3. Install a bridge computer with a faster processor.

   For example, upgrade the bridge computer from a PS/2 Model 50 to a PS/2 Model 80.

4. Install a parallel bridge.

The traffic being sent to a large backbone LAN segment can be estimated by summing the frames or bytes forwarded to it by each connecting bridge during the same time period.

On 4 Mbps LAN segments only, the IBM Token-Ring Network Trace and Performance Program can be used to measure source and destination ring utilization.

- Counter G indicates that the bridge is receiving invalid frames from a malfunctioning attaching device (either the frame is too long, the frame is too short, or the routing information is invalid). See the description of Counter G on page C-20.

- Counter H contains the number of frames received by an IBM PC Network bridge adapter that were not routed across this bridge.

  Counter H accumulates frames passed to the Bridge Program only while the IBM PC Network bridge adapter is not experiencing congestion. When an IBM PC Network bridge adapter experiences congestion, the number of frames that arrived at the adapter but could not be passed to the Bridge Program are counted in counter F.

  Counter H is used in analysis calculations that include the total number of frames received at an IBM PC Network bridge adapter.

Appendix D. Bridge Performance Analysis Worksheets

Included in this appendix are blank originals of:

- The Bridge Performance Analysis Worksheet
- The Bridge Performance Analysis Calculations Worksheet.

Use these worksheets to evaluate the flow of traffic crossing a bridge.

Note: Before using each worksheet, make as many copies of the blank original as needed for each performance measurement. Save the originals for making future copies.

A blank original of the Bridge Performance Analysis Worksheet is included in this appendix. This appendix also contains instructions for filling it out.

Use this worksheet with the Bridge Performance Analysis Calculations Worksheet in the *IBM Local Area Network Administrator's Guide* to evaluate the flow of traffic crossing a bridge.

Note: Before using this worksheet, make as many copies of the blank original as needed for each performance measurement. Save the original for making future copies.

The Bridge Performance Analysis Worksheet

Use the Bridge Performance Analysis Worksheet at the bridge station to record the values of the performance counters displayed on the Bridge Program Performance Counters panel.

To use the Bridge Performance Analysis Worksheet:

1 Make at least one copy of the blank original worksheet. Save the original to copy again later.

2 At the bridge station, select "Configuration Data" from the Main Menu.

3 On a copy of the worksheet:

- Fill in the current date.

- Fill in the bridge name or number.

  You can use the bridge number, or some other identifier that will uniquely identify this bridge.

- Record the Bridge Program Level shown on the Configuration Data panel.

- Fill in the LAN segment types.

4 Determine the length of time for the measurement period.

5 Return to the Bridge Program Main Menu and select "Performance Counters."

6 When the Performance Counters panel is displayed, press **F9 (Reset)** to clear the performance counters to zeros. (Pressing **F9** will not affect the performance counters accessible from the IBM LAN Manager or those used for the Performance Statistics.)

On the copy of the worksheet, record the date and time the counters were reset to zeros. The times are displayed and should be recorded on the worksheet in the format HH:MM:SS,

where H = hour, M = minute, and S = second. (08:35:20 means 35 minutes and 20 seconds after 8 o'clock.)

7 Wait until the desired measurement period has elapsed.

Other Bridge Program functions can be used during the measurement period.

If the message "ECCBR189W Performance counters have overflowed, press reset to clear them" appears during the measurement period, the measurement will be in error. Return to step 6 on page D-3 and use a shorter measurement period.

8 At the end of the desired measurement period, display the Performance Counters panel again.

If you were using another Bridge Program function, return to the Performance Counters panel from the Main Menu.

If no other Bridge Program function was used and the Performance Counters panel is still displayed, press **F5 (Refresh)** to update the panel information to the current performance counter values and time of day.

9 On the copy of the Bridge Performance Analysis Worksheet, record the date and time of day the counters were refreshed, and the performance counter values.

10 Add the counter values for the two LAN segments to obtain and record the bridge totals.

Use the information recorded on the worksheet in making the calculations on the Bridge Performance Analysis Calculations Worksheet.

Bridge Performance Analysis Worksheet
For the IBM PC Network Bridge Program

Date _____

Bridge Name or Number _____

Bridge Program Level _____

LAN Segment Types _____ _____

At the bridge computer:

1. **Display the first Configuration Data panel.**
2. **Record the Bridge Program Level and LAN Segment Types on the worksheet.**
3. **Display the Bridge Program Performance Counters panel.**
4. **Press F9 (Reset) to clear the counters.**
5. **Wait ___ minutes.**
6. **Refresh (press F5) to display the counters again.**
7. **In the spaces provided below, write the information from the panel.**
8. **Add the values for each LAN segment to obtain each Bridge Total.**

Counters reset on ___ - ___ - ___ at ___ : ___ : ___

Counters refreshed on ___ - ___ - ___ at ___ : ___ : ___

Frames Forwarded Values for:

	LAN Segment _____	+ LAN Segment _____	= Bridge Total
Broadcast frames	(A1) _____	+ (A2) _____	= (A3) _____
Broadcast bytes	(B1) _____	+ (B2) _____	= (B3) _____
Non-broadcast frames	(C1) _____	+ (C2) _____	= (C3) _____
Non-broadcast bytes	(D1) _____	+ (D2) _____	= (D3) _____

Frames Not Forwarded Because:

	LAN Segment _____	+ LAN Segment _____	= Bridge Total
Target LAN segment inoperative	(E1) _____	+ (E2) _____	= (E3) _____
Adapter congestion	(F1) _____	+ (F2) _____	= (F3) _____
Other reasons	(G1) _____	+ (G2) _____	= (G3) _____

Other Frames Processed by the Bridge:

	LAN Segment _____	+ LAN Segment _____	= Bridge Total
Frames not routed across this bridge	(H1) _____	+ (H2) _____	= (H3) _____

Bridge Performance Analysis Calculations Worksheet

Date _____ Bridge Identification _____
Bridge Program Level _____ LAN Segment Types _____ _____

Measurement wait time in seconds: J = _____

Broadcast Frames Forwarded:

LAN Segment _____	LAN Segment _____	Bridge Total

Frames per second:

$\dfrac{A1}{J} = K1$ _____ $\dfrac{A2}{J} = K2$ _____ $\dfrac{A3}{J} = K3$ _____

Bytes per second:

$\dfrac{B1}{J} = L1$ _____ $\dfrac{B2}{J} = L2$ _____ $\dfrac{B3}{J} = L3$ _____

Mean frame bytes:

$\dfrac{B1}{A1} =$ _____ $\dfrac{B2}{A2} =$ _____ $\dfrac{B3}{A3} =$ _____

Non-Broadcast Frames Forwarded:

LAN Segment _____	LAN Segment _____	Bridge Total

Frames per second:

$\dfrac{C1}{J} = M1$ _____ $\dfrac{C2}{J} = M2$ _____ $\dfrac{C3}{J} = M3$ _____

Bytes per second:

$\dfrac{D1}{J} = N1$ _____ $\dfrac{D2}{J} = N2$ _____ $\dfrac{D3}{J} = N3$ _____

Mean frame bytes:

$\dfrac{D1}{C1} =$ _____ $\dfrac{D2}{C2} =$ _____ $\dfrac{D3}{C3} =$ _____

Total Frames Forwarded:

LAN Segment _____	LAN Segment _____	Bridge Total

Frames per second:

$K1 + M1 =$ _____ $K2 + M2 =$ _____ $K3 + M3 =$ _____

Bytes per second:

$L1 + N1 =$ _____ $L2 + N2 =$ _____ $L3 + N3 =$ _____

Mean frame bytes:

$\dfrac{B1 + D1}{A1 + C1} =$ _____ $\dfrac{B2 + D2}{A2 + C2} =$ _____ $\dfrac{B3 + D3}{A3 + C3} =$ _____

(Continued on other side)

Total Frames Received by the Bridge:

LAN Segment _____	LAN Segment _____	Bridge Total
$(A1 + C1 + E1 + F1 + G1 + H1) =$	$(A2 + C2 + E2 + F2 + G2 + H2) =$	$(A3 + C3 + E3 + F3 + G3 + H3) =$
$Q1$ _____	$Q2$ _____	$Q3$ _____

Total Frames Routed to the Bridge (Other Than During Adapter Congestion):

LAN Segment _____	LAN Segment _____	Bridge Total
$(A1 + C1 + E1 + G1) =$	$(A2 + C2 + E2 + G2) =$	$(A3 + C3 + E3 + G3) =$
$P1$ _____	$P2$ _____	$P3$ _____

Percentages:

LAN Segment _____	LAN Segment _____	Bridge Total

Percent of Frames Not Forwarded; Target LAN Segment Inoperative:

$$\frac{(100 \times E1)}{P1} = \underline{\hspace{2cm}} \qquad \frac{(100 \times E2)}{P2} = \underline{\hspace{2cm}} \qquad \frac{(100 \times E3)}{P3} = \underline{\hspace{2cm}}$$

Percent of Frames Not Forwarded; Other Reasons:

$$\frac{(100 \times G1)}{P1} = \underline{\hspace{2cm}} \qquad \frac{(100 \times G2)}{P2} = \underline{\hspace{2cm}} \qquad \frac{(100 \times G3)}{P3} = \underline{\hspace{2cm}}$$

Percent of Frames Not Forwarded (Other Than During Adapter Congestion):

$$\frac{100 \times (E1 + G1)}{P1} \qquad \frac{100 \times (E2 + G2)}{P2} \qquad \frac{100 \times (E3 + G3)}{P3}$$

$$= \underline{\hspace{2cm}} \qquad = \underline{\hspace{2cm}} \qquad = \underline{\hspace{2cm}}$$

Percent of Frames Not Processed During Adapter Congestion:

$$\frac{(100 \times F1)}{P1} = \underline{\hspace{2cm}} \qquad \frac{(100 \times F2)}{P2} = \underline{\hspace{2cm}} \qquad \frac{(100 \times F3)}{P3} = \underline{\hspace{2cm}}$$

Percent of Total Frames That Arrived at the Bridge and Were Not Forwarded:

$$\frac{100 \times (E1 + F1 + G1)}{Q1} \qquad \frac{100 \times (E2 + F2 + G2)}{Q2} \qquad \frac{100 \times (E3 + F3 + G3)}{Q3}$$

$$= \underline{\hspace{2cm}} \qquad = \underline{\hspace{2cm}} \qquad = \underline{\hspace{2cm}}$$

Appendix E. License Information

This Appendix contains License Information about the IBM PC Network Bridge Program, Version 1.0. The product identifier for this program is 560111001 and the program part number is 96X5860.

International Business Machines Corporation   Armonk, New York 10504
STATEMENT OF LIMITED WARRANTY
(MEDIA AND PROGRAM)

International Business Machines Corporation (IBM) grants the following limited warranty for this IBM Licensed Program (Program) if this copy of the Program is delivered by IBM, an IBM Authorized Dealer for this Program, or any other IBM approved supplier for this Program to a user. (Such a user is referred to herein as "original user.") A "user" shall mean a Customer who acquired possession of and is licensed to use this copy of the Program for its own use or for use within its own business enterprise and not for remarketing. Any unused portion of the Warranty Period may be conveyed to another user.

1. MEDIA
   The Warranty Period for the media on which the Program is recorded is for three months from the date of its delivery to the original user as evidenced by a receipt.

   IBM warrants that this media will be free from defects in material and workmanship under normal use during the Warranty Period. If notified during the Warranty Period that the media contains such defects, IBM will replace such media. If IBM is unable to deliver replacement media, you may terminate your license and your money will be refunded upon return of all your copies of the Program.

2. PROGRAM
   The Warranty Period for this Program is for three months from the date of its delivery to the original user as evidenced by a receipt.

   IBM warrants that this Program, if unaltered, will conform to its Program Specifications during the Warranty Period when such Program is properly used on a machine for which it was designed. If notified during the Warranty Period that the Program contains defects such that it does not conform to its Program Specifications, IBM will 1) attempt to make the Program operate as warranted a) if prior to the Service Expiration Date, by providing a correction, or b) if after the Service Expiration Date, by providing any existing corrections, or 2) replace the Program with a functionally equivalent Program, as determined by IBM. In the event that IBM does not provide such a remedy, you may terminate your license and your money will be refunded upon return of all your copies of the Program.

   IBM does not warrant that any other defects in the Program will be corrected or that the operation of the Program will be uninterrupted.

This limited warranty will apply only if the Program is licensed and located in the United States or Puerto Rico.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

Some states do not allow the exclusion of implied warranties, so the above exclusion may not apply to you. This limited warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Following the end of the Warranty Period, Program Services may be available until the Service Expiration Date. The License Information contains details on such availability.

If you have a question as to where you may obtain warranty service, see the Statement of Service in the License Information for this Program.

Program Specifications

The IBM PC Network Bridge Program, Version 1.0, when installed
with the required hardware and software (see "Specified Operating
Environment" on page E-7), enables communication between
devices that are connected to different LAN segments. A LAN
segment is either a ring of an IBM Token-Ring Network or a bus of a
broadband IBM PC Network or IBM PC Network Baseband. The
Bridge Program connects broadband and baseband PC Network seg-
ments and Token-Ring Network segments operating at either 4 or 16
Mbps. Broadband PC Network segments can use the same or dif-
ferent frequency pairs.

Specifically, the Bridge Program connects two LAN segments, such
as:

- Two broadband IBM PC Network segments using the same or dif-
  ferent frequency pairs

- Adapters using different frequency pairs on the same broadband
  IBM PC Network segment

- One IBM Token-Ring Network segment operating at either 4 or 16
  Mbps and one broadband IBM PC Network segment

- Two IBM Token-Ring Network segments operating at either 4 or
  16 Mbps

- Two baseband IBM PC Network segments

- One IBM Token-Ring Network segment and one baseband IBM
  PC Network segment

- One broadband IBM PC Network segment and one baseband IBM
  PC Network segment.

The Bridge Program also supports communication with up to four IBM
LAN Manager programs.

Packaged with the Bridge Program are two additional programs:

- An Installation Program to allow you to install the Bridge
  Program on one or more bridge computers

- A Configuration Program to allow you to configure the Bridge
  Program to the needs of your network.

The computer in which the Bridge Program is loaded is a dedicated machine and cannot be used for any other operation while performing as a bridge. For example, you do not load the IBM LAN Manager while the Bridge Program is running in the same computer.

The Bridge Program functions are:

- Frame forwarding active. If the Bridge Program is communicating with the IBM LAN Manager and frame forwarding is enabled, the user can choose to have the Bridge Program:

  - Begin to forward data across the bridge as soon as the Bridge Program is initialized
  - Wait to forward data until the IBM LAN Manager program enables Bridge Program frame forwarding.

- Restart on error. This function automatically restarts the bridge computer, reloads DOS, and reloads the Bridge Program if an adapter check or critical resource depletion occurs. The function requires the use of the DOS AUTOEXEC.BAT file on the Bridge Program working copy.

- Memory dump on error. This function causes an image of the Bridge Program memory and buffers to be written on disk or diskette if a critical resource depletion occurs. The service supplier uses the image in resolving the programming problem.

- Error log. Errors that cause the Bridge Program to end operation are recorded in a file on disk or diskette. The file is useful for problem determination particularly when the bridge is unattended for long periods of time and **Restart on error** is used.

- Hop count limit and single-route broadcast. The hop count limit restricts the number of bridges, to no more than seven, through which a broadcast or single-route broadcast frame can travel in a network.

  When the single-route broadcast function is active for a bridge adapter, frames designated as single-route broadcast frames are passed through the bridge as long as the frame has not reached the bridge's hop count limit.

  These two functions help the user ensure that only one copy of a broadcast or single-route broadcast frame reaches any LAN segment in the network.

- Automatic single-route broadcast. The automatic single-route broadcast function enables the Bridge Program to communicate with other Bridge Programs to determine how to set the single-route broadcast parameter value to make up for for changes in the network configuration.

- Retry initialization during beaconing. If the Bridge Program detects a beaconing condition on one or both rings during initialization, the Bridge Program will try to initialize until both adapters are open or until the bridge operator intervenes.

- Adapter configuration options. The locally administered address function allows the user to override the universally administered address that is permanently encoded in the microcode on each network adapter.

  The shared RAM address function allows the user to specify the address in the computer memory map for the RAM shared with each bridge adapter, if the addresses need to be different from the defaults.

- Communication with IBM LAN Manager programs. The Bridge Program can communicate with up to four IBM LAN Manager programs.

  The Bridge Program parameter server, configuration report server, and error monitor functions collect network and adapter status, error reports, and network configuration information. Some of the collected information is displayed on Bridge Program panels; some is sent as reports or notifications to requesting IBM LAN Manager programs.

  The user can specify a link password for each of the four connections to IBM LAN Manager programs. The IBM LAN Manager programs must use the correct passwords to establish the links with the Bridge Program.

  The Bridge Program allows the IBM LAN Manager Version 2.0 to alter the configuration parameter settings for the

  - Bridge Number
  - LAN Segment Number (primary and alternate adapters)
  - Frame Forwarding Active
  - Bridge Performance Threshold
  - Hop Count
  - Single-Route Broadcast
  - Link Passwords.

- Help function. This function enables an operator to request descriptions and explanations of the use and contents of the Bridge Program function panels.

- Configuration data display. This function enables an operator to display the configuration currently being used by the Bridge Program (the configuration cannot be altered by the Bridge Program; the Configuration Program must be used for alterations). The operator can check for changes to Bridge Program configuration parameters that were made by the IBM LAN Manager.

- Network and communication status. Each Bridge Program function panel displays the current LAN segment status for the LAN segments connected to the bridge. The operator can display more detailed status for each LAN segment, including the fault domain for the last occurring beacon on a ring.

  The operator can also display the current status of any bridge links between the LAN segments and the IBM LAN Manager programs.

- Path trace. The Bridge Program logs an entry for each frame crossing the bridge that requests a system path trace. The log holds the 15 most current entries. The operator can display and clear the path trace log.

- Statistics. The Bridge Program collects statistics on the traffic passing through the bridge, including counts of frames forwarded and frames not forwarded for each LAN segment. The operator can display the bridge performance statistics and counters.

- Shutdown. This function provides the operator with the means to end Bridge Program operation in an orderly manner. Before ending, the Bridge Program verifies the shutdown request with the operator and checks for active links with IBM LAN Manager programs.

Specified Operating Environment

The IBM PC Network Bridge Program is designed to operate with·the following hardware and software.

Machine Requirements

To install and operate the Bridge Program, you need:

- An IBM Personal System/2* (PS/2*) computer with Micro· Channel* architecture and the following
  - At least 512 KB of memory
  - A minimum of one 720 KB diskette drive or one 1.44 MB diskette drive with at least 300 KB of free disk space.
  - Two network adapters that are compatible with your computer (see Table E-1) and the adapter cables required
  - A display that is compatible with your computer (one of the following)
    - An IBM monochrome display
    - An 80-column color monitor
  - An IBM PC Graphics Printer, or its equivalent, if you want printer output
- At least two blank 3.5-inch diskettes.

Refer to the following table to determine the type of adapters you will be installing in the bridge computer.

Table E-1. Network and Adapter Combinations	
Type of Network	**Name of Adapter**
Token-Ring Network	Token-Ring Network Adapter/A Token-Ring Network 16/4 Adapter/A
PC Network	PC Network Adapter II/A PC Network Adapter II/A - Frequency 2 PC Network Adapter II/A - Frequency 3 PC Network Baseband Adapter/A

For more information concerning computer equipment and supplies see "Related Publications" on pagé ix.

Program Requirements

In addition to the Bridge Program, you will need to use the IBM Personal Computer Disk Operating System (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.

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.

Prerequisite Software Requirements

See Program Requirements above.

Licensed Program Materials Availability

This licensed program is available without source licensed program materials. It is available in object code only.

Statement of Service

IBM will provide service for valid program-related defects in the IBM PC Network Bridge Program, Version 1.0 to program licensees at no additional charge. Program service is available until December 30, 1991. Specify product identifier 560111001 when requesting service.

The way each licensee obtains access to program service depends on the marketing channel through which the license was obtained.

For example, in the United States and Puerto Rico, if the IBM PC Network Bridge Program, Version 1.0 was obtained through:

* The IBM M&S Market Operations.

    Requests for program service should be made through the service coordinator of the licensee's company.

    The service coordinator is a representative of the customer who serves as the interface between end users and the IBM support location for IBM licensed program defect support. The service coordinator is registered by the IBM branch office, under the terms of the Quantity Discount Agreement. The service coordinator's responsibilities include, but are not limited to, problem determination, problem source identification, submission of problem reports, application of maintenance, and action on IBM support organization recommendations.

    The service coordinator can call the IBM Support Center (**1-800-237-5511**) at any time, and will usually be called back within eight business hours. The IBM LAN Service Group will contact the service coordinator Monday through Friday between 8:00 a.m. and 5:00 p.m., Eastern time.

If the IBM PC Network Bridge Program is obtained through transfer of license from another party under the conditions of the IBM Program License Agreement supplied with this product, the new licensee can obtain program service through the access arrangement provided for the original licensee.

When a license is transferred, if the original license was obtained through IBM M&S Market Operations, the previous licensee is responsible for contacting the IBM marketing representative to make arrangements to transfer service entitlement to the new licensee.

The new licensee must also establish a qualified service coordinator to work with IBM central service.

IBM does not guarantee service results, or that the program will be error-free, or that all program defects will be corrected.

When a report of a defect in an unaltered portion of a supported release of the program is submitted, IBM will respond by issuing one of the following:

- Defect correction information, such as corrected documentation, corrected code, or notice of availability of corrected code

- A restriction notice

- A bypass.

Corrected code is provided on a cumulative basis on diskettes; no source code is provided. Only one copy of the corrections with supporting documentation will be issued to the licensee, or the agent of the licensee reporting the defect. IBM will authorize various agents, such as IBM Personal Computer dealers and service coordinators of IBM M&S Market Operations customers, to make and distribute a copy of the corrections, if needed, to each IBM PC Network Bridge Program licensee that they serve.

The total number of copies of an update distributed to IBM PC Network Bridge Program licensees within a customer's location cannot exceed the number of copies of the IBM PC Network Bridge Program licensed to the customer.

IBM does not plan to release updates of the IBM PC Network Bridge Program code on a routine basis for preventive service purposes. However, should IBM determine that there is a general need for a preventive service update, it will be made available to all licensees through the same process used to distribute general IBM PC Network Bridge Program updates.

Following the discontinuance of all program services, this program will be distributed on an "as is" basis, without warranty of any kind either express or implied.

Type/Duration of Program Services

Central Service, including a Support Center, will be available until December 30, 1991. Programs in this announcement are supported by the IBM LAN Service Group. Access to this Support Center will be provided through the IBM Support Center. See the Statement of Service section for details.

When Central Service is specified, one or more service locations will be designated which will accept documentation in a format described by IBM indicating that a problem is caused by a defect in the licensed program.

Additional Information

Any other documentation with respect to this licensed program, including any such documentation referenced herein, is provided for information purposes only and does not extend or modify the material contained in the License Information.

List of Abbreviations

CATV	Community Antenna Television	**MB**	megabyte
		Mbps	megabits per second
DOS	Disk Operating System	**NAUN**	nearest active upstream neighbor
ETR	Early Token Release		
KB	kilobyte	**PC**	personal computer
LAN	local area network	**RAM**	random access memory
LLC	Logical Link Control	**ROM**	read-only memory
MAC	medium access control		

Glossary

This glossary defines abbreviations and terms used in this manual in describing the IBM PC Network Bridge Program, the IBM Token-Ring Network, IBM PC Network, and local area networks in general.

It includes information from the *IBM Vocabulary for Data Processing, Telecommunications, and Office Systems*, GC20-1699.

Definitions from draft proposals and working papers under development by the International Standards Organization, Technical Committee 97, Subcommittee 1 are identified by the symbol **(TC97)**.

Definitions from published sections of the *ISO Vocabulary of Data Processing*, developed by the International Standards Organization, Technical Committee 97, Subcommittee 1 and from published sections of the *ISO Vocabulary of Office Machines*, developed by subcommittees of ISO Technical Committee 95, are preceded by the symbol **(ISO)**.

The symbol (T) identifies definitions from draft international standards, draft proposals, and working papers in development by the International Organization for Standardization, Technical Committee 97, Subcommittee 1.

A

active monitor. In the IBM Token-Ring Network, a function in a single adapter that initiates the transmission of tokens and provides token error recovery facilities. Any active adapter on the ring has the ability to provide the active monitor function if the current active monitor fails.

adapter. The circuit card within a communicating device (such as an IBM Personal Computer) and its associated software that enable the device to be attached to a network.

application program. A program written for or by a user that applies to the user's work.

B

baseband. A frequency band that uses the complete bandwidth of a transmission medium. Contrast with *broadband*.

baseband LAN. A local area network in which information is encoded, multiplexed, and transmitted without modulation of carrier. (T)

beaconing. An error-indicating function of adapters that assists in locating the problem causing a hard error on the IBM Token-Ring Network.

bridge. A functional unit that connects two local area networks (LANs) that use the same logical link control (LLC) procedures but may use different medium access control (MAC) procedures. A bridge consists of the bridge computer, two adapters and their cables, and the Bridge Program.

bridge computer. The dedicated computer in which the Bridge Program is loaded.

bridge ID. The bridge label combined with the adapter address of the adapter connecting the bridge to the LAN segment with the lowest LAN segment number; it is used by the Bridge Program automatic single-route broadcast function.

bridge label. A 2-byte hexadecimal number that you can assign to each bridge. See bridge ID.

broadband. A frequency band divisible into several narrower bands so that different kinds of transmissions such as voice, video, and data transmission can occur at the same time. Synonymous with wideband. Contrast with *baseband*.

broadband LAN. A local area network (LAN) in which information is encoded, multiplexed, and transmitted with modulation of carriers.

broadcast frame. A frame that is to be forwarded by all bridges, unless otherwise restricted.

bus. A network configuration where a series of nodes (attaching devices, such as IBM Personal Computers) are connected to a main cable.

bypass. To eliminate a station or an access unit from a ring network by allowing the data to flow in a path around it.

C

carrier. On broadband networks, a continuous frequency signal that can be modulated with an information-carrying signal.

coaxial cable. (coax cable) A cable consisting of one conductor, usually a small copper tube or wire, within an insulation from another conductor of a larger diameter, usually copper tubing or copper braid.

configuration. (1) (TC97) The arrangement of a computer system or network as defined by the nature, number, and the chief characteristics of its functional units. The term may refer to a hardware or a software'configuration. (2) The devices and programs that make up a system, subsystem, or network.

configuration file. The collective set of item definitions that describe a configuration.

continuous carrier. On broadband networks, a condition in which a carrier signal is being constantly broadcast on a given frequency. No further information can be modulated on that frequency. Synonymous with hot carrier.

controlling link. The reporting link between a bridge and a network

manager program that is authorized to change bridge configuration parameters and to disable and enable certain bridge functions.

D

designated bridge. A bridge in a network using automatic single-route broadcast that forwards single-route broadcast frames.

diagnostics. Modules or tests used by computer users and service personnel to diagnose hardware problems.

disk image. A representation of a disk or diskette containing files and programs. The image resides in computer storage and is used by the computer as though it were a physical disk or diskette.

Disk Operating System (DOS). A program that controls the operation of an IBM Personal Computer or IBM Personal System/2 computer and the execution of application programs.

dump. (1) Computer printout of storage. (2) To write the contents of all or part of storage to an external medium as a safeguard against errors or in connection with debugging. (3) (ISO) Data that have been dumped.

E

enabled. Active, operational, and can receive frames from the network. (Servers and functional addresses may be enabled by programs running on the Token-Ring Network.)

establishment. A user's premises that does not extend across public rights of way (for example, a single office building, warehouse, or campus).

F

formatted diskette. A diskette on which track and sector control information has been written and which may or may not contain data.

Note: A diskette must be formatted before it can receive data.

frame. The unit of transmission in the Token-Ring Network. It includes delimiters, control characters, information, and checking characters.

H

hard error. An error occurring on the network that makes it inoperative. See beaconing.

"hello" message. A message used by automatic single-route broadcast to detect what bridges enter and leave the network and to reset single-route broadcast parameters accordingly. The root bridge sends a "hello" message on the network every 2 seconds.

help panel. Information displayed by a program or system in response to a help request from a user. An on-line display that tells you how to use a command or another aspect of a product.

hop count. The number of bridges through which a frame has passed on the way to its destination.

Note: Hop count applies to all broadcast frames that are not single-route broadcast frames.

hop count limit. The maximum number of bridges through which a frame may pass on the way to its destination.

K

kilobyte (KB). 1024 bytes.

L

LAN segment. Any portion of a local area network (for example, a single ring or bus) that can operate independently, but is connected to the establishment network via bridges, controllers, or gateways.

LAN segment status. The condition of the LAN segment (ring or bus).

link. The combination of physical media, protocols, and programming that connects devices on a network.

lobe. In the IBM Token-Ring Network, the section of cable (which may consist of several segments) that attaches a device to an access unit.

local area network (LAN). A data network located on the user's premises in which a serial transmission is used for direct data communication among data stations.

M

megabyte (MB). (1) A unit of measure for storage capacity. One megabyte equals 1 048 576 bytes. (2) Loosely, one million bytes.

N

NAUN. Nearest active upstream neighbor. For any station on a ring, the station that is sending frames or tokens directly to it.

network. A configuration of data processing devices and software connected for information interchange.

network manager. A program or group of programs that is used to monitor, manage, and diagnose the problems of a network.

no carrier. On broadband networks, a condition in which a carrier signal is not being broadcast on a given frequency. In the absence of such a carrier, no information can be modulated on that frequency.

node. Each computer in the IBM PC Network is referred to as a node. Each node includes a personal computer, an adapter, and the necessary software.

non-broadcast frame. A frame containing routing information specifying which bridges are to forward

it. A bridge will forward a non-broadcast frame only if that bridge is included in the frame's routing information.

P

page. (1) The portion of a panel that is shown on a display surface at one time. (2) To move back and forth among the pages of a multiple-page panel. See also *scroll*.

panel. (1) A formatted display of information that appears on a terminal screen. See also *help panel*. (2) In computer graphics, a display image that defines the locations and characteristics of display fields on a display surface.

path. (1) The route traversed by the information exchanged between two attaching devices in the network. (2) A command in DOS that searches specified directories for commands or batch files that were not found by a search of the current directory.

path cost. A value, maintained by each bridge, that indicates the relative length of the path between the root bridge and another bridge.

path trace. A function that may be requested of a bridge by a received frame. The request is for a record of the bridges through which the frame has passed.

R

RAM Paging. RAM paging is a technique that allows the computer software to access all the RAM on the adapter, without having to map the entire shared RAM into the computer's memory map. The shared RAM on the adapter is paged into the computer's memory map one area at a time.

RAM size. The amount of RAM that is directly mapped into the computer's memory map.

random access memory (RAM). A computer's storage area into which data may be entered and retrieved in a nonsequential manner.

read-only memory (ROM). A computer's storage area whose contents cannot be modified.

ring (network). A network configuration where a series of attaching devices, such as IBM Personal Computers, are connected by unidirectional transmission links to form a closed path. A ring of an IBM Token-Ring Network is referred to as a LAN segment or as an IBM Token-Ring Network segment.

root bridge. The bridge in a network using automatic single-route broadcast that sends the "hello" message on the network every 2 seconds. Automatic single-route broadcast uses the message to detect when bridges enter and leave the network, and to change single-route broadcast parameters accordingly.