



3900 Freedom Circle  
Santa Clara, CA 95054  
Telephone: 408-496-0111  
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## **Software Subscription and Support Program**

The Ungermann-Bass local area networking (LAN) systems are designed to provide innovative and efficient LAN solutions for your automated environment. Our Software Subscription and Support Program offers a variety of services that will help you support the operation of your network.

### **MENU OF SERVICES**

The Software Subscription and Support Program, which ensures that you will always have the most current software upgrades and information, offers a menu of services, including:

- o Automatic Software Upgrades. All subscribers to the Software Subscription and Support Service will receive regularly scheduled distributions of software.
- o Access to the Net/One Software Support Hotline. This service provides you with access to the Ungermann-Bass Technical Support Center via a toll-free telephone number.
- o On-Line Software Problem Reporting. Using electronic mail, subscribers can submit problems and receive responses directly from the Ungermann-Bass support group.
- o Software Technical Bulletins. These bulletins, which provide updated information on network software, will be made available to all subscribers.
- o Net/One Technical Journal. Issued quarterly, the Net/One Technical Journal provides Subscribers with technical information on a variety of network hardware and software topics.
- o Software Documentation. All subscribers will receive regularly scheduled distributions of software documentation.

### **ANNUAL FEE**

You can receive the advantages of the Software Subscription and Support package by paying an annual fee. This charge is based on the size of your site's network, measured by the actual purchase value of the hardware plus software.

## **ONE-STOP ACCOUNTABILITY**

For a total solution to your networking needs, we combine the Software Subscription and Support Program with an all-inclusive set of support services. We take responsibility for the total success of your network by providing not only the most technologically innovative networking products but also the support necessary to implement and ensure the optimal functioning of your network.

Committed to customer satisfaction, Ungermann-Bass support begins with a network design tailored to your requirements and continues through our ongoing support and service programs. These programs include Comprehensive Support, Project Management Services, Installation Services, Repair and Exchange Services, Spare Parts Sales Program, Cable System Maintenance, Depot Maintenance, Media Services, and Warranty Services. For more information on any of these programs, contact your local Ungermann-Bass sales representative.





## Comprehensive Support

Ungermann-Bass local area networking (LAN) systems are designed to provide an innovative and efficient LAN network for your automated environment. Our Comprehensive Support Program offers the services necessary for the maximum support of your network.

Our goal is to ensure that your network operates at peak efficiency, with maximum uptime, long after the expiration of the original warranty. The Comprehensive Support Program is staffed by our trained support professionals who use only Ungermann-Bass-approved diagnostic tools, test equipment, and spare parts.

### INTEGRATED SYSTEM SUPPORT

The Comprehensive Support program provides on-call services for your Ungermann-Bass software and hardware. This program, which provides you with integrated system support, includes:

- o All the features of Software Subscription and Support
  - Automatic software upgrades
  - Access to the Net/One Software Support Hotline
  - On-Line Software Problem Reporting
  - Software Technical Bulletins
  - Net/One Technical Journal
  - Software Documentation
- o Installation and testing of new software releases
- o On-site software and hardware support as required to identify and resolve problems
- o Site support up to 300 miles from an Ungermann-Bass Zone "A" service center
- o Extended work week/hours support coverage (available in Zone "A" only)
- o Maintaining a spare parts inventory to facilitate repair activities
- o Installation of factory-specified engineering changes
- o On-site service during the warranty period
- o Escalation procedures to minimize network outage and inconvenience

### CUSTOMER RESPONSIBILITIES

The Comprehensive Support Program is designed to provide you with the support you need for the maximum operation of your network. To ensure the smooth operation of the program, you are responsible for:

- o Taking advantage of training opportunities for your staff so that they understand the operation of the Ungermann-Bass products
- o Following proper procedures for reporting and following up on problems

### UNGERMANN-BASS RESPONSIBILITIES

In addition to the services already listed, we will repair or replace all products that are covered under our agreement with you. We will also install applicable engineering changes that do not alter the form, fit, or function of the products.

## **MONTHLY FEE**

The services provided under the Comprehensive Support package are charged on a monthly basis for each hardware unit ordered. This fee includes any applicable zone and extended hours of service charges.

## **ONE-STOP ACCOUNTABILITY**

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## **Project Management Services**

Successful implementation of a local area network (LAN) requires proper planning, close tracking, and overall coordination. Rapid changes in technology mean an effective system design must meet current operational needs and financial constraints while providing flexibility for future expansion and change. Ungermann-Bass offers Project Management Services to assist you in developing and implementing a network that is tailored to your environment and also meets your business needs.

This program begins with a careful evaluation by our project managers of your technical and business requirements. These requirements are then transformed into a solution capable of meeting both current and future data communications requirements. The result is a network which maximizes productivity while minimizing your financial risk.

### **NETWORK NEEDS ASSESSMENT**

The process begins with designation of an Ungermann-Bass project manager who becomes the focal point to work with you for the entire project. During this phase, an Ungermann-Bass team of specialists led by the project manager will perform a site survey to identify both existing and potential new equipment for connection to the network, as well as user needs, applications, budget constraints, and other factors which may affect installation costs or timeframes.

This information will then be carefully analyzed, and a network design and estimated costs will be generated. The proposed design will be based on both the site survey results and also specific business requirements, organizational structure, and operational procedures. Our goal is to ensure that the physical layout and network architecture fully meet your particular network requirements.

### **LAN SYSTEM DESIGN**

The network design will include a set of working drawings showing proposed cable runs and the location of all network equipment and a bill of materials for the components used in the design. In addition, for broadband networks, we will design the cable plant topology, set design frequencies, determine component input and output levels, and design for anticipated network expansion.

The network design is used as a basis for generating a comprehensive installation plan, including configuration specifications, proposed schedules for each stage of the implementation, and estimated costs for the completed project.

### **PROJECT PLANNING**

After the design is completed and approved, we will work with you to develop a project plan which provides guidelines for project performance. The project plan identifies the objectives and goals of the project, establishes a budget, specifies the characteristics of the overall system, develops a master schedule of planned activities and provides standard procedures for carrying out the project. The primary purpose of the plan is to ensure the project is completed on a timely basis and that all performance criteria are met.

### **PROJECT ORGANIZATION**

Staffing for the project is an important element in the overall planning process. During the planning phase, we will determine the personnel resources required over the duration of the project and develop a project organization that identifies key people and their responsibilities. Our goal is to build a working partnership between the personnel in your organization and our network specialists. Working as a team, we will plan the approach and define the activities that will result in a successful network implementation.



## **IMPLEMENTATION COORDINATION**

As an integral part of Project Management Services, we will closely monitor the progress of the network implementation and coordinate the various activities. Our goal is to provide an uninterrupted implementation by:

- o Coordinating and managing the activities of different groups
- o Documenting the configuration and installation of the LAN
- o Maintaining quality throughout the project
- o Monitoring the budget and meeting cost constraints
- o Ensuring that the project meets specified schedules
- o Providing a method of communication that keeps everyone informed of progress and any problems
- o Resolving problems and setting priorities
- o Administering the contract and any modifications
- o Providing transition assistance from the installation phase to the operation and support of the network
- o Ensuring your staff is trained in the use of the network

## **PROJECT COMPLETION**

At the completion of the project, we will deliver all relevant documentation associated with the project, including:

- o Drawings showing cable routing and component locations
- o System configuration specifications
- o Test results of both components and the overall system
- o Appropriate manuals for all components and network operations

Our goal is to ensure that your organization has the capabilities to operate and fully use all network resources. In addition, to ensure that your network continues to operate at a high level of reliability and availability, we will develop an ongoing maintenance and support program tailored to your organization's specific needs.

## **CUSTOMER RESPONSIBILITIES**

Top management commitment is vital to the success of the network implementation. As an integral part of the team effort, you are responsible for ensuring involvement by the appropriate personnel in the project. By participating in all steps of the implementation, management will help ensure a successful implementation and effective network.

It is also very important that you designate personnel who will have primary responsibility for the daily operation and support of the network. These people should have a thorough understanding of the environment in which the network will be used and should be involved for the duration of the project. Major responsibilities will include monitoring network performance, working with configuration requirements, and assisting users. By working closely with the network team during implementation, these people will be able to function as your organization's network administrators when the network becomes fully operational

## **ONE-STOP ACCOUNTABILITY**

For a total solution to your networking needs, we combine our network implementation expertise with a comprehensive set of support services. We take responsibility for the total success of your network by providing not only the most technologically innovative networking products but also the support necessary to implement and ensure the optimal functioning of your network.

Committed to customer satisfaction, Ungermann-Bass support begins with a network design tailored to your requirements and continues through our ongoing support and service programs. These programs include our Software Subscription and Support, Comprehensive Support, Installation Services, Repair and Exchange Services, Spare Parts Sales Program, Cable System Maintenance, Depot maintenance, Media Services, and Warranty Services. For more information on any of these programs, please contact your local Ungermann-Bass sales representative.





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## Media Support Services

One of the first steps toward meeting your company's need for a sophisticated communications utility is designing and implementing the Media or Cable system. Ungermann-Bass offers a wide range of services necessary to successfully accomplish this first step. The result is an expandable, maintainable, multifunctional and reliable network. If you have an existing cable system, we will work with you to determine how it can be expanded or used more effectively.

### NEEDS ANALYSIS and DESIGN

Our media services program begins with a complete analysis of your business and technical requirements. During this phase, we will perform a comprehensive site survey to determine the optimal cable routing and design layout for your network. We will evaluate any existing wiring for suitability for use, adequate coverage, and expandability. Our goal is to provide the minimum impact on your existing facilities while satisfying the physical, functional, and budget requirements of a communications network.

The information that we gather from the site survey will be used to develop alternative designs that will meet your network cabling needs. These designs will incorporate the topology, media, type, size, and route of the cables. We will also provide you with wiring diagrams and cost comparisons of alternative routes and methods. Ungermann-Bass is an active participant on several networking standards committees. Therefore, our designs are developed to be in accordance with recognized standards, specifications, and any other regulations which may apply.

### SYSTEM SPECIFICATIONS and SUBCONTRACTING

Once you have approved the design, Ungermann-Bass will then develop the system specifications which are tailored for individual installations. These include the statement of work, schedules, material requirements, design criteria, and other information required to obtain subcontractor bids. Our media services include evaluating subcontractor quotes on both a price and technical basis. Ungermann-Bass has qualified subcontractors or will work with a subcontractor of your preference. We will handle all aspects of subcontracting or, if desired, work with your subcontractors as necessary.

### INSTALLATION MONITORING

Our installation assistance includes ensuring that the installation is completed on time and to the required specifications and that it results in a minimal disruption to your business operation. Before turning the cable system over to you, we will certify its operational compliance with the engineered design. This certification assures you that the functional requirements of the network are met.

## **MAINTENANCE**

Once your system is installed and functioning, you can choose the extent of your participation in its maintenance. Ungermann-Bass offers complete cable system maintenance programs. These programs include both preventive and remedial maintenance tailored to your specific needs. This ensures that it is at a high state of reliability and availability. Additional information is included in our brochure on Cable System Maintenance Programs.

## **ONE-STOP ACCOUNTABILITY**

For a total solution to your networking needs, we combine our Media Services expertise with a comprehensive set of support services. We take responsibility for the total success of your network by providing not only the most technologically innovative networking products but also the support necessary to implement and ensure the optimal functioning of your network.

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## Cable System Maintenance

An efficient and reliable network depends on the optimal functioning of each of its components, including the cable plant system. The Ungermann-Bass maintenance programs cover not only the hardware and software components of your network but also its cable system. Our Cable System Maintenance Program, which covers different types of cabling, provides the support necessary to isolate and repair malfunctions, perform preventive maintenance and maintain the cable plant within operating specifications.

Since the cable is the very backbone of the overall network, the importance in maintaining its reliability is paramount to overall network operations. This program is available for whatever type of cable system you may have: baseband, broadband, fiber optic, or twisted pair.

### COMPREHENSIVE MAINTENANCE SERVICES

The Ungermann-Bass Cable System Maintenance Program includes the following services:

- o Priority responses to remedial maintenance requests during contracted hours of coverage
- o A backup plan for providing the necessary technical resources if repairs exceed predetermined time limits
- o Extended hours of coverage optionally available, with a 24-hours 800 In-Watts number provided to all customers covered by a maintenance agreement

### COMPREHENSIVE REMEDIAL MAINTENANCE

Our comprehensive remedial maintenance includes diagnosing problems with the network so that the associated fault can be isolated. Fault isolation helps to minimize the impact on overall network operations. Our support personnel have both the training and advanced equipment necessary to troubleshoot, isolate, and repair cable plant problems. We will then perform the necessary repair, replacement, and any adjustment or realignment of the cable plant to ensure that it meets design specifications. Our support staff is backed by the cable system designers and installers, thereby ensuring a full support capability for your system.

### SPARE PARTS

Ungermann-Bass maintains an availability of critical spare parts on site to minimize downtime in case of failure. Depot level spares are also maintained by Ungermann-Bass which also eliminates the need for you to stock a costly inventory of components which may never need to be used.

## **PREVENTIVE MAINTENANCE**

We perform preventive maintenance so that your cable system continues to operate within design specifications. During preventive maintenance, physical inspection of cable components, measurements, and any necessary realignments or adjustments are performed. In addition, any atypical problems that are detected during this procedure that could degrade network performance are investigated and corrected.

## **CUSTOMER ELIGIBILITY**

Cable systems not installed or certified by Ungermann-Bass must first be certified prior to the start of a maintenance contract. This requirement also applies to cable systems that we may have installed but that were not covered by a maintenance contract upon completion. Any deficiencies identified during this process must be corrected prior to the start of the contract.

## **OTHER CABLE PLANT SERVICE and MEDIA SERVICES**

Ungermann-Bass provides a variety of additional Cable Plant and Media Services. These include design, installation, expansion, certification, upgrades, precontract corrective services, specification compliance, training, and consulting.

## **ONE-STOP ACCOUNTABILITY**

For a total solution to your networking needs, we combine our Cable System Maintenance with a comprehensive set of support services. We take responsibility for the total success of your network by providing not only the most technologically innovative networking products but also the support necessary to implement and ensure the optimal functioning of your network.

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## Installation Services

The implementation of a local area network (LAN) requires a smooth and effective network installation. Ungermann-Bass will perform the installation activities to ensure that this is done in a timely manner and that the result is a highly reliable operating network. Trained Ungermann-Bass support personnel will install the hardware and software products at your site. By using proven installation techniques, our support personnel can ensure a timely installation and a long service life for these products.

### INSTALLATION SERVICES

Ungermann-Bass provides a full range of comprehensive services which can be tailored to meet your specific needs. These range from a full turnkey project where we manage the design, installation, and testing of the network to options which allow Ungermann-Bass to support your staff as necessary.

Ungermann-Bass installation services for hardware and software include the following:

For hardware, we will:

- o Unpack and physically inspect all components
- o Mount the components in the prepared locations and connect the power, or
- o Install board level products in computers and make appropriate switch settings
- o Connect the drop/transceiver cables
- o Conduct power-up diagnostics
- o Test the downloading and reset capability of the components
- o Verify the port operation
- o Replace any defective units discovered during installation
- o Begin the warranty on the date of installation

For software installation, we will:

- o Load all appropriate software
- o Verify the ability of the software to configure the components on the network
- o Verify the ability of the software to download and reset the components
- o Verify network management monitoring functionality

### OTHER SERVICES

Additional services beyond our standard installation which Ungermann-Bass can provide include:

- o Configuring devices connected to the network
- o Comprehensive system testing
- o Installation configuration and system testing documentation
- o Setting up specific network monitoring functions
- o Other services as requested by the customer

## **CUSTOMER RESPONSIBILITIES**

Your assistance and involvement are very important to ensure a timely and successful installation of your network. Your responsibilities during the network installation include:

- o Preparing the installation site to meet the network requirements, such as
  - Providing a complete and tested cable system
  - Ensuring suitable environmental conditions
  - Preparing mounting locations
  - Providing power and device drop/transceiver cables
- o Providing access to all locations for equipment installation
- o Providing Ungermann-Bass with necessary information:
  - Specific equipment locations
  - Software requirements
- o Providing and installing products required for the network but not provided by Ungermann-Bass

## **UNGERMANN-BASS RESPONSIBILITIES**

As part of our standard installation services, we will provide all the resources including personnel, tools, test equipment, and replacement parts required to install the network in the scheduled timeframe. Depending on the complexity, size, time constraints, and availability of your resources, we can provide additional services such as subcontracting, media installation, project management, testing, training, and on-site maintenance. These services not only reduce the impact on your staff, but at the completion of the network installation, you are provided with a complete networking solution to meet your business needs.

## **ONE-STOP ACCOUNTABILITY**

We combine our Installation Services with a comprehensive set of support services to meet your networking needs. We take responsibility for the total success of your network by providing not only the most technologically innovative networking products but also the support necessary to implement and ensure the optimal functioning of your network.

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## Warranty Services

Our primary design goal is to make our hardware and software products the most reliable in the industry. To ensure that our products are built to the highest standards of quality, we use strict design specifications, exhaustive testing, quality and control procedures. Our warranties reflect our confidence in the high quality of our products.

### STANDARD 90-DAY WARRANTY

To assist you during the early months of your operation, we offer a standard 90-day warranty on each of our products. We guarantee that our products will be free of defects in materials or workmanship and will conform in all material respects to published specifications for a period of 90 days from the date of shipment. If the installation is performed by an Ungermann-Bass service representative, the warranty will be from the date of installation.

### ON-SITE WARRANTY SERVICE

If you select the Comprehensive Support package, you will receive on-site maintenance support during the warranty period. In addition, Comprehensive Support subscribers will receive any necessary labor and materials covered by our warranty services at no additional cost.

### FACTORY RETURN WARRANTY SERVICE

If you do not have the Comprehensive Support package, you can return units to the Ungermann-Bass Repair Center for repair and return at no charge during the warranty period.

### CUSTOMER RESPONSIBILITIES

Your responsibilities during the warranty period are:

- o Tracking the warranty start date to ensure warranty eligibility
- o Verifying the product failure is a result of a defect in materials or workmanship and not the result of misuse and/or environmental conditions

## **UNGERMANN-BASS RESPONSIBILITIES**

For Comprehensive Support customers, we will provide all on-site resources including personnel, tools, replacement parts, and other materials required to repair the equipment. For all other customers, we will provide the repair or replacement of all warranty items at the Ungermann-Bass Repair Center, including return freight, at no additional charge.

If any items are returned for repair or replacement once the warranty period expires, they will be repaired and returned in the same manner as non-warranty units, and you will be charged for standard repair services. This also applies to units damaged as a result of misuse or environmental conditions.

## **ONE-STOP ACCOUNTABILITY**

For a total solution to your networking needs, we combine Warranty Services with an all-inclusive set of support services. We take responsibility for the total success of your network by providing not only the most technologically innovative networking products but also the support necessary to implement and ensure the optimal functioning of your network.

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## **Repair and Exchange Services**

In addition to our comprehensive maintenance agreement services, we offer a full line of Repair and Exchange Programs which are supported by the Ungermann-Bass Repair Center. The Repair Center uses the most advanced diagnostic techniques and automated test equipment to repair system components. Our dedicated staff of trained technical personnel is backed by a complete parts inventory and a computerized logistics system to provide fast and cost-effective turnaround for repair and exchange services.

### **FACTORY REPAIR SERVICE**

If you maintain your own equipment, the factory repair service provides a cost-effective way to repair defective units. This service offers a quick turnaround time of 12 days after receipt of the unit. We will repair the standard current products manufactured by Ungermann-Bass for a fixed price. We will also install mandatory engineering changes.

### **HARDWARE LIMITED SUPPORT**

The hardware limited support coverage is designed for customers who have internal hardware maintenance organizations and need fast turnaround of defective units. This service, which will allow you to exchange defective units for operational ones, offers rapid turnaround of repaired units, Repair Center discounts, and 40 hours a year of telephone hardware technical assistance.

### **CUSTOMER RESPONSIBILITIES**

Our repair and exchange services will help you maintain a smoothly running network. To ensure the efficient operation of these programs, you are responsible for :

- o Ensuring that service personnel are properly trained to support Ungermann-Bass products
- o Verifying that product failure is the result of a defect in materials or workmanship and not the result of misuse or environmental conditions

### **UNGERMANN-BASS RESPONSIBILITIES**

We will repair or exchange the defective units or assemblies and warrant the items for a period of 90 days. We will also install mandatory engineering changes. We are not responsible for defective units that have been damaged as a result of misuse or environmental conditions.

## **ONE-STOP ACCOUNTABILITY**

For a total solution to your networking needs, we combine our Repair and Exchange Services Program with an all-inclusive set of support services. We take responsibility for the total success of your network by providing not only the most technologically innovative networking products but also the support necessary to implement and ensure the optimal functioning of your network.

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# Depot Maintenance

A smoothly running network installation depends on the optimal functioning of each of its components. It is very important that you have the capability to effectively maintain all parts of your network. The Ungermann-Bass Depot Maintenance Program provides a cost-effective way for you to maintain your own equipment after the expiration of the warranty period.

## DEPOT MAINTENANCE PROGRAM

The Depot Maintenance Program is only available for hardware products purchased after January 1, 1987, or for products that are certified by the Customer Support Organization for maintainability. Under this program, you are charged a percentage of the published list price of the unit(s). The Ungermann-Bass Repair Center will repair or replace units under the Depot Maintenance Contract within seven days at no additional charge. There is a fee for emergency repair services. Depending on availability of parts for replacement, these emergency services can normally be completed within 72 hours of receipt of the parts by the Repair Center.

## RETURN PROCEDURES

To facilitate tracking control and expedite the repair order, you must obtain a return material authorization (RMA) number for all units prior to shipment. You can obtain the RMA from the Ungermann-Bass Repair Center.

## CUSTOMER RESPONSIBILITIES

Your responsibilities under the depot maintenance program are:

- o Verifying that product failure is a result of a defect in materials or workmanship and not the result of misuse or environmental conditions
- o Paying for freight charges to the Repair Center

## UNGERMANN-BASS RESPONSIBILITIES

We will repair or replace all items covered under a Depot Maintenance Contract within seven days of receipt of the items. We will not be responsible for units that are damaged as a result of misuse or environmental conditions. In addition, items that do not meet the minimum Ungermann-Bass revision level standards will not be accepted under the terms and conditions of the contract. For an additional fee, units that do not meet minimum standards can generally be re-worked to current engineering standards.

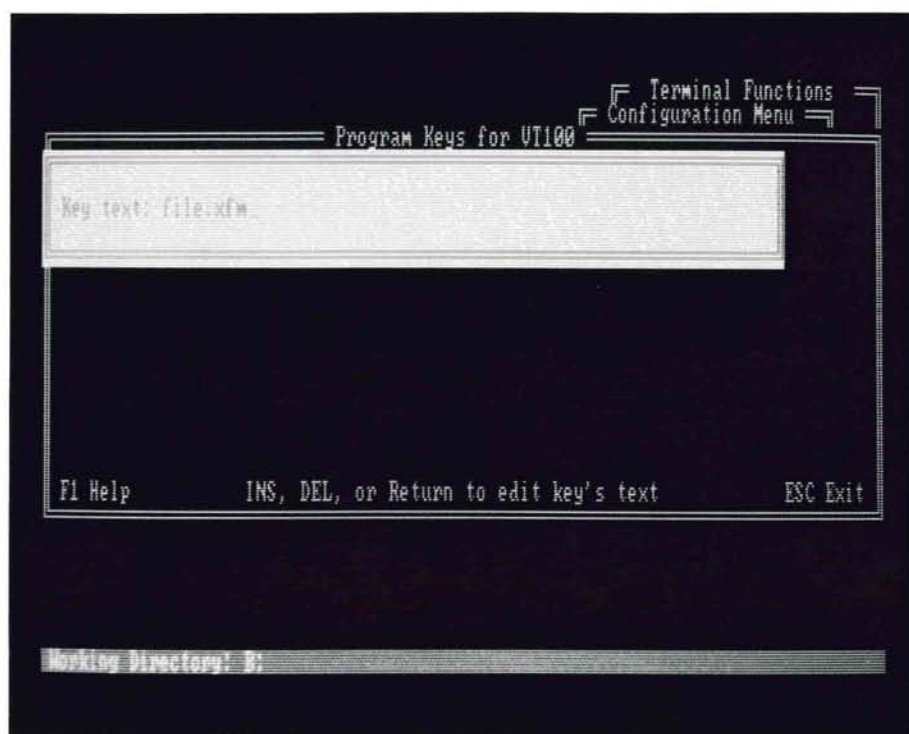
## **ONE-STOP ACCOUNTABILITY**

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## Net/One® Contact

### Highlights

- Flexible, asynchronous terminal emulation of DEC VT220 terminals, in addition to standard VT100, VT52 and IBM 3101 terminals
- Powerful application connectivity language for simplifying distributed application development
- Supports industry-standard communications protocols such as Kermit, XModem and FTP file transfer programs as well as Net/One Universal File Manager protocols

### Maximizes Connectivity

Net/One CONTACT software allows PC users to access and process information located on asynchronous host mainframes and minicomputers such as DEC VAXes and IBM systems.

Designed specifically for use with Ungermann-Bass Net/One PC adapters or asynchronous communications ports, Net/One CONTACT enables IBM PCs, PC-XTs, PC-ATs and compatibles, and IBM PS/2s to act as IBM 3101, DEC VT220, VT100 and VT52 terminals.

Net/One CONTACT coupled with Net/One Universal File Manager provides automated host connections, file transfers, data manipulations and integration with a variety of application software. CONTACT facilitates file transfers over all Net/One base-band, broadband, fiber optic and

token ring twisted pair media access methods as well as asynchronously via a PC's communications port.

Color pop-up menus, a dialing directory and context-sensitive help programs have been designed to guide even the novice user through CONTACT features and applications.

### Saves Time and Money

CONTACT features a multitasking kernel that enables it to run in the background behind other application programs. This means that a user can transfer files, send mail or retrieve host information while working in another PC application, eliminating costly and time-consuming







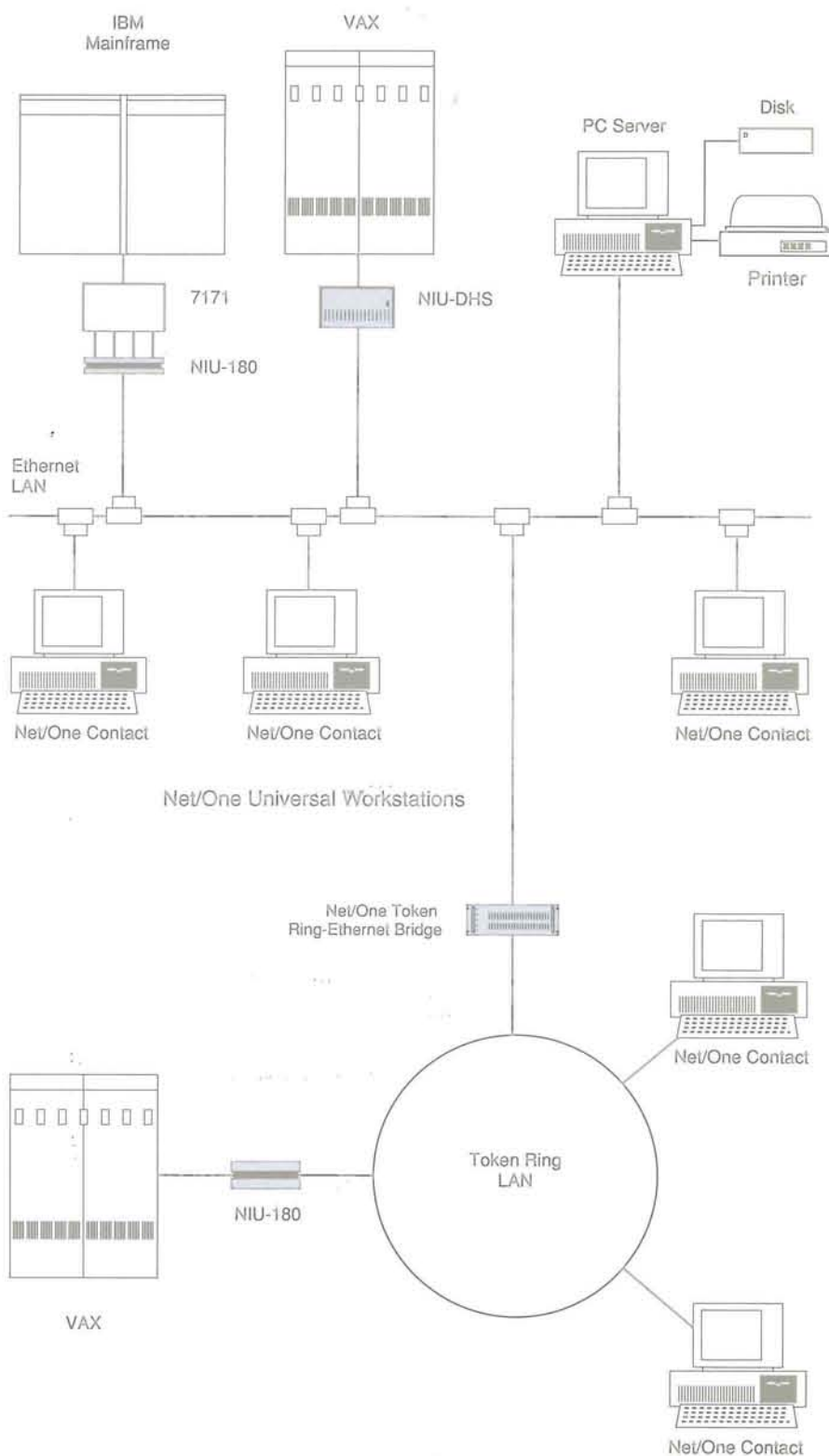
## Redefinable Keyboards

Users can remap their keyboard keys to achieve single key invocation of program activities such as terminal functions, character strings — including phone numbers and host commands — or any commonly used script.

## The Universal Workstation Series

Net/One CONTACT is a member of the Ungermann-Bass Universal Workstation Series of products, a powerful set of local-area network products designed to facilitate workstation connectivity in organizations with multiple host and PC systems.

The Universal Workstation Series provides a consistent user interface, simplifying training and start-up costs and enabling users to easily add workstations as needed. Like all Net/One products, multiple media and devices from most leading vendors are supported, maximizing the use of existing resources and reducing costs.



## Specifications

### Hardware Requirements

#### PC System

IBM PC, PC-XT, PC-AT or fully compatible computer  
IBM PS/2 Personal Computer or fully compatible computer

#### Memory

384 kilobytes  
512 kilobytes for Net/One Universal File Manager

### Software Requirements

#### PC Operating Systems

IBM PC DOS or MS-DOS versions 3.1 or higher

### Net/One Requirements

#### Net/One PC Adapters

NIUpc, 3270 NIUpc, Personal NIU, NIC, NIC PS/2, Personal NIU/Token Ring

Net/One BNS/PC Release 15.0 or higher

### Options

#### File Transfer Methods

XMODEM, Kermit, ASCII, FTP  
Net/One Universal File Manager  
Net/One Linkware Information  
Server  
ASCII

#### Additional Hardware Support

Asynchronous COM1 or COM2 port  
IBM 7171, or other protocol converter supporting one of the emulated terminals  
Tseng Labs adapter (132 column display)

### Ordering Information

Order Number	Description
PC7010	Net/One CONTACT 5.25" Disks — single workstation
PC7020	Net/One CONTACT 3.50" Disks — single workstation
PC7030	Net/One CONTACT Server License

Net/One CONTACT user guide is included with each product order

### Related Publications

Universal File Manager User's Guide





**Net/One TCP  
Application Delivery System**



## Creating Powerful Information Exchange Among Dissimilar Computers

In most large enterprises today, information is a strategic asset. The communications systems that move this information are the organization's lifeline. Whether maintaining a competitive edge in commercial markets, or operating at peak efficiency in public and government sectors, the ability to move information rapidly is a critical requirement for success.

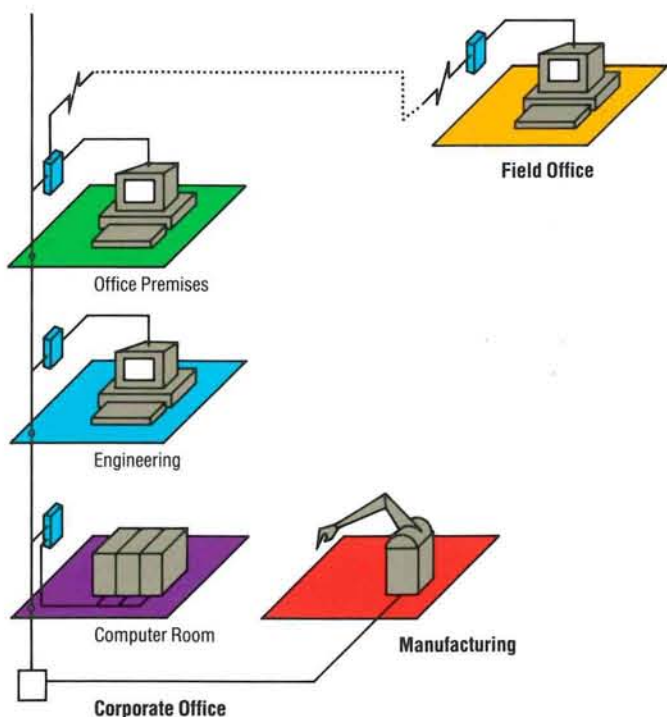
However, moving information in an enterprise is a complex task. Often, it must be retrieved from dissimilar types of computers supplied by many diverse vendors. Additionally, information often is transmitted across multiple types of media and subnetworks before being brought to a user's workstation. This heterogeneous environment must be transparent to users, who need to access information located anywhere in the organization.

Transparent information access and multivendor product interoperability require that many dissimilar devices share a common communications language. Today, the de facto networking standard for heterogeneous networking is TCP/IP (Transmission Control Protocol/Internet Protocol), which is widely accepted in commercial, government and education environments.

TCP/IP's capability complements Ungermann-Bass' mission, which is to interconnect the many dissimilar computer resources used in large enterprises. Net/One,<sup>®</sup> the company's brand name family of products, provides the connectivity required to link all of an enterprise's subnetworks into a cohesive enterprise-wide system.

The result: Net/One TCP, the enterprise-level connectivity solution from Ungermann-Bass.

### Enterprise-Wide Solutions





## Net/One and TCP/IP: A Natural Partnership

Ungermann-Bass' Net/One family of network products is a combination of hardware and software solutions that allow users to access information located on computers made by different vendors. Today, Net/One systems are providing terminal-to-host, PC-to-host and PC-to-PC communications in large enterprises worldwide.

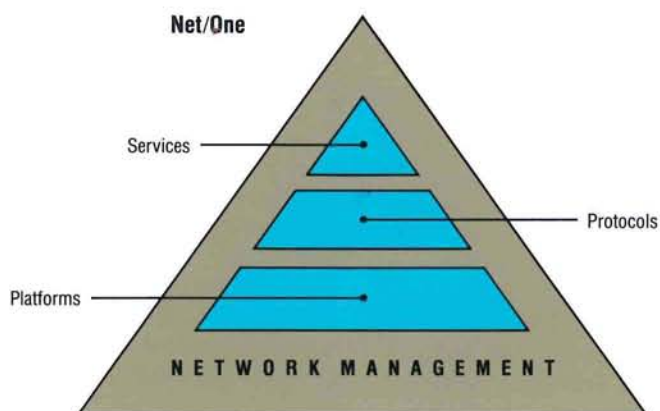
Providing such large systems requires expertise in a multitude of networking disciplines, including protocols, network services, media, communications servers, network management and support. In combination with Net/One services, TCP/IP connectivity offers users high-performance interoperability.

Ungermann-Bass product lines encompass the industry's widest range of connectivity solutions.

The Universal Workstation Series is a family of hardware adapters and software products that enables a user to access IBM, DEC, Hewlett-Packard, Tandem, and other hosts, as well as communications servers, printers and other devices, from the same personal workstation.

Access/One is the first modular network delivery system to support Ethernet and token ring media access methods on twisted-pair wiring. It is the single platform on which MIS and telecom professionals can implement, support and manage corporate or facility-wide networks.

Network interface units (NIUs) are distributed communications processors which provide the physical interfaces and the intelligence necessary to attach devices to the network and allow effective communications among dissimilar devices. Various Ungermann-Bass NIUs allow multiple users access to IBM as well as asynchronous hosts.

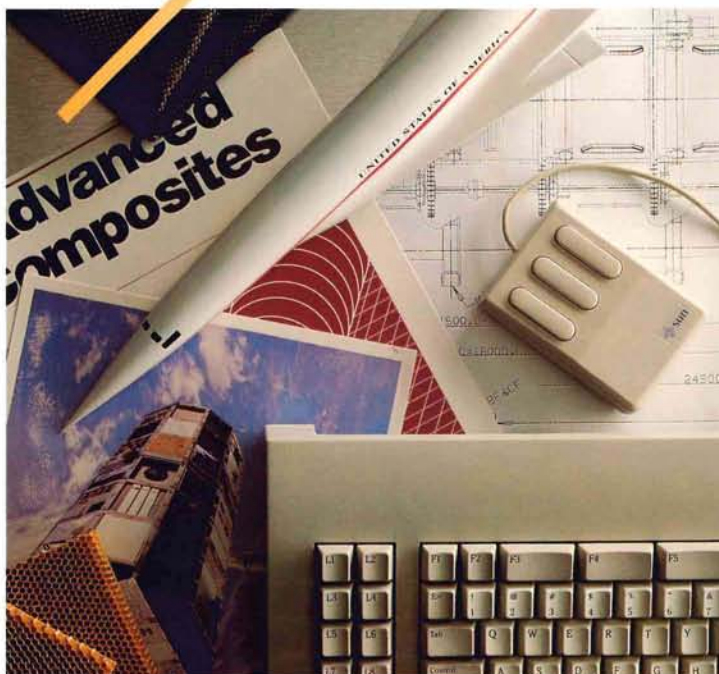


The company's internetworking devices provide local and remote network-to-network communications, expanding the reach of users beyond their buildings or campuses and increasing the number of resources available to them.

Ungermann-Bass network management tools offer network administrators the ability to efficiently configure devices, download software, and monitor and analyze network traffic. The network management software also offers other services, such as fault detection, security, and resource monitoring.

Ungermann-Bass also supports Ethernet and token ring network access methods, as well as major media types, including coaxial cable, optical fiber and twisted-pair telephone wiring.

Because Ungermann-Bass platforms and services are protocol independent, users can implement TCP/IP without sacrificing investments in hardware, applications software, and training. Together, Net/One services and TCP/IP form a natural partnership that brings the benefits of the highest level of interoperability to users.





## Featuring Net/One TCP

Net/One TCP provides the multi-vendor interconnectivity that large enterprises require. Based on TCP/IP protocols, Net/One TCP is a family of products that provide universal host connectivity, terminal emulation capability and high-speed file transfers to allow information access throughout an enterprise.

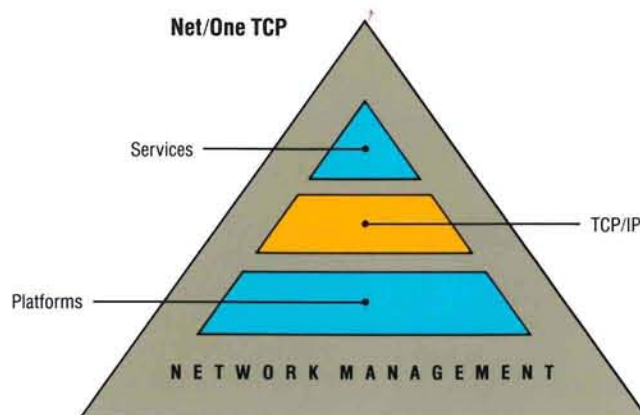
The Net/One TCP product line serves as a thread running through all Ungermann-Bass products, including the Universal Workstation Series, Access/One, terminal servers, internetworking devices, and network management capability.

Running at and above layer three of the ISO seven-layer OSI (Open Systems Interconnection) reference model, Net/One TCP software is independent of network access media and methods.

Connectivity to asynchronous hosts is provided by a full-featured terminal service capability that runs on all of the company's asynchronous network interface units. This capability utilizes the Telnet virtual terminal protocol, a standard for TCP/IP, and allows users to access TCP/IP-based hosts via Telnet. Non-TCP/IP hosts can be accessed through Net/One TCP and a terminal server.

The product line supports various personal computers, including PC and PS/2, and Macintosh workstations, providing users with access to local and remote resources.

Four programmatic interfaces are provided for network program-to-program communications, including the Socket Library and NetBIOS, an industry standard interface for peer-to-peer communications. Net/One TCP's NetBIOS is fully RFC compliant to achieve maximum device interoperability. NetBIOS allows users to continue to run MS-DOS applications and at the same time gain the greater interoperability offered by Net/One TCP.

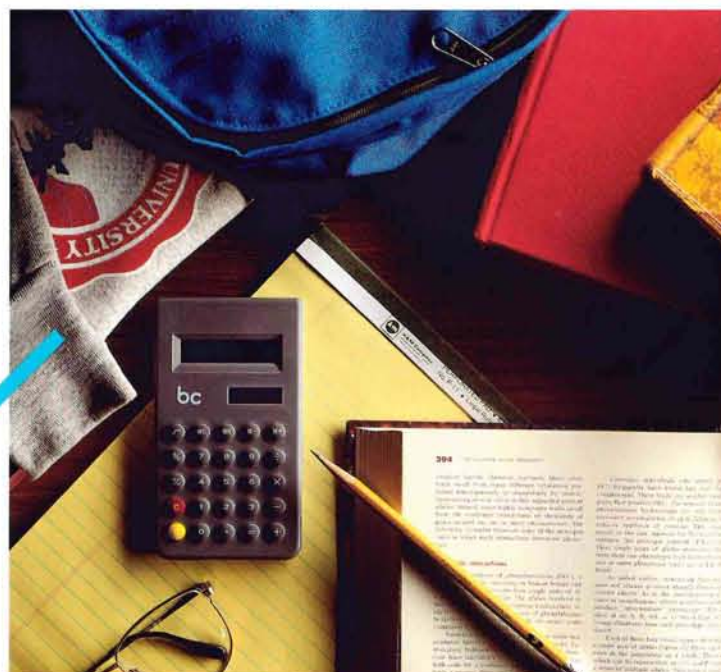


Host-to-host or host-to-workstation file transfers are accomplished through FTP (File Transfer Protocol), another TCP/IP standard. This protocol allows users to manipulate local and remote files, transfer multiple files with a single command, and enter DOS commands without breaking the connection to the host.

In addition, Ungermann-Bass' value-added software, such as Net/One 3270 PC and Net/One 3270 PC Graphics, allows PC or PS/2 workstations to access text and graphics from servers as well as hosts.

Users on separate networks can communicate over Net/One TCP using local and remote internetworking products, including Data Link bridges and routers.

Complete network management capabilities are also provided by Net/One TCP. Among the network management services is security, which is provided by the use of passwords. For Net/One-to-Net/One communications, additional security is provided by Ungermann-Bass' Validation Service, part of the company's network management product line.





## Ungermann-Bass Provides The Solutions

Networking standards originate and evolve with changing user needs. Since it was founded in 1979, Ungermann-Bass has supported and will continue to support standards, whether official or de facto.

One of the industry's earliest de facto standards, XNS (Xerox Network Services) protocols, was developed to provide connectivity to users on Ethernet networks. Ungermann-Bass' early support of XNS and Ethernet has produced a large base of Net/One users.

Today, TCP/IP is the preferred protocol choice for enterprises requiring interoperability among dissimilar computers. It already

is widely accepted in government and education markets, and is the fastest-growing protocol standard for the commercial market. TCP/IP is supported today by nearly 200 vendors.

Evolving OSI (Open Systems Interconnection) standards are gaining acceptance as an internationally developed set of communications protocols. Ungermann-Bass markets full product lines based on XNS and TCP/IP protocols, and OSI products based on emerging protocol profiles.

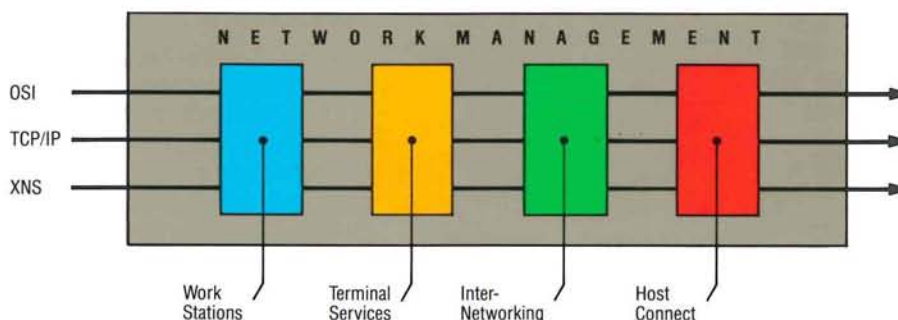
By combining the power of Net/One products and services with TCP/IP protocols, and backed by a protocol integration strategy, Ungermann-Bass users can gain the greater power and functionality of the

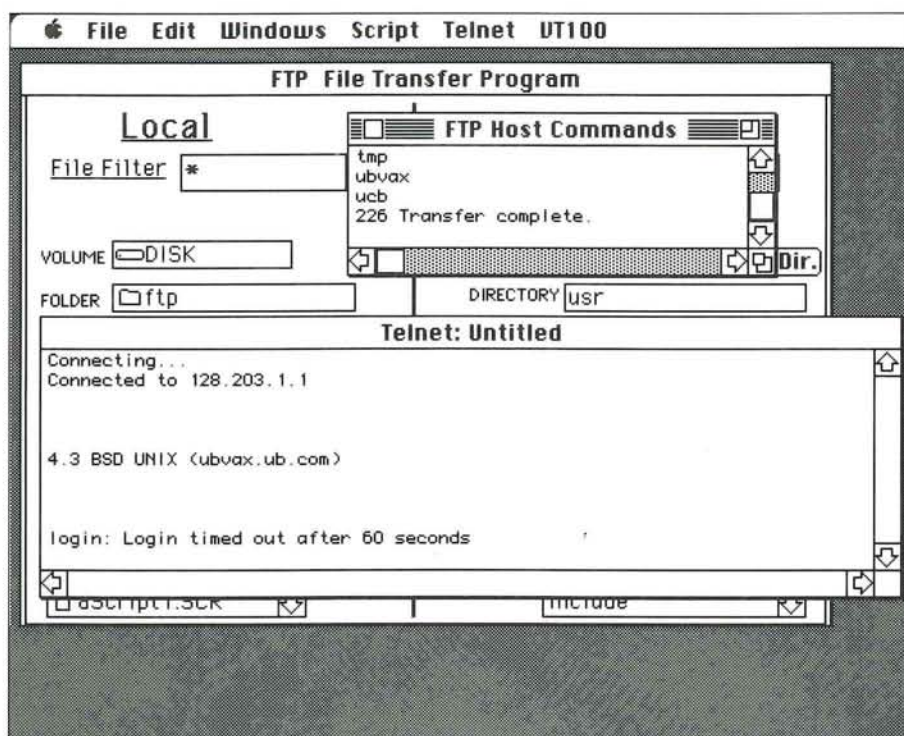
newest protocols without sacrificing earlier investments. This protocol integration gives customers the unique ability to continue using their existing networks while adding OSI-based networks in the future.

Ungermann-Bass offers Net/One TCP and its other Net/One products through a direct sales force, and backs all of its products with a worldwide support services team. This direct sales and support organization helps make Ungermann-Bass the preferred vendor among the world's largest enterprises.

A wholly-owned, independently operated subsidiary of Tandem Computers Incorporated, Ungermann-Bass will continue to offer the most complete networking solutions, fully designed, installed and supported, worldwide.

### Net/One Software Solutions





## Net/One<sup>®</sup> TCP-Mac

### Highlights

- Includes TCP/IP protocols and File Transfer, Terminal Emulation, and Electronic Mail
- Operates on EtherTalk and LocalTalk
- Allows users to concurrently access either TCP/IP or AppleTalk applications
- Provides a consistent, icon-based, mouse-driven user interface for easy configuration, installation, and operation
- Complies fully with industry standards.

### Overview

Net/One TCP-Mac is a standards-based software package designed to seamlessly integrate Apple's Macintosh computers into TCP/IP-based enterprise-wide networks. The software package includes file transfer based on the File Transfer Protocol (FTP), terminal services based on Telnet, and electronic mail based on the Post Office Protocol (POP) and Simple Mail Transfer Protocol (SMTP). A Macintosh user can now productively participate in resource sharing and information exchange within an enterprise network.

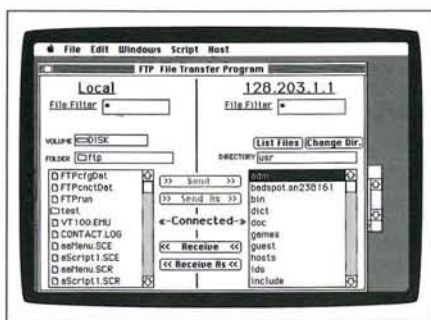
Installation and configuration are made easy by incorporating simple procedures and tools in the TCP-Mac product. The user interface is consistent with Macintosh applications, which makes it easy to use without special training.

Net/One TCP-Mac provides full support for EtherTalk (IEEE 802.3) and LocalTalk, allowing users the flexibility to connect a Macintosh onto either network. Users can run TCP-Mac in Apple's Finder and MultiFinder operating environments.

### File Transfer

An easy-to-use interface and a robust set of features are provided in the File Transfer Protocol (FTP) application. The user interface is designed to provide access to all features of FTP using a consistent interface based on Macintosh standards. For example, users can transfer





files by using the mouse to select from a list of files. Configuration options and commands can be accessed from the menu bar, and appropriate command-key shortcuts are also available.

A Telnet-based terminal emulator is integrated with FTP. The emulator supports up to six Telnet sessions, with each session running in a window emulating a VT100 terminal. Users can connect to multiple hosts through multiple Telnet windows.

The FTP application also provides a powerful script language facility which includes script editing, compiling, and execution. Each executing script is associated with a single VT100 Telnet window.

## Virtual Terminal Access

TCP-Mac supports the Telnet virtual terminal protocol through the Apple Macintosh driver, MacTCP™. The driver allows all existing text or graphics terminal emulators that are based on the standard Macintosh serial drivers to operate in the TCP/IP environment.

The Telnet menu is installed into a terminal emulator as a desk accessory (D/A). A user has the ability to switch between Telnet and the standard Macintosh serial drivers.

## Electronic Mail

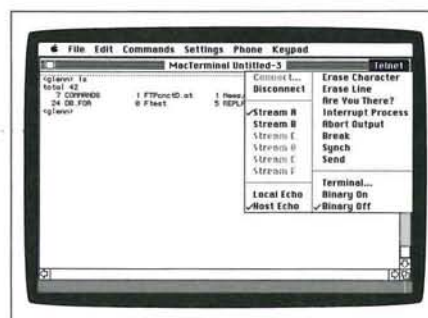
Electronic mail is based on the Post Office Protocol (POP) and Simple Mail Transfer Protocol (SMTP). POP is a "store-and-retrieve" type of implementation. A Message Handling (MH) server, also supporting POP, is required on the network. Messages are sent to the server, and can be retrieved whenever desired. The user may send mail via the MH server using POP or directly to the destination using SMTP.

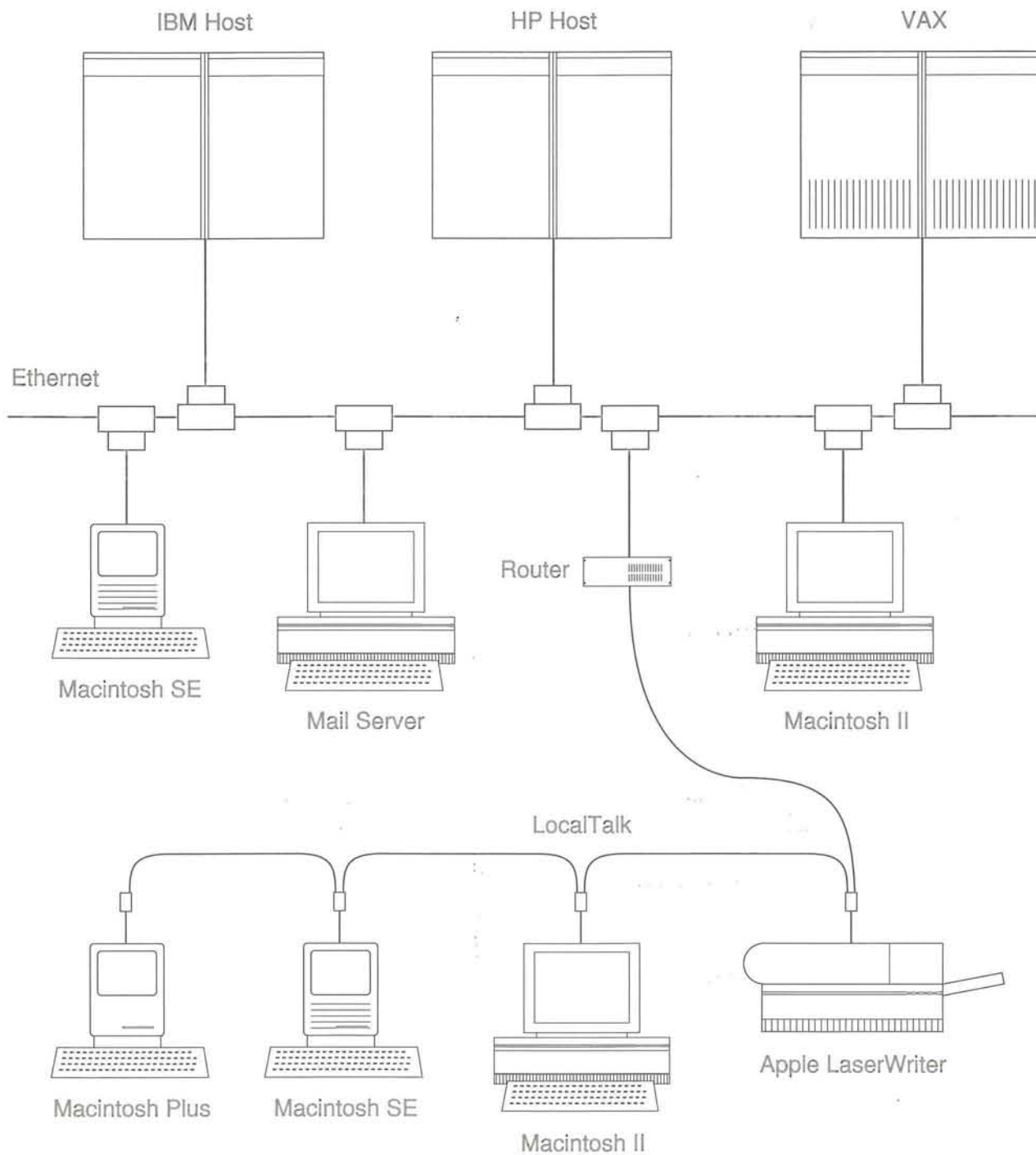
The user interface is consistent with Macintosh standards. The mail utility appears on the screen to be selected by the user.

## TCP/IP Protocols

The Net/One TCP-Mac protocol implementation conforms to standards defined by the U.S Department of Defense (DoD). These standards include TCP (Transmission Control Protocol), UDP (User Datagram Protocol) and IP (Internet Protocol) which are provided through Apple's MacTCP. The FTP (File Transfer Protocol) and Telnet protocols also conform to MIL-STD (Military Standard) specifications.

Additional protocols have been implemented to facilitate consistent operations in an internetwork and multivendor environment. These protocols include: ARP (Address Resolution Protocol), Subnet Addressing, ICMP (Internet Control Message Protocol).







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## Specifications

### *Protocol*

TCP (RFC 793, MIL-STD 1778)  
UDP (RFC 768)  
IP (RFCs 791 and MIL-STD 1777)  
ARP (RFC 826)  
ICMP (RFC 792)  
DNS (RFCs 1034, 1035)  
Internet Subnetting (RFC 950)  
Internet Assigned Numbers  
(RFC 1010)

### *System Requirements*

Macintosh II, Macintosh SE or  
Macintosh Plus  
Appropriate LocalTalk or Ethernet  
connection

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Part No. 26567-01 20M HOP 9/88



Ungermann-Bass, Inc.

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TWX: 910-338-2096



```
AS-PC
ETNIC3 EXE 53685 7-15-88 9:28a
ETNICP3 EXE 54423 7-15-88 9:21a
PASSW 50 1-21-86 12:13p
127 File(s) 18653184 bytes free

C:\TCP>ftp
FTP Version 1.1 (88/04/04)
Copyright 1986 Ungermann-Bass, Inc.
FTP>open sun3 connecting.....

C5-- vax2
login:
4.3 BSD UNIX (ubvax2.UB.Com) (ttyM)
login: _

AS-DISPLAY
UN/370 ONLINE-PRESS ENTER KEY TO BEGIN SESSION

          BBB          UM/SP 4.1
        BBBBBBBBBBB
      BBBBBB BBBBBB
    UUU BBBBB UUU BBBBB
  UUUU BBBBB UUUU BBBBB
  UUUU BBBBB UUUU BBBBB

Net/One 8 Aa C5-- vax2 R 21 C 8 14:02 4/17/88
```

Net/One<sup>®</sup>  
TCP

## Highlights

- Supports asynchronous connectivity to both TCP/IP and non-TCP/IP hosts
- Integrates PC, PS/2 and Macintosh workstations with hosts and wide area networks
- Supports Telnet for asynchronous terminal service and FTP for high speed file transfer

## Overview

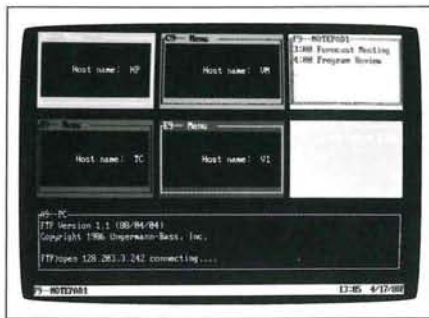
Net/One TCP is a family of standards-based products that provides universal host and workstation connectivity across multivendor, enterprise-wide networks. Conforming to U.S. Department of Defense (D.o.D.) specifications and RFCs (Requests For Comment) for the TCP/IP (Transmission Control Protocol/Internet Protocol) protocol suite, Net/One TCP enables mainframes, minicomputers, workstations, terminals, modems, printers, and other devices to communicate locally and over wide area networks.

Net/One TCP operates with the entire spectrum of Ungermann-Bass' Net/One products to achieve enterprise-wide networking. Base Level Services (BLS) includes terminal services, file transfer and terminal emulation. The product

line also includes TCP-PC, which integrates PC and PS/2 workstations with hosts and supports NetBIOS, and TCP-Mac, which provides connectivity for Apple Macintosh personal computers.

With TCP-PC the user can access all Net/One capabilities, such as network management, internetworking, 3270 connectivity, and the Net/One PC network operating system. Net/One TCP runs on Ethernet and token ring networks; it operates on the company's PC adapters, network interface units, and Access/One network delivery platform.





## Asynchronous Host Connectivity

Net/One TCP's terminal services enable terminal users to establish connections with asynchronous hosts. Direct connections are established to TCP/IP hosts; links to non-TCP/IP hosts are established through an asynchronous terminal server that houses TCP/IP protocols.

Terminal access to TCP/IP hosts is provided through the Telnet virtual terminal protocol which is a standard part of TCP/IP. Ungermann-Bass' Telnet implementation conforms to D.O.D. specifications (MIL-STD 1782, RFC854) to ensure consistent performance and connectivity with a wide range of hosts and applications.

The Telnet protocol also allows PC users to have direct access to a remote host. Ungermann-Bass' CT100, a full VT-100 terminal emulator, is included to allow for remote host access.

CT100 includes support for MS-DOS commands, screen capture, configurable line settings, and programmed keys. Extended features such as scripting, concurrent processing, and hot-key are also available through Net/One CONTACT.

Telnet can be used in combination with a wide range of third-party terminal emulation products referenced through Ungermann-Bass' Net/One Vendor Association (N/OVA) program.

## PC and PS/2 Connectivity

TCP-PC software allows PC and PS/2 workstations running the MS-DOS operating system to access hosts and wide area networks. TCP-PC allows PC users to run standard PC applications, as well as PC network operating systems by incorporating the standard NetBIOS interface (RFC1001 and RFC1002).

TCP-PC provides file transfer capabilities through the File Transfer Protocol (FTP), and terminal access capabilities through the Telnet Protocol. An emulator is bundled with TCP-PC to provide connectivity to asynchronous hosts.

FTP supports high speed transfer of binary and text files. Flexible commands allow users to manipulate local and remote directories, allow transfer of multiple files with a single command, and enable a user to enter DOS commands without breaking the connection to the host.

TCP-PC is also compatible with most network operating systems, including Ungermann-Bass' Net/One PC System, IBM's PC Networks and PC LAN, Microsoft's MS-Net and LAN Manager, and Novell's Advanced NetWare.

## Macintosh Connectivity

TCP-Mac allows Apple Macintosh personal computers to access a range of hosts and other resources, and communicate with a wide range of dissimilar computers

from multiple vendors. TCP/IP protocols for File Transfer, Terminal Emulation, and Electronic Mail are supported. TCP-Mac users can access either TCP/IP or AppleTalk applications on an EtherTalk or LocalTalk network. Easy configuration, installation and operation are provided by a consistent, icon-based, mouse-driven user interface. A complete listing of detailed product specifications is contained in the Ungermann-Bass Net/One TCP-Mac data sheet.

## Value Added Services

Value added services take the user beyond terminal services and PC connectivity. For example, using TCP-PC in conjunction with Ungermann-Bass' value-added software, such as Net/One 3270 PC Graphics, PC or PS/2 users can concurrently access text and graphics information from servers and hosts. Also, users of IBM 3x7x terminals can access IBM hosts by using the NIU-74/78 interface units.

## Network Management

The company's network management software enables network managers to configure devices, download software to servers, debug network software, and track and analyze network traffic, among other services. Also, part of the company's network management product line is Validation Service which provides additional security to the network.



## Internetworking

Ungermann-Bass Data Link Bridges provide protocol-independent internetworking among multiple types of LANs. Multiple protocols, such as XNS (Xerox Networking Services), TCP/IP, OSI (Open Systems Interconnection), and DECnet, can be transmitted across the bridges.



## Programmer Interfaces

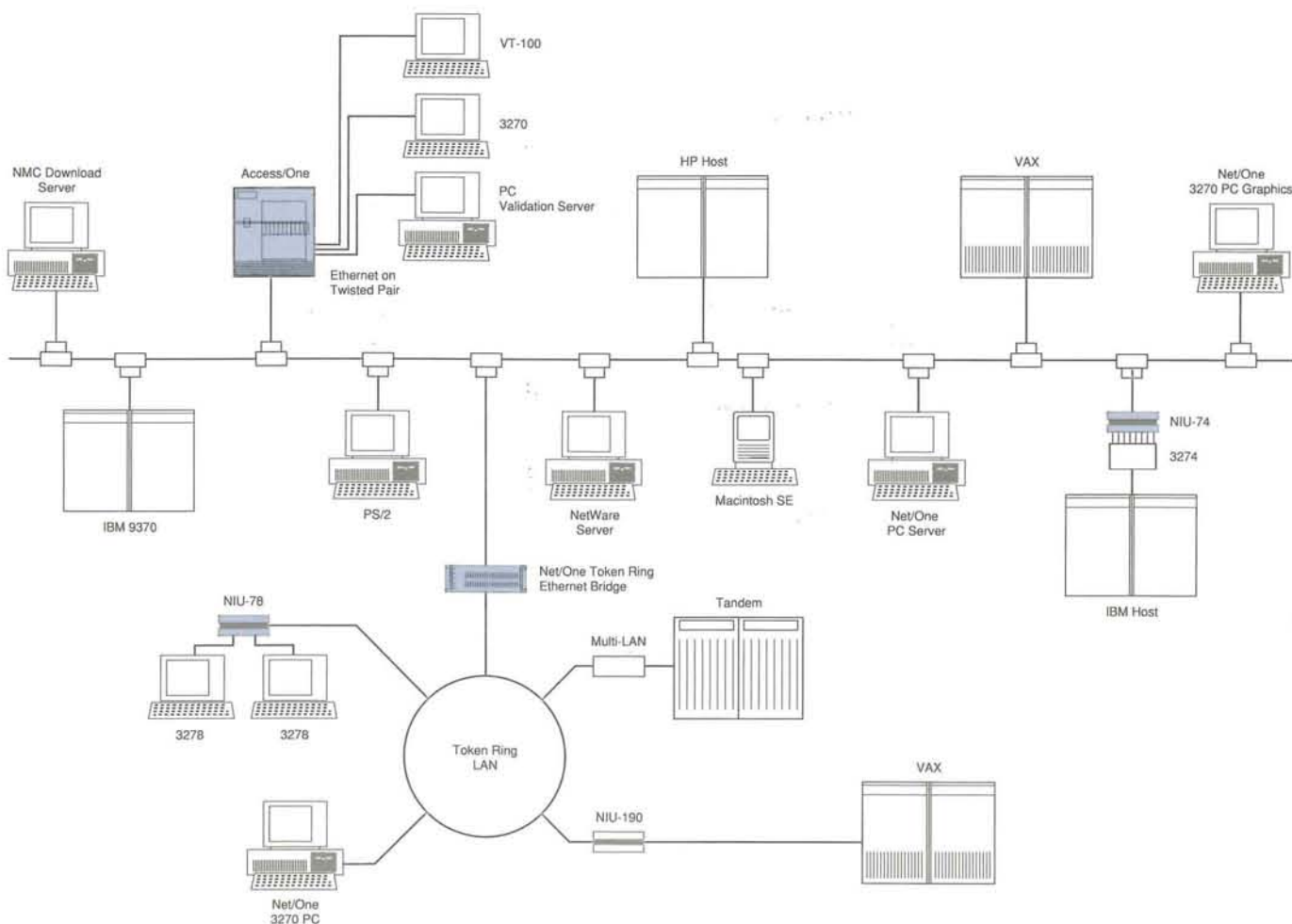
Net/One TCP offers four programmatic interfaces for network program-to-program communications. An assembly language interface is offered through the NetBIOS interface, extensions to the NetBIOS interface, and the Net/One Session Layer (layer five) interface, called NETCI 6B.

Further, a C language interface for programmers is available through the Net/One TCP-PC Socket Library. This procedure interface library is compatible with UNIX 4.3 BSD system calls. Fifty-three procedure calls have been implemented, with access at the TCP, UDP, IP and Data Link layers.

## Net/One Support Services

Ungermann-Bass provides a full range of support services for all of its Net/One networks and products. Among the services are project management, automatic software upgrades, a support hotline, on-line problem reporting, and documentation.

Service is provided by engineers located at the company's world-wide field sales offices and at company headquarters in Santa Clara, California.





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## Specifications

### *Protocol*

#### *Presentation/Application*

Telnet: MIL-STD 1782, RFC854  
FTP: MIL-STD 1780, RFC959

#### *Session*

NetBIOS: RFC1001, RFC1002  
Domain Name Service: RFC1032,  
RFC1033, RFC1034, RFC1035  
Addressing Support: Rotor by  
socket or port

#### *Transport*

TCP: MIL-STD 1778, RFC793  
UDP: MIL-STD RFC768

### *Network*

IP: MIL-STD 1777, RFC791  
ICMP: RFC792  
ARP: RFC826  
RARP Discovery: RFC903  
IP Reassembly: RFC815  
Subnet Addressing: RFC950

### *Data Link*

Baseband Ethernet: Xerox  
XSI018211 IEEE 802.5  
Trailer Encapsulation: RFC893

### *Network Interface Options*

Baseband: 10-Mbps Ethernet  
Broadband: 5-Mbps CSMA/CD  
Token Ring: 4-Mbps IEEE  
802.5-compatible

### *Publications*

Net/One TCP System Overview  
Net/One TCP NMC Network  
Manager's Guide  
Net/One TCP-PC System  
Manager's Guide  
Net/One TCP Terminal Service  
User's Guide  
Net/One TCP Terminal Service Quick  
Reference Card  
Net/One TCP-PC Socket Library  
Programmer's Guide

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