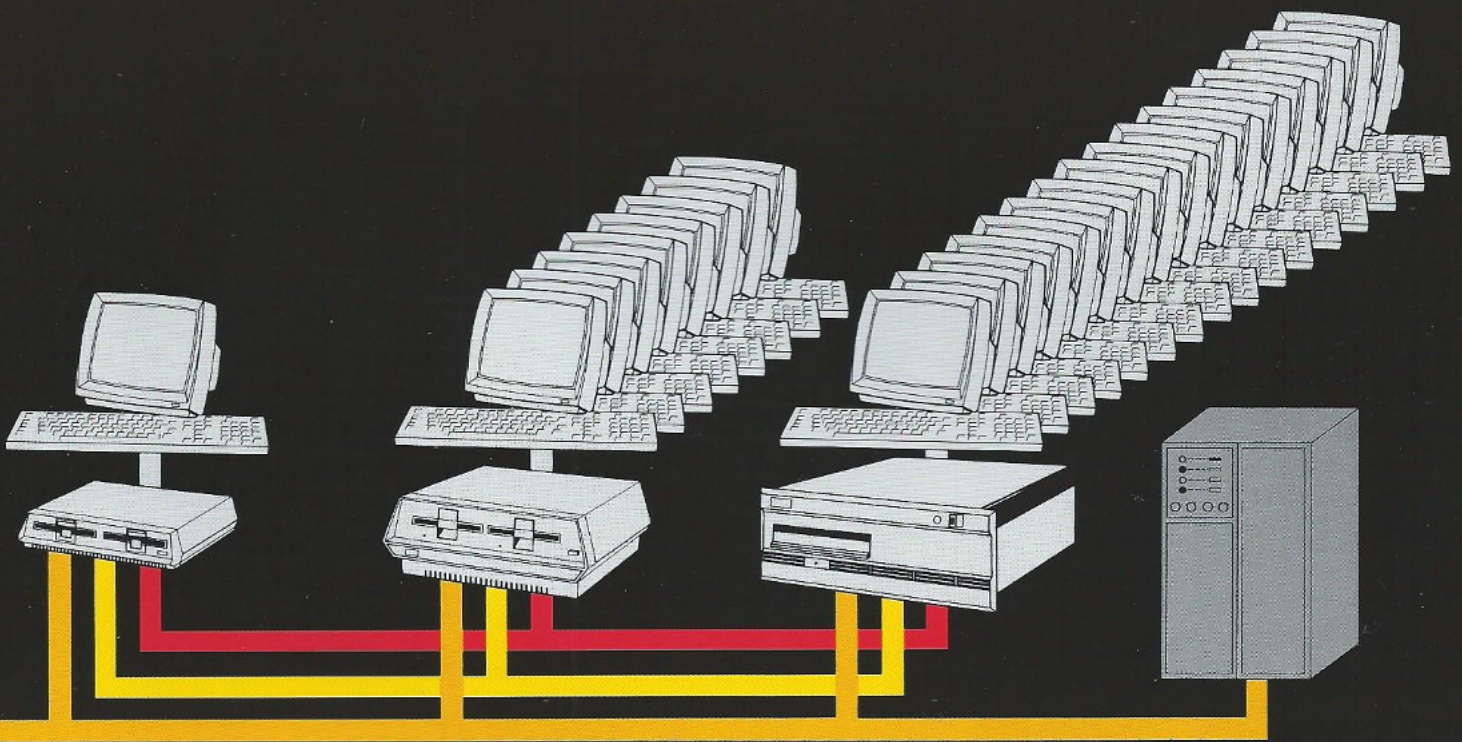


1981

# Networking and Communications

## The 16-bit systems from Altos





# Your gateway to networking and communications for office automation

ALTOS® helps you build a communications network with faster response, built-in redundancy, unlimited expandability and greater utility. Altos gives you a better local network with remote disk access, file transfer, spooled printer service, remote terminal access, internet gateways, mainframe communications and electronic mail. And Altos has the computers, terminals, operating systems, languages, utilities and communications software you need to make your network a reality.

## Three levels of communications power.

Networks come in all shapes and sizes. Altos can help you create the right one for your application.

### Altos office cluster.

One Altos 16-bit multi-tasking micro-computer can support from one to 16 terminals, forming an Altos cluster. An Altos network can be configured to support up to 100 clusters, with 1,600 users. Costs are reduced, because many terminals can share a single connection to the network through an Altos computer.

### Local office network.

Multiple Altos clusters can be linked together to form a single, unified network throughout your facility regardless of which Altos 16-bit system you use. In addition to supporting the Ethernet™ standard for local networking, all Altos 16-bit 8086, 80186 and 68000-based microcomputers also support inter-Altos networking with a low-cost RS-422 twisted pair networking scheme (ALTOS-NET™). This allows you to build in more network control and flexibility.

## Long distance communications.

Altos computers can also handle communications with mainframe computers, networks and other devices not connected directly to your network. Altos will link cluster-users to foreign networks via X.25 protocols. Mainframes are linked via asynchronous communications, bisynchronous communications using IBM 2780/3780 protocols and IBM 3270 terminal emulation.

## Communications and networking hardware.

**The Altos communications processor** fits inside Altos 586 or 568 16-bit system enclosures. The communications processor contains an Ethernet controller and an intelligent I/O controller. The I/O controller carries a Z80™ processor with 64KB of RAM and one synchronous port capable of handling X.25, 2780/3780, 3270, or SNA/SDLC. It also contains an auto-dial/auto-answer modem.

**The Ethernet controller** is an option that adds Ethernet support to any Altos 16-bit computer (586, ACS8600, 568, and ACS68000 and the 186 workstation).

**Altos 186 workstations** can serve both local and remote distributed processing networks using standard communications links. They support two RS-232 ports, both capable of synchronous/asynchronous operation, one 800 KBaud RS-422 port for ALTOS-NET, and is socketed for an optional Ethernet interface.

## Communications and networking software.

**Altos supports many multi-user operating systems.** In turn, this provides a wide selection of networking software. Although Altos plans to support most major communications offerings under these operating systems, the most fully developed package to date is ALTOS-NET, based on UNET.™

| Operating Systems  | Languages                                | Communications and Networking  |
|--|--|--|
| XENIX™/UNIX™<br>UNIX System III™<br>RM/COS™<br>MS™-DOS<br>PICK<br>CP/M-86™<br>MP/M-86™<br>OASIS-16 | BASIC<br>COBOL<br>FORTRAN<br>PASCAL<br>C | ALTOS-NET<br>Ethernet<br>2780/3780 (BISYNC)<br>3270 (BISYNC)<br>Asynchronous<br>SNA/SDLC<br>X.25 |

**Altos' networking features** include virtual terminal facilities that access a remote host as if directly connected, remote file transfer for transfer of ASCII or binary files between computers, process-to-process communication for linking of application programs, electronic mail transfer, automatic route-through to assure transparent operation via intermediate nodes, and Datagram™ service for implementing user-defined, end-to-end protocols.

**ALTOS-NET provides all the needed features** to create an immediately useful network system. Software designers can use the virtual circuit facility to develop sophisticated distributed applications. For ease of use, these services are fully integrated with the standard UNIX buffered and unbuffered I/O functions. Standard ISO transmission and internet protocols ensure reliable data transfer among all stations on the network.

**Ethernet is the local network adopted by Altos.** While other local networking schemes may be used with Altos computers, Ethernet has the advantages of widespread acceptance, standardization and availability.

Altos computers can be directly (locally) connected to Ethernet through the Ethernet interface. They also can be indirectly (remotely) connected via telephone lines. To reduce communications cost, one Altos 16-bit computer directly connected to Ethernet can serve a cluster of up to 16 Altos terminals (model dependent). The Altos can also serve as a gateway between multiple networks. ALTOS-NET software carries the necessary algorithms to control these connections.



## Long distance communications.

**Communicating with large main-frames.** While CCITT and ISO standards are emerging as prerequisites for long distance computer communications, Altos recognizes the immediate need for support of existing IBM protocols. For this reason, Altos computers can support 3270 terminal emulation and 2780/3780 protocols. Altos is also capable of supporting IBM SNA/SDLC.

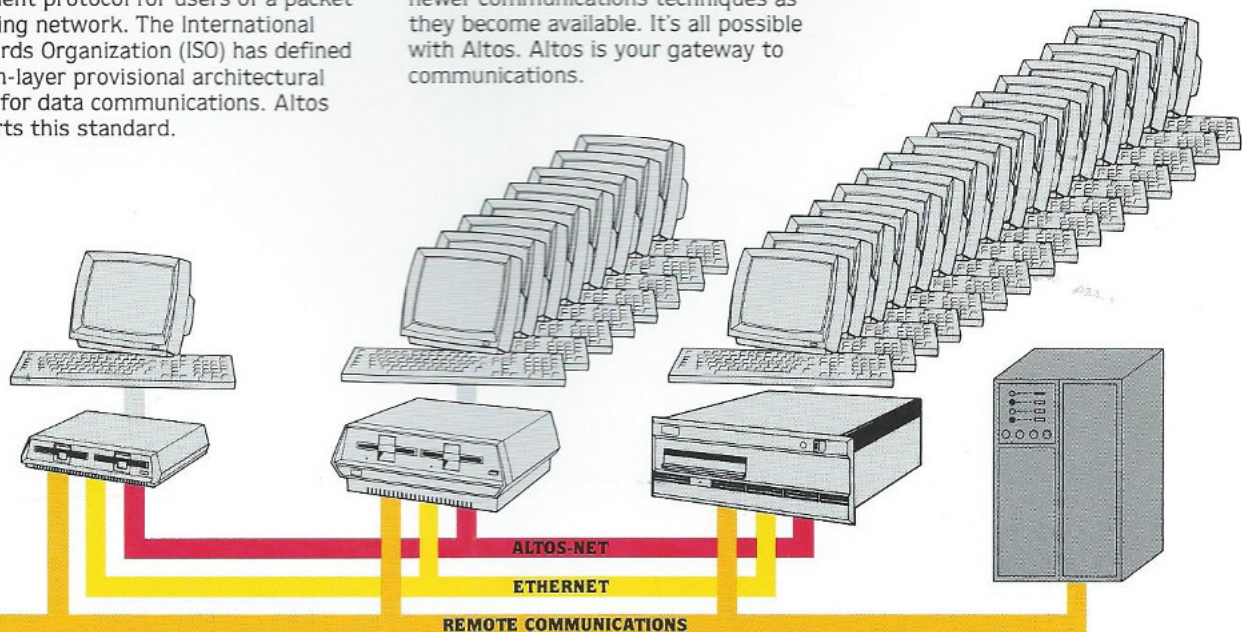
**Asynchronous communications.** Most terminal/computer links use asynchronous communications protocols. With appropriate modems, Altos can support these protocols for remote applications.

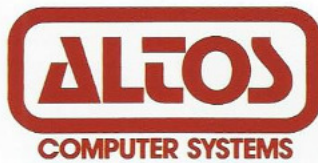
**Standardizing communications.** Altos is adopting remote communications standards. Such standards will simplify network design and assure compatibility among various computers and networks at a practical cost. Altos supports the X.25 CCITT standard and the ISO provisional architectural model for data communications. X.25 is an international CCITT standard that governs line protocol between two devices and the call placement protocol for users of a packet switching network. The International Standards Organization (ISO) has defined a seven-layer provisional architectural model for data communications. Altos supports this standard.

|                                  | ISO Standard Layers | Altos Implementation ALTOS-NET                                    |
|----------------------------------|---------------------|---|
| <b>Hardware choices</b>          | 1. Physical         | RS-232 communications, Ethernet, RS-422 twisted pair              |
|                                  | 2. Data Link        |   |
| <b>Operating system services</b> | 3. Network          | IP-Internet Protocols   |
|                                  | 4. Transport        | TCP-Transport Control Protocols                                   |
|                                  | 5. Session          |   |
|                                  | 6. Presentation     | Virtual Circuits  |
| <b>Application programs</b>      | 7. Application      | UFTP-File Transfer<br>UVTP-Virtual Terminal<br>UMTP-Mail Transfer |

## Altos—your gateway to communications.

Share computer resources among eight users or 800. Establish networks to create the office of the future. Use existing networking schemes now while maintaining the flexibility to adopt newer communications techniques as they become available. It's all possible with Altos. Altos is your gateway to communications.





375 East Trimble Road, San Jose, California 95131  
Telephone: (408) 946-6700  
Telex: 171562 ALTOS SNJ or 470642 ALTO UI

**Sales Offices**

Chicago .....(312) 490-1014  
Dallas .....(214) 458-2305  
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