

EtherBridge Software Release Document

Software Release 1.4

Part No. 008922

Revision 03

This document describes the EtherBridge product which allows DOMAIN internet routing nodes to communicate over an ETHERNET backbone. It describes how to install the software, any changes to the product's documentation, limitations, bugs and bug fixes that apply to the product.

APOLLO COMPUTER INC.
330 Billerica Road
Chelmsford, Massachusetts 01824

Copyright © 1986 Apollo Computer Inc.
All rights reserved. Printed in U.S.A.

First Printing: August, 1986
Latest Printing: January, 1987

This document was formatted using the FMT tool distributed with the DOMAIN computer system.

APOLLO and DOMAIN are registered trademarks of Apollo Computer Inc.

AEGIS, DGR, DOMAIN/BRIDGE, DOMAIN/DFL-100, DOMAIN/DQC-100, DOMAIN/Dialogue, DOMAIN/IX, DOMAIN/Laser-26, DOMAIN/PCI, DOMAIN/SNA, D3M, DPSS, DSEE, GMR, and GPR are trademarks of Apollo Computer Inc.

ETHERNET is a registered trademark of Xerox Corporation.
MULTIBUS is a trademark of Intel Corporation

Apollo Computer Inc. reserves the right to make changes in specifications and other information contained in this publication without prior notice, and the reader should in all cases consult Apollo Computer Inc. to determine whether any such changes have been made.

THE TERMS AND CONDITIONS GOVERNING THE SALE OF APOLLO COMPUTER INC. HARDWARE PRODUCTS AND THE LICENSING OF APOLLO COMPUTER INC. SOFTWARE CONSIST SOLELY OF THOSE SET FORTH IN THE WRITTEN CONTRACTS BETWEEN APOLLO COMPUTER INC. AND ITS CUSTOMERS. NO REPRESENTATION OR OTHER AFFIRMATION OF FACT CONTAINED IN THIS PUBLICATION, INCLUDING BUT NOT LIMITED TO STATEMENTS REGARDING CAPACITY, RESPONSE-TIME PERFORMANCE, SUITABILITY FOR USE OR PERFORMANCE OF PRODUCTS DESCRIBED HEREIN SHALL BE DEEMED TO BE A WARRANTY BY APOLLO COMPUTER INC. FOR ANY PURPOSE, OR GIVE RISE TO ANY LIABILITY BY APOLLO COMPUTER INC. WHATSOEVER.

IN NO EVENT SHALL APOLLO COMPUTER INC. BE LIABLE FOR ANY INCIDENTAL, INDIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES WHATSOEVER (INCLUDING BUT NOT LIMITED TO LOST PROFITS) ARISING OUT OF OR RELATING TO THIS PUBLICATION OR THE INFORMATION CONTAINED IN IT, EVEN IF APOLLO COMPUTER INC. HAS BEEN ADVISED, KNEW OR SHOULD HAVE KNOWN OF THE POSSIBILITY OF SUCH DAMAGES.

THE SOFTWARE PROGRAMS DESCRIBED IN THIS DOCUMENT ARE CONFIDENTIAL INFORMATION AND PROPRIETARY PRODUCTS OF APOLLO COMPUTER INC. OR ITS LICENSORS.

Reader Notice

This document resides on line in the /doc directory. To print a copy of this document, use the PRF command with the -npag and -pr options.

PRF <file-pathname> -PR <printer_name> -NPAG

Contents

<u>Section</u>	<u>Page</u>
CHAPTER 1 OVERVIEW OF ETHERBRIDGE SOFTWARE RELEASE 1.4	
1.1 Product Description	1-1
1.2 Standard Software Prerequisites	1-1
1.3 Changes to Existing AEGIS Shell Commands	1-1
CHAPTER 2 SOFTWARE INSTALLATION PROCEDURES	
2.1 Conventions and Terminology	2-1
2.2 Planning the Installation	2-2
2.3 Additional Information About Administrative Mode Installations	2-3
2.4 Installation Procedure	2-4
2.4.1 Administrative Mode	2-4
2.4.2 User Mode	2-8
CHAPTER 3 DOCUMENTATION	
3.1 Product Documentation	3-1
CHAPTER 4 BUGS AND BUG FIXES	
4.1 Known Limitations in Release 1.4	4-1
4.1.1 Using EtherBridge and TCP/IP Software	4-1

CHAPTER 1

OVERVIEW OF ETHERBRIDGE SOFTWARE VERSION 1.4

1.1 Product Description

Nodes that run EtherBridge software can become routing nodes in a DOMAIN internet. These nodes use an ETHERNET backbone cable as an internet transmission link.

EtherBridge Version 1.4 software contains the directories and files:

- o /sys/bridge/eth/ethbridge -- the EtherBridge routing process
- o /sys/bridge/eth/sleep -- time delay routine
- o /sys/bridge/eth/startup_routing.eth -- sample routing node startup file
- o /doc/etherbridge_release.notes -- on-line documentation

1.2 Standard Software Prerequisites

All non-routing nodes that participate in a DOMAIN internet must run SR9.0 or later versions of the AEGIS operating system. Routing nodes must run SR9.5 or later versions of the operating system. Later versions of standard software may be required for some types of controllers installed in routing nodes. The controller's documentation specifies the required version of standard software.

1.3 Changes to Existing AEGIS Shell Commands

An option to RTSVC (ROUTING_SERVICE), -User nn, sets or displays internet services offered by routing nodes that use EtherBridge software. The value of nn is assigned initially by the operating system at process startup. You can see the assigned value of nn by issuing the RTSVC command. The value remains until the routing node is rebooted or the routing process is stopped and restarted. The operating system may assign a different value when the process is reinitialized.

CHAPTER 2
INSTALLATION PROCEDURE

This chapter describes how to install the EtherBridge Software Version 1.4. Systems that use this software must run SR9.5 or later versions of the AEGIS or DOMAIN IX operating system. If the system is not running the correct version, follow the appropriate software update procedures as described in Installing DOMAIN Software (Order No. 008860) or in the appropriate release notes.

NOTE: Systems must have a minimum of 100 blocks of available disk space for a successful installation of this software.

2.1 Conventions and Terminology

Before you start, make sure you understand these terms and conventions:

Work Node The user node at which you perform the installation procedure.

Target The directory into which you're installing software. The target can be a node entry directory (for example, //TARGET) or any subdirectory (for example, //TARGET/PRODUCT). If the target is on a user node, then the work node and the user node can be the same node.

NOTE: When you are installing software to update a diskless node, the target is the node entry directory of the partner node.

Secure network A network that uses a registry of user accounts and access control lists (ACLs) to control log-in privileges and access to files and directories. Note that an open network does not use a registry or ACLs.

Source area An on-line master area of DOMAIN software. An administrator

installs software from the distribution media into the source area and users install software from the source area over the network. The source area can be a node's entry directory or any subdirectory.

Source media The media (floppy disks, magnetic tape, cartridge tape, or another node in the network) that contains the software.

< > Angle brackets (< >) enclose the name of a key on the keyboard.

2.2 Planning the Installation

There is one installation procedure. You can use the procedure in one of three modes: ADMINISTRATIVE mode, USER mode, or SPECIAL-CASE mode.

ADMINISTRATIVE mode creates a source area by copying the INSTALL program and the new software from the distribution media to the target. You use the administrative mode when no source area for this release exists in the network. See Section 2.3 for more information about administrative-mode installations.

USER mode involves copying your new software from a source area onto another node in the network; it's the simplest and most commonly used mode. You can install in user mode only AFTER an administrative-mode installation has initialized the source area with the INIT_SOURCE program.

Two default conditions apply to a user-mode installation. The defaults are:

- o The INSTALL program automatically copies the new software over the network from the initialized source area, instead of asking you to specify the source area.
- o The INSTALL program uses the SID "user.sys_admin" during the installation, rather than your own login SID.

To install in user mode, get the source area's pathname from your system administrator, then go on to Section 2.4.2.

SPECIAL-CASE mode involves special cases in which you need to override the user-mode defaults. The special cases are:

- o You want to install software from an initialized source area on the network, but your own login SID gives you more rights to a target's protected directories than the default SID "user.sys_admin"
- o You want to install software from a source other than an initialized source area (for example, source media)
- o You want to install additional software in a source area that was

initialized during a previous administrative-mode installation

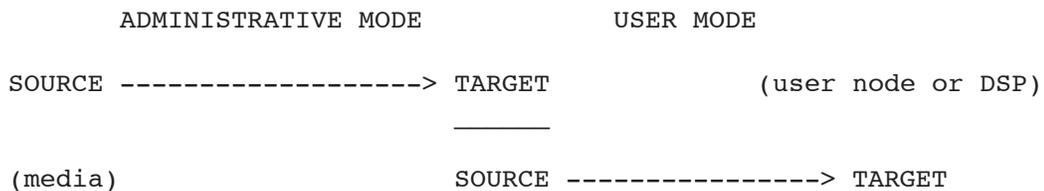
The installation procedure enters special-case mode when you invoke the INSTALL program with its `-my_sid` option. Specifying this option overrides the user-mode defaults, which means that the INSTALL program (1) uses your own login SID instead of "user.sys_admin" and (2) prompts for source media rather than automatically copying the software over the network from an initialized source area. In all other respects, special-case mode behaves like one of the other two modes of installation (your choice of source determines which one).

If you want to install software from an initialized source area on the network while using your own login SID, follow the directions for user-mode installations in Section 2.4.2. These directions include provisions for installing software in special-case mode.

If you want to install software from a source other than an initialized source area, or you want to install additional software in a previously initialized source area, follow the directions for an administrative-mode installation in Section 2.4.1. These directions also include provisions for installing software in special-case mode.

2.3 Additional Information About Administrative-mode Installations

The target of an administrative-mode installation generally serves as the source for subsequent user-mode installations (the administrative-mode target pathname is therefore the same as the user-mode source pathname). User-mode installations use both the INSTALL program and the software stored in the source area.



Your choice of target for an administrative-mode installation depends on whether you want the target node to RUN the software as well as act as a SOURCE for the software. If you also want the node to run the software, make the target the node's entry directory (for example, //node). If you just want the node to contain the software, you should make the target a subdirectory (for example, //node/product/source_area). In either case, users should then use the target of your administrative-mode installation as their source area.

You can install different optional software products into the same source area or into separate source areas. Whichever route you take, you can then selectively install optional products on user nodes or DSPs from the source area(s).

If you have a secure network, you must have system administrator rights to install in administrative mode. Also, during the procedure you must initialize the source area by running the INIT_SOURCE program. This program marks the installation program in the source area with special privileges for subsequent user-mode installations, such as use of the SID "user.sys_admin" during installation. The INSTALL program can then install software in protected system directories, even though the user running the program does not have rights to modify these directories. In open networks, you create a source area but you don't run INIT_SOURCE, since all users have rights to modify their system directories.

2.4 Installation Procedure

The following sections describe the administrative mode and the user mode of installation. To install software in special-case mode, consult Section 2.2 to determine which set of instructions you should follow.

2.4.1 Administrative Mode

NOTE: You can enter "q" or "quit" at any prompt in the INSTALL program to abort the installation and return to the Shell.

1. If you intend to create a source area for future installations, log on to a work node using a system administrator account (for example, my_name.sys_admin.%.%). Otherwise, log on using your own account (for example, my_name.%.%.%).
2. Set your working directory to the installation target. This target will become the source area for user installations. It can be a node entry directory (like //node) or it can be any subdirectory created prior to the installation (like //node/product/source_area). For example:

```
$ wd //node
```

3. Insert the source media into the drive and enter the RBAK command shown below. If you are using a tape cartridge, use the CT option shown in the example. If you are using a magnetic tape, use the M0 (Mzero) option. If you are using a floppy disk, use the F0 (Fzero) option.

NOTE: If you are using multiple floppy disks, insert the floppy disk with the numeral 1 at the end of its label (for example, "FLP8_product_n.n_1").

All of the RBAK commands shown below create an INSTALL directory on the target and write the installation software to the directory. When entering the RBAK command, use lower-case characters to ensure visibility of the install directory in case-sensitive environments. Note that you can leave the source media in the drive for use in a later step; if you remove the source media after executing the RBAK command, the INSTALL program will later prompt you to re-insert the media.

```
RBAK -DEV CT -F 1 install -AS install -L -MS -FORCE -SACL -DU
```

```
RBAK -DEV M0 -F 1 install -AS install -L -MS -FORCE -SACL -DU
```

```
RBAK -DEV F0 -F 1 install -AS install -L -MS -FORCE -SACL -DU
```

4. Set your working directory to the INSTALL directory on the target. For example:

```
$ wd //node/install
```

5. Execute the INSTALL program and follow the prompts. If you are installing software in special-case mode, use the `-my_sid` option.

For ADMINISTRATIVE MODE, type:

```
$ install
```

For SPECIAL-CASE MODE, type:

```
$ install -my_sid
```

6. The program may prompt you to enter an installation type, based on what products already exist in the source area. If it does, answer OPT and proceed. For example:

```
*****  
* SOFTWARE INSTALLATION -- Version n.n *  
*****
```

Software installation TYPES are:

```
STD      --   Install standard software  
RESTART  --   Restart the software installation  
ACL      --   Set ACLs for existing software  
CLEANUP  --   Run the Cleanup Procedure for ADD MODE installations  
OPT      --   Install optional software (e.g., Pascal, FORTRAN)
```

Please enter installation TYPE: OPT

7. When the program displays the names of one or more optional products, enter the name of the optional product that you want to install. For example, to install EtherBridge software you would type "etherbridge", as shown in the sample menu below.

Name	Description	Disk Blocks Needed (Adding New Software)
etherbridge	EtherBridge	100

OTHER If the optional product that you would like to install is not listed above, choose OTHER.
*Note: When you choose OTHER, you are asked a few questions then shown a display of Apollo's optional products. Check with your system administrator to determine which products your site has purchased and in which directory these products have been installed.

Enter the name of a single product you would like to install: etherbridge

8. When prompted for the name of the target, enter the appropriate pathname (that is, the node entry directory or subdirectory that you specified in Step 2). For example:

The TARGET is the node or subdirectory on which you are installing software. (e.g., '//my_node' or '//my_node/subdirectory')
Enter Target: //node

9. The INSTALL program prompts for the source media. Enter your choice.

```
Source MEDIA is one of:
  CTAPE  -- Cartridge Tape
  MTAPE  -- Magnetic Tape
  FLOPPY -- 8" or 5 1/4" Floppies
  NET    -- An area on the network with valid Software
Enter Source Media:
```

10. The INSTALL program may ask you to insert the media into the drive. Insert the media and press <RETURN>.
11. The INSTALL program installs the software, listing each file it copies from the source media. If the software resides on multiple floppy disks, the program prompts you to mount (that is, insert) the next disk and to press <RETURN> to continue.

When the INSTALL program finishes installing the software, it displays the following menu:

Options:

```
RERUN  -- There were errors in the transcript
        pad and you wish to rerun the installation.

FINISH -- The installation ran to completion error free.
        There is no additional optional software you
        wish to install.

CONTINUE -- Install additional optional software.
```

If you encountered any errors during the installation, correct the problem(s) and select RERUN. To locate error messages issued during installation, search backwards for the characters @? (an at sign followed by a question mark) in the installation's transcript pad.

If there were no errors, choose CONTINUE or FINISH. Selecting CONTINUE brings you back to the beginning of the INSTALL program; selecting FINISH makes the program exit. If you were installing software from magnetic tape, cartridge tape, or floppy disks, you can now remove the media from the drive.

12. If you have a secure network and you want the target of your installation to be used as a source area for future installations, run the INIT_SOURCE program (also run the program if you are adding software to a previously initialized source area). You must be logged in as a system administrator to perform this step.

Invoke INIT_SOURCE at the Shell prompt. When prompted, enter the pathname of the new source area (which is currently the target of your administrative-mode installation). Here is an example:

```
$ init_source

Please enter the name of the SOURCE AREA
for your network (e.g., '//NODE/SOURCE_AREA'):
//node

The source area for your network
has been set to: //node
```

This is the end of the administrative-mode installation procedure.

2.4.2 User Mode

NOTE: You can enter "q" or "quit" at any prompt in the INSTALL program to abort the installation and return to the Shell.

1. Log on to a work node using your own account (for example, my_name.%.%.%).
2. Set your working directory to the INSTALL directory in the source area (if necessary, ask your system administrator for the pathname). For example:

```
$ wd //node/install
```

3. Execute the INSTALL program and follow the prompts. If you are installing software in special-case mode, use the -my_sid option.

For USER MODE, type:

```
$ install
```

For SPECIAL-CASE MODE, type:

```
$ install -my_sid
```

4. The program may prompt you to enter an installation type, based on what products already exist in the source area. If it does, answer OPT and proceed. For example:

```
*****  
* SOFTWARE INSTALLATION -- Version n.n *  
*****
```

Software installation TYPES are:

```
STD      --   Install standard software  
RESTART  --   Restart the software installation  
ACL      --   Set ACLs for existing software  
CLEANUP  --   Run the Cleanup Procedure for ADD MODE installations  
OPT      --   Install optional software (e.g., Pascal, FORTRAN)
```

Please enter installation TYPE: OPT

5. When the program displays the names of one or more optional products, enter the name of the optional product that you want to install. For example, to install EtherBridge software you would type "etherbridge", as shown in the sample menu below.

Name	Description	Disk Blocks Needed (Adding New Software)
etherbridge	EtherBridge	100

OTHER If the optional product that you would like to install is not listed above, choose OTHER.
*Note: When you choose OTHER, you are asked a few questions then shown a display of Apollo's optional products. Check with your system administrator to determine which products your site has purchased and in which directory these products have been installed.

Enter the name of a single product you would like to install: etherbridge

6. When prompted for the name of the target, enter the appropriate pathname (that is, a node entry directory or subdirectory). For example:

The TARGET is the node or subdirectory on which you are installing software. (e.g., '//my_node' or '//my_node/subdirectory')
Enter Target: //node

7. The INSTALL program may prompt for the source media. If so, enter NET.

```
Source MEDIA is one of:
    CTAPE  -- Cartridge Tape
    MTAPE  -- Magnetic Tape
    FLOPPY -- 8" or 5 1/4" Floppies
    NET    -- An area on the network with valid Software
Enter Source Media: net
```

8. The INSTALL program may prompt for the source area. If so, enter the pathname (if you don't know it, ask your system administrator). For example:

```
The SOURCE AREA is the node or subdirectory from which you are
copying software. (e.g., '//node' or '//node/subdirectory')
Enter Source Area: //node
```

9. The INSTALL program installs the software, listing the name of each file it copies from the source area. If the software resides on multiple floppy disks, the program prompts you to mount (that is, insert) the next disk and to press <RETURN> to continue.

When the INSTALL program finishes installing the software, it displays the following menu:

Options:

```
RERUN  -- There were errors in the transcript
        pad and you wish to rerun the installation.

FINISH -- The installation ran to completion error free.
        There is no additional optional software you
        wish to install.

CONTINUE -- Install additional optional software.
```

If you encountered any errors during the installation, correct the problem(s) and select RERUN (if necessary, consult your system administrator for assistance). To locate error messages issued during installation, search backwards for the characters @? (an at sign followed by a question mark) in the installation's transcript pad.

If there were no errors, choose CONTINUE or FINISH. Selecting CONTINUE brings you back to the beginning of the INSTALL program; selecting FINISH makes the program exit. If you were installing software from magnetic tape, cartridge tape, or floppy disks, you can now remove the media from the drive.

This is the end of the user-mode installation procedure.

CHAPTER 3
DOCUMENTATION

3.1 Product Documentation

The following documents support the EtherBridge Version 1.4 product:

Planning DOMAIN Internets (009745) Rev. 00 defines DOMAIN internets and describes required site and system preparations.

Managing DOMAIN Internets (005694) Rev. 01 describes how to create, manage and troubleshoot DOMAIN internets.

Etherbridge Software Release Document, Version 1.4 (008922) Rev 03 describes the product, how to install the software, changes to the product's documentation, and product limitations, bugs and bug fixes.

CHAPTER 4
BUGS AND BUG FIXES

4.1 Known Limitations in Release 1.4

Do not use the Shell command NETSVC with -L(ocal) or -R(emote) options on a routing node. These options can disable routing services.

4.1.1 Using EtherBridge and TCP/IP Software

TCP_SERVER can use links to resources on other networks in the internet. In these configurations, if you close a routing port or if the routing node crashes, you can lose TCP/IP service for the network served by the closed port. For TCP_SERVER links to function correctly over routing nodes, the routers must be providing full internet service before you start TCP_SERVER. To recover from system crashes, restore DOMAIN internet routing service first. Then, if necessary restart TCP_SERVERS.

To see if the /SYS/BRIDGE/ETH/ETHBRIDGE process started successfully, use the AEGIS /com/pst command instead of the DOMAIN/IX /bin/ps command to view the process name.

The DOMAIN/IX command /bin/ps can cause the ETHBRIDGE process to halt. In order to view process statistics, use the AEGIS command,

```
/com/pst -un
```

Note that some DOMAIN/IX daemon names (such as routed, or inetd) appear only as UIDs in the /com/pst -un command output. However, a DOMAIN node dedicated to routing typically runs TCP_SERVER, RIP_SERVER (or the DOMAIN/IX daemon, routed), and ETHBRIDGE. On these nodes, /com/pst -un shows visible process names for the TCP/IP processes, TCP_SERVER and RIP_SERVER. Since the TCP/IP process RIP_SERVER and the DOMAIN/IX daemon routed perform the same function, use RIP_SERVER so that when necessary you can view the process name with the command, /com/pst -un.



008922