DG TCP/IP (AOS/VS) Release Notice

Revision 2.50

Model Number 30997

September 1988

085-000715-03

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SECTION 1 - Introduction

The purpose of this release notice is to provide you with information about revision 2.50 of DG TCP/IP (AOS/VS) which is not available in the DG TCP/IP (AOS/VS) documentation. Between revisions of DG TCP/IP, one or more updates to this product may be issued. The purpose of a TCP/IP update is to provide corrections to TCP/IP without releasing a completely new product. This notice covers all materials associated with the Part Numbers listed below.

Part Description	Part Number(s)
1) Model 30997 Release Notice	085-000715-03
2) Model 30997 Release Media	See Section 7

See the media section (under Software) for appropriate media types and part numbers.

[End of Section 1]

SECTION 2 - Product Description

TCP and IP are communication protocols in use on a large number of networks. This product consists of the additional software necessary to allow Data General's AOS/VS operating system to communicate with those networks.

AOS/VS TCP/IP provides both the connection and functional level network services implemented according to The Department of Defense Protocols IP RFC 791, TCP RFC 793, FTP RFC 765, TELNET RFC 764, and SMTP RFCs 821 and 822. AOS/VS TCP/IP provides support for AOS/VS user processes to communicate with processes on other systems connected directly through Ethernet networks. AOS/VS TCP/IP is also used by Data General's functional level networking software, FTP, Sendmail, and TELNET. AOS/VS FTP allows AOS/VS users to transfer files to and from other systems and for users on other systems to transfer files to and from AOS/VS. AOS/VS SMTP permits AOS/VS users to send electronic mail to users on other computer systems and for users of other systems to send mail to AOS/VS users. AOS/VS TELNET enables AOS/VS users to logon to other systems and for users of other systems to logon to AOS/VS.

The implementation is based on the 4.2 Berkeley Software Distribution (BSD). This heritage has been a major influence in the overall structure and capabilities of this product.

AOS/VS TCP/IP functions over ethernet LANs (Local Area Networks). It does not function over X.25.

The AOS/VS system on which this product is installed will have the following directories:

AOS/VS TCPIP Directory Structure

```
:net   -  network program files
      :util        - program files and macros
      :help        - help files
            :telnet_topic       - telnet help
            :telnetd_topic      - telnetd help
            :ftp_topic          - ftp help
            :ftpd_topic         - ftpd help
      :logfiles    - network log data
:etc   -  essential system data
:usr   -  general purpose directory
      :lib             - sendmail and smtp files
      :spool:mqueue    - temporary sendmail spool files
:tmp   -  temporary directory for sendmail files
:util  -  standard VS directory,
          a documentation update file is supplied here
```

See the Software section below for a list of files supplied with this release.

[End of Section 2]

SECTION 3 - Environment

This release is designed to work with version 6.00 or higher of AOS/VS on any MV or DS series machine. The following hardware is required:

* For MV2000DC, MV1400, MV2500 or DS7500:

  An LLC with cable and transceiver to connect to an Ethernet.

* For MV/SC and DS series machines:

  A cable and a transceiver to connect to an Ethernet.

* For other MV series machines:

  An ILC with cables and a transceiver to connect to an Ethernet.

[End of Section 3]

SECTION 4 - Enhancements and Changes

4.1 Enhancements

This section provides a record of enhancements to the TCP/IP product.

Release 2.50

1) Subnetting, as defined by RFC 950, is available with this revision. Subnetting permits the logical splitting of an Internet network into a number of sub networks. It is then possible to change the layout of the sub networks without affecting sites not on the original network.

4.2 Changes

This section provides a record of problems that have been fixed in the software.

1) This release of TCP/IP fixed a problem releasing Virtual Consoles after Telnet session termination.

2) Bugs that prevented processes with process ids greater than 256 from running have been fixed.

3) A bug that caused the Telnet server to crash with a "Process not in hierarchy" message when a user process terminated abnormally has been fixed.

4) The Telnet server will no longer crash after receiving a delete sequence following characters that had been typed ahead.

5) There was a problem with determining what the backspace character should be for non-Data General terminals attached to Data General machines. That problem has been fixed.

6) The Telnet client has been enhanced to recognize both uppercase and lowercase hostnames. It originally translated all names to uppercase.

7) TELNET now accepts user-specified remote ports. Note: Due to this change, TELNET must run with at least rev. 2.50 of TCP/IP (see the Documentation section (Section 6) below for syntax).

8) TELNETD now correctly handles tabs after the user sets char/8bt on.

9) TELNET can now map new-line characters for foreign hosts that previously required use of the carriage return key.

10) A problem interpreting trailing headers has been fixed. This problem was in receiving packets which had the IP header, TCP header, and data in a different order than the standard format.

11) TCP/IP now correctly accepts the addressing combination of a remote hostname and a remote port.

12) The Route command now supports the -f switch.

13) FTP no longer fails when a non-existent directory is deleted.

14) FTP passwords are no longer converted to lowercase.

15) FTPD no longer hangs when when trying to transfer a file into a directory without enough space.

16) FTPD no longer fails if a non-existent file is renamed.

17) FTP will now transfer user-defined file types.

18) Sendmail now performs aliasing correctly.

19) Sendmail now aborts with an error if no sendmail.cf file is found, or if no "local" or "prog" mailer is defined in the sendmail.cf file.

20) Sendmail will now handle multiple mail transactions on a given SMTP connection/session.

21) Sendmail now correctly reads :etc:passwd to find the UID of "mail". It does not assume that "mail" has a UID of 8.

22) Sendmail will now print an error message if a user who is not on the "trusted users" list (as defined in the sendmail.cf file) attempts to use the '-f' flag.

23) Sendmail will now correctly mail to files and to programs.

[End of Section 4]

SECTION 5 - Notes and Warnings

5.1 Notes

1) On very busy Ethernet LANs, there is a known problem where the network appears to not respond to any incoming traffic. If this should occur, please report it to DG through normal support channels. A workaround for this problem is to initiate an outgoing call from the MV to another node on the LAN. The incoming traffic should then begin to flow again.

   Additionally, users may see the following message in the TCPIP.LOG logfile:

   TCPIP: ilcX device hung. Restart required.

   This message indicates that the lan controller is no longer responding to the host software (TCPIP.PR). To re-establish communications, use ifconfig to bring down then up the ILC, or issue down.internet followed by up.internet.

   If this message occurs frequently, we recommend that users ensure that the revision of the ILC in question be upgraded to include ECO number 25506. This ECO is included by FCO number 900537. This upgrade resolves certain hardware conditions that can result in hangs and the corresponding message in TCPIP.LOG.

2) The ILC must be on the first IO channel (IOC) on machines that support multiple IO channels.

3) TELNET can not be executed with input and output as pipes. This means TELNET can not be executed from an EMACS buffer.

4) The TELNETD only supports hard copy mode.

5) TELNETD does not support shared consoles. This means that MV/UX PIPE won't work to pipe through several processes to STDOUT. Also certain applications will not work such as CEO or I-COBOL.

6) The TELNETD may require that certain users use new-line to log into the system until the terminal characteristics are set, at which time carriage return may be used.

7) Both TELNET and sendmail limit transfer of characters to 7-bits. Sendmail is being RFC compliant by limiting this.

8) Sendmail ignores lines in the sendmail.cf file that begin with a blank space.

9) As stated in the "Defining Rewriting Rules" section of the "Installing and Administering DG TCP/IP (AOS/VS)" manual (part number 093-701027-00), when defining rewriting rules in the sendmail.cf file, the fields of the rule must be separated by at least one tab character. Be aware that some editors insert space characters rather than tabs.

10) Sendmail requires that the user have "Change username" privilege in two instances:

    a) If the "S" flag is not specified on the local mailer in the sendmail.cf file. The "S" flag tells sendmail to not reset the user ID before calling the local mailer.

    b) If the user specifies an alternate configuration file on the sendmail command line e.g., x :usr:lib:sendmail -C:udd:foo:my.cf.

11) Sendmail will sometimes hang when writing through a pipe to a local mailer.

12) Sendmail invokes Mailers using DG C compiler Rev 3.22 Pipe Mechanism.

13) Sendmail requires that the user supply a complete pathname when specifying the aliases file in the sendmail.cf file, or when specifying an alternate aliases file on the command line (e.g., x :usr:lib:sendmail -oA:udd:foo:my_aliases).

14) The vs_mail program requires that all user mailbox files, :udd:<user>:mbox, have an acl that includes +,RW (and all superior directories have acls that include +,E).

15) The FTP daemon will not work for users that have encrypted passwords.

16) FTP doesn't position the prompt correctly when doing an MGET in binary mode to some hosts.

17) All three network management utilities (Ifconfig, Route, and Netstat) send their output to the default output file assigned to them when proc'ed. Note that this means that

when Ifconfig is executed from the UP.INTERNET macro with the default output being :NET:LOGFILES:IFCONFIG.LOG, output will go to this file instead of the screen.

5.2 Warnings

1) A text file of documentation changes to the manual "Installing and Administering DG TCP/IP (AOS/VS)", number 093-701027-00 is provided as part of this release. Its pathname is :UTIL:093_701027_00. Please use the information in this file to update your manuals.

2) This release is designed to work with revision 6.00 or higher of AOS/VS. If this release is used with earlier AOS/VS revisions, problems may result.

3) Sendmail does not verify all aspects of the configuration file. Invalid configuration files may cause abnormal behavior of sendmail.

4) Sendmail is not intended to be a user invoked program. It is recommended that users write interface programs to pipe the mail to the sendmail program. Sendmail errors and responses are more suited to a program interface than to a user.

5) Sendmail does not support usernames containing the "." or "$" characters (e.g., "$guest" and "foo.bar"). The use of these characters in usernames conflicts with Internet rules and conventions.

6) FTP may crash with an address trap when doing an MGET.

7) None of the various configuration files or network management files should contain page breaks (e.g., HOSTS, SENDMAIL.CF, etc...).

8) AOS/VS TCP/IP does not support broadcast addresses composed of all ones. This is a function of its 4.2 BSD heritage.

5.3 Debugging Notes

Below are explanations of what may be wrong when some common things fail.

1) If the :net directory is renamed before TCP/IP is loaded, the system must be rebooted or certain utilities (such as tcp_npn_file) will return the following error:
0360: Illegal directory name specification.

2) If ifconfig complains about permissions when trying to configure an ILC, the problem may be that the 802_ilc.epr file does not exist in the root (:).

3) If ifconfig returns "ifconfig: ioctl(SIOCGIFFLAGS) :031717 Invalid Device Configuration File", then the Device given to ifconfig is not known to TCPIP. Remember the device name must be in lowercase.

4) If the telnetd and ftpd NPN files do not exist, these programs will write a large number of error messages to the logfiles which might cause these files to become very large. However, the supplied up.internet.cli macro will create these files if necessary.

5) If telnetd aborts with the error "FILE DOES NOT EXIST" when it is starting up the problem may be that the file :etc:hostname does not exist or cannot be accessed.

6) If any of the applications fail due to 'network unreachable' one of two things may be wrong. The network numbers in :etc:hosts may be incorrect, or the Network Interface may not have been enabled. The system administrator should verify the numbers in :etc:hosts and make sure that the Network Interface was enabled with ifconfig. This is easily checked by issuing the ifconfig command again with the appropriate network interface as its argument.

[End of Section 5]

SECTION 6 - Documentation

6.1 Manuals

Documentation for the TCP/IP product can be found in this release notice and in the following manuals:

093-000398-00 Using AOS/VS Transmission Control Protocol (TCP)

093-000399-00 Using AOS/VS Internet

093-701027-00 Installing and Administering DG TCP/IP (AOS/VS)

6.2 Documentation changes

1) A text file of documentation changes to the manual "Installing and Administering DG TCP/IP (AOS/VS)", number 093-701027-00 is provided as part of this release. Its pathname is :UTIL:093_701027_00. Please use the information in this file to update your manuals.

2) There is a change to page 3-9 of the "Using AOS/VS Transmission Control Protocol (TCP)" manual (part number 093-000398-00) regarding valid parameter combinations for specifying a remote socket.

    a) When the file specified is ":NET:<npn_file>", the ?NRAD field should be supplied and the ?NRPRT field is ignored

    b) When the file specified is ":NET:<hst_file>", the ?NRPRT field should be supplied and the ?NRAD field is ignored

3) There is a change to page 3-7 of the "Using AOS/VS Transmission Control Protocol (TCP)" manual (part number 093-000398-00). The ?NRAD field should be the "remote" (not "local") Internet address.

4) There is a change to page 3-1 of the "Using AOS/VS Transmission Control Protocol (TCP)" manual (part number 093-000398-00) regarding the ?ILTH field. Users must use the correct packet length for the packet they are sending. The correct lengths of the packets are defined in the header files (see :net:cparnet.32.h). Refer to the examples in Appendix A. Also on page 3-1, the reference to ?NILTH is incorrect. Users must specify the actual length, instead of using the ?NILTH as a maximum.

5) There is a change to page 3-15 of the "Using AOS/VS Transmission Control Protocol (TCP)" manual (part number 093-000398-00) regarding the ?NPORT request. The ?NVCID field must be set to zero when issuing this request to TCP.

6) There is a change to page 3-19 of the "Using AOS/VS Transmission Control Protocol (TCP)" manual (part number 093-000398-00) regarding the ?NWRITE call. If the ?NBLT parameter is set to zero and the ?NENDA flag (see ?NREAD) is set in the ?NUFL field, TCP will shut down the connection and indicate to the other side that all data has been sent (i.e., TCP sends a packet with the FIN flag on). All outstanding writes should be completed before a call like this is done. Otherwise, the results will be undefined. This allows a user to tell TCP all outgoing data has been sent and have the connection remain open for receiving until the remote host closes the connection.

7) There is a change to page 3-16 of the "Using AOS/VS Transmission Control Protocol (TCP)" manual (part number 093-000398-00). To use the reserved ports, you need superuser privileges. You do not need superprocess privileges.

8) There is a change to pages 9-6 and 9-7 of "Installing and Administering DG TCP/IP (AOS/VS)." The number appended to the device on the ifconfig command line is really an index into the TCPIP.CF file. For example, if the TCPIP.CF file contains:

```
        ilc 60 1
        ilc 61 1
```

   Then the user might enable each link with:

```
        ifconfig ilc0 hosta -- for the first ilc (ilc 60 1)
        ifconfig ilc1 hostb -- for the second ilc (ilc 61 1)
```

9) A change should be made in "Installing and Administering DG TCP/IP (AOS/VS)" on pages 9-6 and 9-7. For every ifconfig statement in the up.internet.cli macro there should be a corresponding ifconfig statment in the down.internet.cli macro which disables the device. The format of the statement is as follows.

```
proc/block/def/ioc ifconfig <device> down
```

Where <device> is the name of the device (e.g., "ilc0").

10) The following change should be made to "Installing and Administering DG TCP/IP (AOS/VS) on pages 9-6 and 9-7." The IFCONFIG command now has an additional (optional) parameter. This parameter is used to specify the network mask, or which bits of the internet address are being interpreted as the network address. An example of using this parameter:

```
ifconfig ilc0 128.200.1.1 netmask 0xffffff00
```

This means that the first 24 bits (128.200.1) will be used as the network address, with the 1 being the subnet. The default netmask values are :

```
class A network address.......... 0xff000000
class B network address.......... 0xffff0000
class C network address.......... 0xffffff00
```

Refer to page 4-2 of the "Installing and Administering DG TCP/IP (AOS/VS)" manual for a more complete discussion of network addresses.

Note: The original form of the ifconfig command, without the netmask field, will still work in this release. The netmask field is an additional parameter to be used for subnetting.

11) The following change applies to pages 9-6 and 9-7 of "Installing and Administering DG TCP/IP (AOS/VS)." Ifconfig, when reporting device status, will now return a "LOADED" flag when referring to an "intelligent" controller (e.g., ilc). This flag indicates that code has been loaded onto the controller. The meanings of some other common flags are:

```
RUNNING - The controller code is running.
UP - Indicates that TCP/IP has made a successful
     connection with the controller code.
DOWN - Indicates that no connection between TCP/IP
       and the controller code exists.
BROADCAST - TCP/IP will forward packets containing
            broadcast addresses.
```

12) This new feature of ifconfig should be added to pages 9-6 and 9-7 of "Installing and Administering DG TCP/IP (AOS/VS)." The ifconfig command now offers a -broadcast/broadcast parameter. Ethernet type devices are defaulted to broadcast (forward broadcast packets). They can now be told not to do so. To turn broadcasting off,

the ifconfig syntax is:

```
ifconfig ilc0 hosta -broadcast
```

To turn broadcasting on (default), the ifconfig syntax is:

```
ifconfig ilc0 hosta broadcast
```

13) The route command now has an additional required parameter. This parameter specifies whether the destination stated is a host or a network gateway. The parameter values are "net" and "host". The parameter is used to specify whether the destination address is going to be a gateway which will do more routing for the message (net), or whether the destination address will be the final destination host, and will not do any further routing of messages (host). An example of the new route command with the destination being a routing gateway is:

```
route add net 128.5.1 128.6.0.2 1
```

This route sends all packets destined for 128.5.1.x to the address 128.6.0.2, and says that they can then be routed from 128.6.0.2 towards the destination 128.5.1.x. An example of the new route command with the destination being a non-routing host is:

```
route add host 128.5.1 128.5.1.2 1
```

This route sends all packets destined for 128.5.1.x to the address 128.5.1.2, and says that they will not be routed further than the receiving host.

14) There is a change on page A-2 of the "Using AOS/VS Transmission Control Protocol (TCP)" manual (part number 093_000398_00). Change 'stack=1000' to 'stack=3000' in both the link_server.cli and the link_user.cli macros.

15) TELNET now has an additional option. From inside TELNET, the user may enter the command:

```
MAPNL
```

This option will translate outgoing new-line characters into carriage returns.

16) TELNET now supports user supplied remote port numbers. The user may specify these by:

From the CLI:

```
TELNET rhost 21
```

From inside TELNET:

```
CALL rhost 23
```

This will establish a TELNET connection to whatever is listening on <rhost>.<rport> (where rhost is the name of a remote host and rport is the name of a remote port on rhost). The default remote port remains the standard TELNETD port.

17) As stated in Chapter 3, page 3-3 ("Creating Links to the Network Files") of the "Installing and Administering DG TCP/IP (AOS/VS)," the user should create links in :UTIL to the internet macros supplied in :NET:UTIL.

18)

Subnetting:

Readers should refer to RFC 950 for a complete discussion of subnetting. Subnetting allows you to introduce a two level hierarchy into an internet address. By using subnetting, you may access a number of networks using one common internet address. Subnetting lets you take bits which would be used to represent hosts and use these bits to represent subnets. Subnet addresses are appended to the network address. The netmask field in the IFCONFIG command specifies how many bits are being used to represent the network. An example of a class B network address without subnetting is:

128.200.0.37

where 128.200 represents the network address and 0.37 represents the node on the network. The netmask value in this case is 0xffff0000. An example of a class B network address with subnetting is:

128.200.1.37

where 128.200 represents the network address, 1 represents which subnet of this network address, and 37 represents the node on the subnet. The netmask value in this case is 0xffffff00.

Here is an example of subnetting:

Suppose you have an MV using three ILCs. It is acting as a gateway between the networks of two distinct departments in a company and a LAN that connects nodes from every other part of the company. ILC0 is connected to Department A's LAN, ILC1 is connected to Department B's LAN, and ILC2 is connected to the Inter-Departmental LAN (IDL).

Department A has a LAN made up of three hosts which it wants to connect to the company-wide LAN via the gateway

MV.

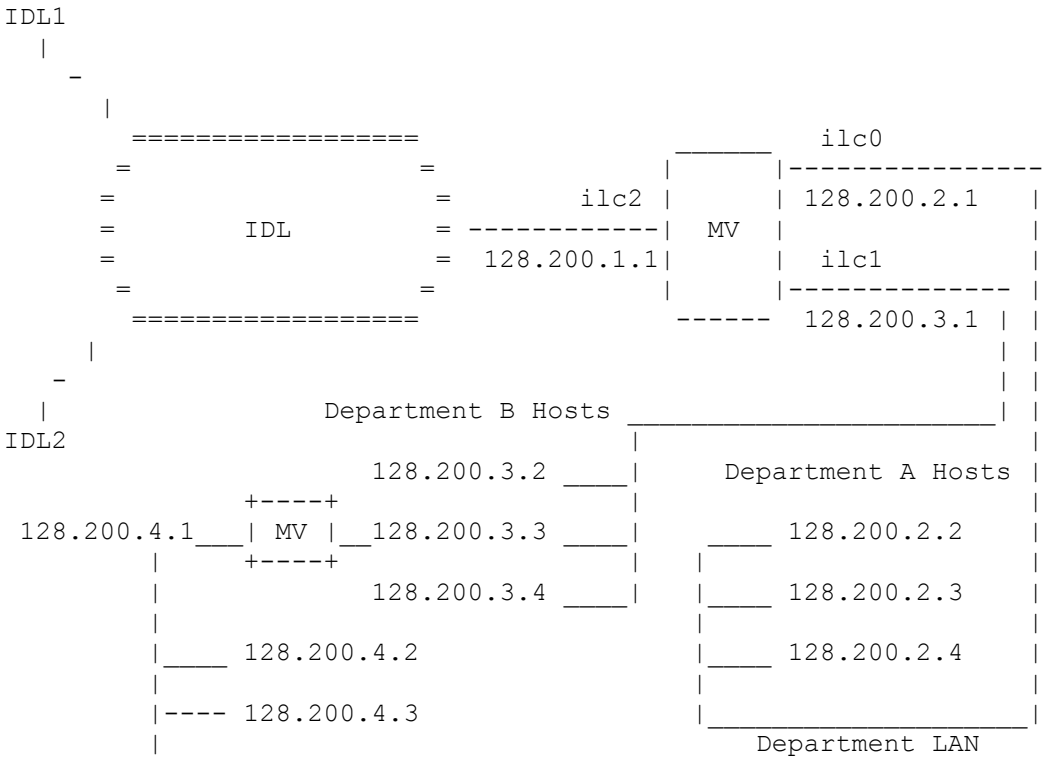
Department B also has a three host LAN. One of these hosts is an MV with a number of individual hosts connected to a second Ethernet controller (e.g., workstations, PCs, etc...) forming another LAN.

The two departments perform related work (this is why they are grouped together behind the MV gateway) and would like to publish one internet address externally.

Suppose that calls may come in from the Inter-Departmental LAN for nodes on the department LANs. The MV has the ILC2 internet address of 128.200.1.1. Nodes on the Department A LAN have internet addresses of 128.200.2.x. Nodes on the Department B LAN have addresses of 128.200.3.x, and the nodes on the subnet off the Dept. B LAN have internet addresses 128.200.4.x.

If a node on the IDL calls a node on the Department B LAN, address 128.200.4.3, the IDL host will recognize the 128.200 portion of the address as the network address, and send it to the ILC2 (address 128.200.1.1) of the gateway MV. That MV then interprets the subnet number of 4, realizes that to get to subnet 4 it must route the call across the number 3 subnet to the MV in Department B (with the internet address of 128.200.3.3), and sends the call out over ILC1 (which has the address of 128.200.3.1). The Department B host with the connected LAN will then route the message out to its final destination.

The MVs are configured with the netmask covering the first 24 bits of the internet address, so that the eight bits following this 16 bit class B network address are used as the subnet address.



Subnet #1 MV Gate Inter-Departmental LAN (IDL)

Subnet #2 MV Gate Department A LAN

Subnet #3 MV Gate Department B LAN

Subnet #4 MV Gate Local Department B LAN

NOTE: Subnet #1 128.200.1.x can be used to hide the actual structure of the company and department networks from the nodes on the IDL. The nodes on the IDL need only know about the MV and its internet address.

[End of Section 6]

SECTION 7 - Software

7.1 Media

Model Number	Part Number	Media
30997B	061-600086-01	20MB CARTRIDGE
30997H	071-001073-02	1600 BPI MAGNETIC TAPE
30997J	070-600024-01	130 MB CARTRIDGE
30997C	071-001073-02	15.2 MB CARTRIDGE
30997G	081-000357-02	96 TPI DISKETTE 1 of 5
	081-000526-02	96 TPI DISKETTE 2 of 5
	081-000527-02	96 TPI DISKETTE 3 of 5
	081-600255-01	96 TPI DISKETTE 4 of 5
	081-001052-00	96 TPI DISKETTE 5 of 5

7.2 Organization

Magnetic Tape Medium Organization (1600-bpi magnetic tape)

File	Contents
0	All files for the root and :net directory.
1	All files for the :ETC directory.
2	All files for the :USR directory.

On all other media, the entire product is shipped as file 0.

7.3 Files

These are the files contained in this release:

Note: The directories :ETC and :USR will be found on all media EXCEPT the 1600-bpi magnetic tape media. As stated above, files in these directories will be shipped as separate dump files. The actual directory names :ETC and :USR will not be found on the release tape.

```
:802_ILC.EPR
:802_ILC.ST
:ETC
:NET
:USR
:UTIL
:ETC:HOSTS.PROTO
:ETC:NETWORKS.PROTO
:ETC:PASSWD.PROTO
:ETC:PROTOCOLS.PROTO
:ETC:SERVICES.PROTO
:NET:FTPA.PR
:NET:FTPA.ST
:NET:FTPD.PR
:NET:FTPD.ST
:NET:HELP
:NET:INTERNETOP.OL
:NET:INTERNETOP.PR
:NET:INTERNETOP.ST
:NET:INTERNET_INTERNAL_ERMES
:NET:LOGFILES
:NET:TCPIP.PR
:NET:TCPIP.ST
:NET:TCPIP_RN_2.50
:NET:TELNETD.PR
:NET:TELNETD.ST
:NET:UTIL
:NET:HELP:FTP
:NET:HELP:FTPD
:NET:HELP:FTPD_TOPIC
:NET:HELP:FTP_TOPIC
:NET:HELP:IFCONFIG
:NET:HELP:NETOP
:NET:HELP:NETSTAT
:NET:HELP:ROUTE
:NET:HELP:SENDMAIL
:NET:HELP:SMTP
:NET:HELP:TCPIP
:NET:HELP:TCP_HST_FILE
:NET:HELP:TCP_NETWORK
```

```
:NET:HELP:TCP_NPN_FILE
:NET:HELP:TELNET
:NET:HELP:TELNETD
:NET:HELP:TELNETD_TOPIC
:NET:HELP:TELNET_TOPIC
:NET:HELP:FTPD_TOPIC:DISABLE
:NET:HELP:FTPD_TOPIC:ENABLE
:NET:HELP:FTPD_TOPIC:SET
:NET:HELP:FTPD_TOPIC:START
:NET:HELP:FTPD_TOPIC:SURROGATES
:NET:HELP:FTPD_TOPIC:TERMINATE
:NET:HELP:FTPD_TOPIC:TIMEOUT
:NET:HELP:FTP_TOPIC:?
:NET:HELP:FTP_TOPIC:APPEND
:NET:HELP:FTP_TOPIC:ASCII
:NET:HELP:FTP_TOPIC:BELL
:NET:HELP:FTP_TOPIC:BINARY
:NET:HELP:FTP_TOPIC:BYE
:NET:HELP:FTP_TOPIC:CALL
:NET:HELP:FTP_TOPIC:CD
:NET:HELP:FTP_TOPIC:CLI
:NET:HELP:FTP_TOPIC:CLOSE
:NET:HELP:FTP_TOPIC:DEBUG
:NET:HELP:FTP_TOPIC:DEFCHAR
:NET:HELP:FTP_TOPIC:DELETE
:NET:HELP:FTP_TOPIC:DIR
:NET:HELP:FTP_TOPIC:FILENAMES
:NET:HELP:FTP_TOPIC:FORM
:NET:HELP:FTP_TOPIC:GET
:NET:HELP:FTP_TOPIC:HASH
:NET:HELP:FTP_TOPIC:HELP
:NET:HELP:FTP_TOPIC:IMAGE
:NET:HELP:FTP_TOPIC:LCD
:NET:HELP:FTP_TOPIC:LS
:NET:HELP:FTP_TOPIC:MGET
:NET:HELP:FTP_TOPIC:MKDIR
:NET:HELP:FTP_TOPIC:MODE
:NET:HELP:FTP_TOPIC:MPUT
:NET:HELP:FTP_TOPIC:OPEN
:NET:HELP:FTP_TOPIC:PATHNAMES
:NET:HELP:FTP_TOPIC:PREFIXES
:NET:HELP:FTP_TOPIC:PROMPT
:NET:HELP:FTP_TOPIC:PUT
:NET:HELP:FTP_TOPIC:PWD
:NET:HELP:FTP_TOPIC:QUIT
:NET:HELP:FTP_TOPIC:RECV
:NET:HELP:FTP_TOPIC:REMOTEHELP
:NET:HELP:FTP_TOPIC:RENAME
:NET:HELP:FTP_TOPIC:RMDIR
:NET:HELP:FTP_TOPIC:SEND
:NET:HELP:FTP_TOPIC:SENDPORT
:NET:HELP:FTP_TOPIC:STATUS
```

```
:NET:HELP:FTP_TOPIC:STRUCT
:NET:HELP:FTP_TOPIC:TEMPLATES
:NET:HELP:FTP_TOPIC:TENEX
:NET:HELP:FTP_TOPIC:TYPE
:NET:HELP:FTP_TOPIC:USER
:NET:HELP:FTP_TOPIC:VERBOSE
:NET:HELP:TELNETD_TOPIC:DISABLE
:NET:HELP:TELNETD_TOPIC:ENABLE
:NET:HELP:TELNETD_TOPIC:SET
:NET:HELP:TELNETD_TOPIC:START
:NET:HELP:TELNET_TOPIC:?
:NET:HELP:TELNET_TOPIC:AYT
:NET:HELP:TELNET_TOPIC:BYE
:NET:HELP:TELNET_TOPIC:CALL
:NET:HELP:TELNET_TOPIC:CLEAR
:NET:HELP:TELNET_TOPIC:CLI
:NET:HELP:TELNET_TOPIC:CLOSE
:NET:HELP:TELNET_TOPIC:CONTINUE
:NET:HELP:TELNET_TOPIC:HELP
:NET:HELP:TELNET_TOPIC:MAPCR
:NET:HELP:TELNET_TOPIC:NEWCLI
:NET:HELP:TELNET_TOPIC:NEWFIRST
:NET:HELP:TELNET_TOPIC:NEWLOCAL
:NET:HELP:TELNET_TOPIC:NEWQ
:NET:HELP:TELNET_TOPIC:NEWS
:NET:HELP:TELNET_TOPIC:NEWTERM
:NET:HELP:TELNET_TOPIC:NOVICE
:NET:HELP:TELNET_TOPIC:OPEN
:NET:HELP:TELNET_TOPIC:OPTIONS
:NET:HELP:TELNET_TOPIC:QUIT
:NET:HELP:TELNET_TOPIC:RESET
:NET:HELP:TELNET_TOPIC:SEND
:NET:HELP:TELNET_TOPIC:STATUS
:NET:UTIL:CFTPD.CLI
:NET:UTIL:CONVERTER.PR
:NET:UTIL:CONVERTER.ST
:NET:UTIL:CPARNET.32.H
:NET:UTIL:CTELNETD.CLI
:NET:UTIL:DOWN.INTERNET.CLI.PROTO
:NET:UTIL:FTP.CLI
:NET:UTIL:FTP.PR
:NET:UTIL:FTP.ST
:NET:UTIL:ICDUMP.PR
:NET:UTIL:ICDUMP.ST
:NET:UTIL:ICDUMPBRKNAME.CLI
:NET:UTIL:IFCONFIG.CLI
:NET:UTIL:IFCONFIG.PR
:NET:UTIL:IFCONFIG.ST
:NET:UTIL:ILCDUMP.CLI
:NET:UTIL:INTERNETERMES.OB
:NET:UTIL:NETSTAT.CLI
:NET:UTIL:NETSTAT.PR
```

```
:NET:UTIL:NETSTAT.ST
:NET:UTIL:PARNET.32.SR
:NET:UTIL:PL1PARNET.32.IN
:NET:UTIL:ROUTE.CLI
:NET:UTIL:ROUTE.PR
:NET:UTIL:ROUTE.ST
:NET:UTIL:SENDMAIL.CLI
:NET:UTIL:TCPHELP.CLI
:NET:UTIL:TCP_HST_FILE.CLI
:NET:UTIL:TCP_HST_FILE.PR
:NET:UTIL:TCP_HST_FILE.ST
:NET:UTIL:TCP_NPN_FILE.CLI
:NET:UTIL:TCP_NPN_FILE.PR
:NET:UTIL:TCP_NPN_FILE.ST
:NET:UTIL:TELNET.CLI
:NET:UTIL:TELNET.PR
:NET:UTIL:TELNET.ST
:NET:UTIL:UP.INTERNET.CLI.PROTO
:NET:UTIL:WAIT_FOR_NO_PORT.CLI
:NET:UTIL:WAIT_FOR_PORT.CLI
:USR:LIB
:USR:SPOOL
:USR:LIB:ALIASES.PROTO
:USR:LIB:ARPAPROTO.CF
:USR:LIB:SENDMAIL.HF
:USR:LIB:SENDMAIL.PR
:USR:LIB:SENDMAIL.ST
:USR:LIB:SMTP.PR
:USR:LIB:SMTP.ST
:USR:LIB:UUCPPROTO.CF
:USR:LIB:VS_MAIL.C
:USR:LIB:VS_MAIL.PR
:USR:LIB:VS_MAIL.ST
:USR:SPOOL:MQUEUE
:UTIL:093_701027_00
```

[End of Section 7]

SECTION 8 - Installation

8.1 For the New User

The New User should follow all steps in the "Loading the Release" and "Configuration" sections below.

8.2 Upgrading from a Previous Revision

If an old version of VS TCP/IP is running, issue the following command:

```
:net:util:down.internet y
```

To perform an Upgrade, the User should perform all steps in the "Loading the Release" section as well as steps 12-19 (as needed) in the "Configuration" section.

8.3 Loading the Release

To load Revision 2.50 of the DG TCP/IP (AOS/VS) Product from magnetic tape reel or 8" cartridge, mount the release tape on a tape drive (assumed below to be drive 0), and issue the following commands:

```
) SUPERUSER ON
*) DEFACL OP,OWARE   +,RE
*) DIRECTORY :
*) LOAD_II/V/DELETE @MTB0:0

*) CREATE/DIR :ETC (omit this step if :ETC exists)
*) DIRECTORY :ETC
*) LOAD_II/V/DELETE @MTB0:1

*) CREATE/DIR :USR (omit this step if :USR exists)
*) DIRECTORY :USR
*) LOAD_II/V/DELETE @MTB0:2
```

To load Revision 2.50 of the DG TCP/IP (AOS/VS) Product from 20MB cartridge or from 130 mb cartridge, insert the release tape into the tape drive, log in to the AOS/VS system, and issue the following commands:

```
) SUPERUSER ON
*) DIRECTORY :
*) X LOAD_II/V/BUFF=16384/DELETE @MTJx
                  (where x is the unit number)
```

When loading from floppy disk, insert the first diskette in the floppy disk drive, log in to the AOS/VS system, and issue the following commands:

```
) SUPERUSER ON
*) OPERATOR ON
*) DIRECTORY :
*) LOAD/V/DELETE @LFD:VOL1:TCPIP
```

The installer must change floppies when prompted to do so by the program. When loading is complete, enter:

```
OPERATOR OFF
```

When loading from either tape or floppy disk is complete, read and follow the installation instructions in this document which is shipped on the release in the file :net:tcpip_rn_2.50.

8.4 Configuration

Set default access control list to give users access to configuration files.

```
DEFACL  OP,OWARE   +,RE
```

Then modify or create the following files to suit your particular system. For information on how to modify these files see the "Installing and Administering DG TCP/IP (AOS/VS)" manual. Many of the files listed below are shipped with a .proto appended to the name; these are prototypes for the given files.

1) :tmp

   If the :TMP directory does not exist on your system, create it with the following commands:

```
DIRECTORY :
CREATE/DIR TMP
```

2) :etc:hosts

```
DIR :ETC
```

If you already have a hosts file, skip to the next numbered step.

```
RENAME HOSTS.PROTO HOSTS

edit HOSTS
```

This file contains the names of all the machines the host may reach by name. Each line of the file contains an entry for a host with the format:

```
"xxx.xxx.xxx.xxx    host_name"
```

3) :etc:services

```
DIR :ETC
```

If you already have a services file, skip to the next numbered step.

```
RENAME SERVICES.PROTO SERVICES
```

This file maps TCP port numbers to ascii names. The prototype file will work fine but you may want to add entries if you wish to write your own applications.

4) :etc:networks

```
DIR :ETC
```

If you already have a networks file, skip to the next numbered step.

```
RENAME NETWORKS.PROTO NETWORKS

edit NETWORKS
```

This file contains the names of networks accessible from this host. Each line of the file identifies one network; see the .proto file. The format of a line is:

```
"network_name   xx[.xx[.xx]]"
```

5) :etc:protocols

```
DIR :ETC
```

If you already have a protocols file, skip to the next numbered step.

```
RENAME PROTOCOLS.PROTO PROTOCOLS
```

This file maps IP protocol numbers to ascii names.

6) :etc:hostname

If you already have a hostname file, skip to the next numbered step.

```
CREATE/I HOSTNAME
myhostname &
)
```

This file contains the name of the local system. The file contains 1 line having the name of the host terminated with newline or "&".

7) :etc:passwd

```
DIR :ETC
```

If you already have a passwd file, skip to next the numbered step.

```
RENAME PASSWD.PROTO PASSWD

edit PASSWD
```

This file provides the user id for mail users. The entries in the proto for op and mail are required. Each line has the format:

"<username>::<id>::<full name>:</udd/username>:"

Where

<username> is the mail user's login username,

<id> is a unique number,

<full name> is the full name of the user for printing,

</udd/username> is the home directory of the user.

8) :net:ftpa

Create this file by issuing

"tcp_npn_file ftpa 20"

(tcp_npn_file.cli is a macro located in :net:util)

9) :net:ftpd

Create this file by issuing

"tcp_npn_file ftpd 21"

10) :net:telnetd

Create this file by issuing

"tcp_npn_file telnetd 23"

11) :net:tcpip.cf

DIR :NET

If you already have a tcpip.cf file, skip to next numbered step. Otherwise create one.

edit TCPIP.CF

This file describes the network controller board(s) TCPIP is to use. Each line has the format:

"DEVICE_TYPE NN X"

Where DEVICE_TYPE is either ilc, il, or llc, NN is the device code for that device (see Environment section), and X is the number of lines for that device (1 for ilc, il and llc).

Example:

ilc 60 1

12) :net:util:up.internet.cli

This macro starts TCPIP. Copy the .proto file and modify the line with ifconfig for the local device type and name. Add the route command if needed.

13) :net:util:down.internet.cli

This macro stops TCPIP. Copy the .proto file and modify the ifconfig line that stops the device.

14) :usr:lib:sendmail.cf

This file specifies the configuration for sendmail. If sendmail.cf does not exist,

```
rename arpaproto.cf sendmail.cf
```

NOTE: UUCP users should "rename uucpproto.cf sendmail.cf".

15) :usr:lib:aliases

This file contains the aliases for sendmail. If this file does not exist, copy the alias.proto file and add the desired aliases. See "Installing and Administering DG TCP/IP (AOS/VS)" Chapter 5 for more details.

16) :net:netop.pr

If this product is being installed on a system that has a revision of the Xodiac network less than rev 5.00, or on a system that has no Xodiac network, then issue the following:

```
delete :net:netop.<pr st ol>
rename <:net:inter,>netop.(pr st ol)
```

Otherwise if this product is being installed on a system that has revision 5.00 of Xodiac or higher then the netop program that is supplied with Xodiac should be used.

17) :net:internet_internal_ermes

If running a version of XTS greater than 5.40, skip this step. Otherwise, if running XTS version 5.40 or less, replace the :net:internal_ermes file with :net:internet_internal_ermes with the following commands:

```
dir :net
delete internal_ermes
rename <internet_,>internal_ermes
```

18) :net:util:internetermes.ob

Replace the :net:util:netermes.ob file with :net:util:internetermes.ob with the following commands:

```
dir :net:util
delete netermes.ob
rename <inter,>netermes.ob
```

You should either move copies of the ermes files from :net:util to :util, or create links from the :util directory. If you chose to do the latter (i.e., create links to the ermes files in :util), you must issue the following commands to create the link:

```
dir :util
create/link netermes.ob :net:util:netermes.ob
```

If netermes has not already been added to your :util:link_ermes.cli macro, edit :util:link_ermes.cli now. Insert the characters

```
NET
```

into the macro's XEQ statement, inside the angle brackets.

Now, rebuild your system's ERMES file by issuing the following commands:

```
dir :util
link_ermes
```

This builds a new ERMES file in :UTIL. Move a copy of the new ERMES file from :util to the root directory (:) by issuing the following commands:

```
dir :util
move/v/recent : ermes
```

19) Bring up the product by issuing

```
:net:util:up.internet
```

[End of Section 8]

SECTION 9 - Software Trouble Reports

If a Software Trouble Report (STR) is filed on any of the products from the TCPIP release the following instructions should be followed.

9.1 Gathering STR Information

If you found an error in the DG TCP/IP (AOS/VS) software or its documentation, or have suggestions to make about the product, please fill out and return a Data General Software Trouble Report (STR). (If your contract permits, you may report the information called for in this section to your Data General representative.) To help expedite STR processing, please include only one problem or suggestion on each STR form. Please follow these guidelines when filling out your Software Trouble Report.

1) List the name of the product as "DG TCP/IP (AOS/VS)" on the STR. (Make sure you specify "under AOS/VS" when necessary.) Calling the product "TCP" or "Internet" may lead to misfiled or delayed STRs.

2) Decide what kind of STR you are writing:

   Enhancement
   -- describe the proposed enhancement clearly and tell why you want it. The better we understand what you want, the easier it is for us to evaluate your request.

   Documentation error
   -- give the page and section or paragraph, and tell why you think there is an error.

   Software problem
   -- clearly and specifically state the problem so that support personnel can try to reproduce it. Try to avoid phrases like "the program does not work" or "fails."

3) On the STR form, provide all of the following information:
   - Date
   - Revision of the product
   - Revision of the microcode
   - Revision of the operating system
   - Names and revisions of other software this product uses
   - The CPU type
   - Terminal and printer types, if relevant
   - The command line, complete instruction, or program name that caused the problem
   - How often the problem occurs and how serious it is
   - The action(s) necessary to reproduce the problem

4) You can shorten the time it takes to solve the problem by isolating the problem to the best of your ability. To do this, try to isolate which part of the TCP/IP package caused the error (e.g., FTP, SMTP, TELNET, or TCP/IP itself).

5) If the problem occurred soon after installing a new revision of the operating system, other communication software, or new hardware, note this.

6) If you received an error message, please write down the text (and number, if there was one) of the message. Also, what was occurring when you received the message(s). (For example, during compiling, linking, executing, etc.)

9.2 Sending Media

If we cannot reproduce a problem because you did not send necessary software (program module, breakfile, macro, or other crucial file), it will delay answering the STR. Sometimes, we have to close the STR with the answer "not reproducible" or "insufficient information." To avoid this, please

1) Include the smallest possible application that demonstrates the problem. This can be a shortened version of the original application. Make sure you send any necessary macros or configuration files needed to reproduce the problem. If you send example applications, make sure they are runnable programs, not listing files.

2) Also send in AOS/VS CLI DUMP format:

   * the process breakfile and memory dump (if any) along with the program symbol table file (program.ST)

* the TCPIP, FTPD, SMTP, and TELNETD logfiles which were active at the time the problem occurred.

* configuration information for both the local and remote host, to include revision level of the operating system and TCPIP, patch histories of all program files, all related configuration (.CF) files, and the type of hardware.

* for STRs involving ILC devices, a memory dump of the controller, dumped by the ICDUMP utility with the ILCDUMP macros. See below in this section for details on using the ICDUMP utility with ILCDUMP.CLI.

* for STRs involving Sendmail and SMTP, submit copies of any relevant queue files in the ":usr:spool:mqueue" directory (e.g., XFs, QFs, DFs, LFs, and TFs).

* a README file explaining what happened, how to reproduce it, and any insight to the problem you have.

Any STRs submitted without the information listed above may be rejected for containing insufficient information. The process breakfiles will normally be found in the :NET directory or :PER directory. The symbol tables and configuration files normally reside in :NET, :NET:UTIL, :USR:LIB, and :ETC. The logfiles may be found in the directory :NET:LOGFILES.

Included in :NET:UTIL of this release is the ICDUMP utility, used to dump memory images of ILCs to disk files to be included in STRs when problems occur with the device types. The utility consists of the program file ICDUMP.PR plus three macros, also in :NET:UTIL, ILCDUMP.CLI, and ICDUMPBRKNAME.CLI.

To dump ILC memory contents, first issue an "ifconfig ilcX down", and then issue the ILCDUMP macro. The macro will prompt for the device code of the ILC controller to be dumped. Entering a newline will cause the default device code, 60, to be selected. The device code entered should match the device code in the :NET:TCPIP.CF file for the particular ILC. Memory will be dumped to a file with filename format ?pid.hh_mm_ss_ILC.BRK.

Also include the symbol table for the ILC (:802_ilc.st) on the STR tape.

After the dump completes, issue an "ifconfig ilcX up" command to re-load the controller and resume communication

over that link.

3) Include a text file (the README file referred to above) on the media describing the application sent, calling hierarchy (if one exists), and what you've done to track down the problem. You can send hard copy, but a text file is preferable.

4) Clearly label the media, giving format, contents, density, buffersize, and date. Verify that the media is readable.

[End of Section 9]

[End of "DG TCP/IP (AOS/VS) Rev. 2.50 Release Notice"]