CompuServe®

**Value-Added
Packet-Switched
Data Network Services**

**Providing Economical
Remote-Area Access
To Host Computers**

CompuServe is a leader in the development of innovative multi-user data communication solutions for business. Commercial, industrial and government organizations of all sizes turn to CompuServe for:

- ▲ Value-Added Packet-Switched Data Network Services
- ▲ Electronic mail
- ▲ Electronic Data Interchange (EDI) services
- ▲ Other electronic information exchange services
- ▲ Decision support and database management systems
- ▲ Financial analysis database access
- ▲ News and news retrieval services

The CompuServe Software Products Division consists of CompuServe Data Technologies, Collier-Jackson, Incorporated, and Access Technology, Inc. The products of these acquisitions complement our existing business services offerings and strengthen CompuServe's position throughout the mainframe and minicomputer software markets.

CompuServe also offers the fastest-growing general interest public information service of its kind. The CompuServe Information Service unites personal computer owners worldwide, linking them to online offerings from travel planning and financial transaction services, to information retrieval from reference databases and shopping on The Electronic Mall.®

For more information about CompuServe Value-Added Packet-Switched Data Network Services or other CompuServe services, contact a CompuServe branch office near you:
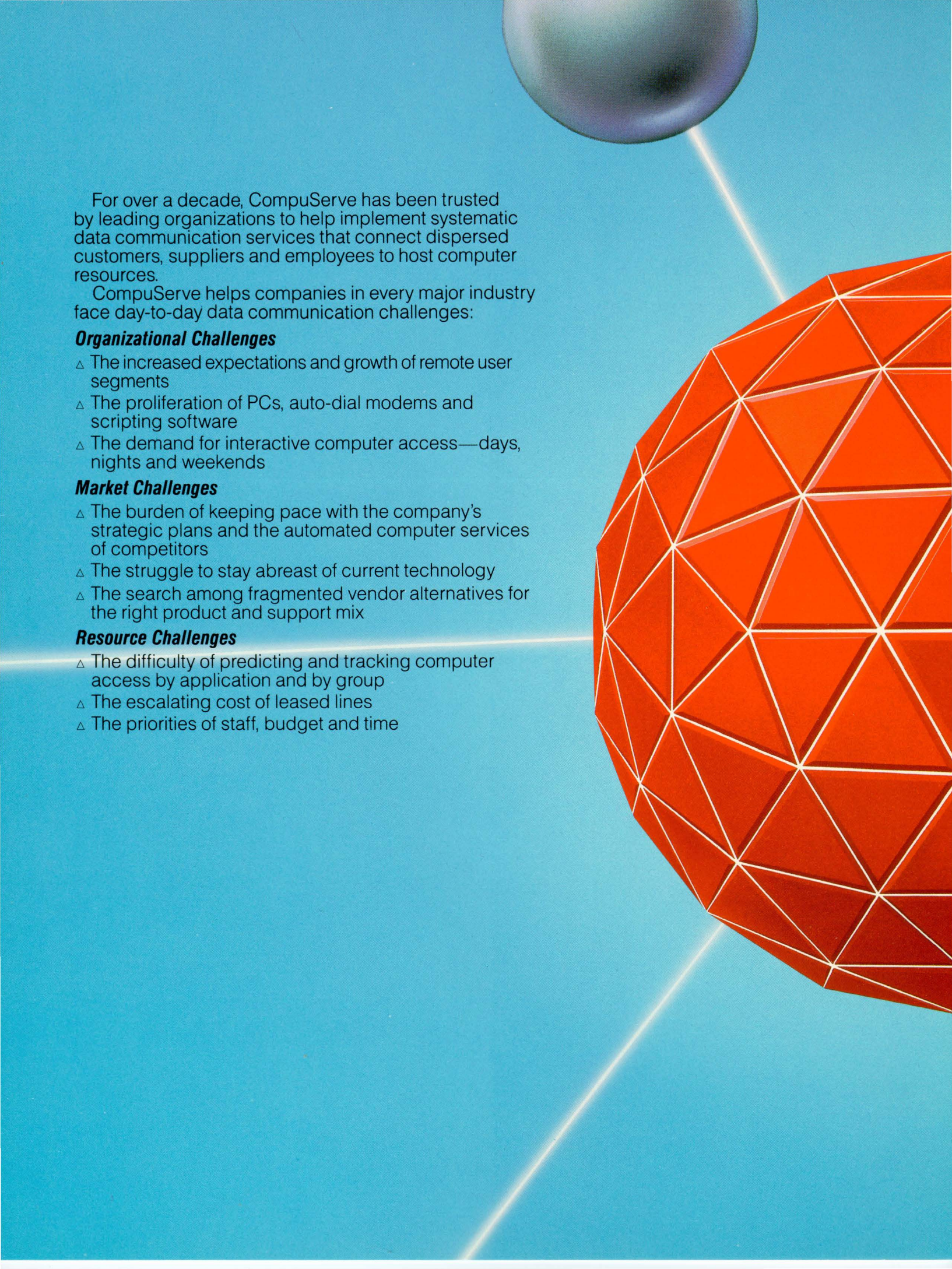
CA	Los Angeles	MO	St. Louis
	Orange County	NJ	Rochelle Park
	San Francisco	NY	New York City
	Santa Clara	OH	Cleveland
CT	Westport		Columbus
FL	Miami		Toledo
GA	Atlanta	PA	Pittsburgh
IL	Chicago		Philadelphia
IN	Indianapolis	TX	Dallas
MA	Boston		Houston
MI	Detroit	DC	Reston, VA
MN	Minneapolis		

CompuServe®

5000 Arlington Centre Blvd.
Columbus, Ohio 43220
614 457-8600

An H&R Block Company

For over a decade, CompuServe has been trusted by leading organizations to help implement systematic data communication services that connect dispersed customers, suppliers and employees to host computer resources.

CompuServe helps companies in every major industry face day-to-day data communication challenges:

Organizational Challenges

△ The increased expectations and growth of remote user segments

△ The proliferation of PCs, auto-dial modems and scripting software

△ The demand for interactive computer access—days, nights and weekends

Market Challenges

△ The burden of keeping pace with the company's strategic plans and the automated computer services of competitors

△ The struggle to stay abreast of current technology

△ The search among fragmented vendor alternatives for the right product and support mix

Resource Challenges

△ The difficulty of predicting and tracking computer access by application and by group

△ The escalating cost of leased lines

△ The priorities of staff, budget and time

Our customers enjoy benefits company-wide:

Executive Officers
Achieve control and long-term predictability of costs.

"Anymore, a lot of our business is done through moving data. Cost is important, but we have to rely on a company who will be around for the long-term. We see CompuServe as a solid partner who helps us control our costs and innovate through tremendous personal attention. While their local people do most of the problem-solving and research of our needs, we also share ideas with their upper management on a regular basis. They understand us, and I like that."

MIS and Telecommunication Directors
Successfully implement comprehensive data communication plans.

"We don't want to have to build our own telephone company. The service I buy from CompuServe meets today's reliability standards and automatically upgrades to keep me state-of-the-art. It also saves staff time, eliminates constant hardware upgrades and maintenance, and complements my own systematic monitoring programs. We bring all our dial traffic through CompuServe —mostly local calls. They do all the switching and multiplexing. We order enough high speed host links to handle our peak load, then they help us understand what our traffic looks like so we can plan for new users in a logical way."

Marketing Managers
Build company recognition as innovators behind aggressive marketing services.

"Nowadays, being able to expedite the delivery of sensitive information to all corners of the world is not just a reason you get business, it's how you keep it. That's why we consider the CompuServe data network vital to our business strategy. By equipping sales personnel to communicate with customers and marketing support staff outside traditional office hours, and by providing them with remote access to central host applications, we create a climate for more responsive service to our accounts."

End Users
Approve and embrace better remote access service.

"It doesn't take an expert to realize that when we experience less downtime, dial fewer busy signals, and enjoy consistent network response, we're more productive and more satisfied. With CompuServe, we hardly even know we're using a dial-up network. And when there is a problem, they tell us what's wrong and talk to us until it's fixed."

CompuServe

**Value-Added Packet-Switched
Data Network Services**

END USER ACCESS

Public or Private Access Rotaries

△ Target no busy signals during the peak
hour on all public ports

△ Reach over 85% of the U.S. population
with local dial access to CompuServe
Network Sites

△ Compatible with all microcomputers

△ Serve any asynchronous terminal device
or terminal concentrator

△ Operate at 300–9600 bps

△ Support local loop error-correcting
protocols

△ Offer private telephone numbers or dedi-
cated circuits for private ports

△ Incorporate bypass technologies

Point of Service (POS) Access Rotaries

△ Serve POS devices only

△ Permit the bypass of a network log-on
sequence
  ▼ Banking Identification Number (BIN)
  ▼ CompuServe Routing Indicator (CRI)

△ Support all major transaction types (i.e.,
debit, credit, private label, etc. For
example, Visa® uses CompuServe for
nationwide bankcard authorization)

△ Operate at 300–1200 bps

Local Area Network Interfaces

△ Provide X.25 access

△ Support asynchronous access (dial-up or
dedicated)

®Visa and the Three Bands Design are registered service
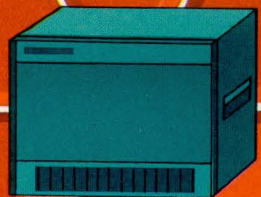marks of Visa International Service Association.

```
<CR>
Host Name:
UIC
Password:
```

```
Network Menu
1  Remote Host I
2  Remote Host II
3  Application I
4  Application II
```

Asynchronous
Terminal

Microcomputer

Portable Computer

VISA®
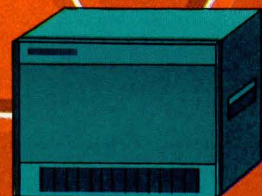
POS Terminal

Microcomputer

LAN Server

Rotary

CompuServe Network Site
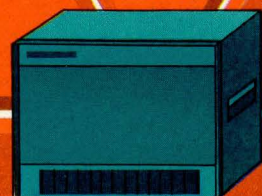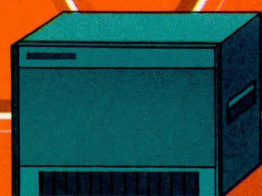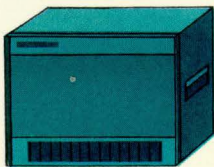
CompuServe Network Site

CompuServe Network Site

Micronode Routing Table

Host Name	Route
xx-yy	1
xx-zz	2
xx-aa	6
xx-bb	5

Backbone Link

▲ Speeds from 9600 bps to 56K bps to T1
▲ Redundant terrestrial and satellite architecture

Micronodes

△ Built to military specifications (design, assembly and production of hardware and software) and serviced by CompuServe
△ Power supply backup
△ Requires no specific environmental conditions
△ Performs error-checking and routing of data packets, code conversion, multiplexing and monitoring
△ Recognizes all other micronodes as peers
△ Least-time path to required destination
△ Real-time dynamic routing
△ Virtual circuit technology
△ Full backbone and switch redundancy, without central routing supervision
△ Responds to restart and reload signals from remote Network Control Centers
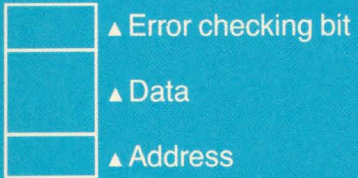△ Automatically reports error rates and trouble conditions
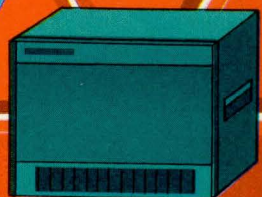
International Gateways
▲ International Public Data Networks

CompuServe Network Site

Packet
▲ Error checking bit
▲ Data
▲ Address

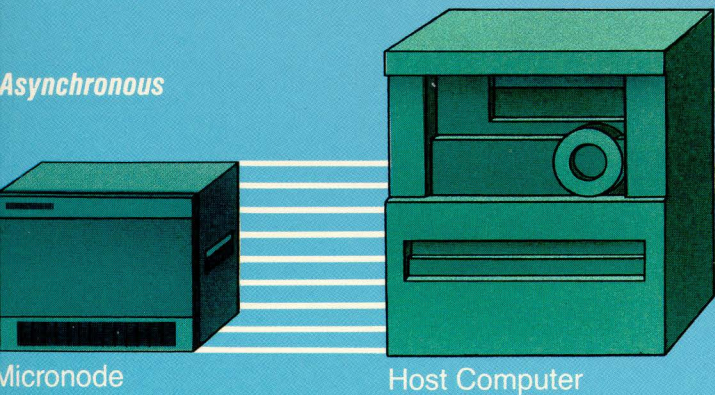**Network Control Centers**
▲ 24-hour monitoring
▲ Network diagnostics
▲ Remote node restart and reload
▲ Network alarm signals
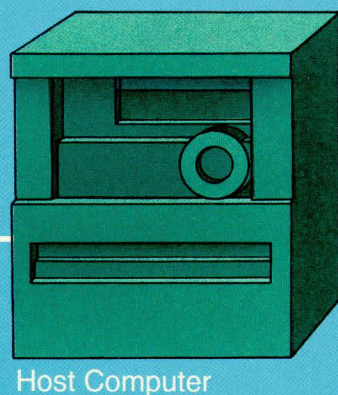▲ Toll-free assistance and technical trouble-shooting

Asynchronous

Micronode   Host Computer

Network Links to Client

▲ 4800 bps
▲ 9600 bps
▲ 14,400 bps
▲ Dial back-up capability

X.25 Network Link

Host Computer

Security Measures and Support Services

▲ CompuServe Host Administration Program
(CHAP)—for customers to independently:
  ▽ Add, change or delete User IDs or
    passwords online
  ▽ Implement up to four levels of security
  ▽ Set additional individual access
    privileges and terminal parameters
  ▽ Post messages at log on
▲ Accounting and allocation reports

Protocol Conversion

Host Computer
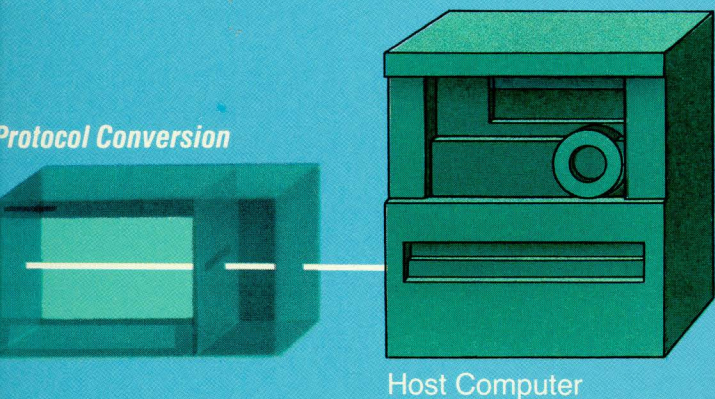
CompuServe
Value-Added Packet-Switched Data Network Services

HOST CONNECTION PROTOCOLS

Asynchronous
△ Recognizes 7 or 8 bit ASCII data
△ Provides hardware and software flow
  control
△ Replaces modems
△ Controls remote terminal and PAD support
  by setting parameters similar to X.3 (via
  tandem sequence and network command
  codes that substitute for X.29 and X.28
  network command sets)

X.25
△ Follows 1980/84 CCITT recommendations
△ Supports extended set of terminal
  parameters
△ Provides X.3 (1980/84) terminal
  parameter support
△ Provides link level control for HDLC
  LAP/LAPB
△ Supports X.121 addressing

SNA/SDLC and Bisynchronous
△ Provides full screen IBM 3278 emulation
△ Provides 3270 and 5250 emulation
△ Compatible with most PCs or
  asynchronous terminals
△ Permits file transfers
△ Serves local printers
△ Enables local echo
△ Supports extended screen and local edit-
  ing control for IBM PCs