

Software

In addition to the Bridge Program, you will need:

For all networks

Disk Operating System (DOS)

Use the IBM Personal Computer Disk Operating System (PC DOS), version 3.3 or later to install and operate the Bridge Program. You need to be familiar with DOS commands, such as FORMAT and DISKCOPY, in order to prepare and use Bridge Program files.

Diagnostic Tests

Each IBM Token-Ring Network and IBM PC Network adapter comes with adapter diagnostics to use when you install the adapter and later as a problem determination tool. The adapter diagnostics are run each time you turn power on at the computer.

IBM Token-Ring Network adapters also come with a Ring Diagnostic diskette to use for problem determination of a segment in the IBM Token-Ring Network.

For an IBM PC Network only

Note: Workstations on a PC Network segment connected by a bridge will require the IBM Local Area Network Support Program Version 1.0 or higher.

Documentation

- Related manuals to help you plan, install, configure, and solve problems (see “Related Publications” on page ix)
- A completed Bridge Planning Chart, provided by the network administrator or planner, showing installation and configuration parameters used in installing and configuring the Bridge Program (see Chapter 2).

Summary of Steps

The following table provides a summary of the tasks you must complete to plan, install, configure, load, and operate the Bridge Program. Use it as a guide to help you find the required detailed information for the task you want to perform.

Table 1-2 (Page 1 of 2). Summary of Steps		
TASK	PERFORMER	REFERENCE
Plan for bridge installation	Administrator	Chapter 2 and Appendix C
Complete Bridge Planning Chart	Administrator	Chapter 2 and Appendix C
Gather hardware and software	Administrator, operator, or hardware installer	Chapter 1
Configure adapters and install hardware	Administrator, operator, or hardware installer	Chapter 3
Obtain Bridge Planning Chart from administrator	Operator	Chapter 2 and Chapter 3
Prepare backup copy of Bridge Program	Operator	Chapter 3
Install Bridge Program	Operator	Chapter 3
Configure Bridge Program	Operator	Chapter 3
Load Bridge Program	Operator	Chapter 4
Operate Bridge Program	Operator	Chapter 4

Table 1-2 (Page 2 of 2). Summary of Steps

TASK	PERFORMER	REFERENCE
Perform problem determination	Operator and administrator	Chapter 5 and Appendix A

Notes:

1. The administrator refers to the network administrator who designs, controls, and manages the LAN.
2. The operator refers to the bridge operator who installs, loads, and operates the Bridge Program.

Chapter 2. Planning the Bridge Configuration

The information in this chapter will help you make the decisions necessary to configure the Bridge Program correctly for your network. If you are using the IBM LAN Manager in your network, see page 2-2 for information concerning the capability of each version of the IBM LAN Manager to change the Bridge Program's configuration parameters.

As the network administrator or planner, you must fill out a copy of the Bridge Planning Chart specifying the values to use for the installation and configuration parameters for this Bridge Program. Refer to "Filling Out the Bridge Planning Chart" on page 2-4 to specify the installation and configuration parameters for the Bridge Program. A blank original of the Bridge Planning Chart is on page 2-31. Complete the Bridge Planning Chart as you read this chapter.

The section beginning on page 2-8 contains detailed descriptions of the installation parameters and charts that show default values and value ranges. The section beginning on page 2-12 contains detailed descriptions of the configuration parameters, charts that show default values and value ranges, and Configuration Program panel examples.

When you have finished filling out the Bridge Planning Chart, give a copy to the person who will install the bridge hardware and prepare the Bridge Program working disk or diskette. File a copy with the other permanent records for your network.

If your network contains a PC network segment, see Appendix C for additional information concerning locally administered addresses and the single-route broadcast parameter.

If your network contains a token-ring network segment, see the *IBM Local Area Network Administrator's Guide* for additional information concerning the configuration parameters. Also, see Appendix C for information concerning single-route broadcast and ETR.

Using the Bridge Program with the IBM LAN Manager

Read the following sections if you are using either the IBM LAN Manager Version 1.0 or Version 2.0 in your network with this version of the Bridge Program. These sections provide information concerning the capability of each version of the IBM LAN Manager to change the Bridge Program's configuration parameters.

Using the Bridge Program with the IBM LAN Manager Version 1.0

If you are using the IBM LAN Manager Version 1.0 in your network, you must be aware of the following:

- The IBM LAN Manager Version 1.0 **can** communicate with the Bridge Program only when it connects two token-ring network segments.

This version of the IBM LAN Manager **cannot** communicate with the Bridge Program when it connects two PC network segments or a token-ring network segment with a PC network segment.

- This version of the IBM LAN Manager provides Bridge Profile information **only** about bridges that connect two token-ring network segments.
- You can change **only** the manual single-route broadcast parameter of the Bridge Program to on or off.

If you use Version 1.0 to change the single-route broadcast parameter value of the Bridge Program, the value will be permanently recorded by writing it to the ECCPARMS.BIN file.

- **Do not** change any other bridge configuration parameter using this version of the IBM LAN Manager.

For more information about Version 1.0 of the IBM LAN Manager, see the *IBM LAN Manager User's Guide*, Version 1.0.

Using the Bridge Program with the IBM LAN Manager Version 2.0

If you are using the IBM LAN Manager Version 2.0 in your network, you must be aware of the following:

- The IBM LAN Manager Version 2.0 **can** communicate with the Bridge Program only if the LAN Manager is installed on a token-ring network segment or a PC network broadband segment. Therefore, if you are using the Bridge Program to connect PC network baseband segments, the LAN Manager must be installed on a PC network broadband or token-ring network segment elsewhere in your network.
- Version 2.0 of the IBM LAN Manager provides Bridge Profile information about all IBM bridges in the network.
- You **can** change the following bridge configuration parameters using Version 2.0 of the IBM LAN Manager
 - Bridge number
 - LAN segment number (for primary and alternate adapters)
 - Frame forwarding active
 - Bridge performance threshold
 - Hop count limit
 - Single-route broadcast (selection mode and parameter value)
 - Link passwords.
- Bridge configuration parameter values changed by the IBM LAN Manager will be permanently recorded by writing them to the ECCPARMS.BIN file.

For more information about Version 2.0 of the IBM LAN Manager, see the *IBM LAN Manager User's Guide*, Version 2.0.

The Bridge Planning Chart

Fill out a Bridge Planning Chart for each bridge in your network. The chart will be used for hardware and software installation and for problem determination. Place each completed chart with your network's permanent records.

The last page of this chapter is a blank Bridge Planning Chart. Before you fill out the chart, make the required number of copies of the blank original. Save the original for making future copies.

Note: DO NOT use the Bridge Planning Chart or information about filling out the chart found in the *IBM Token-Ring Network Introduction and Planning Guide*, the *IBM Local Area Network Administrator's Guide*, or in previous versions of the *IBM Token-Ring Network Bridge Program User's Guide*. It may not be correct for this version of the Bridge Program.

Filling Out the Bridge Planning Chart

Complete the Bridge Planning Chart as you read this chapter.

Section 1 of the Bridge Planning Chart shows the physical location of the bridge in your network.

Section 2 contains installation parameter values to use when you install the Bridge Program as explained in Chapter 2.

Section 3 contains parameter values to use when you prepare the configuration file as explained in Chapter 2.

The Chart Heading

In the spaces provided at the top of the chart:

- Write the date
- Select and write a unique bridge identification name or number to identify this bridge in your network.

This name or number is for your identification purposes only and is not known by the Bridge Program or the network.

How to Load the Bridge Program

Place a check mark in the correct space on the chart to indicate how you will load the Bridge Program into the bridge computer memory: by using a DOS command or automatically.

Load Using a DOS Command

A bridge operator can use a DOS command to load the Bridge Program. Each time the Bridge Program is loaded, the operator types either the Bridge Program load command or the name of a batch file containing the load command. (See “Instructions to Load the Bridge Program Using a DOS Command” on page 4-3 for more information.)

Load Automatically

You can load the Bridge Program automatically:

- With the only operator action being to turn on the power at the bridge computer
- Without further operator action if you use the **Restart on error** bridge function.

Automatic loading requires an AUTOEXEC.BAT file on the working disk or diskette with the Bridge Program files. The AUTOEXEC.BAT file must contain the Bridge Program load command (see “AUTOEXEC.BAT File” on page 3-6, “AUTOEXEC.BAT File” on page 3-9, and “Automatic Loading Instructions” on page 4-5).

Automatic loading is useful if you are using the computer only for the bridge, or in case of a power failure so that the Bridge Program can be restarted without operator action. The **Restart on error** function also requires automatic loading.

Bridge Planning Chart Section 1 — Physical Connections

This section of the chart shows the physical connection of the bridge to each LAN segment that it connects.

At the center of the sketch indicate the location and number of the computer that will be used for the bridge.

Starting with the primary adapter, write on the chart the following information for the LAN segment connections to each adapter:

1. The type of adapter used in the bridge computer.
2. The number of the cable, if applicable.
3. The type of cable connected to each adapter card
 - For the IBM Token-Ring Network—an IBM Token-Ring Network PC Adapter Cable or Type 3 Media Filter (if the IBM Token-Ring Network operates at a data rate of 4 Mbps and uses telephone twisted-pair media as its lobe wiring) or other cable
 - For the broadband IBM PC Network—a Community Antenna Television (CATV) cable (75-ohm coaxial cable)
 - For the IBM PC Network Baseband—telephone twisted-pair cable, type 3 specification.
4. The number of the faceplate to which the cable is attached, if applicable.
5. The type of connecting hardware being used
 - For the IBM Token-Ring Network—an access unit
 - For the IBM PC Network—a splitter or other network hardware.
6. Locate the correct box for the IBM Token-Ring Network or the IBM PC Network (shaded in gray).

7. Fill out the correct box for your network as follows:

- The location, number, and lobe receptacle of the access unit to which each IBM Token-Ring Network adapter is attached, or
- The location of the connecting hardware to which each IBM PC Network adapter is attached.

8. Return to step 1 to complete Section 1 for the alternate adapter.

Refer to the *IBM Token-Ring Network Introduction and Planning Guide*, the *IBM PC Network Broadband Planning Guide*, or the *IBM PC Network Baseband Planning Guide* for more information about physically locating and labeling the devices in a network. DO NOT use the Bridge Planning Chart information in the *IBM Token-Ring Network Introduction and Planning Guide*, the *IBM Local Area Network Administrator's Guide*, or in the *IBM Token-Ring Network Bridge Program User's Guide*. It may not be correct for this version of the Bridge Program.

Bridge Planning Chart Section 2 — Bridge Installation Parameters

Follow these steps to complete Section 2 of the Bridge Planning Chart.

1. Write in the type of each adapter in the bridge computer (for example, 16/4 Adapter/A).
2. Write in the data rate of each IBM Token-Ring Network adapter in the bridge computer.

This field pertains **only** to the IBM Token-Ring Network adapter.

3. Write in the locally administered address for each adapter in the bridge computer.

To obtain more information about locally administered addresses:

- For the IBM Token-Ring Network, see page 2-9 and the *IBM Local Area Network Administrator's Guide*
- For the IBM PC Network, see page 2-9 and Appendix C.

4. Write in the shared random access memory (RAM) address for each adapter in the bridge computer.

See pages 2-9 and 2-10 for more information on shared RAM addresses.

5. Write in if you will be using ETR.

See page 2-11 and “Early Token Release” on page C-16 for more information on ETR.

ETR pertains **only** to the IBM Token-Ring Network adapter.

Installation Parameter Defaults and Allowed Ranges

See Table 2-1 for the default values and value ranges for each installation parameter.

Table 2-1. Installation Parameter Value Ranges and Defaults		
Parameter Description	Default Value	Allowed Range
Locally administered address	000000000000	400000000001 - 40007FFFFFFF
†Shared RAM Address	0000	
†ETR	Y	Y,N
†This configuration parameter applies to only the IBM Token-Ring Network. This parameter is ignored by the IBM PC Network.		

Continue reading this chapter for information about these installation parameters.

Installation Parameter Descriptions

As the network administrator or planner, you must coordinate the selection of values for all installation parameters in your network.

Locally Administered Address

Explanation: Use this parameter to define the network address for the primary or the alternate adapter. If the value is all zeros, the universally administered address permanently encoded on the adapter becomes the network address.

Refer to the instructions in your computer's *Quick Reference* manual for using the computer's Reference Diskette to determine and set the values for this parameter.

For the IBM Token-Ring Network, see the *IBM Local Area Network Administrator's Guide* for more information about assigning locally administered addresses.

For the IBM PC Network, see "Locally Administered Addresses" on page C-5 for more information about locally administered addresses and how to assign them.

Note: If you use locally administered addresses, they must be unique for each primary and alternate adapter in your network.

Shared RAM Address (Adapter 0 — primary)

Explanation: Use this parameter to define where in the computer memory map to locate the primary adapter RAM.

Note: The shared RAM address value is ignored for all IBM PC Network adapters (specify the default value 0000).

The shared RAM address must be located on a 16 KB boundary and is dependent upon the options installed in your computer. The primary adapter's shared RAM address must not conflict with any of the following addresses:

1. Shared RAM address of the alternate token-ring network adapter
2. Read-only memory (ROM) address of the alternate adapter
3. ROM address of this adapter.

Use the default value of 0000 for the shared RAM address on the primary bridge adapter unless there are other features and options in your computer that require you to change the values.

If you have a specific need to use values other than the defaults, use the configuration information on the computer's Reference Diskette to determine and set the shared RAM address for each adapter.

Shared RAM Address (Adapter 1 — alternate)

Explanation: Use this parameter to define where in the computer memory map to locate the alternate adapter RAM.

Note: The shared RAM address value is ignored for all IBM PC Network adapters (specify the default value 0000).

The shared RAM address must be located on a 16 KB boundary and is dependent upon the options installed in your computer. The alternate adapter's shared RAM address must not conflict with any of the following addresses:

1. Shared RAM address of the primary token-ring network adapter
2. ROM address of the primary adapter
3. ROM address of this adapter.

Use the default value of 0000 for the shared RAM address on the bridge adapter unless you have one IBM PC Network adapter and one IBM Token-Ring Network adapter, or if there are other features and options in your computer that require you to change the values.

If you have one IBM PC Network Adapter and one IBM Token-Ring Network adapter in the bridge computer, change the shared RAM address on the IBM Token-Ring Network adapter (which must be the alternate adapter) from the default to D400.

If you need to use values other than the defaults, use the configuration information on the computer's Reference Diskette to determine and set the shared RAM address for each adapter.

Early Token Release

Explanation: Use this option to increase the utilization of the network by reducing the average time required for a network adapter to gain access to a free token. It is automatically enabled when the 16/4 adapter's data rate is set to 16 Mbps. (ETR is ignored if the token-ring network segment operates at a data rate of 4 Mbps and for the IBM PC Network.) Valid values are:

- N Do not use ETR
- Y Use ETR.

The default value for both the primary and alternate adapters is **Y (Yes)**.

See "Early Token Release" on page C-16 for additional information about ETR and how it affects the performance of the network.

Bridge Planning Chart Section 3 — Bridge Configuration Parameters

This section of the chart corresponds with the panels of the Configuration Program.

In the correct space on the chart write the value for each changed parameter. Write a dash in the space if the default value is to be used.

More information about these configuration parameters is provided in "Configuration Program Panels and Parameter Descriptions" on page 2-15. For additional information, see "Single-Route Broadcast Information" on page C-6 and the *IBM Local Area Network Administrator's Guide* to help you select valid values for the other parameters for the IBM Token-Ring Network. For the IBM PC Network, see Appendix C to help you select valid values for the single-route broadcast parameter.

When you have finished filling out the Bridge Planning Chart, give a copy to the person who will be installing the bridge hardware and preparing the Bridge Program working disk or diskette. File a copy with the other permanent records for your network.

Configuration Parameter Defaults and Allowed Ranges

See Table 2-2 for a list of the Bridge Program's configuration parameters, the default values, and the allowed ranges for these parameters.

Table 2-2 (Page 1 of 2). Configuration Parameter Value Ranges and Defaults

Parameter Description	Default Value	Allowed Range
Bridge number	1	0-9, A-F
LAN segment number - adapter 0 (primary)	001	001-FFF
LAN segment number - adapter 1 (alternate)	002	001-FFF
Frame forwarding active	Y	Y,N
Bridge performance threshold	10	0-9999

Table 2-2 (Page 2 of 2). Configuration Parameter Value Ranges and Defaults

Parameter Description	Default Value	Allowed Range
Restart on error	Y	Y,N
Drive for memory dump on error	0	0,A,B,C,D
Drive for error log	0	0,A,B,C,D
Hop count limit	7	1-7
Single-route broadcast (selection mode)	M (Manual)	M (Manual) A (Automatic)
Single-route broadcast active (manual mode)	Y	Y,N
Automatic single-route broadcast: Bridge label Path cost	8000 0000 See Table 2-3 on page 2-26	0000-FFFF 0000-FFFF
Parameter server	Y	Y,N
Error monitor	Y	Y,N
† Configuration report server	Y	Y,N
Link password 0	00000000	
Link password 1	00000000	
Link password 2	00000000	
Link password 3	00000000	
†This configuration parameter applies to only the IBM Token-Ring Network. This parameter is ignored by the IBM PC Network.		

Using The Parameter Defaults

Select one of the following ways to use the parameter default values in the configuration file for the Bridge Program:

1. Copy the configuration file (ECCPARMS.BIN) from the Bridge Program diskette onto your working diskette or fixed disk just as it is provided; do not alter it. All values in the provided file are the default values.
2. Do not have a copy of the configuration file (ECCPARMS.BIN) on your working diskette or fixed disk; erase it from or do not copy it to the working diskette or fixed disk.

When the Bridge Program does not find the ECCPARMS.BIN file on the working diskette or fixed disk, it will use the parameter default values.

Note: You do not need to have a copy of the Configuration Program (ECCCNFG.EXE) on your working diskette or fixed disk to use the parameter default values.

If you decide to use the default values, you do not need to alter the configuration file. Be sure to do the following:

- Indicate on the Bridge Planning Chart that the defaults are to be used by placing a check mark beside "Use defaults."

The check mark indicates to the person installing the Bridge Program whether it is necessary to use the Configuration Program to alter any of the bridge configuration parameters.

- Write a dash in each space on the Bridge Planning Chart next to each parameter for which the default will be used.

The rest of Chapter 2 contains samples of Configuration Program panels and descriptions of the configuration parameters to help you decide whether to change any parameters from the defaults.

Configuration Program Panels and Parameter Descriptions

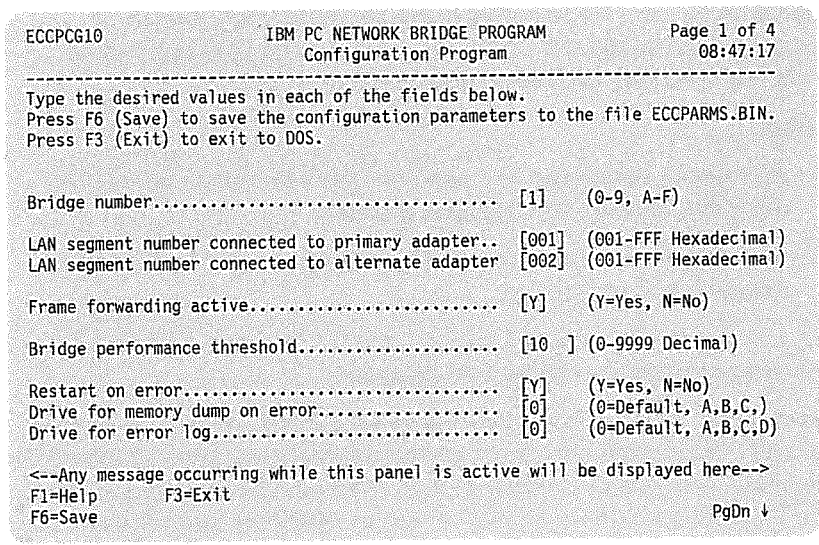


Figure 2-1. The Configuration Program with Default Parameters
(Page 1 of 4)

Bridge Number

Explanation: This parameter uniquely identifies a bridge to the Bridge Program when frames are forwarded through the bridge. The network administrator or planner assigns a bridge number to each bridge in the network. Multiple bridges spanning the same two LAN segments (that is, parallel bridges) **must** have different bridge numbers.

Note: You can use the default bridge number if none of the bridges connected to a LAN segment are parallel bridges.

LAN Segment Number (Primary Adapter)

Explanation: This parameter specifies the 3-digit number used to identify the LAN segment to which the primary adapter (adapter 0) is attached. The network administrator or planner assigns this value. The value for the LAN segment to which the primary adapter is attached must be different from the value for the LAN segment to which the alternate adapter is attached.

Notes:

1. All bridges connected to a specific LAN segment must refer to that LAN segment by the **same** number.
2. All bridges connecting the same two LAN segments must have **different** bridge numbers.

LAN Segment Number (Alternate Adapter)

Explanation: This parameter specifies the 3-digit number used to identify the LAN segment to which the alternate adapter (adapter 1) is attached. The network administrator or planner assigns this value. The value of the LAN segment number to which the alternate adapter is attached must be different from the value of the LAN segment number to which the primary adapter is attached.

Notes:

1. All bridges connected to a specific LAN segment must refer to that LAN segment by the **same** number.
2. All bridges connecting the same two LAN segments must have **different** bridge numbers.

Frame Forwarding Active

Explanation: This parameter specifies whether the bridge will begin transmitting frames from one LAN segment to the other when the Bridge Program is initialized.

Warning: If you have the IBM LAN Manager 1.0 in your network, you **must** set **Frame Forwarding Active** to **Y (Yes)** because this version does not have a function to start or stop frame forwarding. Therefore, if you set **Frame Forwarding Active** to **N (No)**, the Bridge Program will not be able to forward frames to other workstations, which could isolate LAN segments from the network.

Set this parameter value to **N (No)** for the following reasons:

- You want to use the IBM LAN Manager Version 2.0 to activate frame forwarding for a bridge through its link with the Bridge Program.
- You want to isolate a LAN segment or segments from the rest of the network for a particular reason or time period, and activate frame forwarding only at certain times or for certain tasks. A network administrator can use this function to control each bridge individually from a central location.

Bridge Performance Threshold

Explanation: This parameter defines the tolerance for lost frames. It expresses the number of frames per 10 000 that can be lost before notification. This notification takes the form of an entry on the Performance Statistics panel (see “The Performance Statistics Panel” on page 4-29) and a report to any network manager programs that have requested such reports.

Adjust the bridge performance threshold value over time to provide a better correlation between the occurrence of the threshold being exceeded and an awareness of a problem in response time, data exchange, or application program operation. The default is 10 frames per 10 000.

For the IBM Token-Ring Network, refer to the *IBM Local Area Network Administrator's Guide* for information on determining the value for this parameter. For the IBM PC Network, refer to “Bridge Performance Analysis” on page C-18 for information on determining the value for this parameter.

Restart on Error

Explanation: Use this parameter to restart the bridge computer automatically, reload DOS, and reload the Bridge Program if an adapter check or a critical resource depletion occurs. Valid values are:

- | | |
|---|---|
| N | No automatic restart |
| Y | Reload DOS and execute the AUTOEXEC.BAT file. |

To use this option, verify the following:

1. The AUTOEXEC.BAT file on the Bridge Program Working Diskette or fixed disk directory in the default drive contains all of the commands necessary to load and start the Bridge Program.
 - a. If the AUTOEXEC.BAT file is on a diskette, the default drive must contain the diskette and be ready (door closed, if it has a door) whenever the Bridge Program is running. The diskette must be prepared as a system diskette (formatted with the /S option).
 - b. If the AUTOEXEC.BAT file is on a fixed disk, diskette drives **A** and **B**, if present, must be empty (doors open, if they have doors).
 2. In order for the **Restart on error** option to function without operator action, the AUTOEXEC.BAT file must not contain any commands requiring manual responses, such as time and date requests.
-

Drive for Memory Dump on Error

Explanation: Use this parameter to write an image of the Bridge Program memory and buffers on the diskette or fixed disk in the specified drive if a critical resource depletion occurs.

The drive must be one that is installed and operating in the computer, and there must be enough space (210 KB) available on a disk or diskette in that drive. The dump will not be written if there is not enough space. If there is a file with the same name (ECCDUMP.DAT) already existing on that disk or diskette, it will be overwritten.

If the bridge computer has two diskette drives, use the second diskette drive for the memory dump. Valid values are:

- | | |
|-----|---|
| 0 | Use default drive |
| A-D | The drive to which the dump is to be written. |

Note: If the **Restart on error** option is also selected, the drive specified for the dump must be the same as or a later sequential alphabetic character than the system drive for the restart.

Drive for Error Log

Explanation: Use this parameter to specify the drive on which to log errors in the file ECCLOG.DAT (the drive must be installed and operating in the computer). Entering the drive as "0" will log the errors on the default drive. Valid values are:

- | | |
|-----|--|
| 0 | Use default drive |
| A-D | The drive to which the error log is to be written. |

The errors logged are those that cause the Bridge Program to stop for some reason. The file entries can provide problem determination information, particularly in cases where the bridge is unattended for long periods of time and uses **Restart on error** to reload the Bridge Program after an error causes it to stop running.

The ECCLOG.DAT file is not erased from a disk or diskette when the Bridge Program is restarted. Entries are added to the file until the file is full. The Shutdown panel displays a message when the ECCLOG.DAT file fills up. You must then erase the file or supply a new diskette for the file before you restart the Bridge Program. (If you need to save the information in the ECCLOG.DAT file for problem determination, copy the file to another diskette before you erase the file or print the file.)

You can view the ECCLOG.DAT file using a text editor such as DOS EDLIN or IBM Personal Editor. (You cannot use the editor on the bridge computer while the Bridge Program is running, however.)

07-13-89 16:25:32	
Network adapter 0 was removed by network manager.	ECCBR228I
07-17-89 14:51:36	
Abnormal system termination (110).	ECCBR990E
07-17-89 14:51:42	
Memory dump was taken.	ECCBR992I
07-18-89 11:22:12	
Network adapter 0 command failed (03, 07, 0059).	ECCBR217E
07-21-89 11:37:05	
Network adapter 0 command failed (03, 07, 0059).	ECCBR217E
07-21-89 10:43:48	
Network adapter 0 command failed (03, 07, 0011).	ECCBR217E
08-18-89 14:37:09	
Error log is full, data might be lost.	ECCBR084W
08-19-89 09:25:18	
Network adapter 0 command failed (03, 07, 0011).	ECCBR217E
08-24-89 12:33:21	

Figure 2-2. Error Log Example