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DEFENSE COMMUNICATIONS AGENCY

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# DDN PROTOCOL IMPLEMENTATIONS AND VENDORS GUIDE

AUGUST 1986

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DEFENSE COMMUNICATIONS AGENCY

# DDN PROTOCOL IMPLEMENTATIONS AND VENDORS GUIDE

AUGUST 1986

Editors:

Ole Jacobsen  
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It is the intent of the DDN Network Information Center (NIC) to make the DDN Protocol Implementations and Vendors Guide widely available to DDN users at minimal cost. The Guide may be obtained in hardcopy or machine-readable form from several sources. Military users may obtain hardcopy from either the Defense Technical Information Center (DTIC) or the NIC. (Either the NIC or DTIC can provide the ordering number.) Non-military users such as contractors, systems personnel, and researchers may obtain hardcopy from the NIC by sending \$20.00 (\$23.00 overseas) to the DDN Network Information Center, SRI International, Room EJ291, 333 Ravenswood Avenue, Menlo Park, CA 94025. Copies are available online to DDN users who have access to the file transfer services, FTP or KERMIT, using pathname NETINFO:VENDORS-GUIDE.DOC. The online file is updated on a continual basis. The hardcopy version is published twice a year in February and August.

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## NOTICE

The DDN Protocol Implementation and Vendors Guide is for informational purposes only. Inclusion of an implementation or product in this Guide does not constitute an endorsement or an official recommendation on the part of the Defense Communications Agency (DCA), the Defense Advanced Research Projects Agency (DARPA), the DDN Network Information Center (NIC), or the Department of Defense (DoD). Omission of any vendor or implementor has no significant implication, other than that the NIC had no information about that product or implementation, or that the information was not forthcoming by the time of publication. Anyone planning to use the hardware or software described in this Guide is advised to thoroughly investigate the suitability, quality, costs, available support, and other related details pertaining to any given selection, and to make sure that products or implementations being considered for use on the Defense Data Network (DDN) comply with the official DoD Military Standard (MIL-STD) protocols.

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# INTRODUCTION

This is a guide to implementations and products associated with the DoD Defense Data Network (DDN) suite of data communication protocols. It is published for informational purposes only by the DDN Network Information Center at SRI International on behalf of the Defense Communications Agency Defense Communications Systems (DCA DCS) Office to assist those wishing to identify existing implementations or products incorporating the DoD protocols.

The guide has three major sections. Section One contains information about DoD protocols, DDN protocol policy, and qualification testing and evaluation procedures. It also explains how to obtain the DoD protocol specification as well as how to obtain related documentation. Section Two lists software implementations, sorted alphabetically by machine type. Section Three lists hardware implementations, sorted alphabetically by company, and it also lists multiple machine implementations.

An index is provided to assist in locating particular implementations. The index is sorted by operating system, machine type, company name and other important keywords such as "X.25" and "Gateway".

This document supersedes the one formerly known as TCP/IP Implementations and Vendors Guide.

The NIC welcomes your comments, additions and corrections. The last page of the guide contains a convenient form for mailing us your feedback. Network users may also send in the form online via electronic mail to [OLE@SRI-NIC.ARPA](mailto:OLE@SRI-NIC.ARPA).

## Key to Symbols:

v Taken from vendor literature

[ ] Not yet available

Last edit: August 19, 1986

# 1. BACKGROUND

## 1.1. The DoD Protocol Suite

In 1982 the DARPA Transmission Control Protocol (TCP) and Internet Protocol (IP) were designated official DoD network communication protocols by the Office of the Secretary of Defense (OSD). Consequently, subscribers to the DDN need implementations and vendor products that incorporate these protocols.

Vendors and implementors should be aware that DoD has recently announced its intention of transitioning to international protocols, when and if these protocols meet the requirements of the DoD (see the section "OSD Directives" below for further detail). It is anticipated that any such transition will take place over time and will not significantly impact the viability or operability of the DDN.

### 1.1.1. DoD Protocol Selection and Announcement Procedures

Official Military Standard (MIL-STD) protocols are selected through a rigorous review process by the military services and the DCA. Once selected, they are deposited at the Naval Publications and Forms Center and are announced in the catalogs published by that organization as official military standards. See Section 2.6.1 for guidelines on ordering MIL-STDs.

The Department of Defense and each branch of the military have their own protocol announcement procedures as do non-military government agencies, such as the National Bureau of Standards. Commercial, national, and international standards organizations also have their own review and announcement procedures. See IEEE Communications Magazine, Vol. 23, No. 1, 43-55 (Jan. 1985) for an excellent overview of the standardization practices of the various protocol standardization bodies within and outside of DoD.

### 1.1.2. OSD Directives

A number of memoranda from the Office of the Secretary of Defense have been issued which are specific policy statements regarding the DoD protocols. These memoranda are available through FTP from the SRI-NIC.ARPA host computer using the following pathnames:

Host-to-Host Protocols for Data Communication Networks	NETINFO:OSDIR-1.TXT
DoD Policy on Standardization of Host-to-Host Protocols for Data Communications Networks	NETINFO:OSDIR-2.TXT
DDN Implementation	NETINFO:OSDIR-3.TXT
DoD Policy on DDN Protocols	NETINFO:OSDIR-4.TXT
DoD Statement on NRC Report on TP4	NETINFO:OSDIR-5.TXT

They are also reproduced in the 1985 DDN Protocol Handbook, Vol. 1, pages 1-41 through 1-57.

## 1.2. The Defense Data Network (DDN)

The OSD Memoranda of 23 March 1982, 10 March 1983, and 14 May 1984 mentioned in section 1.1.2 above state that the Defense Data Network (DDN) will provide long-haul and area data communications and interconnectivity for DoD ADP systems, and that this network will support the DoD suite of protocols, in particular TCP and IP. Consequently, all equipment attached to the DDN by military subscribers must incorporate, or be compatible with, the DoD internet and transport protocols.

Potential implementors should be aware that protocol implementations for use in the DoD environment **MUST** comply with the MIL-STD versions of the protocol specifications. It is also important that the **LATEST** version of these specifications be used. Most of the protocol documents needed for implementation purposes are included in the 1985 DDN Protocol Handbook issued by the DDN Network Information Center. This handbook can serve as a useful reference to DoD protocols; however, implementors using this or any other similar document should always check to see if there are any later protocol or policy changes that apply.

### **1.2.1. DDN Configuration Management**

DDN network configuration management is under the control of the Configuration Management Branch, DCA Code B602B. Matters pertaining to configuration management of the DDN are decided by the Configuration Control Group (CCG). The CCG is chaired by the DDN Defense Communications System (DCS) Technical Manager and is made up of the DDN DCS Division Chiefs. Trouble reports, incident reports, software patch requests, and requests for network configuration changes are reviewed and approved or disapproved by this group.

### **1.2.2. DDN Protocol Qualification Testing**

Subscriber interfaces which are to be used on the DDN must be qualified by meeting a series of performance tests. The results of these tests must satisfy a Technical Acceptance Team made up of personnel from the DDN DCS, the Defense Communications Engineering Center (DCEC), or other appropriate assignees. The DDN DCS has the final approving authority for subscriber interface qualification.

Currently, X.25 (up to level 3) is the only protocol being tested. There are plans to test TCP/IP and related application software at DCEC. Subscribers who wish to have their DDN interfaces tested and qualified for use on the DDN should contact Code B613, the Development, Test and Evaluation Branch of the DDN DCS for details.

### **1.2.3. Product Testing and Certification**

Vendors who wish to have their DDN protocol products certified for use on the DDN should contact Code B613, the Development, Test and Evaluation Branch of the DDN DCS for details.

## **1.3. Obtaining Protocol Documentation**

### **1.3.1. Military Standards**

Official Military Standards (MIL-STDs) may be ordered from the

Naval Publications and Forms Center, Code 3015  
5801 Tabor Avenue  
Philadelphia, PA 19120  
Phone: (215) 697-3321 (order tape)  
(215) 697-4834 (conversation)

### 1.3.2. RFCs

Requests for Comments (RFCs), a set of protocol-related technical notes, are available from the NIC. Network users may obtain online copies from the SRI-NIC.ARPA host using the file transfer services, FTP or KERMIT. Pathnames are of the format RFC:RFCnnn.TXT (where "nnn" is the number of the RFC). Network users without FTP or KERMIT capabilities may send requests to NIC@SRI-NIC.ARPA for online copies to be delivered via electronic mail.

RFCs can also be purchased in hardcopy from the NIC. The prices are as follows:

RFC Index - \$ 5.00 domestic, \$ 7.00 foreign  
RFCs - \$ 5.00 domestic, \$ 7.00 foreign per copy under 100 pages  
RFCs - \$10.00 domestic, \$13.00 foreign per copy over 100 pages

### 1.3.3. DDN Protocol Handbook

A three-volume reference set containing official DoD network protocols and experimental ARPANET protocols, together with military standards, implementation guidelines, and related background information. Published by the NIC, December 1985. Available from DTIC or NIC.

NIC Price: \$110.00/set domestic, \$130.00/set foreign  
DTIC Price: \$ 5.00/1st 100 pages; \$.07/page thereafter,  
Total pages = 2749  
DTIC Order Nos: Vol.1 ADA-A166 324  
Vol.2 ADA-A166 325  
Vol.3 ADA-A166 326

The 1985 DDN Protocol Handbook supersedes:

Internet Protocol Transition Workbook, March 1982  
Internet Protocol Implementation Guide, August 1982  
Internet Mail Protocols, November 1982  
Internet Telnet Protocol and Options, June 1983  
Miscellaneous Protocols

### 1.3.4. Blacker Front End Interface Control Document

The Blacker Front End Interface Control Document contains the specification for end-to-end data encryption on the DDN. It may be obtained via FTP or Kermit from the SRI-NIC.ARPA host using pathname NETINFO:BLACKER.DOC and is also reproduced in the 1985 DDN Protocol Handbook.

### 1.3.5. DDN X.25 Host Interface Specification

Document containing the specific options and features of CCITT Recommendation X.25 (1980) and the Federal Information Processing Standard (FIPS) 100/Federal Standard 1041, (July 1983). Published by DCA, December 1983. Available from DTIC or NIC.

NIC Price: \$10.00 domestic, \$13.00 foreign  
DTIC Order No.: AD-A137 427

### **1.3.6. DDN Subscriber Interface Guide**

Describes alternative hardware connections to the DDN, including guidelines for connecting equipment to the DDN. Published by DCA, July 1983. Available from DTIC or NIC.

NIC Price: \$10.00 domestic, \$13.00 foreign  
DTIC Order No.: AD-A132 877/2

### **1.3.7. DDN Subscriber Security Guide**

Describes the security architecture of the DDN. Published by DCA, November 1983. Available from DTIC or NIC.

NIC Price: \$10.00 domestic, \$13.00 foreign  
DTIC Order No.: AD-A152 524

### **1.3.8. Interconnection of a Host and an IMP, BBN Report No. 1822**

The specifications for connecting a host computer to a network node (formerly called an Interface Message Processor or IMP, now called a Packet Switch Node or PSN); appendices include the requirements for attaching a host to an IMP through an HDH Interface and the CCITT recommendation X.25 for Link Access Procedure (LAPB). Published by Bolt, Beranek, and Newman Inc., rev. Dec. 1983. Available from the NIC at no charge (while supplies last).

**NOTE:** The BBN-1822 interface is now obsolete on the DDN; however, the document may provide useful background information.

### **1.3.9. DTIC Document Ordering Information**

Military personnel or DoD contractors with proper authorization may obtain protocol-related documents, such as circulars, directives, or memoranda from the Defense Technical Information Center (DTIC). DTIC's address and telephone number are:

Defense Technical Information Center  
Cameron Station  
Alexandria, VA 22314  
(202) 274-7633

Contractors and researchers without access to DTIC can obtain many of the same documents from the NIC.

### **1.3.10. NIC Document Ordering Information**

Documents can be ordered from the NIC by sending a check, money order, or purchase order for the total amount in US dollars, made payable to SRI International. Cash payments or charge cards are not accepted. For all orders, please include your full name, US mailing address with zip code, telephone number, and network mailbox (if available) and send to:

DDN Network Information Center  
SRI International  
Room EJ291  
333 Ravenswood Avenue  
Menlo Park, CA 94025 (800) 235-3155 or (415) 859-3695

Send online requests for an order form to [NIC@SRI-NIC.ARPA](mailto:NIC@SRI-NIC.ARPA), or call the NIC at one of the above telephone numbers.

### **1.3.11. NIC Shipping Information**

**DOMESTIC:** Orders will be shipped via 4th class mail. Please allow 4-6 weeks for delivery. Prices include postage.

**OVERSEAS:** Overseas orders are shipped via "surface printed matter". Prices include postage.

**SPECIAL:** Orders will be shipped via Federal Express or UPS by special arrangement only. If you want an order shipped via either of these methods, please request a document order form from the NIC.



## 2. TCP/IP SOFTWARE IMPLEMENTATIONS BY MACHINE TYPE

### 2.1. Apple

#### 2.1.1. Stanford Ethernet Appletalk Gateway

**PRODUCT-OR-PACKAGE-NAME:** Stanford Ethernet Appletalk Gateway (SEAGATE)

**DESCRIPTION:**

SEAGATE is a gateway that connects an Ethernet using the internet protocols, to an applebus (AppleTalk) using Apple or IP protocols. With such a gateway in place, it becomes possible to create server daemons to provide file, printing, mail, etc. services for Macintoshes.

This distribution of SEAGATE provides all the information and software you should need to setup your own gateway. Please bear in mind that this distribution is not 'supported' and that we can't give extensive help about the mechanics of putting your gateway together. We would like to hear about bug reports or enhancements however.

To assemble your own gateway, you will need at least the items below:

- The hardware is a 3 card multibus system: A 'SUN' (or Forward) 68000 CPU board, an Interlan NI3210 Ethernet card, and a homemade applebus card (about 8 chips) which takes an afternoon to wirewrap.
- A UNIX (usually VAX) running 4.2 BSD, 4.1 BSD or Eunice. This is because the source distributed is written in the PCC/MIT 68000 C compiler. [This is the same compiler included with the SUMACC Mac C cross development kit.] You can probably substitute any 68K C compiler and assembler, but it will be harder.
- Inside Mac, update service, and the Mac software supplement.
- Applebus Developer's Kit, includes: protocol manual, applebus taps and interconnecting cable, Mac applebus drivers on SONY disks.

Software usable through the gateway includes:

- MAT (Mac / ATP transfer program). A simple file transfer utility and daemon. Also serves as a skeleton application for general Mac transaction services. For example you could easily build a Mac program to read and create 'internet mail' containing pictures and speech.
- EFS (external file system). Allows UNIX to act as a general file server for the Macintosh. The Mac user sees the standard 'desktop' iconic model of his remote directory on UNIX. This software was written by John Seamons of LucasFilm and adapted by us for AppleTalk.
- TELNET and TFTP. These correspond to the UNIX programs used to access virtual terminal and file transfer services. The Mac programs here were developed by MIT (Romkey) / Dartmouth (Mark Sherman) and CMU (Tim Maroney). This software has been released by Tim to net.sources.mac (usenet) and is FTPable from CMU.

The released material for all of the above includes source code and documentation. These files are currently publicly accessible on-line via FTP to our SUMEX host, in the <info-mac> directory. There are also tar magtapes available of SUMACC and INFO-MAC (which contains the seagate files). Magtape info:

The tape duplication company below charges \$65 to send each tape. This includes the new reel of tape and surface (book rate) postage. They will accept prepaid checks or money orders. Call the number below for additional info about postage for airmail or international mail.

Maria Code  
Data Processing Services  
Info-Mac TAR tape, and/or SUMACC TAR tape  
1371 Sydney Drive  
Sunnyvale, CA 94087  
(408) 735-8006

#### DOCUMENTATION:

On [SUMEX]<info-mac> the files are:

seagate.ms	documentation in -ms format
seagate.hard	the wirelist for the applebus interface
seagate.shar1	the main gateway sources (including above docs)
seagate.shar2	the ddt, dlq, testsc, and tftp subdirectories
seagate-efs.shar	the file service (client and server)
seagate-mat.shar	the MAT service

All these files are plain ASCII and can be FTP'd from SUMEX with the 'anonymous' login. The shar (shell archive) files are large so we would appreciate it if you would avoid transfers during 9 AM to 5 PM PST.

#### CPU:

Apple Macintosh

#### O/S:

UNIX and others

#### IMPLEMENTATION-LANGUAGE:

C

#### CONTACT:

Bill Croft, (croft@sumex.arpa), SUMEX, Stanford University

#### PROPRIETY-STATUS:

Public domain (Copyrighted by Stanford; may be used, but not sold without permission)

#### INFORMATION-UPDATED:

January 1986

## 2.1.2. Apple Macintosh IP

**PRODUCT-OR-PACKAGE-NAME:** MacIP

**DESCRIPTION:**

MacIP is a set of libraries and programs for the Apple Macintosh. The programs allow use of Telnet and TFTP over AppleTalk. In conjunction with gateways and bridges, the programs allow the use of Telnet and TFTP with other IP hosts on other networks, e.g., a VAX/UNIX on Ethernet. The libraries can be used by Macintosh programs written in Lisa Pascal to provide access to implementations of IP, TCP and UDP protocols on AppleTalk.

**DOCUMENTATION:**

Preliminary documentation is available as a technical report from the Mathematics and Computer Science Department, Dartmouth College, Hanover, NH 03755. A later (more complete and accurate) document may be forthcoming from the University Computation Center, Carnegie-Mellon University, Pittsburgh, PA 15213. (See contacts below). Some documentation accompanies the sources.

**CPU:**

Apple Macintosh (TFTP: 128K; Telnet: 512K)

**O/S:**

Apple Macintosh

**IMPLEMENTATION-LANGUAGE:**

Lisa Pascal and 68000 Assembler

**DISTRIBUTOR:**

- 1) Usenet (net.sources.mac)
- 2) Mark Sherman (see below)
- 3) Tim Maroney (see below)

**CONTACT:**

1) **Tim Maroney, Tim.Maroney@CMU-CS-K.ARPA**  
University Computation Center  
Carnegie-Mellon University  
Pittsburgh, PA 15213

2) **Mark Sherman, mss%Dartmouth@CSNET-RELAY.ARPA**  
Dept. of Mathematics and Computer Science  
Dartmouth College  
Hanover, NH 03755

**ORDERING-PROCEDURE:**

Under revision. Generally, Tim Maroney handles Usenet postings, Mark Sherman handles individual requests. Currently, send a request to Mark Sherman along with five blank single-sided microdisks (3.5 Sony compatible). We will return five disks with sources and programs (payment instead of disks is acceptable. Current estimate is \$5/disk.)

**PROPRIETY-STATUS:**

None.

**INFORMATION-UPDATED:**

November 1985

## **2.2. AT&T**

### **2.2.1. AT&T 3B Series**

**PRODUCT-OR-PACKAGE-NAME:** AT&T Enhanced TCP/IP WIN/3B

**DESCRIPTION:**

Package includes FTP, SMTP, TFTP, Telnet, rlogin, rwho, rcp (remsh), finger, TCP, UDP, ICMP and IP. Lower level protocols supported are Ethernet and X.25. Berkeley sockets interface and the AT&T Transport Level Interface (TLI) are supported.

**DOCUMENTATION:**

User Guide, Administrator Guide, Programmer Reference Manual, and Quick Reference Card

**CPU:**

AT&T 3B/300, 3B/310, 3B/400, 3B5, 3B15, 3B20S and 3B20A computers

**O/S:**

UNIX System V, Release 2

**IMPLEMENTATION-LANGUAGE:**

Mostly C (binary distribution)

**DISTRIBUTOR:**

AT&T Information Systems  
1776 On The Green  
Morristown, NJ 07960

**CONTACT:**

AT&T Information Systems, Application Software (800) 247-1212

**ORDERING-PROCEDURE:**

Contact above

**INFORMATION-UPDATED:**

April 1986

## **2.3. Bolt Beranek and Newman**

### **2.3.1. BBN-C/70**

**PRODUCT-OR-PACKAGE-NAME:** BBN-C/70

**DESCRIPTION:**

The C/70 processor is a BBN-designed system with a native instruction set oriented toward executing the C language. It supports BBN O/S, a UNIX look-alike. A full, well-debugged, implementation of TCP/IP is provided as part of the kernel. Both user and server Telnet, SMTP, and FTP run as 20-bit user processes.

**CPU:**

C/70

**O/S:**

BBN O/S (a UNIX look-alike)

**IMPLEMENTATION-LANGUAGE:**

C

**DISTRIBUTOR:**

BBN Communications Corporation  
50 Moulton Street  
Cambridge, MA 02238

**CONTACT:**

Mitchell Tasman, (mtasman@BBN-UNIX.ARPA), (617) 497-2562

**INFORMATION-UPDATED:**

February 1986

### 2.3.2. BBN-Gateways

#### DESCRIPTION:

In an effort to provide improved service in the gateways maintained at BBN, a new gateway implementation written in MACRO-11 instead of BCPL has been developed. The MACRO-11 gateway provides users with internet service that is functionally equivalent to that provided by the current BCPL gateways with the following exceptions:

- Packets with options will be fragmented if necessary.
- ICMP protocol is supported.
- The gateway sends Time Exceeded, Parameter Problem, Echo, Information Request, Destination Unreachable, and Redirect ICMP messages.
- Initially, Source Quench and Timestamp packets will not be supported.
- Class A, B, and C Network Address formats as specified in the September 1981 Internet Protocol Specification (RFC791) are supported.

The gateway contains an internetwork debugger (XNET) that allows the gateway to be examined while it is running. Buffer space is greatly expanded to provide better throughput. ARPANET RFNMs are counted so the gateway will not send more than 8 outstanding messages to an ARPANET host.

#### IMPLEMENTATION-LANGUAGE:

MACRO-11

#### CONTACT:

Robert Hinden, (hinden@BBNCCV.ARPA), (617) 497-3757

## **2.4. Burroughs**

### **2.4.1. SDC**

**PRODUCT-OR-PACKAGE-NAME:** Burroughs DDN Interface

**DESCRIPTION:**

The Burroughs DDN Interface augments the Burroughs Network Architecture to support communication with Burroughs and other vendor equipment employing DoD protocols. DoD network software is implemented partly in the mainframe and partly in an intelligent front end processor. DDN connection is via X.25 Standard Mode at speeds up to 56 Kbps. Telnet, FTP, and SMTP protocols are supported above TCP and IP. Several mainframes may be connected to DDN through the same front end via a proprietary LAN, in which case the front end supports the External Gateway Protocol. Multiple IMP connections may also be supported.

**CPU:**

B 5900, 6900, 7900, A-Series

**O/S:**

Burroughs MCP Release 3.6

**IMPLEMENTATION-LANGUAGE:**

PASCAL

**DISTRIBUTOR:**

System Development Corporation  
7925 Jones Branch Drive  
McLean, VA 22102

**CONTACT:**

Joseph Gibson, (703) 821-0305

**INFORMATION-UPDATED:**

February 1986

## **2.5. Control Data Corporation**

### **2.5.1. [CDC-Cyber]**

#### **DESCRIPTION:**

This will be a package of software and technical support services for interfacing Cyber computing environments to the Defense Data Network. The expected date of completion is February of 1987.

#### **CPU:**

Cyber 170

#### **O/S:**

NOS

#### **DISTRIBUTOR:**

Control Data Corporation  
215 Moffett Park Drive  
Sunnyvale, CA 94089

#### **CONTACT:**

Paul Trettel, (408) 744-5459

#### **INFORMATION-UPDATED:**

July 1986

## 2.5.2. CYGNUS

**PRODUCT-OR-PACKAGE-NAME:** Cyber TCP/IP, CYGNUS, NIP

**DESCRIPTION:**

CYGNUS is a central processor program which implements TCP, UDP, and IP. NIP is a peripheral processor program which acts as the network device driver for CYGNUS. Communication with the rest of the Internet is accomplished using a Cyber channel adapter which connects the Cyber with a Vax 11/780 system. The Vax acts as a front-end processor for the Cyber: ARP is implemented there and standard Ethernet hardware is used to physically connect to the network. This implementation is now available for general release.

**DOCUMENTATION:**

No published documentation currently exists; internal documentation is under preparation

**CPU:**

Cyber 170/750 with Vax 11/780 as front-end

**O/S:**

UT2D (University of Texas Dual Dinosaur)

**IMPLEMENTATION-LANGUAGE:**

Cyber assembly language for CYGNUS and NIP (COMPASS)

C for the Vax-11 front-end program

**DISTRIBUTOR:**

Computation Center  
The University of Texas at Austin

**CONTACT:**

Dan Reynolds, dan@NGP.UTEXAS.EDU  
Com 23  
Computation Center  
The University of Texas at Austin  
Austin, Texas 78712  
(512) 471-3241 ext 223

**ORDERING-PROCEDURE:**

Contact the person above for specifics

**PROPRIETY-STATUS:**

Copyright 1986, The University of Texas System Board of Regents

**INFORMATION-UPDATED:**

June 1986

## **2.6. Convex Computer Corporation**

### **2.6.1. Convex C-1**

**PRODUCT-OR-PACKAGE-NAME:** CONVEX C-1 affordable supercomputer

**DESCRIPTION:**

The C-1 offers 40 Mflops of processing power in a machine with large real (128 MB) and virtual (2 GB) memory. Software includes vectorizing FORTRAN and C compilers and the UNIX 4.2 BSD operating system. Many standard TCP/IP programs run unchanged on the CONVEX C-1.

**DOCUMENTATION:**

A full set of documentation is available

**CPU:**

CONVEX C-1

**O/S:**

UNIX 4.2 BSD

**IMPLEMENTATION-LANGUAGE:**

C

**DISTRIBUTOR:**

CONVEX Computers  
701 Plano Road  
Richardson, TX 75081  
(214) 952-0200

**CONTACT:**

Marshall Stallings, (214) 952-0200

**ORDERING-PROCEDURE:**

Submit purchase order to above address; see above for pricing information

**PROPRIETY-STATUS:**

Product of CONVEX Computer Corporation

**INFORMATION-UPDATED:**

August 1986

## 2.7. Cray

### 2.7.1. Cray TCP/IP

**PRODUCT-OR-PACKAGE NAME:** Cray TCP/IP Network Package

**DESCRIPTION:**

The TCP/IP Network Package is an implementation of the TCP/IP protocol suite, based on the University of California at Berkeley's 4.2BSD. It supports DoD standard IP, ICMP, TCP, UDP, Telnet, and FTP protocols. SMTP support is planned.

Also supported are extensions developed at UC-Berkeley: socket interface, remote shell (remsh), remote copy (rcp), remote execution (rexecd). Remote login (rlogin) support is planned.

The TCP/IP network package is available with drivers for Network Systems Corporation HYPERchannel adapters and media. A number of other vendors have worked with Cray to make their IP implementations available over the HYPERchannel media. These implementations, in addition to providing direct connections to Cray systems, can provide IP-level gateways to other media (most typically, to Ethernet).

**DOCUMENTATION:**

Complete documentation is available to Cray customers.

**CPU:**

Cray-1/S, Cray-1/M, Cray X-MP, Cray-2

**O/S:**

Unicos, a derivative of Unix System V

**IMPLEMENTATION-LANGUAGE:**

C

**DISTRIBUTOR:**

Cray Research, Inc.  
608 Second Avenue South  
Minneapolis, Minnesota 55402

**CONTACT:**

David D. Thompson  
Manager, Networking and Communications Group  
Cray Research, Inc.  
1440 Northland Drive  
Mendota Heights, Minnesota 55120  
(612) 681-3232

**ORDERING-PROCEDURE:**

Contact any Cray Research sales office

**PROPRIETY-STATUS:**

Product of The Wollongong Group and Cray Research

**INFORMATION-UPDATED:**

July 1986

## **2.8. Data General**

### **2.8.1. [DG/VS]**

#### **DESCRIPTION:**

The TCP/IP product currently supports Ethernet under the DG/UX operations system and will run under the AOS/VS operating system in the future. Support for the DDN implementation is forthcoming. Presently the product includes implementations of FTP and Telnet protocols. TCP/IP tracks the UNIX 4.2 BSD implementation.

#### **DOCUMENTATION:**

Contact Data General

#### **CPU:**

DS/4000 family, and MV product line

#### **O/S:**

DG/UX -today; AOS/VS -future

#### **DISTRIBUTOR:**

Data General  
Data General Sales Force  
4400 Computer Drive  
Westboro, MA 01580

#### **CONTACT:**

Dean Throop  
Data General  
62 Alexander Drive  
Research Triangle, NC 27709  
(919) 549-8421

#### **INFORMATION-UPDATED:**

August 1986

## **2.8.2. Claflin & Clayton 4100**

**PRODUCT-OR-PACKAGE-NAME:** 4100 RDOS TCP/IP

**DESCRIPTION:**

The 4100 Protocols allow Data General RDOS systems to communicate using TCP/IP over Ethernet. Client TELNET, Client FTP and Server FTP applications, as well as an applications level TCP interface are provided.

**DOCUMENTATION:**

Available from vendor

**CPU:**

Data General NOVA, DESKTOP, ECLIPSE, and ECLIPSE/MV systems

**O/S:**

Mapped RDOS

**DISTRIBUTOR:**

Claflin & Clayton, Inc.  
117 Maynard Street  
Northboro, MA 01532

**CONTACT:**

Heather Claflin, (617) 393-7979

**ORDERING-PROCEDURE:**

Contact distributor

**PROPRIETY-STATUS:**

Product of Claflin & Clayton, Inc.

**INFORMATION-UPDATED:**

August 1986

### **2.8.3. Clafin & Clayton 4200**

**PRODUCT-OR-PACKAGE-NAME:** 4200 AOS TCP/IP

**DESCRIPTION:**

The 4200 Protocols allow Data General RDOS systems to communicate using TCP/IP over Ethernet. Client TELNET, Client FTP and Server FTP applications, as well as an applications level TCP interface are provided.

**DOCUMENTATION:**

Available from vendor

**CPU:**

Data General DESKTOP and ECLIPSE systems

**O/S:**

AOS

**DISTRIBUTOR:**

Clafin & Clayton, Inc.  
117 Maynard Street  
Northboro, MA 01532

**CONTACT:**

Heather Clafin, (617) 393-7979

**ORDERING-PROCEDURE:**

Contact distributor

**PROPRIETY-STATUS:**

Product of Clafin & Clayton, Inc.

**INFORMATION-UPDATED:**

August 1986

## **2.8.4. Claflin & Clayton 4300**

**PRODUCT-OR-PACKAGE-NAME:** 4300 AOS/VS TCP/IP

**DESCRIPTION:**

The 4300 Protocols allow Data General RDOS systems to communicate using TCP/IP over Ethernet. Client TELNET, Client FTP and Server FTP applications, as well as an applications level TCP interface are provided.

**DOCUMENTATION:**

Available from vendor

**CPU:**

Data ECLIPSE/MV systems

**O/S:**

AOS/VS

**DISTRIBUTOR:**

Claflin & Clayton, Inc.  
117 Maynard Street  
Northboro, MA 01532

**CONTACT:**

Heather Claflin, (617) 393-7979

**ORDERING-PROCEDURE:**

Contact distributor

**PROPRIETY-STATUS:**

Product of Claflin & Clayton, Inc.

**INFORMATION-UPDATED:**

August 1986

## **2.9. Datapoint**

### **2.9.1. Datapoint WAN-X.25**

**PRODUCT-OR-PACKAGE-NAME:** Wide Area Networking - X.25

**DESCRIPTION:**

Wide Area Networking - X.25 (WAN-X.25) is a communications product designed according to the Open Systems Interconnection (OSI) model. WAN-X.25 uses CCITT X.25 as the transport mechanism for Datapoint-to-Datapoint communications. Datapoint provides a set of software products to utilize the WAN-X.25 services, and a program interface for COBOL, DATABUS, DASL, and Assembler routines.

WAN-X.25 can operate on Packet Switched Data Networks (PSDN), Circuit Switched Telephone Networks (CSTN), Point-to-Point Private/Leased lines, and Circuit Switched Data Networks (CSDN). WAN-X.25 is certified to work on most public data networks world-wide.

WAN-X.25 has been certified by the DDN Program Management Office (PMO) as a DCAC-370-P195-(XX) compliant X.25 product, and is fully qualified to run on the DDN Network.

**DOCUMENTATION:**

RMS Wide Area Networking X.25 User's Guide, edition 3

**CPU:**

Datapoint 86xx, or 88xx

**O/S:**

Resource Management System (RMS)

**IMPLEMENTATION-LANGUAGE:**

Assembler and Datapoint Advanced Systems Language

**DISTRIBUTOR:**

Datapoint Corporation  
9725 Datapoint Drive  
San Antonio, TX 78278

**CONTACT:**

David Hendon, (512) 699-5141

**ORDERING-PROCEDURE:**

Submit order through your local Datapoint representative; contact your local Datapoint representative for pricing information.

**PROPRIETY-STATUS:**

Product of Datapoint Corporation

**DDN-QUALIFIED:**

Yes

**INFORMATION-UPDATED:**

July 1986

## 2.10. Digital Equipment Corporation

### 2.10.1. BRL Gateway

**PRODUCT-OR-PACKAGE-NAME:** BRL Gateway

**DESCRIPTION:**

The BRL Gateway is a total redesign. None of the original MIT code was used. The gateway runs as a set of tasks on a simple multiprocessing operating system called LOS. Both LOS and the gateway code as described here were entirely designed and written by Ron Natalie.

This is an IP gateway with EGP support. The gateway will run on most PDP-11 series processors, but is designed to be portable to other machines that have C compilers. Point-to-point serial links, DEC PCL-11/B, and the ACC LH-DH/11 interfaces are currently supported. Work is in process to support the Interlan Ethernet interfaces with the Address Resolution Protocol, the Network Systems Corporations's HYPERchannel, and the Proteon Ringnet hardware.

All gateway functions and features of the IP and ICMP protocols are supported with the following exceptions. The ICMP timestamp packet is not implemented and ICMP source quench messages are ignored. IP timestamp and routing options are supported. The Exterior Gateway Protocol is supported as described in RFC904. Deviations from the specification are made to optimize the performance as a stub system from the existing core networks. The gateway also uses its own UDP based debug and monitoring protocol. GGP echo packets are also answered.

In addition, the gateway provides Virtual-Host service. TCP connections to be dynamically directed to an active host on the BRLNET. This allows the host "BRL" to appear to always be up for mail purposes.

The original BRL gateway was an early version of the MIT-C gateway modified to know about class B and C addresses and to work with the previously mentioned network interfaces. With the advent of EGP, higher network traffic, and greater routing intelligence, the modified MIT gateway became ineffective.

**DOCUMENTATION:**

Not yet

**CPU:**

Any PDP-11 processor that has memory management. The machines currently in use are a PDP-11/34 and LSI-11/23. A console terminal interface and a clock are required, as well as any network interfaces. The built-in line frequency clock on the LSI-11 processors may be used in lieu of an additional clock.

**O/S:**

LOS (the Little Operating System) is a small message-passing, multitasking operating system written for the implementation of the gateway, but is also being planned for use in real-time and file server applications. The Gateway code runs in the hardware user mode, while LOS itself runs in kernel mode. Interrupts are serviced in real-time by the user code.

**IMPLEMENTATION-LANGUAGE:**

With the exception of small parts of the operating system and some bit manipulation routines, which are written in assembler, both LOS and the Gateway code are written in the C language.

**DISTRIBUTOR:**

U.S. Army Ballistic Research Laboratory  
ATTN: AMXBR-SECAD/R. Natalie  
APG, MD 21005-5066

**CONTACT:**

Ron Natalie, (RON@BRL.ARPA), (301) 278-6678 or above address

**ORDERING-PROCEDURE:**

Send mail to RON@BRL.ARPA for more information

**PROPRIETY-STATUS:**

Both LOS and the Gateway are the property of the Department of the Army. They are available for public use at no charge. They may be distributed with commercial products with slight restrictions.

## 2.10.2. Fuzzball

PRODUCT-OR-PACKAGE-NAME: DCN/Fuzzball System for the PDP11

### DESCRIPTION:

The Fuzzball Internet software system was developed with DARPA sponsorship beginning in 1978 and continuing to the present. It runs in a sizable number of PDP11s and LSI-11s with varying configurations and has been used extensively for testing, evaluation and experimentation with other implementations. The system is designed to be used with the DCnet local network protocols as described in RFC-891 and the Fuzzball operating system for a multi-media internet workstation (also called a Fuzzball), which operates using emulation techniques to support the DEC RT-11 operating system and application programs. However, the system has also been used on other networks, including ARPAnet and NSFnet, and with other operating systems, including RSX-11. An RSX-11 based version incorporating only the IP/TCP modules is presently used to support the INTELPOST electronic-mail network.

The software system consists of a package of MACRO-11 and C modules structured into levels corresponding to local-net, IP, TCP and application levels, with user interfaces at each level. The local-net level supports several communication devices, including synchronous and asynchronous serial lines, 16-bit parallel links, Ethernet and 1822 interfaces. Hosts using these devices have been connected to ARPAnet IMPs, Satellite IMPs, BBN Internet Gateways, SRI Port Expanders and to standard Ethernets, DECnets and X.25 public networks, as well as several DCnet local networks. The system supports subnets as described in RFC-950, as well as network-level type-of-service routing, local-level dynamic routing and extensive time-synchronization and error-reporting functions, including drivers for several types of radio clocks. Ethernet support includes the Address Resolution Protocol (ARP) with a dynamic cache suitable for multiple-gateway and multiple-net cables.

The IP level conforms to the RFC-791 specification, including fragmentation, reassembly and the source-route option. A full set of ICMP features compatible with RFC-792 is available, including error reporting, timestamp, redirect and source-quench messages. Error reports and source-quench information is conveyed to the user level via the TCP and raw-datagram protocol modules. Internet gateway (routing and non-routing) facilities conforming to the Exterior Gateway Protocol (EGP) RFC-904 specification can be included on an optional basis.

The TCP level conforms to the RFC-793 specification, including PUSH, URGENT and options. Its structure is based on circular buffers for reassembly and retransmission, with repacketizing on each retransmission. Retransmission timeouts are dynamically determined using measured roundtrip delays, as adjusted for backoff. Data flow into the network is controlled by measured network bandwidth, and adjusted by source-quench information. Features are included to avoid excessive segment fragmentation and retransmission into zero windows. The user interface level provides error and URGENT notification, as well as a means to set outgoing IP/TCP options.

A raw-datagram interface is available for non-TCP protocols such as UDP (RFC-768). It includes internal congestion and fairness controls, multiple-connection management and timestamping. Protocols above UDP supported in the present system include Network Time Protocol (RFC-958), Time Server (RFC-868), Name Server (IEN-116), Domain Name Server (RFC-883) and Trivial File-Transfer Protocol (RFC-783). Other raw-datagram services include XNET (IEN-158), Exterior Gateway Protocol (RFC-904), PING (ICMP Echo utility) and several experimental services.

A number of user-level protocol modules above TCP have been built and tested with other internet hosts, including TELNET (RFC-854), File Transfer Protocol (RFC-959), Simple Mail Transfer Protocol (RFC-821), Multi-Media Mail Protocol (RFC-759) and various other file-transfer, debugging and control/monitoring protocols. A network-spooling system can be used to move files between DCnet hosts and is compatible with Unix systems.

Code sizes and speeds depend greatly on the system configuration and features selected. A typical 30K-word LSI-11/2 single-user configuration with all features selected and including the operating system, device drivers and all buffers and control blocks, leaves 16K-20K words for user-level application programs and protocol modules. The same service is provided for up to eight individually relocated users in a 128K-word LSI-11/23 configuration and up to 32 users in a 1024K-word LSI-11/73 configuration. A diskless version can be configured for stand-alone gateway applications. Disk-to-disk FTP transfers across a DMA interprocessor link between LSI-11/23s operate in the range 30-50 Kbps with 576-octet packets. The 256K-word LSI-11/73 NSFnet gateway supports up to three 56-Kbps lines and an Ethernet controller, while the 124K-word PDP11/34 INTELPOST system supports two 56-Kbps lines and a number of lower-speed lines. Typical throughputs range from 100 to 400 packets per second, depending on processor and interface type.

**DOCUMENTATION:**

Summary description and help-information files

**CPU:**

PDP-11 and LSI-11 (all models)

**O/S:**

Self-contained

**IMPLEMENTATION-LANGUAGE:**

MACRO-11 and C

**DISTRIBUTOR:**

M/A-COM Linkabit Corporation  
8619 Westwood Center Drive  
Vienna, VA 22180

**CONTACT:**

David L. Mills, (Mills@D.ISLEDU), (703) 749-5208

**ORDERING-PROCEDURE:**

Contact above

**PROPRIETY-STATUS:**

DARPA permission required to distribute sources and/or binaries. Use of DEC RT-11 system software requires license; however, this software is not necessary for network protocols or application programs.

**HOSTS:**

DARPA Internet system: 8 (Linkabit), 3 (Ford Research), 3 (U. Maryland), 4 (U. Michigan) plus one each at DARPA, Rice U., Purdue U., NASA/Ames plus others in Germany, Italy, Netherlands, Norway and UK; NSFnet system: 7 domestic; INTELPOST system: 13 worldwide

**INFORMATION-UPDATED:**

July 1986

### **2.10.3. Process Software RT-11**

**PRODUCT-OR-PACKAGE-NAME:** Process Software RT-11

**DESCRIPTION:**

This TCP/IP Implementation supports file transfer operations on DEC RT-11 operating systems. Both user and server FTP are implemented. Full support is included for Ethernet DEQNA as well as proNET ring hardware interfaces. Process Software Corporation can modify the software for other interfaces.

**DOCUMENTATION:**

Fully documented; supplied with User's Manual

**CPU:**

PDP-11 and LSI-11

**O/S:**

RT-11

**IMPLEMENTATION-LANGUAGE:**

MACRO-11

**DISTRIBUTOR:**

Process Software Corporation  
P.O. Box 746  
35 Montague Road  
Amherst, MA 01004

**CONTACT:**

Phil Denzer, (413) 549-6994, Telex 517891

**ORDERING-PROCEDURE:**

Contact Process Software Corporation

**INFORMATION-UPDATED:**

May 1986

#### **2.10.4. Process Software IAS**

**PRODUCT-OR-PACKAGE-NAME:** Process Software IAS

**DESCRIPTION:**

This TCP/IP Implementation supports file transfer operations on DEC IAS operating systems. Both user and server FTP are implemented. Full support is included for Ethernet DEQNA as well as proNET ring hardware interfaces. Process Software Corporation can modify the software for other interfaces.

**DOCUMENTATION:**

Fully documented; supplied with User's Manual

**CPU:**

PDP-11

**O/S:**

IAS

**IMPLEMENTATION-LANGUAGE:**

MACRO-11

**DISTRIBUTOR:**

Process Software Corporation  
P.O. Box 746  
35 Montague Road  
Amherst, MA 01004

**CONTACT:**

Phil Denzer, (413) 549-6994, Telex 517891

**ORDERING-PROCEDURE:**

Contact Process Software Corporation

**INFORMATION-UPDATED:**

May 1986

## **2.10.5. Process Software RSX-11**

### **DESCRIPTION:**

This TCP/IP Implementation supports file transfer operations between DEC RSX-11M, RSX-11M-PLUS and IAS operating systems. Both user and server FTP are implemented. Full support is included for Ethernet (DEUNA and DEQNA) as well as proNET ring hardware interfaces. Process Software Corporation can modify the software for other interfaces.

### **DOCUMENTATION:**

Fully documented: supplied with User's Manual

### **CPU:**

PDP-11 and LSI-11

### **O/S:**

RSX-11M, RSX-11M-PLUS, IAS

### **IMPLEMENTATION-LANGUAGE:**

Macro-11

### **DISTRIBUTOR:**

Process Software Corporation  
P. O. Box 746  
35 Montague Road  
Amherst, MA 01004

### **CONTACT:**

Phil Denzer, (413) 549-6994, Telex 517891

### **ORDERING-PROCEDURE:**

Contact Process Software Corporation

### **INFORMATION-UPDATED:**

May 1986

## **2.10.6. Excelan RSX-11**

**PRODUCT-OR-PACKAGE-NAME:** EXOS 8031/8032 TCP/IP for RSX-11 systems

**DESCRIPTION:**

Excelan's EXOS 8031 implements DOD standard ARPANET TCP/IP protocols to connect Q-bus-based DEC PDP-11 and LSI-11 minicomputers running RSX-11M to Ethernet networks. EXOS 8032 is the Unibus version. Both include an I/O driver, application programming interface, network administration utilities, and network application utilities: file transfer and virtual terminal connection.

**DOCUMENTATION:**

EXOS 8031/8032 TCP/IP Protocol Package for PDP/RSX Systems Reference Manual

**CPU:**

Q-bus or Unibus-based DEC PDP-11 or LSI-11 minicomputer running RSX-11M

**O/S:**

RSX-11M

**IMPLEMENTATION-LANGUAGE:**

C and MACRO-11

**DISTRIBUTOR:**

Inside Sales  
Excelan, Inc.  
2180 Fortune Drive  
San Jose, CA 95131  
(408) 434-2300

**CONTACT:**

**Sales:** Donna Keeling, (408) 434-2300

**Technical:** Andrea Salzman, (408) 434-2300

**ORDERING-PROCEDURE:**

Contact Inside Sales

**INFORMATION-UPDATED:**

February 1986

## 2.10.7. UNIX V6

### DESCRIPTION:

In the UNIX kernel we have modules to drive a "Pronet" device (10 Mb/s token-passing ringnet), to transmit and receive internet packets, to demultiplex incoming TCP and UDP packets, to reassemble internet fragments, and to maintain a cache of internet hosts and their best first hop gateways. Kernel code and data use from 9k to 10.5k bytes depending on the size of the receive packets buffer.

Outside the kernel we have: TCP, user and server Telnet, SMTP, ICMP, and TFTP. All are running but are in varying stages of development.

### DOCUMENTATION:

Some documentation about the user/kernel interface and about the kernel code

### CPU:

PDP-11/45

### O/S:

Version 6 UNIX

### IMPLEMENTATION-LANGUAGE:

C

### DISTRIBUTOR:

Laboratory for Computer Science  
MIT  
545 Technology Square  
Cambridge, MA 02139

### CONTACT:

Liza Martin, (martin@MIT-CSR.ARPA)

Larry Allen, (lwa@MIT-CSR.ARPA), (617) 253-6011

### ORDERING-PROCEDURE:

We are willing to give this software to anyone who wants it, has a UNIX source license, and will agree to a few constraints. We should point out that it would be difficult for someone who is not a UNIX wizard to install this code. To find out more about the software send mail to martin@MIT-CSR.ARPA or to lwa@MIT-CSR.ARPA.

### PROPRIETY-STATUS:

Copyright MIT Laboratory for Computer Science

## 2.10.8. Venix/11

**PRODUCT-OR-PACKAGE-NAME:** Venix/11 TCP/IP

### **DESCRIPTION:**

This is based on the "UNIX V6" implementation available from the MIT Laboratory for Computer Science. It has been ported to a V7 UNIX system, in particular VenturCom's Venix/11 V2.0.

As little of the processing as possible takes place in the kernel, to minimize the code space required. It fits comfortably on I&D machines, but is almost hopeless on the smaller machines. The kernel includes a proNET device driver, IP fragment reassembly, IP header processing, local-net header processing, and simple routing. The rest of the IP processing, and all of the UDP and TCP functions, are in user libraries. The pseudo-teletype driver is also in the kernel, and is used by Server TELNET.

User programs handle ICMP processing; User and Server TELNET, SMTP, TFTP, Finger, and Discard. There are User programs for Nicname and Hostname. IEN-116 nameservers are used by all programs, and an IEN-116 nameserver is also provided. The TCP used is very simple, not very fast, and lies about windows. No FTP is available, nor is one currently planned.

### **DOCUMENTATION:**

There is a full set of manual pages, and some internals documentation. The kernel code is well commented.

### **CPU:**

PDP-11/44, 45, 70, 73, 84

### **O/S:**

Venix/11 V2.0, should be simple to port to other V7 UNIX systems.

### **IMPLEMENTATION-LANGUAGE:**

C

### **DISTRIBUTOR:**

Proteon, Inc.  
4 Tech Circle  
Natick, MA 01760

### **CONTACT:**

John Shriver, [jas@proteon.ARPA](mailto:jas@proteon.ARPA), (617) 655-3340

### **ORDERING-PROCEDURE:**

Vendor product, available only in source form

### **PROPRIETY-STATUS:**

Improvements are proprietary to Proteon

### **INFORMATION-UPDATED:**

January 1986

## 2.10.9. UNIX 2.9 BSD

### DESCRIPTION:

2.9 BSD TCP/IP is an adaptation of Berkeley's original VAX TCP/IP (running under BSD 4.1 UNIX) which in turn is an offshoot of BBN's VAX TCP/IP. 2.9 BSD TCP/IP runs on PDP-11/44s and PDP-11/70s. The 2.8 version from SRI was adapted by Bill Croft (formerly at SRI), then Tektronix adapted it for 2.9. Berkeley took over modification of the software and brought it back to SRI where Dan Chernikoff and Greg Satz adapted it for a later release of 2.9. In addition to TCP/IP, UDP, ARP and the raw packet interface is available. ICMP redirects are not supported. User software implementations include Telnet and FTP, plus Berkeley-developed local net protocols, RWHO, RSH, RLOGIN, and RCP.

2.9 BSD with TCP/IP support could probably be made to run on smaller PDP-11s although the address space would be very tight and might present problems.

### DOCUMENTATION:

Some documentation available; will be sent with tape request

### CPU:

PDP-11/44, PDP-11/70

### O/S:

2.9 UNIX

### IMPLEMENTATION-LANGUAGE:

C (some system-dependent sections written in assembler)

### CONTACT:

**For technical information:**  
**Carl Smith, (Carl@BERKELEY.ARPA)**  
**(415) 644-1230**

### ORDERING-PROCEDURE:

For distribution, contact the PDP-11 Distribution office at:

Valerie Hanson  
University of California  
Berkeley, CA  
(415) 642-6258

### PROPRIETY-STATUS:

Governed by stipulations of Berkeley BSD license

## **2.10.10. Guelph UNIX 2.9 BSD**

**PRODUCT-OR-PACKAGE-NAME:** GUELPH UNIX 2.9 BSD

**DESCRIPTION:**

This is a variation of the 2.9 BSD kernel that will run on the entire range of PDP11's from 11/23 up. It uses a modified kernel text segment scheme that does not require separate I/D for the TCP/IP code. Various fixes have been applied so that the kernel runs compatibly with UNIX 4.2 BSD on a 10Mbit/sec. ethernet. For more information see 2.9 BSD.

**DOCUMENTATION:**

Same as for 2.9 BSD

**CPU:**

PDP-11/23 to PDP-11/70 including Professional 350 PC's

**O/S:**

UNIX 2.9 BSD

**IMPLEMENTATION-LANGUAGE:**

C plus some assembler

**DISTRIBUTOR:**

Rick Macklem,  
Department of Computing and Information Science  
University of Guelph  
Guelph, Ontario Canada N1G 2W1

**CONTACT:**

Rick Macklem,  
(519) 824-4120 x3284  
rick%uogvax2.BITNET@wiscvm.ARPA

**ORDERING-PROCEDURE:**

Send a tape and a 2.9 BSD source license to the above address

**PROPRIETY-STATUS:**

2.9 BSD source licensees only (see 2.9 BSD)

**INFORMATION-UPDATED:**

October 1985

## 2.10.11. BBN UNIX

**PRODUCT-OR-PACKAGE-NAME:** BBN-VAX-UNIX

**DESCRIPTION:**

BBN has developed an implementation of TCP/IP for DEC's VAX(TM) family of processors, that runs under the Berkeley 4.1 BSD version of UNIX(TM). The development effort was funded by DARPA. Some important features of the BBN VAX TCP/IP are that it runs in the UNIX kernel for enhanced performance, it is a complete implementation of the TCP and IP protocols, and provides facilities for direct user access to the IP and underlying network protocols. The IP module supports checksums, option interpretation, fragmentation and reassembly, extended internet address support, gateway communication with ICMP, and support of multi-homing (multiple interfaces and addresses on the same or different networks). The TCP supports checksums, sequencing, the ability to pass options through to the IP level, and advanced windowing and adaptive retransmission algorithms. Support is also provided for the User Datagram Protocol (UDP).

In addition to the TCP/IP software for the VAX, BBN has developed implementations of the Telnet Virtual Terminal Protocol, File Transfer Protocol (FTP), and Simple Mail Transfer Protocol (SMTP), for use with TCP. These protocols are operated as user level programs. Also provided are network programming support tools, such as network name/address manipulation libraries, status, tracing, and debugging tools.

The TCP/IP and higher level protocol software are now available direct from BBN. The software is distributed on a 1600 bpi tar format tape, containing the sources and binaries for a 4.1 BSD UNIX kernel containing the network modifications and the sources and binaries for the higher level protocols and support software. Documentation is provided in the form of a set of UNIX manual pages for the network access device, user programs, and libraries. In addition, a detailed installation document is provided. Device drivers are supplied for the ACC LH-DH/11 IMP interface, the Proteon Associates PRONET Local Network Interface, the ACC IF-11 IMP interface, and the Interlan 10MB Ethernet interface.

**CPU:**

DEC VAX-11 series

**O/S:**

UNIX 4.1 BSD

**IMPLEMENTATION-LANGUAGE:**

C

**DISTRIBUTOR:**

BBN (see above)

**CONTACT:**

Patricia Buckley, (617) 497-3707

**ORDERING-PROCEDURE:**

The tape is available for a \$300.00 duplication fee to Berkeley 4.1 BSD licensees. To order the tape, contact:

**Bolt Beranek and Newman Inc.**  
10 Moulton St.  
Cambridge, MA 02238  
(617) 497-3827

You will then receive a copy of the licensing agreement. Tapes will be mailed upon receipt of a completed agreement and the distribution fee.

This tape is supplied as-is to UNIX 4.1 BSD licensees, with no warranties or support expressed or implied. BBN would be pleased to arrange separate agreements for providing installation assistance and/or software support services, if desired.

**PROPRIETY-STATUS:**

Requires a 4.1 BSD license from U.C. Berkeley

**HOSTS:**

BBN-VAX (development site)

## 2.10.12. UNIX 4.3 BSD

PRODUCT-OR-PACKAGE-NAME: UNIX 4.3 BSD

### DESCRIPTION:

This implementation was developed by the Computer Systems Research Group of the University of California at Berkeley as part of a number of research projects. It is a revision of 4.2BSD, which in turn was based on the BBN TCP/IP implementation for the VAX. It provides support for TCP, IP, ICMP, and UDP with user and server programs for Telnet, FTP, TFTP and SMTP. Hardware supported includes ACC and DEC/CSS IMP Interfaces, 10M bit/s Ethernet (5 different controllers), 3M bit/s Ethernet, and Proteon PRONET.

### DOCUMENTATION:

Online documentation of user programs, system call interfaces, changes from 4.2BSD, etc.; "Networking Implementation Notes, 4.3BSD Edition"

### CPU:

VAX-8600, 8650, 11/785, 11/780, 11/750, 11/730; MicroVAX II

### O/S:

UNIX 4.3BSD

### IMPLEMENTATION-LANGUAGE:

C

### DISTRIBUTOR:

Computer Systems Research Group  
Computer Science Division  
University of California  
Berkeley, CA 94720

### CONTACT:

**Pauline Schwartz, (Pauline@BERKELEY.EDU)**  
**Distribution Coordinator**  
**(415) 642-7780**

### ORDERING-PROCEDURE:

Contact Distribution Coordinator for information packet

### PROPRIETY-STATUS:

Requires a 4.3BSD license agreement (included) and AT&T UNIX/32V, System III, or System V UNIX source code license.

**NOTE:** The procedure for 4.2BSD licensees to acquire 4.3BSD consists of an Addendum to the 4.2BSD Berkeley License Agreement, plus Site Information and Equipment List Forms and the required payment. If there has been any change with AT&T, copies of that documentation must also be included, e.g., name change, or updating of the AT&T UNIX Software Agreement.

### INFORMATION-UPDATED:

July 1986

## 2.10.13. CSNET X.25 for UNIX 4.2 BSD

### DESCRIPTION:

The IP/X.25 effort is supported at BBN by CSNET for distribution to CSNET sites. It is based on the TCP/IP implementation from Berkeley for 4.2 BSD. A device driver was added which allows IP datagrams to be sent over X.25 virtual circuits, and permits the host to serve as an X.29 PAD. An Interactive Systems INcard is required.

### DOCUMENTATION:

Complete manual available if CSNET subscriber

### CPU:

Any VAX-11 processor with a UNIBUS

### O/S:

Berkeley UNIX 4.2 BSD

### IMPLEMENTATION-LANGUAGE:

C

### DISTRIBUTOR:

CSNET CIC  
Bolt Beranek and Newman Inc.  
10 Moulton Street  
Cambridge, MA 02238  
(CIC@CSNET-SH.ARPA)  
(617) 497-2777

### CONTACT:

Dennis Rockwell (DENNIS@SH.CS.NET)  
Bolt Beranek and Newman Inc.  
10 Moulton Street  
Cambridge, MA 02238  
(617) 497-2777

### ORDERING-PROCEDURE:

Contact CIC (see above under DISTRIBUTOR)

### PROPRIETY-STATUS:

For CSNET users only

### INFORMATION-UPDATED:

February 1986

## 2.10.14. Marble Connect

**PRODUCT-OR-PACKAGE-NAME:** Marble CONNECT

**DESCRIPTION:**

CONNECT is a small collection of utility programs that run under the various Berkeley releases of UNIX for PDP-11's, VAXen, SUN Workstations, ISI Optima, and so forth. CONNECT creates and monitors a serial line connection for the purpose of maintaining continuous networking over often unreliable serial lines. After establishing the connection (it understands a wide variety of autodialer protocols, and it operates over leased- or hard-wires as well), CONNECT listens for loss-of-carrier and, in the event that the carrier is dropped, it re-establishes the connection ASAP. Currently CONNECT is being used with SLIP and Marble Serial IP to maintain ARPA-Ethernet connections over long distances using normal phone lines.

**DOCUMENTATION:**

Full documentation is available

**CPU:**

The program runs on any computers using 4.2 BSD, 4.3 BSD or Marble 2.9 BSD UNIX

**O/S:**

Berkeley UNIX

**IMPLEMENTATION-LANGUAGE:**

C

**DISTRIBUTOR:**

Marble Associates Inc.  
PO Box 786  
Cambridge MA 02238  
(617) 259-1250

**CONTACT:**

Mark Elvy

**ORDERING-PROCEDURE:**

Call or write (with purchase order)

**PROPRIETY-STATUS:**

Product of Marble Associates, Inc.

**INFORMATION-UPDATED:**

August 1986

## **2.10.15. Wollongong System V**

**PRODUCT-OR-PACKAGE-NAME:** WIN/SVX

**DESCRIPTION:**

This TCP/IP implementation includes Telnet (remote login), FTP (file transfer), SMTP (Mail) Netstat, Finger, TFTP. Supports the following network interfaces:

- Interlan Ethernet Controller
- DEC DEUNA/DELUA Ethernet Controller
- EXCELAN Ethernet Controller

**DOCUMENTATION:**

Installation Guide, Programmers Guide, QIO Guide, WINS TCP/IP Primer and Users Manual provided.

**CPU:**

DEC VAX

**O/S:**

UNIX System V (5.2 and greater)

**IMPLEMENTATION-LANGUAGE:**

C

**DISTRIBUTOR:**

The Wollongong Group  
1129 San Antonio Road  
Palo Alto, CA 94303

**CONTACT:**

Dave Preston  
Wollongong Sales  
(415) 962-7200

**ORDERING-PROCEDURE:**

Available with support from The Wollongong Group

**PROPRIETY-STATUS:**

Wollongong

**INFORMATION-UPDATED:**

August 1986

## 2.10.16. UNIQ System V

**PRODUCT-OR-PACKAGE-NAME:** PASSAGE TCP/IP

**DESCRIPTION:**

PASSAGE TCP/IP is a complete implementation of TCP/IP that allows a UNIX System V (5.2) to participate as a routing or nonrouting (end) host over a wide spectrum of communication systems ranging from hard-wired connections to packet-switched or circuit-switched networks. It communicates with adjacent hosts over synchronous communication lines, Ethernet, LANs, and standard 1822 interface to an IMP. Features include TCP/IP, ICMP, Telnet, FTP, UDP, and SMTP. Plans are to implement X.25 in the near future.

**DOCUMENTATION:**

*Included in package*

**CPU:**

DEC VAX-11, DEC PDP-11 (Ethernet only)

**O/S:**

UNIX System V (5.2)

**IMPLEMENTATION-LANGUAGE:**

C

**DISTRIBUTOR:**

UNIQ Digital Technologies  
28 S. Water St.  
Batavia, Ill 60510  
(312) 879-1008

**CONTACT:**

*Sales department (see above)*

**ORDERING-PROCEDURE:**

*Contact distributor*

**PROPRIETY-STATUS:**

*PASSAGE is a product of UNIQ Digital Technologies*

**INFORMATION-UPDATED:**

*January 1986*

## **2.10.17. Excelan System V**

**PRODUCT-OR-PACKAGE-NAME:** EXOS 8015 TCP/IP for UNIX System V-based DEC VAX minicomputers

**DESCRIPTION:**

Excelan's EXOS 8015 implements DOD standard ARPANET TCP/IP protocols to connect UNIX System V-based DEC VAX minicomputers to Ethernet networks. Includes an I/O driver, application programming interface, network administration utilities, and network application utilities: file transfer, virtual terminal connection, and remote command execution.

**DOCUMENTATION:**

EXOS 8010 TCP/IP Protocol Package for UNIX Systems Reference Manual

**CPU:**

DEC VAX-11 family

**O/S:**

UNIX System V

**IMPLEMENTATION-LANGUAGE:**

C

**DISTRIBUTOR:**

Inside Sales  
Excelan, Inc.  
2180 Fortune Drive  
San Jose, CA 95131  
(408) 434-2300

**CONTACT:**

**Sales:** Donna Keeling, (408) 434-2300

**Technical:** Andrea Salzman, (408) 434-2300

**ORDERING-PROCEDURE:**

Contact Inside Sales

**INFORMATION-UPDATED:**

February 1986

## 2.10.18. Internet VMS

**PRODUCT-OR-PACKAGE-NAME:** HYPER-Link

**DESCRIPTION:**

Hyper-Link is a series of communications software and hardware products which meet the Defense Communications Agency MIL-STDs for the Defense Data Network, for use on any of the DDN networks, such as ARPANET, MILNET, etc. These products also conform to the conventions of the UNIX 4.2 BSD implementation of these protocols for use with the many popular UNIX based graphic workstations, such as SUN, APOLLO, CIMLINK, CADNETIX, and others.

Hyper-Link supplies TCP/IP communication protocol software products, an Application Programming Interface to TCP functions for PASCAL, C and Assembly, and the MIL-STD applications File Transfer (FTP), Virtual Terminal (TELNET), and Simple Mail Transfer (SMTP).

Hyper-Link for VAX and MicroVAX VMS systems support Ethernet and DDN X.25 communications links. Ethernet attachment is through DEUNA or DEQNA controller boards. DDN X.25 attachment is through a "standard" certified ACC board (ACC 6250 or 5250). DDN LHDH attachment is also supported through the ACC LHDH controller. The X.25 connection can also be made certifiable to certain commercial X.25 networks such as GTE TELENET, TYMNET and others.

Hyper-Link software can concurrently operate with DECNET in a single VAX or MicroVAX system sharing a single DEUNA or DEQNA board Ethernet connection. This enables a low cost bridge function to operate between the two Ethernet networks.

Similarly, Hyper-Link supports both an X.25 and Ethernet connection in the same system, enabling operation of a LAN to Wide Area Network bridge function.

**DOCUMENTATION:**

A full set of documentation is available.

**CPU:**

DEC VAX-11, MicroVAX

**O/S:**

VMS 4.X

**IMPLEMENTATION-LANGUAGE:**

C and PASCAL

**DISTRIBUTOR:**

Internet Systems Corporation  
8360 W. Oakland Park Blvd.  
Sunrise, Florida 33321

**CONTACT:**

Mary Bloch, (305) 742-0301

**ORDERING-PROCEDURE:**

Submit purchase order to above address; see above contact for pricing.

**PROPRIETY-STATUS:**

Product of Internet Systems Corporation

**INFORMATION-UPDATED:**

February 1986

## 2.10.19. Tektronix VMS

**PRODUCT-OR-PACKAGE-NAME:** VAX/VMS

**DESCRIPTION:**

This implementation runs under VAX 780/VMS. It has a hyperchannel interface with a home-grown VMS driver. TCP/IP from 3COM interoperates with VMS TCP/IP over HYPERchannel. They have added TCP and IP options to UNET. Currently, there is no plan to market TCP/IP software, although it is available to the network research community for internal use only. Support has been added for Ethernet using an Interlan driver.

- TCP: Has no security or precedence.
- IP: No datagram reassembly or fragmentation. Neither Internet control protocol nor gateway protocol have been implemented. There are no plans to implement fragmentation.
- FTP: Not compatible with UNIX 4.2 BSD but compatible with 3COM's implementation of FTP. There are plans, however, to make it compatible with UNIX 4.2 BSD.

**DOCUMENTATION:**

Source is well-commented

**CPU:**

VAX/780,750 and any DEC machine running VMS (including micros)

**O/S:**

UNIX for UNET, VMS for homegrown TCP/IP

**IMPLEMENTATION-LANGUAGE:**

BLISS (an equivalent of C) and some MACRO

**DISTRIBUTOR:**

Tektronix Inc.  
PO Box 500  
Stop 50/454  
Beaverton, OR 97077

**CONTACT:**

Jeff Mulick, (jeffm%tektronix@CSNET-RELAY.ARPA), (503) 627-5007

**ORDERING-PROCEDURE:**

Contact Jeff Mulick

**PROPRIETY-STATUS:**

Not available for OEM resale

## **2.10.20. Wollongong MicroVMS**

**PRODUCT-OR-PACKAGE-NAME:** WIN/MicroVX

**DESCRIPTION:**

This TCP/IP implementation includes Telnet (remote login), FTP (file transfer), SMTP (Mail) Netstat, Finger, TFTP. Supports the DEC DEUNA Ethernet Controller and the ACC X.25 interface (For WIN/MicroVX).

**DOCUMENTATION:**

Installation Guide, Programmers Guide, QIO Guide, WINS TCP/IP Primer, Reference Guide and Users Manual provided.

**CPU:**

DEC MicroVAX I and II

**O/S:**

Micro VMS 4.0 or greater

**IMPLEMENTATION-LANGUAGE:**

C

**DISTRIBUTOR:**

The Wollongong Group  
1129 San Antonio Road  
Palo Alto, CA 94303

**CONTACT:**

Dave Preston  
Wollongong Sales  
(415) 962-7200

**ORDERING-PROCEDURE:**

Available with support from The Wollongong Group

**PROPRIETY-STATUS:**

Wollongong

**INFORMATION-UPDATED:**

August 1986

## 2.10.21. Wollongong VMS

**PRODUCT-OR-PACKAGE-NAME:** WIN/VX

**DESCRIPTION:**

This TCP/IP implementation includes Telnet (remote login), FTP (file transfer), SMTP (Mail) Netstat, Finger, TFTP. Supports the following network interfaces:

- ACC X.25 (For WIN/VX (DDN))
- ACC LH-DH (1822 interface)
- ACC HDH (1822-J) (For WIN/VX (DDN))
- DEC DEUNA/DELUA Ethernet Controller.
- Interlan Ethernet Controller
- DEC DMR-11

**DOCUMENTATION:**

Installation Guide, Programmers Guide, QIO Guide, WINS TCP/IP Primer, Reference Guide and Users Manual provided

**CPU:**

VAX-11

**O/S:**

VMS 4.x and greater

**IMPLEMENTATION-LANGUAGE:**

C

**DISTRIBUTOR:**

The Wollongong Group  
1129 San Antonio Road  
Palo Alto, CA 94303

**CONTACT:**

Dave Preston  
Wollongong Sales  
(415) 962-7200

**ORDERING-PROCEDURE:**

Available with support from The Wollongong Group

**PROPRIETY-STATUS:**

Wollongong

**INFORMATION-UPDATED:**

August 1986

## 2.10.22. Softsel VMS

**PRODUCT-OR-PACKAGE-NAME:** SOFTSEL-VMS

**DESCRIPTION:**

Software implementation of File Transfer Protocol (FTP), Network Virtual Terminal Protocol (TELNET) and Simple Mail Transfer Protocol (SMTP). Runs on top of TCP/IP or NETEX (using a separate TCP Emulator).

**DOCUMENTATION:**

Online VAX/VMS HELP and installation instructions are provided.

**CPU:**

VAX family

**O/S:**

VMS (Versions 4.0 and higher)

**IMPLEMENTATION-LANGUAGE:**

C

**DISTRIBUTOR:**

Softsel Incorporated  
601 Ewing Street  
Princeton, NJ 08540  
(601) 683-1150

**ORDERING-PROCEDURE:**

Contact SCP Product Manager at Softsel Incorporated

**PROPRIETY-STATUS:**

Proprietary product of Softsel Incorporated

(NETEX is a trademark of Network Systems Corporation)

**INFORMATION-UPDATED:**

December 1985

### **2.10.23. Excelan MicroVMS**

**PRODUCT-OR-PACKAGE-NAME:** EXOS 8044 TCP/IP for DEC MicroVAX II supermicros

**DESCRIPTION:**

Excelan's EXOS 8044 implements DoD standard ARPANET TCP/IP protocols to connect MicroVMS-based DEC MicroVAX II supermicros to Ethernet networks. Includes an I/O driver, application programming interface, network administration utilities, and network application utilities: file transfer and virtual terminal connection.

**DOCUMENTATION:**

EXOS 8044 TCP/IP Protocol Package for MicroVAX II Systems Reference Manual

**CPU:**

DEC MicroVAX II supermicro

**O/S:**

MicroVMS

**IMPLEMENTATION-LANGUAGE:**

C and VAX-11 MACRO

**DISTRIBUTOR:**

Inside Sales  
Excelan, Inc.  
2180 Fortune Drive  
San Jose, CA 95131  
(408) 434-2300

**CONTACT:**

**Sales:** Donna Keeling, (408) 434-2300

**Technical:** Andrea Salzman, (408) 434-2300

**ORDERING-PROCEDURE:**

Contact Inside Sales

**INFORMATION-UPDATED:**

February 1986

## 2.10.24. Excelan VMS

**PRODUCT-OR-PACKAGE-NAME:** EXOS 8043 TCP/IP for VMS-based DEC VAX-11 family

**DESCRIPTION:**

Excelan's EXOS 8043 implements DoD standard ARPANET TCP/IP protocols to connect VMS-based DEC VAX minicomputers to Ethernet networks. Includes an I/O driver, application programming interface, network administration utilities, and network application utilities: file transfer and virtual terminal connection.

**DOCUMENTATION:**

EXOS 8043 TCP/IP Protocol Package for VAX/VMS Systems Reference Manual

**CPU:**

DEC VAX-11 family

**O/S:**

VMS

**IMPLEMENTATION-LANGUAGE:**

C and VAX-11 MACRO

**DISTRIBUTOR:**

Inside Sales  
Excelan, Inc.  
2180 Fortune Drive  
San Jose, CA 95131  
(408) 434-2300

**CONTACT:**

**Sales:** Donna Keeling, (408) 434-2300

**Technical:** Andrea Salzman, (408) 434-2300

**ORDERING-PROCEDURE:**

Contact Inside Sales

**INFORMATION-UPDATED:**

February 1986

## **2.10.25. Softsel Gateway**

**PRODUCT-OR-PACKAGE-NAME: SOFTSEL-GATEWAY**

**DESCRIPTION:**

Software implementation of translating gateway that allows the connection of NETEX based networks (such as HYPERchannel, HYPERbus and DATApipe) to TCP/IP based networks. Runs in an environment with both TCP/IP and NETEX.

**DOCUMENTATION:**

Online VAX/VMS HELP and installation instructions are provided for the VMS implementation and UNIX man pages for the UNIX implementation.

**CPU:**

VAX family

**O/S:**

VMS (Versions 4.0 and higher) UNIX 4.2 BSD

**IMPLEMENTATION-LANGUAGE:**

C

**DISTRIBUTOR:**

Softsel Incorporated  
601 Ewing Street  
Princeton, NJ 08540  
(601) 683-1150

**ORDERING-PROCEDURE:**

Contact SCP Product Manager at Softsel Incorporated

**PROPRIETY-STATUS:**

Proprietary product of Softsel Incorporated

(NETEX, HYPERchannel, HYPERbus and DATApipe are trademarks of Network Systems Corporation)

**INFORMATION-UPDATED:**

December 1985

## 2.10.26. TENEX/FOONEX/AUGUST

### DESCRIPTION:

SRI has implemented TCP/IP for the TENEX (FOONEX and AUGUST) operating system running on DEC-10 KA or KI and F2, F3 or F4 Foonly processors. It was adapted from the BBN and ISI versions of TENEX TCP/IP, with contributions from Ed Taft of Xerox and Phil French of Tymshare, and resides in the operating system. It is largely upward-compatible with TOPS-20 implementations and fully compatible with AUGMENT. Telnet, FTP, SMTP, ICMP, ECHO, TIME, WHOIS, and NAME service are available although some are still under development.

This is an implementation done at BBN. DARPA has dropped funding for continued support for Tenex development, and thus the latest versions done for BBN and DEC for TOPS-20 are not available for Tenex.

### DOCUMENTATION:

None available at this time other than that embedded in the programs

### CPU:

DEC-10 (KA, KI), Foonly (F2,F3,F4)

### O/S:

TENEX-134,135/FOONEX/AUGUST

### IMPLEMENTATION-LANGUAGE:

MACRO

### DISTRIBUTOR:

SRI International  
DDN Network Information Center  
Room EJ274  
333 Ravenswood Ave.  
Menlo Park, CA 94025

### CONTACT:

Vivian Neou, (VIVIAN@SRI-NIC.ARPA), (415) 859-4781

### ORDERING-PROCEDURE:

Contact Vivian Neou

### PROPRIETY-STATUS:

DCA-owned software

### INFORMATION-UPDATED:

January 1986

## 2.10.27. LLL TOPS-10

### DESCRIPTION:

A TOPS-10 implementation was begun by Don Provan while at WPAFB-AFWAL and was completed by him at LLL-MFE. There have been no serious problems since April of 1983. System supports IP/ICMP and TCP. User level software available for FTP and Telnet connections.

### DOCUMENTATION:

Scarce: existing code (both system code and user level code) is the only reliable source of information; user level code maintained by nedved@CMU-CS-A.ARPA

### CPU:

PDP-10 or PDP-10 look alikes

### O/S:

TOPS-10 (also runs under WAITS at SU-AI)

### IMPLEMENTATION-LANGUAGE:

MACRO-10

### DISTRIBUTOR:

Don Provan  
Lawrence Livermore Laboratory  
MFE Computer Center  
P.O. Box 5509  
Livermore, CA 94550

### CONTACT:

Don Provan, (provan@LLL-MFE.ARPA), (415) 422-4474

### ORDERING-PROCEDURE:

All files are in [70,71,monitor]@LLL-MFE, available via FTP; also available on 9-track tape

### HOSTS:

LLL-MFE running TOPS-10 7.01a on a KL-10, WPAFB-AFWAL running TOPS-10 7.01 on a KL-10, CMU-CS-A running TOPS-10 6.02a on a KL-10, SU-AI running WAITS on a KL-10, WHARTON running TOPS-10 7.01a on a KL-10

## 2.10.28. MIT ITS

### DESCRIPTION:

This is a TCP/IP implementation that runs under the MIT Incompatible Timesharing System (ITS) on DEC-10/20 machines (KA or KL), written by Ken Harrenstien of SRI International under contract to MIT. Includes Telnet, FTP and SMTP. Bug reports and interest group is BUG-TCP@MIT-MC.ARPA.

### DOCUMENTATION:

Available from contact

### CPU:

DEC-10/20 (KA and KL)

### O/S:

ITS

### IMPLEMENTATION-LANGUAGE:

MIDAS(PDP-10)

### DISTRIBUTOR:

MIT, Cambridge, MA

### CONTACT:

**Ken Harrenstien, (KLH@SRI-NIC.ARPA)**  
**SRI International**  
**Room EJ200**  
**333 Ravenswood Avenue**  
**Menlo Park, CA 94025**  
**(415) 859-3695**

### ORDERING-PROCEDURE:

Appropriate files can be FTPed across the network; contact KLH@SRI-NIC.ARPA for more information.

### PROPRIETY-STATUS:

MIT-proprietary software

### HOSTS:

MIT-MC

## 2.10.29. BBN TOPS-20

**PRODUCT-OR-PACKAGE-NAME:** BBN-TOPS-20

### **DESCRIPTION:**

The TOPS20 Internetworking software supports multiple networks, multiple interfaces on a single network, and multiple protocol suites. Included in the standard distribution are an interface to 1822 nets via an AN20, an interface to a network front-end via a DTE20, and the DARPA protocol suite (DEC is developing an Ethernet interface).

The DARPA IP, ICMP, TCP, Server TELNET protocols are included within the TOPS20 monitor; other protocols are implemented as user application processes. The IP module supports a routing cache maintained via ICMP redirect NET and HOST messages. It performs fragmentation and reassembly, implements all options and can forward traffic between any of the host's interfaces. Applications may interface to the IP layer using User Queues.

All ICMP messages are supported; error messages may be sent by any of the protocol layers; higher layers are notified when a message is received concerning one of their packets. Messages can be sent by applications using the User Queue facility.

Applications can interface to TCP either as a read/write file or via multiple buffers. The TCP layer supports IP routing options, ICMP destination unreachable, source quench, and redirects which specify a type-of-service, and the segment size option. Support for preemption, precedence, and security options is delegated to the application. Telnet supports options and subnegotiations.

There is extensive inter-layer flow control, error reporting, and monitoring. Utilities are available to provide information, list monitoring data, and perform diagnostics.

DEC has distributed a prior version of this implementation as part of its standard TOPS20-AN monitor; the current version is currently being transferred to DEC.

### **DOCUMENTATION:**

User's Manual including Site Configuration Guide

### **CPU:**

DEC KL10

### **O/S:**

TOPS20-AN, Release 5 or 6

### **IMPLEMENTATION-LANGUAGE:**

Macro

### **DISTRIBUTOR:**

Bolt Beranek and Newman Inc.  
10 Moulton Street  
Cambridge, MA 02238

### **CONTACT:**

Charles Lynn, (CLynn@BBNA), (617) 497-3367

### **INFORMATION-UPDATED:**

July 1986

**ORDERING-PROCEDURE:**

The latest software release should soon be available as part of the standard DEC TOPS20-AN monitor. Until the transfer process has been completed, the software is available via FTP over the internet, or by sending a magtape to:

**Bolt Beranek and Newman Inc.**  
10 Moulton Street  
Cambridge, MA 02238  
Attn: Charles Lynn

A return mailing label should be included. Also required is a TOPS-20 Source License and the TOPS-20 monitor sources, as the implementation includes source-level changes to the standard DEC monitor.

**PROPRIETY-STATUS:**

Public domain

**HOSTS:**

TOPS-20s at BBN, ISI, CMU; DEC Customers are running a previous version

**INFORMATION-UPDATED:**

January 1986

## 2.10.30. DEC TOPS-20

**PRODUCT-OR-PACKAGE-NAME:** TOPS-20AN

**DESCRIPTION:**

Based on the DARPA sponsored TCP/IP implementation for TOPS-20 with major modifications. The BBN TCP/IP software was merged into the standard supported TOPS-20, and a different JSYS interface was implemented that utilized the existing TOPS-20 I/O JSYSs by adding a logical device for TCP. Supports: the 1822 interface, DEC NI20 Ethernet interface and the DEC CI20 computer interconnect.

**DOCUMENTATION:**

Hardware manuals, print sets, diagnostics write-up and descriptions in the TOPS-20 software notebooks.

**CPU:**

DEC KL10E or KL10R

**O/S:**

TOPS-20, Release 6.1

**IMPLEMENTATION-LANGUAGE:**

PDP10/TOPS-20 assembler

**DISTRIBUTOR:**

Digital Equipment Corporation  
200 Forest St.  
Marlboro, MA 01752

**CONTACT:**

**Jim McCollum (McCollum@TOPS20.DEC.COM)**  
**MR01-2/L10**  
**(617) 467-4635**

**ORDERING-PROCEDURE:**

See your local DEC salesman

**PROPRIETY-STATUS:**

Licensed by DEC

**INFORMATION-UPDATED:**

April 1986

### **2.10.31. Panda TOPS-20 EGP**

**PRODUCT-OR-PACKAGE-NAME:** EGP-20

**DESCRIPTION:**

EGP-20 is a subset implementation of the Exterior Gateway Protocol (EGP) which allows a DECSYSTEM-20 to be used as an IP gateway. TOPS-20 provides a "dumb gateway" facility; however, all new gateways are required to negotiate EGP to announce their availability to their neighbor gateways.

**DOCUMENTATION:**

Online included with package

**CPU:**

DECSYSTEM-20

**O/S:**

TOPS-20 version 5.3 or later

**IMPLEMENTATION-LANGUAGE:**

MACRO-20 (DECSYSTEM-20 assembly language)

**DISTRIBUTOR:**

PANDA PROGRAMMING  
1802 Hackett Ave., Rainbow Suite  
Mountain View, CA 94043-4431

**CONTACT:**

Mark Crispin, MRC %PANDA@SUMEX-AIM, (415) 968-1052

**ORDERING-PROCEDURE:**

Call for pricing and ordering information

**PROPRIETY-STATUS:**

Panda Programming propriety

**INFORMATION-UPDATED:**

July 1986

## 2.10.32. Panda TOPS-20 Mail

**PRODUCT-OR-PACKAGE-NAME:** MM-20

**DESCRIPTION:**

MM-20 is an electronic mailsystem for the DECSYSTEM-20 family. MM-20 incorporates mail reading, mail queueing, mailbox/mailling lists, SMTP (DoD Internet mail transport protocol), "sends", and external queue management tools. MM-20 supports the following protocols: DoD Internet TCP/IP/SMTP, DECnet using SMTP, Chaos, and Pup. A facility also exists for adding additional delivery routines (e.g. mailing over asynchronous TTY lines).

**DOCUMENTATION:**

Online included with package

**CPU:**

DECSYSTEM-20

**O/S:**

TOPS-20 version 4 or later (version 5.3 or later is required for TCP/IP support)

**IMPLEMENTATION-LANGUAGE:**

MACRO-20 (DECSYSTEM-20 assembly language)

**DISTRIBUTOR:**

**PANDA PROGRAMMING**  
1802 Hackett Ave., Rainbow Suite  
Mountain View, CA 94043-4431

**CONTACT:**

**Mark Crispin, MRC%PANDA@SUMEX-AIM, (415) 968-1052**

**ORDERING-PROCEDURE:**

MM-20 is available for a nominal charge to cover media and shipping costs; call for current information.

**PROPRIETY-STATUS:**

Public Domain

**INFORMATION-UPDATED:**

July 1986

### **2.10.33. Panda TOPS-20 NETSRV**

**PRODUCT-OR-PACKAGE-NAME:** NETSRV

**DESCRIPTION:**

NETSRV is a multi-process listener and server for a number of the major Internet service protocols. It replaces such programs as FTSCCT and SMTPSV. NETSRV is based on a similar program for the old NCP protocols.

**DOCUMENTATION:**

Online included with package

**CPU:**

DECSYSTEM-20

**O/S:**

TOPS-20 version 5.3 or later

**IMPLEMENTATION-LANGUAGE:**

MACRO-20 (DECSYSTEM-20 assembly language)

**DISTRIBUTOR:**

**PANDA PROGRAMMING**  
1802 Hackett Ave., Rainbow Suite  
Mountain View, CA 94043-4431

**CONTACT:**

**Mark Crispin, MRC%PANDA@SUMEX-AIM, (415) 968-1052**

**ORDERING-PROCEDURE:**

Bundled as part of the PANDA MODIFICATIONS TO TOPS-20; call for separate ordering information.

**PROPRIETY-STATUS:**

Panda Programming propriety

**INFORMATION-UPDATED:**

July 1986

## **2.10.34. Panda Modifications to TOPS-20**

**PRODUCT-OR-PACKAGE-NAME:** PANDA MODIFICATIONS TO TOPS-20

**DESCRIPTION:**

The PANDA MODIFICATIONS TO TOPS-20 consists of a set of extensions and bug fixes to TOPS-20. These include many of the public domain extensions to TOPS-20 published on the "ARPANET TOPS-20 list" as well as many extensions unique to the PANDA MODIFICATIONS including facilities to operate TOPS-20 in networking configurations not supported by DEC.

The PANDA MODIFICATIONS TO TOPS-20 are distributed as a set of REDIT-format change files and therefore are only available to sites with a valid DEC TOPS-20source license.

**DOCUMENTATION:**

Online included with package

**CPU:**

DECSYSTEM-20

**O/S:**

TOPS-20 version 5.4; TOPS-20 version 6.1 modifications will be available soon.

**IMPLEMENTATION-LANGUAGE:**

MACRO-20 (DECSYSTEM-20 assembly language)

**DISTRIBUTOR:**

PANDA PROGRAMMING  
1802 Hackett Ave., Rainbow Suite  
Mountain View, CA 94043-4431

**CONTACT:**

Mark Crispin, MRC%PANDA@SUMEX-AIM, (415) 968-1052

**ORDERING-PROCEDURE:**

Call for pricing and ordering information

**PROPRIETY-STATUS:**

Panda Programming propriety

**INFORMATION-UPDATED:**

July 1986

### **2.10.35. Panda TOPS-20 Telnet**

**PRODUCT-OR-PACKAGE-NAME:** TELNET-20

**DESCRIPTION:**

TELNET-20 implements the user half of the Internet TELNET protocol. It also supports Chaos, Pup, and DECnet protocols.

**DOCUMENTATION:**

Online included with package

**CPU:**

DECSYSTEM-20

**O/S:**

TOPS-20 version 5.3 or later

**IMPLEMENTATION-LANGUAGE:**

MACRO-20 (DECSYSTEM-20 assembly language)

**DISTRIBUTOR:**

PANDA PROGRAMMING  
1802 Hackett Ave., Rainbow Suite  
Mountain View, CA 94043-4431

**CONTACT:**

Mark Crispin, MRC%PANDA@SUMEX-AIM, (415) 968-1052

**ORDERING-PROCEDURE:**

Bundled as part of the PANDA MODIFICATIONS TO TOPS-20; an earlier version is distributed by DEC.

**PROPRIETY-STATUS:**

Panda Programming propriety

**INFORMATION-UPDATED:**

July 1986

## **2.11. ELXSI**

### **2.11.1. ELXSI Fusion TCP/IP**

**PRODUCT-OR-PACKAGE-NAME:** ELXSI Fusion TCP/IP

**DESCRIPTION:**

Implementation of FTP and Telnet for ELXSI machines running release 10 or later. Also included are packet-monitoring and statistics utilities. Later releases will include networking libraries.

**DOCUMENTATION:**

Manuals and on-line documentation

**CPU:**

ELXSI 6400

**O/S:**

Embos, Enix System V, Enix 4.2

**IMPLEMENTATION-LANGUAGE:**

C and Pascal

**DISTRIBUTOR:**

ELXSI Inc.  
2334 Lundy Place  
San Jose, CA 95131

**CONTACT:**

**Bob Hedges, ELXSI**  
**(408) 942-0900**

**ORDERING-PROCEDURE:**

Through sales representatives

**PROPRIETY-STATUS:**

Source and object code for sale

**INFORMATION-UPDATED:**

August 1985

## **2.12. Gould**

### **2.12.1. Gould MPX-32**

**PRODUCT-OR-PACKAGE-NAME:** MPX-32 TCP/IP

**DESCRIPTION:**

An implementation of the Department of Defense Protocols for Gould CONCEPT/32 machines running the MPX-32 (Release 3.2B or later) Operating System. This includes IP and TCP. UDP, TFTP, FTP, Telnet and SMTP will be implemented during 1986.

**DOCUMENTATION:**

Operation and installation procedures are covered by standard Gould, CSD documentation.

**CPU:**

All CONCEPT/32 machines

**O/S:**

MPX-32 (Release 3.2B or later)

**DISTRIBUTOR:**

Gould Inc. Computer Systems Division  
6901 West Sunrise Boulevard  
Ft. Lauderdale, FL 33313-4499

**CONTACT:**

**Don Zwonitser, Product Line Manager, Communications, (305) 587-2900**

**INFORMATION-UPDATED:**

January 1986

## **2.13. Hewlett-Packard**

### **2.13.1. HP-9000 Series 300**

**PRODUCT-OR-PACKAGE-NAME:** Hewlett-Packard NS-ARPA SERVICES/300

**DESCRIPTION:**

NS-ARPA SERVICES/300 is a local area networking software product for the Hewlett-Packard 9000 Series 300 HP-UX systems. It supports multi-vendor connectivity via ARPA and Berkeley network services, including 4.2/BSD sockets, TELNET, FTP, SMTP/sendmail, rlogin, rcp, and rexec. The product includes LAN diagnostic tools and troubleshooting information for finding problems on the network. Also included in the product are HP Network Services, including transparent remote file access and network file transfer. HP Network Services are used for communication between HP systems as well as VAX/VMS systems.

**DOCUMENTATION:**

A User's Guide and Node Manager's Guide are provided with the product. Among other topics, these include expanded tutorial sections on Berkeley sockets and sendmail.

**CPU:**

HP9000 Series 300 (68010/68020 based systems)

**O/S:**

HP-UX - Release 5.1 or later

**IMPLEMENTATION-LANGUAGE:**

C

**DISTRIBUTOR:**

Hewlett-Packard Company  
P.O. Box 10301  
Palo Alto, CA 94303-0890  
(415) 857-1501

**CONTACT:**

Local HP Sales Office

**ORDERING-PROCEDURE:**

Contact your local HP Sales Office; order product number 50952B

**PROPRIETY-STATUS:**

Proprietary product of Hewlett-Packard

**INFORMATION-UPDATED:**

July 1986

### **2.13.2. HP-9000 Series 800**

**PRODUCT-OR-PACKAGE-NAME:** Hewlett-Packard ARPA SERVICES/800

**DESCRIPTION:**

ARPA SERVICES/800 is a local area networking software product for the Hewlett-Packard 9000 Series 800 HP-UX systems. It supports multi-vendor connectivity via ARPA and Berkeley network services, including 4.2/BSD sockets, TELNET, FTP, SMTP/sendmail, rlogin, rcp, and rexec. The product includes LAN diagnostic tools and troubleshooting information for finding problems on the network.

**DOCUMENTATION:**

A User's Guide and Node Manager's Guide are provided with the product. Among other topics, these include expanded tutorial sections on Berkeley sockets and sendmail.

**CPU:**

HP9000 Series 800, Model 840

**O/S:**

HP-UX

**IMPLEMENTATION-LANGUAGE:**

C

**DISTRIBUTOR:**

Hewlett-Packard Company  
P.O. Box 10301  
Palo Alto, CA 94303-0890  
(415) 857-1501

**CONTACT:**

Local HP Sales Office

**ORDERING-PROCEDURE:**

Contact your local HP Sales Office; order product number 50980A

**PROPRIETY-STATUS:**

Proprietary product of Hewlett-Packard.

**INFORMATION-UPDATED:**

July 1986

## **2.14. Honeywell**

### **2.14.1. [DPS6]**

**PRODUCT-OR-PACKAGE-NAME:** DPS6-DDN

**DESCRIPTION:**

This will be a package of software and technical support services for interfacing Honeywell computing environments to the Defense Data Network.

This implementation includes an X.25 interface. Features are FTP, SMTP and Telnet support for asynchronous terminals and Honeywell synchronous terminals. It also includes a programmatic interface for applications running under Mod 400. Available September 1986.

**DOCUMENTATION:**

Complete documentation

**CPU:**

Honeywell DPS6

**O/S:**

GCOS 6 Mod 400

**IMPLEMENTATION-LANGUAGE:**

C

**DISTRIBUTOR:**

Honeywell Information Systems  
Federal Systems Divisions  
7900 West Park Drive  
McLean, VA 22102

**CONTACT:**

Jim Reda, (703) 448-2099

**ORDERING-PROCEDURE:**

Contact Jim Reda

**PROPRIETY-STATUS:**

Honeywell Information Systems

**DDN-QUALIFIED:**

Yes

**INFORMATION-UPDATED:**

July 1986

## 2.14.2. [DPS8]

**PRODUCT-OR-PACKAGE-NAME:** DPS8-DDN

**DESCRIPTION:**

This will be a package of software and technical support services for interfacing Honeywell computing environments to the Defense Data Network.

This TCP/IP implementation includes an X.25 interface. Features are FTP, SMTP and Telnet support for asynchronous terminals and Honeywell synchronous terminals. It also includes a programmatic interface for applications running under GCOS 8. Available September 1986.

**DOCUMENTATION:**

Complete documentation

**CPU:**

Honeywell DPS8

**O/S:**

GCOS 8

**IMPLEMENTATION-LANGUAGE:**

C

**DISTRIBUTOR:**

Honeywell Information Systems  
Federal Systems Divisions  
7900 West Park Drive  
McLean, VA 22102

**CONTACT:**

**Jim Reda, (703) 448-2099**

**ORDERING-PROCEDURE:**

Contact Jim Reda

**PROPRIETY-STATUS:**

Honeywell Information Systems

**DDN-QUALIFIED:**

Yes

**INFORMATION-UPDATED:**

July 1986

### 2.14.3. MULTICS

**PRODUCT-OR-PACKAGE-NAME:** MULTICS TCP/IP Facility

**DESCRIPTION:**

The Multics implementation includes TCP/IP as well as Telnet, FTP, and SMTP. Support is also available for Finger, Discard, Echo, Time, and ICMP.

**DOCUMENTATION:**

Online help file supplied

**CPU:**

Honeywell Level 68, DPS8M

**O/S:**

Multics MR 10.0 and beyond

**IMPLEMENTATION-LANGUAGE:**

PL/1

**DISTRIBUTOR:**

Honeywell Information Systems  
Federal Systems Division  
7900 Westpark Drive  
McLean, VA 22102

**CONTACT:**

Jim Reda, (703) 448-2099  
Honeywell Information Systems  
MST 60  
P.O. Box 8000  
Phoenix, AZ 85065  
(602) 249-6629

**ORDERING-PROCEDURE:**

Contact Jim Reda

**PROPRIETY-STATUS:**

Honeywell product

**HOSTS:**

CISL-SERVICE-MULTICS, HI-MULTICS, MIT-MULTICS, RADDC-MULTICS, USGS1-MULTICS,  
USGS2-MULTICS

**INFORMATION-UPDATED:**

November 1985

## 2.15. IBM

### 2.15.1. MIT IBM-PC

**PRODUCT-OR-PACKAGE-NAME:** PC/IP

**DESCRIPTION:**

A set of PC/DOS commands that allow the IBM-PC to be a client of several TCP/IP-based network services, and to be used for network monitoring and maintenance. The TCP, UDP, and IP layers are designed with specific tailoring to the requirements of their known customers, user Telnet and user/server ftp. Drivers have been implemented for the 3Com Etherlink card, the Interlan Ethernet card, and the Proteon proNET card. This package is the outgrowth of an MIT research project exploring networking of small personal computers.

**DOCUMENTATION:**

User's manual with object; Programmer's guide with source

**CPU:**

IBM-PC family and other hardware-compatibles, such as Compaq

**O/S:**

DOS 2.0, 2.1, 3.0, or 3.1

**IMPLEMENTATION-LANGUAGE:**

C: Portable C cross-compiler operating under VAX UNIX, and A86 (Cross-assembler operating under VAX UNIX)

**DISTRIBUTOR:**

M.I.T. Microcomputer Center  
Room 11-209  
77 Massachusetts Ave  
Cambridge, MA 02139  
(617) 253-6325

Proteon, Inc.  
4 Tech Circle  
Natick, MA 01760  
(617) 655-3340

**CONTACT:**

**For research purposes only:**  
**Prof. Jerome H. Saltzer, Saltzer@Athena.MIT.EDU**  
**MIT/Laboratory for Computer Science**  
**545 Technology Square**  
**Cambridge, MA 02139**  
**(617) 253-6016**

**ORDERING-PROCEDURE:**

Contact distributors

**PROPRIETY-STATUS:**

Copyright by MIT with blanket permission to copy, modify, and redistribute, so long as credit is given

**INFORMATION-UPDATED:**

January 1986

## 2.15.2. FUSION IBM-PC

**PRODUCT-OR-PACKAGE-NAME:** FUSION Network Software

**DESCRIPTION:**

Network software for Ethernet and Pronet. Runs TCP/IP and/or XNS protocols. Provides file transfer (FTP/send,rcv), virtual terminal (Telnet), network management. Interoperates with UNIX 4.2 BSD, socket calls.

**DOCUMENTATION:**

User manuals for MS-DOS, Network Administrators Manual, Programmers Reference Manual.

**CPU:**

8088 (IBM-PC and compatibles), 8086, 80186, 80286

**O/S:**

MS-DOS, PC/IX, Venix, Xenix 3, Xenix 5

**IMPLEMENTATION-LANGUAGE:**

C, runs with Lattice of Microsoft

**DISTRIBUTOR:**

Network Research Corporation  
4010 Moorpark  
San Jose, CA 95117

**Direct Sales:**

San Francisco:	(408) 248-2121
Los Angeles:	(805) 485-2700
Chicago:	(312) 920-9777
Boston:	(617) 787-7846
Washington D.C.:	(703) 648-1570

**CONTACT:**

**K.W. Sanofsky, San Francisco Branch Sales Manager**

**ORDERING-PROCEDURE:**

See above

**PROPRIETY-STATUS:**

Developed by Network Research Corporation

**INFORMATION-UPDATED:**

August 1986

### **2.15.3. FTP IBM-PC**

**PRODUCT-OR-PACKAGE NAME:** PC/TCP

**DESCRIPTION:**

PC/TCP is a commercial rewrite of the MIT PC/IP by some of its original authors. It includes FTP, Telnet, user and server TFTP, the Berkeley protocols (rlogin, rexec, rsh, rcp, lpr) and a number of other miscellaneous programs. It supports the 3COM Etherlink interface, the Proteon proNET ring interface and the Interlan NI5010 Ethernet interface.

**DOCUMENTATION:**

Binaries come with installation notes and a User's manual. Programming libraries and source come with a Programmer's manual.

**CPU:**

IBM-PC, IBM-PC/XT, IBM-PC/AT and some compatibles

**O/S:**

MS-DOS and PC-DOS versions 2.x and 3.x

**IMPLEMENTATION-LANGUAGE:**

Microsoft C

**DISTRIBUTOR:**

FTP Software, Inc.  
PO Box 150  
Kendall Square Branch  
Boston, MA 02142  
(617) 497-5066

**CONTACT:**

John Romkey, romkey@BORAX.LCS.MIT.EDU  
FTP Software, Inc.  
PO Box 150  
Kendall Square Branch  
Boston, MA 02142  
(617) 497-5066

**ORDERING-PROCEDURE:**

Contact FTP Software for a current price list; quantity discounts and site licenses are available

**PROPRIETY-STATUS:**

Source licenses and vendor agreements are available

**INFORMATION-UPDATED:**

February 1986

#### **2.15.4. Beame IBM-PC**

**PRODUCT-OR-PACKAGE-NAME:** BWTEL/BWKTEL, BWSERTH and related products.

**DESCRIPTION:**

BW?TEL provides a VT100/VT52 emulator that runs (TELNET) TCP/IP protocol on an ethernet. True VT100 emulation is provided, with speed a major consideration.

BWSERTH allows most serial terminal emulators to run (TELNET) TCP/IP on an ethernet network. The interface to the user is Hayes-like.

BWxxx products use the 3Com etherlink board for the IBM-PC and TI/PC.

**DOCUMENTATION:**

A set of documentation is available.

**CPU:**

IBM-PC and TI/PC and true compatibles

**O/S:**

MS-DOS or PC-DOS Version 2.0 and above

**IMPLEMENTATION-LANGUAGE:**

8086 Assembler.

**DISTRIBUTOR:**

Beame & Whiteside Software Ltd.  
259 Fiddler's Green Road  
Ancaster, Ontario, Canada  
L9G 1W9

**CONTACT:**

Lisa Beame, (416) 648-5866

**ORDERING-PROCEDURE:**

Submit purchase order to above address; see above contact for pricing.

**PROPRIETY-STATUS:**

Product of Beame & Whiteside Software Ltd.

**INFORMATION-UPDATED:**

July 1986

### **2.15.5. Fibronics IBM-PC**

**PRODUCT-OR-PACKAGE-NAME:** KNET TCP/PC

**DESCRIPTION:**

This product enables the IBM Personal Computer to participate as host on Ethernet or any network using TCP/IP protocols. Supports TFTP and Telnet. Requires 128K bytes of memory, one disk drive, mono or color monitor with 80 column display and 3Com Etherlink Control Board. Compatible with other systems supporting TCP/IP.

**DOCUMENTATION:**

Available from vendor

**CPU:**

IBM-PC, PC/XT

**O/S:**

DOS 2.0, 2.1, 3.0

**IMPLEMENTATION-LANGUAGE:**

C, 8086 Assembler

**DISTRIBUTOR:**

Fibronics International Inc.,  
325 Stevens Street  
Hyannis, MA 02601

**CONTACT:**

Inside sales, (617) 778-0700 or (800) 368-2537

**PROPRIETY-STATUS:**

Source code not available for purchase

**INFORMATION-UPDATED:**

April 1986

## **2.15.6. Wollongong IBM-PC**

**PRODUCT-OR-PACKAGE-NAME:** WIN/PC

**DESCRIPTION:**

This TCP/IP implementation includes Telnet (remote login), FTP (file transfer), TFTP (trivial file transfer), Network Statistics Utilities. Supports the 3COM Ethernet Controller.

**DOCUMENTATION:**

Installation Guide and Users Manual

**CPU:**

IBM-PC, XT, AT, and IBM compatibles

**O/S:**

PC-DOS (MS-DOS) 2.0 and greater

**IMPLEMENTATION-LANGUAGE:**

C

**DISTRIBUTOR:**

The Wollongong Group  
1129 San Antonio Road  
Palo Alto, CA 94303

**CONTACT:**

Dave Preston  
Wollongong Sales  
(415) 962-7200

**ORDERING-PROCEDURE:**

Available with support from The Wollongong Group

**PROPRIETY-STATUS:**

Wollongong

**INFORMATION-UPDATED:**

August 1986

## 2.15.7. Frontier IBM-PC

**PRODUCT-OR-PACKAGE-NAME:** PC-DDN

**DESCRIPTION:**

Frontier Technologies Corporation has introduced a hardware and software package that allows IBM-PC's, XT's and AT's (and compatibles) to communicate over DDN. The hardware consists of an intelligent communications controller (AdCom2-I) with 1/2 Megabyte of local RAM and MIL-188-144, Mil-188C interfaces. The X.25 resides in the 64 K PROM on board and is executed by the local CPU (80188). The TCP/IP is loaded in the local RAM from the PC. The resident real time operating system (VRTX) allows the highest performance execution of X.25 and TCP/IP. The ADCom2-I also runs 3270 SNA/SDLC, 3270 Bisync, and Async terminal emulations. Implementation of FTP/TELNET/SMTP is in progress.

**DOCUMENTATION:**

Available

**CPU:**

IBM-PC, XT, AT (and compatibles)

**O/S:**

MS-DOS and Xenix

**IMPLEMENTATION-LANGUAGE:**

C

**DISTRIBUTOR:**

Frontier Technologies Corporation  
3510 N. Oakland Avenue  
Milwaukee, Wisconsin 53211  
(414) 964-8689

**CONTACT:**

Dr. Prakash Ambegaonkar, (414) 964-8689

**ORDERING-PROCEDURE:**

Contact Frontier Technologies

**PROPRIETY-STATUS:**

Frontier Technologies

**INFORMATION-UPDATED:**

January 1986

## **2.15.8. Excelan IBM-PC [DOS]**

**PRODUCT-OR-PACKAGE-NAME:** EXOS 8051 TCP/IP for DOS-based IBM-PC/XT/AT systems

**DESCRIPTION:**

Excelan's EXOS 8051 implements DOD standard ARPANET TCP/IP protocols to connect DOS-based IBM-PC/XT/AT supermicros to Ethernet networks. Includes an I/O driver, network administration utilities, and network application utilities: file transfer and virtual terminal.

**DOCUMENTATION:**

EXOS 8051 TCP/IP Protocol Package for IBM-PC/XT/AT (DOS) Reference Manual

**CPU:**

IBM-PC/XT/AT (and compatibles)

**O/S:**

PC DOS

**IMPLEMENTATION-LANGUAGE:**

C

**DISTRIBUTOR:**

Inside Sales  
Excelan, Inc.  
2180 Fortune Drive  
San Jose, CA 95131  
(408) 434-2300

**CONTACT:**

**Sales: Donna Keeling, (408) 434-2300**

**Technical: Andrea Salzman, (408) 434-2300**

**ORDERING-PROCEDURE:**

Contact Inside Sales

**INFORMATION-UPDATED:**

February 1986

## **2.15.9. Excelan IBM-PC [XENIX]**

**PRODUCT-OR-PACKAGE-NAME:** EXOS 8011 - TCP/IP for XENIX-based IBM-PC ATs

**DESCRIPTION:**

Excelan's EXOS 8011 implements DOD standard ARPANET TCP/IP protocols to connect XENIX-based IBM-PC ATs to Ethernet networks. Includes an I/O driver, application programming interface, network administration utilities, and network application utilities: file transfer, virtual terminal connection, and remote command execution.

**DOCUMENTATION:**

EXOS 8011 TCP/IP Protocol Package for IBM-PC AT (XENIX) Reference Manual

**CPU:**

IBM-PC AT

**O/S:**

XENIX

**IMPLEMENTATION-LANGUAGE:**

C

**DISTRIBUTOR:**

Inside Sales  
Excelan, Inc.  
2180 Fortune Drive  
San Jose, CA 95131  
(408) 434-2300

**CONTACT:**

**Sales:** Donna Keeling, (408) 434-2300

**Technical:** Andrea Salzman, (408) 434-2300

**ORDERING-PROCEDURE:**

Contact Inside Sales

**INFORMATION-UPDATED:**

February 1986

## 2.15.10. Microsoft IBM-PC

**PRODUCT-OR-PACKAGE-NAME:** Microsoft C PC/IP

**DESCRIPTION:**

Microsoft C PC/IP is a version of MIT PC/IP (see MIT IBM-PC) that can be compiled using standard MS/DOS compilers available from the Microsoft Corporation. The original PC/IP code was developed using a cross-compiler on a VAX running UNIX. Using a PC native compiler makes development easier.

**DOCUMENTATION:**

All manuals are available from MIT.

**CPU:**

IBM-PC family and other hardware-compatibles, such as Compaq.

**O/S:**

DOS 2.0, 2.1, 3.0, or 3.1

**IMPLEMENTATION-LANGUAGE:**

C: Microsoft Corp. C Compiler Version 3.00 or higher.

Assembler: Microsoft Corp. Macro Assembler Version 3.00 or higher.

**DISTRIBUTOR:**

Available via anonymous FTP, see ORDERING-PROCEDURE.

**CONTACT:**

**Drew D. Perkins, (Drew.Perkins@TE.CC.CMU.EDU)**  
Carnegie Mellon University  
4910 Forbes Ave.  
Pittsburgh, PA 15213  
(412) 268-6628

**ORDERING-PROCEDURE:**

All files are available via anonymous FTP from TE.CC.CMU.EDU. This machine is a TOPS20 system. Login in as user "anonymous", password "guest". Next, use the "cd" command to change your working directory to "pk:<pcip>". Do a "dir" command to get a listing of all the necessary files. First, "get" the files "install.msc" and "install.bat" in netascii mode. The rest of the files must be retrieved in binary/octet mode. On a UNIX system use the command "tenex" to tell TOPS20 to use a local byte size of 8 bits. Now retrieve the files "tarread.exe", "root.tar", "include.tar", "srcdev.tar", "srclib.tar" and "srccmd.tar".

Once you have these on your local machine, use TFTP or some other file transfer program to get them to your PC. Put the files under a subdirectory such as c:\pcip. Make sure you do the transfers in the proper mode (octet or ascii, as above). The file install.msc explains what you have. Last, just type "install" and the batch job will do the rest. Many of these files are quite large. We would appreciate it if you would avoid transfers during prime-time hours.

**PROPRIETY-STATUS:**

Copyright by MIT and CMU with blanket permission to copy, modify, and redistribute, so long as credit is given.

**INFORMATION-UPDATED:**

July 1986

## 2.15.11. IBM VM

**PRODUCT-OR-PACKAGE-NAME:** VM Interface Program for TCP/IP

### **DESCRIPTION:**

The IBM VM Interface Program for TCP/IP is a program offering which implements the full set of DOD protocol suite. The package uses a 370 channel attached Series/1 with Event Driven Executive to interface with the DDN (using either 1822 or DDN X.25); uses a Series/1 with Realtime Programming System to interface with GTE-TELENET; and uses a Device Access Control Unit to interface with Ethernet or/and ProNet.

TCP/IP runs in a separate disconnected virtual machine. Similarly, user SMTP, server SMTP, server FTP, and server Telnet each occupies a dedicated virtual machine. User FTP and user Telnet run within a user's virtual machine under CMS. Communication between virtual machines is done through the IBM Virtual Machine Communication Facility (VMCF).

### **DOCUMENTATION:**

Installation Guide (SH20-6520), Maintainer's Guide (SH20-6521), User's Guide (SH20-6518), Device Access Control Unit Network Guide (SH20-6538), and Series/1 Network Guide (SH20-6539) can be ordered as unlicensed documents. System programmer's Guide (LY20-0954) is a Licensed Document.

### **CPU:**

IBM S/370, 303x, 43xx, or 308x machines

### **O/S:**

VM/SP

### **IMPLEMENTATION-LANGUAGE:**

IBM Pascal and assembler

### **DISTRIBUTOR:**

IBM Corporation

### **CONTACT:**

**If your site is a university:**

#### **Distribution contact:**

**Sheryl Pomraning  
University of Wisconsin  
1210 W. Dayton St.  
Madison, WI 53706  
(608) 262-5776**

#### **Technical contacts:**

**Julie Hagens  
Computer Science Department  
University of Wisconsin  
1210 W. Dayton St.  
Madison, WI 53706  
(608) 262-7892**

**If your site is not a university:**

**Distribution contact:  
Your local IBM sales representative**

**Technical Contacts:  
Susan Poh or Mary Dart  
IBM Corporation  
708 Quince Orchard Blvd  
Gaithersburg, MD 20878  
(301) 240-5992 or (301) 240-5669**

**ORDERING-PROCEDURE:**

Contact Local IBM Sales Representatives. The Program Offering is 5798-DRG.

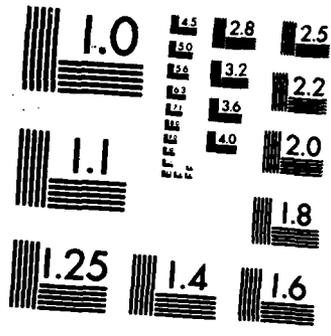
**DDN-QUALIFIED:**

Yes

**INFORMATION-UPDATED:**

August 1986





MICROCOPY RESOLUTION TEST CHART  
NATIONAL BUREAU OF STANDARDS-1963-A

## 2.15.12. IBM-VM WISCNET

**PRODUCT-OR-PACKAGE-NAME:** WISCNET

**DESCRIPTION:**

The University of Wisconsin has implemented the Internet protocols (FTP/SMTP/Telnet/TCP/IP) for IBM VM systems under contract with IBM.

TCP/IP runs in a separate disconnected virtual machine. Similarly, user SMTP, server SMTP, server FTP, and server Telnet each occupies a dedicated virtual machine. User FTP and user Telnet run within a user's virtual machine under CMS. Communication between virtual machines is done through the IBM Virtual Machine Communication Facility (VMCF). A detailed description of the software is available from the contact listed below.

Drivers have been implemented to enable TCP/IP to use either the Proteon PRONET token ring LAN or an Ethernet. The hardware interface is via an IBM DACU (Device Access Control Unit). The DACU enables connection of UNIBUS devices to an IBM channel. A software driver for an AUSCOM interface is also available.

**CPU:**

Will run on any 370 architecture using VM

**O/S:**

VM/SP

**IMPLEMENTATION-LANGUAGE:**

IBM Pascal and assembler

**DISTRIBUTOR:**

University of Wisconsin, Madison

**CONTACT:**

**Only if your site is a university or college (others should contact their local IBM representative for information on the IBM TCP/IP product).**

**Sheryl Pomraning  
Computer Science Department  
University of Wisconsin  
1210 W. Dayton St.  
Madison, WI 53706  
(608) 262-1204**

**ORDERING-PROCEDURE:**

License information is available from the above contact

**INFORMATION-UPDATED:**

January 1986

### **2.15.13. Fibronics VM**

**PRODUCT-OR-PACKAGE-NAME:** KNET TCP/VM

**DESCRIPTION:**

KNET TCP/VM is a TCP/IP-based network software package supporting the Ethernet local-area network, Bisync and CTCA links. KNET conforms to the ISO/OSI Reference Model for layered network architecture and runs as an application on the mainframe. (See also "Fibronics K200" described in the Hardware Section of this document).

Services supported include client and server Telnet, client and server FTP, client and server SMTP (interfaced to VM NOTE), and client and server TFTP. An application interface to TCP virtual circuits and UDP datagram circuits is also available. In addition, the following small servers are available for UDP: time, discard, echo, name, and quote of the day. Support for TCP echo and discard services is also provided. Telnet access to all VM services is provided via 3270 emulation. Support is provided under FTP for both binary mode and for NETASCII. Automatic data conversion to/from ASCII to EBCDIC is supported. No modification of VM/SP is required. All services run either under CMS or as a guest operating system under CP. SMTP option is available. KNET/VM also supports XNS protocols.

**DOCUMENTATION:**

Available from vendor

**CPU:**

IBM 370 class or equivalent

**O/S:**

VM/SP Rel 3 or later

**IMPLEMENTATION-LANGUAGE:**

Assembler and C

**DISTRIBUTOR:**

Fibronics International, Inc.  
325 Stevens Street  
Hyannis, MA 02601

**CONTACT:**

Hal Spurney, Marketing and Sales Manager (617) 778-0700 or 800-LAN-KNET

**PROPRIETY-STATUS:**

Source code not available for purchase

**INFORMATION-UPDATED:**

July 1986

## **2.15.14. [SSA VM]**

**PRODUCT-OR-PACKAGE-NAME:** SSA DACU VM

### **DESCRIPTION:**

This package provides a low cost flexible full service interface to the Defense Data Network. The IBM VM TCP/IP program product must be purchased to provide TELNET, simple mail, and file transfer. Modifications are provided to permit an IBM 7170 Device Attachment Control Unit (DACU) with an Advanced Computer Communications 5250 X.25 or 1822 HDH controller to be connected to the DDN. Currently under development. Available Fall 1986.

### **DOCUMENTATION:**

Full documentation is provided with the IBM TCP/IP program product. DACU installation instructions are provided by Software Systems Associates.

### **CPU:**

IBM 370 class processor or equivalent

### **O/S:**

VM

### **IMPLEMENTATION-LANGUAGE:**

PASCAL and assembler

### **DISTRIBUTOR:**

Software Systems Associates  
4900 Leesburg Pike Suite 305  
Alexandria, VA 22302  
(703) 998-0436

### **CONTACT:**

Barbara Walker, (703) 998-0436

### **ORDERING-PROCEDURE:**

Contact above

### **PROPRIETY-STATUS:**

Proprietary product

### **INFORMATION-UPDATED:**

August 1986

## **2.15.15. UCLA MVS**

**PRODUCT-OR-PACKAGE-NAME:** UCLA ACP

**DESCRIPTION:**

This is a full-service package of software and technical support services for interfacing IBM MVS computing environments to the Defense Data Network. It is based on the UCLA ARPANET Control Program.

**DOCUMENTATION:**

A product description document is available

**CPU:**

IBM S/370, 43xx, 303x, 308x and PCMs

**O/S:**

MVS/SP Version 1 with ACF/VTAM Release 1.3

Note: The PL/I resident library is required for the TSO command processor

**IMPLEMENTATION-LANGUAGE:**

Assembler H (98%)

PL/I (TSO command processor and utilities)

**DISTRIBUTOR:**

Network Solutions, Inc.  
Advanced Communications Division  
8229 Boone Boulevard, 7th Floor  
Vienna, VA 22180

**CONTACT:**

Will McDuffie (800) 332-7240, ns-ddn@DDN2.ARPA

In Virginia: (703) 749-2440

**ORDERING-PROCEDURE:**

To be determined; contact Network Solutions

**PROPRIETY-STATUS:**

Public domain, except for (1) "C" library sources, available only to sites with AT&T C/370 license, and (2) source for full-screen 3278 extensions, available only with IBM FSD approval

**INFORMATION-UPDATED:**

January 1986

## 2.15.16. ACC MVS

**PRODUCT-OR-PACKAGE-NAME:** ACCES/MVS

**DESCRIPTION:**

The ACCES/MVS software program is a full-service communication sub-system for the DoD Internet protocols, which execute on an IBM type mainframe under the MVS operating system. ACCES/MVS includes all Internet-specific protocol code which when combined with ACC's ACS 9305 or ACS 9310 provides a full-service host interface to the DDN or to a Ethernet local area network. Services supported include, client and server SMTP, client and server FTP, client and server Telnet, TCP and IP, ICMP and UDP. ACCES/MVS can be installed under either MVS/SP or MVS/XA with no operating system modification. Interprocess communication is accomplished with ACF/VTAM

**DOCUMENTATION:**

Fully documented vendor product; descriptive literature available

**CPU:**

IBM-370, 43xx, 30xx, and any IBM compatible machine

**O/S:**

MVS/SP or MVS/XA with ACF/VTAM

**DISTRIBUTOR:**

ACC (Advanced Computer Communications)  
720 Santa Barbara Street  
Santa Barbara, CA 93101

**CONTACT:**

**Technical Marketing:**  
**Jim Thrower**  
**IBM Product Manager**  
**(805) 963-9431**

**ORDERING-PROCEDURE:**

Vendor product; contact sales department

**PROPRIETY-STATUS:**

*Proprietary product of ACC*

**INFORMATION-UPDATED:**

August 1986

## 2.15.17. CISCO MVS

**PRODUCT-OR-PACKAGE-NAME: HFS**

### **DESCRIPTION:**

Communications Interface Solutions Company (CISCO) builds and supports products that extend the Defense Data Network (DDN). The CISCO TAC3270, FEP3270 and HFS interconnect IBM 3270 or compatible SNA/SDLC or BSC terminal controllers and devices to IBM or PCM MVS-VTAM computer systems on the DDN providing native mode terminal operation (3270 Data Stream) with the host and the full set of DDN protocols. CISCO also provides products that connect IEEE 802.3 Local Area Networks with IBM MVS systems and the DDN. These products are TCP/IP based and are interrelated.

Host Full Service (HFS) software runs on an IBM computer that utilizes the IBM MVS operating system and the ACF/VTAM communications access method. It provides the TCP/IP (thru SAPI), Telnet NVT, FTP and SMTP protocols needed for the host computer to deliver a 'Full-Service' DDN offering. HFS also provides support services for the TAC3270 and FEP3270 in the form of the software downline loading, statistics gathering capability, and remote maintenance commands.

#### **HFS Product Summary:**

The DDN upper layer protocols adhere to a User-Server structure where (in each of the three upper layer protocols, Telnet NVT, FTP and SMTP) the User process, usually in one computer, initiates a dialog (following the upper layer protocol) with a Server process, usually in another computer. By following the conventions defined in each upper layer protocol these User-Server process pairs accomplish their data communications tasks. Telnet Network Virtual Terminal's (NVT) goal is to allow a terminal user in one system to have terminal to host dialog with another system regardless of the real terminal attributes. File Transfer Protocol's (FTP) goal is allow files to be transferred between two computer systems. Simple Mail Transfer Protocol's (SMTP) goal is to transfer mail to and from user mailboxes (on files) on cooperating systems.

Within IBM's MVS operating system, under TSO (Time-Sharing Options), CISCO's Host Full Service (HFS) software provides Telnet NVT User, FTP User and SMTP User processes as TSO commands so that interactive users on one MVS computer system can utilize directly these DDN Full Service capabilities in communication with other DDN Full Service host computers. Within the HFS subsystem, CISCO's HFS software provides the Telnet NVT Server, FTP Server and SMTP Server processes so that users on other DDN Full Service computer systems can communicate with this MVS host using these higher level communications services. Within the CISCO TAC3270, CISCO provides a Telnet NVT User process so that the terminals attached to the TAC3270 can utilize this higher level protocol to communicate with DDN Full Service hosts of all kinds.

HFS uses the Service Access Protocol (SAP) via two dedicated VTAM 3270 SNA sessions between the FEP3270 and HFS for data paths in support of these server facilities in the host (one for inbound CISCO DDN traffic and one for outbound CISCO DDN traffic).

This basic structure allows the TCP/IP control to be resident in the FEP3270 and yet the session startup/shutdown and data I/O to be available in the host. Once in the host at that level then the higher level protocols are implemented in the host; Telnet NVT, FTP, SMTP.

HFS also contains DDN data communication support for MVS application programs through dialog with the HFS subsystem as a sequential file (VSAM ESDS, BSAM or QSAM). This I/O capability is accomplished through the use of the MVS SubSystem Interface (SSI). The HFS subsystem using the SSI in concert with its JCL exit and I/O reaction capabilities builds and responds to the key control block parameters. The session establishment parameters are placed on the Job Control Language (JCL) statements using the SUBSYS= capabilities.

This combination allows these file access methods (VSAM ESDS, BSAM and QSAM) to accomplish their open, close, read, write (e.g. GET, PUT, CHECK) functions without any modifications to the file access methods themselves while the HFS subsystem allows that I/O to actually be transmitted as DDN

TCP/IP sessions across the DDN. Thus, the HFS subsystem and the user interface is built on 'IBM-supported' interfaces without modifications to MVS and the application programming interface uses standard file access methods.

**DOCUMENTATION:**

HFS Installation and Update Guide

HFS Operation and Subsystem Support Reference Manual

HFS DDN ULP User's Guide

HFS MVS TCP/IP Programmer's Reference Manual

**CPU:**

HFS runs on IBM MVS Operating System based equipment including all the 3000 series and 4000 series and their plug compatible counterparts

**O/S:**

MVS

**IMPLEMENTATION-LANGUAGE:**

Predominantly C, some assembly

**DISTRIBUTOR:**

CISCO  
9067 Shady Grove Ct.  
Gaithersburg, MD 20877  
(301) 921-8800

**CONTACT:**

Jon D. Weston, (301) 921-8800

**ORDERING-PROCEDURE:**

Call for details.

**PROPRIETY-STATUS:**

All Products CISCO Proprietary

**INFORMATION-UPDATED:**

June 1986

## 2.15.18. Fibronics MVS

**PRODUCT OR PACKAGE NAME:** KNET TCP/MVS

**DESCRIPTION:**

KNET TCP/MVS is a TCP/IP-based network software package supporting the Ethernet local area network and all SNA supported links. KNET conforms to the ISO/OSI Reference Model for layered network architecture and runs as a started task under the control of MVS. (See also, "Fibronics K200" described in the Hardware Section of this document).

Services supported include client and server TELNET, client and server FTP, and client and server TFTP. An application interface to TCP virtual circuits and UDP datagram circuits is also available. In addition, the following small servers are available for UDP: time, discard, echo, name, and quote of the day. Support for TCP echo and discard services is also provided. Telnet access to all MVS services is provided via 3270 emulation. Telnet access support for "TN3270 mode" is also provided. Support is provided under FTP for both binary mode and for NETASCII. Automatic data conversion to/from ASCII to EBCDIC is supported. No modification to of MVS is required.

**DOCUMENTATION:**

Available from vendor

**CPU:**

IBM 370 class or equivalent

**O/S:**

MVS/SP Release 1.3 or later, operating system with VTAM

**IMPLEMENTATION-LANGUAGE:**

Assembler and C

**DISTRIBUTOR:**

Fibronics International, Inc.  
325 Stevens Street  
Hyannis, MA 02601

**CONTACT:**

Hal Spurney, Marketing and Sales Manager, (617) 778-0700 or 800-LAN-KNET

**PROPRIETY-STATUS:**

Source code not available for purchase

**INFORMATION-UPDATED:**

July 1986

## **2.15.19. Fibronics 310**

**PRODUCT OR PACKAGE NAME:** K310 T1/Ethernet System

**DESCRIPTION:**

The K310 Ethernet controller pair provides a high-speed interface between an IBM 370, 30xx or PCM and a remote Ethernet local-area network over T1 or high-speed communication lines. The K310H is a microprocessor driven control unit that attaches to IBM's block multiplexer channel using standard IBM bus and tag cables and to a communication link. The K310E attaches to a high-speed communication link an the Ethernet. The K310 implements the physical and data link layers of the ISO/OSI Reference Model for network architecture and conforms to the specification for Ethernet, Version 1.0.

**DOCUMENTATION:**

Available from vendor

**CPU:**

IBM 370, IBM 30xx, or PCM

**DISTRIBUTOR:**

Fibronics International, Inc.  
325 Stevens Street  
Hyannis, MA 02601

**CONTACT:**

Hal Spurney, Marketing and Sales Manager, (617) 778-0700 or 800-LAN-KNET

**PROPRIETY-STATUS:**

Fibronics product

**INFORMATION-UPDATED:**

July 1986

## 2.15.20. Softsel MVS

**PRODUCT-OR-PACKAGE-NAME:** SOFTSEL-MVS

**DESCRIPTION:**

Software implementation of File Transfer Protocol (FTP), Network Virtual Terminal Protocol (TELNET) and Simple Mail Transfer Protocol (SMTP). Runs on top of TCP/IP or NETEX (using a separate TCP Emulator).

**DOCUMENTATION:**

User documentation and installation instructions are included

**CPU:**

IBM 43xx and compatible machines

**O/S:**

MVS

**IMPLEMENTATION-LANGUAGE:**

PL/1 and Assembler H

**DISTRIBUTOR:**

Softsel Incorporated  
601 Ewing Street  
Princeton, NJ 08540  
(601) 683-1150

**ORDERING-PROCEDURE:**

Contact SCP Product Manager at Softsel Incorporated

**PROPRIETY-STATUS:**

Proprietary product of Softsel Incorporated (NETEX is a trademark of Network Systems Corporation)

**INFORMATION-UPDATED:**

December 1985

## 2.15.21. SSA MVS

**PRODUCT-OR-PACKAGE-NAME:** SSA DACU MVS

**DESCRIPTION:**

This package provides a low cost flexible full service interface to the Defense Data Network. The UCLA ACP has been modified to replace TCP/IP with the Host to Front End Protocol (HFP). All ACP services have been retained including TELNET, full screen, SMTP, and FTP. Network connection is provided using an IBM 7170 Device Attachment Control Unit (DACU) with an Advanced Computer Communications ACP 610 connected to the Systems Development Corp. CP8201 Front End Processor.

**DOCUMENTATION:**

Full documentation is provided with UCLA ACP program. ACP HFP installation and operation documentation as well as DACU installation instructions are provided by Software Systems Associates.

**CPU:**

IBM 370 class processor or equivalent

**O/S:**

MVS

**IMPLEMENTATION-LANGUAGE:**

PLI and assembler

**DISTRIBUTOR:**

Software Systems Associates  
4900 Leesburg Pike Suite 305  
Alexandria, VA 22302  
(703) 998-0436

**CONTACT:**

Barbara Walker, (703) 998-0436

**ORDERING-PROCEDURE:**

Contact above

**PROPRIETY-STATUS:**

Proprietary product

**INFORMATION-UPDATED:**

August 1986

## 2.16. LISP Machine

### 2.16.1. LMI

**PRODUCT-OR-PACKAGE-NAME:** LMI TCP/IP

**DESCRIPTION:**

An Excelan-Exos-101/200 series network front-end processor residing on the Multibus of an LMI-Lambda family multi-processor computer provides TCP and UDP services to the application programs TELNET, FTP, IMAGEN and others. The applications are integrated into the generic device, pathname, filesystem, or network systems of the operating system, wherever applicable for transparent and automatic usage. The UNIX operating system support provided by Excelan for the front-end is also available and runs concurrently on a 68010 processor.

**DOCUMENTATION:**

Available from vendor

**CPU:**

LMI Lambda under the ZetaLisp-Plus operating system concurrently with a 68010 under the UNIX operating system

**O/S:**

ZetaLisp-Plus Release 2.0 or later, UNIX System V

**IMPLEMENTATION-LANGUAGE:**

Lisp, C

**DISTRIBUTOR:**

Lisp Machine, Inc.  
1000 Massachusetts Avenue  
Cambridge, MA 02138

**CONTACT:**

Local LMI Sales Office or LMI, Inc.

Sales: Jane Relihan, (617) 682-0500

**ORDERING-PROCEDURE:**

Contact LMI Marketing

**PROPRIETY-STATUS:**

Proprietary product of Lisp Machine, Inc.

**INFORMATION-UPDATED:**

January 1986

## **2.17. Perkin-Elmer**

### **2.17.1. Perkin-Elmer HYPER-Link**

**PRODUCT-OR-PACKAGE-NAME: HYPER-Link**

**DESCRIPTION:**

Hyper-Link is a series of communications software and hardware products which meet the Defense Communications Agency MIL-STDs for the Defense Data Network, for use on any of the DDN networks, such as ARPANET, MILNET, etc. These products also conform to the conventions of the UNIX 4.2 BSD implementation of these protocols for use with the many popular UNIX based graphic workstations, such as SUN, APOLLO, CIMLINK, CADNETIX, and others.

Hyper-Link supplies TCP/IP communication protocol software products, an Application Programming Interface to TCP functions for PASCAL and Assembly, and the MIL-STD applications File Transfer (FTP), Virtual Terminal (TELNET), and Simple Mail Transfer (SMTP).

Hyper-Link for Concurrent Computer (Perkin Elmer) OS/32 systems uses the PE Ethernet Data Link Controller. DDN access via X.25 is scheduled to be available after July 1986.

**DOCUMENTATION:**

A full set of documentation is available

**CPU:**

Perkin-Elmer 32xx

**O/S:**

IS/32

**IMPLEMENTATION-LANGUAGE:**

PASCAL

**DISTRIBUTOR:**

Internet Systems Corporation  
8360 W. Oakland Park Blvd.  
Sunrise, FL 33321

**CONTACT:**

Mary Bloch, (305) 742-0301

**ORDERING-PROCEDURE:**

Submit purchase order to above address; see above contact for pricing.

**PROPRIETY-STATUS:**

Product of Internet Systems Corporation

**INFORMATION-UPDATED:**

February 1986

## **2.18. Plexus**

### **2.18.1. Plexus Gateway**

**PRODUCT-OR-PACKAGE-NAME:** DDN Communications Gateway

**DESCRIPTION:**

A DDN implementation using an intelligent front-end processor to control MIL Standard TCP, IP and ICMP. Both X.25 and/or 1822 interfaces are available. TELNET, FTP and Send Mail applications reside in the Host job processor.

**DOCUMENTATION:**

Installation and Users manual are provided

**CPU:**

P/35, P/55/, P/60, P/75

**O/S:**

Plexus implementation of UNIX System V

**IMPLEMENTATION-LANGUAGE:**

C

**DISTRIBUTOR:**

Plexus Computers, Inc.  
3833 North First Street  
San Jose, CA 95134  
(408) 943-9433

**CONTACT:**

Local Plexus Sales Office

**ORDERING-PROCEDURE:**

Through above contact

**PROPRIETY-STATUS:**

Plexus product

**INFORMATION-UPDATED:**

July 1986

## **2.19. PRIME**

### **2.19.1. PRIME 50 Series**

**PRODUCT-OR-PACKAGE-NAME:** PRIME TCP/IP

**DESCRIPTION:**

This is a TCP/IP-based network software package which uses X.25 as the ISO model Network Layer.

Services supported include SMTP, client and server FTP, client and server Telnet. A set of interface libraries is provided to enable applications coded in any PRIME-supported language to utilize TCP/IP for communications. In addition, the TCP Daytime, Character Generator, Discard, and Active Users protocol servers and PRIMOS command processors are provided. It will be available in late February 1986.

**DOCUMENTATION:**

Use of the generic network systems is documented in standard manuals describing TCP/IP. A Prime computer system installation and user guide is also provided.

**CPU:**

All PRIME 50-series computers:

2350, 2450 (Tower packaging systems); 2250, 2655 (Office packaging); 9655, 9750, 9955 (Computer room packaging)

**O/S:**

PRIMOS (Revision 19.4.5 or later)

**IMPLEMENTATION-LANGUAGE:**

FTP, SMTP, Telnet in C; other code in PRIME's SPL, PLP, PMA

**DISTRIBUTOR:**

PRIME Computer  
Custom Systems Group  
492 Old Connecticut Path  
Framingham, MA 01701

**CONTACT:**

PRIME Custom Systems Group, (617) 626-1700 ext. 3869

**ORDERING-PROCEDURE:**

Contact Prime Custom Systems Group

**PROPRIETY-STATUS:**

Product of PRIME Computer, Inc.

**INFORMATION-UPDATED:**

February 1986

## **2.20. RIDGE**

### **2.20.1. RIDGE**

**PRODUCT NAME:** Ridge TCP/IP

**DESCRIPTION:**

This product is based on the 4.2 BSD release which includes Telnet, FTP and the 4.2 programs--rlogin, rcp, rsh, ruptime and rwho. In addition, the CMU packet filter for Ethernet is also part of the release.

**DOCUMENTATION:**

Available

**CPU:**

Ridge 32

**O/S:**

ROS 3.3

**IMPLEMENTATION-LANGUAGE:**

C

**DISTRIBUTOR:**

Ridge Computers  
2451 Mission College Blvd.  
Santa Clara, CA 95054

**CONTACT:**

Larry Lunetta, Director, Marketing, (408) 986-8500

**ORDERING-PROCEDURE:**

Call or write for information

**INFORMATION-UPDATED:**

January 1986

## 2.21. Sperry

### 2.21.1. Maryland TCP/IP

**PRODUCT-OR-PACKAGE-NAME:** IP/TCP-1100 -- Current level 2R2Q5

**DESCRIPTION:**

The University of Maryland Computer Science Center has implemented TCP/IP for the Sperry 1100 Series computer systems. The implementation currently supports IP, ICMP, TCP, server TELNET, server FTP, user and server SMTP, user and server MDQS. The link level connection is via a 40KB synchronous link or Sperry word channel. Direct connection to an Ethernet is under construction. Currently running on at least 3 Internet hosts including UMD2.UMD.EDU.

**DOCUMENTATION:**

Installation, configuration and operation documentation is provided in both printed and machine readable form. No internals documentation is currently available. Package is distributed in source form.

**CPU:**

Sperry 1100/60 EIS, 1100/70 EIS, 1100/80, 1100/90

**O/S:**

OS1100 Level 38R5 or later

**IMPLEMENTATION-LANGUAGE:**

PLUS and MASM

**DISTRIBUTOR:**

Systems Staff  
Computer Science Center  
University of Maryland  
College Park, MD 20742

**CONTACT:**

Louis A. Mamakos (louie@TRANTOR.UMD.EDU)  
Michael G. Petry (petry@TRANTOR.UMD.EDU)  
(301) 454-2946

**ORDERING-PROCEDURE:**

Contact distributors for current procedure

**PROPRIETY-STATUS:**

Developed under state of Maryland funding by public institution; available to any requestor

**INFORMATION-UPDATED:**

March 1986

## 2.21.2. Sperry-1100

**PRODUCT-OR-PACKAGE-NAME:** SPERRY-1100

**DESCRIPTION:**

The following DDN protocols are supported in this implementation: IP, ICMP, TCP, Telnet, FTP and SMTP. In addition, X.25 and HDLC Distant Host are supported. FTP and SMTP are implemented within DDP in the 1100 host. All other protocols are implemented within TELCON. Two hardware configurations are required as a minimum at each Series 1100 host location: an 1100/60, 1100/70, 1100/80 or 1100/90 computer and a Distributed Communications Processor (DCP/40, DCP/20 or DCP/10A) as a front-end. The DCP's may also be configured as remote concentrators to provide remote terminal access to DDN hosts. A medium or high-speed loadable line module configured to support bit-synchronous communications protocols is required in the DCP to support the HDLC interface. The DDN X.25 interface was unconditionally qualified with DCA in February of 1985.

**DOCUMENTATION:**

Available from vendor

**CPU:**

Sperry 1100 60/70/80/90 and Sperry DCP 40/20/10A

**O/S:**

IS 1100; TELCON

**IMPLEMENTATION-LANGUAGE:**

PLUS for 1100 software; TELCON assembler for DCP

**DISTRIBUTOR:**

Sperry Corporation  
Federal Government Marketing  
8008 Westpark Drive  
McLean, VA 22102

**CONTACT:**

George Blankenship, (703) 556-5050

**ORDERING-PROCEDURE:**

Vendor restricted distribution; contact sales rep

**PROPRIETY-STATUS:**

Proprietary product of Sperry

**DDN-QUALIFIED:**

Yes

**INFORMATION-UPDATED:**

August 1986

### **2.21.3. Sperry Series 5000**

**PRODUCT-OR-PACKAGE-NAME:** SPERRY DDN-5000

**DESCRIPTION:**

The following DDN protocols are supported: DDN X.25, IP, ICMP, TCP, Telnet, FTP, and SMTP. The electrical interfaces conforms to EIA RS-449/442. The DDN X.25 interface was unconditionally qualified for standard mode operation in March of 1986.

**DOCUMENTATION:**

Available from vendor

**CPU:**

Sperry 5000/20, 5000/40, 5000/60, 5000/80, and 5000/90

**O/S:**

UNIX System V Release 2.0

**IMPLEMENTATION-LANGUAGE:**

C

**DISTRIBUTOR:**

Sperry Corporation  
Federal Government Marketing  
8008 Westpark Drive  
McLean, VA 22102

**CONTACT:**

George Blankenship, (703) 556-5050

**ORDERING-PROCEDURE:**

Vendor restricted distribution; contact sales rep.

**PROPRIETY-STATUS:**

Proprietary product of Sperry

**DDN-QUALIFIED:**

Yes

**INFORMATION-UPDATED:**

August 1986

## **2.21.4. Sperry HYPER-Link**

**PRODUCT-OR-PACKAGE-NAME:** HYPER-Link

**DESCRIPTION:**

Hyper-Link is a series of communications software and hardware products which meet the Defense Communication Agency MIL-STDs for the Defense Data Network, for use on any of the DDN networks, such as ARPANET, MILNET, etc. These products also conform to the conventions of the UNIX 4.2 BSD implementation of these protocols for use with the many popular UNIX based graphic workstations, such as SUN, APOLLO, CIMLINK, CADNETIX, VALID LOGIC and others.

Hyper-Link supplies TCP/IP communication protocol software products, an Application Programming Interface to TCP functions for PASCAL and MASM, and the MIL-STD applications File Transfer (FTP), Virtual Terminal (TELNET), and Simple Mail Transfer (SMTP).

Hyper link connects the SPERRY 1100 host to Ethernet or DDN X.25 networks through a channel attached Front End Processor. DDN LHDH attachment is also supported. The X.25 connection can also be made certifiable to certain commercial X.25 networks such as GTE TELENET, TYMNET and others.

**DOCUMENTATION:**

A full set of documentation is available.

**CPU:**

Sperry 11xx

**O/S:.**

IS/1100

**IMPLEMENTATION-LANGUAGE:**

PASCAL

**DISTRIBUTOR:**

Internet Systems Corporation  
8360 W. Oakland Park Blvd.  
Sunrise, FL 33321

**CONTACT:**

Mary Bloch, (305) 742-0301

**ORDERING-PROCEDURE:**

Submit purchase order to above address; see above contact for pricing.

**PROPRIETY-STATUS:**

Product of Internet Systems Corporation

**INFORMATION-UPDATED:**

February 1986

## 2.22. Sun Microsystems

### 2.22.1. Sun-68000

**PRODUCT-OR-PACKAGE-NAME:** SunLink DDN, SunLink IR, Sun Workstation

**DESCRIPTION:**

SunLink DDN is a member of the SunLink product family. The SunLink products implement industry and de-facto standard protocols to provide wide-area and multivendor networking. SunLink DDN includes the host-PSN protocol layers below IP, allowing Suns to provide DDN host services to a multivendor Ethernet network or internetwork which supports the TCP/IP protocol suite. Sun Link DDN includes the three major interfaces defined by DoD: DDN Standard X.25, DDN Basic X.25 and 1822 HDH/HDLC. The software runs on any Sun processor with an available local port or on a Sun equipped with the SCP board for higher speeds.

Another SunLink family member, SunLink IR, implements point-to-point internetwork links and allows dynamic routing of IP packets. It uses either the CPU's standard serial ports for transmission speeds of up to 19.2 Kbps, or the SunLink Communication Processor (SCP) for higher speeds.

The Sun-3 is a VMEbus-based product family that uses the Motorola 68020 virtual memory processor and 68881 floating point processor. The Sun systems run 4.2 BSD UNIX with AT&T System V compatibility enhancements. Sun's native networking architecture includes the 4.2 BSD TCP/IP protocols in conjunction with a 10 Mbit/second Ethernet local area network. In addition to the standard internet protocols, Sun supports the same services as the 4.2 BSD VAX UNIX network software: rlogin, rsh, rwho, ruptime, routed, and rexecd.

Sun's network services let users establish consistent directory and file structures on distinct machines. These network services, such as Network File System (NFS) and Yellow Pages (YP), are based upon Sun's Remote Procedure Call (RPC) protocol and External Data Representation (XDR) standard to allow portability across different computer architectures. NFS allows workstations to share file systems across the network; the YP protocols are used to provide domain-wide distributed administrative databases, such as user names and mail aliases.

**DOCUMENTATION:**

Available from vendor

**CPU:**

Motorola 68020

**O/S:**

UNIX, Berkeley 4.2 BSD and AT&T System V

**IMPLEMENTATION-LANGUAGE:**

C

**DISTRIBUTOR:**

Sun Microsystems, Inc.  
2550 Garcia Avenue  
Mountain View, CA 94043

**CONTACT:**

General Information: (800) 821-4643; In CA: (800) 821-4642

**ORDERING-PROCEDURE:**

Available from vendor

**PROPRIETY-STATUS:**

All network source code is available. The NFS is available for license to other vendors. The RPC and XDR libraries have been made publicly available at no charge.

**HOSTS:**

There are over 660 Sun Workstations on the DARPA Internet as of July, 1986.

**INFORMATION-UPDATED:**

July, 1986

## **2.23. Symbolics**

### **2.23.1. Symbolics LISP Machine**

**PRODUCT-OR-PACKAGE-NAME:** Symbolics TCP/IP

**DESCRIPTION:**

An implementation of the Internet protocol family for Symbolics 36xx Machines running release 5.2 or later. This includes IP, ICMP, TCP, and UDP. Higher level protocols supported include Telnet, SUPDUP, FTP, SMTP and TFTP. TCP/IP is completely integrated in the Lisp Machine generic network system and will be used by the system automatically whenever necessary.

**DOCUMENTATION:**

Use of the generic network system is documented in standard manuals and is available online through a keyword lookup system.

**CPU:**

Symbolics Machine (3600, 3640 and 3670)

**O/S:**

Symbolics Lisp System (Release 5 or later)

**IMPLEMENTATION-LANGUAGE:**

Lisp Machine LISP

**DISTRIBUTOR:**

Symbolics, Inc.  
4 Cambridge Center  
Cambridge, MA 02142

**CONTACT:**

Local Symbolics sales office or Symbolics, Inc. (Sales), (617) 576-2600

**ORDERING-PROCEDURE:**

Contact Symbolics Marketing

**PROPRIETY-STATUS:**

Proprietary product of Symbolics, Inc.

**INFORMATION-UPDATED:**

December 1985

## **2.24. Tandem Computers, Incorporated**

### **2.24.1. [Guardian/NonStop II]**

#### **DESCRIPTION:**

Tandem is currently developing TCP/IP to run with X.25. It is expected to be available in the spring of 1987. Telnet, FTP and SMTP are the upper layer protocols under development also.

#### **DOCUMENTATION:**

Users manuals will be available when products are released

#### **CPU:**

Tandem NonStop II and Txp Processors

#### **O/S:**

Guardian

#### **IMPLEMENTATION-LANGUAGE:**

TAL

#### **DISTRIBUTOR:**

Tandem Computers  
19333 Vallco Parkway  
Cupertino, CA 95014

#### **CONTACT:**

Gale Burnette, (703) 476-3066

#### **ORDERING-PROCEDURE:**

Contact Tandem

#### **PROPRIETY-STATUS:**

Tandem proprietary product

#### **DDN-QUALIFIED:**

Yes

#### **INFORMATION-UPDATED:**

February 1986

## **2.25. Xerox Corporation**

### **2.25.1. Xerox XDE**

**PRODUCT-OR-PACKAGE-NAME:** XDE (Xerox Development Environment) 5.0 Desktop

**DESCRIPTION:**

The TCP/IP package in XDE 5.0 supports the use of the TCP/IP family of networking protocols. It supports the application protocols of FTP, TFTP, SMTP and Telnet the networking protocols of IP, TCP, UDP and ARP, as outline by various RFCs. This package also provides for window based user interfaces to the above application protocols and Mesa language programming interfaces to the above protocols.

**DOCUMENTATION:**

Programmer level documentation to each of the individual application level protocols as well as network level protocols is given and user interface documentation for the tools which use these applications.

**CPU:**

This software is for use on the 8010 and 6085 processors. These are proprietary processors optimized for the running of the Mesa language

**O/S:**

Pilot 12.3 operating system (Xerox proprietary)

**IMPLEMENTATION-LANGUAGE:**

Mesa 12.3

**DISTRIBUTOR:**

Xerox Corporation  
101 Contiental Boulevard  
El Segundo, CA 90245

**CONTACT:**

Local Xerox Sales Representative or XDE Product Marketing (408) 737-4418

**ORDERING-PROCEDURE:**

Contact above

**PROPRIETY-STATUS:**

Product of the Xerox Corporation for 8010 and 6085 workstations.

**INFORMATION-UPDATED:**

August 1986

## 2.26. MULTIPLE-MACHINE IMPLEMENTATIONS

### 2.26.1. Communication Machinery Corporation

**PRODUCT-OR-PACKAGE-NAME:** CMC Internet TCP/IP

**DESCRIPTION:**

An implementation of TCP/IP for UNIX System V and 4.2 BSD systems with CMC's DDN Node Processor (DNP), Front-End Processor for MULTIBUS. The TCP, IP, ICMP, and UDP protocols run on the DNP; the applications, which run on the host UNIX system, include TELNET, FTP, SMTP, rlogin, rsh and rcp.

**DOCUMENTATION:**

System calls as documented in 4.2 BSD documentation. CMC supplies the following documents: Internet User's Guide, Internet Programming Guide, and Internet System Manager Guide.

**CPU:**

DNP-30 for MULTIBUS

**O/S:**

UNIX System V, UNIX 4.2 BSD

**IMPLEMENTATION-LANGUAGE:**

C

**DISTRIBUTOR:**

Communication Machinery Corporation  
1421 State St.  
Santa Barbara, CA 93101

**CONTACT:**

Russ Sharer, (805) 963-9471

**ORDERING-PROCEDURE:**

Contact CMC Marketing

**PROPRIETY-STATUS:**

CMC Proprietary

**INFORMATION-UPDATED:**

November 1985

## 2.26.2. CMC-Ethernet

**PRODUCT-OR-PACKAGE-NAME:** CMC Internet TCP/IP for Ethernet

**DESCRIPTION:**

An implementation of TCP/IP for UNIX System V and 4.2 BSD systems with CMC's Ethernet Node Processor family of Front-End Processors for Ethernet. ENP's are available for VMEbus, VERSAbus, MULTIBUS, UNIBUS, Qbus, and IBM-PC/AT. The TCP, IP, ICMP, and UDP protocols run on the ENP; the applications, which run on the host UNIX system, include TELNET, FTP, SMTP, rlogin, rsh and rcp.

**DOCUMENTATION:**

System calls as documented in 4.2 BSD documentation. CMC supplies the following documents: Internet User's Guide, Internet Programming Guide and Internet System Manager Guide.

**CPU:**

ENP-10 for VMEbus  
ENP-20 for VERSAbus  
ENP-30 for MULTIBUS

ENP-40 for UNIBUS  
ENP-50 for Qbus  
ENP-60 for IBM-PC/AT

**O/S:**

UNIX System V, UNIX 4.2 BSD

**IMPLEMENTATION-LANGUAGE:**

C

**DISTRIBUTOR:**

Communication Machinery Corporation  
1421 State St.  
Santa Barbara, CA 93101

**CONTACT:**

Russ Sharer, (805) 963-9471

**ORDERING-PROCEDURE:**

Contact CMC Marketing

**PROPRIETY-STATUS:**

CMC Proprietary

**INFORMATION-UPDATED:**

November 1985

### 2.26.3. CMC-QM100

**PRODUCT-OR-PACKAGE-NAME:** QM100

**DESCRIPTION:**

A software package implementation of the TCP/IP/ICMP/UDP protocols. A multi-channel TCP/IP implementation available in source code (C language) for the user to compile and integrate into his or her application.

**DOCUMENTATION:**

QM100 User Interface Specification

**CPU:**

Any

**O/S:**

Any

**IMPLEMENTATION-LANGUAGE:**

C

**DISTRIBUTOR:**

Communication Machinery Corporation  
1421 State St.  
Santa Barbara, CA 93101

**CONTACT:**

Russ Sharer, (805) 963-9471

**ORDERING-PROCEDURE:**

Contact CMC Marketing

**PROPRIETY-STATUS:**

CMC Proprietary

**INFORMATION-UPDATED:**

November 1985

#### **2.26.4. Excelan EXOS 8010**

**PRODUCT-OR-PACKAGE-NAME:** EXOS 8010

**DESCRIPTION:**

The EXOS 8010 Protocol Package consists of two parts. One, the TCP/IP protocol module, is downloaded to any of Excelan's EXOS 200 series Intelligent Ethernet Controllers (described separately-see the Hardware Section of this document). Running this code, the controller then provides TCP,UDP, and IP services to the host system. The protocol module is supplied in object form. It can be used with any host system, and is independent of operating system design. The second part of the EXOS 8010 product consists of I/O drivers, libraries, and utilities which can be integrated with any version of the UNIX operating system. These emulate the BSD network interface model, and include applications such as FTP, rlogin, rsh, rcp, and mail.

**DOCUMENTATION:**

Available from Excelan

**CPU:**

Any

**O/S:**

UNIX

**IMPLEMENTATION-LANGUAGE:**

C language

**DISTRIBUTOR:**

Excelan  
2180 Fortune Drive  
San Jose, CA 95131

**CONTACT:**

**Sales:** Donna Keeling, (408) 434-2300

**Technical:** Andrea Salzman, (408) 434-2300

**ORDERING-PROCEDURE:**

Contact Excelan

**PROPRIETY-STATUS:**

Excelan Product

**INFORMATION-UPDATED:**

January 1986

## 2.26.5. FUSION UNIX

**PRODUCT-OR-PACKAGE-NAME:** FUSION Network Software

**DESCRIPTION:**

Network software for Ethernet, Pronet, Omninet. Runs TCP/IP and/or XNS protocols. Provides file transfer (FTP/send,recv), virtual terminal (Telnet), network management. Interoperates with 4.2 UNIX, socket calls. (See also entry for FUSION VMS).

**DOCUMENTATION:**

User manuals for UNIX, Network Administrators Manual, Programmers Reference Manual.

**CPU:**

8088 (IBM-PC and compatibles), 8086, 80186, 80286, 68000, 32000, PDP-11, VAX, Rainbow, DEC Pros

**O/S:**

UNIX: 4.2 BSD, System 3, Version 7, System V, Xenix 3, Xenix 5, Venix, PC/IX

**IMPLEMENTATION-LANGUAGE:**

C, runs on system's native C compiler

**DISTRIBUTOR:**

Network Research Corporation  
4010 Moorpark  
San Jose, CA 95117

**Direct Sales:**

San Francisco:	(408) 248-2121
Los Angeles:	(805) 485-2700
Chicago:	(312) 920-9777
Boston:	(617) 787-7846
Washington D.C.:	(703) 648-1570

**CONTACT:**

**K.W. Sanofsky, San Francisco Branch Sales Manager**

**ORDERING-PROCEDURE:**

See above

**PROPRIETY-STATUS:**

Developed by Network Research Corporation

**INFORMATION-UPDATED:**

August 1986

## 2.26.6. FUSION VMS

**PRODUCT-OR-PACKAGE-NAME:** FUSION Network Software

**DESCRIPTION:**

Network software for Ethernet and Pronet. Runs TCP/IP and/or XNS protocols. Provides file transfer (FTP/send, rcv), virtual terminal (Telnet), network management. Interoperates with UNIX 4.2 BSD socket calls. (See also entry for FUSION UNIX).

**DOCUMENTATION:**

User manuals for VMS, Programmers Reference Manual, Network Administrator Manual

**CPU:**

PDP-11, VAX-11, MicroVAX, Rainbow, DEC Pros

**O/S:**

VMS, MicroVMS

**IMPLEMENTATION-LANGUAGE:**

C, runs on system's native C compiler

**DISTRIBUTOR:**

Network Research Corporation  
4010 Moorpark  
San Jose, CA 95117

**Direct Sales:**

San Francisco: (408) 248-2121

Los Angeles: (805) 485-2700

Chicago: (312) 920-9777

Boston: (617) 787-7846

Washington D.C.: (703) 648-1570

**CONTACT:**

K.W. Sanofsky, San Francisco Branch Sales Manager

**ORDERING-PROCEDURE:**

See above contact

**PROPRIETY-STATUS:**

Developed by Network Research Corporation

**INFORMATION-UPDATED:**

August 1986

### 2.26.7. LANlord

**PRODUCT-OR-PACKAGE-NAME:** LANlord High Speed Networking System

**DESCRIPTION:**

This is a high performance back-end LAN (25 Mb/s) designed to physically, electronically and logically connect mainframe computers and other networking technologies.

Release ONE of LANlord supports TCP/IP-based host software from Internet Systems Corporation and is available now.

Release TWO of LANlord implements TCP/IP protocols on the network, supports FTP applications on the host, and will available 3rd quarter 1986.

LINKlord gateways implementing T-1 links between LANlord networks are available now. A LINKlord gateway to Ethernet will be available 4th quarter 1986.

**CPU:**

IBM, DEC (all processors interfacing to DEC DR11-W)

**O/S:**

MVS, VMS

**DISTRIBUTOR:**

Computer Network Technology  
9440 Science Center Drive  
New Hope, MN 55428

**CONTACT:**

Bob Lutnicki, (800) 638-8324

**ORDERING-PROCEDURE:**

Call for information

**INFORMATION-UPDATED:**

August 1986

## 2.26.8. Unisoft UNIX

**PRODUCT-OR-PACKAGE-NAME:** B-NET

**DESCRIPTION:**

The UNIPLUS+ networking software which offers multiple and interactive links between UNIPLUS+ based systems (68000-based) and other computers running TCP/IP compatible protocols. The interconnected systems may use a variety of physical layers including Ethernet LAN products and may be geographically distributed or physically adjacent to one another and interconnected in a variety of topologies.

**B-NET features include:** process-to-process communication, remote file transfer, virtual terminal facilities, datagram service, electronic mail, automatic route-through, flexibility for adding additional network drivers, and access to all levels of protocols.

This software is basically an enhanced version of Berkeley's 4.2 UNIX.

**DOCUMENTATION:**

Available through vendor

**CPU:**

68000-based systems

**O/S:**

Unisoft UNIX (Berkeley's 4.2 with enhancements)

**IMPLEMENTATION-LANGUAGE:**

C

**DISTRIBUTOR:**

Unisoft Systems  
2405 Fourth Street  
Berkeley, CA 94710

**CONTACT:**

Carl Smith, (415) 644-1230

**INFORMATION-UPDATED:**

July 1986

## **3. TCP/IP HARDWARE IMPLEMENTATIONS**

### **3.1. Advanced Computer Communications**

#### **3.1.1. ACC ECU-II**

**PRODUCT-OR-PACKAGE-NAME:** ECU-II

**DESCRIPTION:**

The Error Control Unit provides an error-controlled link for long distance connection of 1822 devices to PSNs. Data transfer between ECU-II units can take place at 1.5Mb/s when directly connected by a 4-pair low capacitance cable up to 914 meters (3000 feet) in length. Lower rates can be selected or determined by attached modem types 303, 209, V.35, or 188-114. Units are in pairs, one at each end of the communication link. The data rate is enhanced by elimination of the need for inter resource "handshaking" on every bit transferred. The units serve as store-and-forward buffers, receiving and buffering resource-generated data in semi-conductor RAMs, then forwarding it by special protocol to the ECU near the other resource device. Since the ECUs have two separate buffers they are capable of simultaneous receipt and transmission in each direction. ECUs communicate with the IMP via direct cable or modems.

**DOCUMENTATION:**

Fully documented vendor product; descriptive literature available

**DISTRIBUTOR:**

ACC (Advanced Computer Communications)  
720 Santa Barbara Street  
Santa Barbara, CA 93101

**CONTACT:**

**Technical:**  
**Gary Krall, (Gary@ACC.ARPA)**  
**Program Manager, Government Systems**  
**(805) 963-9431**

**ORDERING-PROCEDURE:**

Vendor product; contact sales department

**PROPRIETY-STATUS:**

Proprietary product of ACC

**INFORMATION-UPDATED:**

August 1986

### 3.1.2. ACC IF-11Q/1822

**PRODUCT-OR-PACKAGE-NAME:** IF-11Q/1822

**DESCRIPTION:**

Full-duplex DMA controller used to attach a DEC LSI-11, or MicroVAX to a PSN supporting 1822 protocol. Operates in Local Host or Distant Host modes. If more than one PSN connection is required, optional XQ/1822 boards can be added.

**DOCUMENTATION:**

Fully documented vendor product

**CPU:**

PDP-11/03, PDP-11/23, and MicroVAX

**DISTRIBUTOR:**

ACC (Advanced Computer Communications)  
720 Santa Barbara Street  
Santa Barbara, CA 93101

**CONTACT:**

**Technical:**  
**Gary Krall, (Gary@ACC.ARPA)**  
**Program Manager, Government Systems**  
**(805) 963-9431**

**ORDERING-PROCEDURE:**

*Vendor restricted product, contact above*

**PROPRIETY-STATUS:**

Proprietary product of ACC

**INFORMATION-UPDATED:**

August 1986

### 3.1.3. ACC 9305

**PRODUCT-OR-PACKAGE-NAME:** ACS 9305 (aka IF-370/DDN)

**DESCRIPTION:**

The ACS 9305 provides a full-service interface between an IBM MVS or VM host and the DDN. Its hardware and software subsystems connect the IBM block multiplexer channel to the DDN PSN, supporting DDN Standard Mode X.25 and HDH (1822-J) protocol access. The ACS 9305 is capable of supporting T1 access to the PSN, through the use of 68000 microprocessor technology. The hardware interface is a front-end processor that performs three levels of protocol functions and interfaces to host-resident software sub-system implementing the high-level DoD protocols. These software modules can be either the ACCES/MVS package for MVS systems, or the IBM VM Interface Program for TCP/IP.

**CPU:**

IBM-370, 43xx, 30xx, and any IBM-compatible machine which supports a FIPS-60 channel interface.

**O/S:**

MVS - ACC's ACCES/MVS package

VM - IBM's VM Interface Program for TCP/IP (5798-DRG)

**IMPLEMENTATION-LANGUAGE:**

C

**DISTRIBUTOR:**

ACC (Advanced Computer Communications)  
720 Santa Barbara Street  
Santa Barbara, CA 93101

**CONTACT:**

**Technical Marketing:**  
**Jim Thrower**  
**IBM Product Manager**  
**(805) 963-9431**

**ORDERING-PROCEDURE:**

Call or write for information

**PROPRIETY-STATUS:**

Proprietary product of ACC

**DDN-QUALIFIED:**

Yes

**INFORMATION-UPDATED:**

August 1986

### 3.1.4. ACC IF-IMP/370

**PRODUCT-OR-PACKAGE-NAME:** IF-IMP/370 (IF-370/1822)

**DESCRIPTION:**

Connects an IBM host computer to a PSN supporting 1822 protocol. Interfaces to a IBM Byte Channel. Operates in either Local Host or Distant Host mode. MVS operating system support provided by the UCLA ARPANET Control Program.

**DOCUMENTATION:**

Fully documented vendor product.

**CPU:**

IBM-370, 43XX, or any IBM compatible system

**O/S:**

MVS

**DISTRIBUTOR:**

ACC (Advanced Computer Communications)  
720 Santa Barbara Street  
Santa Barbara, CA 93101

**CONTACT:**

**Technical:**  
**Gary Krall, (Gary@ACC.ARPA)**  
**Program Manager, Government Systems**  
**(805) 963-9431**

**ORDERING-PROCEDURE:**

Vendor restricted product, contact above

**PROPRIETY-STATUS:**

Proprietary product of ACC

**INFORMATION-UPDATED:**

August 1986

### 3.1.5. ACC LH-DH/11

**PRODUCT-OR-PACKAGE-NAME:** LH-DH/11

**DESCRIPTION:**

The LH-DH/11 is a full-duplex Direct Memory Access (DMA) controller that attaches to a DEC PDP-11 or VAX Unibus and provides external communication to the PSN supporting 1822 protocol. By means of interchange of plug-in circuits, the controller can be used for either local host (30' cable limit) or distant host (2000' cable limit) applications.

**DOCUMENTATION:**

Fully documented vendor product: descriptive literature available

**CPU:**

PDP-11, VAX-11

**DISTRIBUTOR:**

ACC (Advanced Computer Communications)  
720 Santa Barbara Street  
Santa Barbara, CA 93101

**CONTACT:**

**Technical:**  
**Gary Krall, (Gary@ACC.ARPA)**  
**Program Manager, Government Systems**  
**(805) 963-9431**

**ORDERING-PROCEDURE:**

Vendor product, contact sales department.

**PROPRIETY-STATUS:**

Proprietary product of ACC

**INFORMATION-UPDATED:**

August 1986

### 3.1.6. ACC IF-11/HDH

**PRODUCT-OR-PACKAGE-NAME:** IF-11/HDH

**DESCRIPTION:**

This is a full-duplex DMA error checking communication unit which attaches a PDP-11 or VAX to a DDN PSN supporting HDH (1822-J) protocol.

**DOCUMENTATION:**

Fully documented vendor product, descriptive literature available

**CPU:**

PDP-11, VAX-11

**O/S:**

UNIX 4.2 and 4.3 BSD, Ultrix, VMS (Supported by Wollongong, Internet),

UNIX System V (supported by Uniq Digital Technologies)

**DISTRIBUTOR:**

ACC (Advanced Computer Communications)  
720 Santa Barbara Street  
Santa Barbara, CA 93101

**CONTACT:**

**Technical:**  
**Gary Krall, (Gary@ACC.ARPA)**  
**Program Manager, Government Systems**  
**(805) 963-9431**

**ORDERING-PROCEDURE:**

Vendor product, contact sales department.

**PROPRIETY-STATUS:**

Proprietary product of ACC

**DDN-QUALIFIED:**

Pending

**INFORMATION-UPDATED:**

August 1986

### 3.1.7. ACC IF-11Q/HDH

**PRODUCT-OR-PACKAGE-NAME:** IF-11Q/HDH

**DESCRIPTION:**

Full-duplex DMA controller used to attach a DEC LSI-11, or a MicroVAX to a DDN PSN supporting HDH (1822-J) protocol. Utilized in Fuzzball gateways.

**DOCUMENTATION:**

Fully documented vendor product

**CPU:**

PDP-11/03, PDP-11/23 and MicroVAX

**DISTRIBUTOR:**

ACC (Advanced Computer Communications)  
720 Santa Barbara Street  
Santa Barbara, CA 93101

**CONTACT:**

**Technical:**  
**Gary Krall, (Gary@ACC.ARPA)**  
**Program Manager, Government Systems**  
**(805) 963-9431**

**ORDERING-PROCEDURE:**

Restricted Vendor product

**PROPRIETY-STATUS:**

Proprietary product of ACC

**INFORMATION-UPDATED:**

August 1986

### **3.1.8. ACC M/1822**

**PRODUCT-OR-PACKAGE-NAME:** M/1822

**DESCRIPTION:**

DMA controller used to attach a MULTIBUS system to a DDN supporting 1822 protocol. Operates in either Local Host or Distant Host modes. Currently implemented on SUN and Pyramid workstations and utilized in Proteon and Cisco's gateway products.

**DOCUMENTATION:**

Fully documented vendor product.

**CPU:**

Sun Microsystems and Pyramid Technologies

**O/S:**

UNIX System V and UNIX 4.2 BSD. Sun device drivers available public domain from SRI.

**DISTRIBUTOR:**

ACC (Advanced Computer Communications)  
720 Santa Barbara Street  
Santa Barbara, CA 93101

**CONTACT:**

**Technical:**  
**Gary Krall, (Gary@ACC.ARPA)**  
**Program Manager, Government Systems**  
**(805) 963-9431**

**ORDERING-PROCEDURE:**

Vendor product, contact sales department.

**PROPRIETY-STATUS:**

Proprietary product of ACC

**INFORMATION-UPDATED:**

August 1986

### 3.1.9. ACC ACP625

**PRODUCT-OR-PACKAGE-NAME:** ACP 625

**DESCRIPTION:**

This is a full-duplex DMA communication interface which attaches a PDP-11 or VAX to a DDN PSN supporting Basic Mode X.25. The ACC implementation is in conformance at link level to FED-STD-1041, FIPS-PUB 100 and at packet level to DDN X.25 Host Interface Specification, December 1983 for Basic Mode X.25 operation.

**DOCUMENTATION:**

Fully documented vendor product; descriptive literature available

**O/S:**

UNIX 4.2 and 4.3 BSD, VAX/VMS (supported by The Wollongong Group and Internet Systems)

**CPU:**

DEC PDP-11 and VAX-11 systems

**DISTRIBUTOR:**

ACC (Advanced Computer Communications)  
720 Santa Barbara Street  
Santa Barbara, CA 93101

**CONTACT:**

**Technical:**  
**Gary Krall, (Gary@ACC.ARPA)**  
**Program Manager, Government Systems**  
**(805) 963-9431**

**ORDERING-PROCEDURE:**

Vendor product, contact sales department.

**PROPRIETY-STATUS:**

Proprietary product of ACC

**DDN-QUALIFIED:**

Yes

**INFORMATION-UPDATED:**

August 1986

### 3.1.10. ACC ACP6250

**PRODUCT-OR-PACKAGE NAME:** ACP 6250

**DESCRIPTION:**

This is a full-duplex DMA communication front-end, utilizing 68000 microprocessor technology, which attaches a VAX to a DDN PSN capable of supporting data rates in excess of 64 Kbps. The ACC implementation is in conformance at the link level to FED-STD-1041, FIPS-PUB 100 and at packet level to DDN X.25 Host Interface Specification, December 1983.

**DOCUMENTATION:**

Fully documented vendor product; descriptive literature available

**CPU:**

68000 for board, VAX-11 for host

**O/S:**

UNIX 4.2 and 4.3 BSD, Ultrix 1.1 and 1.2, VAX/VMS (supported by The Wollongong Group, Internet Systems, and Network Research Corp.)

**DISTRIBUTOR:**

ACC (Advanced Computer Communications)  
720 Santa Barbara Street  
Santa Barbara, CA 93101

**CONTACT:**

**Technical:**  
**Gary Krall, (Gary@ACC.ARPA)**  
**Program Manager, Government Systems**  
**(805) 963-9431**

**ORDERING-PROCEDURE:**

Vendor product; contact sales department

**PROPRIETY-STATUS:**

Proprietary product of ACC

**DDN-QUALIFIED:**

Yes

**INFORMATION-UPDATED:**

August 1986

### **3.1.11. ACC ACP 5250**

**PRODUCT-OR-PACKAGE NAME:** ACP 5250

#### **DESCRIPTION:**

This is a full-duplex DMA communication front end, utilizing 68000 microprocessor technology, which attaches a MicroVAX to a DDN PSN, and is capable of supporting data rates in excess of 64 Kbps. The ACC implementation is in conformance at link level to FED-STD-1041, FIPS PUB 100 and at packet level to DDN X.25 Host Interface Specification, Dec. 1983.

#### **DOCUMENTATION:**

Fully documented vendor product.

#### **CPU:**

68000 for board and MicroVAX for host

#### **O/S:**

Ulrix 1.1 and 1.2, and MicroVMS (supported by The Wollongong Group, Internet Systems, and Network Research Corp.)

#### **DISTRIBUTOR:**

ACC (Advanced Computer Communications)  
720 Santa Barbara Street  
Santa Barbara, CA 93101

#### **CONTACT:**

**Technical:**  
**Gary Krall, (Gary@ACC.ARPA)**  
**Program Manager, Government Systems**  
**(805) 963-9431**

#### **ORDERING-PROCEDURE:**

Vendor product, contact sales department.

#### **PROPRIETY-STATUS:**

Proprietary product of ACC

#### **DDN-QUALIFIED:**

Yes

#### **INFORMATION-UPDATED:**

August 1986

### 3.1.12. ACC ACS 1030

**PRODUCT-OR-PACKAGE-NAME:** ACS 1030

**DESCRIPTION:**

The ACS 1030 is a stand-alone communications system that allows standard IBM SNA devices to access the DDN, in a totally transparent manner. Connecting to existing line sets on IBM 37x5 front-end processors (or compatible) at the host site(s), and to the RS232 port on a remote device (eg 3274), the ACS 1030 permits the replacement of existing leased line communications facilities with the DDN. TCP/IP is fully supported and is implemented in sub-system firmware. The ACC implementation is in conformance at link level to FED-STD-1041, FIPS PUB 100 and at packet level to DDN X.25 Host Interface Specification, Dec. 1983. Network and host data rates supported are in excess of 64 Kbps.

**DOCUMENTATION:**

Fully documented vendor product; descriptive literature available

**DISTRIBUTOR:**

ACC (Advanced Computer Communications)  
720 Santa Barbara Street  
Santa Barbara, CA 93101

**CONTACT:**

**Technical:**  
**Gary Krall, (Gary@ACC.ARPA)**  
**Program Manager, Government Systems**  
**(805) 963-9431**

**ORDERING-PROCEDURE:**

Vendor product, contact sales department.

**PROPRIETY-STATUS:**

Proprietary product of ACC

**DDN-QUALIFIED:**

Yes

**INFORMATION-UPDATED:**

August 1986

### 3.1.13. ACC 9310

**PRODUCT-OR-PACKAGE-NAME:** ACS 9310

**DESCRIPTION:**

The ACS 9310 provides a full-service interface between an IBM MVS or VM host and an Ethernet or IEEE 802.3 Local Area Network. Its hardware and software subsystems connect the IBM block multiplexer channel to a 10-megabit-per-second Ethernet or 802.3 LAN. The ACS 9310 maximizes throughput with its modular design utilizing a high-speed bus and 68000 microprocessor technology. The hardware interface is a front-end processor that performs the necessary protocol functions and interfaces to host-resident software sub-system implementing the high-level TCP/IP protocols. These software modules can be either the ACCES/MVS package for MVS systems, or the IBM VM Interface Program for TCP/IP.

**CPU:**

IBM-370, 43xx, 30xx, and any IBM-compatible machine which supports a FIPS-60 channel interface.

**O/S:**

MVS - ACC's ACCES/MVS package

VM - IBM's VM Interface Program for TCP/IP (5798-DRG)

**IMPLEMENTATION-LANGUAGE:**

C

**DOCUMENTATION:**

Fully documented vendor product; descriptive literature available

**DISTRIBUTOR:**

ACC (Advanced Computer Communications)  
720 Santa Barbara Street  
Santa Barbara, CA 93101

**CONTACT:**

**Technical Marketing:**  
**Jim Thrower**  
**IBM Product Manager**  
**(805) 963-9431**

**ORDERING-PROCEDURE:**

Vendor product, contact sales department.

**PROPRIETY-STATUS:**

Proprietary product of ACC

**INFORMATION-UPDATED:**

August 1986

## 3.2. Apple

### 3.2.1. Kinetics AppleTalk-Ethernet Gateway

**PRODUCT-OR-PACKAGE-NAME:** Kinetics FastPath/Standalone (KFPS)

**DESCRIPTION:**

The Kinetics FastPath/Standalone (KFPS) is a programmable AppleTalk-to-Ethernet gateway. Current gateway programs include AppleTalk protocols and IP protocols. The latter program is compatible with the Stanford SEAGATE gateway. In the IP version, IP packets originating from the Macintosh and encapsulated within AppleTalk protocols are decapsulated at the KFPS and routed using IP routing. Appletalk protocols originating from a Macintosh are encapsulated in IP protocols and routed to the destination, where they are decapsulated.

The KFPS is packaged in a 5.5" x 9.0" case, which contains power supply, a main logic board (Motorola 68008 CPU, Intel 82586 Ethernet chip, Zilog 8530 Serial Controller chip), a piggyback memory board (48K static RAM standard, expandable to 112K; 8K PROM standard, expandable to 128K), and a battery to backup the program and data in RAM.

Each KFPS is delivered with a Macintosh disk which contains both gateway program versions, and a configuration program which may be used to set network parameters and to download then gateway program to the KFPS. Kinetics will supply KFGPS users with a copy of MacIP, the Macintosh application package from CMU which includes MacTELNET and MacTFTP. Kinetics will also supply the source code for the SEAGATE-compatible IP gateway program.

The External File system (EFS), developed by Lucasfilm and Stanford and available as part of the SEAGATE code package, may also run through the KFPS IP gateway program. EFS allows files stored in UNIX directory to appear on a Macintosh desktop and accessed by the Macintosh Finder.

**DOCUMENTATION:**

Kinetics' products are described in a 12-page Product Catalog and Price list. KFPS is shipped with a User Manual which describes its operation and its configuration within both AppleTalk and IP networks. Instructions for IP addressing and MacIP are also included.

**CPU:**

Motorola 68008

**O/S:**

Proprietary

**IMPLEMENTATION-LANGUAGE:**

C

**DISTRIBUTOR:**

Kinetics, Inc.  
2500 Camino Diablo, Suite 110  
Walnut Creek, CA 94596  
(415) 947-0998

**CONTACT:**

Sandy Sanderson, (415) 947-0998

**ORDERING-PROCEDURE:**

Contact Kinetics

**PROPRIETY-STATUS:**

KFPS and the AppleTalk gateway program are proprietary products of Kinetics, Inc. The IP gateway program contains code copyrighted by Stanford and Kinetics; it may be used, but not sold without permission. MacIP is Copyright 1985 (Carnegie-Mellon University); 1983, 1984 (Massachusetts Institute of Technology); and 1984 (Mark Sherman).

**INFORMATION-UPDATED:**

May 1986

### **3.3. Apollo**

#### **3.3.1. Apollo Ethernet Gateway**

**PRODUCT-OR-PACKAGE-NAME:** Apollo Ethernet Gateway

**DESCRIPTION:**

This is an intelligent hardware controller which mounts in the server processor (DSP80A) or Multibus interfaces on other computational nodes. Includes cable, transceiver and full TCP/IP access protocol.

**DOCUMENTATION:**

TCP/IP Reference Manual

**CPU:**

Runs on Apollo DOMAIN systems (68020 based)

**O/S:**

UNIX 4.2 BSD, System V and AEGIS O/S

**IMPLEMENTATION-LANGUAGE:**

C

**DISTRIBUTOR:**

Apollo Computer, Inc.  
4301 Great America Parkway  
4th Floor  
Santa Clara, CA 95054  
(408) 496-2900

**CONTACT:**

Nearest Apollo Sales Office or (617) 256-6600

**ORDERING-PROCEDURE:**

Contact nearest Apollo Sales Office or (617) 256-6600

**PROPRIETY-STATUS:**

Public Domain

**INFORMATION-UPDATED:**

February 1986

## **3.4. Aydin Monitor Systems**

### **3.4.1. Aydin Mini TAC**

**PRODUCT-OR-PACKAGE-NAME:** Mini Terminal Access Controller Model 4200

**DESCRIPTION:**

The Mini-TAC is one of several models in Aydin's NIU product family. It provides a convenient way to interface subscribers terminals to the DDN. Its 16 subscriber ports can be individually configured for any combination of synchronous or asynchronous terminals. The Mini-TAC's User TELNET, a compatibility protocol, transforms a diversity of asynchronous conventions into a single, standard format. This format is acceptable to all DDN access controllers that support asynchronous hosts and terminals.

Synchronous ports emulate an IBM host for terminals that conform to the IBM 327x Display System Protocols. The Mini-TAC supports concurrent network connections for up to sixtyfour 3270-type terminals (through up to 16 327x controllers). A 3270 terminal, operating in its normal BISYNC mode, can be used to talk to remote asynchronous hosts.

**DOCUMENTATION:**

Manuals available

**CPU:**

Multiple (4) 68010 Processors

**O/S:**

AMOS (Aydin Micro Operating System)

**IMPLEMENTATION-LANGUAGE:**

C

**DISTRIBUTOR:**

Aydin Monitor Systems  
502 Office Center Drive  
Ft. Washington, PA 19034

**CONTACT:**

Michael J. Alford, V.P., Marketing, (215) 646-8100

**ORDERING-PROCEDURE:**

Contact Aydin

**PROPRIETY-STATUS:**

Contains some propriety software

**DDN-QUALIFIED:**

Yes

**INFORMATION-UPDATED:**

July 1986

### 3.4.2. Aydin HDEP

**PRODUCT-OR-PACKAGE-NAME:** Host Front End Processor Model 4210

**DESCRIPTION:**

Aydin's HFEP confers DDN compatibility on larger mainframe hosts. It enables the host to communicate with distant terminals and other hosts at host-to-HFEP burst rates up to 300 Kbps. In order to work with the HFEP, the host must incorporate a front end software package: "WWMCCS Host-to-Front-End Protocol Specification, Version 1.0." The combination of this package and the HFEP itself offers powerful host-to-host data transfer capabilities while keeping the DDN and HFEP itself transparent to the host's users and applications programs.

The HFEP furnishes two high speed synchronous interfaces: both may go to the same host, or two independent hosts can be supported. Bursts of data up to 1000 characters (bytes) long can be processed to and from the hosts at the maximum bit rate.

**DOCUMENTATION:**

Manuals available

**CPU:**

Multiple (4) 68010 Processors

**O/S:**

AMOS (Aydin Micro Operating System)

**IMPLEMENTATION-LANGUAGE:**

C

**DISTRIBUTOR:**

Aydin Monitor Systems  
502 Office Center Drive  
Ft. Washington, PA 19034

**CONTACT:**

Michael J. Alford, V.P., Marketing, (215) 646-8100

**ORDERING-PROCEDURE:**

Contact Aydin

**PROPRIETY-STATUS:**

Contains some propriety software

**DDN-QUALIFIED:**

Yes

**INFORMATION-UPDATED:**

July 1986

### 3.4.3. Aydin TEP

**PRODUCT-OR-PACKAGE-NAME:** Terminal Emulation Processor Model 4220

**DESCRIPTION:**

Aydin's TEP is the compliment of the Aydin Mini-TAC. The TEP provides a vehicle for interfacing subscriber hosts to the DDN. To a host computer, each port on the TEP looks and acts like a terminal. The TEP's 16 ports can be individually configured for any combination of synchronous or asynchronous hosts. The host needs no additional software or hardware: by emulating the distant terminal, the TEP makes itself and the DDN completely transparent. The TEP's Server TELNET, a compatibility protocol, transforms a diversity of asynchronous conventions into a single, standard format. This format complements the Mini-TAC's User TELNET. When operating with an IBM hosts, the TEP emulates an IBM 327x controller. The TEP responds negatively to the host's general poll until receipt of a terminal service request message from a distant Mini-TAC. Only then is an end-to-end connection established.

**DOCUMENTATION:**

Manuals available

**CPU:**

Multiple (4) 68010 Processors

**O/S:**

AMOS (Aydin Micro Operating System)

**IMPLEMENTATION-LANGUAGE:**

C

**DISTRIBUTOR:**

Aydin Monitor Systems  
502 Office Center Drive  
Ft. Washington, PA 19034

**CONTACT:**

Michael J. Alford, V.P., Marketing, (215) 646-8100

**ORDERING-PROCEDURE:**

Contact Aydin

**PROPRIETY-STATUS:**

Contains some propriety software

**DDN-QUALIFIED:**

Yes

**INFORMATION-UPDATED:**

July 1986

## **3.5. Bolt Beranek and Newman**

### **3.5.1. BBN-C/30**

**PRODUCT-OR-PACKAGE-NAME:** BBN-C/30

**DESCRIPTION:**

The Terminal Access Controller (TAC) is a user Telnet host that supports the TCP/IP host-to-host protocols. It runs in a 64K C/30 computer. It supports up to 63 terminal ports, and connects to a network via an 1822 or HDH host interface. The TAC TCP/IP conforms with RFC791 and RFC793 specifications with the following exceptions:

- - IP options are accepted but ignored.
- - All TCP options except maximum segment size are not accepted.
- - Precedence, security, etc. are ignored. The TAC also supports Packet core, TAC Monitoring, Internet Control Message Protocol (ICMP), and a subset of the Gateway-Gateway protocols.

For more information on the TAC's design, see IEN-166. All major features have been implemented except Class B and C addressing, IP reassembly, and TCP Urgent handling. These will be done in the near future.

**CONTACT:**

**Robert Dye, (RDye@BBN-UNIX.ARPA), (617) 497-2453**

**INFORMATION-UPDATED:**

**February 1986**

## **3.6. Bridge Communications**

### **3.6.1. Bridge CS/1**

**PRODUCT-OR-PACKAGE-NAME:** The Communications Server 1 (CS/1)

**DESCRIPTION:**

Bridge's CS/1 server with TCP/IP software performs the function of a terminal or host server, allowing up to 32 asynchronous devices (e.g., terminals, printers, computers) to access host computers that support TCP/IP and are attached to an Ethernet LAN. The CS/1 also supports the User Datagram Protocol (UDP) and the Ethernet Address Resolution Protocol (ARP). Bridge Communications also offers gateway servers which interface the CS/1 to broadband networks and the IBM SDLC world.

**IMPLEMENTATION-LANGUAGE:**

C

**DISTRIBUTOR:**

Bridge Communications, Inc.  
2801 Stierlin Road  
Mountain View, CA 94043

**CONTACT:**

Douglas W. Tsui, (415) 969-4400

**PROPRIETY-STATUS:**

Product of Bridge Communications, Inc.

**INFORMATION-UPDATED:**

February 1986

### **3.6.2. Bridge CS/100**

**PRODUCT-OR-PACKAGE-NAME:** The Communications Server 100 (CS/100)

**DESCRIPTION:**

Bridge's CS/100 server with TCP/IP software performs the function of a terminal or host server, allowing up to 14 asynchronous devices (e.g., terminals, printers, computers) to access host computers that support TCP/IP and are attached to an Ethernet LAN. The CS/100 also supports the User Datagram Protocol (UDP) and the Ethernet Address Resolution Protocol (ARP). Bridge Communications also offers gateway servers which interface the CS/100 to broadband networks and the IBM SDLC world.

**IMPLEMENTATION - LANGUAGE:**

C

**DISTRIBUTOR:**

Bridge Communications, Inc.  
2801 Stierlin Road  
Mountain View, CA 94043

**CONTACT:**

Douglas W. Tsui, (415) 969-4400

**PROPRIETY-STATUS:**

Product of Bridge Communications, Inc.

**INFORMATION-UPDATED:**

February 1986

### 3.6.3. Bridge GS/3

**PRODUCT-OR-PACKAGE-NAME:** The Gateway Server 3 (GS/3)

**DESCRIPTION:**

Bridge's GS/3 server with TCP/IP software interconnects physically isolated Ethernet segments over multiple point to-point communication links. It supports up to four synchronous communications lines with data rates up to 64K bps each. As an internetwork router, the GS/3 uses the Internet Protocol (IP) to route packets across networks. It is compatible with Bridge's comprehensive TCP/IP line of communications, gateway, and network control servers.

**IMPLEMENTATION-LANGUAGE:**

C

**DISTRIBUTOR:**

Bridge Communications, Inc.  
2801 Stierlin Road  
Mountain View, CA 94043

**CONTACT:**

**Douglas W. Tsui, (415) 969-4400**

**PROPRIETY-STATUS:**

Product of Bridge Communications, Inc.

**INFORMATION-UPDATED:**

February 1986

### **3.6.4. Bridge GS/6**

**PRODUCT-OR-PACKAGE-NAME:** The Gateway Server 6 (GS/6)

**DESCRIPTION:**

Bridge's GS/6 server with TCP/IP software interconnects an Ethernet segment to the broadband backbone trunk. As many as 255 Ethernet TCP/IP networks can be supported over a single 6 Mhz broadband channel using GS/6s Carrier Sense Multiple Access (CSMA) mechanism. As an internetwork router, the GS/6 uses the Internet Protocol (IP) to route packets across networks. It is compatible with Bridge's comprehensive TCP/IP line of communications, gateway, and network control servers.

**IMPLEMENTATION-LANGUAGE:**

C

**DISTRIBUTOR:**

Bridge Communications, Inc.  
2801 Stierlin Road  
Mountain View, CA 94043

**CONTACT:**

Douglas W. Tsui, (415) 969-4400

**PROPRIETY-STATUS:**

Product of Bridge Communications, Inc.

**INFORMATION-UPDATED:**

February 1986

### **3.6.5. Bridge CS/1-SNA**

**PRODUCT-OR-PACKAGE-NAME:** The Communications Server 1-SNA (CS/1-SNA)

**DESCRIPTION:**

Bridge's CS/1-SNA server with TCP/IP software supports one synchronous SDLC port to an IBM communications controller with a maximum of 24 LU-to-LU sessions. It provides a connection service between a wide variety of non-IBM terminals, workstations, and an IBM host running Systems Network Architecture (SNA) protocol. The CS/1-SNA is compatible with Bridge's comprehensive TCP/IP line of communications, gateway, and network control servers.

**IMPLEMENTATION-LANGUAGE:**

C

**DISTRIBUTOR:**

Bridge Communications, Inc.  
2801 Stierlin Road  
Mountain View, CA 94043

**CONTACT:**

Douglas W. Tsui, (415) 969-4400

**PROPRIETY-STATUS:**

Product of Bridge Communications, Inc.

**INFORMATION-UPDATED:**

February 1986

### **3.6.6. Bridge NCS/150**

**PRODUCT-OR-PACKAGE-NAME:** The Network Control Server 150 (NCS/150)

**DESCRIPTION:**

Bridge's NCS/150 server with TCP/IP software provides a complete continuous record of all network activity at the session level. It is a network management server that allows configuration control, monitoring, bootloading, and centralized control of local area network resources. The NCS/150 is designed to support up to 40 Bridge Communications Servers on a single network or multiple networks interconnected by Gateway Servers.

**IMPLEMENTATION-LANGUAGE:**

C

**DISTRIBUTOR:**

Bridge Communications, Inc.  
2801 Stierlin Road  
Mountain View, CA 94043

**CONTACT:**

Douglas W. Tsui, (415) 969-4400

**PROPRIETY-STATUS:**

Product of Bridge Communications, Inc.

**INFORMATION-UPDATED:**

February 1986

## 3.7. CISCO

### 3.7.1. CISCO FEP3270

**PRODUCT-OR-PACKAGE-NAME:** FEP3270

**DESCRIPTION:**

Communications Interface Solutions Company (CISCO) builds and supports products that extend the Defense Data Network (DDN). The CISCO TAC3270, FEP3270 and HFS interconnect IBM 3270 or compatible SNA/SDLC or BSC terminal controllers and devices to IBM or PCM MVS-VTAM computer systems on the DDN providing native mode terminal operation (3270 Data Stream) with the host and the full set of DDN protocols. CISCO also provides products that connect IEEE 802.3 Local Area Networks with IBM MVS systems and the DDN. These products are TCP/IP based and are interrelated.

FEP3270 models connect IBM or plug compatible MVS-ACF/VTAM host computers to the DDN and/or IEEE 802.3 LANs. The FEP3270 is a Front-End Processor communications control unit (FEP) that appears to MVS as a 3274 channel attached terminal control unit. Thus it can readily co-exist with other vendors FEPs or other CISCO FEPs on the host computer. The FEP3270 has full TCP/IP capability which is used in support of DDN protocols and the 3270 native mode protocols. The FEP3270 provides native mode 3270 terminals direct connection to the host via ACF/VTAM as 3270 Display Stations or Printers and DDN Full Service users connection to those facilities on the host managed through CISCO's HFS (thru SAPI).

**FEP3270 Product Summary:**

The FEP3270 is a data communications front end processor that connects to an IBM or PCM (Plug Compatible Manufacturer) MVS ACF/VTAM computer system via an IBM or PCM Block Multiplexer Channel utilizing one subchannel address of that channel. It connects to the DDN via an RS-449/422 or RS-232-C interface utilizing X.25 Standard and TCP/IP Protocols. The FEP3270 has a power switch, a reset switch, nine indicator lights, two Asynchronous ASCII Maintenance Ports (RS-232-C) and a four foot 110 volt power cord with a three pronged (grounded) plug.

The FEP3270 hardware is built on a Multibus (IEEE 796 BUS) structure utilizing Motorola 68000 technology. Two single board computers are utilized with an IBM channel interface board as the core of each FEP3270 model. Additional boards and interfaces are added to provide the different models.

There are different models of the FEP3270:

- FEP3270-10 provides one DDN interface using RS-449/422 at 56 Kbps.
- FEP3270-10C provides one DDN interface using RS-232-C (up to 19.2 Kbps) externally clocked.
- FEP3270-40 provides four DDN interfaces using RS-449/422 at 56 Kbps (RPQ product, earliest availability expected to be second quarter 1987).
- FEP3270-11 provides one DDN interface using RS-449/422 at 56 Kbps and one Local Area Network (LAN) interface utilizing the IEEE 802.3 standard (RPQ product, earliest availability expected to be January 1987).
- FEP3270-11C provides one DDN interface using RS-232-C (up to 19.2 Kbps) externally clocked and one Local Area Network (LAN) interface utilizing the IEEE 802.3 standard (RPQ product, earliest availability expected to be January 1987).
- FEP3270-31 provides three DDN interfaces using RS-449/422 at 56 Kbps and one LAN interface utilizing the IEEE 802.3 standard (RPQ product, earliest availability expected to be second quarter 1987).

**Note: RPQ (Request for Price Quote) products prices and delivery are quoted upon request. Availability is not immediate.**

**DOCUMENTATION:**

3270 DDN Products Structure and Operation

FEP3270 Installation and Repair Guide

FEP3270 Operation and Problem Determination

FEP3270 Installation and Repair Guide

**CPU:**

The FEP and TAC CISCO products are Motorola 68000 based and are coupled with CISCO hardware for interfacing to the DDN and other media.

**O/S:**

The FEP and TAC CISCO products are CISCO RTOS based. RTOS is a CISCO proprietary operating system.

**IMPLEMENTATION-LANGUAGE:**

Predominantly C, some assembly

**DISTRIBUTOR:**

CISCO  
9067 Shady Grove Ct.  
Gaithersburg, MD 20877  
(301) 921-8800

**CONTACT:**

Jon D. Weston, (301) 921-8800

**ORDERING-PROCEDURE:**

Call for details

**PROPRIETY-STATUS:**

All Products CISCO Proprietary.

**INFORMATION-UPDATED:**

June 1986

### 3.7.2. CISCO TAC3270

PRODUCT-OR-PACKAGE-NAME: TAC3270

#### DESCRIPTION:

Communications Interface Solutions Company (CISCO) builds and supports products that extend the Defense Data Network (DDN). The CISCO TAC3270, FEP3270 and HFS interconnect IBM 3270 or compatible SNA/SDLC or BSC terminal controllers and devices to IBM or PCM MVS-VTAM computer systems on the DDN providing native mode terminal operation (3270 Data Stream) with the host and the full set of DDN protocols. CISCO also provides products that connect IEEE 802.3 Local Area Networks with IBM MVS systems and the DDN. These products are TCP/IP based and are interrelated.

TAC3270 models connect IBM 3270 or compatible terminal control units and devices (Display Stations and Printers) to the DDN. It is a terminal access controller (TAC) that provides support for 3270 control units and terminals as native mode devices connecting across the DDN (using TCP/IP) to any FEP3270 at the host or as a Telnet Network Virtual Terminal (NVT) for access to any DDN host computer supporting Telnet NVT.

#### TAC3270 Product Summary:

The TAC3270 is a data communications concentrator for use on the DDN (or directly attached to an IEEE 802.3 Baseband LAN). Up to 128 terminal devices can be connected to the TAC3270 via IBM 3270 terminal control units attached to the six Terminal Ports. These ports support point-to-point or multidrop configurations at speeds up to 19.2 Kbps each using either SDLC or BSC protocols on an RS-232-C interface. It connects to the DDN via an RS-449/422 or RS-232-C interface utilizing X.25 Standard and TCP/IP Protocols. The TAC3270 has a power switch, a reset switch, nine indicator lights, two Asynchronous ASCII Maintenance Ports (RS-232-C) and a four foot 110 volt power cord with a three pronged (grounded) plug.

The TAC3270 hardware is built on a Multibus (IEEE 796 BUS) structure utilizing Motorola 68000 technology. Two single board computers are utilized with an port extension card as the core of each TAC3270 model.

There are different models of the TAC3270:

- TAC3270-10 provides one DDN interface using RS-449/422 at 56 Kbps.
- TAC3270-10C provides one DDN interface using RS-232-C (up to 19.2 Kbps) externally clocked.
- TAC3270-01 provides one LAN interface using IEEE 802.3 standard Baseband connection via a Transceiver and 50 foot cable provided with the unit. (There is no DDN connection associated with this unit. This product is included for identification purposes mainly. It is a companion unit to the FEP802.3, FEP3270-11, FEP3270-11C and the FEP3270-31, all of which provide IBM host computer connection to an IEEE 802.3 Baseband LAN. This product is expected to be available in the 2nd quarter 1987.

#### DOCUMENTATION:

3270 DDN Products Structure and Operation

TAC3270 Installation and Repair Guide

TAC3270 Operation and Problem Determination Guide

#### CPU:

The FEP and TAC CISCO products are Motorola 68000 based and are coupled with CISCO hardware for interfacing to the DDN and other media.

**O/S:**

The FEP and TAC CISCO products are CISCO RTOS based. RTOS is a CISCO proprietary operating system.

**IMPLEMENTATION-LANGUAGE:**

Predominantly C, some assembly

**DISTRIBUTOR:**

CISCO  
9067 Shady Grove Ct.  
Gaithersburg, MD 20877  
(301) 921-8800

**CONTACT:**

Jon D. Weston, (301) 921-8800

**ORDERING-PROCEDURE:**

Call for details.

**PROPRIETY-STATUS:**

All Products CISCO Proprietary

**INFORMATION-UPDATED:**

June 1986

### 3.7.3. CISCO FEP802.3

**PRODUCT-OR-PACKAGE-NAME:** FEP802.3

**DESCRIPTION:**

Communications Interface Solutions Company (CISCO) builds and supports products that extend the Defense Data Network (DDN). The CISCO TAC3270, FEP3270 and HFS interconnect IBM 3270 or compatible SNA/SDLC or BSC terminal controllers and devices to IBM or PCM MVS-VTAM computer systems on the DDN providing native mode terminal operation (3270 Data Stream) with the host and the full set of DDN protocols. CISCO also provides products that connect IEEE 802.3 Local Area Networks with IBM MVS systems and the DDN. These products are TCP/IP based and are interrelated.

FEP802.3 connects IBM or PCM MVS ACF/VTAM host computers to an IEEE 802.3 Baseband LAN. It is a Front-End Processor (FEP) that appears to MVS as a 3274 channel attached terminal control unit. Thus it can readily co-exist with other FEPs on the host computer. The FEP802.3 provides TCP/IP access only to HFS. DDN Full Service Upper Layer Protocols are available through HFS.

**FEP802.3 Product Summary:**

The FEP802.3 is a Front-End Processor (FEP) that appears to an IBM MVS computer system as a 3274 channel attached terminal control unit. Thus it readily co-exists with other FEPs on the host computer. The FEP802.3 provides Local Area Network users (terminals and hosts) TCP/IP Full Service connection to those DDN Upper Layer Protocols on the MVS host managed by HFS.

The FEP802.3 connects to an IBM or PCM MVS computer system via an IBM Block Multiplexer Channel utilizing one subchannel of that channel. It connects to the Local Area Network via a CISCO provided IEEE 802.3 Baseband Transceiver attached to the FEP802.3 by a CISCO provided 50 foot cable. The FEP802.3 has a power switch, a reset switch, nine indicator lights, two Maintenance Ports (RS-232-C Asynchronous ASCII at 1200 bps) and a four foot, 110 volt power cord with a three pronged (grounded) plug.

The FEP802.3 hardware is built on a Multibus (IEEE 796 BUS) structure utilizing Motorola 68000 technology. Two single board computers are utilized with a LAN interface board as the core of each FEP802.3.

**FEP3270, TAC3270 and FEP802.3 Software Summary:**

The FEP3270, FEP802.3 and the TAC3270s have two software systems; the Maintenance Port Software (MPS) and the CISCO Network Control Program (CNCP). Both the MPS and the CNCP run in the Microbar SBCs. Both run utilizing a CISCO Proprietary operating system named RTOS that is contained in ROM on the Microbar SBCs. CISCO RTOS contains the X.25 Standard protocol and the IEEE 802.3 (802.2) protocol.

The Maintenance Port Software is contained in the ROMs of the Microbar SBC and provides the FEP3270 customer configurator, the CNCP software loader and the problem determination and programmer debugging tools available thru the Maintenance Port.

The CNCP is downline loaded from the host over the Block Multiplexer Channel on command from the host via HFS. CNCP contains the TCP/IP, SAPI, SNA Emulation, Native Mode Server and LAN interface capabilities of the FEP3270. The IMP Processor (one of the Single Board Computers) runs the TCP/IP, SAPI and LAN interface software. The SNA Emulation Processor (another of the Single Board Computers) runs the SAPI, SNA Emulation and Native Mode Server software. Part of the SNA Emulation portion of the CNCP is the cSNA3270 software licensed by CISCO from System Strategies, Inc. as part of their cSNA3270 software product.

The NOVRAM contains the configuration parameters regarding this equipment including its Internet Address, Equipment model and serial number, the LU configuration parameters for the SNA interface to the host, the DDN parameters for the operation of the DDN X.25 link and the password for the MPS as well as the equipment exception event log for problem determination.

The Maintenance Port Software (MPS) is run from the Maintenance Port. It contains the local configurator, a debugger, a statistics display, a memory display, a statistics gathering facility, a device driver interface for the Maintenance Port and a Telnet NVT interface for operation of MPS from remote sites over the DDN (via an NVT terminal or CISCO HFS TSO command). As there is with the Maintenance Port, this mode of operation of MPS is secured through a password mechanism so as to limit access to the MPS to authorized users.

The Local Configurator portion of the MPS (Maintenance Port Software) allows for the configuration of the DDN interface parameters (Internet Address of the unit, Message Length Maximum, etc.) and other software configuration parameters. The LU's for Displays and Printers are configurable for name and function.

The primary software to run the equipment is the CISCO Network Control Program (CNCP) which can be loaded from the MVS-VTAM host using the HFS Loader. The rest of the software is stored in Read Only Memory (ROM) in the unit. The CNCP is in NOVRAM and is only down-line loaded when a new version of the CNCP software is desired.

**DOCUMENTATION:**

FEP802.3 Installation and Repair Guide

FEP802.3 Operation and Problem Determination Guide

**CPU:**

The FEP and TAC CISCO products are Motorola 68000 based and are coupled with CISCO hardware for interfacing to the DDN and other media.

**O/S:**

The FEP and TAC CISCO products are CISCO RTOS based. RTOS is a CISCO proprietary operating system.

**IMPLEMENTATION-LANGUAGE:**

Predominantly C, some assembly

**DISTRIBUTOR:**

CISCO  
9067 Shady Grove Ct.  
Gaithersburg, MD 20877  
(301) 921-8800

**CONTACT:**

Jon D. Weston, (301) 921-8800

**ORDERING-PROCEDURE:**

Call for details

**PROPRIETY-STATUS:**

All Products CISCO Proprietary

**INFORMATION-UPDATED:**

June 1986

### 3.7.4. CISCO FEPCTCA

**PRODUCT-OR-PACKAGE-NAME:** FEPCTCA

**DESCRIPTION:**

Communications Interface Solutions Company (CISCO) builds and supports products that extend the Defense Data Network (DDN). The CISCO TAC3270, FEP3270 and HFS interconnect IBM 3270 or compatible SNA/SDLC or BSC terminal controllers and devices to IBM or PCM MVS-VTAM computer systems on the DDN providing native mode terminal operation (3270 Data Stream) with the host and the full set of DDN protocols. CISCO also provides products that connect IEEE 802.3 Local Area Networks with IBM MVS systems and the DDN. These products are TCP/IP based and are interrelated.

FEPCTCA - This Request for Price Quote (RPQ) product provides up to 16 Channel To Channel Adapter (CTCA) connections between IBM or PCM MVS hosts connected across the DDN via FEPCTCAs. The appearance to MVS is the same as a CTCA with each distant host utilizing one subchannel address on the Block Multiplexer Channel connection to the FEPCTCA. This product allows the operation of MSNF over the DDN.

This product is not expected to be released before June 1987.

**DISTRIBUTOR:**

CISCO  
9067 Shady Grove Ct.  
Gaithersburg, MD 20877  
(301) 921-8800

**CONTACT:**

Jon D. Weston, (301) 921-8800

**ORDERING-PROCEDURE:**

Call for details

**PROPRIETY-STATUS:**

All Products CISCO Proprietary

**INFORMATION-UPDATED:**

June 1986

## **3.8. cisco Systems**

### **3.8.1. cisco Systems ASM Communication Servers**

**PRODUCT-OR-PACKAGE-NAME:** ASM Communications Servers

**DESCRIPTION:**

The ASM family of communications servers are TCP/IP based devices for the attachment of ordinary RS232 devices to a TCP network. The most common application is the attachment of terminals, PCs and modems to an Ethernet. The device can support up to 80 lines and 2 parallel printers. Full domain naming is supported as well as IEN-116. The ASM can be configured as a TAC replacement with an 1822DH interface.

**DOCUMENTATION:**

User/Administrator/Configuration Guide

**CPU:**

ASM (68K based)

**O/S:**

ASM operating software

**IMPLEMENTATION-LANGUAGE:**

C

**DISTRIBUTOR:**

cisco Systems  
Box 475  
Menlo Park, CA 94026-0475  
(415) 326-1941

**CONTACT:**

S. Lerner, (415) 326-1941

**ORDERING-PROCEDURE:**

State number of lines and interfaces required; wide configuration flexibility.

**PROPRIETY-STATUS:**

cisco Systems

**INFORMATION-UPDATED:**

June 1986

### 3.8.2. cisco Systems Gateways

**PRODUCT-OR-PACKAGE-NAME:** AGS Family Gateways

**DESCRIPTION:**

The AGS family of gateways are IP/TCP gateways linking multiple IP networks. The gateways can operate as interior or exterior gateways for multiple networks of differing subnetting. Protocols: IP/ICMP, TCP/Telnet (used for remote maintenance), UDP/TFTP, UDP/Time, ARP (including proxy ARP), RARP, UDP/BOOTP, 1822 IMP-Host, EGP, IGRP (dynamic multipath routing on an general graph, currently proprietary). Not all configurations come with all protocols. Media: 10MB Ethernet, 1822-DH, HDLC serial.

**DOCUMENTATION:**

Administrator/Configuration guide

**CPU:**

AGS (68K)

**O/S:**

AGS operating software

**IMPLEMENTATION-LANGUAGE:**

C

**DISTRIBUTOR:**

cisco Systems  
Box 475  
Menlo Park, CA 94026-0475  
(415) 326-1941

**CONTACT:**

S. Lerner, (415) 326-1941

**ORDERING-PROCEDURE:**

State number and types of interfaces required and the service (interior, exterior, combined) needed; up to 4 ethernets, 4 HDLC lines, 2 1822-DH.

**PROPRIETY-STATUS:**

cisco Systems

**INFORMATION-UPDATED:**

June 1986

### **3.9. Communication Machinery Corporation**

#### **3.9.1. CMC-3200**

**PRODUCT-OR-PACKAGE-NAME:** DRN-3200 CMC TCP/IP Ethernet - DDN Gateway

**DESCRIPTION:**

A TCP/IP implementation on CMC's DRN 3200 DDN/Ethernet Gateway, which is a stand-alone device transferring messages between the two networks. Includes: IP, ICMP, and EGP

**DOCUMENTATION:**

DRN 3200 System Operations Manual

**CPU:**

Standalone

**O/S:**

Proprietary

**IMPLEMENTATION-LANGUAGE:**

C

**DISTRIBUTOR:**

Communication Machinery Corporation  
1421 State St.  
Santa Barbara, CA 93101

**CONTACT:**

Russ Sharer, (805) 963-9471

**ORDERING-PROCEDURE:**

Contact CMC Marketing

**PROPRIETY-STATUS:**

CMC Proprietary

**INFORMATION-UPDATED:**

November 1985

### 3.9.2. CMC Gateway

**PRODUCT-OR-PACKAGE-NAME:** CMC TCP/IP Ethernet/DDN Gateway Software

**DESCRIPTION:**

An implementation of TCP/IP for UNIX System V and 4.2 BSD systems with CMC's DDN - Ethernet Node Processor for MULTIBUS. The EGP, TCP, IP, ICMP and UDP protocols run on the Node Processor, allowing users access to either the DDN or an Ethernet. The Node Processor can additionally act as a gateway between the two networks. Applications, which run in the host UNIX system, include TELNET, FTP, TFTP and SMTP.

**DOCUMENTATION:**

System calls as documented in 4.2 BSD documentation.

Also from CMC:

Internet User's Guide

Internet Programmer's Guide

Internet Systems Manager Guide

**CPU:**

VMEbus

ENP-50 for Qbus

ENP-60 for IBM-PC/AT

ENP-40 for UNIBUS

ENP-30 for MULTIBUS

**O/S:**

UNIX System V, UNIX 4.2 BSD

**IMPLEMENTATION-LANGUAGE:**

C

**DISTRIBUTOR:**

Communication Machinery Corporation  
1421 State St.  
Santa Barbara, CA 93101

**CONTACT:**

Russ Sharer, (805) 963-9471

**ORDERING-PROCEDURE:**

Contact CMC Marketing

**PROPRIETY-STATUS:**

CMC Proprietary

**INFORMATION-UPDATED:**

November 1985

### 3.9.3. CMC-QM10

**PRODUCT-OR-PACKAGE-NAME:** QM10 Advanced Communication Processor

**DESCRIPTION:**

The QM10 is an LSI device supporting virtual circuit and packet level functions, using TCP, IP, and ICMP. It is a 40 pin DIP device with a piggyback ROM for protocols. It supports a single virtual circuit, using shared RAM memory for software interfacing.

**DOCUMENTATION:**

QM10 Application note

QM10 Programming guide

**CPU:**

6502 microprocessor

**O/S:**

Any

**IMPLEMENTATION-LANGUAGE:**

C

**DISTRIBUTOR:**

Communication Machinery Corporation  
1421 State St.  
Santa Barbara, CA 93101

**CONTACT:**

Russ Sharer, (805) 963-9471

**ORDERING-PROCEDURE:**

Contact CMC Marketing

**PROPRIETY-STATUS:**

CMC Proprietary

**INFORMATION-UPDATED:**

November 1985

## **3.10. Encore**

### **3.10.1. Annex-UX**

**PRODUCT-OR-PACKAGE-NAME:** Annex-UX

**DESCRIPTION:**

The Annex-UX is a terminal server for Ethernet that uses TCP/IP. It has 16 asynchronous serial ports and one parallel printer port. Each serial port can support an auto-answer modem. Both rlogin and telnet protocols are supported, and each port can have up to three virtual terminal connections. The IP implementation interprets both ICMP redirects and 4.2 route daemon messages.

The Annex-UX has been successfully tested with 4.2 and 4.3bsd Unix. Planned enhancements during 1986 include IP subnet support, security features, and a editing front end capable of offloading standard Unix machines by handling simple editing operations within the Annex-UX.

**DOCUMENTATION:**

A two manual set is shipped with each Annex-UX. It consists of a Hardware Installation Guide and a Users Guide. A Network Administrators Guide is available for a nominal charge.

**CPU:**

National Semiconductor 32016

**O/S:**

Proprietary

**IMPLEMENTATION-LANGUAGE:**

C

**DISTRIBUTOR:**

Call for local distributor

**CONTACT:**

**Rich D'Angelo  
Encore Computer Corporation  
257 Cedar Hill Street  
Marlboro, MA 01752  
(617) 460-0500**

**ORDERING-PROCEDURE:**

Contact factory

**PROPRIETY-STATUS:**

Proprietary

**INFORMATION-UPDATED:**

February 1986

## **3.11. Excelan**

### **3.11.1. Excelan EXOS-200**

**PRODUCT-OR-PACKAGE-NAME:** EXOS 200 Series Intelligent Ethernet Controller

**DESCRIPTION:**

The EXOS 200 Series includes boards for Multibus, VME, Q-bus, UNIBUS, IBM-PC/XT/AT (and compatibles). The design is modular, and can be readily adapted to other host bus designs. Each is a single-board front-end processor which includes an 80186 CPU, at least 256 Kbytes RAM, and an Ethernet Data Link controller. In addition, a DMA-backed SBX bus connector allows additional communications links to be supported via off-the-shelf daughter boards. An EPROM-based operating system kernel manages EXOS resources, and provides a standard high-level programming environment for protocol code. All boards can run the same object code, and are 100% software compatible with other Excelan products. TCP/IP protocol code, available separately from Excelan, can be downloaded to EXOS RAM at start-up time either by the host system, or over the Ethernet.

**DOCUMENTATION:**

Available from Excelan

**CPU:**

Any

**O/S:**

Any

**DISTRIBUTOR:**

Excelan  
2180 Fortune Drive  
San Jose, CA 95131

**CONTACT:**

**Sales:** Donna Keeling, (408) 434-2300

**Technical:** Andrea Salzman, (408) 434-2300

**ORDERING-PROCEDURE:**

Contact Excelan

**PROPRIETY-STATUS:**

Excelan Product

**INFORMATION-UPDATED:**

January 1986

## **3.12. Fibronics**

### **3.12.1. K200**

**PRODUCT-OR-PACKAGE-NAME:** K200

**DESCRIPTION:**

The K200 Ethernet controller provides a high-speed interface between an IBM 370, 30xx or PCM and the Ethernet local-area network. The K200 is a microprocessor driven control unit that attaches to IBM's block multiplexer channel using standard IBM bus and tag cables. K200 implements the physical and data link layers of the ISO/OSI Reference Model for network architecture and conforms to the specifications for Ethernet, version 1.0. Maximum throughput is in excess of 2.5 megabits per second.

**DOCUMENTATION:**

Available from vendor

**CPU:**

IBM 370, IBM 30xx, PCM

**DISTRIBUTOR:**

Fibronics International, Inc.  
325 Stevens Street  
Hyannis, MA 02601

**CONTACT:**

Hal Spurney, Marketing and Sales Manager, (617) 778-0700 or 800-LAN-KNET

**PROPRIETY-STATUS:**

Fibronics product

**INFORMATION-UPDATED:**

July 1986

### **3.13. Ford Aerospace & Communications Corporation**

#### **3.13.1. Ford Multinet Gateway**

**PRODUCT-OR-PACKAGE-NAME:** Ford Multinet Gateway

**DESCRIPTION:**

The Ford Multinet Gateway development has been sponsored by the USAF Rome Air Development Center as a high performance multilevel secure communications gateway and is currently under evaluation by the Computer Security Center for AI security status. The Multinet Gateway was designed to interconnect dissimilar networks and protocols using the DoD reference model for layered network architecture. The implementation supports IP, EGP, GGP, ICMP, X.25, 1822, HDH (message mode and packet mode) and HDLC. A LAN interface using IEEE 802/Ethernet will be available in the 4th quarter of 1986. The Multinet Gateway is available with end-to-end encryption. The DDN X.25 interface is certified at 56K BPS by Defense Communications Agency. The Man-Machine interface includes a terminal and a printer for control and statistics.

**DOCUMENTATION:**

Manuals and On-line documentation

**CPU:**

Ford Secure Network Access Processor (Z8000 based)

**O/S:**

Ford Secure Communications Support System

**IMPLEMENTATION-LANGUAGE:**

C

**DISTRIBUTOR:**

Ford Aerospace & Communications Corporation  
10440 State Highway 83  
Colorado Springs  
CO 80908

**CONTACT:**

Paul Cook, (apcook@cos1.arpa), (303) 594-1140

Bob Tishman, (rtt@cos2.arpa), (303) 594-1492

**ORDERING-PROCEDURE:**

Contact distribution center

**DDN-QUALIFIED:**

Yes

**INFORMATION-UPDATED:**

July 1986

## 3.14. Imagen

### 3.14.1. ImageServer 2308

**PRODUCT-OR-PACKAGE-NAME:** ImageServer XP Model 2308 TCP/IP Ethernet

**DESCRIPTION:**

All products in the ImageServer XP Series achieve true page throughput rates with its proprietary Real-Time Rasterization process which lets you print at full speed because processing and printing are handled simultaneously. All models in this series are compatible with a broad choice of interfaces including Ethernet, RS-423, IBM 3270 and 2780/3780, Centronics, Dataproducts and Versatec. IMAGEN offers a large selection of optional fonts on all products including Lucida, Lucida Sans, Helvetica, Times Roman, and Century Schoolbook.

The ImageServer XP Model 2308 8PPM 300 DPI laser printer includes a Canon LBP-CX print engine, an IMAGEN IP/II Image Processor, a single floppy disk drive and one 8 1/2 x 11" input cassette tray. The 2308 is available in 1, 2, and 3 Mbyte configurations with memory options to include up to 3 additional megabytes of RAM. An optional 20 Mbyte Winchester can be included to allow faster access of fonts and storage of forms or special document formats. The ImageServer XP Model 2308 desktop laser printer is IMAGEN's versatile entry level document processing system designed to meet the publishing needs of small work groups requiring high-quality printing of text and graphics.

**DOCUMENTATION:**

Available from vendor

**CPU:**

Motorola 68000, Multibus-based, proprietary hardware

**O/S:**

Proprietary, not user-programmable

**IMPLEMENTATION-LANGUAGE:**

C

**DISTRIBUTOR:**

IMAGEN Corporation  
2650 San Thomas Expressway  
Santa Clara, CA 95051  
(408) 986-9400

**CONTACT:**

**Sales:** Roger McLean

**Technical:** John Lang

**ORDERING-PROCEDURE:**

Contact vendor for more information

**PROPRIETY-STATUS:**

IMAGEN proprietary

**INFORMATION-UPDATED:**

July 1986

### 3.14.2. ImageServer 3320

**PRODUCT-OR-PACKAGE-NAME:** ImageServer XP Model 3320 TCP/IP Ethernet

**DESCRIPTION:**

All products in the ImageServer XP Series achieve true page throughput rates with its proprietary Real-Time Rasterization process which lets you print at full speed because processing and printing are handled simultaneously. All models in this series are compatible with a broad choice of interfaces including Ethernet, RS-423, IBM 3270 and 2780/3780, Centronics, Dataproducts and Versatec. IMAGEN offers a large selection of optional fonts on all products including Lucida, Lucida Sans, Helvetica, Times Roman, and Century Schoolbook.

The ImageServer XP Model 3320 20PPM 300 DPI laser printer includes a Canon LBP-20 print engine, an IMAGEN IP/II Image Processor, a single floppy disk drive and two 8 1/2 x 11" input cassette trays. The 3320 is available in 2 or 3 Mbyte configurations with memory options to include up to 3 additional megabytes of RAM. An optional 20 Mbyte Winchester can be included to allow faster access of fonts and storage of forms or special document formats. The 3320 is driven by a page description language and can handle 11 x 17" paper format. This unit is perfect for use as a proofing device in CAE/CAD applications and for large volume document processing applications where high duty cycle, offset quality printing, and low cost of operation are important.

**DOCUMENTATION:**

Available from vendor

**CPU:**

Motorola 68000, Multibus-based, proprietary hardware

**O/S:**

Proprietary, not user-programmable

**IMPLEMENTATION-LANGUAGE:**

C

**DISTRIBUTOR:**

IMAGEN Corporation  
2650 San Thomas Expressway  
Santa Clara, CA 95051  
(408) 986-9400

**CONTACT:**

**Sales:** Roger McLean

**Technical:** John Lang

**ORDERING-PROCEDURE:**

Contact vendor for more information

**PROPRIETY-STATUS:**

IMAGEN proprietary

**INFORMATION-UPDATED:**

July 1986

### 3.14.3. ImageServer 4324

**PRODUCT-OR-PACKAGE-NAME:** ImageServer XP Model 4324 TCP/IP Ethernet

**DESCRIPTION:**

All products in the ImageServer XP Series achieve true page throughput rates with its proprietary Real-Time Rasterization process which lets you print at full speed because processing and printing are handled simultaneously. All models in this series are compatible with a broad choice of interfaces including Ethernet, RS-423, IBM 3270 and 2780/3780, Centronics, Dataproducts and Versatec. IMAGEN offers a large selection of optional fonts on all products including Lucida, Lucida Sans, Helvetica, Times Roman, and Century Schoolbook.

The ImageServer XP Model 4324 24PPM 300 DPI laser printer includes a Xerox SP-24 print engine, an IMAGEN IP/II Image Processor, a single floppy disk drive and two 8 1/2 x 11" input cassette trays. The 4324 is available in 2 or 3 Mbyte configurations with memory options to include up to 3 additional megabytes of RAM. An optional 20 Mbyte Winchester can be included to allow faster access of fonts and storage of forms or special document formats. With superior paper management capabilities including 11 x 17" paper handling and offset stacking the 4324 is designed to meet the needs of work group document processing and CAE/CAD applications.

**DOCUMENTATION:**

Available from vendor

**CPU:**

Motorola 68000, Multibus-based, proprietary hardware

**O/S:**

Proprietary, not user-programmable

**IMPLEMENTATION-LANGUAGE:**

C

**DISTRIBUTOR:**

IMAGEN Corporation  
2650 San Thomas Expressway  
Santa Clara, CA 95051  
(408) 986-9400

**CONTACT:**

**Sales:** Roger McLean

**Technical:** John Lang

**ORDERING-PROCEDURE:**

Contact vendor for more information

**PROPRIETY-STATUS:**

IMAGEN proprietary

**INFORMATION-UPDATED:**

July 1986

### 3.14.4. ImageServer 7320

**PRODUCT-OR-PACKAGE-NAME:** ImageServer XP Model 7320 TCP/IP Ethernet

**DESCRIPTION:**

All products in the ImageServer XP Series achieve true page throughput rates with its proprietary Real-Time Rasterization process which lets you print at full speed because processing and printing are handled simultaneously. All models in this series are compatible with a broad choice of interfaces including Ethernet, RS-423, IBM 3270 and 2780/3780, Centronics, Dataproducts and Versatec. IMAGEN offers a large selection of optional fonts on all products including Lucida, Lucida Sans, Helvetica, Times Roman, and Century Schoolbook.

The ImageServer XP Model 7320 20 PPM 300 DPI laser printer includes a Canon LBP-20 print engine with a duplexer unit, a large capacity input tray and dual offset stackers, an IMAGEN IP/II Image Processor, a single floppy disk drive, a serial interface, two 8 1/2 x 11" input cassettes, and a Raster Image Buffer that allows Real-Time Rasterization of the most complex graphics. The 7320 is available with 3 Mbytes of RAM with options to include up to 3 additional megabytes. An optional 20 Mbyte Winchester can be included to allow faster access of fonts and storage of forms or special document formats. The 7320 is the ideal production machine for large-volume document processing or for large-format CAE/CAD applications.

**DOCUMENTATION:**

Available from vendor

**CPU:**

Motorola 68000, Multibus-based, proprietary hardware

**O/S:**

Proprietary, not user-programmable

**IMPLEMENTATION-LANGUAGE:**

C

**DISTRIBUTOR:**

IMAGEN Corporation  
2650 San Thomas Expressway  
Santa Clara, CA 95051  
(408) 986-9400

**CONTACT:**

**Sales:** Roger McLean

**Technical:** John Lang

**ORDERING-PROCEDURE:**

Contact vendor for more information

**PROPRIETY-STATUS:**

IMAGEN proprietary

**INFORMATION-UPDATED:**

July 1986

## **3.15. MICOM-Interlan**

### **3.15.1. MICOM-Interlan TCP/IP**

**PRODUCT-OR-PACKAGE-NAME:** MICOM-Interlan TCP/IP

**DESCRIPTION:**

This is a DoD TCP/IP implementation compatible the with 4.2 BSD TCP/IP implementation. Currently, a DEC VMS and MICRO VMS implementation is available. Other versions will be announced soon. This TCP/IP runs on the intelligent NP-series protocol/processors.

**DOCUMENTATION:**

Library calls, installation, guide to diagnostics, device drivers documentation and utilities are included.

**CPU:**

DEC VAX family and MicroVax II; others will be announced in the near future

**O/S:**

VMS and MicroVMS

**IMPLEMENTATION-LANGUAGE:**

C-callable library; TCP/IP image in on-board

**DISTRIBUTOR:**

MICOM-Interlan  
155 Swanson Road  
Boxboro, MA 01719

**CONTACT:**

**B. R. Finer, Product Manager, (617) 263-9929  
or LAN Marketing/Sales at 1-800-LAN-TALK**

**ORDERING-PROCEDURE:**

Contact LAN Marketing/Sales for nearest office on 1-800-LAN-TALK

**PROPRIETY-STATUS:**

MICOM-Interlan

**INFORMATION-UPDATED:**

January 1986

### 3.15.2. MICOM-Interlan NP-series Protocol Processors

**PRODUCT-OR-PACKAGE-NAME:** MICOM-Interlan NP-series Protocol Processors

**DESCRIPTION:**

Intelligent Ethernet interface boards that support both on-board (layers 1-4) and link-level protocol implementations.

**DOCUMENTATION:**

Diagnostics, installation, and user's manuals are included.

**CPU:**

DEC UNIBUS-based systems (NP100), DEC Q-bus based systems (NP200), MULTIBUS-based systems (NP300) and IBM-PC/AT based systems (NP600).

**O/S:**

Based on buses as described above, including VMS, MicroVMS, and MS DOS.

**DISTRIBUTOR:**

MICOM-Interlan  
155 Swanson Road  
Boxboro, MA 01719

**CONTACT:**

**B. R. Finer, Product Manager, (617) 263-9929  
or LAN Marketing/Sales at 1-800-LAN-TALK**

**ORDERING-PROCEDURE:**

Contact LAN Marketing/Sales for nearest sales office at 1-800-LAN-TALK

**PROPRIETY-STATUS:**

MICOM-Interlan

**INFORMATION-UPDATED:**

January 1986

### **3.15.3. MICOM-Interlan-NI1010A**

**PRODUCT-OR-PACKAGE-NAME:** MICOM-Interlan NI1010A

**DESCRIPTION:**

Link level Ethernet Controller board for Digital Equipment UNIBUS-based systems.

**DOCUMENTATION:**

User manual, installation instructions and diagnostics are included.

**CPU:**

UNIBUS-based systems such as VAX-11 and PDP-11

**O/S:**

TCP/IP software is available from various vendors (Including Wollongong and with UNIX 4.2 BSD).

**DISTRIBUTOR:**

MICOM-Interlan  
155 Swanson Road  
Boxboro, MA 01719

**CONTACT:**

**B. R. Finer, Product Manager, (617) 263-9929  
or LAN Marketing/Sales at 1-800-LAN-TALK**

**ORDERING-PROCEDURE:**

Contact LAN Marketing/Sales for nearest sales office on 1-800-LAN-TALK

**PROPRIETY-STATUS:**

MICOM-Interlan

**INFORMATION-UPDATED:**

January 1986

### 3.15.4. MICOM-Interlan NI5010A

**PRODUCT-OR-PACKAGE-NAME:** MICOM-Interlan NI5010A

**DESCRIPTION:**

Link level Ethernet Controller board for IBM-PC buses or equivalent.

**DOCUMENTATION:**

User's manual, installation instructions and diagnostics are included.

**CPU:**

IBM-PC/XT/AT or compatibles

**O/S:**

TCP/IP software is available from various vendors (MIT PC/IP) for this product

**DISTRIBUTOR:**

MICOM-Interlan  
155 Swanson Road  
Boxboro, MA 01719

**CONTACT:**

**B. R. Finer, Product Manager, (617) 263-9929  
or LAN Marketing/Sales at 1-800-LAN-TALK**

**ORDERING-PROCEDURE:**

Contact LAN Marketing/Sales for nearest sales office on 1-800-LAN-TALK

**PROPRIETY-STATUS:**

MICOM-Interlan

**INFORMATION-UPDATED:**

January 1986

## 3.16. MITRE

### 3.16.1. MITRE NAC

**PRODUCT-OR-PACKAGE-NAME:** Mitre Network Access Component

**DESCRIPTION:**

This is Mitre's second generation network controller (see ZILOG-Z8000). Using an expanded hardware base, industry standard backplanes and multiple microprocessor boards, Mitre has built a MCS-68000-based network access component. This network component has both MULTIBUS and VERSABUS form factors and broadband, Ethernet and 1822 network interfaces.

The standard MULTIBUS network component contains an OMNIBYTE-dual-ported 68000, with 128K bytes dynamic RAM, and 96K bytes EPROM, a memory board, and a Bridge serial i/o (SIO) interface board. The SIO board has its own 68000 cpu, 8 serial ports, 4K bytes RAM and 32K bytes ROM. The long-haul network version contains an ACC MULTIBUS-1822 interface. The VERSABUS version supports an ACC VERSABUS-1822 interface. In addition, the VERSABUS version supports an ACC VERSABUS-UNIBUS interface for host-interfacing to DEC machines.

The software is written in 'C' and runs under CMOS, a 'C' version of SRI's Micro Operating System. In addition to supporting TCP, IP, ICMP, and the appropriate network level protocol, the network front-end version (aka a host interface unit for the LAN environment) supports both the DTI-Host-to-Front-End Protocol and a Mitre Network Access Protocol.

**DOCUMENTATION:**

Some Mitre Technical Reports

**CPU:**

MCS-68000

**O/S:**

CMOS

**IMPLEMENTATION-LANGUAGE:**

C

**DISTRIBUTOR:**

The Mitre Corporation  
McLean, VA 22102

**CONTACT:**

Manette Charny, (charny@mitre-gw), (703) 883-6728

**PROPRIETY-STATUS:**

Public domain

**INFORMATION-UPDATED:**

January 1986

### 3.16.2. Mitre Z8000

**PRODUCT-OR-PACKAGE-NAME:** MITRE Zilog Z8000

**DESCRIPTION:**

This network controller is the product of a series of Mitre projects aimed at making network access (both local and long-haul) as straightforward as computer peripheral access. Some of the new microprocessors make it possible to construct a "network controller" that handles the particulars of packet ordering and flow control in the same way that hardware controllers handle the particulars of disk cylinder centerline or an end of tap sensor. This TCP/IP network controller, supported by a Z8000 microprocessor box, is currently interfaced to a number of UNIX systems via a UMC-Z80. The outboard box is accessed by a set of I/O-like management calls (open, close, read, write, and special) which transport TCP requests via a network access protocol.

The outboard box has 64K bytes of Ram, 32 bytes of Rom, a Z8002 micro, and a serial USART (880K BPS max.) All of the software was written in C using an in-house version of the portable C compiler. The unit interfaces as easily to a local network as it does to the DDN. All that is necessary for this conversion is the addition of an ACC-1822 hardware device and a new device driver. Other than different round trip delays, host user-level software sees no difference between the two network devices. The resulting set of Z8000-based building blocks supports host interface unit and a terminal concentrator on the local net.

Performance with TCP/IP has been measured with two user processes talking via TCP/IP over the cable at 350K BPS. Rates as high as 450K BPS occur when user I/O buffer sizes are set at 8K bytes per I/O. The Internet Protocol contains the lowest level of addressing. This allows for local units to be addressed in the same way remote units, two or three networks away, are addressed. The effect of 300 bit TCP/IP headers has negligible impact on performance.

**DOCUMENTATION:**

Some Mitre Technical Reports

**O/S:**

CMOS

**IMPLEMENTATION-LANGUAGE:**

C

**DISTRIBUTOR:**

The Mitre Corporation  
McLean, VA 22102

**CONTACT:**

John Mullen, (jrm@MITRE.ARPA), (703) 827-7476

**PROPRIETY-STATUS:**

Public domain

## 3.17. ProtocomDevices

### 3.17.1. Protocom Burroughs PAD

**PRODUCT-OR-PACKAGE-NAME:** P-Series PAD - Burroughs Poll/Select

**DESCRIPTION:**

The Protocom P-Series PAD allows you to run a full range of Burroughs Poll/Select equipment over public and private packet switched networks that support CCITT X.25 1980/1984. The P-Series PAD is standard certified for up to 56 Kbps on all products for DDN. The Protocom P-Series PAD involves the TCP/IP protocol. Each P-Series PAD on the network can be monitored and configured remotely. Local area networking is supported via a line interface module for all P-Series PADs. The P-Series PAD comes in 3 versions:

- P250: 15 terminals/printing on 1 Burroughs Poll/Select port (RS-232C)
- P2500: 40 terminals/printing on 4 Burroughs Poll/Select ports (RS-232C)
- P160: 240 simultaneous sessions, a 56 Kbps network port allowing load sharing and call hunting and can functionally realize 7 different multiple protocols

Independently mapped terminal and host addresses permit communication between any terminals and/or printers and any Uniscope host application on the network. Three possible connection methods, two simultaneous user sessions on a single terminal, and host originated calls to shared printers are all supported. TurboMode (Protocom's proprietary data streaming) provides unequal response time. Configurable user screens, mnemonic addressing and user defined function keys are all available.

**DOCUMENTATION:**

A full set of documentation is available

**CPU:**

All Burroughs Poll/Select compatible equipment

**O/S:**

Burroughs Poll/Select

**IMPLEMENTATION-LANGUAGE:**

Assembler

**DISTRIBUTOR:**

ProtocomDevices  
Federal Systems Group  
439 N. Lee St. Square  
Old Town Alexandria, VA 22314

**CONTACT:**

Judy England or Mary Jean Ferrick, (703) 684-0766

**ORDERING-PROCEDURE:**

Submit purchase order to above address; call contacts for pricing.

**PROPRIETY-STATUS:**

Product of ProcomDevices

**DDN-QUALIFIED:**

Yes

**INFORMATION-UPDATED:**

August 1986

### 3.17.2. Protocom Honeywell PAD

**PRODUCT-OR-PACKAGE-NAME:** P-Series PAD - Honeywell VIP 7700

**DESCRIPTION:**

The Protocom P-Series PAD allows you to run Mapper, Demand, Sperrylink and the full range of Uniscope equipment over public and private packet switched networks that support CCITT X.25 1980/1984. The P-Series PAD is standard certified for up to 56 Kbps on all products for DDN. The Protocom P-Series PAD involves the TCP/IP protocol. Each P-Series PAD on the network can be monitored and configured remotely. Local area networking is supported via a line interface module for all P-Series PADs. The P-Series PAD comes in 3 versions:

- P250: 15 terminals/printing on 1 port (RS-232C)
- P2500: 40 terminals/printing on 4 ports (RS-232C)
- P160: 240 simultaneous sessions, a 56 Kbps network port allowing load sharing and call hunting and can functionally realize 7 different multiple protocols

Independently mapped terminal and host addresses permit communication between any terminals and/or printers and any Uniscope host application on the network. Three possible connection methods, two simultaneous user sessions on a single terminal, and host originated calls to shared printers are all supported. TurboMode (Protocom's proprietary data streaming) provides unequal response time. Configurable user screens, mnemonic addressing and user defined function keys are all available.

**DOCUMENTATION:**

A full set of documentation is available

**CPU:**

All Honeywell 77xx compatible equipment

**O/S:**

VIP 77xx

**IMPLEMENTATION-LANGUAGE:**

Assembler

**DISTRIBUTOR:**

ProtcomDevices  
Federal Systems Group  
439 N. Lee St. Square  
Old Town Alexandria, VA 22314

**CONTACT:**

Judy England or Mary Jean Ferrick, (703) 684-0766

**ORDERING-PROCEDURE:**

Submit purchase order to above address; call contacts for pricing.

**PROPRIETY-STATUS:**

Product of ProtocomDevices

**DDN-QUALIFIED:**

Yes

**INFORMATION-UPDATED:**

August 1986

### 3.17.3. Protocom IBM PAD

**PRODUCT-OR-PACKAGE-NAME:** P-Series PAD - IBM 3270BSC/SNA-SDLC/2780-3780

**DESCRIPTION:**

The Protocom P-Series PAD allows you to run a full range of IBM equipment over public and private packet switched networks that support CCITT X.25 1980/1984. The P-Series PAD is standard certified for up to 56 Kbps on all products for DDN. The Protocom P-Series PAD involves the TCP/IP protocol. Each P-Series PAD on the network can be monitored and configured remotely. Local area networking is supported via a line interface module for all P-Series PADs. The P-Series PAD comes in 3 versions:

- P250: 15 terminals/printing on 1 synchronous port (RS-232C)
- P2500: 40 terminals/printing on 4 synchronous ports (RS-232C)
- P160: 240 simultaneous sessions, a 56 Kbps network port allowing load sharing and call hunting and can functionally realize 7 different multiple protocols

Independently mapped terminal and host addresses permit communication between any terminals and/or printers and any Uniscope host application on the network. Three possible connection methods, two simultaneous user sessions on a single terminal, and host originated calls to shared printers are all supported. TurboMode (Protocom's proprietary data streaming) provides unequal response time. Configurable user screens, mnemonic addressing and user defined function keys are all available.

**DOCUMENTATION:**

A full set of documentation is available

**CPU:**

All 3270 SNA/SDLC and 2780/3780 functionally compatible equipment

**O/S:**

VM, MVS, OS370, IMS

**IMPLEMENTATION-LANGUAGE:**

Assembler

**DISTRIBUTOR:**

ProtcomDevices  
Federal Systems Group  
439 N. Lee St. Square  
Old Town Alexandria, VA 22314

**CONTACT:**

Judy England or Mary Jean Ferrick, (703) 684-0766

**ORDERING-PROCEDURE:**

Submit purchase order to above address; call contacts for pricing.

**PROPRIETY-STATUS:**

Product of ProcomDevices

**DDN-QUALIFIED:**

Yes

**INFORMATION-UPDATED:**

August 1986

### 3.17.4. Protocom Sperry PAD

**PRODUCT-OR-PACKAGE-NAME:** P-Series PAD - Sperry Uniscope

**DESCRIPTION:**

The Protocom P-Series PAD allows you to run Mapper, Demand, Sperrylink and the full range of Uniscope equipment over public and private packet switched networks that support CCITT X.25 1980/1984. The P-Series PAD is standard certified for up to 56 Kbps on all products for DDN. The Protocom P-Series PAD involves the TCP/IP protocol. Each P-Series PAD on the network can be monitored and configured remotely. Local area networking is supported via a line interface module for all P-Series PADs. The P-Series PAD comes in 3 versions:

- P250: 15 terminals/printing on 1 Uniscope port (RS-232C)
- P2500: 40 terminals/printing on 4 Uniscope ports (RS-232C)
- P160: 240 simultaneous sessions, a 56 Kbps network port allowing load sharing and call hunting and can functionally realize 7 different multiple protocols

Independently mapped terminal and host addresses permit communication between any terminals and/or printers and any Uniscope host application on the network. Three possible connection methods, two simultaneous user sessions on a single terminal, and host originated calls to shared printers are all supported. TurboMode (Protocom's proprietary data streaming) provides unequal response time. Configurable user screens, mnemonic addressing and user defined function keys are all available.

**DOCUMENTATION:**

A full set of documentation is available

**CPU:**

All Sperry Uniscope functionally compatible equipment

**O/S:**

OS1100

**IMPLEMENTATION-LANGUAGE:**

Assembler

**DISTRIBUTOR:**

ProtcomDevices  
Federal Systems Group  
439 N. Lee St. Square  
Old Town Alexandria, VA 22314

**CONTACT:**

Judy England or Mary Jean Ferrick, (703) 684-0766

**ORDERING-PROCEDURE:**

Submit purchase order to above address; call contacts for pricing.

**PROPRIETY-STATUS:**

Product of ProcomDevices

**DDN-QUALIFIED:**

Yes

**INFORMATION-UPDATED:**

August 1986

## **3.18. SCOPE**

### **3.18.1. Scope DDN MicroGateway**

**PRODUCT-OR-PACKAGE NAME:** DDN MicroGateway

**DESCRIPTION:**

The DDN MICROGATEWAY is a single board product which implements the MIL Standard TCP/IP as well as ICMP and lower layer link and network protocols - either FIPS 100/X.25 or 1822/HDH.

Using a Motorola 68008 microprocessor, the DDN MICROGATEWAY provides full-service host support at 56K bits per second, and it will accommodate up to 64 TCP/IP sessions with its shared memory interface.

A companion DDN MICROGATEWAY software product support host TELNET, FTP, and SMTP applications, thus offering a total turn-key solution for certain UNIX operating system environments.

**DOCUMENTATION:**

A user's manual describes product design and provides information on how to integrate the DDN MICROGATEWAY into the user's host hardware and operating system environment.

**CPU:**

Single board implementations for MULTIBUS, IBM-PC Bus, VMEBus and Concurrent Computer MUX Bus

**O/S:**

Board product is not O/S specific. ULPs are based on UNIX 4.2 BSD or UNIX System V. Other O/S's are available

**IMPLEMENTATION-LANGUAGE:**

TCP/IP, X.25 are in C firmware, embedded in the hardware product; ULPs are in C

**DISTRIBUTOR:**

SCOPE Incorporated  
1860 Michael Faraday Drive  
Reston, VA 22090  
(703) 471-5600

**CONTACT:**

Carl Kelly

**ORDERING-PROCEDURE:**

See above contact

**PROPRIETY-STATUS:**

Commercially available

**DDN-QUALIFIED:**

Yes

**INFORMATION-UPDATED:**

July 1986

## 3.19. Software Kinetics, Inc.

### 3.19.1. X.Calibre Plus

**PRODUCT-OR-PACKAGE-NAME:** X.Calibre Plus

**DESCRIPTION:**

X.Calibre Plus package includes hardware and software to provide an interface between a host with TCP/IP and X.25 network. In addition, the X.Calibre Plus provides a software interface to ISO Level 1, 2, and 3 as specified in X.25. The software was implemented following the guidelines of RFC877 for the Transmission of IP Datagrams over Public Data Networks and is compliant with the DDN Standard X.25 Service.

The X.Calibre board contains a 68000 processor, up to 1 Mbyte of ram, two serial ports and a WD2511 X.25 Packet Network Interface to control a third serial port to the X.25 network or line.

Host level software support programs include a board loading utility, a network address table loading utility, a status monitoring utility, and device driver code to support Berkeley sockets and direct access to ISO (X.25) board functions. Current host operating systems supported include 4.2 BSD UNIX and DEC Ultrix. The device driver is delivered in source form while utilities are binaries.

Board level software support includes interface to Levels 1, 2 and 3 of X.25, queue management, virtual circuit management, diagnostics, statistics, Internet to X.25 address resolution and host level interface. Board level software is delivered as binary that is loaded from the host. Diagnostics and test software for board functions is in ROM.

The X.Calibre Plus Package available for DEC VAX QBUS and UNIBUS.

**DOCUMENTATION:**

Installation and Configuration Guide, Programming Guide

**CPU:**

68000 8Mhz CPU on board product

**O/S:**

4.2 BSD UNIX and DEC ULTRIX for host; custom O/S for board product

**IMPLEMENTATION-LANGUAGE:**

C Language for host

C Language and small amount of 68000 assembly for board

**DISTRIBUTOR:**

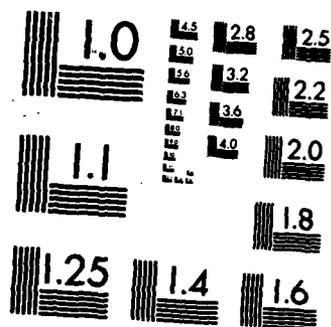
Software Kinetics Ltd  
65 Iber Road  
P.O Box 680  
Stittsville (Ottawa)  
Ontario, Canada  
K1A 3G0

AD-A173 060

DDN (DEFENSE DATA NETWORK) PROTOCOL IMPLEMENTATIONS AND 3/3  
VENDORS GUIDE(U) SRI INTERNATIONAL MENLO PARK CA DDN  
NETWORK INFORMATION CENTER O JACOBSEN ET AL. AUG 86  
NIC-50002 DCA200-84-C-0024 F/G 9/2 NL

UNCLASSIFIED





MICROCOPY RESOLUTION TEST CHART  
NATIONAL BUREAU OF STANDARDS-1963-A

**CONTACT:**

**Product Sales,  
Software Kinetics  
(613) 831-0888**

**ORDERING-PROCEDURE:**

Contact above

**PROPRIETY-STATUS:**

Software Kinetics Proprietary

**INFORMATION-UPDATED:**

July 1986

## **3.20. System Development Corporation**

### **3.20.1. SDC CP8001**

**PRODUCT-OR-PACKAGE-NAME:** SDC MIL/INT LAN Network Front End (CP8001)

**DESCRIPTION:**

The MIL/INT product line includes network front ends, terminal concentrators, and gateways implementing DoD protocols for both DDN and broadband LANs. The LAN NFE provides access to a broadband LAN for a host computer implementing the DoD Host to Front End Protocol (HFP). The NFE implements HFP, TCP, IP, ICMP, and the LAN access protocol. Connection to the host is via HFP with X.25 LAPB at speeds up to 600 Kbps. The host must implement HFP and any application protocols desired (Telnet, FTP, SMTP). The LAN interface is a proprietary CSMA/CD network access protocol on industry standard broadband cable (CATV) systems. The data rate on each channel of the LAN is 2 Mbps.

**DOCUMENTATION:**

Product Specification, Installation Manual, and User Manual

**CPU:**

Multiple Intel 8086 microprocessors

**O/S:**

Proprietary realtime OS86 based on secure kernel technology

**IMPLEMENTATION-LANGUAGE:**

C

**DISTRIBUTOR:**

System Development Corporation  
2525 Colorado Ave.  
Santa Monica, CA 90406

**CONTACT:**

Technical: Carl Sunshine, (213) 453-5161

Sales: Brad Anderson, (805) 987-9472

**INFORMATION-UPDATED:**

February 1986

### **3.20.2. SDC CP8040**

**PRODUCT-OR-PACKAGE-NAME:** SDC MIL/INT LAN Terminal Concentrator (CP8040)

**DESCRIPTION:**

The MIL/INT product line includes network front ends, terminal concentrators, and gateways implementing DoD protocols for both DDN and broadband LANs. The LAN TC provides access to a LAN for up to eight asynchronous terminals operating at speeds up to 19.2 Kbps. The TC may also be configured as a Terminal Emulation Processor (TEP) to attach asynchronous ports on a host to the network. The LAN operates using a proprietary CSMA/CD network access protocol on industry standard broadband cable (CATV) systems. The data rate on each channel of the LAN is 2 Mbps. The TC also implements Telnet, TCP, IP, and ICMP, to support terminal communication with other DoD compatible devices.

**DOCUMENTATION:**

Product Specification, Installation Manual, and User Manual

**CPU:**

Multiple Intel 8086 microprocessors

**O/S:**

Proprietary realtime OS86 based on secure kernel technology

**IMPLEMENTATION-LANGUAGE:**

C

**DISTRIBUTOR:**

System Development Corporation  
2525 Colorado Ave.  
Santa Monica, CA 90406

**CONTACT:**

**Technical:** Carl Sunshine, (213) 453-5161

**Sales:** Brad Anderson, (805) 987-9472

**INFORMATION-UPDATED:**

February 1986

### **3.20.3. SDC CP8050**

**PRODUCT-OR-PACKAGE-NAME:** SDC MIL/INT LAN Terminal Bus Interface Unit (CP8050)

**DESCRIPTION:**

The MIL/INT product line includes network front ends, terminal concentrators, and gateways implementing DoD protocols for both DDN and broadband LANs. The Terminal BIU provides a compact, low cost LAN interface for two asynchronous terminals via two RS-232 ports operating at speeds up to 19.2 Kbps. The BIU implements a proprietary CSMA/CD network access protocol on industry standard broadband cable (CATV) systems. The data rate on each channel of the LAN is 2 Mbps. The BIU also implements Telnet, TCP, IP, and ICMP, to support terminal communication with other DoD compatible devices.

**DOCUMENTATION:**

Product Specification, Installation Manual, and User Manual

**CPU:**

Intel 8086 microprocessor

**O/S:**

Proprietary realtime OS86 based on secure kernel technology

**IMPLEMENTATION-LANGUAGE:**

C

**DISTRIBUTOR:**

System Development Corporation  
2525 Colorado Ave.  
Santa Monica, CA 90406

**CONTACT:**

**Technical:** Carl Sunshine, (213) 453-5161

**Sales:** Brad Anderson, (805) 987-9472

**INFORMATION-UPDATED:**

February 1986

### **3.20.4. SDC DDN Gateway**

**PRODUCT-OR-PACKAGE-NAME:** SDC MIL/INT Long Haul Network Gateway (CP8060)

**DESCRIPTION:**

The MIL/INT product line includes network front ends, terminal concentrators, and gateways implementing DoD protocols for both DDN and broadband LANs. The Long Haul Network Gateway interconnects the long haul backbone network of DDN (or any network based on IMP type switches) with a broadband LAN. Dynamic routing is supported using both an internal Gateway-to-Gateway (GGP) protocol with other LAN gateways in the local system, and the DoD External Gateway Protocol (EGP) with the core DDN system. IP, ICMP, and network access protocols are also supported. The LAN employs a proprietary CSMA/CD network access protocol on industry standard broadband cable (CATV) systems. The data rate on each channel of the LAN is 2 Mbps. DDN access may be either local or remote (via modems) using either X.25 or HDH protocols at speeds up to 56 Kbps. The MIL/INT DDN TC has been certified by DCA for DDN access.

**DOCUMENTATION:**

Product Specification, Installation Manual, and User Manual

**CPU:**

Multiple Intel 8086 microprocessors

**O/S:**

Proprietary realtime OS86 based on secure kernel technology

**IMPLEMENTATION-LANGUAGE:**

C

**DISTRIBUTOR:**

System Development Corporation  
2525 Colorado Ave.  
Santa Monica, CA 90406

**CONTACT:**

Technical: Carl Sunshine, (213) 453-5161

Sales: Brad Anderson, (805) 987-9472

**DDN-QUALIFIED:**

Yes

**INFORMATION-UPDATED:**

February 1986

### **3.20.5. SDC LAN Gateway**

**PRODUCT-OR-PACKAGE-NAME:** SDC MIL/INT LAN Interchannel Gateway (CP8080)

**DESCRIPTION:**

The MIL/INT product line includes network front ends, terminal concentrators, and gateways implementing DoD protocols for both DDN and broadband LANs. The Interchannel Gateway interconnects LAN channels on the same or different cable plants. IP, ICMP, Gateway-to-Gateway (GGP), and LAN access protocols are supported. The LAN employs a proprietary CSMA/CD network access protocol on industry standard broadband cable (CATV) systems. The data rate on each channel of the LAN is 2 Mbps.

**DOCUMENTATION:**

Product Specification, Installation Manual, and User Manual

**CPU:**

Multiple Intel 8086 microprocessors

**O/S:**

Proprietary realtime OS86 based on secure kernel technology

**IMPLEMENTATION-LANGUAGE:**

C

**DISTRIBUTOR:**

System Development Corporation  
2525 Colorado Ave.  
Santa Monica, CA 90406

**CONTACT:**

**Technical:** Carl Sunshine, (213) 453-5161

**Sales:** Brad Anderson, (805) 987-9472

**INFORMATION-UPDATED:**

February 1986

### 3.20.6. SDC CP8201

**PRODUCT-OR-PACKAGE-NAME:** SDC MIL/INT Long Haul Network Front End (CP8201)

**DESCRIPTION:**

The MIL/INT product line includes network front ends, terminal concentrators, and gateways implementing DoD protocols for both DDN and broadband LANs. The Long Haul NFE provides access to the long haul backbone of the DDN (or any network based on IMP type switches) for a host computer implementing the DoD Host to Front End Protocol (HFP). The NFE implements HFP, TCP, IP, ICMP, and the long haul DDN network access protocols (X.25 or HDH). Connection to the host is via HFP with X.25 LAPB at speeds up to 600 Kbps. The host must implement HFP and any application protocols desired (Telnet, FTP, SMTP). IMP connections may be local or remote (via modems) at speeds up to 56 Kbps. The MIL/INT DDN NFE has been certified by DCA for DDN access.

**DOCUMENTATION:**

Product Specification, Installation Manual, and User Manual

**CPU:**

Multiple Intel 8086 microprocessors

**O/S:**

Proprietary realtime OS86 based on secure kernel technology

**IMPLEMENTATION-LANGUAGE:**

C

**DISTRIBUTOR:**

System Development Corporation  
2525 Colorado Ave.  
Santa Monica, CA 90406

**CONTACT:**

**Technical:** Carl Sunshine, (213) 453-5161

**Sales:** Brad Anderson, (805) 987-9472

**DDN-QUALIFIED:**

Yes

**INFORMATION-UPDATED:**

February 1986

### **3.20.7. SDC CP8240**

**PRODUCT-OR-PACKAGE-NAME:** SDC MIL/INT Long Haul Network Terminal Concentrator (CP8240)

**DESCRIPTION:**

The MIL/INT product line includes network front ends, terminal concentrators, and gateways implementing DoD protocols for both DDN and broadband LANs. The Long Haul Network TC provides access to the long haul backbone of DDN (or any network based on IMP type switches) for up to eight asynchronous terminals operating at speeds up to 19.2 Kbps. The TC may also be configured as a Terminal Emulation Processor (TEP) to attach asynchronous ports on a host to the network. The TC implements Telnet, TCP, IP, ICMP, and the DDN network access protocols (X.25 or HDH). IMP connections may be local or remote (via modems) at speeds up to 56 Kbps. The MIL/INT DDN TC has been certified by DCA for DDN access.

**DOCUMENTATION:**

Product Specification, Installation Manual, and User Manual

**CPU:**

Multiple Intel 8086 microprocessors

**O/S:**

Proprietary realtime OS86 based on secure kernel technology

**IMPLEMENTATION-LANGUAGE:**

C

**DISTRIBUTOR:**

System Development Corporation  
2525 Colorado Ave.  
Santa Monica, CA 90406

**CONTACT:**

**Technical:** Carl Sunshine, (213) 453-5161

**Sales:** Brad Anderson, (805) 987-9472

**DDN-QUALIFIED:**

Yes

**INFORMATION-UPDATED:**

February 1986

## **3.21. Tektronix**

### **3.21.1. Tektronix 6130 Workstation**

**PRODUCT-OR-PACKAGE-NAME:** 6130 Intelligent Graphics Workstation

**DESCRIPTION:**

The Tektronix Model 6130 is a UNIX 4.2 BSD & System V based workstation that has a 32-bit processor, 1 megabyte of parity memory (with 16 MB virtual addressability), 20 megabyte winchester (expandable to 40 or 80 MB), dual RS-232-C interfaces, Local Area Network (LAN) interface and ethernet TCP/IP with Distributed File System (DFS) software and a General Purpose Interface Bus (GPIB) all standard. The system can be expanded with additional disks, interfaces, streamer tape drives and software products.

The 6130 uses the ethernet standard (IEEE 803.2) with Transmission Control Protocol/Internet Protocol (TCP/IP) which handles the communications between a users program and other processes executing on the same workstation, at a different workstation on the LAN, or on a different network. The 6130 supports the File Transfer Protocol (FTP), the Simple Mail Transfer Protocol (SMTP) and the Virtual Terminal (Telnet). Tektronix has implemented a Distributed File System that allows a workstation to access files on other workstations as though they were resident locally. The 6130 can support up to 14 RS-232 terminals although 2 or 3 users per system is recommended.

**DOCUMENTATION:**

The documentation set that is included with the 6130 consists of ten well written manuals which cover system installation, operations, system administration, and extensive reference material. Over 40 other manuals are available which describe the language compilers, statistical software, spreadsheet programs, and other software and enhancement products.

**CPU:**

The 6130 uses the National Semiconductor 32000 Family of processors; the CPU is the NS 32016 with the NS 32081 Floating Point Unit.

**O/S:**

UTek, Tektronix UNIX-based (System V and 4.2 BSD)

**IMPLEMENTATION-LANGUAGE:**

C Language

**DISTRIBUTOR:**

Tektronix, Inc.

**CONTACT:**

**Local Sales Office or:**

**Mark Mehall, (503) 685-2275**  
**Tektronix Inc.**  
**P.O. Box 1000 60-770**  
**Wilsonville, Oregon 97070**  
**uucp: {ucbvax,decvax,ihnp4)!tektronix!orca!markm**  
**CSnet: orca!markm@tek**  
**ARPAnet: orca!markm.tek@csnet-relay**  
**WU Telex: 151754**  
**TWX: 910-467-8707**  
**ITT Telex: 4742109**  
**FAX: (503) 682-3408 GRP III, II Auto**

**ORDERING-PROCEDURE:**

Contact the Local Tektronix Office

**PROPRIETY-STATUS:**

UTek and the Distributed File System are proprietary products

**INFORMATION-UPDATED:**

February 1986

## **3.22. Wollongong Group**

### **3.22.1. Wollongong DDN Host Access Board - MicroVAX**

**PRODUCT-OR-PACKAGE-NAME:** WIN/MicroVX (DDN)

**DESCRIPTION:**

This is a complete hardware/software TCP/IP implementation which allows any VAX/VMS host to connect to the DDN. Includes Telnet (remote login), FTP (file transfer), SMTP (Mail) Netstat, Finger, TFTP. Supports the DEC DEQNA Ethernet Controller and ACC X.25 interfaces.

**DOCUMENTATION:**

Installation Guide, User's Guide, Programmer's Guide, Reference Manual, and the WINS TCP/IP Primer provided

**CPU:**

DEC VAX-11

**O/S:**

VMS 4.x and greater

**IMPLEMENTATION-LANGUAGE:**

C

**DISTRIBUTOR:**

The Wollongong Group  
1129 San Antonio Road  
Palo Alto, CA 94303

**CONTACT:**

Dave Preston  
Wollongong Sales  
(415) 962-7200

**ORDERING-PROCEDURE:**

Available with support from The Wollongong Group

**PROPRIETY-STATUS:**

Wollongong

**INFORMATION-UPDATED:**

August 1986

### 3.22.2. Wollongong DDN Host Access Board - VAX

**PRODUCT-OR-PACKAGE-NAME:** WIN/VX (DDN)

**DESCRIPTION:**

This is a complete hardware/software TCP/IP implementation which allows any VAX/VMS host to connect to the DDN. Includes Telnet (remote login), FTP (file transfer), SMTP (Mail) Netstat, Finger, TFTP. Supports the ACC HDH (1822-J) and ACC X.25 interfaces.

**DOCUMENTATION:**

Installation Guide and User Manual provided

**CPU:**

DEC VAX-11

**O/S:**

VMS 3.1 or greater and VMS 4.x

**IMPLEMENTATION-LANGUAGE:**

C

**DISTRIBUTOR:**

The Wollongong Group  
1129 San Antonio Road  
Palo Alto, CA 94303

**CONTACT:**

Dave Preston  
Wollongong Sales  
(415) 962-7200

**ORDERING-PROCEDURE:**

Available with support from The Wollongong Group

**PROPRIETY-STATUS:**

Wollongong

**INFORMATION-UPDATED:**

August 1986







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# TCP/IP Implementations and Vendors Guide

August 1986

If you have a contribution for our next issue, please fill in the following template and send it via the DDN network to OLE@SRI-NIC.ARPA or through U. S. mail to:

DDN Network Information Center  
SRI International  
333 Ravenswood Avenue  
Menlo Park, CA 94025  
Attn: Ole J Jacobsen - EJ276

PRODUCT-OR-PACKAGE-NAME:

DESCRIPTION:

DOCUMENTATION:

CPU:

O/S:

IMPLEMENTATION-LANGUAGE:

DISTRIBUTOR:

CONTACT:

ORDERING-PROCEDURE:

PROPRIETY-STATUS:

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Comments:

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stamp  
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333 Ravenswood Avenue, EJ291  
Menlo Park, California 94025

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