Overview

The MacX25™ software links Apple® Macintosh® personal computers to packet-switched data networks (PSDNs) supporting CCITT Recommendation X.25.

MacX25 server software allows a Macintosh to be set up as a single entry point to the PSDN. Access to host computers and end-user services on the PSDN is distributed from the server to Macintosh computers over the AppleTalk® network system.

MacPAD™ software, included with MacX25, works in conjunction with the server software and provides packet assembler/disassembler (PAD) connectivity to the PSDN. Implemented as a connection tool for the Macintosh Communications Toolbox, MacPAD allows terminal applications using the toolbox to connect to host systems on the PSDN.

MacX25 features an administrator's application that facilitates configuration and administration of the server. An address service allows administrators to set addressing details on the Macintosh server, presenting MacPAD users with a menu listing available hosts and end-user services by name. Users connect to services simply by selecting the appropriate name—they aren't required to know PAD commands and address numbers.

The MacX25 Programming Library (available separately) works in conjunction with the MacX25 server to provide X.25 access to applications, enabling developers to create Macintosh solutions that give users access to packet-switched networks.

Features	*Benefits*
▶ X.25 network access	▶ Provides Macintosh computer users with reliable wide area network connectivity.
▶ Conformance to International Telegraph & Telephone Consultative Committee (CCITT) recommendations	▶ Provides universal interoperability with other X.25-conformant systems.
▶ Server-based access	▶ Makes it easy to add users. ▶ Reduces costs by maximizing use of expensive resources such as leased lines.
▶ Packet assembly/disassembly facility (MacPAD)	▶ Supports asynchronous terminal access to packet-switched networks.
▶ Easy-to-use Address Book with a graphics-based user interface	▶ Allows users to select an available service by name without having to learn traditional PAD commands.
▶ Graphics-based Administrator application	▶ Facilitates software installation and administration of user access.
▶ User passwords	▶ Prevents unauthorized users from accessing the server.
▶ Runs under the MultiFinder™ system software	▶ Eliminates the need for a dedicated computer, allowing the server to run other applications.

Technical Summary

General Features

MacX25 supports the following:
- ► CCITT 1980 Compatible Mode
- ► CCITT 1984 Compatible Mode
- ► Packet Assembler/Disassembler (X.3, X.28, X.29)
- ► Operation as a DTE
- ► Operation as a DCE
- ► Virtual Circuits: 64 maximum
- ► Single link for each Apple Serial NB Card
- ► Multiple cards for each Macintosh II
- ► Operation at up to 19.2Kbps with RS-232C
- ► Operation at up to 64Kbps with V.35
- ► Multiple servers for each AppleTalk network system

MacX25 does not support the following:
- ► Permanent Virtual Circuits
- ► X.32 switched circuit operation

Optional Facilities

For Subscription Registration

MacX25 supports the following:
- ► Extended Sequence numbers
- ► Default Packet Size Assignment: 32 to 4,096
- ► Default Window Size Assignment: 1 to 128
- ► Flow Control Parameter Negotiation: Fixed (at "yes")
- ► Throughput Class Negotiation: Fixed (at "yes")
- ► Closed User Groups
- ► Bilateral Closed User Groups
- ► Fast Select Acceptance: Fixed (at "yes")
- ► Reverse Charging Acceptance
- ► Local Charging Prevention

MacX25 does not support the following:
- ► On-Line Facility Registration
- ► Default Throughput Class Assignment: Fixed (at 48000 bps)
- ► D bit modification

At Call Initiation

MacX25 supports the following:
- ► Packet Size Negotiation
- ► Window Size Negotiation
- ► Throughput Class Negotiation
- ► CUG Group Specification
- ► BCUG Group Specification
- ► Fast Select
- ► Network User Identification
- ► Charging Information
- ► Reverse Charging
- ► RPOA Selection
- ► Call Address Modified Notification
- ► Transit Delay Selection
- ► User Data Field
- ► Calling Address Extension
- ► Called Address Extension
- ► Quality of Service Negotiation
- ► Expedited Data Negotiation

At Call Reception

MacX25 supports the following:
- ► Packet Size Negotiation
- ► Window Size Negotiation
- ► Throughput Class Negotiation
- ► CUG Group Specification
- ► BCUG Group Specification
- ► Fast Select Acceptance
- ► Reverse Charging Acceptance
- ► Charging Information
- ► Call Redirection Notification
- ► Transit Delay Selection
- ► User Data Field
- ► Calling Address Extension
- ► Called Address Extension
- ► Quality of Service Negotiation
- ► Expedited Data Negotiation

Note: The preceding sections list the capabilities of the MacX25 server, and not those of MacPAD. Use of a facility depends on support for it in the appropriate supported PSDN. All parameters listed under Subscription Registration can be set by the administrator via the Administrator application, except for parameters marked "Fixed"; these parameters are fixed at the specified values or settings. Parameters listed under Call Initiation and Call Reception are accessible to software developers via the MacX25 server.

Network Certification

MacX25 is certified for connection to Telenet and GEIS (GEISCO) networks. Certification is planned for Tymnet and DDN; and in Europe, for the U.K. (PSS), Germany (Datex-P), France (Transpac), Italy (ITAPAC), Sweden (Datapak), the Netherlands (DN-1), Canada (Datapac), and Australia (Austpac).

System Requirements

MacX25 Server

To set up a MacX25 server, you'll need:

► Any personal computer in the Macintosh II family with an internal hard disk (2 megabytes of RAM recommended)

► Macintosh System Software Version 6.0.3 (or later)

► An Apple Serial NB Card with the appropriate RS-232C or V.35 cable

► The appropriate LocalTalk™ network–compatible cable connectors

To use MacX25 on an Ethernet network, you'll need the appropriate Ethernet interface card for your Macintosh.

MacPAD

To use MacPAD, you'll need:

► A Macintosh Plus, Macintosh SE, or Macintosh SE/30 personal computer, or any computer in the Macintosh II family

► A terminal-service application that uses the Macintosh Communications Toolbox

► The appropriate LocalTalk-compatible cable connectors

To use MacPAD on an Ethernet network, you'll need the appropriate Ethernet interface card for your Macintosh.

The AppleTalk Data Stream Protocol (ADSP) software and the Macintosh Communications Toolbox software are included with the MacX25 server software.

MacX25 Programming Library

Overview

The MacX25 Programming Library allows developers to create software solutions that provide users with access to a packet-switched data network. It works in conjunction with the MacX25 server to provide X.25 services to application programs.

The library is a toolkit, or collection of routines, that offers a high-level program interface for applications. Routines are included for initiating and terminating contact with the MacX25 server, establishing and closing down a virtual circuit, passing data across an established circuit, and more. Technical support is available to Apple Partners .

Features

▶ High-level programming interface

▶ Library of X.25 service routines

Benefits

▶ Provides access to X.25 over the AppleTalk network system, using the AppleTalk Data Stream Protocol (ADSP).
▶ Eliminates the need for developers to have detailed knowledge of ADSP and AppleTalk.

▶ Facilitates development of distributed X.25 applications.
▶ Allows applications to run on the MacX25 server under MultiFinder.

Product Details

C programming libraries are supplied with the MacX25 Programming Library. Routines are included that allow users to connect and disconnect from the server and to query server status and circuit information. A packet-level interface using control blocks is provided for developers who require maximum control. A higher-level logical packet interface, also provided, performs data translation and formatting services, creates X.25 packets, and relieves the programmer of some lower-level tasks. The MacX25 Programming Library includes a programmer's guide.

System Requirements

To use the MacX25 Programming Library, you'll need:
▶ A Macintosh Plus, Macintosh SE, or Macintosh SE/30 personal computer, or any computer in the Macintosh II family
▶ Macintosh System Software Version 6.0.3 (or later)
▶ The appropriate LocalTalk-compatible cable connectors

To use the MacX25 Programming Library on an Ethernet network, you'll need an appropriate Ethernet interface card for your Macintosh.

For development work, the Macintosh Programmer's Workshop (MPW™) Version 3.0 with MPW C is required.

Ordering Information	**MacX25** Order No. M0711	With your order, you'll receive: ▶ MacX25 server software ▶ MacPAD software ▶ Macintosh Communications Toolbox software	▶ ADSP software ▶ *MacX25 Administrator's Guide* ▶ *MacPAD User's Guide*
	MacX25 Programming Library Order No. M0245LL/A	With your order, you'll receive: ▶ MacX25 Programming Library software ▶ *MacX25 Programmer's Guide*	For information about licensing, contact: Apple Software Licensing Apple Computer, Inc. 10431 De Anza Blvd., M/S 38I Cupertino, CA 95014
	Apple Serial NB Card Order No. M0264		To use the Apple Serial NB Card, you'll need one of the following cables: ▶ RS-232C Cable (Order No. M0128LL/A) ▶ V.35 Cable (Order No. M0127LL/A)