mayflower

From their IBM or compatible PCs, agents are linked to Mayflower's host mainframe computer by a local phone call via the CompuServe Network to batch transmit data, such as order registration and order tracking, through the various phases of the order life cycle.

"Our agents are no longer dependent on calling Indianapolis 10 to 15 times a day for credit requests or order status information," explains Mayflower's Simon Morse, vice president and chief information officer. "There's a substantial time and cost savings by transmitting data electronically as opposed to over the phone—and there's never a busy signal."

According to Morse, the time needed to register shipments is cut significantly with CAINS. Additionally, agents can manage their time more efficiently by grouping their various requests and sending them once a day at their convenience.

Besides the associated communications cost savings, administrative costs are also reduced by computerizing such functions as bills of lading and tariff updates.

More accurate information flow is another benefit of using data network communications. Errors that often result from verbal communication, such as wrong addresses or loading dates, are reduced. And, because agents are tapping directly into the host computer, they're receiving correct answers to their questions, such as those about discounts on contract orders.

"CAINS enables Mayflower agents to provide customers with accurate information quickly, allowing agents to offer higher quality customer service," explains Morse.

In fact, some of Mayflower's national account customers are also on the CAINS system.

Agents on the CAINS system use PACKET/PC communications and terminal emulation software to access the Mayflower host computer through the CompuServe Network, which is accessible via a local phone call.

"We did not want to invest in the training and other services that are needed to build our own network support. Network management is CompuServe's business, not ours. It's what they're good at," Morse says. "With CompuServe, if there's a problem, it takes one phone call. They determine the problem and they solve it."

CompuServe provides local day-to-day network support, as well as long-range planning and consulting. Also, CompuServe's worldwide capabilities offer a cost-effective solution for linking overseas remote agencies to Mayflower's host computer.

► "There's a substantial time and cost savings by transmitting data electronically as opposed to over the phone—and there's never a busy signal."



The CAINS system is available to all Mayflower agents. The moving company intends to offer additional services through the CAINS system and plans to continue using CompuServe as its network provider.

# Newsbriefs

## World Watch

CompuServe now offers 9600 bps dial service from London, England. Miracom (US Robotics) V.32 modems with V.42 error correction have been installed to support all speeds from 300-9600 bps.

CompuServe will install communication sites in Frankfurt and Munich, Germany early this summer. These sites will provide local dial access up to 9600 bps and dedicated line services directly into CompuServe's network.

In addition, interconnections to the German PDN Datex-P will provide supplementary dial coverage throughout Germany. These services will provide easier and more economical options to CompuServe customers in Germany.

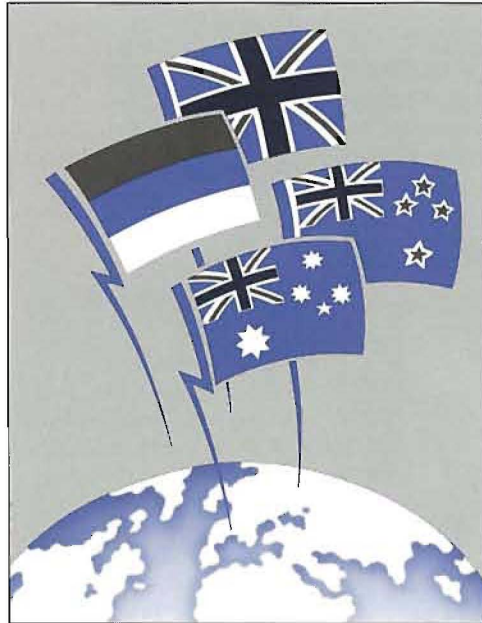
Within the year CompuServe will complete an interconnection to an Australian packet network (FALNET). This will provide local access from cities in Australia and New Zealand to hosts on CompuServe's network in the United States.

## CompuServe Acquires SEARA Information Strategy Corporation

CompuServe has acquired SEARA Information Strategy Corporation, a McLean, Virginia-based local area network (LAN) systems integration company. SEARA will join the Systems Integration Group of CompuServe's Network Services Division, along with MicroSolutions, Inc., the Dallas-based company acquired by CompuServe last August. SEARA serves a diverse customer base of law firms, corporations and associations, providing a full range of LAN consulting, systems and technical services. The SEARA acquisition is an important step in the nationwide expansion of CompuServe's LAN Systems Integration Group. This group will enable CompuServe to sell and support LAN systems in addition to providing wide area network LAN interconnections. Rob Mainor, president, of SEARA, has been named general manager of CompuServe's Systems Integration Group.

## Alliance Formed to Address EDI Business Needs

CompuServe and Sterling Software's ORDERNET Services Division have entered into a strategic alliance resulting in the integration of ORDERNET's EDI service and CompuServe's packet data network. The alliance combines the reliable, local-dial access of the CompuServe network with the benefits of ORDERNET Services' EDI expertise.



ORDERNET has provided EDI services since 1978, longer than any other EDI network, and is known as a premier leader in EDI services and software. ORDERNET is among the top providers of EDI translation software for micro, midrange and mainframe computers.

"This partnership will permit CompuServe and ORDERNET Services to leverage each other's industry strengths to provide a fully-integrated service," said Bob Massey, executive vice president of CompuServe's Network Services Division.

## WORLDSPAN Travel Agents Have Easy Access Via CompuServe Network

WORLDSPAN, a leading provider of comprehensive information services to the travel industry, has signed a new five-year agreement to provide its customers dial-up access to WORLDSPAN host computers via the CompuServe Network.

"Because of our longstanding business relationship with CompuServe, WORLDSPAN subscribers will continue to enjoy cost-effective access to their applications," said Paul Halstead, WORLDSPAN vice president-distributed application development. Halstead added that there are "significant cost efficiencies" under the new agreement.

The CompuServe Network will be used by designated WORLDSPAN travel agencies who utilize the company's dial-in airline reservation systems.

"CompuServe is very pleased to expand its agreement with WORLDSPAN," said Bob Massey, executive vice president of CompuServe's Network Services Division. "The capabilities CompuServe offers are

particularly effective for WORLDSPAN subscribers who need periodic or remote access to WORLDSPAN's information."

Use of the CompuServe Network eliminates the expense of leased or dedicated line access for many travel agencies who use WORLDSPAN services.

## CompuServe Now Offers Authorized LAN Classes

CompuServe now provides vendor-authorized local area network training classes in eight cities coast-to-coast. CompuServe is licensed by Novell, Banyan, Microsoft and 3Com to conduct LAN administration classes specific to each vendor's operating systems.

CompuServe currently provides LAN classes in Los Angeles, San Francisco, Dallas, Houston, Chicago, Columbus, New York City and Washington, D.C. Dates for public offerings are scheduled 90 days in advance. On-site classes are also available for a minimum of six students.

Novell's entire six-course Certified NetWare Engineer (CNE) training program is available, as well as all eight LAN courses developed by Microsoft University. Classes in Banyan's Vines Administration, Advanced Planning and User Seminar courses are scheduled, and 3Com's courses in 3+Share and 3+Open administration are also available.

To request a free catalog with descriptions of these courses, class schedules and registration instructions, please call the following numbers:

In New York, Dallas, Houston and Columbus: 800-527-0177

In Los Angeles, San Francisco, Chicago, and Washington, D.C.: 800-783-7894

## CompuServe, Eicon Technology Announce Reseller Agreement

CompuServe has entered into a reseller agreement with Montreal-based Eicon Technology Corporation, a manufacturer of advanced data communication products.

Eicon Technology's gateway and router products will be offered as part of CompuServe's X.25 LAN Connectivity services. These services will provide complete LAN-to-LAN and LAN-to-Host interconnectivity at speeds up to 56 kbps.

"Eicon Technology offers superior quality, breadth of product line and excellent reputation in the X.25 and QLLC LAN connectivity arenas," said Andy May, director of marketing for CompuServe's Network Services Division. "Eicon Technology products, packaged with CompuServe's expertise in wide area networking, will enable CompuServe to deliver a value-added solution that addresses clients' LAN interconnectivity needs." (See related story on page 2).

## CompuServe Network Links Job-Seeking Students, Employers

More than 100,000 employers across the country can access the resumes of job-seeking students through JOBLINE, a database established by the University Treasury Corp (UTC).

"Employers simply access the service via the CompuServe Network and type in the credentials they prefer — a particular major, career preference, geographic preference, or other criteria," said UTC president Robert McGuire.

The CompuServe Network provides a cost-effective way for employers to access the resumes, which reside on UTC host computers in Chicago.



Bob Massey, executive vice president of CompuServe's Network Services Division (left), and Cal Rader, chief executive officer of WORLDSPAN, recognize the signing of a new five-year contract between the two companies. WORLDSPAN travel agents use the CompuServe Network for dial-up access to airline reservation and ticket printing systems.

(CompuMode, continued from page 2)

with either PACKET/74 or PACKET/MAIN to provide datastream support to remote PCs; and PACKET/5250, in conjunction with PACKET/94 to provide similar support for the 5250 datastream. Each of these products provides full IBM terminal emulation support with the addition of error correction, compression, and file transfer support.

In addition, Telepartner International offers several packages which meet specific application or end user needs. These include PACKET/3270-MAC supporting 3270 applications on the Apple Macintosh; PACKET/3270-LAN providing 3270 support to local area network based workstations; and PACKET/400, providing support to IBM Application System/400 midrange systems running IBM PC Support application programs.

Telepartner International is also in the process of releasing PACKET/FLASH! a package that will greatly increase the speed of transmitting display screens in 3270 interactive applications.

By providing both CompuMode and PACKET/PC products, CompuServe offers a wide range of personal computer and terminal IBM emulation solutions to CompuServe network customers. CompuServe continues to aggressively pursue new offerings to take advantage of changing technology; future service offerings may include enhanced LAN gateway products, multi-drop services, and peer-to-peer connectivity services.

To learn more about CompuServe's family of IBM services, contact your local CompuServe account team.

*IBM, System Network Architecture, SNA, SDLC, and Application System/400 are registered trademarks of International Business Machines Corporation.*

*Packet/3270, Packet/3270-MAC, Packet/3270-LAN, Packet/5250, Packet/74, Packet/Main, Packet/94, and Packet/400 are products of Telepartner International.*

## INTEROP 91

CompuServe Network Services will exhibit at INTEROP 91, October 7-11, in San Jose, Calif. INTEROP will feature live demonstrations by over 250 exhibitors as well as informative tutorials and conference sessions. The CompuServe exhibit, booth #107, will highlight the latest advances in FRAME-Net as well as other new products and services. Stop by the CompuServe booth at INTEROP to learn more about CompuServe's value added network services.



## 9600bps V.32 Public Dial Update

The cities below currently offer 9600 bps V.32 public dial access through the CompuServe Network. Call 1-800-848-8980 for access numbers.

- AZ Phoenix  
Tucson
- CA Anaheim  
Culver City  
Los Angeles  
Newport Beach  
North Hollywood  
Pomona  
Sacramento  
San Diego  
San Francisco  
Santa Clara  
Torrance  
Van Nuys
- CO Denver
- CT Hartford  
Stamford
- FL Jacksonville  
Miami  
Orlando  
Tampa
- GA Atlanta  
Macon  
Savannah
- HI Honolulu
- IL Chicago
- IN Indianapolis
- MA Cambridge
- MD Baltimore
- MI Detroit  
Grand Rapids  
Lansing  
Saginaw  
Troy
- MN Minneapolis
- MO Kansas City  
St. Louis
- NC Charlotte
- NJ Cherry Hill  
Morristown  
Newark  
Princeton  
Rochelle Park  
Woodbridge
- NV Las Vegas
- NY Buffalo  
New York
- OH Cincinnati  
Cleveland  
Columbus  
Dayton  
Toledo
- OK Oklahoma City  
Tulsa
- OR Portland
- PA Philadelphia  
Pittsburgh
- SC Greenville
- TX Austin  
Dallas  
Ft. Worth  
Houston  
San Antonio
- UK London
- UT Salt Lake City
- VA Fairfax  
Norfolk
- WA Seattle

# 9600

## New Cities

The following cities have recently been installed. Watch for updates in future issues of Communication Solutions.

**Lawrence, KS (913)843-0140**  
**Manhattan, KS (913)776-7111**  
**Mankato, MN (507)388-8723**  
**Carlisle, PA (717)245-2066**



For more information about items mentioned in Communication Solutions, contact your CompuServe account representative or CompuServe's Network Services Division, 614/457-8600, Ext. 2377. FAX 614/457-0348.

# Communication Solutions

**Editor** - David Kishler  
**Art Director** - Christa Krueger  
**Production Assistant** - Susan Toombs  
**Editorial Board** - Rich Baker, Andy May, Jim Freeze, Sheila Hornsby, Megan Janusz, Claire Morton, Robin Redding, Chris Winslow.

Copyright © 1991 by CompuServe Incorporated, an H&R Block Company. All rights reserved. Contents may not be reproduced in whole or in part without written permission of publisher. *Communication Solutions* assumes no responsibility for return or safety of unsolicited matter. Direct editorial correspondence to: Editor, *Communication Solutions*, P.O. Box 20212, Columbus, OH 43220.

CS-6007(07/91) Printed in the USA

# CompuServe

**Corporate Headquarters**  
 5000 Arlington Centre Boulevard  
 P.O. Box 20212  
 Columbus, Ohio 43220

Address Correction Requested

First Class  
 U.S. Postage  
 Paid  
 CompuServe